Amateur Radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

VOL. 57, No. 1, JANUARY 1988
Actually 1989

FORWARD TO THE 21ST CENTURY

KENWOOD

AMATEUR LINE-UP

Kenwood's amateur lineup for 1988 incorporates the latest developments in communications technology.

Superior front end specifications are accompanied by the latest developments in transmitter design. Automatic antenna tuning and advanced digital & microprocessor technology make these the easiest to operate Kenwoods ever

Personal computer control is available on several models.

TS-940S

Competition Quality HF Transceiver. Transmitter SSB CW AM FM and FSK 160 10 metres bands Output 250W PEP Automatic antenna tuner Receiver 150kHz 30MHz continuous 40 memories programmable and band scans Power requirement 240VAC 50 60Hz

TS-440S

Compact HF Transceiver. Transmitter SSB CW FM AFSK 160 10 metre bands Output 200W PEP Optional automatic antenna tuner Receiver 100kHz 30MHz continuous Power requirement 12 16VDC 20A max

1.8-50MHz

TS-680S

High performance HF & 6 metre Transceiver. Transmitter SSB CW AM and FM modes 160 6 metre bands Output 100W PEP (160 10m) 10W (6m) Receiver 500kHz 30MHz continuous Memory scan band scan Power req 12 16VDC 20A max

VHF

TR-751A
TR-851A

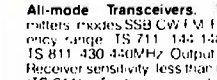
All-mode Transceivers. Frequency Range TR 751A 144 148MHz TR 851A 430 440MHz Transmitter SSB CW FM modes Output 25W Receiver sensitivity less than 0 11uV (TR-851A) Features include Auto mode selection dual digital VFOs 10 memories plus COM channel Optional Digital Channel Link System Power req 13 8V +15% 7 5A max

TH-25A
TH-45A

FM Handheld Transceivers. Frequency range TH-25 144 148MHz TH-45 430 440MHz Output 5W Receiver sensitivity less than 0 16uV (TR 25) 14 multi function memories memory scan and band scan Power req 6 0 16VDC 1 2A max

TS-711A
TS-811A

All-mode Transceivers. Transmitters modes SSB CW FM Frequency range TS 711 144 148MHz TS 811 430 440MHz Output 25W Receiver sensitivity less than 0 2uV (TS-811) Features include 40 multi function memories programmable band scan and memory scan plus programmable memory channel ockout Power req 240VAC 13 8V DC 8 0A max



TM-221
TM-421

FM Mobile Transceivers. Transmitters Frequency range 144 148MHz (TR221) 430 440MHz (TR 421) Output 45W (TM 221) 35W (TM 421) Low power switch to 5W Receiver Frequency Range 130 173 995MHz (TR 221) 438 449 995MHz (TR421) Sensitivity less than 0 16uV Power requirements 13 8VDC +15% 9 5A max

TH-215A
TH-415A

FM Handheld Transceivers. Transmitters Frequency Range 144 148MHz (TH 215) 430 440MHz (TH 415) Output 5W 0 5W (Hi low) Receiver 141 163MHz (TH 215) 430 440MHz Scan modes include band memory and programmable band scans with 3 scan stop modes Power requirements 7 2 16V 2 0A max

VHF/UHF DUAL BANDER

TM-721A **NEW**

Dual band FM Transceiver with across band duplex. New for 1988 with dual watch selectable full duplex cross band operation automatic band change 30 memory channels Transmitter Frequency Range 144 148MHz 430 440MHz Output 45W (VHF) 35W (UHF) Receiver sensitivity 0 16uV (UHF)

RECEIVERS

R-5000

Communications Receiver. The R 5000 is a competition class communications receiver It receives all modes (SSB CW AM FM FSK) Frequency coverage is 100kHz to 30MHz in 30 bands Selectable IF filters and dual mode noise blanking are incorporated Power requirements 240VAC or 13 8V DC

RZ-1

Wide Band Receiver. The RZ 1 covers 500kHz 905MHz Features include AM and FM reception 100 easy to operate multi function memory channels Scan modes include VFO scan and memory scan plus programmable channel ockout Power requirements 11 16V DC 1A max

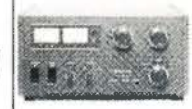
MISC.

STATION MONITOR

SM-220

Based on a wide frequency range oscilloscope it combines a two tone generator a wide variety of waveform observing capabilities

HF LINEAR AMPLIFIER



TL922

A class AB1 grounded grid linear amplifier Covers 160 10m for SSB CW and RTTY modes Drive Power 80W for full output RF Input Power 2 000W PEP (SSB)

ANTENNA TUNER

AT-250

Optional automatic antenna tuner for the TS-680S Features full coverage of 160 10 metres Insertion loss less than 0 8dB Through power 150W

REMOTE CONTROL HANDSET

RC-10

Connects to models TM 221 TM 421 TM 721 Provides all functions on the front pane Will link together models TM 221 TM 421

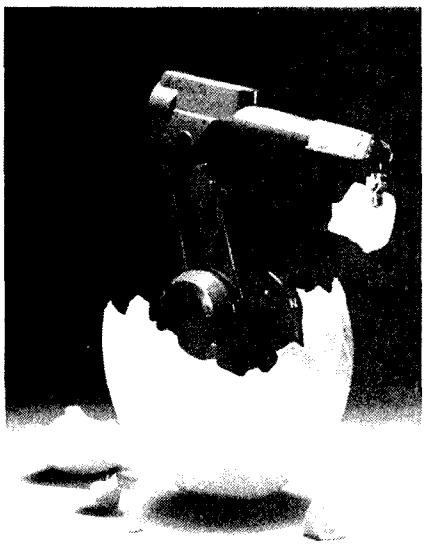
KENWOOD ELECTRONICS AUSTRALIA PTY. LTD.

4E WOODCOCK PLACE, LANE COVE, SYDNEY, N.S.W., 2066. Ph. (02) 428 1455.

YOUR AUTHORISED KENWOOD DEALER, BELOW, WILL GUARANTEE SATISFACTION:
Further, beware of dealers not listed in this advertisement who are selling Kenwood communications equipment All Kenwood products offered by them are not supplied by Kenwood Australia Pty Ltd and have no guarantees applicable

NSW: Sydney, Emtronics (02) 211 0988 **Parramatta,** Captain Communications (02) 633 4333. **Inverell,** Reg Stockman Communications (067) 22 1303 **Cessnock,** Robertson Electronics (049) 90 7908 **Wollongong,** Macelec Pty Ltd (042) 29 1455 **Port Macquarie,** DX Engineering (065) 84 9922 **Lismore,** Frank Boundy (066) 86 2145 **ACT:** O'Connor Alex Johnson (062) 47 9125 **VIC: Moorabbin** Measure Tech Supplies Pty Ltd (03)553 4566 **Melbourne,** Emtronics (03) 670 0330 **Ballarat,** Brian Stares (053) 39 2808 **Bendigo,** Sumner Electronics (054) 43 1977 **TAS: Hobart,** Watsons Wireless (002) 34 4303 **Launceston,** Marine & Communication (003) 31 2711 **Burnie,** VK Electronics (004) 31 7733 **QLD: Albion,** Mitchel Radio Co (07) 357 6830 **Brisbane,** Emtronics (07) 394 2555 **SA & NT: Port Adelaide,** International Communications Systems Pty Ltd (08) 47 3688 **WA: Victoria Park,** Willis Electronics (09) 470 1118 **Ferndale,** Bay Radio (09) 451 3561 **Osborne Park,** Ford Electronics (09) 242 1766

Amateur Radio



Future Technology towards the 21st Century. How will our hobby contribute?

Special Features

Electronics & Amateur Radio in Tasmanian Education *by Tony Clayton VK7AH* 14
IARU Region 3 Working Group Reports 25
Packet Radio on HF *by David Tan 9M2DT* 11
Proposed Revised Australian Band Plans 22
QRP in the 1920s *by Colin MacKinnon VK2DYM* 17
The Robot — *21st Century Technology by Ken McLachlan VK3AH* 6
Try Using Japanese Morse Code with Japanese Stations 13
VI88XPO *by Alan Shawsmith VK4SS* 3
What's Worse than Radio Blackouts? *by Ken Gott VK3AJU* 21
1988 AR Index 30

Technical Features

Not another Article on the G5RV! *by Don Knox VK1DK* 18
Reflections on the John Moyle Field Day *by Waldis Jirgens VK2DXV* .. 8
Ringo Antenna *by Ian Crompton VK5KIC* 16
Topical Technicalities *by Lindsay Lawless VK3ANJ* 36
Try This
— *Antenna Impedance Meter by S E Widgery VK3SE* 56
— *Solid State Conversion of Leader LSG11 Signal Generator by Andrew Hay VK7ZHA* 29
— *Stop Your TH3 Junior Drooping by Arthur Brean VK6SY* 12

Regular Features

Advertisers' Index 64
ALARA 44
AMSAT Australia 46
Awards
— *Central Coast Award* 41
— *European 1992 Community Award* 41
Club Corner 54
Contests
— *CQ World-Wide 160 Meter DX Contest Rules* 42
— *French Contest 1989* 43
— *UBA Contest Rules for 1989* 42
— *1st ARRL RTTY Roundup* 43
Editor's Comment 2
Education Notes 45
Five-Eighth Wave 57
Hamads 63
How's DX 52
Ionospheric Summary 62
Morseword No 23 48
Over to you! — *members have their say* 58
Pounding Brass 53
QSLs from the WIA Collection 49
QSP 2, 12, 15, 24, 45, 56
Radio Amateur Old Timers' Club 51
Silent Keys 63
Spotlight on SWLing 50
VHF UHF — *an expanding world* 38
VK2 Mini-Bulletin 56
VK3 WIA Notes 56
WICEN News 62

DEADLINE

All copy for inclusion in the March 1989 issue of Amateur Radio, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic. 3162, at the latest, by 9 am, January 20, 1988.

PROUDLY PRINTED IN AUSTRALIA

Amateur Radio

Published monthly as the Official Journal by the Wireless Institute of Australia, founded 1910. ISSN 0002 — 6859. Registered Office: 3/105 Hawthorn Road, Caulfield North, Vic. 3161. Telephone: (03) 528 5962.

EDITOR
BILL RICE* VK3ABP

NEWS EDITOR
JIM LINTON VK3PC

TECHNICAL EDITING CO-ORDINATOR
PETER GIBSON* VK3AZL

TECHNICAL EDITORS
EVAN JARMAN* VK3ANI
GIL SONES* VK3AUI

MARKETING
BRUCE KENDALL* VK3WL

CONTRIBUTING EDITORS
Frank Beech VK7BC
Joy Collis VK2EBX
Brenda Edmonds VK3KT
Ron Fisher* VK3OM
Gilbert Griffith VK3CO
Ken Hall VK5AKH
Roy Hartkopf* VK3AOH
Robin Harwood VK7RH
Ron Henderson VK1RH
Colin Hurst VK5HI
Eric Jamieson VK5LP
Bill Martin VK2COP
Hans Ruckert VK2AOU

COMPUTER DRAFTING
Liz Kline
Ken Kline
*Members of Publications Committee

GENERAL MANAGER & SECRETARY
Bill Roper VK3ARZ

MEMBERSHIP AND CIRCULATION MANAGER
Helen Wageningen

ACCOUNTS AND ADVERTISING MANAGER
June Fox

Inquiries and material to:
The Editor,
PO Box 300,
Caulfield South, Vic. 3162.

Material should be sent direct to PO Box 300, Caulfield South, Vic. 3162, by the 20th day of the second month preceding publication. **Note:** Some months are a few days earlier due to the way the days fall. Check page 1 for deadline dates. **Phone: (03) 528 5962.** HAMADS should be sent direct to the same address, by the same date.

Acknowledgment may not be made unless specifically requested. All important items should be sent by Certified Mail. The Editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying a reason.

TRADE PRACTICES ACT

It is impossible for us to ensure the advertisements submitted for publication comply with the Trade Practices Act 1974. Therefore advertisers and advertising agents will appreciate the absolute need for themselves to ensure that the provisions of the Act are complied with **strictly.**

VICTORIAN CONSUMER AFFAIRS ACT

All advertisers are advised that advertisements containing only a PO Box number as the address cannot be accepted without the addition of the business address of the box-holder or seller of the goods.

Production: BETKEN PRODUCTIONS
5 Masefield Avenue, Mooroolbark, Vic. 3138.
FAX:(03) 725 0490
Combined Colour Separations by: COMBINED REPRO GRAPHICS
3/35 Malvern Street, Bayswater, Vic. 3158.
Tel:(03) 729 4344
Typesetting by: BETKEN PRODUCTIONS
5 Masefield Avenue, Mooroolbark, Vic. 3138.
Make up and Photo Reproduction by: EASTERN ADVERTISING PTY LTD
PO Box 558, Lilydale, Vic. 3140
Tel:(03) 735 5410
Printed by: WESTERNPORT PRINTING PTY LTD
Station Street, Koo-wee-rup, Vic. 3981.
Tel:(059) 97 1888.
Mail Processing by: POLK MAILING COMPANY PTY LTD
PO Box 140, Collingwood, Vic. 3066.
Tel:(03) 417 5161
Opinions expressed by individuals are not necessarily those of the Wireless Institute of Australia.

Editor's Comment

ANOTHER NEW YEAR

After all the Bicentennial frenzy of 1988, welcome to 1989! There seems to be nothing much to distinguish it at this early stage. No Bicentennial, no Olympic Games, not a Leap Year; just your undistinguished run-of-the-mill common or garden year. No Region 3 Conference, no WARC (but let's not forget that we're a year closer to the next, in 1992 or 1993, and *after that amateur radio may never be the* same again!).

When I became Editor of AR in 1984 the magazine production had already been in the capable hands of Betken Productions for two years. Not only does this issue very nearly complete six years of service by Betken, but it is also their last. The WIA will not easily find alternatives, and I would like to record here our gratitude to Ken and Bett for the tremendous job they have done over the years.

As a result of this change in our circumstances, two things are virtually certain. There will be a great deal more work to be done by the Publications Committee and by the already heavily overloaded Executive Office, *or* (But more likely *and*) the magazine costs will *rise* significantly. As always, our aim will still be to bring you the best magazine we can all afford, but some changes may be forced upon us. There may also be a few problems in maintaining present production schedules. Time will tell.

One feature of *Amateur Radio* which does not change is that you, the readers, continue to find technical articles the most interesting part of the magazine. This means that we are critically dependent on you, the writers, to maintain the supply of good, readable, educational and/or useful articles. They need not be technical "blockbusters" or deal only with the latest state-of-the-art fringe-of-the-field! Much of what seems second nature to some of us old timers is often basic knowledge of which newcomers may not yet be aware. It never ceases to amaze me how students these days need to learn more and more than their parents ever knew, and in less and less time! In our own particular field, let's make AR a useful contributor to this educational process.

We have always found it difficult to maintain a supply of good, topical colour photographs for front covers. Words like *last-minute, hand-to-mouth,* and *panic* spring to mind! Although we still cannot afford to pay for articles, we would be happy to pay say $50 for any photo which we can and do use on a front cover, if it is relevant to an accompanying article. Transparencies, preferably at a choice of two or three different exposures, are needed. Black and white photos for use on internal pages to support the same article will earn an additional fee of $10.

Well, there it is. January 1989. Doesn't look too auspicious at this stage, does it? Perhaps, viewed in retrospect from 1990, it may prove to have been an epic year. In hope, may we all have a Happy New Year!

Bill Rice VK3ABP
Editor

ar

SUBSCRIPTION REMINDER NOTICES

As from now, only one membership subscription notice will be forwarded to members each year.

A reminder notice will not be sent!

As from now, only one additional issue of *Amateur Radio* magazine will be sent to you if your renewal subscription is not received.

Not two additional issues as in the past!

Only a small number of *Amateur Radio* magazines are now being printed each month surplus to members requirements. This means that if you do not renew your subscription on time, you may not be able to get your missing copies of AR!

WHEN YOUR MEMBERSHIP RENEWAL IS DUE, PLEASE PAY PROMPTLY AND ENSURE CONTINUAL RECEIPT OF *AMATEUR RADIO* MAGAZINE!

ar

Alan Shawsmith VK4SS
HISTORIAN FOR THE QUEENSLAND WIA DIVISION
35 Whynot Street, Westend, Qld. 4101

The operation of station VI88XPO, in Brisbane, during the period April 30 to October 30, 1988, as part of the Expo World Fair, was a significant history-making event for Queensland amateur radio — and not likely to be repeated in the foreseeable future. As luck would have it, 1988 was also Australia's Bicentennial Year: hence the figure '88' in the dual purpose call sign.

As all Australia and the world now know, Expo 88 was an outstanding success. Local and foreign visitors, and consequently the dollar profit, exceeded all expectations. The number from overseas, who were enticed here by the activity of VI88XPO, is obviously not known but an educated guess suggests that a contact with VI88XPO would have acted as a catalyst for many a wavering mind.

The Expo Authority did not give approval for VI88XPO to be erected on the world site proper. This most unexpected decision was a great blow, especially as it came so late in the planning. For a time it appeared that there would be no VI88XPO operation at all. However, in order to keep faith with amateurs locally and overseas, who were waiting for the World Fair Station to come on air, WIA Queensland President, David Jones VK4NLV, organised a volunteer group of assistants to erect VI88XPO elsewhere. A suitable site was offered at the nearby Technical and Further Education Communications building (TAFE).

Types of equipment used were transceivers FT-101B, TS-530S and TR-4C. These were fed into a TH6DXX beam and a G5RV for 80 and 40 metres. As always happens, the uninvited guest Murphy "gate-crashed" the scene. Erecting the beam posed problems. A TH6DXX plus rotator is not a lightweight structure and needs to be stood on a solid base. This latter was lacking, however, due to an "antenna party" comprising Hans Huber (TAFE Technical Officer), Eric VK4NEF, Rick VK4NMA, Harvey VK4AHW, Bruce VK4AMV, David VK4NLV and Eddie VK4ABX, the array was eventually put in place.

The honour of making the first VI88XPO QSO was given to this writer (VK4SS), and the station worked was JA4MZL, at 0001 UTC, April 30, 1988 on 21 MHz CW. This was followed by XE2AQ, at 0002 UTC. During the next five hours 300 contacts were made. After this, VK4SS was then rostered on the after-midnight shift, mostly 14 MHz CW. Operation was from my own shack only 500 metres from and overlooking the World Fair site. (Personally, I enjoyed every minute of the "pile-ups" than ensued).

The TAFE Communications building was open from 8 am to 9 pm, the World Fair from 10 am to 10 pm. Unfortunately, continuous 12-hour operation by VI88XPO was impossible as the majority of amateurs who would have given their time willingly were busy at their places of employment. Even so, the station was quite active. Below is a list of those who did their bit unselfishly to keep the station on the air. Most operated from the TAFE site but a few from their own QTHs.

VK4ABF, Kev VK4KTF, Val VK4VR, Eddie VK4ABX, Eric VK4NEF, Don VK4YI, Geoff VK4AG, Bob VK4NFE, Tom VK4ZAL, Aaron VK4AHO, Peter VK4NGK, Jim VK4ZML, Bruce VK4AMV, Mike VK4NHF, Guy VK4ZXZ, Anne VK4ANN, VK4NJQ, Bob VK4LG (CW), Roy VK4BAY, David VK4NLV, Bill VK4MWZ (CW), Noel VK4BIF, Rick VK4NMA, Alan VK4SS (CW), John VK4BKC, Tom VK4OD, Laurie VK4BLE, Pam VK4PAM, Keith VK4TT (CW), Bob VK4CE,

The beam is up and guyed. David VK4NLV adjusts the guy tension whilst Eric VK4NEF unties the rope used to raise/tilt the antenna to an operating position.

Alan VK4SS, sets his programmable keyer for some high speed QSOs (and a "pile-up"?).

VK4RL (RTTY), Rus VK4XA (CW), Cathy VK4CEK, Alex VK4RU, Peter VK2SJ, Lee VK4CXX, Eric VK4VCE, Merv VK4DV, Geoff VK4VLI, Gus VK4GUS/VE7GUS, Marshall VK2DBS/4/WA6PRE.

A special word of thanks is due to the following:

1. Hans Huber, TAFE Technical Communications, who was always available to "trouble-shoot" the station during its period of operation.
2. TAFE Amateur Radio Club, VK4AAM, for the use of their premises.
3. David Jones VK4NLV, WIA Queensland President, who co-ordinated the original volunteers.
4. Eric Fittock VK4NEF, Roster Control and a non-stop, do everything work horse. His QSO tally exceeded 3000.
5. Roy Mahoney VK4BAY, Acting Controller in Eric's absence. He did his regular weekly stint on air, right to the end.

A few others who were rostered were, John VK4BKC, who travelled from the Gold Coast each week to do his rostered shift. Cathy VK4CEK, recovering from an eye operation, was driven from an outer Brisbane suburb by her son Eric VK4VCE, on her allotted days. She also brought her own transceiver along, as did one or two others. Local "boy" Keith VK4TT, brought along his own special "bug" key and stirred up some fast CW for the quicker operators. Australian Airlines Captain Bob VK4LG, when in town, brought his own transceiver and gave the CW boys and girls a QSO.

A variety of visitors from diverse places found their way to the VI88XPO shack. To mention a few:

A group of students employed at a mining site at Nhulunbuy, in Arnhem Land came on a tour of inspection.

A US citizen and globe-trotting fossicker.

Marshall WA6PRE/VK2DBS/4, dropped by more than once to talk to his buddies back home.

Roy VK4BAY, (no sched arranged) happened to work Marshall after his return to Fresno California, and brought him up-to-date on events.

Serge RA3AJD, a technician at the Russian Expo Pavilion, accompanied by a friend had fun working his compatriots in UA-land in his native tongue.

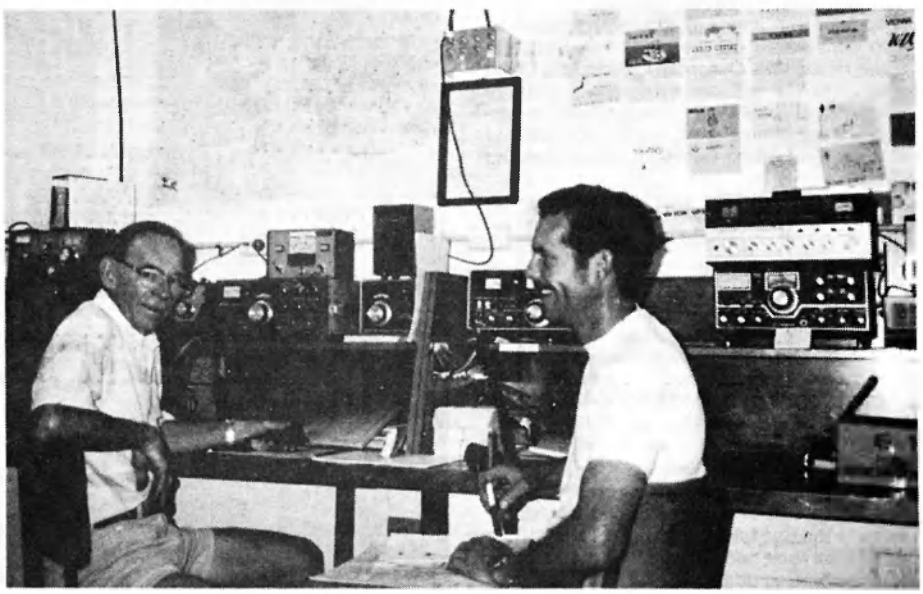
No comment on VI88XPO could be complete without an acknowledgment of gratitude to the understanding partners of all those who participated in the operation. It is certain that domestic chores were often put aside so that the station be kept on the air.

Eric VK4NEF, deservedly made the last VI88XPO QSO at 2400 UTC, 28 MHz SSB on October 30, 1988. Final detailed figures are not yet available at this time of writing — but a conservative estimate shows that 15 000 QSOs with 150 countries on five bands were accomplished and many friendships cemented in the process.

The Expo Authority adopted as the World Fair's theme, "Leisure in the Age of Technology". Could any activity personify this phrase better than amateur radio? Even so, it wasn't enough to influence the profit-minded decision makers.

ar

Roy **VK4BAY (left) and Hans Huber TAFE Technical Officer.**

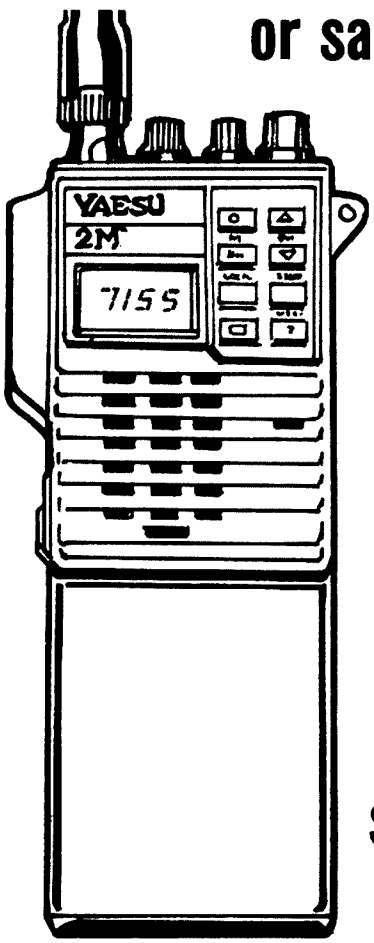


Roy VK4BAY (left) and Eric VK4NEF, two stalwarts of the action at VI88XPO.

JUST 2

of the great, money saving reasons most amateurs shop at Dick Smith Electronics. When it comes to selection, price or sales and service back-up — there's nowhere else to go!

YAESU



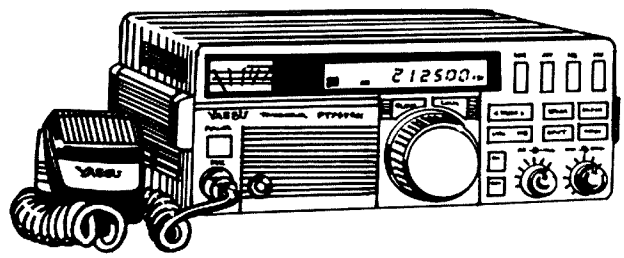
Big Performance From A Tiny Hand-Held!

The ideal 2m for the novice . . . or anyone wanting the best in hand-held performance. A tiny 55mm × 32mm × 139mm, yet Yaesu's FT23R is packed with all the most advanced features.

— Look! —

- **Fully microprocessor controlled**
- **Covars 144-148MHz**
- **10 memories**
- **Repeater splits**
- **Busy and priority scanning**
- **Up to 5 Watts output (With optional 12V supply)**
- **S/RF Meter, carry case, antenna — FNB-10 Nicad Battery & moral Cat D-3490**

$469



Budget HF Transceiver

Compact and lightweight so you can even use it as a mobile! The incredible Yaesu FT747GX is specially designed for easy operation, high performance and value for your dollar.

Look what you get ...

- **All HF bands (160 through 10 including WARC)**
- **All Mode (with optional FM)**
- **100 Watt (CW, AM 25W)**
- **Just 238 × 93 × 238mm**
- **Yaesu quality and much more!**

Cat D-2930

$1395

MIC NOT INCLUDED

DICK SMITH ELECTRONICS

Now available at 60 stores:
• **NSW** • **Albury** *21 8399* • **Bankatown Square** *707 4888* • **Blacktown** *671 7722* • **Bondi Junction** *387 1444* • **Brookvale (Warringah Mall)** *905 0441* • **Campbelltown** *(046)27 2199* • **Chatswood Chase** *411 1955* • **Chullora** *642 8922* • **Gore Hill** *439 5311* • **Gosford** *25 0235* • **Hornsby** *477 6633* • **Liverpool** *600 9888* • **Maitland** *33 7866* • **Miranda** *525 2722* • **Newcastle** *61 1896* • **North Ryde** *88 3855* • **Parramatta** *689 2188* • **Penrith** *(047)32 3400* • **Railway Square** *211 3777* • **Sydney City** *267 9111* • **Tamworth** *66 1711* • **Wollongong** *28 3800* • **ACT** • **Fyshwick** *80 4944* • **VIC** • **Ballarat** *31 5433* • **Bendigo** *43 0388* • **Box Hill** *890 0699* • **Coburg** *383 4455* • **Dandenong** *794 9377* • **East Brighton** *592 2366* • **Essendon** *379 7444* • **Footscray** *689 2055* • **Frankston** *783 9144* • **Geelong** *43 8804* • **Melbourne City** *326 6088* • **Richmond** *428 1614* • **Ringwood** *879 5338* • **Springvale** *547 0522* • **QLD** • **Brisbane City** *229 9377* • **Buranda** *391 6233* • **Cairns** *311 515* • **Chermside** *359 6255* • **Redbank** *288 5599* • **Rockhampton** *27 9644* • **Southport** *32 9863* • **Toowoomba** *38 4300* • **Townsville** *72 5722* • **Underwood** *341 0844* • **SA** • **Adelaide City** *232 1200* • **Beverley** *347 1900* • **St. Marys** *277 8977* • **Elizabeth** *255 6099* • **Enfield** *260 6088* • **WA** • **Cannington** *451 8666* • **Fremantle** *335 9733* • **North Perth** *328 6944* • **Perth City** *481 3261* • **TAS** • **Hobart** *31 0800* • **NT** • **Stuart Park** *81 1977*

DSXpress order line 008 22 6610

THE ROBOT — 21st Century Technology

Ken McLachlan VK3AH
PO Box 39, Mooroolbark, Vic. 3138

Fourteen years ago saw the world's first installation of an electronic industrial robot.

Since that time many thousands have been manufactured throughout the world, performing various menial tasks in those early days, gradually increasing to the ultimate in precision during this decade.

Many will comment that the use of robots is creating less work for individuals entering or attempting to enter the work force and it has been argued by the Managing Director and founder of the company operating under the name Voxson, Mr Lucas Longginou. Earlier this decade the headquarters of the company was moved to sunny Queensland, making radios for motor vehicles.

Quality vehicle sound systems became the next step of operations to be placed on the market, being a complete success, home entertainment units quickly followed. The company is poised to move into other facets and expect sales of $50 million in 1989 and $300 million by 1991.

Mr Longginou, according to an article in *PROFIT!*, visualises vast extensions to their operations and the introduction of the use of robots which contrary to popular belief, wouldn't do away with jobs in Australia, but increase them.

The article states that jobs, now located in foreign countries will be brought to within our country. Introduction will in fact create more employment of technicians, engineers, sales, marketing and distribution personnel.

According to other recent media reports, Australia has approximately nearly a thousand robots installed in various environments. The Ford Motor Company is believed to have in the order of 200 units operating in its two Victorian factories located at Broadmeadows and Geelong. Our country's quantity of machined and programmed 'workman' is infinitesimal to those in use by our northern neighbours.

Management and workers alike have quickly seen the benefits, particularly in industrial environments where moving heavy weights, using hazardous equipment and breathing noxious fumes has produced better quality control, higher productivity, less absenteeism with the spin off to the workers being employed in more interesting productive aspects which create a higher degree of job satisfaction, minimising accidents, work related injuries and sickness with the bonus of working less man-hours, allowing more time for leisure, closer family involvement, increasing education and doing what they like to do, which naturally they outshine in, accomplishing it better and quicker. Why? Simply, because they like doing it.

Looking back in history, there was the Industrial Revolution, which was the same period that our country was discovered. After celebrating our Bicentenary last year, we are updating the history books daily with our technological advancements, particularly in the electronics arena.

Robots can be produced to virtually perform any function that ones mind can envisage and the robot is only as good as the program that has been written for the duties which it is intended to perform in many areas that a human couldn't handle such as temperature, scientific and hazardous locational environments to mention a few.

When one looks at some of the specifications that robot manufacturers are offering, the mind boggles. Speeds of up to two and a half metres per second for the handling a 100 kilogram load, with a repeatability factor being better than one tenth of a millimetre. The approximate working area of the largest electronic, electrical and industrial Robot is one and one half metres wide in the vertical plane complimented by a working height of two metres and a rotational axis of 270 degrees in the horizontal plane. It will not complain of temperatures that lie between plus five to 45 degrees Celsius and will work constantly 24 hours per day, if required.

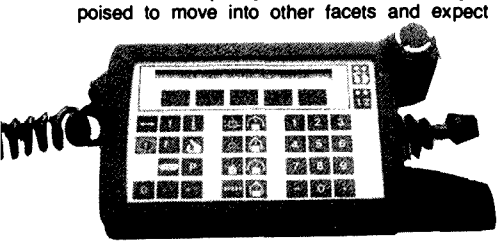
The Robots, which we are going to call Fred and Freda in this article, may receive instructions from a mainframe computer or even to a common 'garden' type 'look-a-like' variety using five and a quarter inch 'floppys'. Its 'fingers' can handle many tasks such as:

- Material handling in various forms.
- Spot welding.
- De-burring.
- Machine tending.
- Spray painting.
- Arc welding.

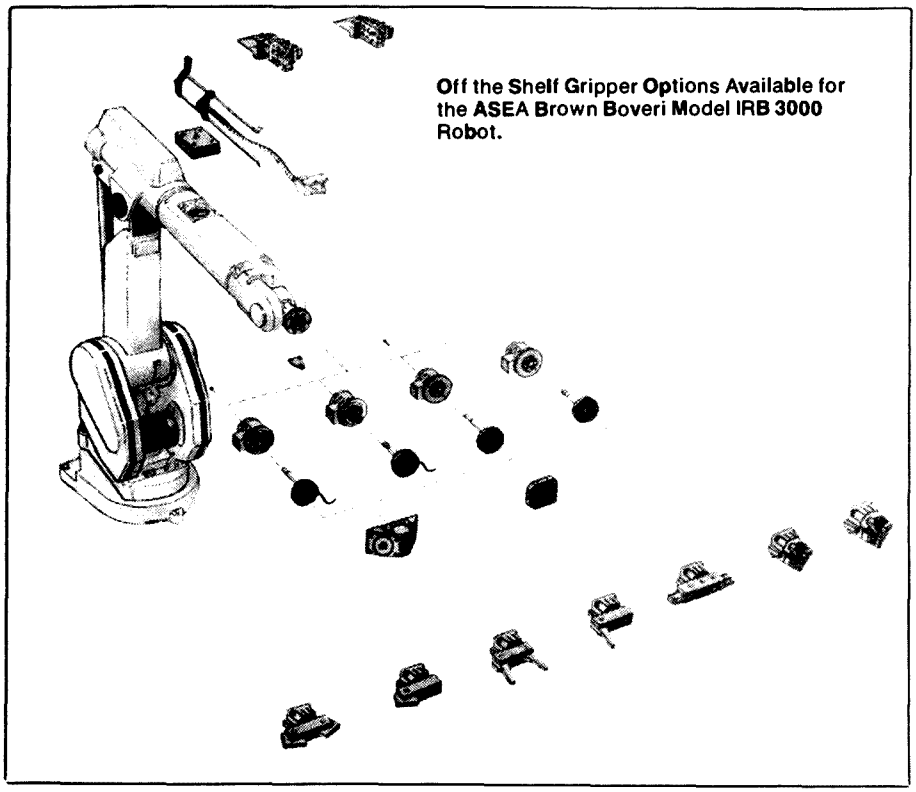
These tasks are a few applications which may be performed in increments indiscernible to the human eye on over 10 axes. Fred can do anything he is told and work quite harmoniously with his partner Freda. The controlling floppy is divided into 19 blocks which are capable of performing up to 9999 programs. Approximately 164 Kbyte programs can be stored on the disc and automatically down loaded into RAM, thus utilising the 'floppy', as a mass storage.

The Department of Labour and Industry, the 'guru' of factory regulations in Victoria, stipulates the maximum weight of any article a female may lift is 16 kilograms. Freda, when correctly designed doesn't 'huff and puff' at loads like this, she also doesn't ask for a 'smoko' or 'lunch' break whilst she is on an assembly line. Fred and Freda are the Method and Planning Engineers dream. A dream that will snowball into a major industrial revolution before the year 2000, not only in Australia, but throughout the world, even to the yet uninitiated, third world countries. A bonanza of progress and efficiency brought about by the dedication of computer engineers, technicians and suitably instructed supervisory personnel.

According to media reports, Japan has come up with the most innovative 'jockey' yet known. Yes, it is a robot jockey which is providing the answers to the Japanese racing industry's prob-



ASEA Brown Boveri Patented Teaching Pendant with Joy Stick.



Off the Shelf Gripper Options Available for the ASEA Brown Boveri Model IRB 3000 Robot.

lem of the lack of jockeys. At the present they are only doing trackwork and the 'jockey' has not to endure stringent diets to make the correct weight. The robot nicknamed Cosmo and all the relations of Cosmo can use reins, whip and spurs which are electronically controlled by a receiver that is actuated by a legitimate jockey, giving instructions on a transmitter. Voice commands usually used in the racing industry are relayed to an attached speaker, of course in the language the horse understands.

There is extreme interest in Japan and other countries in this concept of training horses and maybe eventually using them for racing. The next decade may see a lot of changes in the industry, but how the Australian racing authorities will take to it is another story. Look how long it took the gentlemen of the 'Turf' to recognise and allow the ladies to enter into the profession. In a mixed race, a jockey could say anything to a robot opponent without facing the horror of the stewards wrath. Well for the present anyway!

The amateur is not left out in the cold in this sphere of electronics and even the Honorable Senator Gareth Evans QC, in his address on opening the 1988 Remembrance Day Contest intimated the amateurs assistance in radio, over the years, now it is the time to expand the technological knowledge we have and channel it towards the *future*. What better *avenue* than having a hand in a radio-controlled Fred and Freda, from the allied and fastest growing Australian hobby, computers. Let us as a dedicated service organisation, show the professionals that we will not be left behind and can assist with ideas and new concepts in this fast growing and accepted field of technology.

ASEA Brown and Boveri Robotics nine years ago introduced to Australia, Sweden's proven decade of technology for Australian engineers and technicians to build on. The original designers are improving daily the initial concept by having evolved a method of electronically controlling six areas of freedom in the working head and a further three external axes for use on track motion, or manipulators. In one unit, the 'arm' may be twisted, the 'wrist' bent and even swiveled to the nth degree of accuracy in complicated and tedious assembly tasks.

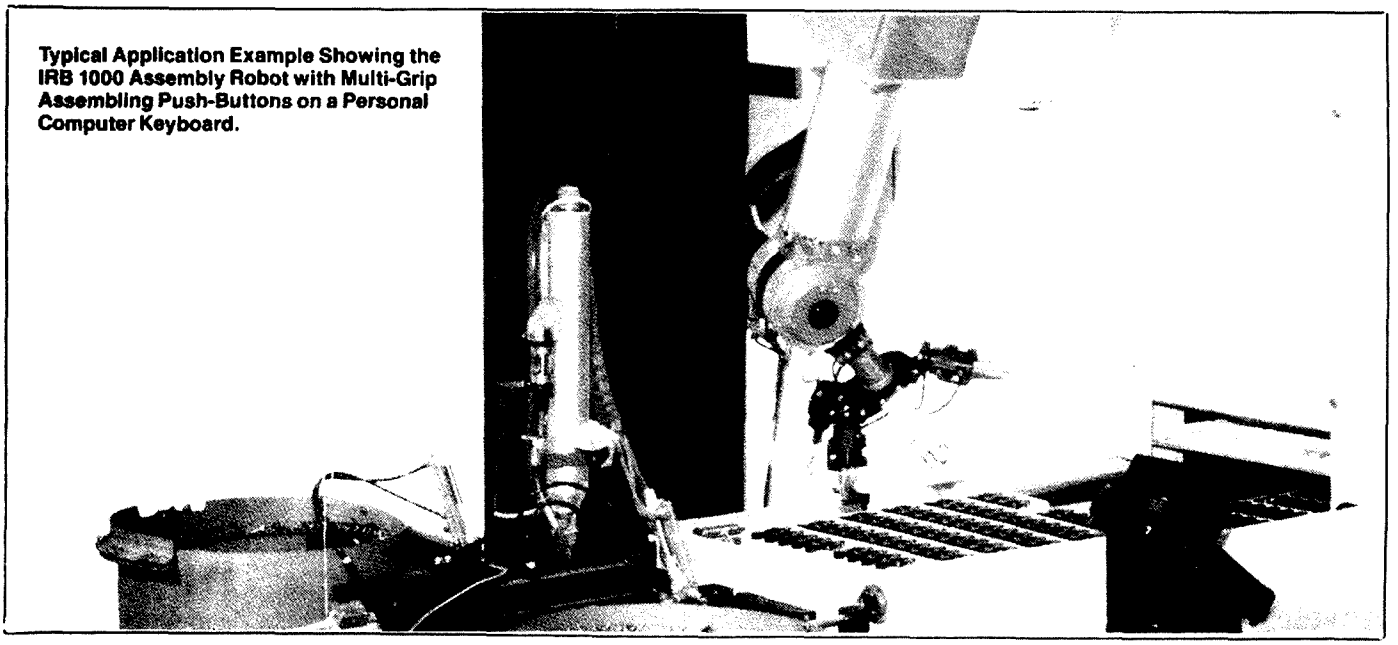
Programming is simple, as plain alphanumeric questions are displayed on the screen, requiring the operator to indicate the response he or she desires by pressing the appropriate key or by manual control of a joy-stick to position the 'fingers' at the desired point for the envisaged operation.

Like all equipment, service is required. As one who uses a car knows that one does not only put petrol in and keep driving but has to check oil, water and a host of other services. Fred and Freda are the same nevertheless, their control unit has a built in diagnostic unit, which advises of faults which may appear from time to time by locating the area or areas responsible. All units are fail safe programmed initially, in the rare case of an equipment malfunction.

Sincere thanks are extended to the Management and staff of ASEA Brown Boveri Robotics, for their assistance and advice in the writing and illustration of this article and also to *PROFIT*, the *magazine* written and distributed by the Australia wide accounting firm of Coopers and Lybrand.

1. PROFIT June/July 1988: Distributed by Coopers and Lybrand in Australia

ar



Typical Application Example Showing the IRB 1000 Assembly Robot with Multi-Grip Assembling Push-Buttons on a Personal Computer Keyboard.

REFLECTIONS ON THE JOHN MOYLE FIELD DAY

Waldis Jirgens VK2DXV
27 Oag Crescent, Kingswood, NSW. 2750

So you have been chosen to evaluate the John Moyle contest. You have been unable to help with the contest itself, but being the club's computer guru it's your turn to do the logs. You look at them, and straight away you wonder why they let the people with the worst handwriting keep the logs. Just as well... you will have to decipher the hieroglyphics. A more thorough look: There are AX stations, to be treated as VK, and then VI88ACT and VI88SA; there is no VI88NSW, so they will be all treated as interstate. Then there is this VK3. ./2 at his holiday home in NSW, sending an I suffix, and another VK3. ./2 being in the bush and sending an F suffix; not to forget the P29 station using the F ending too. A Canadian station sending an I suffix; did they explain the rules to him on air? As usual many portable stations didn't use the /P, or did the logkeeper just omit it, in his wisdom relying on you to put it back in place?

Then you must distinguish between contest and non-contest ZLs for the dupes. Somewhere in the log there are no times marked for five minutes. You warned them before, not to do that, but the five minutes you can interpolate. The VHF log holds a special temptation for stations around 50, 100 or 150 kilometre away. Are you going to be honest and determine the QTH as best you can or will you be tempted to write 101 instead of 99?

Having decided to be honest you go to work. Being equipped with an IBM PC clone and a brand new Turbo Pascal compiler you do first things first and design a data-capture program. Sure, you could do this part with a word processor, but that will take you a while. Your club has worked like mad and has made more than 500 contacts.

Going through the logs again, you realise that only a handful of reports sent are not 59. You think of sportsmanship and the introduction of the less than 90 percent 59 rule next year, but then you see that this simplifies data entry, in that the reports sent can be generated by the program. Having written the first version and tested it you add some whistles and bells and capture the 15 metre and two metre data first.

Backup copies of the diskette done you start thinking of the evaluation program. A look at the rules shows you that the real challenge will be the dupe-check routine whereas the rest will be a piece of cake. So you write "the rest" first and run the 15 and two metre evaluations. The first listing looks a bit scruffy, but the second one is okay. Then you add the dupe-check routine. Being unfamiliar with Pascal you learn about the Div and Mod arithmetic operators as well as about the val function and programming without a 'go to' command. Finally the dupe-check routine runs with your little test-log that you set up and you start data-capture for the bands with the most contacts — 40 and 80 metres.

Several hours later still with sore fingers you do a final check on them with the word processor — add a forgotten /P or change an incorrect figure. After the backup copies are created it's time for the big moment, run the final evaluation program against the live data. It turns out to be an anti-climax. Relentlessly the printer spits out the logs. You even see that there was a dupe on two metres, which you had missed before. Having created another copy of the logs for yourself you start thinking of the Federal Contest Manager. How on earth is he going to check all the incoming logs? If he had them all in standard format machine-readable he'd have a chance. Well may be in five years time! Then you think about sending your programs to AR, so that others might benefit from them in 1989. Then again you think of all those poor operators who will try to convert them to BASIC (don't ! ! !).

Anyway here they are. Some things are hard-coded but they can be changed easily. Some problems may have a simpler solution, but I did not want to spend more time than necessary with them. So all that remains is to wish you good luck and happy contesting.

ar

```
program dacap;
Uses CRT, Turbo3;
var
   call : string[11];
   date : string[1];
   time : string[4];
   sent : string[8];
   rece : string[9];
   qth  : string[20];
   dist : string[3];
   band : string[3]; datsa : string[1];
   ok : string[1]; dsn : string[7];
   datfil : text; ZZZ : string[56]; next : char; ende : boolean;
   sein, cocode : integer;
begin
    write('Band >'); readln(band);
    dsn:='log.'+band;
    assign(datfil,dsn);
    repeat
       write('start from scratch: a, append: b>');
       readln(band);
    until ((band='a') or (band='b'));
    if band='a' then rewrite(datfil) else append(datfil);
    repeat
      write('Call >'); readln(call);
      if length(call)<11 then call:=call+'
      repeat
         write('date or null >'); readln(date);
      until (((length(date)=0) or (date='1')) or (date='2'));
      if length(date)=0 then date:=datsa else datsa:=date;
      write('time >'); readln(time);
repeat
  if length(time)<4 then time:='0'+time;
until length(time)=4;
val(copy(sent,3,3),sein,cocode); sein:=sein+1;
{* prepare for null send string - phone only *}
write('sent or null >'); readln(sent);
if length(sent)=0 then
begin
   Str(sein,sent);
   if length(sent)<3 then
   begin
      repeat
         sent:='0'+sent;
      until length(sent)=3;
   end;
end;
if length(sent)=3 then sent:='59'+sent+'F';
if length(sent)<8 then sent:=sent+'      ';
write('rec >'); readln(rece);
if length(rece)<9 then rece:=rece+'       ';
if  (band='144') then
begin
   write('qth >'); readln(qth); write('dist >'); readln(dist);
   if length(qth)<20 then qth:=qth+'                    ';
   repeat
     if length(dist)<3 then dist:='0'+dist;
   until length(dist)=3;
end          else
begin
   qth:='                    ';dist:='000';
end;
```

```
    ZZZ:=call+date+time+sent+rece+qth+dist;
    write(ZZZ);
    repeat
      write(':ok= agn=N last=E >'); readln(ok);
    until (((length(ok)=0) or (ok='N')) or (ok='E'));
    if ((length(ok)=0) or (ok='E')) then
    begin
      writeln(datfil,ZZZ);
    end;
    ende:=(ok='E');
  until ende;
  close(datfil);
end.


program johnmo;
Uses CRT, Turbo3, Printer;
var
  call : string[11];
  date : string[1];
  time : integer;
  sent : string[8];
  rece : string[9];
  qth  : string[20];
  dist : integer;
  dsn  : string[7]; band : string[3]; drive : string[1];
  datfil, prfil : text;
  ZZZ : string[56]; datpr : string[8]; is : string[2];
  mode : string[5];
  pa, lc : ShortInt;
  cocode, y, PINX, inx, iw : integer;
  cw, dup, VK, VK2, VKX, H, I, P, Z, O : boolean;
  MISAT : array[1..9] of boolean;
  score, mul, bon : integer;
  rusco : longint;
  casa : array[1..300] of string[11];
  dasa : array[1..300] of string[1];
  tims : array[1..300] of integer;
  cwsa : array[1..300] of boolean;
function validco : boolean;
var li, li2, hour, houro, danu, danu2, abstim, abstimo, tidif : integer;
    houro2 : integer;
    vali : boolean;
begin
  vali:=true;
  if inx>0 then
  begin
    li:=inx;
val(date,danu,cocode); hour:=(time Div 100)+(danu-1)*24;
abstim:=hour*60+(time Mod 100); (* minutes absolute *)
repeat
if call=casa[li] then
begin
  if Z then
  begin
    val(dasa[li],danu,cocode); houro:=(tims[li] Div 100)+(danu-1)*24;
    if (hour=houro) then
    begin
      if (li=inx) then vali:=false (* no in betweens then *)
      else
      begin
        if (cwsa[li]=cw) then vali:=false (* same mode *)
        else
        begin
          li2:=li-1;
          if li2>0 then
          begin
          repeat
            val(dasa[li2],danu2,cocode);
            houro2:=(tims[li2] Div 100)+(danu2-1)*24;
            if ((houro2=hour) and (call=casa[li2]))
            then vali:=false; (* 3rd contact in hour *)
            li2:=li2-1;
          until (((vali=false) or (houro2<>hour)) or (li2=0));
          end;
        end;
      end;
    end;
  end
  else
  begin
    val(dasa[li],danu2,cocode);
    houro:=(tims[li] Div 100)+(danu2-1)*24;
    tidif:=abstim-(houro*60+(tims[li] Mod 100));
    if ((NOT VK) or I) then
    begin
      if ((tidif<360) and (cw=cwsa[li])) then vali:=false;
    end
    else
    begin
      if ((tidif<180) and (cw=cwsa[li])) then vali:=false;
    end;
  end;
 end;
 li:=li-1;
 until ((li=0) or (NOT vali));
end;
if vali then
begin
  inx:=inx+1; (* function sideeffect: store in arrays *)
  casa[inx]:=call; dasa[inx]:=date; tims[inx]:=time; cwsa[inx]:=cw;
end;
validco:=vali;
end;
procedure wrtopic;
begin
   write(Lst,Chr(18)); (* release condensed print *)
   write(Lst,Chr(12)); (* form feed *)
   writeln(Lst,'Log VK2HZ/P for ',band,' HHZ Page: ',pa);
   writeln(Lst,' '); write(Lst,Chr(15)); (*select condensed print *)
   writeln(Lst,'Date     Time  Call    Band Mode   Sent    Received QSOp ',
               'Mlt Bon Total');
   pa:=pa+1; lc:=3;

end;
begin
 inx:=0;
 write('band>'); readln(band); write('file on drive a or c)'):readln(drive);
 Chdir(drive+':\'); dsn:='log.'+band;
 if band='3P5' then band:='3.5'; (* for topic *)
 assign(datfil,dsn):reset(datfil); pa:=1;
 wrtopic; (* write topics on new page *)
 rusco:=0;
 pinx:=0;
 repeat
  PINX:=PINX+1;
  readln(datfil,ZZZ);
  call:=copy(ZZZ,1,11);
  date:=copy(ZZZ,12,1);
  Val(copy(ZZZ,13,4),time,cocode);
  if cocode<>0 then begin writeln('*** time incorrect ***');
                          writeln(ZZZ); time:=0;
                    end;
  sent:=copy(ZZZ,17,8); rece:=copy(ZZZ,25,9); qth:=copy(ZZZ,33,20);
  Val(copy(ZZZ,54,3),dist,cocode);
  if cocode<>0 then begin writeln('+++ invalid distance +++');
                          writeln(ZZZ); dist:=0;
                    end;
  (* Now the whole record is subdivided in it's components *)
  if date='1' then datpr:='19/3/88 ' else datpr:='20/3/88 ';
```

```
  if (copy(sent,7,1)<>' ') then
  begin
     if (copy(rece,7,1)<>' ') then cw:=true
     else
     if ((copy(rece,3,1)<>' ') and (copy(rece,4,1)=' ')) then
     cw:=true
     else cw:=false;
  end
  else cw:=false;
  if cw then mode:='CW    ' else mode:='Phone';
  VK:=false;
  VK2:=false; VKX:=false; H:=false; I:=false; P:=false; Z:=false;
  VK:=((copy(call,1,2)='VK') or
       (copy(call,1,2)='VI')) or (copy(call,1,2)='AX'));
  (* VK contact *)
  for y:=0 to 9 do
  begin
    if y<>2 then
  begin
    Str(y,is); is:='/'+is; (* /x for check of call *)
    if (VK and (pos(is,call)>0)) then VKX:=true;
  end;
end;
if VKX then VK2:=false else
VK2:=(VK and (pos('/2',call)>0)) or ((pos('VK2',call)=1) and (NOT VKX));
VKX:=(VK and (NOT VK2));
P:=(pos('/',call)>0); (* portable station *)
Z:=((pos('ZL',call)=1) and (pos('/',rece)>0)); (* ZL fieldday station *)
MISAT[1]:=(pos('A',rece)>0); MISAT[2]:=(pos('I',rece)>0);
MISAT[3]:=(pos('C',rece)>0); MISAT[4]:=(pos('D',rece)>0);
MISAT[5]:=(pos('E',rece)>0); MISAT[6]:=(pos('F',rece)>0);
MISAT[7]:=(POS('G',rece)>0); H:=(pos('H',rece)>0); MISAT[8]:=H;
I:=(pos('I',rece)>0);
IF (NOT I) then
begin
   MISAT[9]:=false;
   for iw:=1 to 8 do
   begin
      MISAT[9]:=MISAT[9] or MISAT[iw];
      (* just if one of them is true, it is not an I type station *)
   end;
   I:=(NOT MISAT[9]); (* neither A to H -> must be I type *)
end;
(* now we have all the info to calculate the score *)
score:=0;
if (VKX and P) then score:=20;
if (VK2 and P) then score:=15;
if (VKX and H) then score:=10;
if (VK2 and H) then score:=5;
if (VKX and I) then score:=2;
if (VK2 and I) then score:=1;
if (NOT VK) then score:=2;
if ((pos('?',rece)>0) or (pos('?',call)>0)) then score:=0;
dup:=(NOT validco);
if dup then begin
   score:=0; qth:='**** duplicate *****';
                    end;
write(Lst,datpr); write(Lst,time:4); write(Lst,' '); write(Lst,call);
write(Lst,band); write(Lst,' '); write(Lst,mode); write(Lst,' ');
write(Lst,sent); write(Lst,' '); write(Lst,rece); write(Lst,' ');
write(Lst,score:2); write(Lst,'  ');
case dist of
0..49    : mul:=1;
50..149  : mul:=5;
150..300 : mul:=10;
301..999 : mul:=20; end;
write(Lst,mul:2); if score>0 then bon:=10 else bon:=0;
write(Lst,'   ');write(Lst,bon:2);
if cw then score:=score*2;
score:=score*mul+bon; rusco:=rusco+score;
write(Lst,' '); write(Lst,score:3);
if ((dist>0) or (dup)) then
begin
    write(Lst,' '); write(Lst,qth);
    if ((dist>0) and (NOT dup)) then
                 begin
                  write(Lst,dist); write(Lst,'km');
                 end;
  end;
  writeln(Lst,' ');
  lc:=lc+1; if lc>59 then
  begin
   write(Lst,'--Progressive total: '); writeln(Lst,rusco:6);
   wrtopic;
  end;
 until EOF(datfil);
 write(Lst,'####### Final score: '); writeln(Lst,rusco:6);
end.
```

PACKET RADIO ON HF

David H T Tan 9M2DT
4 Jalan Derumun, Damansara Heights, 50490
Kuala Lumpur, Malaysia

Malaysia has a comparatively small amateur population. Nevertheless these amateurs have kept up with developments in amateur radio. There are groups of amateurs participating in amateur satellite operation, AMTOR and Packet Radio. There is an AMTOR mailbox station operated by 9M2CR and a Packet Bulletin Board 9M2BBS operated by myself. The number taking up Packet Radio is increasing.

Fortunately, the Malaysian Amateur Radio Society (MARS), which represents the amateur fraternity, has a very cordial relationship with the National Regulatory Authority and this has greatly helped the growth of amateur activity in Malaysia.

Despite the small, but increasing number of 'Packeteers, I am concerned with the growing opposition to the use of Packet on HF There have even been suggestions from certain quarters that Packet BBS stations on HF be banned. I wish to submit that this is a retrograde step. I am confident that congestion problems with existing Packet Radio Systems can be substantially reduced with further technological development, mutually agreed operational procedures and as newcomers gain experience with this mode of operation.

It must be noted that the use of TDM (Time Domain Multiplex) enables multiple Packet QSOs to go on simultaneously on the same frequency; hence the mode is in keeping with the principle of spectrum conservation by increased channel utilisation. As an example, I believe there are at least nine BBS stations currently operating on the same frequency in the AsiaNet.

The IARU Administrative Council has made two resolutions recently as regards Packet Radio, viz:

RESOLUTION 86-2 CONCERNING PACKET RADIO OPERATION

(2) that member Societies are urged to encourage amateurs in their countries to confine HF Packet operation to the segments of the bands designated for RTTY and similar modes, viz; 14.070 to 14.100 MHz.

(3) that development work that takes place outside RTTY sub-bands should be confined to one frequency per band with the frequency to be designated by the International Secretariat for international communications after consultation with regional organisations and member Societies for domestic communications with due consideration of regional band plans, domestic regulations and the desirability of minimising interference to stations using other modes of emission.

(4) that member Societies are urged to address, through their regional organisations, the need for specific provisions for Packet Radio operation in their band plans consistent with worldwide activity.

RESOLUTION 87-2

. . .that member Societies are hereby urged to acquaint their members as to the undesirable aspects of the uncontrolled proliferation of unattended store and forward (mailbox) stations.

However, Resolution 86-2 is not being practiced for the following reason:

An examination of the activity between 14.070 and 14.100 MHz will reveal a great number of RTTY and AMTOR stations including mailbox stations in this segment. It was obvious to the Packet BBS operators that Packet will not work satisfactorily amongst AMTOR and RTTY transmissions because of the unique characteristics of Packet operation.

Therefore, HF Packet operators all over the world started operating above 14.100 MHz (LSB) for Packet operation in the 20 metre band. The BBSs are limited by mutual agreement to a number of spot frequencies in this segment with 2 kHz channel spacing, that is, centred on .103, .105, .107, .109, and .111 at the present time.

However, this has created another problem. SSB operators who have run regular nets in the area above 14.100 MHz object to Packet stations transmitting when the phone operators have occupied the frequency. The subject of band planning is therefore confronted by the 'I was here first' problem. Objections have also been raised by Region 2 operators on the grounds that Region 3 agreements are not binding as far as they are concerned. Yet another complaint comes from the Keyboard Packet operators who want real time QSOs but are unable to do so because of congestion due to the steady growth of BBS.

Currently, no special channel has been assigned for real-time operators. Perhaps this may be necessary to accommodate both BBS and real-time operators.

Congestion problems with Packet operation can be attributed to:

(a) Remote stations involved in down loading files.

(b) The rate of beaconing on HF Packet is the responsibility of the Packeteer. It is understood that excessive beaconing is unnecessary and contributes to channel congestion.

(c) The frequency on which two Packeteers operate has to be within very close limits if RETRYs are to be reduced. Newcomers are often not aware of this requirement and hence inadvertently contribute towards congestion. However, this problem will solve itself as the Packeteer gains experience.

(d) The same applies to the adjustment of the TNC even when one has locked on to the BBS station or to the distant station in real-time QSOs. This again results in RETRYs but as in (c), this problem too will be resolved as the Packeteer becomes more familiar with his new mode of operation.

It cannot be denied that Packet Radio network has contributed to international goodwill as a result of the large volume of traffic handled and that this has been the result of a great deal of experimentation in the true spirit of amateur radio.

It does not appear reasonable therefore that regulations imposed at an earlier period such as amateur operators must listen before transmitting, restrictions as to unattended operation etc, should be invoked to stifle the development of Packet Radio. No other field of engineering has experienced such enormous strides in development as the electronic field and consequently these earlier regulations should be modified to accommodate advances in technology like Packet Radio. In this respect, I am glad to say, MARTS, although a small society, has already approached the Malaysian Regulatory Authority to revise the regulations pertaining to third-party traffic.

From the above, it is clear that teething problems are being experienced by this new mode of operation but it is felt that with developments in technology and co-operation, a solution can be found, for example, there was significant improvement when Level 3 networking was introduced.

On the whole it can be said that HF BBS operation has been satisfactory so far taking into account the inexperience of most users. Better understanding of operating procedures, tolerance of others, and adjustments of the times of downloading files to periods of low activity, will help reduce the congestion currently being experienced.

It is obvious that Packet Radio, particularly HF BBS operations, cannot share a section of the band along with other modes and so allocating the RTTY sub-band for this mode does not solve problems.

It is acknowledged that the allocation of amateur sub-bands for specific modes is not the function of the national regulatory authority. It is up to the national societies in conjunction with regional organisations to formulate a 'Gentlemen's Agreement' to enable the various modes to operate without interfering with each other. In fact, this is contained in point (4) of Resolution 86-2 which states: 'that member societies are urged to address through their regional organisations the need for specific provisions for Packet Radio operations in their band plan consistent with world-wide activity'

Self-regulation in the Amateur Radio Service has played an important part in the policing of amateur radio in the past and the same would apply to the problems being experienced with Packet Radio communication. It is acknowledged that in the early stages of Packet Radio development, inefficient use of the band may have created problems but these have, to a large extent, been overcome.

Problems can also be minimised by mutually agreed procedures, for example:

(a) Originators of messages for users of BBS in other local area networks should not attempt to lodge their messages directly on HF but use the message forwarding facility of the local BBS.

(b) Message forwarding takes place at times of least activity.

(c) The number of the BBSs on network frequencies should be controlled.

(d) To beacon less frequently since it is now rare to find an amateur who has not at least some idea of what Packet is.

(e) In view of increasing congestion, some suggestions concerning HF Packet operation for individual users are:

(i) Set PACLEN to 80 or less depending on the quality of the link.

(ii) Set MAXFRAME to 1 or 2 so that the number of data bytes sent in the information field in combination with PACLEN does not

exceed 80. This will minimise the number of RETRYs.
(iii) Set USERS to 1 to disable multiple connections and avoid using digipeated Packet operation if possible.
(iv) QSY off the BBS frequencies as soon as possible when OSOing with individual users.
(v) Set FRACK to a sensibly long value such as 10.

For further development of Packet Radio, it is essential that it be given a minimum of 25 kHz in each of the HF bands. On 20 metres, the band segment 14.101 to 14.125 would seem appropriate. Unless adequate provision for Packet Radio is included in HF Band Plans, the problem facing the store and forward operation of unattended BBS stations is unlikely to be resolved.

The above is a paper presented by David H T Tan 9M2DT (sysop @ 9M2BBS), Kuala Lumpur, Malaysia, at the AsiaNet HF Sysop Conference held in Brisbane, Queensland, from September 3-4, 1988.

ar

SILENT KEY

Richard Morse W1GR, died on July 1, this year, at the age of 76.

Richard was past Assistant Secretary of the Army for Research and Development under both the Eisenhower and Kennedy administrations, as well as the founder of the Modern Maid Corporation.

Of recent years he was the Director of the Boston Museum of Science. He was a descendent of Samuel F B Morse, whom we all know so well.

—Condensed from *The ARRL Newsletter* Volume 7 Number 17 by Ken McLachlan VK3AH

ar

TRY THIS

STOP YOUR TH3 JUNIOR DROOPING

Arthur Brean VK6SY
28 Bennion Street, Trigg, WA. 6029

This modification also deters large birds (crows, etc) from perching on the elements!

Recently, I took possession of a TH3 Junior Yagi which was looking rather tired. I tried the old method of giving the tubing in the elements half a turn and, although it looked better, it still drooped.

Three tubes were then made up (as in Figure 1) using the bolt in place of the anchor bolt in the element to boom bracket. The dowels are five-eighths of an inch in diameter and 12 inches long.

The braided rope, (non-conductive) is four millimetres and is tied off outboard of the 15 metre traps (see Figure 2). Allow the rope to stretch under tension before putting the Yagi on the tower.

Perhaps with strengthening, this idea could be used on the bigger Yagis. It works well on the TH3 Junior and deters large birds from perching on the elements.

ar

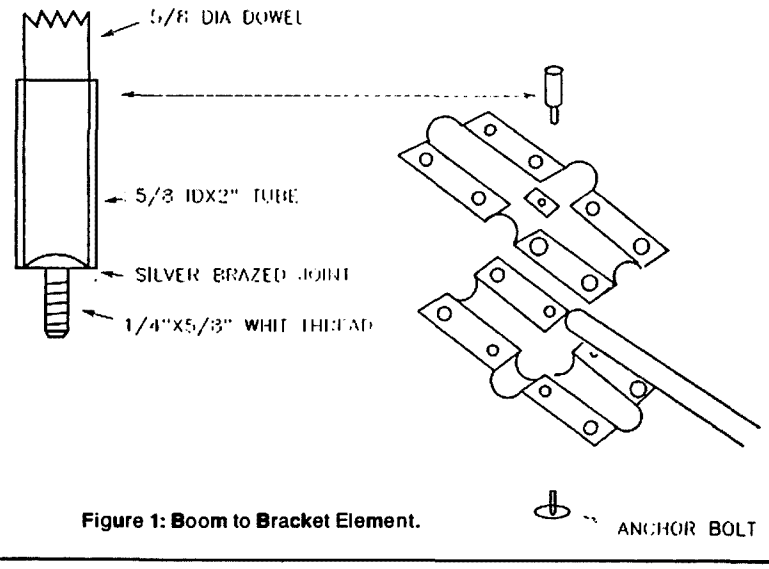


Figure 1: Boom to Bracket Element.

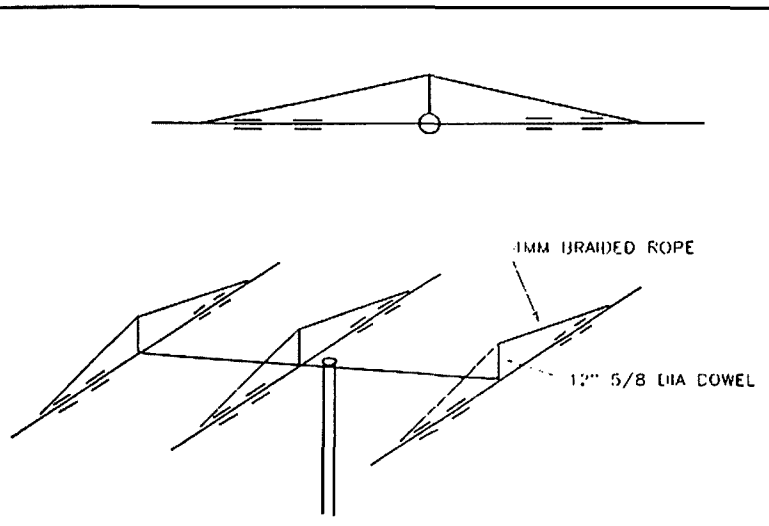


Figure 2.

TRY USING JAPANESE MORSE CODE WITH JA-STATIONS

English *Good day, very glad to see you first time.*

JA-CODE DO KN AR C I E B GK I BT IN AS BT C L L G I OA SK

English *I will send my QSL card sure, please send me your QSL card.*

JA-CODE DO L HE UT I E L E S OA I AS V G E OA OK F S L S DE I AR SK V SK

English *Best 73 and good DX I hope to see you again goodbye.*

JA-CODE DO E I OA UT 73 I E AS AT HE L L G E SK I U KA I U E S SK

When you sent these JA-Codes, if JA-station answers with many JA-Codes. Please send this to him.

English *I can send only this one JA-Code, hi!*

JA-CODE DO I E I AR E SK O E I Y HE L AR I HE I HE AR E E E SK

(DO is like BT in English-code, and SK like AR.)

(By JA1AB)

PRACTICAL JAPANESE FOR ENGLISH SPEAKING AMATEURS

It is true Japanese is one of the most difficult languages to learn in the world, but when it is limited to the amateur's simple sentences, greetings and numbers, English-speaking amateurs can easily speak Japanese by the following (English spelled) method.

Japanese amateurs will warmly welcome practical Japanese.

(English)	*(Japanese Pronunciation)*	*(Japanese CW Code)*
Good day. (anytime for greeting)	corn-nich-war. Konnichiwa.	KN AR C I E
Good morning.	ohio! Ohayoh.	AS E N O
Good afternoon.	corn-nich-war. Konnichiwa.	KN AR C I E
Good evening. (on meeting)	corn-bun-war. Konbanwa.	KN AR B I AR I
Good night. (on parting)	Oh-ja-sea-ee-not-say. Oyasuminasai.	AS E OA UA E EA A
This is JA1ABC, come in please	Couch-roeer JA1ABC desh, dan-though Kochi ra wa JA1ABC dess, doohoo.	
I am very glad to meet you first time.	Hedge-may ma-she-te, you-rou-shick! Hajime mashite, yoroshiku.	E KI I BT I MI SK
Your signal is 59. (go = five Q = nine)	Signal war go Q desh. SNIganaru wa gon kyu dess.	
My QTH is CHIBA city, near TOKYO.	QTH war CHIBA shi, TOKYO no sobar desh. QTH wa CHIBAshi, TOKYO no soba dess.	
Address is	Jue-sho-war ..... desh. Jyusho wa ..... dess.	
My name is BOB.	Now-ay-war bob desh. Namae wa BOB dess.	E I EO I (BOB) IK I OA
Thank you very much nice QSO.	QSO alligator! (early-gat-tonght. QSO arigato.	(QIO) GK G L I UT U
I would like to have your QSL.	QSL oh-net-gay she-mass. QSL onegai shimass.	
I hope to see you again.	Hatter I ma-shon. (ma like mather) Hatu mi masyo.	
Best 73 and good DX.	(A Japanese amateur can understand this sentence).	
Good bye.	Sir-your-now-rat. Sayonara.	IA E E I E
So long.	Journay. Jyaane.	
73.	Non-jev-san. Nanajyu-san.	
88.	Hatch-jev-hatch. Hachijyu-hachi.	

CARDINAL NUMBERS

0	*NAY*	NNI			
1	*EACH*	ICHI	8	*SOCK*	HOHE
2	*NNNN*	NI	7	*SEVCH*	SHICHI
3	*SUN*	SAN	8	*SEVCH*	HACHI
4	*SHE*	SHI	9	*Q*	KYU
5	*GO*	GO	10	*JEH*	JYU

When using Japanese Morse code, you must put -..--- at the beginning. (like -...-)
...._ at the end. (like .-.-.)

ELECTRONICS AND AMATEUR RADIO IN TASMANIAN EDUCATION

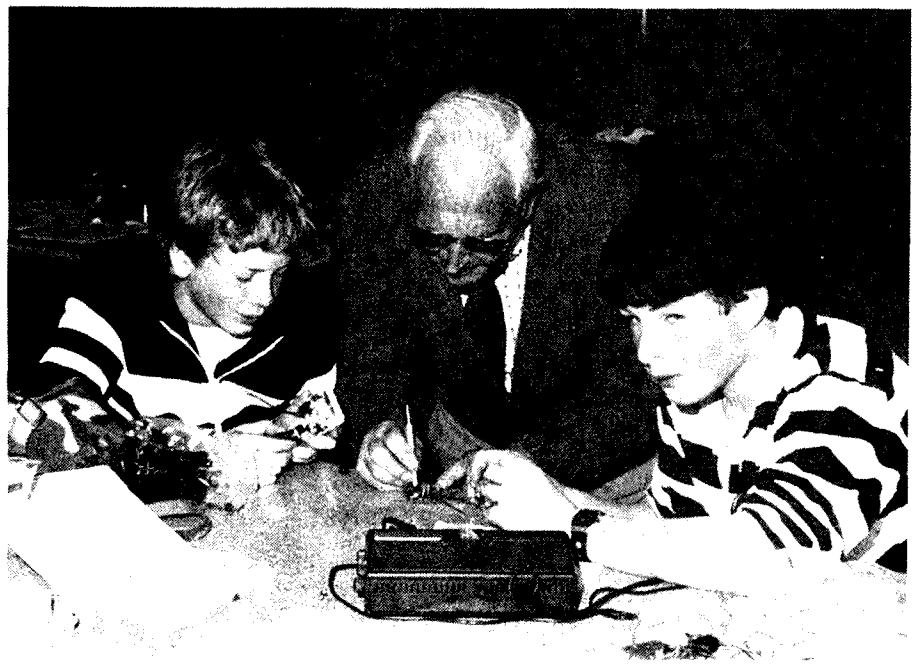
Tony Clayton VK7AH
10 Wrenswood Drive, Quoiba, Tas. 7310

Education has perhaps been a little too slow to catch up with progress.

"You are lucky to be in a school offering electronics. Take my advice: when you go for your interview, take along something you have made, be prepared to take the lid off and explain what some of the components do, and if my guess is right, . . ." That was the gist of the advice given to a girl in a Tasmanian high school by an Armed Forces career officer. Of course, some training in electronics is not the only criterion for entry to the Armed Forces, but the conversation does reflect the urgency felt by many employers, both small and large, to see a greater proportion of future employees having some experience in electronics.

It is easy to see that this is quite reasonable, when one considers the vital role which electronics plays in science, technology, commerce, communications, education, defence and entertainment. And yet we have an anomaly in the education system in that, while schools would not think of depriving their students of opportunities to study the traditional subjects, most do not offer substantial courses in electronics, despite the overwhelming relevance and need. Education has perhaps been a little too slow to catch up with progress, especially when we consider that schools are educating their students for the future in which, presumably, electronics will play an even greater part in day-to-day life than it does at present.

Some would say that electronics need only be taught in Technical and Further Education colleges and other tertiary institutions. But this is not the view of the Tasmanian TAFE colleges themselves, nor of the tertiary institutions, nor of the employers to *whom* I *have* spoken, *nor of the* Tasmanian Education Department. In fact, it is true to say that there is a great deal of support for the establishment of courses in electronics in secondary education, from students, parents and teachers, as well as from other educators and employers. But there is reluctance on the part of some schools to offer electronics in their curricula, mostly because they do not have a staff member confident to teach it, or because they are concerned about the (perceived) financial burden of establishing a new practical subject, or, dare I say it, because some have yet to be convinced of its importance. The Tasmanian State Institute of Technology has agreed to offer a new retraining course, "Electronics for Teachers". It is to be hoped that this will help to solve the first of the impediments, and that the others, too, will soon fade. Nevertheless, the decision as to whether to include electronics in its curriculum belongs to the individual school. At least, from this year, Tasmanian schools will have a range of new syllabuses available. And this brings us to the exciting part of the story . . . but first, just a little history.



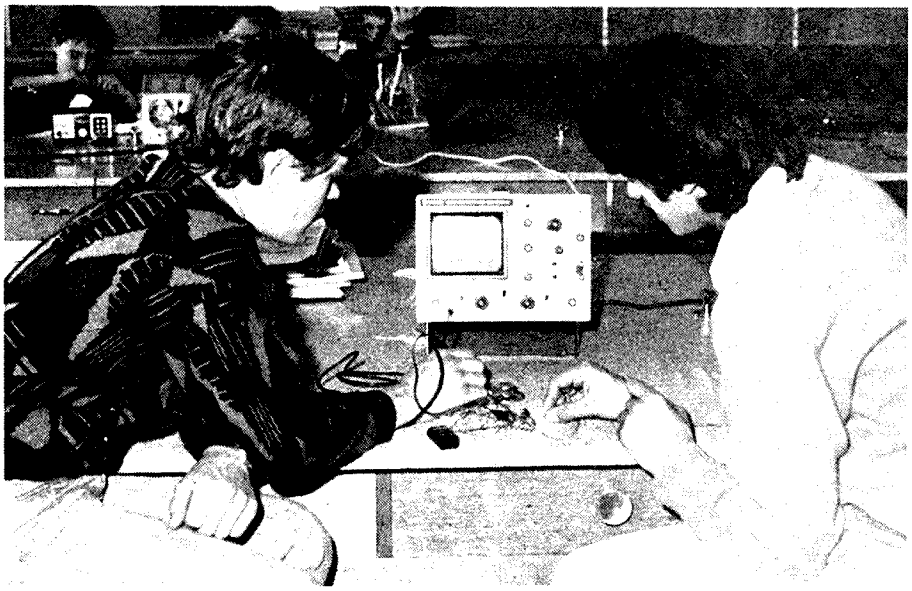
Jack Wright VK7WJ, assists Devonport High School students, (from left) Chris Dawes and Richard Bardenhagen to tune their "bug" during the School's Activities Week, October 1988.

In Tasmania, secondary education is divided into two parts: years 7 to 10 are in "high schools" and years 11 and 12 in "secondary colleges". Before 1983, there was almost no electronics: a few schools and colleges ran short courses, mostly kit construction, and there were some aspects covered in science and physics courses. In 1983, a two-year electronics course was introduced by the Science Subject Committee of the Schools Board of Tasmania as an optional subject *for years* 9 and 10. At Devonport High School, there is an average of 70 students, about one fifth of the years 9 and 10 population, enrolled in this course over the past six years. (Although, for the above and other reasons, the number of schools offering this subject has been *limited*). But it has been a good starting point.

As a result of interest created by this course, the Electronics Planning Group was formed. Over the past two years this Group has grown in size, influence and expertise and now boasts more than 40 members from high schools, colleges, Catholic education, the University, TAFE, the TSIT, the Australian Maritime College, Parents and Friends, administration and employers. Formation of this Group has coincided with the introduction of the Tasmanian Certificate of Education — a new system for certificating students at the end of their secondary education — and of a completely revamped and renewed set of courses for years 9 to 12. This has presented an ideal opportunity to introduce some new syllabuses — in Electronics.

The Schools Board has now formed an Electronics Committee, a subgroup of the EPG, and has given it the authority to prepare courses in electronics for students of all abilities from years 9 to 12. Trialling of these courses will begin in 1989 and they will be progressively phased in from 1990 to 1993. Thus, if a school decides to make appropriate provision in its curriculum, a student may:

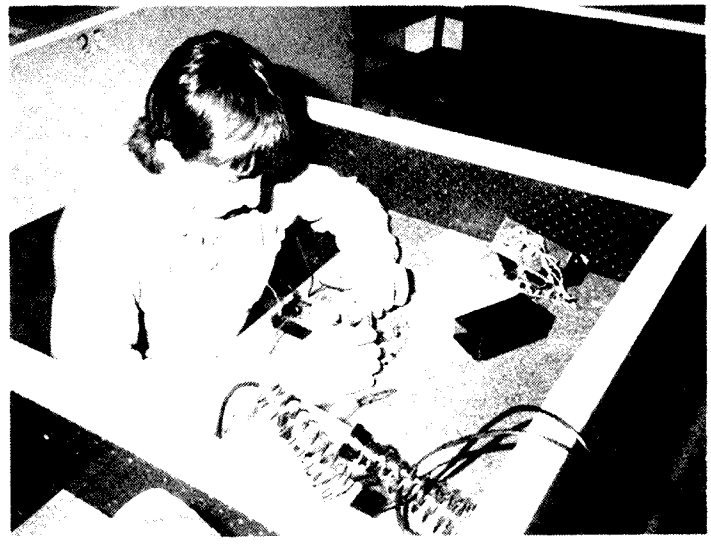
- — study electronics for as little as 25 hours, or as much as 450 (or more) hours over four years,
- — in an extended course, select from a range of areas of specialisation, including radio,
- — emphasise mainly construction aspects (for less academic students), application (for average students), or design (for more gifted students).



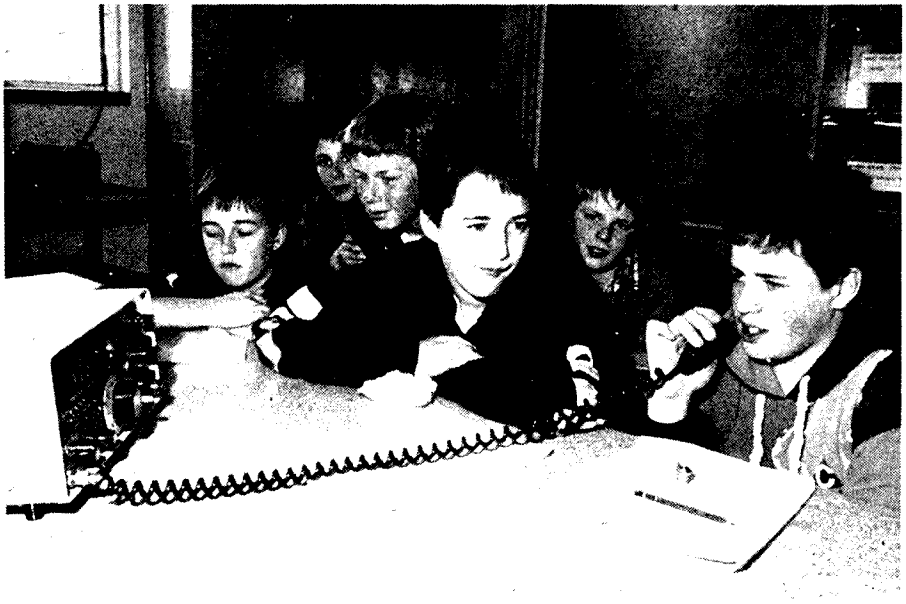
Devonport High School students, Stuart Matthews (L) and Timmy Vassiadis looking at the output waveforms from a "Music Maker" circuit.

And now, for those who have read his far to find out what all this has to do with amateur radio — your perseverance is rewarded! Syllabuses are being written as either 25 or 100 hour subjects (the latter to be studied for one year) and all will be based around 25 hour modules. Topics will include basic electronics, radio, digital, electronic music, robotics, NAOCP and AOCP — about 20 in all. Of course, most will have to e divided into more than one 25-hour module and many will have prerequisite subjects. For example, Radio 1, Radio 2, and Antennas will be amongst the necessary prerequisites for NAOCP. This is to say that, as part of their schooling, students should have the opportunity of studying for and receiving their Amateur Operator's Certificate of Proficiency — if they wish to specialise in this area. Others may choose to specialise in microprocessors or analogue devices, etc.

A happy coincidence has been the present devolvement of amateur licence examinations by the Department of Transport and Communications (DOTC) to approved individuals and institutions. Having decided to make NAOCP and AOCP modules available, it is a natural step to offer the examination and, if appropriate, an Amateur Operator's Certificate. This would provide students with a worthwhile additional incentive in the course. Hence, three members of the Electronics Committee (VK7s MA, HZ and AH, all members of the Wireless Institute of Australia (WIA)) have jointly applied to DOTC for approval to conduct amateur licence examinations. If approval is given, papers will be made available to schools and colleges throughout the State and, if required, to other organisations, such as the WIA Branches. This is likely to have profitable consequences for both amateur radio and the WIA, as far as membership is concerned! Already, through their activities in electronics and radio (with the club station, VK7DHS) at Devonport High School, six students have used the present system to gain their novice or limited licences.

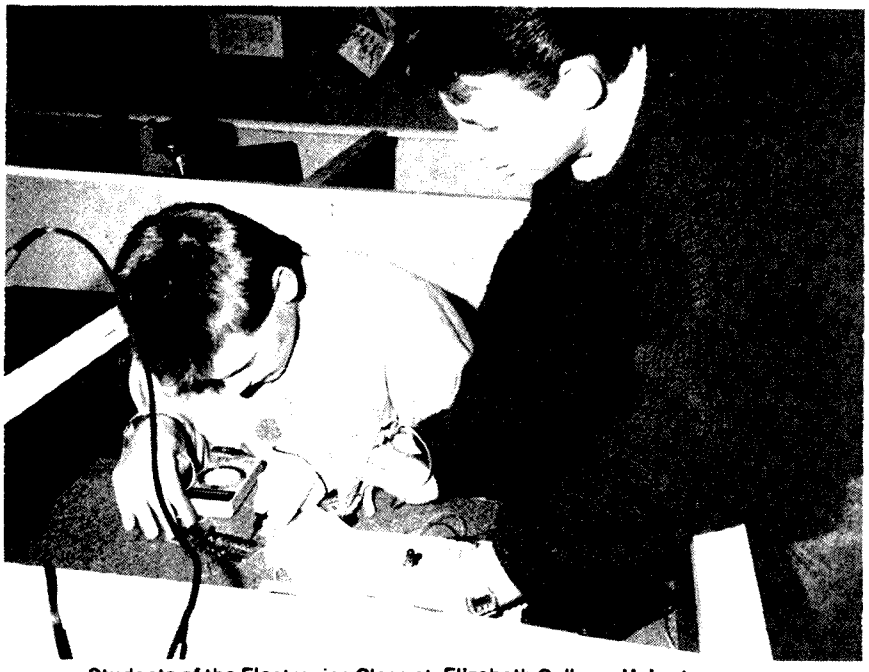


Electronics at Elizabeth College, Hobart.



It is a long story; battles have been fought, arguments won and decisions made, but at last it seems that Tasmania is approaching a time when a relevant, interesting and flexible set of courses in electronics will be available to its secondary students. We have started from scratch, working without the benefit of similar courses against which to compare our own, but inputs from many people with wide-ranging expertise have, to some extent, compensated for this. This year, thanks to CRA Limited, the writer will be looking at electronics in secondary education in Europe, USA and Japan, and our offerings will no doubt benefit from that experience. Nevertheless, there will be mistakes and omissions made, and changes and improvements will be necessary, but it is definitely a step in the right direction. Only if they have had opportunities to develop aptitudes and interests and to see for themselves what electronics is all about can students be expected to make in-

Matthew West, with interested onlookers, during operation of the Devonport High School Club Station, VK7DHS.



Students of the Electronics Class at Elizabeth College, Hobart.

formed decisions in favour of careers or further study in this area of technology. And only then can they make the contributions which will be vital to maintain Australia's competitiveness in the technological world of the future.

Finally, how about some response? I would be very interested to hear from anyone who would like to comment on the above, or who may be involved in some way in the teaching of electronics in another State. In Tasmania, we have found that co-operation between all interested parties has been a very productive approach and I have no doubt that the principle could be extended beyond the State. I would be happy to provide further details, a copy of our overview, syllabuses, etc, especially for people in educational institutions and we are, of course, keen to hear about what is happening in other States. If you would like to make contact, please phone me at home (004) 24 5375, or at school (004) 24 3900, or write either C/- Devonport High School, Best Street, Devonport, Tas. 7310 or to the address at the head of this column. For materials, preferably send a blank disc (3.5 or 5.25 inch), which can be written in Amiga or IBM compatible 720k (double-sided) format; indicate whether you prefer WP or ASCII files. Alternatively, if hard-copy is preferred, please send an A4 sized, stamped, self-addressed envelope.

ar

RINGO ANTENNA

Ian Crompton VK5KIC
9 Craig Street, Richmond, SA. 5033

From HF we all know of the fullwave loop and the DDRR quarterwave loop resonated by a capacitor at the free end.

Research in Italy, and possibly elsewhere, tells of a loop a halfwave long. A closed loop, not an open loop, with a capacitor at its free end as the quarterwave loop is.

Information from Italy shows plots of resonant frequency and of resonance impedance for the halfwave form plotted against either feedpoint-groundplane link angle or of spacing between element and groundplane in wavelengths.

There are also comparative plots of the impedance at resonance of the quarterwave loop and of the halfwave loop, and of bandwidth, in both cases in relation to feedpoint-groundpoint angle.

The quarterwave loop impedance as against feedpoint to groundpoint connection angle ranges from just over 50 ohms to somewhere around 1 000 ohms.

Impedance of the halfwave closed loop ranges in terms of feedpoint angle from about 35 ohms, peaking close to 50 ohms, then falling away gradually.

In terms of element-groundplane spacing there is no plot shown for the capacitor resonated quarterwave, but the closed halfwave loop shows 10 to 50 ohms.

For the halfwave loop, both feedpoint angle and element-ground spacing affect resonant frequency, which can be capacitor tuned by a capacitor opposite on the ring to the element-groundplane connection.

For halfwave elements cut for 400 MHz, the resonant frequency ranged from 330 MHz to close to 500 MHz in terms of feedpoint angle for constant height above groundplane. This was without a capacitor to adjust.

Element-groundplane spacing adjusted resonant frequency from about 330 MHz for close spacing t a little over 480 MHz for feedpoint angle held constant.

Resonant frequency against height is plotted as a nearly straight line in the reference *Electronic Letters* when plotted against h/lambda, but shows a similar more complicated relationship when you plot resonant frequency for the halfwave form against element-groundplane spacing having multiplied h/lambda by wavelength for that frequency.

The item in *Electronic Letters* shows comparative plots of radiation pattern for the halfwave and quarterwave loops.

In the vertical plane, the halfwave has a little gain over the quarterwave lop, varying in amount with angle from the ground and being least at about 40 degrees. The sharp null above the quarterwave loop is present but not as deep as for the halfwave loop.

In the horizontal plane the same plot, close to an even circle, is given for each.

Both sheet-groundplane and groundplane reduced to an element forms exist. The work by G6JP, in contrast to the Italian work, claims the groundplane form supports typically a three percent bandwidth compared with 10 percent for a monopole (with groundplane?).

But, suitably tuned, three percent would support the typical 10 MHz bandwidth of a hand-held for use portable in the 420-450 MHz band.

Trying a groundplane-reduced-to-element form with central feedpoint, and not external feedpoint as shown in the diagrams with elements, both of them, cut for 500 MHz I got a SWR ranging from 1.3 to 1.7 across 433 to 440 MHz. I then removed 'surplus' wire, tidied things up (?) a little and blew the SWR to >5 across that segment!

As one of my great-uncles used to say; "You'll learn! Maybe, you are learning!".

REFERENCES

Electronic Letters, Vol 1, No 7, September 1965.
HAWKER, Pat, G3VA. Amateur Radio Techniques, RSGB, 6th Edition, 1978, pps 248-9 and 264.
JESSOP, G T, G6JP. *VHF/UHF Manual*, RSGB, 4th Edition, 1963, pps 8-34 and 8-35.

ar

RSGB DATA SYMPOSIUM

The first RSGB sponsored Data Symposium was conducted over the third weekend of July, with some 120 people and a dog called Dancer attending.

The program consisted of 21 lectures on subjects such as digital signalling techniques, satellite communication, composing pictures using a RTTY terminal and high speed modem use, to mention only a few. Many and varying types of projects were also described to a very attentive audience.

Many discussions took place, with much swapping of information and material from visitors from many countries. Included in the group was Joseph EI3EG, a 'white cane' operator who runs a very successful mailbox with the aid of a speech synthesiser. Joseph was accompanied by Dancer, his very well trained and behaved guide dog, who was a big hit with all the group.

It is anticipated to conduct this Symposium as an annual event and if you are interested in attending, drop a line to Mike G3XDV with an SAE plus English stamps or a 'green stamp' to defray postage expenses.

—Condensed from *Gateway* Volume 4 Number 24, 1988 by Ken McLachlan VK3AH

ar

QRP IN THE 1920s

Colin MacKinnon VK2DYM
52 Mills Road, Glenhaven, NSW. 2154

In the August edition of AR, the News Editor, Jim Linton VK3PC, made brief reference of two historical snippets and suggested someone could shed more light on them.

The first came from an obituary of Loran (Windy) Windom W8GZ, which said he set a world low power record using 0.567 of a watt in a 1926 contact with Australian radio amateur 5BG.

Another reference from a 1924 WIA Victorian Division exhibition program said contacts with a power of .0037 of a watt had been achieved between Sydney and New Zealand.

Colin MacKinnon VK2DYM, has responded and his article which follows makes interesting reading.

A QRP contact between Sydney and New Zealand in the 1920s with only 0.0037 watts! I may be skeptic, but I suspect that the power given is an error (or the operator forgot to turn his filament supply on).

There are a number of reasons for being doubtful, one being that the common plate voltage for amateur valve transmitters was 250 to 300 volts, so the plate current would have been only 15 m*icro*-amps. Few amateurs would even be able to measure such low currents. Also, during the 1920s the aim of most was to generate more power to get more distance and even a single valve was capable of running two watts (and that was considered very low power!). From my files I suggest a possible explanation and some background on the likely radio amateurs involved.

Charles MacLurcan 2CM, was an avid experimenter in the early days of amateur wireless. His expertise achieved good DX using low power (10 watts) at a time when others couldn't even get interstate reports.

On June 4, 1922, he managed to transmit 705 miles with only 8.7 watts. (Note that the 8.7 watts could conceivably be mis-transcribed to 3.7, but I can't explain a few extra zeros).

The equipment consisted of three Radiotron five watt output tubes in parallel with a high tension supply of 300 volts DC. The actual voltage at the plates was 284 volts DC, with a plate current of 31 milliamps. The filament voltage was six volts and the radiation was given as 900 milliamps. The antenna, a four wire cage (called a "Sausage-type" in those days), 200 feet long and suspended from an 80 foot mast as an inverted Vee. The ends of the antenna were supported 25 feet above ground, and the natural resonance was listed as 325 metres. He had a counterpoise made from four wires each 220 feet long, spaced four feet apart and 10 feet above ground. The feeders were, of course, open wire type. The actual operating frequency was 135 metres (2.2 MHz).

2CM's transmission was heard by A L Dixon, the Senior Wireless Officer on the SS *Montoro* on its way to New Zealand (705 miles from Sydney). Dixon was also an amateur, 2AD, and was using a receiver with a single Expanse B valve. Dixon's report gave 2CM an S6 on speech and music, and an S8 on CW and Tonic Train. (Hands up all those who know that a Tonic Train is not a railway carriage for drunks!).

The transmission was also heard in Melbourne by Joe Reed 2JR, using a two valve receiver. Joe was another early New South Wales experimenter, and at the time had been transferred to Melbourne by his employer, Commonwealth Radio.

In July 1922, 2CM, using the same transmitting set-up, was heard in New Zealand by the operator on board the SS *Ulimaroa* whilst berthed at Auckland. This feat was applauded at a monthly meeting of the WIA NSW Division, and reported in *Sea Land and Air*. Could this be the QRP reception mentioned in the 1924 publication? I can find no other likely incidence in literature between 1922 and 1925. As for changing 8.7 watts to 0.0037 watts, I've told the newspapers a million times not to exaggerate.

Going back a little, Charles Dansie MacLurcan was an active experimenter in 1910, and had a "shack" in the Wentworth Hotel with a large antenna on the roof. It helped that his family owned the hotel. His equipment in 1910 comprised a Loose Coupler, a loading coil, with a choice of two silicon detectors and a perikon detector. He had three kilohm headphones. Chas, or "Charley" had two transmitters, a one inch spark coil with a helix and Leyden jars and a spark gap, as well as a 1.5 kilo watt rotary converter run from the 240 volts DC domestic electricity supply, and converting to 500 cycles AC. This fed an oil-cooled transformer, a rotary spark gap with a glass plate condenser in oil, and a helix. Using the spark coil on 12 volts, he could send messages to ships up to 64 miles out of Sydney. With the larger set his best DX was 300 miles.

In 1911, MacLurcan was one of 26 officially authorised "private wireless telegraph stations"; in partnership with L S Lane who later became 2LL when such calls were issued.

A fire in the Wentworth Hotel destroyed the set-up, so Chas imported a half kilowatt set from Clapp Eastham Co of New York. He built a new receiver using a De Forest Audion, the first such valve in Australia. No sooner had he set up an enviable station when World War I intervened and the equipment was interned until 1919.

He moved to Agnes Street, Strathfield in about 1920 and built the equipment and antenna described above. By that time spark sets were passe and the race was on to build valve transmitters with useful output. 2CM was at the forefront of research in technical matters and propagation, as well as being a WIA councillor. There is much more to the MacLurcan story — but maybe another time.

In his note Jim also mentions a low power record set between 8GZ and 5BG using 0.567 watts. Some background on this possibility follows.

Another early experimenter who became interested in low power operation was Harry Kauper 5BG. Harry was the Chief Engineer for commercial station 5CL, in Adelaide, and a prominent amateur in South Australia.

Over the latter days of November 1925, he succeeded in contacting the United States of America on low power, as quoted from the South Australian *Wireless Weekly* of December 2, 1925.

"IS THIS A WORLD'S RECORD?
"5BG Does Some Eye Opening Stunts on Very Low Power and Wavelength

"Using a 201A tube and accumulator type B batteries on a homemade transmitter he succeeded in raising U2APM on 7.5 watts on the 26th and U2MM on the 27th." Both US stations were in New York City.

The report continues, and says that 5BG further reduced his power to 5.6 watts, and contacted both U6HM in California, U1AMF and later U1AXA. The aerial used by 5BG was a single wire at 30 feet, with a counterpoise under it.

The article confirms the difficulty of measuring low power by adding:
"The aerial current was only 80 milliamps or lower, and has to be measured with an extremely low reading hot wire meter.".

The frequency is not given in the report, only the fact that it was "short wave", so it was probably in the 85-95 metre band (3.2 to 3.5 MHz), which had recently been made available to amateurs.

I have not found any mention of the record that 5BG is reported to have set with Windy 8GZ.

In looking at the claim that 8GZ used 0.567 watts, *including filament power*, a typical receiving valve using six volts on the filament would draw maybe 60 milliamps. That leaves about 0.2 watts for RF output. Considering the elementary state of the transmitters, receivers and antennas of the period, this is either a remarkable achievement, or for the skeptic, a case of the printer putting the decimal point in the wrong place. However, even if the figure was really 5.67 watts, it is still an exceptional feat.

See also *A History of Radio in South Australia, 1897-1977* by J F Ross, for more information on 5BG and his record.

NOT ANOTHER ARTICLE ON THE G5RV!

Don Knox VK1DK
79 Harrington Circuit, Kambah, ACT. 2902

"What is the input impedance of the G5RV and is there a better length?"

MY GOOD FRIEND, Kevin VK2DYW, has extolled the virtues of a G5RV antenna for may years and has encouraged me to replace my 25 foot base-loaded vertical with one. While he has not yet succeeded, this article covers some research on centre feed wire antennas.

For those who have not heard of a G5RV, it consists of a centre feed wire antenna 51 feet either side (102 feet overall). From the centre of the antenna, a quarter wavelength of open wire 450 ohms feeder at 14.2 MHz is connected to coaxial cable (typically 50 ohms) which, in turn, is connected to the transceiver.

Kevin had noticed that an antenna tuner was essential between the coax and the transmitter to achieve 1:1 VSWR on all bands, even 14 MHz. Kevin raised my curiosity by asking two simple questions; "What is the input impedance of the G5RV and is there a better length?"

This article is based on my research into the theoretical impedance of thin wire antennas based largely on Kraus [1]. If you wish, you can apply the results for any centre feed antenna with sufficient accuracy to save a lot of the frustration of the cut and try method of combining antenna lengths and open wire feeders to achieve best multi-band operation.

METHODS OF CALCULATING ANTENNA IMPEDANCE

Kraus [2] has a number of chapters devoted to the simple centre feed antenna and provides a number of methods of determining the input impedance. Unfortunately, an exact solution is for the input impedance of a centre feed thin wire antenna of odd multiples of a half wavelength in free space [3]. The second if for a general solution for a centre feed thin cone antenna in free space [4].

An approximate solution for thick antenna in free space is outlined by Kraus based on work by Hallen [5]. Unfortunately, insufficient information is given to apply the results in general.

An approximate method of calculating the input impedance of thin wire antenna was suggested by Kraus [6] based on the exact solution for the thin cone case. An antenna, made up of two equal cones, can be represented by a constant impedance transmission line and the impedance at a point of maximum current. Similarly, an antenna made up of two equal lengths of parallel conductors, can be represented by a transmission line of equivalent average impedance and the impedance at a point of maximum current. In both cases, the input impedance at the centre of the antenna is equal to the impedance at the nearest current maximum to the centre transformed by the equivalent transmission line to the centre impedance. While the series resistance Rm, at a current maximum, can be calculated exactly using Kraus' formulas for a cone or thin wire antenna, the series reactance term Xm can only be calculated for a cone antenna and odd multiples of half wavelength thin wire antenna in free space.

To cut a long story short, I eventually used the results of Hallen to estimate the series reactance Xm and calculated the series resistance term Rm up to 4.5 wavelengths. These results are shown in Table 1. It should be emphasised that the Rm values are calculated from Kraus' formula [7], but the Xm values are "guess-timates" except at odd multiples of a half wavelength.

ODD MULTIPLES OF HALF WAVELENGTH

The input impedance of a centre feed antenna that is exactly odd multiples of a half wavelength long can be obtained directly from Table 1 because the current maximum occurs at the centre of the antenna. For example, a half wave dipole in free space has a series impedance of 73 ohms resistive and 43 ohms inductive. A 1.5 wavelength centre feed antenna in free space has a series input impedance of 106 ohms resistive and 46 ohms inductive. In all cases, the physical length would have to be reduced by a small amount to become pure resistive. In practice, an additional shortening is required because of the capacitance added to the antenna by the insulators.

CALCULATION ANTENNA IMPEDANCE

The steps to calculate the input impedance at the centre of a thin wire antenna in free space are as follows:

1. Determine the equivalent average transmission line impedance (Z0) of the wire antenna.
   Z) = 120(1n(21/d) - 1)
   where Z0 = average transmission line impedance (ohms)
   1n = log to the base e
   1 = overall physical length of antenna (metres)
   d = diameter of wire (metres)
2. Determine the physical length of the antenna in wavelengths
   Lw = 1*f/300
   where Lw = physical length (wavelengths)
   1 = physical length (metres)
   f = frequency (MHz)
3. Determine the value of Rm and Zm from Table 1 for Lw calculated in step 2.
4. Calculate the distance Lc of the current maximum om the antenna input for Lw calculated in step 2.
   Lc = Lw/2 + 0.25 for 0.0 < Lw > 0.5
   Lc = Lw/2 + 0.25 for 0.5 < = Lw > 1.5
   Lc = Lw/2 + 0.75 for 1.5 < = Lw > 2.5
   Lc = Lw/2 + 1.25 for 2.5 < = Lw > 3.5
   Lc = Lw/2 + 1.75 for 3.5 < = Lw > 4.5
5. Use a Smith Chart (or equivalent see List 1) to find impedance at the end of a line of impedance Z0 calculated in step 1 and length Lc calculated in step 4 when terminated by Rm — jXm determined in step 3. This is the input impedance Ra + jXa at the centre of the antenna.
6. Determine the equivalent length of the matching line Lm = Lp*f/(300*v)
   where Lm = equivalent length of the line (wavelengths)
   Lp = physical length of the line (metres)
   f = frequency (MHz)
   v = velocity constant of the line
7. Use a Smith Chart (or equivalent see Table 1) to find the impedance R1+jx1 at the end of the matching line of impedance Z1 and length Lm as calculated in step 6 when terminated by Ra+jxa found in step 5. R1+jX1 is the impedance at the end of the matching line of impedance Z1.

RESULTS

Table 2 and 3 gives the results for a G5RV antenna system connected to a 50 ohms coaxial cable. An examination of Table 3 confirms that the G5RV shows a low VSWR at 3.6, 14.2 and 24.9 MHz. Even then, the VSWR is far from 1:1, the best being 2.5:1 at 14.2 MHz. The G5RV has a very high VSWR at 10.1, 18.1 and 28.5 MHz, and around 10:1 at 7.2 and 21.2 MHz.

CONCLUSION

On the basis of these results, an antenna tuner is essential. The best place for the antenna tuner would be between the 450 ohms matching line and the coax to minimise the losses in the coaxial cable at the high VSWR exhibited at some frequencies. Nevertheless, an antenna tuner between the transmitter and the coax would also work well at 3.6, 14.2 and 24.9 MHz, but you would have to suspect that the overall losses would be quite high at other frequencies, particularly 10.2, 18.1 and 28.5 MHz.

It is worthwhile noting that the matching line length can be varied to minimise the VSWR at a given frequency. For example, if the 450 ohms matching line is made an odd multiple of a quarter wavelength at 28.5 MHz, the input

List 1 — Smith Chart Replacement.

```
10 PRINT"THIS PROGRAMME CALCULATES THE INPUT IMPEDANCE AND VSWR"
20 PRINT"AT THE END OF A TRANSMISSION LINE OF A GIVE IMPEDANCE"
30 PRINT"AND LENGTH WHEN TERMINATED WITH A GIVEN LOAD."
40 PRINT"THE EQUATIONS ARE GIVEN IN CHAPTER 16 OF THE ARRL"
50 PRINT"1985 HANDBOOK. SET LINE LENGTH TO 0 FOR VSWR"
60 PRINT"CALCULATIONS ONLY."
70 PRINT : PRINT
80 PI = 3.14159
90 PRINT"LINE IMPEDANCE(Z0) = "; Z0
100 INPUT"CHANGE Z0 (Y/N)"; A$
110 IF A$ = "N" THEN GOTO 130 ELSE IF A$ = "n" THEN GOTO 130
120 INPUT"LINE IMPEDANCE(Z0) ="; Z0
130 PRINT"LINE LENGTH (WAVELENGTH) = "; X
140 INPUT"CHANGE LINE LENGTH (Y/N)"; A$
150 IF A$ = "N" GOTO 170 ELSE IF A$ = "n" THEN GOTO 170
160 INPUT"LINE LENGTH = "; X
170 PRINT"SERIES LOAD RESISTANCE(RL) = ";RA
180 INPUT"CHANGE RL (Y/N)"; A$
190 IF A$ = "N" THEN GOTO 210 ELSE IF A$ = "n" THEN GOTO 210
200 INPUT"SERIES LOAD RESISTANCE(RL) = "; RA
210 PRINT"SERIES LOAD REACTANCE (X (+ or -)) = ";XA
220 INPUT"CHANGE X (Y/N)"; A$
230 IF A$ = "N" THEN GOTO 250 ELSE IF A$ ="n" THEN GOTO 250
240 INPUT"SERIES LOAD REACTANCE (X) = "; XA
250 R1 = RA/Z0 : X1 = XA/Z0    'ARRL P.16-2
260 A = 2*PI*X
270 IF (X - FIX(X)) <> .25 THEN GOTO 300
280 R2 = R1/(R1^2 + X1^2) : X2 = -X1/(R1^2 + X1^2)
290 GOTO 350
300 A1 = (1+(TAN(A)^2))
310 A2 = (1 - (X1*TAN(A))) : A3 = R1*TAN(A)
320 A4 = (1 - (TAN(A)^2)) : A5 = (1 - (R1^2) - (X1^2))*TAN(A)
330 R2 = R1*A1/((A2^2) + (A3^2))    'ARRL P.16-2 EQ. 5
340 X2 = ((X1*A4) +A5)/((A2^2) + (A3^2)) 'ARRL P.16-2 EQ.6
350 RG = Z0*R2 : XG = Z0*X2 'ARRL P.16-2
360 TAR = SQR(((RA - Z0)^2 + XA^2)/((RA + Z0)^2 + XA^2))
370 VSWR = (1 + TAR)/(1 - TAR) 'ARRL P.16-1 EQ.1 & P.16-2 EQ.2
380 PRINT : PRINT
390 PRINT"SERIES GENERATOR RESISTANCE (RG)= ";RG
400 PRINT"SERIES GENERATOR REACTANCE (XG) = "; XG
410 PRINT"VSWR = "; VSWR : PRINT : PRINT
420 GOTO 80
```

impedance is almost exactly 50 ohms.

I have also seen suggestions that a 1:1 or 4:1 ferrite core balun should be connected between the 450 ohms line and the coax, but I suggest it would be completely useless at the higher VSWRs and be an attenuator instead! By comparison, Kevin VK2DYW, has designed and built a 1:1 balun using ferrite beads to reduce skin currents on the sheath of the coax which does work but that is another story.

Of the questions originally posed by Kevin, I have answered the first, namely, what is the impedance of the G5RV. The second question, whether there is a better length, I will leave to the reader. Happy calculating!

REFERENCES

1. KRAUS, John D. Antennas, McGraw-Hill Electrical and Electronic Series, 1950.
2. As above. Chaps 5, 8, 9 and 10.
3. As above. Equs (10-57) and (10-58), p 261.
4. As above. Equs (8-27), (8-28) and (8-29), p 225.
5. As above. Chap 9.
6. As above. Section 8-6, p 228.
7. As above. Equ (5-90), p 143.

WAVELENGTH	Rm	Xm
0.0	0.00	0.0
0.1	0.19	5.0
0.2	2.88	10.0
0.3	13.18	20.0
0.4	36.13	30.0
0.5	73.13	43.0
0.6	119.82	60.0
0.7	166.40	75.0
0.8	200.68	90.0
0.9	212.69	130.0
1.0	199.09	170.0
1.1	165.30	170.0
1.2	124.44	150.0
1.3	92.98	120.0
1.4	84.73	80.0
1.5	105.49	45.0
1.6	150.34	10.0
1.7	204.97	5.0
1.8	250.69	30.0
1.9	271.36	75.0
2.0	259.63	140.0
2.1	220.12	180.0
2.2	168.00	180.0
2.3	123.65	150.0
2.4	105.03	100.0
2.5	120.77	47.0
2.6	166.62	15.0
2.7	226.80	0.0
2.8	279.66	20.0
2.9	305.86	80.0
3.0	295.75	140.0
3.1	253.26	180.0
3.2	194.70	190.0
3.3	142.74	170.0
3.4	117.95	120.0
3.5	130.85	47.0
3.6	177.78	3.0
3.7	242.04	0.0
3.8	300.08	30.0
3.9	330.33	75.0
4.0	321.51	140.0
4.1	277.04	180.0
4.2	213.96	200.0
4.3	156.60	170.0
4.4	127.42	115.0
4.5	138.38	47.0

Table 1 — Resistance (Rm) and Reactance (Xm) at a Current Maximum.

ANT. LENGTH= 102 FEET 31.0896 METRES

ANT. DIAMETER= .2 cm

ANT. AVERAGE TRANSMISSION IMP.= 1121

FREQ(MHZ)	L(WAVELENGTH)	Ra + jXa
3.6	.37	32 -j440
7.2	.75	400 +j1200
10.1	1.05	1600 -j2800
14.2	1.47	97 -j45
18.1	1.88	1700 +j2100
21.2	2.20	330 -j1100
24.9	2.58	170 +j310
28.5	2.95	4100 +j540

Table 2 — G5RV Antenna Input Impedance (Step 5).

MATCHING LINE IMPEDANCE = 450 OHMS

EQUIVALENT LENGTH (Lm) = 0.5 WAVELENGTHS AT 14.2MHZ

COAXIAL CABLE IMPEDANCE = 50 OHMS

FREQ(MHZ)	Lm	R1 + jX1	VSWR(50 OHMS)
3.6	0.128	15 - j10	3.3 : 1
7.2	0.254	50 - j140	10 : 1
10.1	0.356	61 + j450	68 : 1
14.2	0.5	97 - j45	2.5 : 1
18.1	0.637	103 - j490	49 : 1
21.2	0.747	50 + j160	12 : 1
24.9	0.877	113 - j52	2.8 : 1
28.5	1.0	4100 + j540	83 : 1

Table 3 — G5RV Impedance at Input to Matchline (Step 7).

WHAT'S WORSE THAN RADIO BLACKOUTS?

Volcanic Eruptions, for a start!

Ken Gott VK3AJU
38A Lansdowne Road, Saint Kilda, Vic. 3183

Volcanos belching ash and lava, satellites plunging to earth, aircraft passengers endangered by cosmic rays and blackouts affecting telephone cables, as well as wireless traffic, could be on the agenda for next year, according to a recent report. All could be attributed to the solar cycle, now surging towards a peak in late 1989.

Normally I would be inclined to regard such reports with scepticism. At best, I would see them as speculative, and at worst, as sensationalist.

For two reasons, however, I cannot be so dismissive. Firstly, because they appeared in a reputable UK journal, the *New Scientist*, but also because there is some supporting evidence for these dire predictions.

When the *New Scientist* article, in which the predictions were made, appeared on July 7, 1988, solar activity had been increasing at the fastest rate since observations started in 1840. The possible hazard to aircraft passengers at high altitudes — and even worse danger to astronauts — stems from the boost to the amount of cosmic rays reaching the earth.

Apart from this, it is thought that the stream of charged particles could disturb the paths of the 200 or so artificial satellites orbiting the earth, causing some to re-enter the atmosphere prematurefy.

We all know about the effects on HF communications.

Data from the Sunspot Index Data Centre at the Royal Observatory of Belgium, suggests that no previous solar cycle since 1840 has risen so rapidly to the point it had reached in May this year. The Centre predicts that the cycle will reach a peak of about 170, but possibly as high as 200, in September 1989.

Meanwhile, Jim Shirley, a scientist based in California, had already predicted a similar peak of activity based on an independent study relating to movements of the sun.

It was news to me, but the sun is not the centre of the solar system. The true centre is determined by the positions and masses of all the planets relative to the sun. "On this basis, the sun follows a looping orbit around the centre mass, which is sometimes near the heart of the sun and sometimes outside its surface," to quote the *New Scientist* article.

There is no known reason why this motion should affect solar activity, but the records show a clear correlation between the sun-spot cycle and the rate of change of the sun's angular momentum (see Figure 1).

Shirley's observations show that the sun is making a very unusual loop around the centre mass of the solar system. Between 1984 and 2000 it will be travelling "backwards; compared to its average direction of motion during the past 13 centuries.

This "backward" motion will be most apparent in 1989-91.

Such an event has happened only twice before in the past 1300 years — in 1623-1663 and in 1810-1812.

In both periods there were severe volcanic eruptions and cooling of the climate due to dust from the volcanos blocking the sunlight.

So, when the sun has looped "backwards" there have been volcanic eruptions.

But, is this cause and effect — or an example of what were called "nonsense correlations" when I studied statistical methods at university?

These can take the form of two or more time series, which, when drawn as graphs, show a perfect or near perfect match — but one which is due to sheer accident.

The example given to us in classes was the average length of the sermons preached by a leading Anglican cleric, calculated on an annual basis, and the incidence of swine fever in South Africa. The two graphs matched almost perfectly over a period of many years, but obviously the sermons did not cause the swine fever, nor did periodic increases in the disease cause the cleric to be wordier than usual.

There is no apparent reason why the sun's motion should affect solar activity, nor why the latter should cause volcanos to erupt.

Shirley argues that the probability that the common pattern between the sun's motion and volcanic eruptions is due to chance is only four percent. He has therefore predicted volcanic and climatic extremes in the near future, even though the reasons for the changes are unknown.

The *New Scientist* comments that the linkage between the sun's change in angular momentum and sun-spot activity is more firmly based than Shirley's perceived link with volcanic activity; the former prediction seems to have been borne out by the Belgium data as analysed by the US National Oceanic and Atmospheric Administration, ie that solar activity is increasing at the fastest rate since 1840 and could peak in late 1989.

However, there are other complications. There is evidence that the earth is warming up (perhaps because of the greenhouse effect) and this may mask any period of cooling, similar to those in the 17th and 19th centuries, if such takes place. Also, some scientists are apparently worried that extreme solar events in 1989-1990 might partly conceal damage to the ozone layer resulting from aerosols and other chemicals — the reason being that increased flows of particles from the sun produce more ozone in the stratosphere.

ar

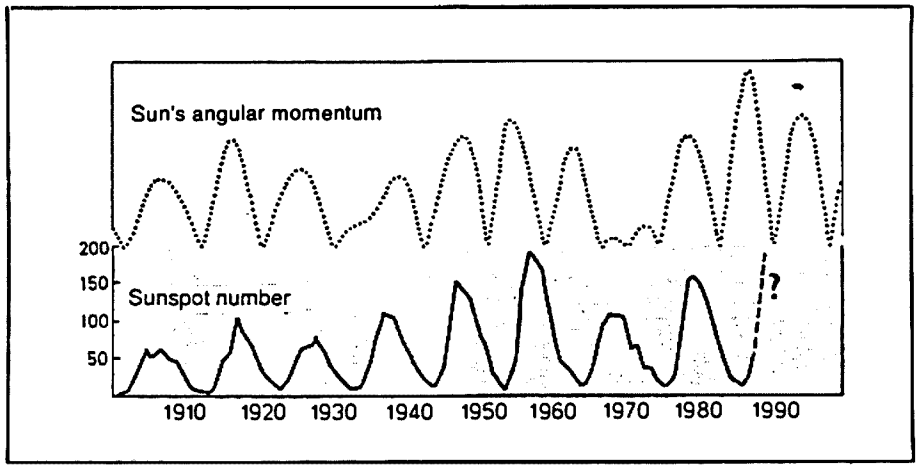
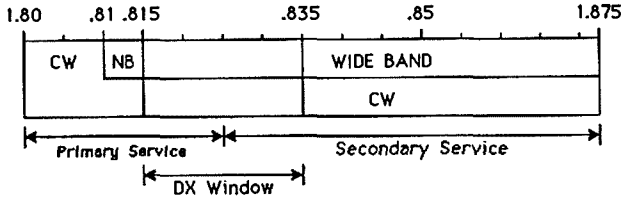


Figure 1: Momentum and sunspots — are the two by any chance related?
New Scientist July 7, 1988

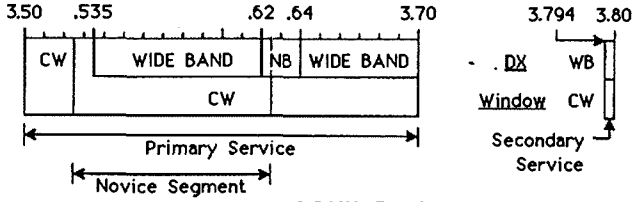
PROPOSED REVISED AUSTRALIAN BAND PLANS

The IARU Region 3 Conference, held in Seoul during October 1988, adopted a revised set of Regional Band Plans. The WIA delegates contributed to the band planning working group and identified areas where Australia might not be able to comply with proposed regional band plans. FTAC has now examined these plans, tested them against the Australian Band Plans adopted at the 1986 and 1988 Federal Conventions and derived proposed revised Australian Band Plans.

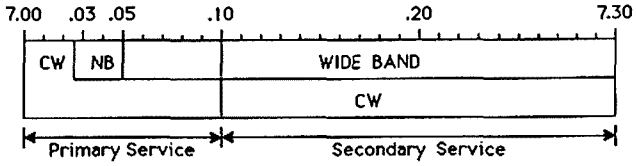
These band plans are offered for consideration by Australian radio amateurs and, if thought fit, adoption at the April 1989 Federal Conventions.



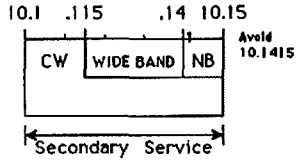
1.8 MHz Band.



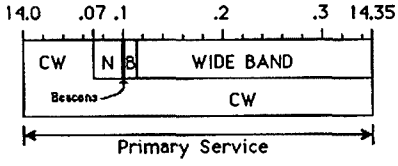
3.5 MHz Band.



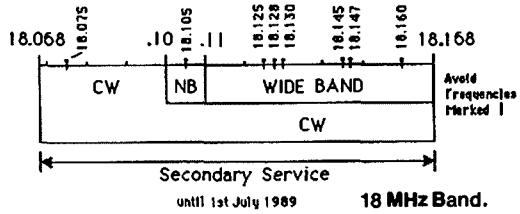
7 MHz Band.



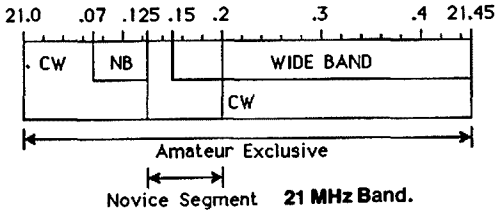
10 MHz Band.



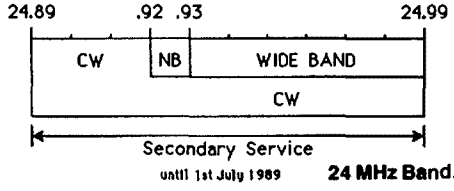
14 MHz Band.



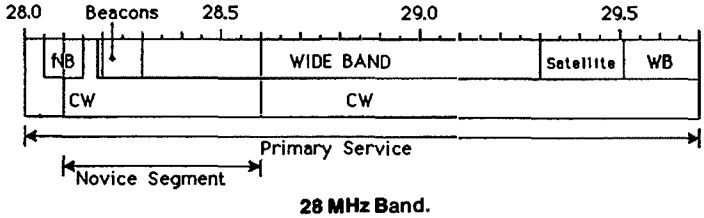
18 MHz Band.



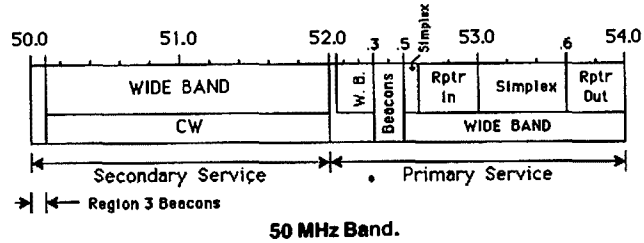
21 MHz Band.



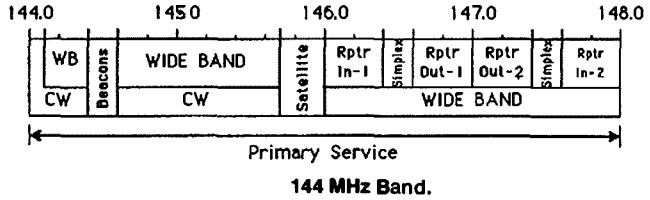
24 MHz Band.



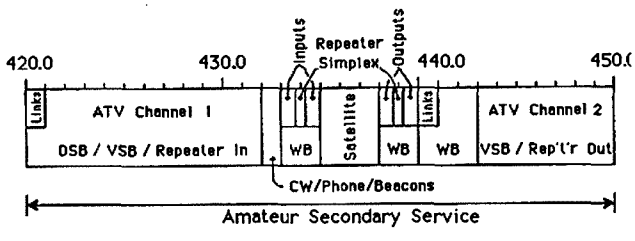
28 MHz Band.



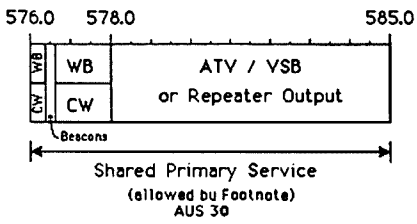
50 MHz Band.



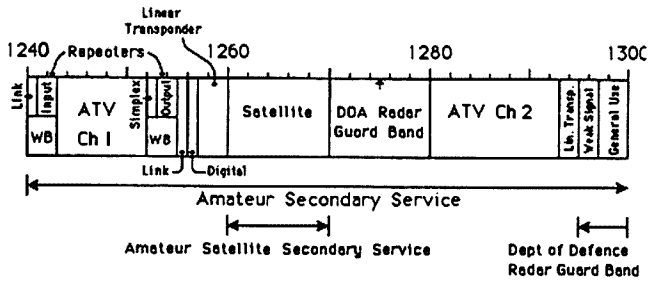
144 MHz Band.



420 MHz Band.



576 MHz Band.



1296 MHz Band.

PROVISIONAL MICROWAVE BANDPLANS (Table 3)

2320 to 2450 MHz bandplan — Region 1

		Usage
2300.000		
Sub-regional (National bandplans)		
2320.100		
CW exclusive	2320.000 2320.025	*EME* *(Moonbounce)*
2320.150		
CW & SSB	2320.200	*SSB centre of activity*
2320.800		
Beacons exclusive		
2320.990		
2321.000		
Simplex & repeaters (FM)		
2322.000		
All modes	2322 to 2355 2355 to 2365 2365 to 2370 2370 to 2390	*ATV* *Digital comms* *Repeaters* *ATV*
2390.000		
		EME (Moonbounce)
2392.000		
All modes		
2400.000		
Amateur satellite service		
2450.000		

3400 to 3475 MHz bandplan — Region 1

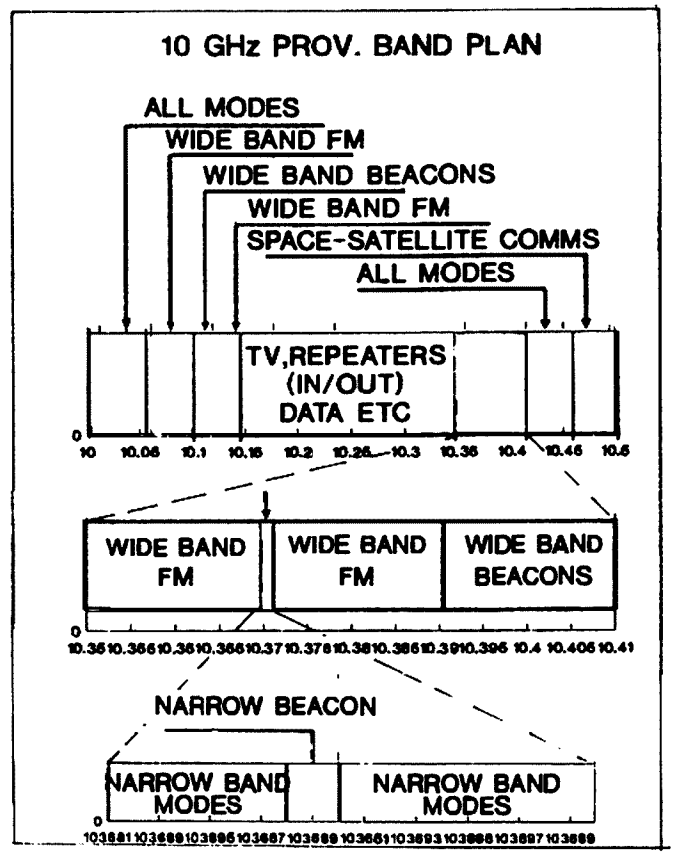
		Usage
3400.000		
All modes		
3456.000		
Narrow band CW/EME/SSB	3456.250	*Centre of activity*
3458.000		
All modes		
3475.800		

Notes on the provisional 2300 to 2450 MHz bandplan

a) In countries which do not have access to the ALL MODES against 2322 to 2390 MHz, the FM SIMPLEX & REPEATER segment 2321 to 2322 MHz may be used for digital data transmissions.

b) In countries where the narrow-band segment 2320 to 2322 MHz is not available, the following alternative narrow-band segments can be used:
2304 to 2306 MHz
2308 to 2310 MHz

10000 to 10500 MHz bandplan — Region 1



Notes on the provisional 10000 to 10500 MHz bandplan

In those countries where the narrow-band segment 10366 to 10370 MHz is not available, the segment 10450 to 10452 MHz is suggested as an alternative narrow-band segment.

5650 to 5850 MHz bandplan — Region 1

	Usage	
5650.000		
Amateur satellite service (up-link)		
5670.000		
All modes		
5760.000		
Narrow-band CW/EME/SSB	5760.250	*Centre of activity*
5762.000		
All modes		
5830.000		
Amateur satellite service (down-link)		
5850.000		

24.0 to 24.25 GHz bandplan — Region 1

	Usage	
24000.000		
Amateur satellite service	24125.000	*Preferred operating frequency wide-band equipment*
24050.000		
All modes		
24192.000		
Narrow-band CW/SSB/Beacons	24192.000	*Centre of activity*
24194.000		
All modes		
24250.000		

47.0 to 47.2 GHz bandplan — Region 1

	Usage	
47000.000		
	47088.000	*Centre of narrow-band activity*
47200.000		

COMMENTS ON THE BAND PLAN

It has not been possible to adopt the Region 3 Band Plan for 1.6 MHz due to the much reduced Australian allocation, compared with other regional nations. Consequently, the 1986 plan has bee retained, although some out-of-band working may e necessary for DX operations.

It was possible for the WIA delegation to influence the Region 3 plan for 3.5 MHz to retain the existing division between CW and phone. This is obviously of advantage to Australian novice operators.

The increasing demand for spectrum for data communications, as reported by the Packet Working Group, has led to a redefining of narrow band modes bandwidth, which is now increased to up to 2 kHz occupied bandwidth. The narrow band modes segment has been moved down to 7.040 to align with Region 3. Opportunity has also been taken to align the lower edge of the narrow band modes segment with the regional plan at 7.025 MHz.

For the 10 MHz band, Region 3 defined a narrow band modes segment from 10.140 to 10.50 MHz. This does not vary from the existing Australian narrow band modes segment, however because of a spot frequency we must avoid, it may be desirable to widen the segment. We retain the right to use phone on this band for communications within Australia only.

The increasing demand for data communications has, likewise, led to an increase in the narrow band modes segment on 14 MHz. As packet and other traditional data modes, such as RTTY and AMTOR cannot co-exist, the band plan retains the traditional modes in the Interval 14.070 to 14.095 MHz and places other data modes, including packet, in the interval 14.095 to 14.112 MHz, excluding the CW beacons at 14.000 MHz plus/minus a 500 Hz guard band.

No changes are recommended to the existing 18, 21, 24 and 28 MHz band plans.

The wide band modes repeater inputs segment has been changed from 52.600 to 52.975 MHz to allow a 1 MHz repeater split. This now places general all modes in the interval 52.000 to 53.400 MHz. This change took place in 1986 and is not consequent upon any Region 3 band planning actions.

No changes are recommended to the existing 144 and 420 MHz band plans.

Whilst no formal changes have been made to the 576 MHz band plan, it is recommended this band be reserved for ATV repeater outputs as long as it continues to be available for radio amateur use.

Changes were proposed to the 1296 MHz band plan as to repeater frequency sub-bands at the 1988 Federal Convention. Their adoption was conditional upon receipt of DOTC (Aviation Group) clearance that no interference was occasioned by the proposals. As that documented clearance has not yet been received, the band plans remain as adopted in 1986.

The 1988 Federal Convention, by adopting the FTAC Annual Report, adopted provisional band plans for the microwave bands up to 47 GHz. The plans adopted were the provisional Region 1 band plans, except for 10 GHz where the more detailed RSGB Band Plan (which conforms to Region 1 guidance) was provisionally adopted.

FTAC invites comments on these proposed revised Australian Band Plans. Comments should be directed to Divisional Federal Councillors, or as contributions to the columns of this magazine.

FTAC proposes to submit these revised Australian Band Plans to the 1989 Federal Convention for formal adoption.

Federal Technical Advisory Committee (FTAC)

November 1988

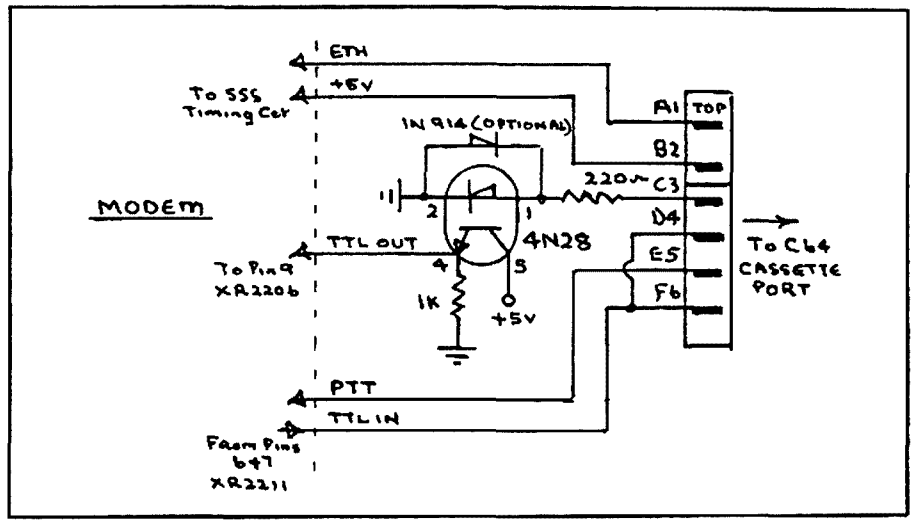
ar

ADDENDUM TO ADDENDUM

The drawing on page 52 of AR for October 1988 is reversed (left for right). All terminals and connections are still correct, but (my own mistake) it is not consistent with the drawing of the original modem in the July 1988 issue.

—Contributed by Ron Mills VK5XW

ar



IARU REGION THREE WORKING GROUP REPORTS

The recent IARU Region 3 Conference, held in Seoul during October 1988, set up several Working Groups to consider contributed papers on a common topic and to prepare recommendations for the Conference sitting in plenary session. There were three principle working groups, one devoted to regional band planning, one to packet radio and the third devoted to planning for the next WARC. The WIA contributed to all working groups, despite only having two representatives at the conference, both of whom convened a working group.

The Band Planning Working Group revised band plans derived at the last Region 3 Conference which was held in Auckland in 1985 and added two new band plans for the 1.8 and 3.5 MHz bands. They received initial inputs on the 1.8 and 3.5 MHz bands from the Packet Radio Working Group. The report of the Band Planning Wbrking Group appears elsewhere in this issue of *Amateur Radio.*

Despite their adoption by the Conference, the band plans do not automatically become binding upon Australian radio amateurs. Indeed they have been examined by FTAC, who have recommended a revised series of Australian Band Plans for consideration and ultimately adoption if thought fit by the coming WIA Federal Convention, next April. These revised Australian Band Plans also appear in this magazine.

The Packet Radio Working Group's report is also included in this issue. In addition to the increased data modes frequency segments on several HF bands, which were passed to the Band Planning Working Group for action, the report contains some seven recommendations concerning the introduction and operation of packet.

It is anticipated these recommendations will become the basis of an Australian Position Paper on packet which will be published in this magazine shortly and offered for adoption at the April Federal Convention. Once again members will be given an opportunity to comment and guide these decisions through their Federal Councillors. Of course, comment through the columns of this magazine is always welcome.

The Preparation for Future WARCs Working Group's report appears elsewhere in this issue of *Amateur Radio.* Its recommendations including the Region 3 position on band allocations and representation on National WARC preparatory groups as well as on the National Delegations to Geneva, most likely in 1993. Again this topic calls for preparation of an Australian Position Paper for consideration and adoption at the April Convention.

IARU REGION 3 THE 7TH REGIONAL CONFERENCE OCTOBER 10 to 14, 1988 SEOUL, KOREA

REPORT FROM WORKING GROUP 1
Convener: ZL2AMJ
Members: 9M2DT, 9V1VS, G3FKM, HL1CG, K0TO, JA1AYC, YB0JH, ZL2NN and others from the Packet Radio Working Group. Terms of Reference: 1. To review band plans previously adopted by the Association,
2. To address any band plan changes that may be recommended by any Packet Radio Working Group set up by the Conference, and
3. To recommend updated band plans for HF, VHF and UHF for Region 3, for Conference consideration.

Relevant Papers:
Papers 8, 19m'49, 51, 52, 74, 79 and 93 were considered.

Meetings:
The Working Group met in conjunction with the Packet Radio Working Group to address the need to accommodate packet operating in the Region 3 Band Plans.

Working hours:
Tuesday 2030 - 2220
Wednesday 1330 - 1500

Procedures:
The band plans developed at the Auckland Conference were reviewed.
New band plans for the 1.8 MHz and 3.5 MHz bands were developed.
The need for band plans for bands above 1300 MHz was considered.
The revised band plans for conference consideration are included here. Provisions for packet are included.
The Region 1 representative wished to have his great concern recorded for the wide divergence in the band plans for packet by Region 3 from those recently decided by Region 1.

FOR: ARRL, JARL, KARL, MARTS, PARA, PARS, RSGB, SART, WIA.
AGAINST: nil.
ABSTAIN: RAST, CRSA.
Passed.

REGION THREE BAND PLANS

The Basic Principles underlying the Region 3 Band Plan:

1. In all cases of conflict between a band plan and the national regulations of a country, the latter shall prevail.
2. Nothing in these band plans shall be construed as prohibiting different national arrangements, provided that harmful interference is not caused to stations in the countries operating in accordance with the regional band plan.
3. Notwithstanding item 2 above, member societies of Region 3 are strongly urged to use these regional band plans as a basis for their national band plans.

PLEASE NOTE:

Phone operation includes SSTV, FAX and modes with similar bandwidths not exceeding 6 kHz.

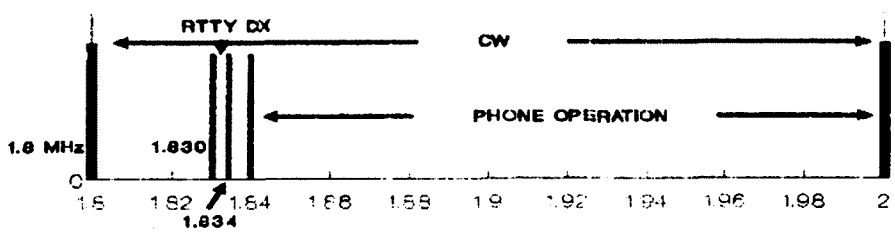
NB is narrow band modes including CW, RTTY, Packet and modes with similar bandwidths not exceeding 2 kHz.

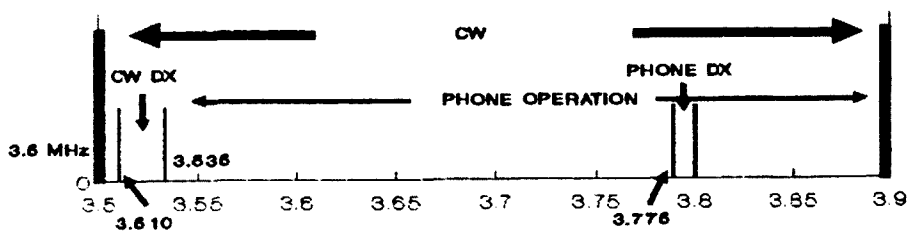
WB is wideband modes including FM.

Segments marked SATELLITE should be kept clear of other operating modes.

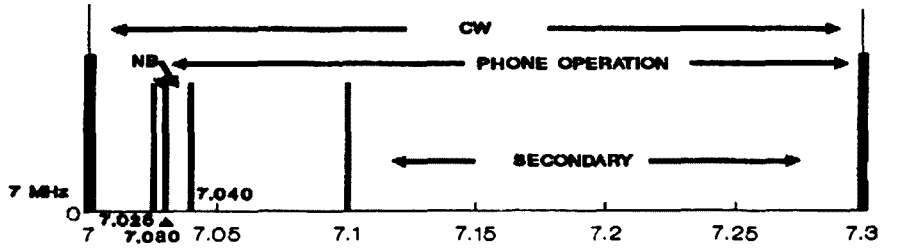
EME includes other weak-signal propagation modes, ie, Meteor Scatter and Auroral Scatter.

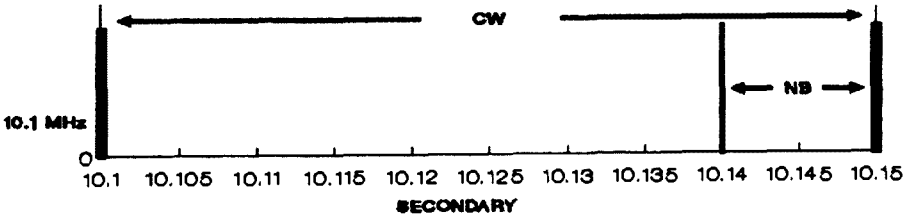
Secondary at 7.1 to 7.3 MHz means that amateur stations shall not cause harmful interference to stations of the Broadcasting Service.

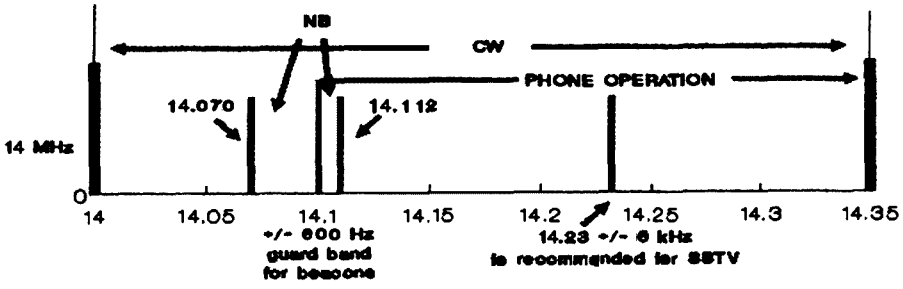




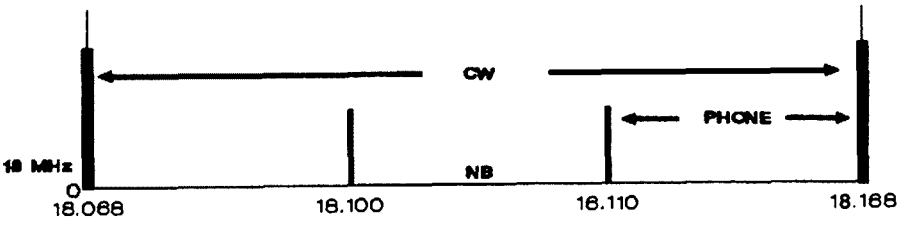
Note: Where the total band available nationally is 100 kHz or less, phone operation may commence at 3.525 MHz.

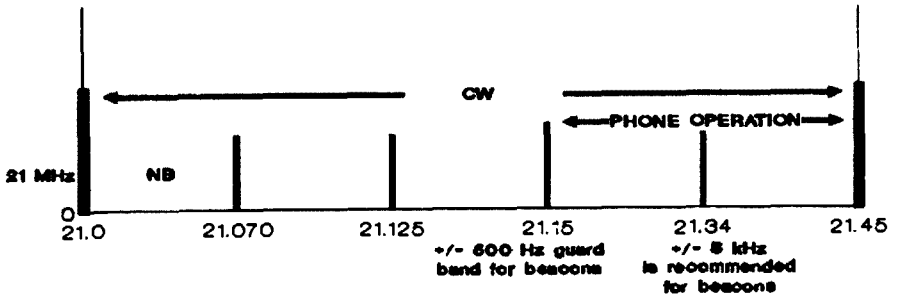






Note: Considering the dramatic increase in data mode usage on the 20 metre band, it is recommended that the sub-band for these classes of signals be 14.070 MHz to 14.112 MHz (with ± 500 Hz at 14.100 for beacons), and within that data sub-band the current practices of traditional data modes may continue up to 14.095 MHz with 14.095 to 14.112 MHz being reserved for other data modes including packet.





REPORT OF PACKET RADIO WORKING GROUP (WG 1-P)

Convener: Ron Henderson VK1RH

Members:

Calvin White HL9EP
Daishichiro Iida JI1XHU
Jay Holladay W6EJJ
Moeis Tjondro YB1CPT
Bob Knowles ZL1BAD
David Tan 9M2DT
Jayaram 9V1VS

Terms of Reference:

1. To review current developments in packet radio techniques.
2. To consult with working groups on band plans, and
3. To report to and recommend to the conference any changes needed to Region 3 documents and policies to assist the development of packet radio in this region, including consideration of third party message matters associated with packet radio.

Relevant Papers:

Papers

19 Report from Region 1.
37 Use of Packet Radio to Improve Inter-Society Communication.
61 Third Party Traffic Status.
66 Packet Radio in Australia.
66 Information Exchanges on Packet Bulletin Boards.
69 Packet Radio on HF
71 IARU AC Resolutions.
81 Packet Radio Regulations.
87 Packet Radio on 14 MHz.
89 International Aspects of Packet Radio.
98 Packet Radio Korea.

Working hours:

Tuesday 2030 - 2230
Wednesday 1330 - 1600
Thursday 1330 - 1430

CURRENT DEVELOPMENTS

The Working Group, in its discussions as a prelude to recommending band plan changes to WG 1, made the following observations.

a The increasing demand for data mode band space.
b Band planning needs to be dynamic yet have stability; hence the recommendations of this conference should have a life span until at least the next regional conference, when evolving techniques may lead to revision.
c The inappropriateness of the presently used designators "RTTY" and "Narrow Band Modes" to describe what are data communications.
d The expression "HF Packet" describes F1D transmissions.
e HF packet is utilised for two differing purposes; for real time QSOs and for data networking including BBS operations.
f Flexibility must be maintained to permit continued experimentation with modems, shift frequencies, protocols, etc.

RECOMMENDATION 1

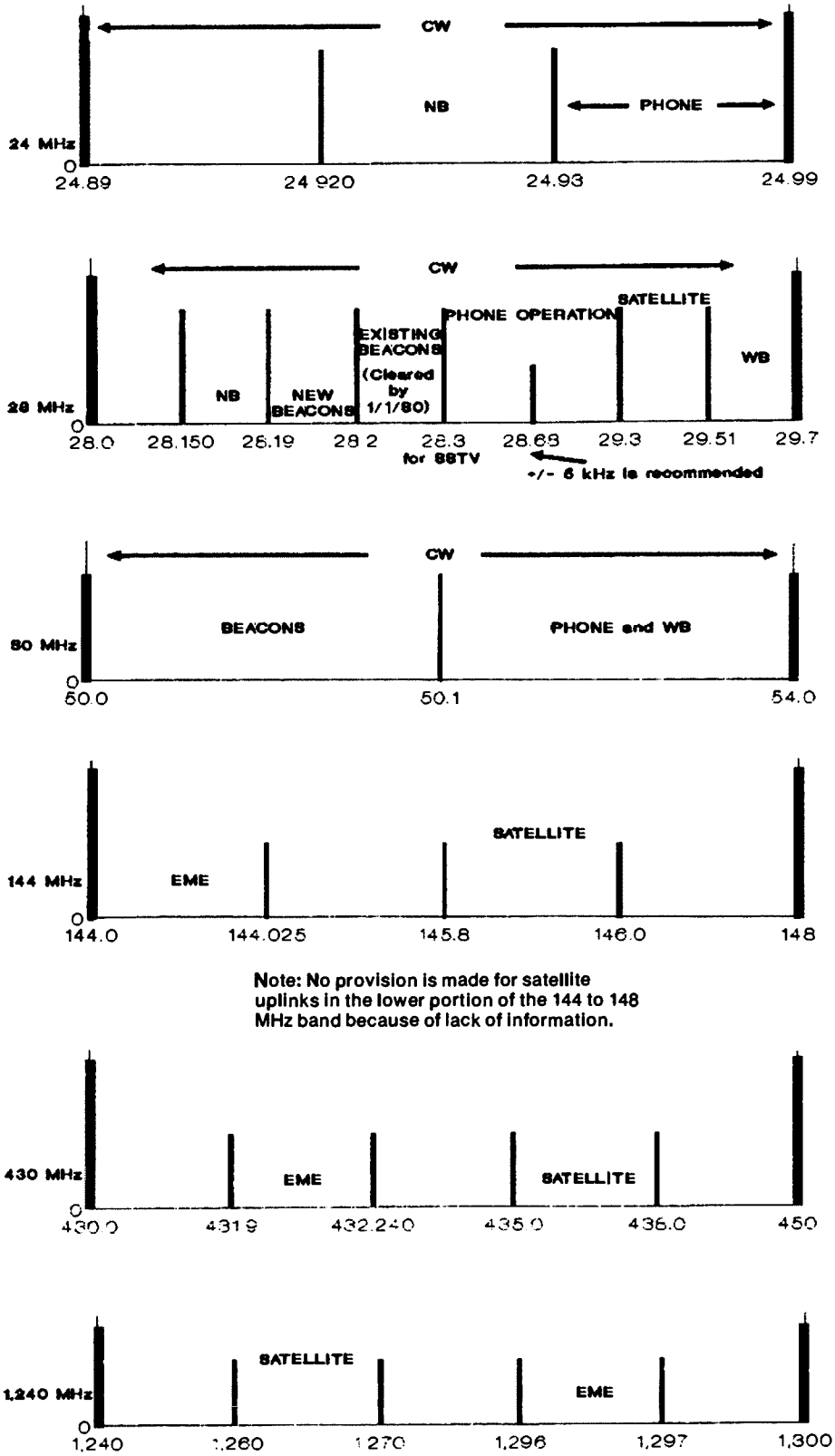
The WG identified the activities listed in note form in Annex A as warranting further investigation by packet researchers and developers.

BAND PLANS

The WG examined all Region 3 Band Plans from 1.8 to 30 MHz and made the following recommendations to WG 1 (Recommendations 2).

MHz

1.8 No recommendation
3.5 No recommendation
7 Data sub-band 7.025 - 7.040 MHz



10 Data sub-band 10.140 - 10.150 MHz
14 Data sub-band 14.070 - 14.112 MHz
18 Data sub-band 18.100 - 18.110 MHz *
21 Data sub-band 21.070 - 21.125 MHz *
24 Data sub-band 24.920 - 24.930 MHz *
28 Data sub-band 28.050 - 28.150 MHz *

* denotes no change from Auckland 1985 Band Plan.

The WG was desirous of not stipulating mandatory emission mode segments, within sub-bands, however the following footnote to the 14 MHz band plan was provided for guidance of regional societies in formulating any "Gentleman's Agreements".

(Recommendation 3)

Considering the dramatic increase in data mode usage on the 20 metre band, it is recommended that the sub-band for these classes of signals by ¶14.070 to 14.112 MHz (with ± 500 Hz at 14.100 MHz for CW beacons) and within that data sub-band the current practices of traditional data modes may continue up to 14.095 MHz with 14.095 to 14.112 MHz being reserved for other data modes including packet.

In making these recommendations, the WG was mindful of IARU AC 86-2. However they were of the opinion "market forces" applied and their wish was to both provide additional data mode spectrum yet contain that extension.

Further they are of the opinion these actions conform with the wider application of the Resolution.

CHANGES TO ASSIST THE DEVELOPMENT OF PACKET RADIO THIRD PARTY COMMUNICATIONS

On the matter of third party communications, the WG draws the following recommendation to the attention of Working Group 2 (Recommendation 4).

Urge members societies to make representations to their administrations to permit the retransmission of information received from other amateur stations and that such reception and retransmissions of amateur originated information be not treated as third party traffic as referred to in para 2733 of the Radio Regulations.

PROLIFERATION OF BBS

The Working Group noted the experience o many societies with the proliferation of BBS in the initial "flush of enthusiasm".

It is recommended: (Recommendation 5A)

To ensure the orderly growth of the packet mode the establishment of BBS should be coordinated. Such co-ordination to be the responsibility of each national society within its country and that where the transmissions of any VHF/UHF BBS have the potential to cross national boundaries the establishment of any BBS shall be co-ordinated by the member societies likely to be affected. It is further recommended; (Recommendation 5B).

That each society attempt to limit the number of HF BBS operating from their country to the minimum number necessary.

ACCESS TO THE PACKET NETWORK

The Working Group observed the desirability of retaining a simple means of access to the packet radio network by newcomers, using relatively unsophisticated stations.

Interoperability of systems, though interfaces as necessary, was considered an essential objective.

It is recommended; (Recommendation 6).

Access to the packet radio network be achievable using relatively unsophisticated stations.

CHANGES TO REGIONAL POLICIES

Changes to Region 3 Band Plans, as developed at Auckland 1985, have been identified in Recommendations 2 and 3 and passed to WG 1 for incorporations.

Clarification of the meaning of third party communications has been identified in Recommendation 4 and passed to WG 2 for development.

Adoption of this report on the 14 MHz band plan of WG 1 does not signify Region 3's disassociation from IARU AC 86-2, but rather its continued considered application.

ANNEX A FUTURE PACKET RADIO DEVELOPMENTS

The following areas should be considered in future development of packet radio techniques.

MODEMS — Improved modulation techniques, to achieve greater data rates for given occupied bandwidths.

PROTOCOLS — Link layer improvements.

— Networking/trunking with improved through puts.

— Development of a compatible hierarchy of BBS for a wide range of user conditions.

SYSTEM CONTROL — Station integration using microprocessors.

— Automatic operation on 24-hour basis.

— Development of adequate safeguards to shutdown stations.

SYSTEM PERFORMANCE and OPTIMISATION — Kiss TNC development.

— Performance analysis and reporting.

SOFTWARE — Encourage the co-ordination of developments to ensure compatibility, avoid duplication, inform others and spread scare resources.

— Encourage the release of source codes.

PLENARY DISCUSSION

MARTS — sees value in recommendations.

ADOPTION

M: WIA

S: ARRL

NZART — Recommendation 4 — sees it as a Recommendation to WG 2.

RSGB — Requests reservation be noted as data above 14.100 MHz not supportable by RSGB.

FOR: WIA, SIRS, SARTS, ORARI, NZART, MARTS, JARL, RSGB, CSRA, ARRL +1.

AGAINST: —

ABSTAIN: —

Carried.

REPORT FROM WORKING GROUP 2

Convener: David Wardlaw VK3ADW

Members:

Richard Baldwin W1RU
Shozo Hara JA1AN
R J Hughes G3GVV
Peter Lake ZL1AIZ
Michael Owen VK3KI
David Rankin 9V1RH
Alberto Shaio HK3DEU
David Sumner K1ZZ
Yoni Sutjahjono YB0DLG
Louis van de Nadort PA0LOU

Terms of Reference:

1. The position in preparation of a position for the Amateur Service and the Amateur Satellite Service in respect of frequency and regulatory matters,
2. The means to advance the position of the Amateur Service and the Amateur Satellite Service, including representation, education and materials for such purpose, and
3. To report and make recommendations to this conference for actions needed to be taken by the Region 3 Association and its member societies.

Relevant Papers:

Document No 88/VII/

20 Preparation for a future ITU Conference — Mr Baldwin.
22 Band Allocations for Region 3 and the Next General WARC — Directors.
26 IARU Funding and Financing — NZART.
35 The New Zealand Amateur Band at 610 to 622 MHz — NZART.
40 Planning Towards the Use of the Radio Spectrum in the 21st Century by the Amateur Service — NZART.
41 Deregulation and Sale of the Radio Spectrum — NZART.
45 International Communications in Emergencies — NZART.
53 Preparation for WARC Frequency Allocation — WIA.
71 Administrative Council Resolutions 84-6, 84-4, 77-1 — Admin Council.

Document No 85/VI/89, page 7 — Administrative Council Suggestions for Consideration by the Regions in Connection with a Possible Future WARC.

ADOPTION:

M WIA
S JARL

Carried. U.

ACTION: The Working Group developed the following document and submits it to the conference as its recommended plan for achieving frequency allocation and regulatory objectives of the Amateur Service and the Amateur Satellite Service at future ITU World Administrative Radio Conferences.

PLANNING FOR THE AMATEUR SERVICE AND AMATEUR SATELLITE SERVICE

Growth in numbers of radio amateurs and increased diversity of their operations make further extensions of frequency allocations necessary. Both communicators and technical experimenters should be encourages. Technical innovation, experimentation and scientific involvement as a whole service should be fostered.

The value of the Amateur Service and the Amateur Satellite Service as a natural disaster communications relief resource should be emphasised.

Because radio amateurs are capable of a considerable degree of self-administration, these benefits can be gains without placing an undue burden on national administrations.

A. GENERAL OBJECTIVES

1 The Amateur Service and Amateur Satellite Service should retain the existing general objectives of personal intercommunication, self-training and technical investigations.
2 Operations should be by duly authorised people for personal interest, self-education, scientific research, and without financial regard or gain.0
3 The availability of a "common licence" should be encouraged.
4 Administrations should be encouraged to propose and support resolutions in favour of the Amateur Service and the Amateur Satellite Service at World Administrative Radio Conferences and at other ITU meetings and forums.
5 Efforts should continue, to develop the technical, educational, and social contribution that is made to the world community and to international relations by amateur radio.
6 The retention of Morse code requirements should be encouraged for operation below 30 MHz.

B. SPECTRUM ALLOCATION NEEDS

1. Allocations below 30 MHz

a) Retain present allocations, including Amateur Satellite operation in all bands allocated exclusively to the Amateur Service.

b) Access to a narrow band for experimentation in the vicinity of 190 kHz (noting the existence of a band edge in Region 1 at 148 kHz).

c) Exclusive world-wide allocation of 100 kHz in the vicinity of 1.8 MHz, and retention of additional shared allocation of 100 kHz in Regions 2 and 3.

d) Exclusive world-wide allocation of 300 kHz at 3.5 MHz, and retention of additional shared allocations in Regions 2 and 3 (200 kHz in Region 2, 100 kHz in Region 3).

e) Shared primary world-wide allocation at 5.005 to 5.060 MHz.

f) Exclusive world-wide allocation of 300 kHz at 7 MHz, with elimination of footnotes permitting Fixed Service operation and retention of resolution prohibiting broadcasting from the world-wide amateur band.

g) Exclusive world-wide allocation of 250 kHz at 10.1 MHz.

h) Exclusive world-wide allocation of 400 kHz at 14 MHz, with elimination of footnote permitting Fixed Service operation.

i) Exclusive world-wide allocation of 250 kHz at 18.068 MHz.

j) Retention of exclusive world-wide allocation of 450 kHz at 21 MHz.

k) Exclusive world-wide allocation of 250 kHz at 24.74 MHz.

l) Retention of exclusive world-wide allocation of 1.7 MHz at 28 MHz.

2. Allocations between 30 Mhz and 10.5 GHz

a) Retention of 50-54 MHz in Regions 2 and 3, and provision of exclusive band of 500 kHz and shared band of another 1.5 MHz in Region 1.

b) Retention of 144-146 MHz as a world-wide Amateur and Amateur Satellite band, with elimination of footnotes allowing operation by other services in some countries; retention of 146-148 MHz in Regions 2 and 3, and addition of 146-148 MHz as a primary shared band in Region 1.

c) Retention of 220-225 MHz as a primary, shared amateur band in Region 2 and addition of an allocation in Regions 1 and 3.

d) Establishment of 430-440 MHz as a world-wide exclusive Amateur and Amateur Satellite band, with continued sharing of 420-430 and 440-450 MHz where now permitted; deletion of footnotes permitting fixed and mobile operation at 430-440 MHz.

e) Retention of footnote 691 (610-622 MHz on a secondary basis).

f) Retention of 902-928 MHz as a secondary amateur band in Region 2, with 902-905 MHz elevated to primary

status and added, where possible, in Regions 1 and 3.

g) Retention of existing band at 1240-1300 MHz, including Amateur Satellite bidirectional (not limited to uplink only) at 1260-1270 MHz, with 1260-1300 MHz elevated to primary status; deletion of footnotes permitting fixed and mobile operation at 1260-1300 MHz.

h) Retention of existing band at 2300-2450 MHz, including Amateur Satellite allocation at 2400-2450 MHz, with 2390-2400 MHz elevated to primary status.

i) Retention of existing band at 3300-3500 MHz in Regions 2 and 3; addition of 3400-3475 MHz in Region 1; world-wide Amateur Satellite allocation at 3400-3410 MHz (presently Regions 2 and 3 only); 3400-3420 MHz elevated to primary status.

j) Retention of existing band at 5650-5925 MHz where presently allocated, including Amateur Satellite uplink at 5650-5670 MHz and downlink at 5830-5850 MHz; 5760-5762 MHz elevated to primary status.

k) Retention of existing band at 10.0-10.5 GHz, including Amateur Satellite band at 10-45-10.5; 10.35-10.5 GHz elevated to primary status.

3 Allocations above 10.5 GHz

a) Retention of all existing allocations.

b) New shared allocations coinciding with any newly created ISM bands.

c) Shift ISM centre frequency from 24.125 GHz to 24.15 GHz.

d) Upgrade secondary allocations at 76-81 GHz, 144-149 GHZ and 241-248 GHz to primary.

e) Upgrade 119.98-120.02 GHz from secondary to primary; expand if possible.

4. Extend footnote 510 to include all amateur bands between 1.8 MHz and 2450 MHz.
5. Delete certain footnotes which impinge upon the operation of the Amateur Service and Amateur Satellite Service in Region 3 (see Doc No 88/VII/22).

C. REGULATORY MATTERS

2733 of the Radio Regulations provides:

> (2) it is absolutely forbidden for amateur stations to be used for transmitting international communications on behalf of third parties.

Techniques such as packet radio, used internationally, may be inhibited by some administrations on the basis of this provision.

There are three possible solutions.

1. One of for administrations to interpret 2733 as not inhibiting communications between amateur station, whether directly or through intermediate stations. This is the preferred course, and is justified as being a correct interpretation given the context and the intent of the provision.

The second and third solutions involve seeking amendment to the Radio Regulations.

2. Article 1, Section V of the Radio Regulations could include a definition, for example as follows:
   Third Party (in the Amateur Service and Amateur Satellite Service); Any party other than a person licenced to operate the apparatus of an amateur station.

The advantage of this course may be that it is easier to seek the inclusion of a definition than to seek a review of Article 32.

3. However, if Article 32 was to be reviewed, amendment to 2733 could be sought, for example by adding:

> . . . on behalf of third parties, other than a third party who is a person licenced to operate the apparatus of an amateur station.

The Administrative Council is requested to keep this matter under review.

D. ACTIONS REQUIRED IN SUPPORT OF THESE OBJECTIVES

1. Member societies should request that their administrations submit proposals advancing these objectives to relevant ITU Conferences and CCIR Meetings.
2. Member societies should request that their administrations support such proposals when advanced by other administrations.
3. Member societies should seek to have a suitably qualified representative of the Amateur Service and the Amateur Satellite Service included in their national delegations to ITU Conferences and Meetings having matters of relevance to our societies on their agendas. This may require the member societies to make appropriate provisions for funding of such representatives.
4. Member societies should seek to develop relationships with key persons in ITU affairs and to ensure that these persons are fully briefed on amateur matters.
5. Member societies are urged to keep the Secretary, Region 3, fully apprised of preparations underway in their country.
6. The actions of the 6th Regional Conference in adopting Motions 9-J/1, 9-J/3 and 9-J/4 are hereby reaffirmed. Particular note should be taken of Resolution 9-J/4 with respect to continued participation in the work of the CCIR.

Try This!

Andrew Hay VK7ZHA
19 Morgan Court, Davenport, Tas. 7310

SOLID STATE CONVERSION OF LEADER LSG11 SIGNAL GENERATOR

Many years ago, the LSG11 was available as an inexpensive, simple and very popular signal generator.

There must be many of these units still about. Some have probably already been converted to solid-state operation. For the rest that haven't the circuit in Figure 1 and this brief description may motivate you to try solid-state conversion.

Firstly, the unit is stripped of all of the valve associated components, leaving only the front panel controls and the L/C components intact. The function switch on the front panel (EXT, 400 Hz, 1000 Hz, XTAL) is then removed and replaced with a four-pole, three-position switch.

Whilst all construction was done on tag strips, a printed circuit board could be used if desired. With careful preparation, a successful conversion can be done in about three hours.

The power supply transformer was a 12 V/200 mA unit that was bought for $5. The total cost of the conversion was less than $20.

With the conversion done, the original calibration should be close enough,m the original functions will be still intact and the unit should provide useful harmonics up to 500 MHz.

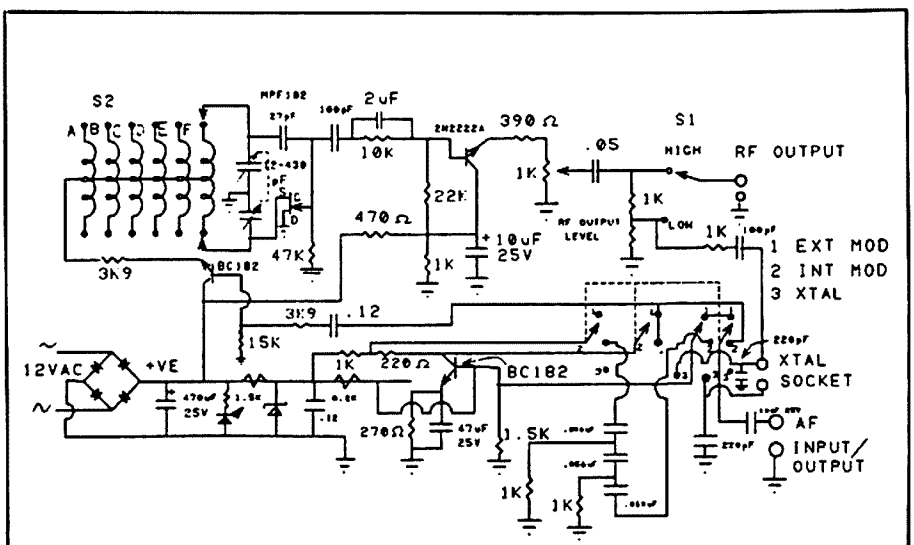


Figure 1: FET Circuit suitable to convert a Leader LSG11 to Transistor Operation.

1988 INDEX OF ARTICLES by months

ANTENNAS

Broadband High Frequency Antennas by Rob Gurr VK5RG .... Jan 8
Storage Idea for End-Fed Antennas by Peter Parker VK6NNN . Jan 15
Vertical Vee Antenna by Maurie Dewhurst VK5PMD ..... Jan 41
Your Two Metre Yagi — Vertical or Horizontal by George Cranby VK3GI ..... Jan 4
Free-Standing Tilt-Over Mast by Allan Carman VK3AOH ..... Feb 15
Overhauling the TH3 Triband Beam by Desmond Greenham VK3CO ..... Feb 19
Radiation Resistance, Loss Resistance & Antenna Efficiency by Lloyd Butler VK5BR ..... Feb 10
Trim Slim Jim by Errol Chick VK3CG ..... Feb 5
Yagi Design by David Tanner VK3AUU ..... Feb 18
Delta Yagi — a solution by M Glisson VK2JMG & Barry Gilmour VK2MUZ ..... Mar 6
Low Cost Antenna Construction Idea by Peter Parker VK6NNN ..... Mar 26
Simple Six-metre Vertical by Peter O'Connell VK2EMU ..... Mar 31
Tractor Mobile Antenna by Robert Pavan VK4FUE ..... Mar 27
Antenna Calculation Program in Basic by Dean Probert VK5LB ..... Apr 6
Clothesline Monobander by Ron Bell VK3MB ..... May 25
An ATU, Antenna & Operating by Peter Parker VK6NNN ..... May 17
More on Tilting the Yagi by Harold French VK3ZRM ..... May 19
Raising those Wire Sky-Hooks by Peter Robinson VK4DFR .... Jun 26
Mast for Restricted Area by Leo Weller VK3YX ..... Jul 8
Discussion on Open Wire Feeders & Balanced Output Antenna Matchers by Dean Probert VK5LB ..... Sep 27
Remote Control Antenna Switching System by Bill Duke VK2WD ..... Sep 26
A Beam for Two Metre Fox-hunting by Greg Williams VK3VT .. Oct 10
Capacitively Loaded Dipole Antenna — Some New Findings by Dick Turrin W2IMU ..... Nov 8
Triband Delta Loop Antenna by Bob Hancock VK5AFZ ..... Dec 23

AWARDS

Requiem Award ..... Jan 53
Publications Committee Awards for 1987 ..... Feb 26
Scandinavian CW Activity Group ..... Mar 57
Swedish Field ..... Mar 57
Worked Berlin West (WBWW) ..... Mar 57
First Settlers Award ..... Apr 42
Ron Wilkinson Achievement Award ..... Apr 37
Armada 400 ..... May 43
Golden Antenna Award ..... May 43
KARL Award Program ..... May 42
Minnet Award ..... May 42
Polar Bridge Diploma ..... May 43
Australian Bicentenary Certificate ..... Jun 38
Vanuatu ARS Award ..... Jun 38
YARC Award ..... Jun 38
Australian Award Updates ..... Jul 49
VK2 Awards 1988 ..... Jul 49
Australian Award Updates ..... Aug 49
OAA 1000 Odense Anniversary Award ..... Aug 49
Rotterdam Award ..... Aug 49
HMAS Sydney Award ..... Sep 44
Ten-Ten 28 Chapter ..... Sep 44
VK2 Awards ..... Sep 42
Parramatta Historical Site Award ..... Oct 31
Lion City Award ..... Oct 31
New Awards Manager ..... Dec 47

BOOK REVIEWS

Halcyon Days ..... Jan 49
Better Radio/TV Reception ..... May 41
Novice Study Guide ..... May 41
1988 ARRL Handbook for the Radio Amateur ..... Jun 43
Beam Antenna Handbook ..... Jul 44
Radio Theory Handbook for Amateur Operators ..... Aug 28

COMPUTERS

Amateur Log Program for the Amstrad CPC612 by Jim Oliver VK7JO ..... Feb 12
Jacket Maker for the Commodore C-64 by Bob Richards VK7NRR ..... Feb 12
Memory Expansion for the VZ200/VZ300 Computers by Lloyd Butler VK5BR ..... May 11
Oh No, Not Another Log-Keeping Program! by Kevin Feltham VK3ANY ..... Sep 4
Coil Design Made Easy by Arthur Solomon VK3LJ ..... Nov 4
Not Another RD Contest Program! by Terry Neumann VK5ATN ..... Nov 6
Air Cored Coil Calculation Program in GW Basic by Keith Angrave VK3BVK ..... Dec 24
Reprinting the RD Log at a Later Stage by Terry Neumann VK5ATN ..... Dec 30

CONTESTS

73 Magazine World SSB Championship Contests ..... Jan 50
BARTG Spring RTTY Contest Rules ..... Feb 43
John Moyle Memorial Field Day Contest Rules 1988 ..... Feb 42
UBA Contest ..... Feb 43
RD Contest 1987 Results ..... Mar 51
CQ M Contest 1988 Rules ..... Apr 43
Ross Hull Memorial Contest 1987 Results ..... Apr 43
Sangster Shield Contest ..... May 40
VK Novice 1988 Rules ..... May 38
World Telecommunications Day Contest 1988 Rules ..... May 38
All Asian DX Contest ..... Jun 36
ANARTS RTTY Contest ..... Jun 35
CQ WW VHF WPX Contest ..... Jun 36
CW & Phone Sprints ..... Jun 37
World Telecommunications Day Contest ..... Jun 35
European DX Contents 1988 Rules ..... Jul 42
Keyman's Club of Japan Single Operator CW Contest 1988 Rules ..... Jul 43
Remembrance Day Contest 1988 Rules ..... Jul 41
Sunshine State Jack Files Memorial Contest Rules 1988 ..... Jul 43
First Annual "59 Plauqe" Japan International DX Contest ..... Aug 35
VK/ZL/O DX Contest ..... Aug 34
12th West Australian Annual 3.5 MHz CW & SSB Contests ..... Aug 34
RSGB 21 MHz Contests ..... Aug 36
YL/OM Summer SSB Sprint ..... Aug 34
OK DX Contest 1988 Rules ..... Sep 38
VK/ZL/O DX Contest 1987 Results ..... Sep 39
28th Scandinavian Activity Contest 1988 Rules ..... Sep 38
John Moyle Memorial Field Day 1988 Results ..... Oct 22
National Sprint 1988 Results ..... Oct 25
HF Contest Championship 1987 Results ..... Nov 41
Jack Files Sunshine State Memorial Contest 1988 Results ..... Nov 42
National Sprint name change ..... Nov 41
WIA Novice Contest 1988 Results ..... Nov 40
Ross Hull Memorial Contest 1989 Rules ..... Nov 40
National VHF/UHF Field Day Rules ..... Dec 38

FEATURE ARTICLES

Going Portable by Dmitri Perno VK4BDP ..... Jan 38
Military Radio Collecting — An interview with Colin MacKinnon VK2DYM ..... Jan 21
Mobile HF Radio at the Woomera Range by Lloyd Butler VK5BR ..... Jan 22
Old Examination Papers ..... Jan 35
Solar Activity and the Rise of the New Solar Cycle by Richard Thompson ..... Jan 36
VHF/UHF Distance Records ..... Jan 33
WIA Beacon Data Base ..... Jan 33
WIA Repeater Data Base ..... Jan 31
Australia-wide Appeal for QSL Cards ..... Feb 32
Christmas Eve — A sad farewell ..... Feb 41
Clandestine SWLing — from the other side of the Fence by Reg Glanville VK2ELG ..... Feb 24
Darwin Radio Club's 21st Birthday Celebration by Doug McArthur VK3UM (ex-VK8KK) ..... Feb 33
Examination Devolution Update by Jim Linton VK3PC ..... Feb 26
Federal Convention Agenda Motions for 1988 ..... Feb 27
Old Examination Papers ..... Feb 14 & 35
Secondhand Equipment Guide by Jim Linton VK3PC ..... Feb 22
Three Amateurs go to the Top by Keith Scott VK3SS ..... Feb 20
WIA Divisional Broadcasts ..... Feb 34
WIA Management is Democratic by Ron Henderson VK1RH & Peter Gamble VK3YRP ..... Feb 3

Boiling Water — RF Style by David Barneveld VK4BGB ..... Mar 25
Bug Hunt by Gil Sones VK3AUI ..... Mar 5
Darwin Radio Club's 21st Birthday Celebration — a pictorial view by Doug McArthur VK3UM (ex VK8KK) ..... Mar 32
JOTA by Satellite by Peter Hughes VK6HU ..... Mar 38
Old Examination Papers ..... Mar 45
Tears and Joy of owning a FT-102 by C H Castle VK5KL ..... Mar 24
WIA Video Tape Program Title Listing by John Ingham VK5KG ..... Mar 42
ARRL DXCC Revised Rules ..... Mar 38
Examination Devolution Update by Jim Linton VK3PC ..... Apr 36
Federal Convention Agenda Items ..... Apr 32
Power Line Carrier by Gil Sones VK3AUI ..... Apr 4
10 GHz Provisional Band Plan ..... May 32
DXCC Countries by Ken McLachlan VK3AH ..... May 20
Bruce Reginald Mann — A Life Story of an Old Timer by Jim Linton VK3PC ..... May 3
International Beacons ..... May 28
New Complex — Kosmos-1861 ..... May 29
Tips for Faster Copying with CW by Dean Probert VK5LB ..... May 18
52nd Federal Convention Report ..... Jun 3
52nd Federal Convention Pictorial Report ..... Jun 32
Brochure DOC71 Essential for all Radio Amateurs by Jim Linton VK3PC ..... Jun 22
Examination Devolvement — latest progress report by Jim Linton VK3PC ..... Jun 31
Longest Serving WIA Federal President by Jim Linton VK3PC Jun 30
Story of AX2SWJ by Ted Brien VK2PTB & Gerry McCulloch VK2BMZ ..... Jun 14
Immunity — the sword of Damocles ..... Jul 27
Medical Emergency in Papua New Guinea by Ally & Bob Lynch P29RL ..... Jul 10
Murray Bridge Story by Lloyd Butler VK5BR ..... Jul 18
Opening of Parliament House by Dan Steiner VK1ST ..... Jul 4
Third Party Traffic ..... Jul 28
Two Metres for the Newcomer by Ron Cook VK3AFW ..... Jul 5
Intelsat ..... Aug 12
Report to Executive on Special Call Signs ..... Aug 10
Royal Australian Air Force Ex-Signals Group by Peter Alexander VK2PA ..... Aug 26
Three Aussies at Dayton Hamvention by Jim Linton VK3PC .... Aug 18
Treasurer's Report ..... Aug 2
An Introduction to Fox Hunting by Greg Williams VK3VT ..... Sep 10
Jamboree on the Air by Bob Demkiw VK2ENU ..... Sep 12
Remembrance Day Contest Opening Address ..... Sep 7
Report on the Operation of Packet Radio Bulletin Boards in the Amateur Radio Service ..... Sep 8
RFI = Nuisance? — A look at the legalities ..... Sep 13
Stoic Wireless Operator Continues to Tap Out Messages compiled by Bett McLachlan ..... Sep 25
The Miracle of the Silver Screen by Ken McLachlan VK3AH .... Sep 18
VK6 Morse Workshop a Big Hit again by Andrew Baumanis VK6WB ..... Sep 16
Broadcast with a Difference by John Taylor VK3AJT ..... Oct 19
Introducing the New Minister ..... Oct 15
ITU Conferences — and you ..... Oct 4
Old Timer Returns from a World of Silence ..... Oct 26
RSGB 75th Anniversary ..... Oct 5
Stolen Equipment Register ..... Oct 58
Appointment of General Manager/Secretary ..... Nov 3
A Boy & His Radio ..... Nov 11
Hurricane Gilbert Disaster by Jim Linton VK3PC ..... Nov 22
International Amateur Radio Network by Sam Voron VK2BVS . Nov 17
Operation Update by Ken McLachlan VK3AH ..... Nov 21
Open Letter from Federal Executive Member ..... Nov 29
RSGB 75th Anniversary ..... Nov 25
Skitrek — Reprinted from QST Canada ..... Nov 20
Swedish Student at Geelong ..... Nov 44
WIA Videotape Program Title Listing ..... Nov 38
Gift Honours War Casualties ..... Dec 36
Hinch at Seven Damages Reputation of Amateur Radio Service ..... Dec 40
Miniaturisation Brings Change Reprinted from *Elements* ..... Dec 35
Mount Skene Revisited by William Magnusson VK3JT ..... Dec 34
Students Today — Space Engineers Tomorrow by Paul Barber VK3DBP ..... Dec 37
Three Weeks in August by Meg Box VK5AOV ..... Dec 33
Unattended Residence & Your Holidays by Ken McLachlan VK3AH ..... Dec 6
West Australia to South Australia 2 Metre Path by John Hawkins VK6HQ ..... Dec 16
WIA Report of the Seventh Region Three Regional Conference ..... Dec 4

ELECTROMAGNETIC COMPATIBILITY

Buying an Appliance? You may get RFI you didn't bargain for! Jan 54
What can we learn from an improvised Jacky Test? ..... Feb 46
Breakthrough ..... Mar 54
"Were you on your radio last night?" — Part 1 ..... Apr 50
"Were you on your radio last night?" — Part 2 ..... May 48
Radiation Immunity of VCRs ..... Jun 46
A Law is only as Good as its Policing is Effective! ..... Jul 50
Trouble with Hi Fi, TV & Equipment? ..... Aug 47
Trouble with Hi Fi, TV & Equipment? ..... Sep 46
The Ferrite Core Choke Solved the EMC Problems ..... Oct 41
Make your system comfortable by Fred Rode VK3AFR ..... Nov 23
The VE3SR Case ..... Nov 48

EQUIPMENT REVIEWS

Icom IC-228H 2m Transceiver ..... Jul 32
Icom IC-781 All-band HF Transceiver ..... Jul 33
Kenwood TM-421A 70cm UHF FM Transceiver ..... Jul 30
Kenwood TM-721A Dual Band FM Transceiver ..... Jul 30
Alinco Two Metre Hand-Held FM Transceiver ..... Oct 17
Icom IC-32AT Dual Band FM Transceiver ..... Oct 18
Kenwood TS-140 & TS-680 Transceivers ..... Oct 12
Icom IC-2GAT & IC-4GAT Transceivers ..... Nov 26

FUTURE OF AMATEUR RADIO

Options by the Future of Amateur Radio Working Party ..... Jan 42
Summary of "Novices on 2m" Surveys conducted by Divisions ..... Feb 29
Synopsis of Members Comments ..... Mar 40
Paper 6 — Conclusions & Recommendations ..... Apr 30
A Novice Viewpoint by Peter Parker VK6NNN ..... May 23
Review after Federal Convention ..... Jul 26
As seen by a Novice-to-be by R A Fenton L20530 ..... Aug 16

MINI-PROJECTS

Handy Quartz Crystal Checker by Drew Diamond VK3XU ..... Feb 30
Shorting Stick from an old Flyspray Dispenser by Peter Parker VK6NNN ..... Feb 28
High Voltage Capacitor Checker by Peter O'Connell VK2EMU Mar 31
The Squeakbox by Leigh Harrison VK6WA ..... Mar 10
Three Filters by R Schestavin VK5RC ..... Mar 35
Two Valve Audio Amplifier by Peter Parker VK6NNN ..... Mar 20
Wideband Variable Frequency Audio Oscillator by Lloyd Butler VK5BR ..... Mar 17
Build a Swailer reprinted from TCA ..... Apr 28
Discussion on Mixers by Lloyd Butler VK5BR ..... Apr 16
Tune-up Indicator by Peter Parker VK6NNN ..... Apr 25
Introducing the "Markap" by Ken Kimbertey VK2PY ..... Jun 6
Audio Frequency Generator Counter by Ron Mills VK5XW ..... Jul 15
Brick Cooler David Barneveld VK4BGB ..... Sep 36
Modified Heath Cantenna by David Barneveld VK4BGB ..... Oct 5
Experimental 'Q' Meter by Lloyd Butler VK5BR ..... Nov 14
Simple Alarm by J Heath VK2DVH ..... Dec 10

NOVICE NOTES

Some Practical Tips of VFO Construction ..... Jan 45
A Handy Quartz Crystal Checker ..... Feb 30
Measuring Small Coils & Capacitors with a Dip Meter ..... May 26

POWER SUPPLIES

Mains Power Supply for Battery Operated Receiver by Jack Townsend VK5HT ..... Jan 41
Standby Battery Charging by Mike Groth VK5AMG ..... Jan 16
16 Amp Power Supply by Peter Parker VK6NNN ..... Feb 4
Power Supply Low Loss Full Protection by Roy Hartkopf VK3AOH ..... Mar 23
Separate Batteries by Lindsay Lawless VK3ANJ ..... Jun 13
20 Amp Power Supply by Moorabbin & District Radio Club ..... Aug 4

TECHNICAL ARTICLES

Broadband High Frequency Antennas by Rob Gurr VK5RG .... Jan 8
Mains Power Supply for Battery Operated Receiver by Jack Townsend VK5HT ..... Jan 41
One Valve Regenerative Receiver by Peter Parker VK6NNN ... Jan 28
PEP Revisited by Ron Cook VK3AFW ..... Jan 18
Standby Battery Charging — by Mike Groth VK5AMG ..... Jan 16
Storage Idea for End-Fed Antennas by Peter Parker VK6NNN . Jan 15
Vertical Vee Antenna by Maurie Dewhurst VK5PMD ..... Jan 41
Your Two Metre Yagi — Vertical or Horizontal by George Cranby VK3GI ..... Jan 4
16 Amp Power Supply by Peter Parker VK6NNN ..... Feb 4
Amateur Log Program for the Amstrad CPC612 by Jim Oliver VK7JO ..... Feb 12
Building Blocks Revisited — Part 8 by Harold Hepburn VK3AFQ ..... Feb 6
Fine Tuning for the Early FRG-7 by Alistair Elrick VK4FTL ..... Feb 22
Free-Standing Tilt-Over Mast by Allan Carman VK3AQH ..... Feb 15
Jacket Maker for the Commodore C-64 by Bob Richards VK7NRR ..... Feb 12
Overhauling the TH3 Triband Beam by Desmond Greenham VK3CO ..... Feb 19
Radiation Resistance, Loss Resistance & Antenna Efficiency by Lloyd Butler VK5BR ..... Feb 10

Shorting Stick from an old Flyspray Dispenser by Peter Parker VK6NNN ..... Feb 28
Trim Slim Jim by Errol Chick VK3CG ..... Feb 5
Yagi Design by David Tanner VK3AUU ..... Feb 18
CW Five-Watt, One Valve QRP Transmitter by Peter Parker VK6NNN ..... Mar 29
Delta Yagi — a solution by M Glisson VK2JMG & Barry Gilmour VK2MUZ ..... Mar 6
Dual Speed Controller for the Siemens Model 100 Teleprinter by Morris Odell VK3DOC ..... Mar 21
Eighty Metre, Five Watt QRP Transmitter by Rod Green VK6KRG ..... Mar 13
Eighty metre QRP Transmitter by Peter Parker VK6NNN ..... Mar 37
High Voltage Capacitor Checker by Peter O'Connell VK2EMU Mar 31
L C T — a new transmission system by Peter Cox PA3DX ..... Mar 4
Low Cost Antenna Construction Idea by Peter Parker VK6NNN ..... Mar 26
Power Supply Low Loss Full Protection by Roy Hartkopf VK3AOH ..... Mar 23
Simple IC22S Channel Layout by Gil Griffith VK3CQ ..... Mar 9
Simple Six-metre Vertical by Peter O'Connell VK2EMU ..... Mar 31
The Squeakbox by Leigh Harrison VK6WA ..... Mar 10
Three Filters by R Schestavin VK5RC ..... Mar 35
Topical Technicalities — Coupling Networks by Lindsay Lawless VK3ANJ ..... Mar 30
Tractor Mobile Antenna by Robert Pavan VK4FUE ..... Mar 27
Two Valve Audio Amplifier by Peter Parker VK6NNN ..... Mar 20
Video Recorder TVI Case History by Karl Saville VK5AHK ..... Mar 34
Wideband Variable Frequency Audio Oscillator by Lloyd Butler VK5BR ..... Mar 17
Antenna Calculation Program in Basic by Dean Probert VK5LB ..... Apr 6
Build a Swailer reprinted from TCA ..... Apr 28
Clearing Branches & Leaves by Herb Unger VK2UJ ..... Apr 37
Discussion on Mixers by Lloyd Butler VK5BR ..... Apr 16
Memory Expansion for the VZ200/VZ300 Computers by Lloyd Butler VK5BR ..... Apr 11
One plus One equals Disaster by Roy Hartkopf VK3AOH ..... Apr 10
Screw Insertion by Herb Unger VK2UJ ..... Apr 40
Time Division Multiplexing the 1920s way The Bull Transmitter reprinted from the Harmsworth Wireless Encyclopedia ..... Apr 26
Topical Technicalities — Technical Names by Lindsay Lawless VK3ANJ ..... Apr 31
Tune-up Indicator by Peter Parker VK6NNN ..... Apr 25
An ATU, Antenna & Operating by Peter Parker VK6NNN ..... May 17
Clothesline Monobander by Ron Bell VK3MB ..... May 25
Conversion of the AWA 25M to Six-Metres FM by Ian Keenan VK3AYK ..... May 12
Conversion of the Philips 1680 to Six-Metres FM by Ian Keenan VK3AYK ..... May 14
More on Tilting the Yagi by Harold French VK3ZRM ..... May 19
Rationalising RMS by Don Law VK2AIL ..... May 19
Tank Circuits & Output Coupling by Lloyd Butler VK5BR ..... May 8
To Multiplex or Perplex by Jack Heath VK2DVH ..... May 6
Topical Technicalities — Effective Length of an Aerial by Lindsay Lawless VK3ANJ ..... May 5
Topical Technicalities — Response by Lindsay Lawless VK3ANJ ..... May 13
Grown Halfwave Dipole by Steve Jenkinson VK3YH ..... Jun 12
Holding Small Nuts in Awkward Places by Tom Laidler VK5TL Jun 34
Introducing the "Markap" by Ken Kimberley VK2PY ..... Jun 6
No Fuss Battery Holder by J Stewart VK2ADI ..... Jun 12
Raising those Wire Sky-Hooks by Peter Robinson VK4DFR .... Jun 26
Topical Technicalities — Loudspeakers, etc by Lindsay Lawless VK3ANJ ..... Jun 19
Topical Technicalities — Separate Batteries by Lindsay Lawless VK3ANJ ..... Jun 13
Audio Frequency Generator Counter by Ron Mills VK5XW ..... Jul 15
Mast for Restricted Area by Leo Weller VK3YX ..... Jul 8
Topical Technicalities — A Different Slant by Lindsay Lawless VK3ANJ ..... Jul 25
VHF Modem for RTTY, AMTOR & Packet by Ron Mills VK5XW ..... Jul 13
20 Amp Power Supply by Moorabbin & District Radio Club ..... Aug 4
Adjustable Guy Lengths for Masts by Peter Brand VK3BPB .... Aug 11
FL-2100B & FL-2100Z Working with Solid-State Transceivers by Ron Mills VK5XW ..... Aug 23
Let's Remember our Basics by Geoff Taylor VK5TY ..... Aug 33
Measurement of Input/Output Impedance by Ken Kimberley VK2PY ..... Aug 24
RF Impedance Matching using Ferrite Toroidal Cores — Part 1 Transmission Line Transformers by Stephen Bushell VK3HK .. Aug 21
Siemens M100 Teleprinter 100 Volt 50 MA Power Supply & TTL Interface by Ron Mills VK5XW ..... Aug 14
Topical Technicalities — Key Clicks by Lindsay Lawless VK3ANJ ..... Aug 20
Two Metre Propagation & Temperature Inversion by John Byrne VK3DNK ..... Aug 8
Brick Cooler David Barneveld VK4BGB ..... Sep 36
Discussion on Open Wire Feeders & Balanced Output Antenna Matchers by Dean Probert VK5LB ..... Sep 27
Oh No, Not Another Log-Keeping Program! by Kevin Feltham VK3ANY ..... Sep 4
One Valve Regenerative Receiver by Peter Parker VK6BWI .... Sep 30
Remote Control Antenna Switching System by Bill Duke VK2WD ..... Sep 26
RF Impedance Matching using Ferrite Toroidal Cores by Stephen Bushell VK3HK ..... Sep 14
Topical Technicalities — Telecommunications by Lindsay Lawless VK3ANJ ..... Sep 35
A Beam for Two Metre Fox-hunting by Greg Williams VK3VT .. Oct 10
Modified Heath Cantenna by David Barneveld VK4BGB ..... Oct 5
Coil Design Made Easy by Arthur Solomon VK3LJ ..... Nov 4
Capacitively Loaded Dipole Antenna — Some New Findings by Dick Turrin W2IMU ..... Nov 8
Digital Display Drop-out in TS-530/TS-830 Transceivers by Ron Tulloch VK4BF ..... Dec 19
Electromagnetic Compatibility — make your system comfortable by Fred Rode VK3AFR ..... Nov 23
Experimental 'Q' Meter by Lloyd Butler VK5BR ..... Nov 14
Not Another RD Contest Program! by Terry Neumann VK5ATN ..... Nov 6
RF Impedance Matching Using Ferrite Toroidal Cores Part 3: Conventional Transformers by Stephen Bushell VK3HK ..... Nov 18
"22" Special by Ken Kimberley VK2PY ..... Dec 11
Air Cored Coil Calculation Program in GW Basic by Keith Angrave VK3BVK ..... Dec 24
Hints & Kinks — Kenwood TS-530S Transceiver by Con Murphy VK6PM ..... Dec 18
Receiver Large Signal Performance by John Day VK3ZJF ..... Dec 20
Reprinting the RD Log at a Later Stage by Terry Neumann VK5ATN ..... Dec 30
RF Impedance Matching Using Ferrite Toroidal Cores Part 4: Construction & Testing by Stephen Bushell VK3HK ..... Dec 26
Simple Alarm by J Heath VK2DVH ..... Dec 10
Topical Technicalities by Lindsay Lawless VK3ANJ ..... Dec 31
Triband Delta Loop Antenna by Bob Hancock VK5AFZ ..... Dec 23

TELETYPE

Dual Speed Controller for the Siemens Model 100 Teleprinter Morris Odell VK3DOC ..... Mar 21
VHF Modem for RTTY, AMTOR & Packet by Ron Mills VK5XW ..... Jul 13
Siemens M100 Teleprinter 100 Volt 50 MA Power Supply & TTL Interface by Ron Mills VK5XW ..... Aug 14

TRANSCEIVERS, TRANSMITTERS & RECEIVERS

One Valve Regenerative Receiver by Peter Parker VK6NNN ... Jan 28
Fine Tuning for the Early FRG-7 by Alistair Elrick VK4FTL ..... Jan 22
CW Five-Watt, One Valve QRP Transmitter by Peter Parker VK6NNN ..... Mar 29
Eighty Metre, Five Watt QRP Transmitter by Rod Green VK6KRG ..... Mar 13
A 80 metre QRP Transmitter by Peter Parker VK6NNN ..... Mar 37
Simple IC22S Channel Layout by Gil Griffith VK3CQ ..... Mar 9
Conversion of the AWA 25M to Six-Metres FM by Ian Keenan VK3AYK ..... May 12
Conversion of the Philips 1680 to Six-Metres FM by Ian Keenan VK3AYK ..... May 14
FL-2100B & FL-2100Z Working with Solid-State Transceivers by Ron Mills VK5XW ..... Aug 23
One Valve Regenerative Receiver by Peter Parker VK6BWI .... Sep 30
Hints & Kinks — Kenwood TS-530S Transceiver by Con Murphy VK6PM ..... Dec 18
Receiver Large Signal Performance by John Day VK3ZJF ..... Dec 20

TRY THIS

Simple IC22S Channel Layout by Gil Griffith VK3CQ ..... Mar 9
Clearing Branches & Leaves by Herb Unger VK2UJ ..... Apr 37
Screw Insertion by Herb Unger VK2UJ ..... Apr 40
Grown Halfwave Dipole ..... Jun 12
Holding Small Nuts in Awkward Places ..... Jun 34
No Fuss Battery Holder ..... Jun 12
Adjustable Guy Lengths for Masts by Peter Brand VK3BPB .... Aug 11
Digital Display Drop-out in TS-530/TS-830 Transceivers by Ron Tulloch VK4BF ..... Dec 19
Simple Alarm by J Heath VK2DVH ..... Dec 10

WICEN

Can you make it great in '88? ..... Jan 56
The Smallest WICEN Exercise? ..... Feb 51
Bungonia Cave Rescue ..... May 52
Castrol World Rally ..... Jun 53
WICEN Victoria moves ahead ..... Aug 41
Police Chief Praises WICEN ..... Oct 47

1988 INDEX OF ARTICLES alphabetical

ANTENNAS

Antenna Calculation Program in Basic by Dean Probert VK5LB ..... Apr 6
Antenna — A Low Cost Construction Idea by Peter Parker VK6NNN ..... Mar 26
Antenna Switching System - Remote Control by Bill Duke VK2WD ..... Sep 26
Antennas - Broadband High Frequency by Rob Gurr VK5RG .. Jan 8
Antennas — End-Fed, A Storage Idea by Peter Parker VK6NNN ..... Jan 15
ATU, Antenna & Operating by Peter Parker VK6NNN ..... May 17
Beam for Two Metre Fox-hunting — A by Greg Williams VK3VT ..... Oct 10
Capacitively Loaded Dipole Antenna — Some New Findings by Dick Turrin W2IMU ..... Nov 8
Clothesline Monobander by Ron Bell VK3MB ..... May 25
Delta Yagi — A solution by M Glisson VK2JMG & Barry Gilmour VK2MUZ ..... Mar 6
Mast — Free-Standing Tilt-Over Type by Allan Carman VK3AQH ..... Feb 15
Mast for Restricted Areas by Leo Weller VK3YX ..... Jul 8
Mobile Antenna for a Tractor by Robert Pavan VK4FUE ..... Mar 27
Radiation Resistance, Loss Resistance & Antenna Efficiency by Lloyd Butler VK5BR ..... Feb 10
Six-metre Vertical — Simple by Peter O'Connell VK2EMU ..... Mar 31
TH3 Triband Beam — Overhauling by Desmond Greenham VK3CO ..... Feb 19
Tilting the Yagi — An Update by Harold French VK3ZRM ..... May 19
Triband Delta Loop Antenna by Bob Hancock VK5AFZ ..... Dec 23
Trim Slim Jim by Errol Chick VK3CG ..... Feb 5
Two Metre Yagi — Vertical or Horizontal by George Cranby VK3GI ..... Jan 4
Vertical Vee Antenna by Maurie Dewhurst VK5PMD ..... Jan 41
Wire Feeders & Balanced Output Antenna Matchers - A Discussion by Dean Probert VK5LB ..... Sep 27
Wire Sky-Hooks — Raising by Peter Robinson VK4DFR ..... Jun 26
Yagi Design by David Tanner VK3AUU ..... Feb 18

AWARDS

Armada 400 ..... May 43
Australian Award Updates ..... Jul 49
Australian Award Updates ..... Aug 49
Australian Bicentenary Certificate ..... Jun 38
First Settlers Award ..... Apr 42
Golden Antenna Award ..... May 43
HMAS Sydney Award ..... Sep 44
KARL Award Program ..... May 42
Lion City Award ..... Oct 31
Minnet Award ..... May 42
OAA 1000 Odense Anniversary Award ..... Aug 49
Parramatta Historical Site Award ..... Oct 31
Polar Bridge Diploma ..... May 43
Publications Committee Awards for 1987 ..... Feb 26
Requiem Award ..... Jan 53
Ron Wilkinson Achievement Award ..... Apr 37
Rotterdam Award ..... Aug 49
Scandinavian CW Activity Group ..... Mar 57
Swedish Field ..... Mar 57
Ten-Ten 28 Chapter ..... Sep 44
Vanuatu ARS Award ..... Jun 38
VK2 Awards 1988 ..... Jul 49
VK2 Awards ..... Sep 42
Worked Berlin West (WBWW) ..... Mar 57
YARC Award ..... Jun 38

BOOK REVIEWS

ARRL 1988 Handbook for the Radio Amateur ..... Jun 43
Beam Antenna Handbook ..... Jul 44
Better Radio/TV Reception ..... May 41
Halcyon Days ..... Jan 49
Novice Study Guide ..... May 41
Radio Theory Handbook for Amateur Operators ..... Aug 28

COMPUTERS

Air Cored Coil Calculation Program in GW Basic by Keith Angrave VK3BVK ..... Dec 24
Coil Design Made Easy by Arthur Solomon VK3LJ ..... Nov 4
Jacket Maker for the Commodore C-64 by Bob Richards VK7NRR ..... Feb 12
Log Program for the Amstrad CPC612 by Jim Oliver VK7JO .... Feb 12
Log Program — Not Another RD Contest Log by Terry Neumann VK5ATN ..... Nov 6
Log Program — Oh No, Not Another! by Kevin Feltham VK3ANY ..... Sep 4
Memory Expansion for the VZ200/VZ300 Computers by Lloyd Butler VK5BR ..... May 11
Reprinting the RD Log at a Later Stage by Terry Neumann VK5ATN ..... Dec 30

CONTESTS

12th West Australian Annual 3.5 MHz CW & SSB Contests ..... Aug 34
73 Magazine World SSB Championship Contests ..... Jan 50
All Asian DX Contest ..... Jun 36
ANARTS RTTY Contest ..... Jun 35
BARTG Spring RTTY Contest Rules ..... Feb 43
CQ M Contest 1988 Rules ..... Apr 43
CQ WW VHF WPX Contest ..... Jun 36
CW & Phone Sprints ..... Jun 37
European DX Contents 1988 Rules ..... Jul 42
First Annual "59 Plauqe" Japan International DX Contest ..... Aug 35
HF Contest Championship 1987 Results ..... Nov 41
Jack Files Sunshine State Memorial Contest 1988 Results ..... Nov 42
John Moyle Memorial Field Day Contest Rules 1988 ..... Feb 42
John Moyle Memorial Field Day 1988 Results ..... Oct 22
Keyman's CLub of Japan Single Operator CW Contest 1988 Rules ..... Jul 43
National Sprint 1988 Results ..... Oct 25
National Sprint name change ..... Nov 41
National VHF/UHF Field Day Rules ..... Dec 38
OK DX Contest 1988 Rules ..... Sep 38
RD Contest 1987 Results ..... Mar 51
Remembrance Day Contest 1988 Rules ..... Jul 41
Ross Hull Memorial Contest 1987 Results ..... Apr 43
Ross Hull Memorial Contest 1989 Rules ..... Nov 40
RSGB 21 MHz Contests ..... Aug 36
Sangster Shield Contest ..... May 40
Scandinavian Activity Contest 1988 Rules ..... Sep 38
Sunshine State Jack Files Memorial Contest Rules 1988 ..... Jul 43
UBA Contest ..... Feb 43
VK Novice 1988 Rules ..... May 38
VK/ZL/O DX Contest 1988 Rules ..... Aug 34
VK/ZL/O DX Contest 1987 Results ..... Sep 39
WIA Novice Contest 1988 Results ..... Nov 40
World Telecommunications Day Contest 1988 Rules ..... May 38
World Telecommunications Day Contest ..... Jun 35
YL/OM Summer SSB Sprint ..... Aug 34

FEATURE ARTICLES

10 GHz Provisional Band Plan ..... May 32
52nd Federal Convention Pictorial Report ..... Jun 32
52nd Federal Convention Report ..... Jun 3
A Boy & His Radio ..... Nov 11
Appointment of General Manager/Secretary ..... Nov 3
ARRL DXCC Revised Rules ..... Mar 38
Australia-wide Appeal for QSL Cards ..... Feb 32
Beacons - International ..... May 28
Boiling Water — RF-Style by David Barneveld VK4BGB ..... Mar 25
Broadcast with a Difference by John Taylor VK3AJT ..... Oct 19
Brochure DOC71 Essential for all Radio Amateurs by Jim Linton VK3PC ..... Jun 22
Bruce Reginald Mann — A Life Story of an Old Timer by Jim Linton VK3PC ..... May 3
Bug Hunt by Gil Sones VK3AUI ..... Mar 5
Christmas Eve — A sad farewell ..... Feb 41
Clandestine SWLing — from the other side of the Fence by Reg Glanville VK2ELG ..... Feb 24
Darwin Radio Club's 21st Birthday Celebration by Doug McArthur VK3UM (ex-VK8KK) ..... Feb 33

Darwin Radio Club's 21st Birthday Celebration — a pictorial view by Doug McArthur VK3UM (ex VK8KK) ..... Mar 32
DXCC Countries by Ken McLachlan VK3AH ..... May 20
Examination Devolution Update by Jim Linton VK3PC ..... Feb 26
Examination Devolution Update by Jim Linton VK3PC ..... Apr 36
Examination Devolvement — latest progress report by Jim Linton VK3PC ..... Jun 31
Examination Papers — Old ..... Jan 35
Examination Papers — Old ..... Feb 14 & 35
Examination Papers — Old ..... Mar 45
Federal Convention Agenda Items ..... Apr 32
Federal Convention Agenda Motions for 1988 ..... Feb 27
Fox Hunting—An Introduction by Greg Williams VK3VT ..... Sep 10
Gift Honours War Casualties ..... Dec 36
Going Portable by Dmitri Perno VK4BDP ..... Jan 38
Hinch at Seven Damages Reputation of Amateur Radio Service ..... Dec 40
Hurricane Gilbert Disaster by Jim Linton VK3PC ..... Nov 22
Immunity — the sword of Damocles ..... Jul 27
Intelsat ..... Aug 12
International Amateur Radio Network by Sam Voron VK2BVS . Nov 17
Introducing the New Minister ..... Oct 15
ITU Conferences — and you ..... Oct 4
Jamboree on the Air by Bob Demkiw VK2ENU ..... Sep 12
JOTA by Satellite by Peter Hughes VK6HU ..... Mar 38
Longest Serving WIA Federal President by Jim Linton VK3PC Jun 30
Medical Emergency in Papua New Guinea by Ally & Bob Lynch P29RL ..... Jul 10
Military Radio Collecting — An interview with Colin MacKinnon VK2DYM ..... Jan 21
Miniaturisation Brings Change Reprinted from *Elements* ..... Dec 35
Miracle of the Silver Screen — The, by Ken McLachlan VK3AH ..... Sep 18
Mobile HF Radio at the Woomera Range by Lloyd Butler VK5BR ..... Jan 22
Mount Skene Revisited by William Magnusson VK3JT ..... Dec 34
Murray Bridge Story by Lloyd Butler VK5BR ..... Jul 18
Old Timer Returns from a World of Silence ..... Oct 26
Open Letter from Federal Executive Member ..... Nov 29
Opening of Parliament House by Dan Steiner VK1ST ..... Jul 4
Operation Update by Ken McLachlan VK3AH ..... Nov 21
Power Line Carrier by Gil Sones VK3AUI ..... Apr 4
Remembrance Day Contest Opening Address ..... Sep 7
Report on the Operation of Packet Radio Bulletin Boards in the Amateur Radio Service ..... Sep 8
Report to Executive on Special Call Signs ..... Aug 10
RFI = Nuisance? — A look at the legalities ..... Sep 13
Royal Australian Air Force Ex-Signals Group by Peter Alexander VK2PA ..... Aug 26
RSGB 75th Anniversary ..... Oct 5
RSGB 75th Anniversary ..... Nov 25
Secondhand Equipment Guide by Jim Linton VK3PC ..... Feb 22
Skitrek — Reprinted from QST Canada ..... Nov 20
Solar Activity and the Rise of the New Solar Cycle by Richard Thompson ..... Jan 36
Stoic Wireless Operator Continues to Tap Out Messages compiled by Bett McLachlan ..... Sep 25
Stolen Equipment Register ..... Oct 58
Story of AX2SWJ by Ted Brien VK2PTB & Gerry McCulloch VK2BMZ ..... Jun 14
Students Today — Space Engineers Tomorrow by Paul Barber VK3DBP ..... Dec 37
Three Weeks in August by Meg Box VK5AOV ..... Dec 33
Swedish Student at Geelong ..... Nov 44
Tears and Joy of owning a FT-102 by C H Castle VK5KL ..... Mar 24
Third Party Traffic ..... Jul 28
Three Amateurs go to the Top by Keith Scott VK3SS ..... Feb 20
Three Aussies at Dayton Hamvention by Jim Linton VK3PC .... Aug 18
Tips for Faster Copying with CW by Dean Probert VK5LB ..... May 18
Treasurer's Report ..... Aug 2
Two Metres for the Newcomer by Ron Cook VK3AFW ..... Jul 5
Unattended Residence & Your Holidays by Ken McLachlan VK3AH ..... Dec 6
VK6 Morse Workshop a Big Hit again by Andrew Baumanis VK6WB ..... Sep 16
WIA VHF/UHF Distance Records ..... Jan 33
West Australia to South Australia 2 Metre Path by John Hawkins VK6HQ ..... Dec 16
WIA Beacon Data Base ..... Jan 33
WIA Divisional Broadcasts ..... Feb 34
WIA Management is Democratic by Ron Henderson VK1RH & Peter Gamble VK3YRP ..... Feb 3
WIA Repeater Data Base ..... Jan 31
WIA Report of the Seventh Region Three Regional Conference ..... Dec 4
WIA Video Tape Program Title Listing by John Ingham VK5KG ..... Mar 42
WIA Videotape Program Title Listing ..... Nov 38

ELECTROMAGNETIC COMPATIBILITY

A Law is only as Good as its Policing is Effective! ..... Jul 50
Breakthrough ..... Mar 54
Buying an Appliance? You may get RFI you didn't bargain for! Jan 54
Make your system comfortable by Fred Rode VK3AFR ..... Nov 23
Radiation Immunity of VCRs ..... Jun 46
The Ferrite Core Choke Solved the EMC Problems ..... Oct 41
The VE3SR Case ..... Nov 46
Trouble with Hi Fi, TV & Equipment? ..... Aug 47
Trouble with Hi Fi, TV & Equipment? ..... Sep 46
"Were you on your radio last night?" — Part 1 ..... Apr 50
"Were you on your radio last night?" — Part 2 ..... May 48
What can we learn from an improvised Jacky Test? ..... Feb 46

EQUIPMENT REVIEWS

Alinco Two Metre Hand-Held FM Transceiver ..... Oct 17
Icom IC-2GAT & IC-4GAT Transceivers ..... Nov 26
Icom IC-32AT Dual Band FM Transceiver ..... Oct 18
Icom IC-228H 2m Transceiver ..... Jul 32
Icom IC-781 All-band HF Transceiver ..... Jul 33
Kenwood TM-421A 70cm UHF FM Transceiver ..... Jul 30
Kenwood TM-721A Dual Band FM Transceiver ..... Jul 30
Kenwood TS-140 & TS-680 Transceivers ..... Oct 12

FUTURE OF AMATEUR RADIO

A Novice Viewpoint by Peter Parker VK6NNN ..... May 23
As seen by a Novice-to-be by R A Fenton L20530 ..... Aug 16
Options by the Future of Amateur Radio Working Party ..... Jan 42
Paper 6 — Conclusions & Recommendations ..... Apr 30
Review after Federal Convention ..... Jul 26
Summary of "Novices on 2m" Surveys conducted by Divisions ..... Feb 29
Synopsis of Members Comments ..... Mar 40

MINI-PROJECTS

Audio Frequency Generator Counter by Ron Mills VK5XW ..... Jul 15
Brick Cooler David Barneveld VK4BGB ..... Sep 36
Build a Swailer reprinted from TCA ..... Apr 28
Discussion on Mixers by Lloyd Butler VK5BR ..... Apr 16
Experimental 'Q' Meter by Lloyd Butler VK5BR ..... Nov 14
Handy Quartz Crystal Checker by Drew Diamond VK3XU ..... Feb 30
High Voltage Capacitor Checker by Peter O'Connell VK2EMU Mar 31
Introducing the "Markap" by Ken Kimberley VK2PY ..... Jun 6
Mast for Restricted Area by Leo Weller VK3YX ..... Jul 8
Modified Heath Cantenna by David Barneveld VK4BGB ..... Oct 5
Shorting Stick from an old Flyspray Dispenser by Peter Parker VK6NNN ..... Feb 28
Simple Alarm by J Heath VK2DVH ..... Dec 10
Squeakbox by Leigh Harrison VK6WA ..... Mar 10
Three Filters by R Schestavin VK5RC ..... Mar 35
Tune-up Indicator by Peter Parker VK6NNN ..... Apr 25
Two Valve Audio Amplifier by Peter Parker VK6NNN ..... Mar 20
Wideband Variable Frequency Audio Oscillator by Lloyd Butler VK5BR ..... Mar 17

NOVICE NOTES

A Handy Quartz Crystal Checker ..... Feb 30
Measuring Small Coils & Capacitors with a Dip Meter ..... May 26
Some Practical Tips of VFO Construction ..... Jan 45

POWER SUPPLIES

16 Amp Power Supply by Peter Parker VK6NNN ..... Feb 4
20 Amp Power Supply by Moorabbin & District Radio Club ..... Aug 4
Mains Power Supply for Battery Operated Receiver by Jack Townsend VK5HT ..... Jan 41
Power Supply Low Loss Full Protection by Roy Hartkopf VK3AOH ..... Mar 23
Separate Batteries by Lindsay Lawless VK3ANJ ..... Jun 13
Standby Battery Charging by Mike Groth VK5AMG ..... Jan 16

TECHNICAL ARTICLES

16 Amp Power Supply by Peter Parker VK6NNN ..... Feb 4
20 Amp Power Supply by Moorabbin & District Radio Club ..... Aug 4
"22" Special by Ken Kimberley VK2PY ..... Dec 11
Adjustable Guy Lengths for Masts by Peter Brand VK3BPB .... Aug 11
Air Cored Coil Calculation Program in GW Basic by Keith Angrave VK3BVK ..... Dec 24
Amateur Log Program for the Amstrad CPC612 by Jim Oliver VK7JO ..... Feb 12
Antenna — Low Cost Construction Idea by Peter Parker VK6NNN ..... Mar 26
Antenna Calculation Program in Basic by Dean Probert VK5LB ..... Apr 6
ATU, Antenna & Operating by Peter Parker VK6NNN ..... May 17
Beam for Two Metre Fox-hunting by Greg Williams VK3VT ..... Oct 10
Brick Cooler David Barneveld VK4BGB ..... Sep 36
Broadband High Frequency Antennas by Rob Gurr VK5RG .... Jan 8
Build a Swailer reprinted from TCA ..... Apr 28
Building Blocks Revisited — Part 8 by Harold Hepburn VK3AFQ ..... Feb 6

Capacitively Loaded Dipole Antenna — Some New Findings by Dick Turrin W2IMU ..... Nov 8
Clearing Branches & Leaves by Herb Unger VK2UJ ..... Apr 37
Clothesline Monobander by Ron Bell VK3MB ..... May 25
Conversion of the AWA 25M to Six-Metres FM by Ian Keenan VK3AYK ..... May 12
Conversion of the Philips 1680 to Six-Metres FM by Ian Keenan VK3AYK ..... May 14
Coil Design Made Easy by Arthur Solomon VK3LJ ..... Nov 4
CW Five-Watt, One Valve QRP Transmitter by Peter Parker VK6NNN ..... Mar 29
Delta Yagi — a solution by M Glisson VK2JMG & Barry Gilmour VK2MUZ ..... Mar 6
Digital Display Drop-out in TS-530/TS-830 Transceivers by Ron Tulloch VK4BF ..... Dec 19
Electromagnetic Compatibility — make your system comfortable by Fred Rode VK3AFR ..... Nov 23
Experimental 'Q' Meter by Lloyd Butler VK5BR ..... Nov 14
Discussion on Mixers by Lloyd Butler VK5BR ..... Apr 16
Discussion on Open Wire Feeders & Balanced Output Antenna Matchers by Dean Probert VK5LB ..... Sep 27
Dual Speed Controller for the Siemens Model 100 Teleprinter by Morris Odell VK3DOC ..... Mar 21
Eighty Metre, Five Watt QRP Transmitter by Rod Green VK6KRG ..... Mar 13
Eighty metre QRP Transmitter by Peter Parker VK6NNN ..... Mar 37
Fine Tuning for the Early FRG-7 by Alistair Elrick VK4FTL ..... Feb 22
FL-2100B & FL-2100Z Working with Solid-State Transceivers by Ron Mills VK5XW ..... Aug 23
Free-Standing Tilt-Over Mast by Allan Carman VK3AQH ..... Feb 15
Grown Halfwave Dipole by Steve Jenkinson VK3YH ..... Jun 12
High Voltage Capacitor Checker by Peter O'Connell VK2EMU Mar 31
Hints & Kinks — Kenwood TS-530S Transceiver by Con Murphy VK6PM ..... Dec 18
Holding Small Nuts in Awkward Places by Tom Laidler VK5TL Jun 34
Introducing the "Markap" by Ken Kimberley VK2PY ..... Jun 6
Jacket Maker for the Commodore C-64 by Bob Richards VK7NRR ..... Feb 12
L C T — a new transmission system by Peter Cox PA3DX ..... Mar 4
Let's Remember our Basics by Geoff Taylor VK5TY ..... Aug 33
Mains Power Supply for Battery Operated Receiver by Jack Townsend VK5HT ..... Jan 41
Measurement of Input/Output Impedance by Ken Kimberley VK2PY ..... Aug 24
Memory Expansion for the VZ200/VZ300 Computers by Lloyd Butler VK5BR ..... Apr 11
Mobile Tractor Antenna by Robert Pavan VK4FUE ..... Mar 27
Modified Heath Cantenna by David Bameveld VK4BGB ..... Oct 5
More on Tilting the Yagi by Harold French VK3ZRM ..... May 19
Multiplex or Perplex by Jack Heath VK2DVH ..... May 6
No Fuss Battery Holder by J Stewart VK2ADI ..... Jun 12
Not Another Log-Keeping Program! by Kevin Feltham VK3ANY ..... Sep 4
One plus One equals Disaster by Roy Hartkopf VK3AOH ..... Apr 10
One Valve Regenerative Receiver by Peter Parker VK6NNN ... Jan 28
Overhauling the TH3 Triband Beam by Desmond Greenham VK3CO ..... Feb 19
One Valve Regenerative Receiver by Peter Parker VK6BWI .... Sep 30
PEP Revisited by Ron Cook VK3AFW ..... Jan 18
Power Supply Low Loss Full Protection by Roy Hartkopf VK3AOH ..... Mar 23
Radiation Resistance, Loss Resistance & Antenna Efficiency by Lloyd Butler VK5BR ..... Feb 10
Raising those Wire Sky-Hooks by Peter Robinson VK4DFR .... Jun 26
RD Contest Program, Not Another ! by Terry Neumann VK5ATN ..... Nov 6
Remote Control Antenna Switching System by Bill Duke VK2WD ..... Sep 26
Rationalising RMS by Don Law VK2AIL ..... May 19
Receiver Large Signal Performance by John Day VK3ZJF ..... Dec 20
Reprinting the RD Log at a Later Stage by Terry Neumann VK5ATN ..... Dec 30
RF Impedance Matching using Ferrite Toroidal Cores — Part 1: Transmission Line Transformers by Stephen Bushell VK3HK ..... Aug 21
RF Impedance Matching using Ferrite Toroidal Cores — Part 2 by Stephen Bushell VK3HK ..... Sep 14
RF Impedance Matching Using Ferrite Toroidal Cores — Part 3: Conventional Transformers by Stephen Bushell VK3HK ..... Nov 18
RF impedance Matching Using Ferrite Toroidal Cores — Part 4: Construction & Testing by Stephen Bushell VK3HK ..... Dec 26
Screw Insertion by Herb Unger VK2UJ ..... Apr 40
Shorting Stick from an old Flyspray Dispenser by Peter Parker VK8NNN ..... Feb 28
Siemens M100 Teleprinter 100 Volt 50 MA Power Supply & TTL Interface by Ron Mills VK5XW ..... Aug 14
Simple Alarm by J Heath VK2DVH ..... Dec 10
Six-metre Vertical by Peter O'Connell VK2EMU ..... Mar 31
Standby Battery Charging — by Mike Groth VK5AMG ..... Jan 16
Storage Idea for End-Fed Antennas by Peter Parker VK6NNN . Jan 15
Squeakbox — The by Leigh Harrison VK6WA ..... Mar 10
Tank Circuits & Output Coupling by Lloyd Butler VK5BR ..... May 8
Three Filters by R Schestavin VK5RC ..... Mar 35
Time Division Multiplexing the 1920s way The Bull Transmitter reprinted from the Harmsworth Wireless Encyclopedia ..... Apr 26
Topical Technicalities — Coupling Networks by Lindsay Lawless VK3ANJ ..... Mar 30
Topical Technicalities by Lindsay Lawless VK3ANJ ..... Dec 31
Topical Technicalities — A Different Slant by Lindsay Lawless VK3ANJ ..... Jul 25
Topical Technicalities — Effective Length of an Aerial by Lindsay Lawless VK3ANJ ..... May 5
Topical Technicalities — Key Clicks by Lindsay Lawless VK3ANJ ..... Aug 20
Topical Technicalities — Loudspeakers, etc by Lindsay Lawless VK3ANJ ..... Jun 19
Topical Technicalities — Response by Lindsay Lawless VK3ANJ ..... May 13
Topical Technicalities — Separate Batteries by Lindsay Lawless VK3ANJ ..... Jun 13
Topical Technicalities — Technical Names by Lindsay Lawless VK3ANJ ..... Apr 31
Topical Technicalities — Telecommunications by Lindsay Lawless VK3ANJ ..... Sep 35
Triband Delta Loop Antenna by Bob Hancock VK5AFZ ..... Dec 23
Trim Slim Jim by Errol Chick VK3CG ..... Feb 5
Tune-up Indicator by Peter Parker VK6NNN ..... Apr 25
Two Metre Propagation & Temperature Inversion by John Byrne VK3DNK ..... Aug 8
Two Metre Yagi — Vertical or Horizontal by George Cranby VK3GI ..... Jan 4
Two Valve Audio Amplifier by Peter Parker VK6NNN ..... Mar 20
Vertical Vee Antenna by Maurie Dewhurst VK5PMD ..... Jan 41
VHF Modem for RTTY, AMTOR & Packet by Ron Mills VK5XW ..... Jul 13
Video Recorder TVI Case History by Karl Saville VK5AHK ..... Mar 34
Wideband Variable Frequency Audio Oscillator by Lloyd Butler VK5BR ..... Mar 17
Yagi Design by David Tanner VK3AUU ..... Feb 18

TELETYPE

Dual Speed Controller for the Siemens Model 100 Teleprinter Morris Odell VK3DOC ..... Mar 21
Siemens M100 Teleprinter 100 Volt 50 MA Power Supply & TTL Interface by Ron Mills VK5XW ..... Aug 14
VHF Modem for RTTY, AMTOR & Packet by Ron Mills VK5XW ..... Jul 13

TRANSCEIVERS, TRANSMITTERS & RECEIVERS

A 80 metre QRP Transmitter by Peter Parker VK6NNN ..... Mar 37
Conversion of the AWA 25M to Six-Metres FM by Ian Keenan VK3AYK ..... May 12
Conversion of the Philips 1680 to Six-Metres FM by Ian Keenan VK3AYK ..... May 14
CW Five-Watt, One Valve QRP Transmitter by Peter Parker VK6NNN ..... Mar 29
Eighty Metre, Five Watt QRP Transmitter by Rod Green VK6KRG ..... Mar 13
Fine Tuning for the Early FRG-7 by Alistair Elrick VK4FTL ..... Jan 22
FL-2100B & FL-2100Z Working with Solid-State Transceivers by Ron Mills VK5XW ..... Aug 23
Hints & Kinks — Kenwood TS-530S Transceiver by Con Murphy VK6PM ..... Dec 18
One Valve Regenerative Receiver by Peter Parker VK6NNN ... Jan 28
Simple IC22S Channel Layout by Gil Griffith VK3CQ ..... Mar 9
One Valve Regenerative Receiver by Peter Parker VK6BWI .... Sep 30
Receiver Large Signal Performance by John Day VK3ZJF ..... Dec 20

TRY THIS

Adjustable Guy Lengths for Masts by Peter Brand VK3BPB .... Aug 11
Clearing Branches & Leaves by Herb Unger VK2UJ ..... Apr 37
Digital Display Drop out in TS-530/TS-830 Transceivers by Ron Tulloch VK4BF ..... Dec 19
Grown Halfwave Dipole ..... Jun 12
Holding Small Nuts in Awkward Places ..... Jun 34
No Fuss Battery Holder ..... Jun 12
Simple Alarm by J Heath VK2DVH ..... Dec 10
Simple IC22S Channel Layout by Gil Griffith VK3CQ ..... Mar 9
Screw Insertion by Herb Unger VK2UJ ..... Apr 40

WICEN

Bungonia Cave Rescue ..... May 52
Can you make it great in '88? ..... Jan 56
Castrol World Rally ..... Jun 53
The Smallest WICEN Exercise? ..... Feb 51
Police Chief Praises WICEN ..... Oct 47
WICEN Victoria moves ahead ..... Aug 41

TOPICAL TECHNICALITIES

Lindsay Lawless VK3ANJ
PO Box 112, Lakes Entrance, Vic. 3909

The secret of good and efficient 'digital communication' is economy of digits. Digital communication is communication with messages enciphered, then encoded with electrical impulses representing the numbers of the cipher. That total process is usually referred to as encoding.

The message originator encodes information with the numbers (digits) of a selected number system and supplies the receiver with a decoder to retrieve the original information. Between the information encoder and the information decoder there may be additional processes necessary to translate the code to electrical signals and to modulate and demodulate a 'bearer'.

Information can be discrete like the characters of a typewriter keyboard or continuous like speech waveforms and analogue meter readings. It is necessary to convert continuous information to discrete form by "sampling' and 'quantising'; which simply means to sample the information at intervals, measure the sample magnitude and express that as a number; ie a group of digits.

To encode discrete information, N digits from a number system with radix X are required and X^N is the number of discrete elements in the information. A 1000 volt digital meter for measuring 0 to 999.9 volts in increments of 0.1 volt requires 10 000 decimal numbers for the 10 000 possible messages. The radix (X) is therefore 10 and N = 4; ie

$$M = 10^4 = 10\,000 \text{ and}$$
$$N_{10} = \log_{10} 10\,000 = 4 \text{ digits}$$
$$\text{generally } N_x = \log_x M \text{ digits} \quad \ldots (1)$$

M is the number of information elements required. Any number system could be used to encode the information, a radix 8 system (octal) for example would require:

$$N_8 = \log_8 10\,000 = 4.43 \text{ octal digits.}$$

0.43 of a digit is impossible — five octal digits are required.

A radix 2 (binary) system would need:

$$N_2 = \log_2 10\,000 = 13.29 \text{ bits — use 14.}$$

Because $2^{14} = 16\,384$ there would be 8 384 redundant numbers which is a waste of bits if the redundancy can't be used for other purposes.

To find the logarithm to the base x use:

$$\log M = \log_{10} M / \log_{10} x$$

example

$$\log_{10} 10\,000/\log_{10} 8 = 4/0.9 = 4.43$$

A meter with 10 000 increments each 0.1 volt is designed for situations which demand that resolution and for the expectation that all 10 000 have equal probability. The probability (p) is 0.0001 and (1) can be modified to:

$$N = \log. 1/p \ldots (2) \text{ or}$$
$$N = -\log p \ldots (3)$$

Equations (2) and (3) reveal the importance of message element probability and provide the clue to achieving digit economy.

N can be reduced by deliberately increasing p: for example, if the number of increments can be reduced from 10 000 to 1000 (p = 0.001) the decimal digits can be reduced to three and binary digits from 14 to 10. Binary redundancy is reduced also.

A better result can be achieved by range switching; for example, if it is certain (p=1) that a measurement will be higher than 200 volts and very rarely (p→0) exceed 300 volts — a volt meter range 200 to 300 volts will be suitable. Three only decimal display digits will be required and the binary information transfer will need only 10 bits. The accuracy remains at 0.1 volt.

That economy may not be necessary or desirable for a laboratory or workshop bench meter but if the task is too remote the measurement (telemetry) the saving permits a reduction of lines in a parallel transfer highway and reduced bandwidth or higher signalling speed in a serial transfer system.

Scientists and engineers, for very good reasons, want to measure and express what they are talking about in numbers, and information is no exception. In 1948, Claude Shannon of the Bell Laboratories, showed how well to do that. The above rough analysis of a practical problem illustrates the connection between probability and information value. The number of digits required to encode an information element depends on it's probability and it's information value. The equations (2) and (3) can be rewritten to read:

$$I = -\log_x p \text{ information units.}$$

If X is 2 the information unit is the 'bit' and if X is 10 the unit is the Hartley, if X = e the unit is the nat, so named because e is the base of 'natural' logarithms. The practical unit for present technology is the bit, but other possibilities should be kept in mind. Most messages contain elements with different information values, it is necessary to know the average information. The total information is:

$$I = np_1 \log 1/p_1 + np_2 \log 1/p_2 + \ldots np_n \log 1/p_n \quad \ldots (4)$$

n is the number of elements. The average information is I/n or H. Therefore:

$$H = p_1 \log 1/p_1 + p_2 \log 1/p_2 \ldots \text{etc} \quad \ldots (5)$$

If no attempt is made to optimise information, the spread of value about the average will be substantial and it is worthwhile endeavouring to reduce that spread. Speech dynamic range compression is one example, bandwidth compression is another. The information value in the letters of the alphabet ranges from approximately three bits to 10 bits. Telegraphists intuitively optimised information value by abbreviations.

Mostly, the choice is between fidelity and information value — the former requires words of many bits to suit the highest information value and this usually means large redundancy. The latter will sacrifice fidelity and use source range compression and word length optimisation related to information value.

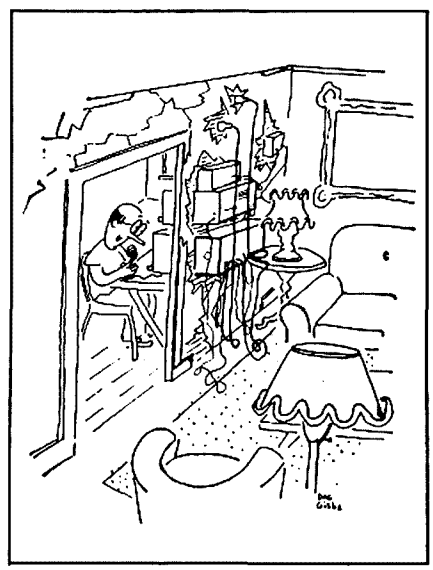
Photographic quality is a good example of the difference between fidelity and information value. A large format photograph is artistically satisfying but 110 size format enlarged is just as informative using a fraction of the picture elements.

Another consideration is the resolution of the information source: if the resolving power of the lens is two minutes of angle (equivalent to that of the eye) it is a waste of digits to provide for better resolution in the information transfer system.

The above foray into the realms of information theory is presented as a rough introduction to the subject in the hope that our digital buffs will spare some time from their VDU gazing and examine the basic philosophy without which true understanding is not possible.

Recommended References

Principles of Communications Systems. Taub and Schilling.
Reference Data for Radio Engineers. ITT.
Fundamentals of Computer Science. A J T Cronin.



—Cartoon Contributed by Gil Griffith VK3CQ

"And, Honey, wait til you see the shack. I've built the equipment into the wall."

$120 CHRISTMAS GIFT FROM EMTRONICS

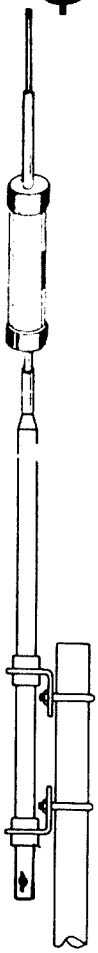
WITH EVERY HF TRANSCEIVER KENWOOD, ICOM OR JRC YOU WILL RECEIVE THE NEW TET-EMTRON.

MV-3

THREE BANDS (10.15 AND 20 METRES) VERTICAL ANTENNA WORTH $120

ABSOLUTELY FREE!

THIS OFFER IS VALID FROM DEC. 1, 1988 UNTIL JAN 31, 1989



MV-3

TET-EMTRON'S NEW HB-31

ROTATABLE 3 BAND (10.15 & 20M) DIPOLE THE IDEAL ANTENNA FOR HAMS WITH LIMITED SPACE AND BUDGET. ONLY **$169**

ROTATORS

- KR 400 in stock
- KR 800 in stock
- KR 2000 in stock
- KR 500 in stock
- KR 5400 in stock
- KR 050 stay bearing
- KR 065 stay bearing
- KR 400 in stock
- DIAWA MR 750 due Sept.
- DIAWA MR 7504 motor in stock

8 core Rotator Cable now in Stock

GO MOBILE with NEW **EM-5** EMTRON'S UNIQUE HF MOBILE ANTENNA

Featuring 80 metre adjustable bandspread full leagl power on all bands.
Five bands on one antenna. Tapered Fibreglass **$189**

NEW 1989 CATALOGUE OUT NOW!

THIS 68 PAGE CATALOGUE WILL MAKE YOUR MIND "BOGGLE"!

MANY EXCITING NEW PRODUCTS NOT SEEN IN AUSTRALIA BEFORE. SOME JUST RELEASED.

ORDER YOUR COPY IMMEDIATELY!

SEND $2.00 FOR YOUR HOME DELIVERY

AR CATALOGUE ORDER FORM CUT HERE

PLEASE SEND MY COPY OF EMTRONICS NEW 1989 RADIO COMMUNICATIONS CATALOGUE

NAME .....

ADDRESS .....

POSTCODE .....

ICOM

ALL ICOM PRODUCTS, COMMERCIAL AND AMATEUR ARE AVAILABLE FROM EMTRONICS
Contact us for Australia's most competitive prices!

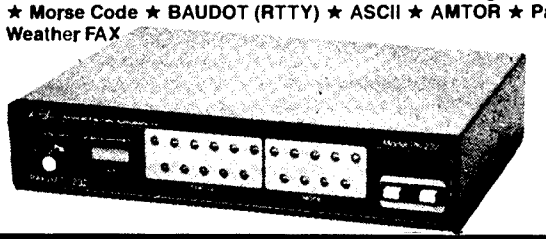
KENWOOD

FULL RANGE OF ALL KENWOOD PRODUCTS AVAILABLE AT COMPETITIVE PRICES FROM OUR 3 STORES! ! !

JOIN THE PACKET REVOLUTION!

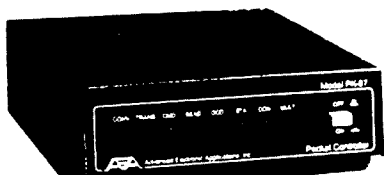
New PK-232 Breakthrough

A new software enhancement makes the AEA PK-232 the only amateur data controller to offer six transmit/receive modes in a single unit.
★ Morse Code ★ BAUDOT (RTTY) ★ ASCII ★ AMTOR ★ Packet ★ Weather FAX



PRICE $649 WITH FAX

NEW



PK-88 ™ PACKET CONTROLLER NOW $299

The PK-88 is not just another copy, it is much more. With all the packet program features of the Multi mode PK-232, the PK-88 is an economical new TNC designed to bring you enhanced completely compatible packet software plus new hardware features for improved packet operation.

BANKCARD
MASTERCARD & VISA
WELCOME

EMTRONICS

MAIL ORDERS WELCOME

NSW & HEAD OFFICE:
92-94 Wentworth Ave, Sydney
NSW. 2000. TLX:AA73990
P.O. Box K21 Haymarket, NSW. 2000
Ph: (02) 211 0988
FAX: (02) 281 1508

VICTORIA:
288-294 Queen St, Melbourne
Vic. 3000
Entrance from Lt. Lonsdale St.
Ph: (03) 67 8551 or 670 0330
FAX: (03) 670 0671

QUEENSLAND:
416 Logan Road, Stones Corner
Qld. 4120
Ph: (07) 394 2555
FAX: (07) 394 4316

Eric Jamieson VK5LP
9 West Terrace, Meningie, SA. 5264

VHF UHF — an expanding world

All times are Universal Co-ordinated Time and indicated as UTC

AMATEUR BANDS BEACONS

FREQUENCY	CALL SIGN	LOCATION
50.005	H44HIR	*Honiara*
50.011	JA2IGY	*Mie*
50.020	JE6ZIH	*Japan*
50.028	JA7ZMA	*Fukushima City*
50.032	ZD8VHF	*Ascension Island* [1]
50.066	VK6RPH	*Perth*
50.075	VS6SIX	*Hong Kong*
50.080	KH6JJK	*Hawaii*
50.110	BY4AA	*China*
50.490	JG1ZGW	*Tokyo*
51.020	ZL1UHF	*Auckland*
52.013	P29BPL	*Port Moresby*
52.100	ZK2SIX	*Niue*
52.200	VK8VF	*Darwin*
52.250	ZL2VHM	*Manawatu*
52.320	VK6RTT	*Wickham*
52.325	VK2RHV	*Newcastle*
52.330	VK3RGG	*Geelong*
52.345	VK4ABP	*Longreach*
52.370	VK7RST	*Hobart*
52.420	VK2RSY	*Sydney*
52.425	VK2RGB	*Gunnedah*
52.435	VK3RMV	*Hamilton*
52.440	VK4RTL	*Townsville*
52.445	VK4RIK	*Cairns*
52.450	VK5VF	*Mount Lofty*
52.460	VK6RPH	*Perth*
52.465	VK6RTW	*Albany*
52.470	VK7RNT	*Launceston*
52.485	VK8RAS	*Alice Springs*
52.510	ZL2MHF	*Mount Climie*
144.022	VK6RBS	*Busselton*
144.400	VK4RTT	*Mount Mowbullan*
144.410	VK1RCC	*Canberra*
144.420	VK2RSY	*Sydney*
144.430	VK3RTG	*Glen Waverley*
144.445	VK4RIK	*Cairns*
144.445	VK4RTL	*Townsville*
144.465	VK6RTW	*Albany*
144.470	VK7RMC	*Launceston*
144.480	VK8VF	*Darwin*
144.485	VKSRAS	*Alice Springs*
144.550	VK5RSE	*Mount Gambier*
144.600	VK6RTT	*Wickham*
144.800	VK5VF	*Mount Lofty*
144.950	VK2RCW	*Sydney*
144.950	VK3RCW	*Melbourne*
145.000	VK6RPH	*Perth*
432.066	VK6RBS	*Busselton*
432.160	VK6RPR	*Nedlands*
432.410	VK1RBC	*Canberra*
432.420	VK2RSY	*Sydney*
432.440	VK4RSD	*Brisbane*
432.445	VK4RIK	*Cairns*
432.445	VK4RTL	*Townsville*
432.450	VK3RAI	*Macleod*
432.535	VK3RMB	*Mount Buninyong*
432.540	VK4RAR	*Rockhampton*
1296.198	VK6RBS	*Busselton*
1296.410	VK1RBC	*Canberra*
1296.420	VK2RSY	*Sydney*
1296.440	VK4RSD	*Brisbane*
1296.445	VK4RIK	*Cairns*
1296.480	VK6RPR	*Nedlands*
2304.445	VK4RIK	*Cairns*
2306.440	VK4RSD	*Brisbane*
10368.000	VK3RGZ	*Pretty Sally Hill* [2]
10445.000	VK4RIK	*Cairns*

1 According to news from South Africa, this beacon is in continuous operation. Ascension Island is about eight degrees south of the Equator and midway between Africa and South America.

2 John VK3ZJC, advises that the 10 GHz beacon VK3RGZ has been built and licensed and should be operating from Pretty Sally Hill, north of Melbourne, by the time you read this. Frequency is 10368.000, plus or minus 20 kHz. Power is about 250 mW and this will be fed into two antennas, one of which will be a 30 dB dish aimed at VK7. The identification is MCW and will alternate between narrow and wide deviation. The beacon was apparently made by Andrew VK3KAJ, and tested by Les VK3ZBJ.

John also confirms the operation of VK3RMB on 432.535 MHz. It runs a continuous carrier with FSK identification every 30 seconds. John says the beacon is S9 at his location, 120 kilometres distant, while VK3RAI, 16 kilometres away is S7.

Readers will note that the beacon ZS2SIX, on 50.005 MHz, has been removed from the list. Hal Lund ZS6WB, says that it is still off the air. Apart from ZS6PW operating evenings only and beaming north on 50.014 MHz, there appear to be no active beacons on six metres from South Africa.

With the earlier closing of my notes last month, several letters arrived too late to be included. The same could happen this month, which is unfortunate, but then the January issue is always an early closing date.

DX FROM THE TIP OF AUSTRALIA

Lionel VK3NM, reports that he recently returned from a trip to far north Queensland, which took him to Weipa, Coen, etc. From there he worked a lot of six metre DX with incredible ease, using only 10 watts and a quarter wave whip antenna on the car.

From Coen he worked his first batch of JAs on TEP with signals very wobbly, like severe doppler effects. The band stayed open for many hours, it did not matter how weak signals were, he could still work the stations. At times, on first switching the rig on, the band was void of activity, but one CQ call brought in dog-piles from the far north. He said one could work a list of stations, have tea, shower, etc go back and the band would still be open. A much different story from Melbourne!

From Coen on 7/9, between 0947 and 1111 UTC, Lionel worked 23 JAs in districts 1, 2, 3, 4, 5 and 0. Signals were 5 x 9 both ways in many instances, which is exceptional considering the small antenna used. On the same day, Joe KG6DX, was heard but he was lost when he turned his antenna to work JAs.

From Laura on 8/9, JR2YCB 5 x 5, JE2QJI 5 x 4 and JL1FQJ 5 x 1 between 1034 and 1129 UTC. From Cairns o 10/9 between 0953 and 1029, 15 JAs were worked in districts 1, 2, 3, and 6 with signals varying between 5 x 9 and 5 x 1. Also from Cairns on 12/9 between 0931 and 1059, JG2BRI 5 x 4 , HL9CB 5 x 9, JH4PFU 5 x 9, JA1FHX 5 x 2, JA7JWF 5 x 9, JA3LCF 5 x 8 and JH4NRG 5 x 2.

Then from Calliope on 15/9 between 0300 and 0355, JA8TSG 5 x 3, JH7XRZ 5 x 8, JA0TPE 5 x 2, JA9MJR 5 x 7, JA8TMJ 5 x 8, JR7VTE 5 x 4, JA8GVQ/1 5 x 6, JA8JEP 5 x 9, JA2LRE 5 x 2 and JA1PVI 5 x 6.

It is interesting to note the wide variations in signal strength; also, Lionel managed to work stations in all the call areas JA1 to JA0 inclusive which is a good effort for low power and the attendant dog-piles.

Lionel mentioned the television crud from China or Russia on 49.750 was very strong on most of six metres. No signals were heard from the south during his operating periods. Thanks for writing Lionel, hope you had a good trip.

THE UNITED KINGDOM REPORT

Ken Ellis G5KW, sends a copy of his column "50 MHz" in the British *Amateur Radio* magazine which reports the first two-way QSOs between British stations along the south coast and South Africa since November 1947. G5BY and ZS1T established contact early on August 28. Warnings had been given by the South African 28 MHz beacons which resulted in a number of crossband QSOs 28/50 MHz taking place.

On 5/9, a north-south path was opened between south coast stations and Windhoek in Namibia around 1743 UTC. ZS6XJ worked eight G stations.

During August there were at least five good openings between England and ZD8 Ascension Island.

On 7/9, the all time first two-way QSO between England and South America occurred when eight G stations made contact with LU7DZ, Buenos Aires, between 2123 and 2130 UTC. The first QSO was completed by G1PAM in Plymouth. The Great Circle distance is about 11 300 kilometres or 7057 miles between G3CCH and LU7DZ, which creates a UK six metre record. G5KW says "This means that five continents have now been worked from England leaving only Australasia to be worked for 'worked-all-continents'."

On 27/9, at 1115, G5KW was alerted by telephone that the ZS6PW beacon was S9 on 50.009 MHz. Between 1130 and 1220 he worked ZS4TX/6, ZS6LW, ZS6LN, ZS6XJ. ZS6ANK and ZS6WB with signals to 5 x 9. The path was still open at 1425 when he worked ZS3AT and still open at 1850 to work ZS3E.

Ken G5KW, reports that Sweden will be granting 25 special licences for 50 MHz from November 1988. Also, SU1ER in Cairo, Egypt, will operate on 50 MHz as soon as he is able to acquire equipment. No six metre equipment is available in Egypt.

It is also possible that Finland (OH) may be granted permission to operate between 50.000 and 50.450 MHz using CW and SSB on a non-interference basis.

Mike G3SED, reports that the PJ0M DXpedition to Saba Island in the Caribbean on 9/7 worked GM3POI/A and G3SED around 2150, with both contacts being the first ever to GM and G.

SOUTH AFRICAN REPORT

Hal Lund ZS6WB, continues to send his "VHF News" reports to me and from this it is possible to gauge the measure of activity to our west and particularly in the European region — it is rather like between VK and JA except that the South Africans have a lot more countries to work, with some activity being reported from most of the western nations there.

ZS4TY has applied for permission to operate 7P8 in Lesotho. TR8DX has returned to France so there is little likelihood of six metres from Gabon. Zimbabwe recently give its amateurs permission to use six metres, but of the two stations with suitable equipment, Z21FT has moved to South Africa and Z23JO had his stations destroyed by lightning, so it will be a while before activity appears from that country.

The 9H1SIX beacon has been moved to a new QTH which is 230 metres above sea lever and runs 7.5 watts to a five eighth wave ground plane. YB3CN has a new IC-575 and is awaiting a new six

metre beam to arrive from Australia. FR5DN on Reunion Island has operating permission but no equipment. 9Q5NW has a Heath SB-110 en route from the US. 5H1HK is active from Zanzibar Island and 9H1s were heard in contact with him on 25/9 and ZS3E on 27/9. FR5EL is now active on six metres and 4X1IF has already contacted him crossband. 5B4OG has been active recently on six metres CW.

PY5ZBU in Brazil, recently contacted his 97th country on six metres and Is one of the leading contenders for Six Metres DXCC No 1. A fine effort. The ARRL announced that the first five stations to qualify for the Six Metre DXCC will receive wall plaques in addition to DXCC Certificates.

The September 1988 ZS 50 MHz DX Report indicates that six metres was open every day of the month except 3/9! The month started off with weak signals to Cyprus (5B4) and Malta (9H1). On 5/9 conditions started to Improve with contacts from South Africa to England and from then onwards daily contacts were available looking north.

In addition to all manner of G stations, call signs worked by South Africans during September included:
9H3IX, 9H3EN, 9H3EO, 5B4AZ, F5QT, PA3EON, SZ2DH, FC1MKY, F5GZ, CT4KQ, FC1BUU, FC1TJP, CT1DTQ, 9H1BT, 9H1IX, SV1DO, CS8LN, FC1GXV, SV0FE, 5H1HK, RA3DYS, CT1WW, plus crossband to 4X1IF, I4XCC and OK3CM.

On 27/9, JA1VOK reported that during a good opening, JR6HJ in Okinawa had F2 QSOs on six metres with Africa and South America, both probably firsts for Cycle 22. The first was on 27/9 at 1634 with 5H1HK and the second n 28/9 at 0211 with PY2BBL. The contact with Africa was after midnight JA time.

From the SOuth African report and the G5KW report, it would appear exciting times are ahead for several years for six metre operators, particularly those In well placed locations. Australian amateurs will, no doubt, share in a lot of these contacts but our geographical location dictates that we need to be vigilant if we are to share in some of the more exotic contacts.

A REPORT FROM A NOVICE

John McRae VK5NJF of Nuriootpa in the Barossa Valley, has written to say how thrilled he was to recently be given the chance to work some JAs on six metres.

Receiving his licence in December 1987, John, being a novice licence holder, is not able to operate on six metres. However, on 21/9 he visited his friend Norm VK5ZAH, and observed him working eight JAs between 0920 and 1013 UTC, all around 5 x 9. He was most impressed. This having whetted his appetite, he returned to VK5ZAH on 7/10 and asked if he could listen on six metres. Noting the band was open to Japan he obtained permission from Norm to operate and during the next 30 minutes worked 11 JAs in 1, 3, 5 and 6 districts, with signals around 5 x 5.

He said "I was ecstatic about my first experience with six metres, giving me an increasing urge to upgrade very soon."

Good for you John, go to it! But don't leave it too long or you may miss out on some of the best contacts.

Anyway, it is encouraging to oldies like me to learn there are still some keen guys out there who can receive a thrill from DX operating on a VHF band. I offer my greatest encouragement to anyone prepared to give it a go.

THE MELBOURNE SCENE

John VK3ZJC, has written with some further news. He wished to correct a statement printed in my columns in October which said that "aircraft enhancement had provided poor contacts to Canberra and Sydney" when in fact they were good contacts. Rushing to my original copy, I noted I had said "good" but when typeset apparently "poor" was used! John also advised that the 1296 MHz calling frequency should read 1296.100 MHz.

John reports that a solar powered 10 GHz beacon is planned for the repeater site on Mount Baw Baw in Gippsland and understand Jim VK3ZYC, is working on this one.

There has been little activity on 144 and 432 other than aircraft enhancement contacts. Stations worked in Melbourne include VK1s BG, BUC, AU; VK2s BE, FG, DVZ, ZAB and ZRE. John finds that signals are often better on 432 than 144, thus resulting in more contacts, although his equipment is comparable, except that on 432 the overall electrical noise level is lower giving him a quieter noise floor.

Ross VK2DVZ, has been in Taree for the school holidays and he and David VK3AUU, have been hearing pieces of each others signals on 144.200 MHz. Nothing much from west of Melbourne, except for Maurice VK3XVB, near Bendigo and Russell VK3ZQB, in Port Fairy. Noel VK3AUG, has regular scheds with VK3BRB in Mildura.

Moss VK7IM, visited VK3 in September and stirred up interest in scatter tests between VK3 and VK7 on two metres. He lives south-east of Mount Wellington, so can only work stations east of Melbourne. He runs 400 watts on two metres and is waiting for a high power permit.

The packet operation has increased on 144.800 and the frequency is often used for speech contacts by packet operators, making it impossible to monitor VK5VF

Roger VK3XRS, near Bairnsdale, is operational on 1296 FM with a four foot dish. Attempts to work VK3ZBJ and VK3ZJC have been unsuccessful so far, no doubt due to the inconvenient position of Mount Baw Baw in the middle of the path!

John VK3YTV and Peter VK3ZPW, now have low power transverters operating on 2304 MHz. These were made from kits which Peter brought in from England.

John VK3ZJC says he has a 576 MHz exciter for FM/AM/CW/ATV and is about to start on the power amplifier. He hopes to have the varactor multipliers ready for the summer. The 2304 MHz converter and antenna both need a final tweak and they will be ready. The antenna is a slotted array with 16 dB gain.

Over the summer holidays, John hopes to go portable through north-east Victoria, the Snowy Mountains, across to the south coast of New South Wales and back to Melbourne via East Gippsland. He would like to include operation from Mount Kosciusko, something he has always wanted to do! He plans to operate from 10 different locator squares including two which have no resident amateurs. Plans are to operate on 52, 144 and 432 at least, with some thought being given as to how to include 1296 in the operation. Depending on how the projects go, he may eventually be able to do some mountain topping on 576 and 2304 MHz.

Finally, John says there have been some angry debates on the air over the use of 144.100 for prolonged contacts. Some claim their presence on the calling frequency increases the likelihood of DX contacts, as they are providing signals on the frequency for others to hear. Obviously, others disagree, claiming they are blocking out weaker stations. The matter could be resolved to some extent if all the stations involved left a reasonable break between transmissions, allowing another and possibly more distant station to break in and be identified. If this is not done every time, then the stations would be better off the frequency.

From the VK5LP viewpoint, I try not to become too involved in long contacts on any calling frequency. If it cannot be avoided, and that sometimes happens for various reasons, then I do ensure that I leave at least a three second break before replying to an over from the other party. I am sure if this technique was followed to the letter by all stations, there would not be the need for prolonged discussions on what seems to me to be common sense usage of a frequency. For some time now, I have been training myself to adopt the idea of a three second break for all contacts on 144 and 432 MHz.

On six metres it may be different. I believe if you are making a 30 second contact on F2 or TEP to some rare station, then it is necessary to have a series of very quick overs for the exchange of the required information to confirm the contact. If you wait three seconds in this case you are likely to have someone else take the contact off you! I am also doubtful if much in the way of breaks are required for strong Es contacts, especially If they are of the signal report and name exchange variety. If you are having a chat with a station, then I believe it would be courteous to allow a break between overs to allow another station to call in. You may become annoyed if that happens too often. If that is the case, you must assume there are a lot of stations around looking for contacts and perhaps you should defer chatting for another occasion.

I am sure there are no hard and fast rules which will suit every situation. The best I can offer for anyone using a calling frequency, particularly in a city, is to consider placing themselves in a distant location and asking themselves "am I likely to be heard by those stations chatting on the frequency?" Finally, for distant stations, never overlook the advantages a CW signal can offer, a carrier beeping away underneath even the strongest signals has a chance of eventually being heard in which case you may be allowed in!

Thanks John, your letters often stir the pot a bit, which is good. At least, this time, it has given me the chance to state my position in this case.

EME CONFERENCE

A letter and phone call recently heralded the safe return of Doug VK3UM and his wife Bev, from the Third International EME Conference held over the weekend of September 9 to 11, 1988, at Thorn in The Netherlands, adjacent to the Belgium border. Thorn has a population of 2800 and the delightful and immaculately restored houses have a history dating back to the Roman Empire.

Doug said it was a magnificent conference, rated by many who should know, as one of the best. More than 200 attended both the Saturday and Sunday sessions — it almost seemed as though all of Europe's amateurs were there! Sixteen countries were represented and there was a great feeling of fellowship and the inter-mix was excellent. The technical content and quality was real state-of-the-art and left one feeling somewhat humble.

Attended by more than 80 OMs and wives, a buffet dinner on the Friday evening started the proceedings. Geert PA3CSG, welcomed the visitors and the conference was opened by the Mayor of Thorn. This was an opportunity for many EME operators to meet the operator "at the other end".

Saturday's activities began with a visit to an old radio museum, where the items on display, in working order, were in considerable contrast to the theme of the conference.

The first lecture was presented by Jan DL9KR, who spoke on the theme of achieving the lowest noise receiving systems. Jan detailed the overall factors that are required to achieve the results necessary for absolute minimum noise systems, including methods of evaluation, ground noise, sun or stellar noise, equipment stability, expected values for system temperatures and their application, antenna gain, feeder loss, preamplifiers, antenna relays, noise figures, filters (RF and AF). Jan left the audience with little doubt why his signal is so loud and his receiving capability a demonstrated. It was a practical summary for all attendees to return home to work on their stations.

This lecture was followed by one entitled "How to achieve low system temperature on 432 EME" by Rainier DJ9BV, who ably demonstrated the problems in noise figure measurement and the traps even the test equipment manufacturers have, until recently, failed to address. His paper has resulted in a means of providing the ability to make true, universal comparative noise measurements throughout the world.

Peter PA3AEF, followed with an appraisal of Minninec 3. Peter outlined the advantages and disadvantages of using the program which at last can be regarded as a guide to antenna design and

a t worst a "mine field" of conflicting conclusions. Inherent "bugs" within the program were demonstrated.

Following Peter's presentation, Gunter DL6WU, spoke on his results and how they compared with the theoretical results obtained by Minninec 3.

The final presentation was given by Doug VK3UM, who detailed the facilities provided by his extensive EME Planner software, which allows system evaluation in accord with practical measurements detailed earlier by DL9KR. Doug further presented the advantages of utilising the software for EME common window scheduling and the evaluation of two-station capability for completing an EME QSO.

A long question period enabled listeners to seek answers to queries from the various speakers and this triggered many lively debates.

Everyone crossed the border to Kinrooi, in Belgium, for the evening dinner which Doug described as an outstanding success!

On the Sunday morning, DJ9BV supervised noise figure measurements on the 432/1296 preamplifiers. Results of these will be known later.

Group discussions on a wide variety of subjects were held concurrently with the NF measurements, with topics including sequencing, identification procedures, reporting sequences, activity weekend choices, etc. Also, during this period, video tapes were shown of the W6LET EME efforts, W3IWI, 4U1UN, and PA3CSG operations, together with slides and photographs of JA stations.

The conference was closed at 1700 by PA3CSG, who was presented with a documented memento from the participants, by N7ART and VK3UM.

Represented at the conference were many stations, who comprised, by definition, those who had had a minimum of one QSO off the moon on frequencies above 432 MHz. From Germany there were 11 call signs, France 10, UK 4, Italy 1, USA 2, Norway 1, Austria 1, Belgium 1, The Netherlands 4, Sweden 6, Poland 1, Canada 1, Yugoslavia 2 and Australia 1.

While the amateurs were discussing EME throughout the weekend, the ladies were occupied with a full program of activities, including much sightseeing.

There is a lot of excellent, state-of-the-art information contained in the various papers presented at the conference. It is beyond the scope of this column to include them here, one can only hope they can be made available by means of some medium, to those who can use the information. EME enthusiasts might consider sending a stamped envelope to Doug VK3UM, seeking details on how the information may be obtained.

Obviously, what has been printed above does not do justice to the material included in the papers, an overview has been given here so readers may be advised of the content, from which they can make their own decisions whether to follow the matter any further. Thank you Doug for sending me the information.

SIX METRE DX STANDINGS

Next month being the February issue will see the updated Six Metre Standings List. The receipt of a revised list from Rob VK3XQ, which is correct in every aspect, reminded me that I wanted to make a comment about the Standings.

Ever since I started the Standings several years ago, I have always prefaced the list with the comment "Credit has not been given for contacts made with stations when 50 MHz was not authorised."

The reason for this was due to my knowledge of some contacts having been made on 50 MHz by Australian stations during Cycle 21 when we were not authorised to make such contacts. To my knowledge, no one claimed a listing for any such contacts.

With Cycle 22 well and truly upon us now, it may be worth me stating that the position has not changed as far as the Standings are concerned. Under the terms of Document DOC 71 from DOTC, as I understand it, the band 50.000 to 50.150 MHz may be used in VK6 without restriction. In VK5 and VK8 power is restricted to 25 watts output at the transmitter. In VK2, 3, 4, and 7, operating is only permitted outside the broadcasting hours or Channel 0.

Therefore, any claims submitted from the eastern States for contacts between say 0000 and 1300 UTC will have to be disallowed unless there is proof of the contact having occurred on 52 MHz. This may seem unfair, but there is little else I can do; I cannot be seen to be condoning operating during hours not provided for in the regulations.

It seems a pity that the restrictions are in such a blanket form in the eastern States. In Europe, where many countries are geographically so close, there are administrating bodies permitting operations on 50 MHz on a non-interference basis and utilising a 10 watts output limit during television hours. Something along similar lines here would satisfy most operators and any problems of interference would be minimal. Most interference in this country is still going to be co-channel interference during periods of enhanced propagation.

OTHER NEWS

The West Australian VHF Group Bulletin for October says that the Perth VHF beacons are nearing readiness for a return to operation. Hopefully, by the time you read this the beacons will be installed in their permanent site at the Channel 7 transmitter site.

Col VK5RO, says there has been considerable six metre activity during October, with the band open to somewhere most days. Despite the excellent days during the early part of the month when eastern States stations were working into W-land, the conditions did not extend as far as VK5.

On 24/10 ZL2KT worked K6FTA and WA6BYA for first contacts to the US for this cycle.

There have also been continuing reports of JAs working long path into Europe. I am not sure whether they did that during Cycle 21 but they seem to be doing it at the moment.

The VK5LP establishment is still under severe restrictions at the moment with the driven element broken on the six metre beam. The VK5 beacon is only S1 instead of its usual S9+ so any hope of hearing signals on the band are nil. South Australia has had one of its windiest periods for many years, with almost every change in the weather producing gale force winds. My neighbour says that he believes we have had the worst winds in 30 years. The wind today (26/10) reached 111 kmh! Little wonder David VK5KK, has been unable to climb the tower to replace the broken element. If this continues I may have to go out portable!

CLOSURE

It will be 1989 by the time you read this. All the Bicentenary 1988 fixtures will be concluded. For most this will mean some rest, for me it means a year with further activities. 1989 represents 150 years since the first settlement of the Torrens Valley of which Forreston, my former home town, is part. I have a commitment to give some help with their celebrations including the completion of my book on the history of Forreston, which I started to research over five years ago. This has taken much of my spare time, but with its completion by July/August 1989, I am looking forward to spending extra time on the bands, particularly six metres, where there is promise of much interesting activity over the next two or three years at least.

Closing with two thoughts for the month: "Some people reach the top of the ladder only to find it is leaning against the wrong wall" and "A woman with true charm is one who can make a youth feel mature, an old man youthful, and a middle-aged man completely sure of himself."

73 From the Voice by the Lake.

ar

Awards

Ken Gott VK3AJU
WIA FEDERAL AWARDS MANAGER
38A Lansdowne Road, Saint Kilda, Vic. 3183

WARC BANDS IN NEW ARRL AWARD

There is a special role for two of the WARC bands in a new award announced by the ARRL to mark its 75th anniversary in 1989.

All QSOs for the ARRL Diamond Jubilee Award must be made within 1989, as defined in UTC, and there are three routes for winning it on HF

1. By working 75 different DXCC countries on any combination of the 18 and 24 MHz bands, each country to be counted only once, irrespective of which band is used. In other words, all 75 may be worked on 18 MHz or 24 MHz, or a combination of both.

   As far as I am aware, this is the first time that QSOs on WARC bands have counted towards a major international award.
2. By working 75 US novice stations in QSOs involving something more than a "hello-goodbye" exchange. This is to provide meaningful contacts designed to help US novices improve their operating skills and to encourage them to upgrade.

   So far, the ARRL does not seem to have given any guidance about the duration of such QSOs, but I expect it is the spirit of the law, rather than the letter, which matters.
3. By working stations in 75 "sections" of the ARRL and Canadian RRL on any combination of bands/modes.

See table below for a list of the sections and some explanation of them.

The Diamond Jubilee Award may be won in one of the three classes listed above and subsequently endorsed for one or both of the other two.

No QSL cards are required, but applicants must personally certify the accuracy of log extracts submitted on the Diamond Jubilee Award Application form. This is available from the ARRL, 225 Main Street, Newington, CT 06111, USA.

No fee for the application form is mentioned, but my experience is that a green stamp plus self-addressed envelope should fetch it. Otherwise two IRCs.

The award itself costs US$5 or 12 IRCs, with US$1 or two IRCs for any subsequent endorsements.

Applications must be received within one year of the end of the award period; ie by December 31, 1990.

Non-members of the ARRL are eligible and awards in all three sections are open to SWLs.

However, don't look for US amateurs on 18 MHz until sometime in the second half of this year as the band is not yet open to them, but the FCC is expected to release it about mid-year. The IARU band plan will apply; ie CW 18.068-18.100 MHz, RTTY 18.100-18.110 MHz, and phone 18.110-18.168 MHz.

The present 24 MHz band plan is also applicable to all regions; ie CW 24.890-24.920 MHz, then RTTY up to 24.930 MHz, followed by phone up to 24.990 MHz.

The Diamond Jubilee Award can also be won on VHF and I will give details in my next column.

In general, the "sections" used in the ARRL Diamond Jubilee Award correspond to the US States and the Canadian Provinces and in the table below they are listed by their standard postal abbreviations, eg CT is Connecticut, ON is Ontario, etc.

However, it is obvious that some of the more populous States have been subdivided. NNJ and SNJ presumably represent northern and southern New Jersey respectively. It is also my guess that ENY is eastern New York and WNY the western part of the Empire State.

Even so, some puzzles remain and I have written to the ARRL asking for a decoding for publication in AR. In the meantime, good hunting, and maybe you could ask some of our American and Canadian colleagues to explain abbreviations which continue to puzzle you.

CENTRAL COAST AWARD

The Central Coast Amateur Radio Club sponsors an award for contacts on any licenced band in any mode, governed by the following:

1. Overseas operators must contact two Central Coast Stations **or** the club station (VK2AFY or VK2EH).
2. VK operators must contact four Central Coast stations plus the club station (VK2AFY or VK2EH).
3. Central Coast operators must contact 10 Central Coast stations plus the club station (VK2AFY or VK2EH).
4. Shortwave listeners must log two-way contacts in accordance with the conditions 1, 2 or 3 above.

A Central Coast Station is one being operated:
— by a member of the CCARC (even if the member resides outside the boundaries of the Central Coast).
— by a person who resides on the Central Coast who is not a member of the CCARC.
— in a portable capacity on the Central Coast, or
— in a mobile capacity on the Central Coast.

The Central Coast is that area bounded by the Shire of Wyong and the City of Gosford combined, the postcodes are 2250, 2251, and 2254 to 2263 inclusive.

Copy only of log entries, certified to be correct by the claimant and another person to be forwarded to the address of the club, PO Box 238, Gosford, Vic. 2250.

EUROPEAN 1992 COMMUNITY (E-1992-C) AWARD

Issued by the European Community, this new unique and very attractive award should emphasise the objectives of the Community.

The "E-1992-C" Award can be obtained by all licensed radio amateurs and shortwave listeners from January 1, 1989 onwards.

Requirements:

There are three ways to log 12 x 12 different stations from the 12 member countries on the HF bands either in CW, SSB or mixed.

Portugal: CT, CU; Germany FRG: DL; Spain: EA, EA6; Ireland: EI; France: F, TK; Italy: I, IS; Denmark: OZ, OY; Belgium: ON; Luxembourg: LX; Greece: SV, SV5, SV9, SY; Netherlands: PA; United Kingdom: G, GD, GI, GJ, GM, GU, GW, ZB2.

Outside the UBA Contests

Log 144 different stations from the EC members countries.

At least six different stations from each of "The Twelve".

At the most 20 stations per country to complete the required 144.

During the UBA Contests

Log 144 different stations from the EC member countries.

At least two different stations from each of "The Twelve".

At the most 24 stations per country to complete the required 144.

The application must arrive with your contest entry. (See this month's Contest Column for rules of the UBA Contest).

Combined Results

A missing LX or SV station in the contest may be replaced outside the contest by two other stations from that country.

All other contacts should be logged in the UBA contest and you must have sent your entry.

Combined results from up to four consecutive UBA contests to achieve the requirements will be accepted.

The application must consist of:

A written request signed by the applicant and certified by two licensed amateurs.

List with date, time, call sign, report, band and mode of 144 contacts.

The award fee of seven IRCs, US$4 or equivalent value in other currency.

Name, call sign and full address of the applicant and his witnesses.

The award claim should be sent to: UBA HF Award Manager, Van Campenhout Mat ON5KL, Hospicestraat, 175, 9080 Moerbeke-Waas, Belgium.

ar

ARRL/CRRL SECTIONS

1	2	3	4	5	6	7	8	9	0	VE
CT	ENY	OE	AL	AR	EB	AZ	MI	IL	CO	MAR
EMA	NLI	EPA	GA	LA	LAX	ID	OH	IN	IA	PQ
ME	NNJ	MDC	KY	MS	ORG	MT	WV	WI	KS	ON
NH	SNJ	WPA	NC	NM	SB	NV			MN	MB
RI	WNY	NFL	NTX	SCV	OR			MO	SK	
VT			PR	OK	SDG	UT			NE	AB
WMA			SC	STX	SF	WA			NO	BC
			SFL	WTX	SJV	WY			SD	YU /NWT
			TN		SV	AK				
			VA		PAC					
			VI							

Contests

Frank Beech VK7BC
FEDERAL CONTEST MANAGER
37 Nobelius Drive, Legana, Tas. 7277

CONTEST CALENDAR

January 1989

1 — 7 Ross Hull Memorial VHF/UHF Contest continues
7 — 8 First ARRL RTTY Roundup Contest (Rules this issue)
28 — 29 WIA Trial VHF/UHF Field Day Contest (Rules December issue)
28 — 29 REF French Contest (Rules this issue)
27 — 29 CQ Magazine 1989 160 meter DX Contest (Rules this issue) CW
28 — 29 UBA Belgian DX Contest (Rules this issue) CW

FEBRUARY 1989

11 — 12 QCWA CW Party
11 — 12 YLRL YL/OM SSB Contest
18 — 19 ARRL DX CW Contest
24 — 26 CQ WW 160 meter SSB Contest
25 — 26 YLRL YL/OM CW Contest
25 — 26 UBA Belgian DX SSB Contest (Rules this issue)

MARCH 1989

4 — 5 ARRL DX SSB Contest
11 — 12 RSGB Commonwealth Contest
18 — 19 NZART Field Day Contest
18 — 19 WIA John Moyle Memorial Field Day Contest
25 — 26 CQ WW WPX SSB Contest

CONTEST RESULTS

VK4TT was the top scoring VK station in the 1988 REF French Contest CW section.

VK3IO was the leading station on the Oceania CW section of the 1988 CQ World-wide 160 meter contest for Australia, with VK2BQQ the runner up.

In the SSB section, VK3IO being the only entry from VK was the top scorer with 1440 points.

VK4TT was the leading VK station in the 1987 LZ DX contest with 2646 points.

VK4TT was also the leading VK station in the Belgian UBA CW Contest for 1988 with 144 points.

VK4TT and VK5BS both are to receive certificates for being the VK leaders in the USSR GC contest for 1987, VK4TT being the Oceania winner for SOSB section and VK5BS for the SOMB section.

Congratulations must go to you all, keep up the good work.

As we have rather a lot of contest rules to publish this month, and you will all be getting your portable stations together for the forthcoming summer contests, which will include the trial *VHF/UHF* Field Day for you to enjoy, I will wish you all a Happy New Year and good contesting.

CQ WORLD—WIDE 160 METER DX CONTEST

CW — January 27-29.
SSB — February 24-26
Starts — 2200 UTC Friday
Ends — 1600 UTC Sunday

Conditions and activity on the 160 metre band are at their maximum. We can expect over 100 active countries on both Phone and CW. Here is your chance to run up your State and Country totals in a very short time. The "DX Window" has not been seriously observed for several years. Since many stations could not operate there anyway, the only frequency restrictions are those of your own country. We still encourage Pacific DX to transmit 1.907 to 1.912 MHz and specify a listening frequency. W/VE transmission there is counterproductive. Any station can always specify a listening frequency if he/she so desires.

CLASSES — Single and multi-operator. Use of a spotting net makes you multi-operator.

EXCHANGE — RS/T and QTH. State for the US, areas for Canada, prefix for DX, country abbreviation for those with unusual prefixes.

Stations operating in a State different from that indicated by the call are required to sign portable.

SCORING — Contacts with stations in own country, two points. Contacts with stations on other countries in same continent, five points. Contacts with stations in other continents, 10 points.

MULTIPLIER — Each US State (48), Canadian area (13) and DX country. Maritime Mobiles separated by at least 100 miles. Canadian areas: VO1, VO2, NB, NS, PE1, VE2, VE3, VE4, VE5, VE6, VE7, NWT, Yukon, KH6 and KL7 are considered countries, but not also States. USA and Canada may not be counted as country multipliers. Maritime Mobile points determined by location. ARRL DXCC and WAE country lists and WAC boundaries are the standards.

FINAL SCORE: Total QSO points times the sum of all multipliers (States + VE areas + DX Countries + Maritime Mobiles).

PENALTIES: Three additional contacts may be deleted for each unacknowledged duplicate or unverifiable contact removed from the log. A second multiplier may be removed for each one lost by the above action.

DISQUALIFICATION: You may be disqualified for violation of your country amateur radio regulations, unsportsmanlike conduct or claiming excessive duplicate or false multiplier contacts. If the corrected score without penalties shrinks more than three percent from that claimed, disqualification will be considered. Disqualified stations or operators may be barred from competing in *future* CQ contests for up to three years.

AWARDS — Certificates to the top scorers in each class, each State, Canadian area, and DX country. Also, the following plaques.

Single Operator

	CW	SSB
World	by K5AAD	by K5AAD
USA	by K4TEA	by K4JRB
Europe	by K4UEE	by N4NX
Africa	by K4SB	by WB4ZNH
S America	by K4TKM/6	
Asia	by WD4RCO	

Multi-operator

World	by N4RJ	by Southeastern DX Club

The above plaques may be won by the same station every other year. Winner of a world plaque will not also receive a sub-area one. It will go to the runner-up.

Sample log and summary sheets may be obtained from CQ by sending a large SAE with sufficient funds to cover your request. You can make tour own, 40 contacts per page, columns for UTC, exchanges, multiplier and its sequential number only the first time it is worked.

Include a summary sheet with your entry showing the scoring and other essential information and a signed declaration that all rules have been observed. Mailing deadline for CW entries is February 28 and March 31 for the SSB section.

Send logs to 160 Meter Contest Director, Donald McClenon N4IN, 3075 Florida Avenue, Melbourne, FL 32904 USA. They may also be sent to CQ, 160 Meter Contest, 76 North Broadway, Hicksville, NY 11801. Please indicate CW or SSB on the envelope.

UBA CONTEST 1989

The Union of Belgian Amateurs invite all amateurs world-wide to participate in this contest.

The UBA has the honour to announce that this contest will be challenged under the Patronage of Mr Ripa di Meana, Member of the Commission, responsible for Communication, Information and Culture.

The European Community Trophy will be presented to the highest scoring EC member station from both the CW and SSB Class B competition.

NAME AND AIM: To contact as many Belgian and other amateurs as possible and to provide a way to achieve the WABP and the EC awards in the "UBA Contest".

PERIODS: Last full weekend of January and February each year. CW on January 28 1300 UTC to January 28 1300 UTC (24 hours). SSB February 25 1300 UTC to February 26 1300 UTC (24 hours).

CLASSES:
(a) Single operator single band.
(b) Single operator multi band.
(c) Multi operator single transmitter all bands.
(d) QRP 10 watt input as Class B.
(e) SWL as Class B.

BANDS: 10, 15, 20, 40 and 80 metres. Frequencies according to the IARU Region 1 Band Plan.

CW — 3.500-3.560; 7.000-7.035; 14.000-14.060; 21.000-21.080; 28.000-28.100 MHz.

SSB — 3.600-3.650; 3.700-3.800; 7.040-7.100; 14.125-14.300; 21.200-21.400; 28.500-28.800 MHz.

CONTEST CALL: CW "TEST UBA"; SSB "CQ UBA".

EXCHANGE: RS/T plus serial number starting from 001. Note that Belgian stations give their province abbreviation (eg 59001/AN).

SCORING: QSO with ON, DA1 and DA2 counts 10 points. QSO with other European Community member stations as listed below counts three points. QSO with any other station counts *one* point.

MULTIPLIERS: All Belgian provinces: AN, BT, HT, LB, LG, LU, NR, OV, WV. Each of the prefixes ON4, ON5, ON6, ON7, ON8, ON9, DA1, DA2. All other countries from the European Community: CT, CU, DL, EA, EA6, EI, F, G, GD, GI, GJ, GM, GU, GW, I, IS, LX, OZ, OY, PA, SV, SV5, SV9, SY, TK, ZB2. A total maximum of 43 per band.

FINAL SCORE: Total QSO points times the total number of multiplier points.

LOGS: Showing date, time (UTC), station worked, exchange with respective serial number, multipliers and points. Use a different sheet for each band. Each entry must have a summary sheet showing all the scoring information, class of entry, mode, name, call sign/s, full address and a signed declaration. The IARU R1 standard format sheets are recommended. Computer print-outs are accepted provided they have the same format as hand written logs. Computer logs on disc can only be accepted when the format is MS DOS/ASCII.

SWL: Log the call sign of the station heard, complete report sent by this station, call sign for the station worked, your report to the station heard. Points will be considered for stations in the "heard stations" column only.

DECLARATION: "I declare that all contest rules and all the rules and regulations for amateur radio operations in my country have been observed and adhered to. I accept the decisions of the contest committee."

ADDRESS FOR LOG: UBA HF Contest Committee, Galicia Jan ON6JS, Oude Gendarmeriestraat, 62, B-3100 Heist Op Den Berg, Belgium.

DEADLINE: All entries must be postmarked not later than 30 days after the contest.

AWARDS: The new "UBA Contest Award" will be sent to the highest scoring station in each class from each country. Other participants receive a certificate provided they contact at least 40 stations.

The EC Trophies go to the EC winners of Class B from each event.

A special engraved plaque is donated by ON6JG to the overall winner in Class B of the SSB contest.

PENALTIES AND DISQUALIFICATION:

Penalties for:

— incomplete or incorrect exchange, nil points.

— deduction of three times QSO value for any unmarked duplicate contact.

Disqualification applies for:

— incomplete or late entry (the latter will be treated as a check log).

— violation of the rules.

— unsportsmanlike behaviour.

— excessive number of unmarked duplicates () 2 percent).

FIRST ARRL RTTY ROUNDUP

Racket — Baudot — AMTOR — ASCII

Many digital communication choices await participants in this year's *New* RTTY Roundup. This is the *first* annual all-digital contest sponsored by the ARRL.

The object of the RTTY Roundup is to work as many digital stations as you can world wide on any of the allowed digital modes within the allotted time period. QSO point totals are multiplied by the total number of different States plus VE provinces plus DXCC countries worked. So, it pays to try different bands to work into different areas. Remember, multipliers count only once (*not* once per band), but you can rework the same station on a different band for additional QSO points. You may operate more than one digital mode during the contest, but QSOs and multipliers may only be counted once regardless of mode.

One of the most exciting twists of this contest is packet radio. Packet stations are reminded that contacts for contest credit may *not* be made using digipeaters.

In addition to the competitive aspects of a digital-only contest, it is also a great chance to work new States, provinces and countries for awards.

Even if you have never operated an SSB or CW contest before, jump in — it is fun! You can read all about contesting and digital operation in *The ARRL Operating Manual* or *ARRL Handbook*, available from your Division or direct from ARRL Headquarters.

Getting Ready

Okay, you want to give the ARRL RTTY Roundup a try. What next?

1. For starters, carefully read the rules published here.

2. Get the proper paperwork. ARRL offers a package of forms to help you organise your contest entry. You wouldn't dream of doing your tax return on a sheet of notebook paper, would you? Here is what you will need:

* *Log sheets* for keeping track of your contest contacts. These special log sheets have spaces for all of the information that you need to record for each QSO.

* *Dupe sheets* to help you organise, in alphanumeric order, the call signs of stations contacted. If you fill out the dupe sheet as you operate, you can tell at a glance whether or not you have contacted a station before. You will need one per band.

* *Summary Sheet* to help you figure out your final score. The summary sheet is very important because it also helps us get your score listed correctly in *QST*.

Recommended HF Digital Operating Frequencies (MHz)

North and South America	*Europe/Africa*
3.590 RTTY DX	*3.580-3.620*
3.605-3.645	
7.040 RTTY DX	*7.035-7.045*
7.060-7.100	
14.070-14.099.5	*14.080-14.100*
21.070-21.100	*21.080-21.120*
28.070-28.150	*28.050-28.150*

Recommended Novice Digital Operating Frequencies (MHz)

10 metres: 28.100-28.150* *suggested simplex packet radio frequencies: 28.102.3 28.104.3*

* Authorised power output 200 watts maximum for Novices Techs *only* on the 10 metre Novice sub-band.

Canadian Multipliers

Prefix	Province	Prefix	Province
VO1/VO2	NFLD /LAB	VE4	MB
VE1	NB	VE5	SK
VE1	NS	VE6	AB
VE1	PEI	VE7	BC
VE2	PQ	VE8	NWT
VE3	ON	VY1	YUKON

You can obtain a contest package by sending a business size self-addressed envelope plus sufficient postage to ARRL RTTY Roundup Forms, 225 Main Street, Newington, CT. 06111. Each package includes one summary sheet, one dupe sheet and three log sheets. Each log sheet has room for 200 contacts. Feel free to make photocopies as necessary.

Rules:

OBJECT: Contact and exchange QSO information with as many stations as possible on digital modes. Any station may work any other station.

CONTEST PERIOD: First full weekend of January. Begins 1800 UTC Saturday, January 7, and ends 2400 UTC SUnday, January 8, 1989. Operate no more than 24 hours. Two rest periods (for a combined total of six hours) must be taken in two single blocks of time, clearly marked in the log.

MODES: Amateurs may use the following modes: Baudot RTTY, ASCII, AMTOR and Packet (attended operation only).

BANDS: All amateur bands, 3.5 to 30 MHz (excluding 10, 18 and 24 MHz).

ENTRY CATEGORIES:

(a) Single Operator, multi band — One person performs all operating and logging functions. Use of spotting nets (operating arrangements involving assistance through DX-alerting nets, etc) is not permitted. Single-operator stations are allowed only one transmitted signal at any given time.

1. less than 150 watts output.
2. 150 watts output or more.

(b) Multl Operator, single transmitter only — More than one person operates, checks for duplicates, keeps the log, etc. Once the station has begun operation on a given band, it must remain on that band for at least 10 minutes; listening time counts as operating time. Multi-operator stations are allowed only one transmitted signal at any given time.

EXCHANGE:

For United States: Signal report and State.

For Canada: Signal report and Province.

For DX: Signal report and serial number, starting at 001.

Note: Both stations must receive and acknowledge the complete exchange for the contact to count.

SCORING:

(a) QSO Points: Count one point for each completed QSO (anyone can work any one). A station may be worked once per band for QSO credit (but not for additional multipliers).

(b) Multiplier: Count only once (not once per band), each US State (except KH6 and KL7), each VE province (plus VE8 and VY1) and each DXCC country. KH6 and KL7 count only as separate DXCC countries. The US or Canada do not count as DXCC countries.

MISCELLANEOUS: Cross band and cross mode contacts are not permitted. Packet radio contacts made through digipeaters or gateways are not permitted.

REPORTING: Contest forms (log sheets, summary sheet, dupe sheet) are available from ARRL Headquarters. Official forms are recommended. Any entry making more than 200 total QSOs must submit duplicate check sheets (an alphabetical listing of stations worked). Incomplete or late entries will be classified as check logs and are not eligible for competition or awards. Logs should indicate dates, QSO times, on and off times, call signs of stations worked, complete exchange sent and received for each contact, and band. Postmark your entry within 30 days after the contest ends (by February 8, 1989). Send entries to: ARRL Contest Branch, 225 Main Street, Newington, CT. 06111.

AWARDS: Distinctive certificates will be awarded to: Top high-power and low-power Single-operator and Multi-operator scorers in each ARRL/CRRL Section; top high-power and low-power Single-operator and Multi-operator scorers in each DXCC country (other than W/VE); each Novice and Technician entrant; each entrant making at least 50 QSOs.

CONDITIONS OF ENTRY: Each entrant agrees to be bound by the provisions as well as the intent of this announcement, the regulations of his/her licensing authority and the decisions of the ARRL Awards Committee.

FRENCH CONTEST 1989

TRAFFIC: Only with stations from France, FFA (French Army in Germany), DOM-TOM (Departments and Territories overseas). Prefixes beginning with F, TV, HW, TK. . .

PERIODS:

CW begins the last Saturday of January, Saturday January 28, from 0600 UTC to Sunday January 29, 1989, 1800 UTC.

PHONE begins the last Saturday of February, Saturday February 25, from 0600 UTC to Sunday February 26, 1989, 1800 UTC.

BANDS: 3.5, 7, 14, 21, 28 MHz, with respect to the IARU segments.

REPORTS: RS/T and serial number. French stations give also their department number.

POINTS: For each QSO, one point in the same continent, or three points with another continent.

MULTIPLIER: Per band, one point for each different department (Corsica-TK — has two departments: 2A and 2B), FFA (DA1 and DA2), DOM-TOM.

The station F6REF/00 counts as one special point.

FINAL SCORE: Sum of all QSO points multiplied by the sum of multiplier points from each band.

CATEGORIES: Mono-operator, Multi-operators, SWLs.

LOGS: Must be received before March 15 for CW and April 15 for Phone.

ADDRESS: Reseau des Emetteurs Francais REF Contest, C/- M Pacchiana Christian F6ENV, 7 Chemin des exoles, Quartier St-Jean, 13110 Port-de-Bouc, France.

1988 NATIONAL SPRINTS CORRECTION

Unfortunately my friend (?) Murphy became involved in the results as published in the October 1988 issue of AR. One of the excellent CW performers was relegated to a tail-end of the Phone Section.

Rex Shilton VK4CAG, with a score of 20 points was an equal winner In VK4 (with VK4YB and VK4TT) CW Section.

Rex is an avid and very active brass pounder in the Sunshine Coast Radio Club — listing his result in the Phone scores was akin to handing a key man a power microphone!

As soon as the error was discovered, a Certificate was dispatched to Rex to mark his excellent performance. The Adelaide Hills Amateur Radio Society looks forward to his entry in the 1989 event. The fault is entirely my responsibility and I apologise for the error in the copy submitted to AR.

—Contributed by John Hampel VK5SJ, National Sprints Contest Manager

ar

Australian Ladies Amateur Radio Association

Joy Collis VK2EBX
PUBLICITY OFFICER, ALARA
Box 22, Yeoval, NSW. 2868

Before closing the book on our Bicentennial Year, perhaps we will take a quick look back.

1988 was a very important year for YLs, with so many YL awards being offered, and keen sought after. The Dutch were first in the field with their "YL-Year 1988" Award, followed by the Japanese, Brazilian and Finnish YL organisations, and our own Mavis Stafford Bicentenary Trophy. These special awards were in addition to the ongoing YL awards and contests running concurrently.

ALARA activated many of the special Bicentennial call signs during the year, including VI88 — WIA, NSW, VIC, SA, QLD and WA. Thousands of contacts were made, and QSLing efficiently handled.

Bicentennial efforts included the Mavis Stafford Bicentennial Trophy, Bicentennial Stickers on ALARA awards and award upgrades, and Bicentennial Certificates for those qualifying in the ALARA Contest. In addition, the call signs VI88WIA and VI88QLD were in use for our Birthday Activity Day, and VI88WIA during the ALARA Contest.

Barbeques, luncheons, and get-togethers were held in several States, and were well attended.

On September 4, ALARA conducted the WIA VK3 Divisional Broadcast, and was handled very professionally by the ladies concerned.

A presentation of books was made to Walford School, in Adelaide, in appreciation of the use of the school facilities during the ALARA-Meet in September 1987.

Meg VK5AOV, and associates conducted a very successful "Get-to-Know-Amateur-Radio" with the girls at Walford School during August.

Christine VK6ZLZ, became WIA VK6 Divisional President; Mavis VK3KS, won two gold cups and a plaque with the highest DX score, phone and CW, in the DX-YL to NA-YL Contest. (The NA winners also happened to be ALARA members). Jenny VK5ANW (our hard-working Secretary) and OM Mike celebrated their Silver Wedding Anniversary. Marjorie VK3HQ and Bobbie VK6MH, achieved the milestone of 50 years in amateur radio, and each received a memento of the occasion from ALARA. Sadly Bobbie became a Silent Key early in the year. We were also saddened by the loss of Eleanor VK4BEM and long-time member, Daphne Hugo (VK6).

Now, with a new page to write on, a new year ahead, and improving propagation, let us hope we can continue the activities and renew the friendships made in 1988.

Chris VK2VCC.

JOAN AND THE JAPANESE CAPTAIN

Joan Beevers VK3BJB, well-known for her activities as a controller of the Japanese Maritime OKERA Net, was recently invited, together with her husband and son, to visit the Japanese ship the *Aki Maru* as a guest of Captain Yorio Tsubota JI2GAZ/MM. The following account of the visit appeared in a Mildura newspaper:

"The captain of a Japanese bulk carrier was given a sample of Sunraysia wine, dried fruit and other produce last week, and was amazed.

"Not at the produce, but that someone he have never met would do a 2400 kilometre round trip to deliver it in person.

"That's exactly what Mildura-based amateur radio enthusiast, Joan Beevers did last week, and it's not the first time.

Mrs Beevers, fluent in Japanese, has been speaking to the skippers of giant ocean-going tankers and other carriers for about 18 years.

"She has received scores of invitations to visit overseas ports in a variety of countries.

"They're a bit far for her to travel, but when one of her regular radio contacts comes closer to home, Mrs Beevers loves to try and meet them in person.

"She has already met contacts in Portland and Melbourne, but last week she made her longest trip — she and her husband Ray, and son Brad, 13, went to meet Captain Yorio Tsubota, skipper of the 88 000 tonne bulk carrier *Aki Maru*.

""We often talk over the radio on the mobile maritime channels," Mrs Beevers said yesterday.

""You get to know the skippers of a lot of the ships over the years, but it's not often I get a chance to meet them in person."

"She said Captain Tsubota was amazed that she would travel the 1200 kilometres to be his guest for two days.

""We were looked after like royalty" she said. "We had the stateroom, the run of the ship, and Captain Tsubota cooked us a meal in his quarters."

"Mrs Beevers presented the skipper and his crew of 27 with a good sample of local produce, some of which they had never tasted before.

""They loved the dried fruit." she said.

"Mrs Beevers contacted Captain Tsubota by radio on her return to Mildura, and this time he extended another invitation — for her to be his guest in Japan.

"Mrs Beevers has been in amateur radio for the last 18 years, and was speaking to so many skippers and crew of Japanese ships and trawlers that she decided to learn the language four years ago.

"She now speaks it fluently, and is in daily radio contact with many of her maritime contacts."

Joan's radio activities keep her very busy — she has been guest speaker at three Rotary Club Meetings recently, and at other meetings, besides being visited by many radio friends. She has also participated in an on-air interview. To quote from Joan's letter "Who said that staying at home and being a housewife was boring?"

THE MAVIS STAFFORD BICENTENNIAL TROPHY

Hopefully, there will be plenty of logs heading towards Mavis, and it will be very interesting to see who has won this trophy — and who has won the consolation prize offered by Margaret VK4AOE.

Don't forget that the closing date for logs to be received is January 31, so if you have not already done so send your log to: The Award Custodian, Mavis Stafford VK3KS, 16 Byron Street, Box Hill South, Vic. 3128. *You have to be in it to win it!*

MID-WINTER CONTEST — January 14/15, 1989

The Mid-winter Contest is held under the auspices of a YL Committee (BYLC, BYLARA, Elettra Marconi and DYLC).

Rules are as follows:

CW — Saturday January 14, from 0700 to 1900 UTC.

SSB — Saturday January 15, from 0700 to 1900 UTC.

All HF bands, no cross-band. YLs call CQ Contest and work YLs and OMs.

Log entry with call RS/T, number, YLs start with 2001, country plus time and date, YL or OM.

Points: QSO with YL five points, with OM three points, one station per band may be worked.

Multiplier: every DXCC country counts as multiplier (not per band). Total score for all bands, points time multiplier. SWLs as above.

Log showing call of station submitted to: BYLC, PO Box 262, 3770 AG Barneveld, Netherlands. Must be postmarked before February 20, 1989.

YL-YEAR 1988 AWARD

(Full details were published in December 1987 *Amateur Radio*).

Following requests to extend the period of the award, it has been extended by two months and a final day. You can work January and February 1989 with eight or 11 YLs per month. February 1989 is the *Final* Day. Every contact with a YL station on this day counts for two points (Joker). In your application you can use a total six Joker stations, from February 29, 1988 or February 28, 1989, or mixed. These Jokers must be all different stations. Six Joker stations are enough to complete a missing month. No other changes to the award conditions.

(The certificate for this award is quite attractive).

AWARD UPDATE

No	Date	Recipient	Sticker	Bicenten Stick
	1988			
140	Jul 13	Sue Ludeman KA6SOC		1
141	Aug 3	Ken Watson VK2CKW		1
22	Jul 23	Pearl Neilson ZL2QY	6	1
40	Sept 16	Elizabeth Anderson VE7YL	16	1

NEW MEMBER

Welcome to Chris VK2VCC. We are glad you have decided to join us.

A very happy and prosperous New Year to all.

73/33, Joy VK2EBX.

ar

Walli DJ6US.

Education Notes

Brenda Edmonds VK3KT
FEDERAL EDUCATION OFFICER
PO Box 883, Frankston, Vic. 3199

The new regulations, the brochures being produced by DOTC to replace the *Amateur Operator's Handbook*, have been circulated in draft form for the Institute's comments, and the comments have been returned to the Department.

The set will consist of:

- DOC 70 — Information for Prospective Amateur Operators, which contains the information about examinations, exemptions, reciprocal licensing, club operation and the examination syllabuses;
- DOC 71 — Licence Conditions and Regulations Applicable to the Amateur Service, which covers operation of stations, frequency allocations, classes of emission, power limits and repeater/translator conditions; and
- DOC 72 — Amateur Service - Operating Procedures, covering calling and reply procedures, distress communications, the Q-code and emission designations.

Photocopies of DOC 71 are available from State Offices of DOTC. It is expected that the others will also be available fairly soon.

Discussion with DOTC early in November produced an assurance that the new brochures and the information therein, will not become examinable until well after they are all freely available. We will be given some months notice before the examinations are based on their contents. This means that the February examination will be still based on the 1978 edition of the *Amateur Operator's Handbook*.

From my reading of the drafts, there is not a lot of change from the regulations as we have become used to them. Of course account has been taken of the changes to operating requirements since the last publication. The intent has been to make them more relevant to the amateur service, some of the distress procedures which relate to the maritime service have been deleted. The emphasis on the Q-code has been reduced.

The section which will cause candidates most trouble is the Emission Designations. At first reading it appears much more complex than A3J or F5. It is still based on the same characteristics as we have been using, but also has a bandwidth component. An explanation of the system used has previously been published in this journal (see June 1986, page 9).

Most instructors have tended to leave the Regulations out of the course, expecting the students to be able to rote learn the required sections. The new publications will make most of this easier, as in many cases the language has been simplified, and some logic appears. But I would like to recommend that instructors give some class time to the section covering emission designations. Not only will it help the candidates to pass the Regulations examination, but explanation of the official language will help them to understand more about modulation and types of transmissions, and so help the theory sections as well.

Because of the extension of novice privileges to include some of the two metre band, it has become necessary to include a small section on FM theory in the 'Transmitters' and 'Receivers' sections of the novice syllabus. This should not cause much problem as we are assured questions will require only a basic level of understanding, and I expect to be able to view the questions before they are released.

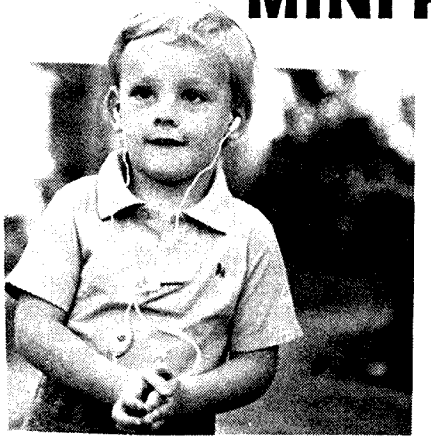
My best wishes for 1989 to all readers. It will be another year of big changes on the administration side of our hobby. By the end of the year, the development machinery should be fully in place, and we will have more control than ever over who is eligible to join our ranks.

The opportunities to encourage, instruct and enlist new recruits put some responsibility on all members to contribute to the new system in one way or another. It would be a shame to lose potential new members because no one could be bothered to arrange for an examination, or to pass on information as needed.

There are very few of us who have entered the hobby without some assistance from an established amateur. Now will be the opportunity to repay those old debts by helping a newcomer to obtain a licence.

73, Brenda VK3KT

MINI RADIO GIVES AN EAR FULL



What was claimed to be the smallest ever commercial FM receiver was launched at the Seoul Olympic Games.

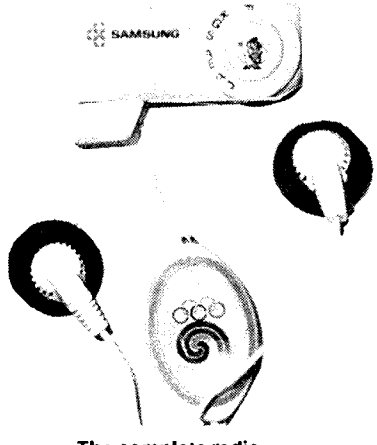
Those attending the Olympics opening and closing ceremonies were given one of the receivers free. This was a gesture assisted by the manufacturers Samsung, whose factory is located in South Korea. Samsung are well-known in Australia as their quality products are beginning to appear in the television receiver and VDU stores.

Each radio was presented in a plastic container similar in size to a standard cassette holder and was powered by two supplied 'button' batteries and was capable of receiving the multilingual transmissions from transmitters located at the Olympic village. The languages used were Korean (K), German (G), Arabic (A), English (E), Spanish (S), Japanese (J), French (F) and Russian (R). Each language being coded on the dial as per the brackets.

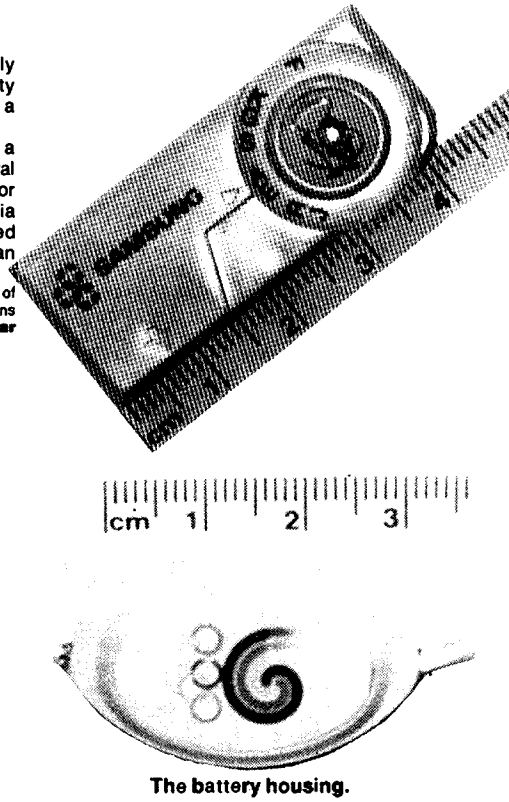
It is not known whether they will be commercially marketed to the public but going on their popularity at the time it seems that they would be quite a viable proposition.

Each unit comprises of two single ear phones, a battery holder and the radio. The radio on removal of the metal back reveals a tuning capacitor mounted onto a circuit board which is fed power via a three pin phased plug which is also cabled connected to the earpieces and doubling as an antenna.

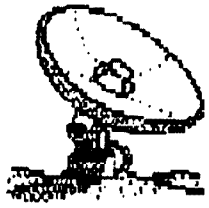
—Contributed by Jim Linton VK3PC. Photographs courtesy of Betken Productions



The complete radio.



The battery housing.



AMSAT Australia

Colin Hurst VK5HI
8 Arndell Road, Salisbury Park, SA. 5109

NATIONAL CO-ORDINATOR
Graham Ratcliff VK5AGR

INFORMATION NETS
AMSAT AUSTRALIA
Control: VK5AGR
Amateur Check-In: 0945 UTC Sunday
Bulletin Commences: 1000 UTC.
Primary Frequency: 3.685 MHz
Secondary Frequency: 7.064 MHz

AMSAT SW PACIFIC
2200 UTC Saturday
14.282 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT Australia. This information is also included in some WIA Divisional Broadcasts.

AMSAT-AUSTRALIA NEWSLETTER AND SOFTWARE
The fine monthly publication *AMSAT-Australia Newsletter* published on behalf of AMSAT-Australia by Graham VK5AGR, now has 280 plus subscribers. Should you also wish to subscribe, then send a cheque for $20 made payable to AMSAT-Australia and post to:
AMSAT-Australia, C/- PO Box 2141, GPO, Adelaide, SA. 5001.

The Newsletter provides the latest news items on all satellite activities and is a must for all those seriously interested in amateur satellite activities.

Graham also provides a Software Service in respect to general satellite programs made available to him from various sources. The only requirements to make use of this service is to send Graham a diskette nominating your requirements, a nominal $10 donation to AMSAT-Australia and sufficient moneys for return postage and packing. To obtain details of the programs available and other AMSAT-Australia services, send an SASE to Graham.

AMSAT-OSCAR 13 VERSUS AMSAT-OSCAR 10
It is obvious my "tutorial" on AMSAT-OSCAR 13 in the November issue has raised world-wide interest.

Some additional points that have been brought to my attention by Graham VK5AGR, are also worthwhile to readily share with the readers of this column. The first is a phenomena that has been aware to the more ardent VHF enthusiasts turned satellite communicators. During the summer months, the ionisation of the E layer provides the medium by which VHF enthusiasts work copious DX primarily on six metres, using the Sporadic E phenomena. The medium, by which two metre and 70 centimetre DX is worked over the summer period cannot be directly related to the E layer, however it is due (in part) to the ionisation of one of the tropospheric layers that encircle our planet. VHF enthusiasts will also be aware of the vagaries of conditions applying to both 144 and 432 MHz, for example when 432 is available over a set path, it does not readily mean that 144 will be booming over the same path, which is contrary to what is theoretically considered to be the case.

Theoretically it is believed that the VHF and UHF uplink signals are not influenced by the Earth's tropospheric layers, however as alluded to above this is not always the case. Graham VK5AGR, being one of the erstwhile command stations for both AO-10 and AO-13 has been documented on numerous occasions during the summer months in-ordinate attention of the 45 UHF uplink. Graham believes this is directly related to the partial ionisation of a tropospheric layer. (Partial: implying frequency dependency). How many satellite communicators on OSCARs 6, 7 and 8 remember the staccato QSB that was only evident on the downlink signals during the summer months. The theory being 10 metre signals trapped (reflecting) within ionised E layers and eventually spilling out through "holes" in the ionised layers. Therefore, should you experience the odd occasion where you find that your uplink power has to be increased to ensure your downlink is comparable but *not greater* than the general beacon on 158.812 MHz give some thought to the above.

However, the most important issue that I wish to bring to readers attention is the significance of *squint angle*. Just to refresh memories, *squint angle* is the term coined by Jim Miller G3RUH, to define the angle subtended by the centre line of the satellites receiving and transmitting antennas and the communicator (ie you and I). Taking into account that the satellite antennas have defined beamwidths, there is an optimum period for the most effective communications.

Similarly, the beamwidths and effective tracking of the communicators station antennas also come into the equation for effective communication. Just recently Graham VK5AGR, in one of his rare idle moments, was reflecting on comments made by an American station who had compared notes with Graham, on his comparisons of AO-10 versus AO-13 as observed from the USA. Although the operator considered AO-13 was superior, he was puzzled as to why his best DX had been transposed from the west of his QTH to the east. Intrigued by the sincerity of the comments, Graham set about using PLAN-10 (G3RUH's Tracking Program) to ascertain what the *mutual* squint angles would be under the circumstances. In hindsight, the results were predictable, however prior to analysing the problem, Graham openly admitted he and many others like him had only ever stopped to consider their own environment with respect to the spacecraft. As I mentioned in my last tutorial, the rules have changed with AO-13 and comparisons to AO-10 should be tempered.

Nonetheless, Graham's exercise was not wasted as he saw the tremendous potential for a *Mutual Squint* scenario for G3RUH's program. An approach to Jim has already ensured that a Beta copy of a new version of Plan-10, incorporating this feature, will be in the mail for Graham's evaluation within weeks. Fundamentally, you enter your QTH's co-ordinates and the co-ordinates of the station that you wish to communicate with, and the program determines the optimum time for *mutual* communication. It is anticipated that by the time this issue of *Amateur Radio* reaches readers, the new software will be available from AMSAT-Australia. Please refer all inquiries to Graham VK5AGR.

TECHNICAL COMPENDIUM
This month's column is always a difficult one to cover as the deadline for copy is literally months ahead. Following numerous requests for technical data relating to the various satellites I have compiled the following technics. Primarily, the information is courtesy Graham VK5AGR, AMSAT-UK and AMSAT-DL. One publication not included due to the magnitude of information (eight pages) is one entitled *AMSAT OSCAR 13 TELEMETRY BLOCK FORMAT* by Peter DB2OS. An SASE to Graham VK5AGR, with a small donation to AMSAT-Australia (to cover photocopying, etc) requesting this document will yield a dearth of information who wish to decode the PSK Telemetry from AO-13.
de Colin VK5HI

AMSAT OSCAR-10
Due to radiation damage to the Onboard Computer memory, the Mode L transponder and beacons are no longer active. However, the Mode B transponder and beacons continue to operate when there is sufficient solar illumination on the solar panels.

Mode B Transponder

Uplink Passband	Downlink Passband
435.027 — 435.179 MHz	145.977 — 145.825 MHz

The transponder is linear and inverting; ie LSB on the uplink results in USB on the downlink and the translation equation is:
Downlink Frequency = 581.004 - Uplink Frequency ± Doppler Shift

The General Beacon is on 145.810 MHz and the Engineering Beacon is on 145.987 MHz. Due to the OBC memory failure, the General Beacon only transmits a steady CW carrier. The Engineering Beacon is now rarely ever heard.

FUJI OSCAR-12
Fuji OSCAR-12 has two transponders with two associated beacons.

Mode JA Transponder — Analogue (ie voice)

Uplink Passband	Downlink Passband
145.800 — 148.000 MHz	435.900 — 435.800 MHz

Beacon — 435.795 MHz ± Doppler Shift

The transponder is linear and inverting; ie LSB on the uplink results in USB on the downlink and the translation equation is:
Uplink Frequency = 581.800 — Downlink Frequency ± Doppler Shift

The beacon transmits telemetry information in Morse code.

Mode JD Transponder — Digital (1200 Baud PSK)

Uplink Frequency	Downlink Frequency
Channel 1 — 145.850	435.910 MHz
Channel 2 — 145.870	435.910 MHz
Channel 3 — 145.890	435.910 MHz
Channel 4 — 145.910	435.910 MHz

Beacon — 435.910 MHz ± Doppler Shift

Uplink is two metres FM and the downlink is 1200 Baud PSK on SSB and uses AX.25 V2 Packet Radio protocol.

RADIO SPUTNIK — 10
Transponders

MODE	UPLINK BAND	DOWNLINK BAND
K	21.160 — 21.200	29.360 — 29.400
T	21.160 — 21.200	145.860 — 145.900
A	145.860 — 145.900	29.360 — 29.400
KT	21.160 — 21.200	29.360 — 29.400 and 145.860 — 145.900
KA	21.160 — 21.200 and 145.860 — 145.900	29.360 — 29.400

Beacons: 29.357, 29.403*, 145.857 and 145.903 MHz.
Robot Up: 21.120, 145.820 MHz.

RADIO SPUTNIK — 11
Transponders

MODE	UPLINK BAND	DOWNLINK BAND
K	21.210 — 21.250	29.410 — 29.450

T	21.210 — 21.250	145.910 — 145.950
A	145.910 — 145.950	29.410 — 29.450
KT	21.210 — 21.250	29.410 — 29.450 and 145.910 — 145.950
KA	21.210 — 21.250 and 145.910 — 145.950	29.410 — 29.450

Beacons: 29.407, 29.453*, 145.907 and 145.953 MHz.
Robot Up: 21.130, 145.830 MHz.

The transponders on RS-10/11 are linear and non-inverting transponders; ie USB on the uplink produces USB on the downlink. Also note that a frequency on the low end of the uplink passband corresponds to a frequency on the low end of the downlink passband. Beacons transmit telemetry information in Morse code.

* denotes confirmed Robot downlink frequency.

RADIO SPUTNIK — 5 AND RADIO SPUTNIK — 7

Mode A Transponders

Uplink Passband 5 — 145.910-145.950 and Uplink Passband 7 — 145.960-146.000
Downlink Passband 5 — 29.410-29.450 and Downlink Passband 7 — 29.460-29.500

Beacons and/or Robot Transponder Downlinks

29.331 29.341
29.452 29.501

Robot Transponder Uplinks

145.826 145.835

RS-5 and RS-7 transponders are also linear and non-inverting — see above.

DESIGN AND LAUNCH OF RS-12 and RS-13

RS-12 and RS-13 are brothers of RS-10/11. RS-12 and RS-13 were built at the Tsiolkovskiy Museum for the History of Cosmonautics in Kaluga city, an industrial centre 180 kilometres south-west of Moscow. The chief architects of the project were Alexsandr Papkov and Victor Samkov. RS-12/13 — one monounit mounted in primary payload COS-MOS, carrier navigation system for sea ships (as well as RS-10/11). Launch time of RS-12 and RS-13 is expected in 1989.

Obit Configuration

Polar circular orbit with average height 1000 kilometres (621 miles), inclination 83 degrees and period 105 minutes.

Transponder

RS-12

Mode "A"	**Uplink**	**145.910 - 145.950**
	Downlink	**29.410 - 29.450**
	Beacon	**29.4081 (or 29.4543)**
Mode "B"	**Uplink**	**21.210 - 21.250**
	Downlink	**29.410 - 29.450**
	Beacon	**29.4081 (or 29.4543)**
Mode "T"	**Uplink**	**21.210 - 21.250**
	Downlink	**145.910 - 145.950**
	145.9125 (or 145.9587)	
Mode "KA"	**Uplinks**	**21.210 - 21.250**
		145.910 - 145.950
	Downlink	**29.410 — 29.450**
	Beacon	**29.4081 (or 29.4543)**
Mode "KT"	**Uplink**	**21.210 - 21.250**
	Downlinks	**29.410 - 29.450**
		145.910 - 145.950
	Beacons	**29.4081 (or 29.4543)**
		145.9125 (or 145.9587)

RS-13

Mode "A"	**Uplink**	**145.960 - 146.000**
	Downlink	**29.460 - 29.500**
	Beacon	**29.4582 (or 29.5043)**
Mode "B"	**Uplink**	**21.260 - 21.300**
	Downlink	**29.460 - 29.500**
	Beacon	**29.4582 (or 29.5043)**
Mode "T"	**Uplink**	**21.260 - 21.300**
	Downlink	**145.960 - 146.000**
		145.8622 (or 145.9083)
Mode "KA"	**Uplinks**	**21.260 - 21.300**
		145.960 - 146.000
	Downlink	**29.460 - 29.500**
	Beacon	**29.4582 (or 29.5043)**
Mode "KT"	**Uplink**	**21.260 - 21.300**
	Downlinks	**29.460 - 29.500**
		145.960 - 146.000
	Beacons	**29.4582 (or 29.5043)**
		145.8622 (or 145.9083)

AUTOANSWER "ROBOT"

RS-12

Modes: A, K, T, KA, KT
Uplink: 21.1291 and/or 145.8308 MHz
Downlink: 29.4543 and/or 145.9587 MHz

RS-13

Modes: A, K, T, KA, KT
Uplink: 21.1385 and/or 145.8403 MHz
Downlink: 29.5043 and/or 145.9083 MHz

Technical Data

DC Power:

All Systems Off — RS-12 4.6 watts RS-13 3.5 watts
All Systems On (max output) — RS-12 35 watts RS-13 25 watts

RS Output Power:

Beacon and "Robot" (low/high) — RS-12 0.45/1.2 watts RS-13 0.45/1.2 watts
Transponder Tx (29 or 145) — RS-12 about 3 watts RS-13 about 8 watts

AMSAT OSCAR-13

Mass:

Launch Weight 140 kg
Mass in Orbit 90 kg

Dimensions:

Height with Antennas 1.35 m
Width with Antennas 2.00 m

Antennas on the Satellite

70 cm directional = 10 dBic (right hand circular)
2 m directional = 6 dBlc (right hand circular)
20 cm + 2 m omni = -2 dBi
23 cm helix = 11 dBic (right hand circular)
13 cm helix = 12 dBic (right hand circular)

Solar Generator:

Initial capacity — 40 watts
After three years in orbit — 25 watts

Life Expectancy:

six years

Launch:

Rocket = Ariane IV; V-22
Launch Site = CSG, Kourou
Date = June 1988

Orbit:

(after launch)
Apogee 35 800 kilometres
Perigee 200 kilometres
Inclination 10 degrees
(after orbit correction)
Apogee 35 800 kilometres
Perigee 1 500 kilometres
Inclination 57 degrees
Orbital Period 11 hours
Stabilisation Spin Stabilised

U Transponder:

Input 435.420 MHz to 435.570 MHz
Output 145.825 MHz to 145.975 MHz
General Beacon 145.812 MHz
Engineering Beacon 145.985 MHz
Transponder Power 50 watts PEP
Necessary transmit power at a ground station = 10 watts to a 12 dBic antenna (right hand circular).

L Transponder:

Input 1 1269 MHz to 1269.330 MHz
Output 1 435.715 MHz to 436.005 MHz
Input 2 144.425 MHz to 144.475 MHz
Output 2 435.651 MHz to 435.940 MHz
General Beacon 435.651 MHz
RUDAK Input 1269.710 MHz
RUDAK Output 435.677 MHz
Transponder Power 50 watts PEP
RUDAK Power 6 watts

Necessary transmit power at a ground station = three watts to a 24 dBic antenna (right hand circular).

S Transponder:

Input 435.601 MHz to 435.637 MHz
Output 2400.711 MHz to 2400.747 MHz
Beacon 2400.325 MHz
Transponder Power one watt

Necessary transmit power at a ground station = three watts to a 24 dBic antenna (right hand circular).

ar

DEADLINE FOR MARCH IS JANUARY 20, 1989

SATELLITE ACTIVITY FOR AUGUST/SEPTEMBER 1988

1. LAUNCHES

The following launching announcements have been received:

INT'L NO 1988	SATELLITE	DATE	NATION	PERIOD min	APG km	PRG km	INC deg
074A	OSCAR 23	Aug 25	USA	107.4	1176	1032	90.0
074B	OSCAR 31	Aug 25	USA	107.4	1178	1032	90.0
075A	Soyuz TM-6	Aug 29	USSR	See		note	
076A	Cosmos 1966	Aug 30	USSR	11h48m	39299	617	62.6
077A	USA 31	Sep 02	USA				
078A	USA 32	Sep 05	USA				
079A	Cosmos 1967	Sep 06	USSR	90.3	409	206	72.9
080A	Fengyun 1	Sep 06	China	102.8	904	881	99.1
081A	Gstar 3	Sep 08	USA	983.1	36161	16587	1.5
081B	SBS 5	Sep 08	USA	1423.4	35788	35289	0.1
082A	Cosmos 1968	Sep 09	USSR	88.7	262	192	82.3
083A	Progress 38	Sep 09	USSR	88.8	267	193	51.6
084A	Cosmos 1969	Sep 15	USSR	89.7	373	178	67.0
085A	Cosmos 1970	Sep 16	USSR	11h14m	19102	19102	64.8
085B	Cosmos 1971	Sep 16	USSR	11h14m	19102	19102	64.8
085C	Cosmos 1972	Sep 16	USSR	11h14m	19102	19102	64.8
086A	CS-3B	Sep 16	Japan		37200	200	
087A	Horizon 1	Sep 19	Israel	98.8	1150	250	142.9
088A	Cosmos 1973	Sep 22	USSR	90.2	395	206	72.9
089A	NOAA H	Sep 24	USA				

2. RETURNS

During the period 90 objects decayed including the following satellites:

1988-048A	Soyuz TM-5	Sep 07
1988-072A	Cosmos 1964	Sep 09
1988-073A	Cosmos 1965	Sep 22
1988-079A	Cosmos 1967	Sep 15
1988-082A	Cosmos 1968	Sep 23

3. NOTES

1988-075A Soyuz TM-6:

This satellite carried Commander Vladimir Lyakhov, Physician Valeriy Polyakov and Afghan Research Cosmonaut Abdul Ahad Mohmand to the orbital station MIR. Docking was made on August 31, and SOYUZ TM-5 undocked on September 05 with Vladimir Lyakhov and Abdul Ahad Mohmand on board. The descent module landed at 0050 UTC , September 07, 160 kilometres south-east of the city of Dzhezkazgan.

1988-081A Gstar 3 & 1988-081B SBS 5:

These satellites were launched for the USA at the European Space Agency facility at Kourou, French Guiana.

—Contributed by Bob Arnold VK3ZBB

ar

MORSEWORD 23

Audrey Ryan

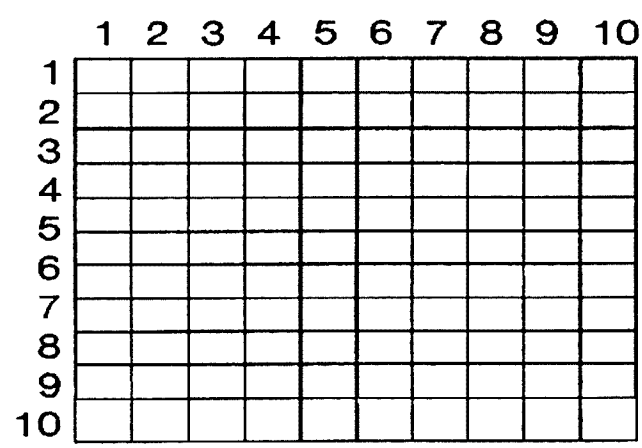
30 Starling Street, Montmorency, Vic. 3094

ACROSS

1 Incise
2 Dye
3 Scene
4 Pews
5 Young Elizabeth
6 Trot
7 Wander
8 Rips
9 Set of rooms
10 Fish

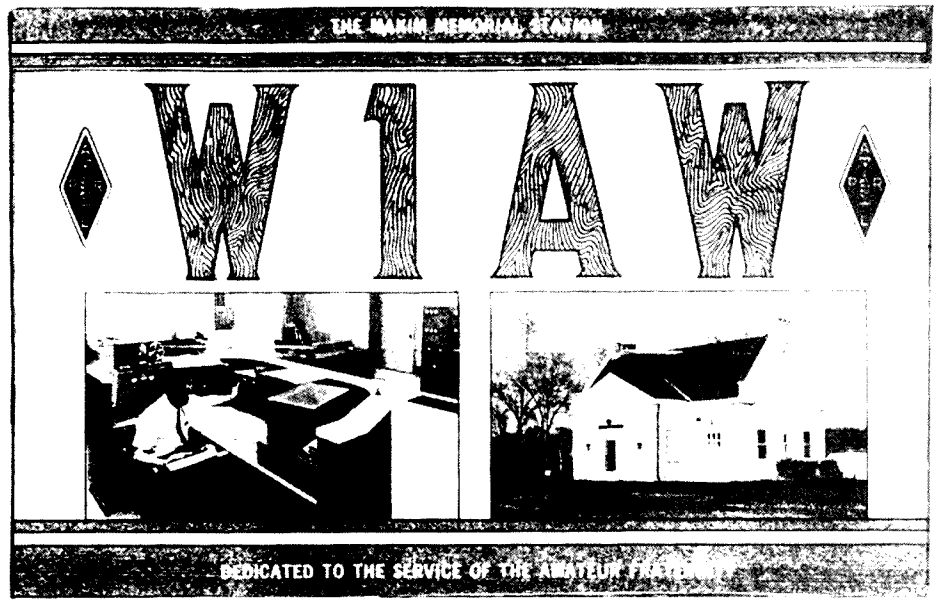
DOWN

1 Spoken
2 Fades
3 Bottom
4 Servant boy
5 Faces the bowler
6 Bulb
7 Huge
8 Appears likely
9 Set of Stipend
10 Adapts



Solution page 60. . .

QSLs from the WIA Collection



W1AW

This is a QSL from the radio station of the American Radio Relay League (ARRL) Headquarters situated at Newington, Connecticut. It also was the call sign of one of the outstanding pioneers of amateur radio administration.

In these days of advanced technology and general affluence which enables one to choose and purchase an infinite range of radio equipment "straight off the shelf", it is easy to forget not only the pioneers of amateur radio, technology but those of amateur radio administration. The QSL shown here represents part of the history of how the organisation of amateur radio (as we know it today) really got started. It is true that amateur experimenters were active in the early 1900s. Both Australian and American experimenters had their own call signs even back in the early 1900s although general licencing did not eventuate until later in the decade. However, there was no organisation of amateur activities except through a few local radio clubs. The story of amateur radio administration, at least on a national basis, really starts with the ARRL, which although possibly not the oldest national administrative body in the world (our own Wireless Institute of Australia has a claim to that achievement), did more than any other body on an international level to establish and guard the interests of all amateurs throughout the world.

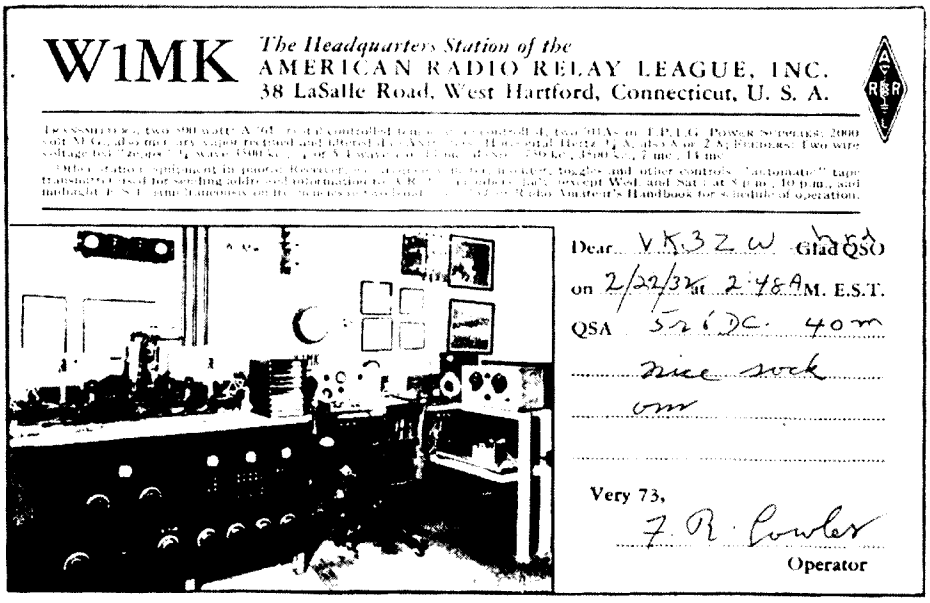
The name of the founder and first President of the ARRL was Percy Hiram Maxim, a name much revered throughout the world of amateur radio. Although almost every amateur will know of the ARRL (and its periodical, *QST*), few will realise the significance of that word "relay" in its title. The whole development of amateur radio, in fact, could be said to centre around that one word.

The use of spark transmission and long waves (one always spoke of wavelengths rather than frequencies in those days), severely limited the distance over which transmissions could take place. The answer to the problem of overcoming distance therefore, was to set up a series of co-operating experimenters each of whom could help relay a message. This needed good organisation as well as the spirit of being willing to help one another — a spirit which was to grow throughout the whole field of amateur radio serving to bond it into a powerful but friendly body.

It was Hiram Maxim, assisted by Clarence D Tuska, who put this necessary organisation into effect through a league of relay stations. Of course, written communication between members of the relay team was also needed and that is the story of the periodical *QST*.

It was on April 6, 1914, at a meeting of the Radio Club of Hartford, Connecticut, that a committee was set up to investigate the possibility of forming what was to become known as the ARRL. The date of the club meeting of May 18, 1914, is generally recognised as the birth of that organisation since it was at that meeting that application forms for membership to the newly-formed league were distributed. About three months later, a system of relay routes was formulated so that messages could be passed from one part of the country to the next. These trunk line routes covered the whole of the United States. On February 1, 1915, the ARRL became independent from the Hartford Club and became incorporated as a non-profit organisation, continuing to operate however from Hartford. By the end of 1916, more than 150 cities had been linked through relay by the main trunk lines, with branch lines completing the national coverage. A large number of relays were necessary since the spark transmitter was not the most efficient of devices. After all, a half-inch spark could send a signal over about five miles, a kilowatt unit, a few hundred.

All transmissions used telegraphy and there was, at that time, virtually no use of amplification (De-Forest's audion, although capable of amplification, was mainly used by the few experimenters who had one, as a more efficient device to crystal or electrolytic detectors). A milestone was reached on January 14, 1917, when a message was transmitted (through relay) across America from one coast to the other, and on February 6, a transcontinental transmission and message reply was received. (It took one hour 24 minutes for this relay from East Coast to West Coast and return!). Thus began an organisation that was to grow in strength and to voice the rights of amateurs, a fact that was to be soon put to the test in the 1920s (and in latter years), when the curtailment of amateur radio frequencies was threatened by both governments and the interests of commercial radio.



W1MK

This card is from the Headquarters station of the ARRL, in West Hartford, Connecticut, before the station was relocated at Newington. The main transmitters were each of 500 watts, and there was an auxiliary transmitter of 250 watts.

The first W1MK station (operating initially as 1 MK) was at the Headquarters Offices of the ARRL and was established in 1924. After a shift in location (still in the State of Connecticut) the station was destroyed by floods in March 1936. From that time it was determined to establish a

new and better station to replace W1MK and to make this a fitting memorial to the founder of the ARRL, Hiram Maxim, who had died on February 17, of the same year.

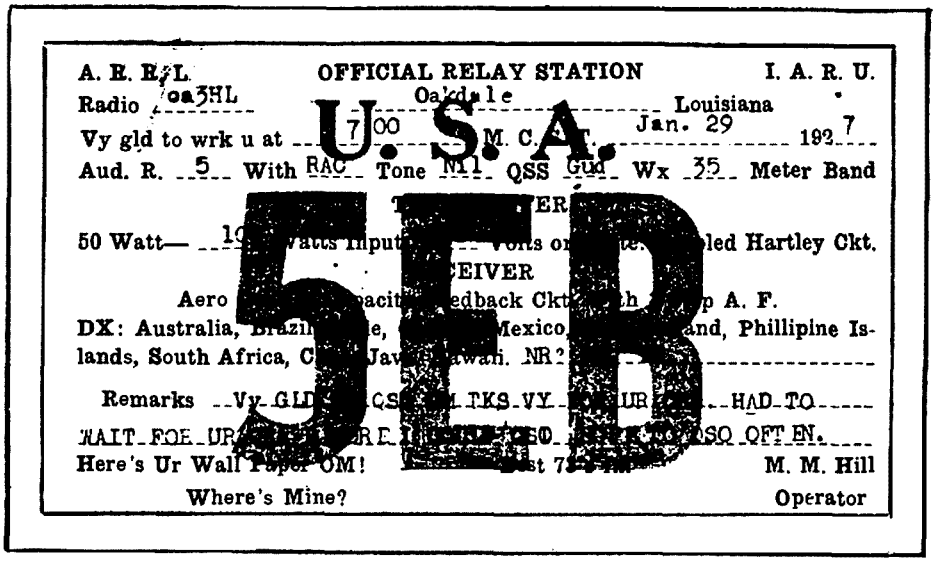
The new station was located at Newington on a seven and a half acre site, and on the anniversary of his death the station was dedicated to this pioneer. It became known as the *Maxim Memorial Station* and bore the call sign, W1AW. As pointed out, this was Maxim's old call. The Federal Communications Commission (FCC), with the special approval of Maxim's heirs, changed the ARRL Headquarters call sign from W1MK to W1AW, in order to perpetuate his call and to serve as a lasting memorial to him. It was believed to be the first instance of the FCC authorising such a change in call sign. The new call was first used to commence a memorial relay on February 17, 1937.

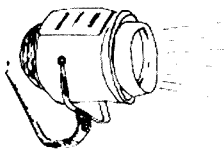
5EB

Dated January 29, 1927, the interesting feature of this QSL card from America (and several others like it of the 1920s) is the title *Official Relay Station* at the top of the card.

Wishing to unite various radio clubs through the proposed league, ARRL, Hiram Maxim sent a letter to the President of the Radio Club of Hartford, as early as March 25, 1914, in which he said; "The object of securing the membership of the various Clubs, would be to have those Clubs advise us as to what stations in their locality are the best ones for us to appoint as Official Relay Stations." Thus the whole network of relay stations was established throughout America comprised of those amateurs known for both their skill and reliability. Little wonder that M M Hill was proud enough to identify his station as a member station of this remarkable relay system.

ar





Spotlight on SWLing

Robin Harwood VK7RH
52 Connaught Crescent, West Launceston, Tas. 7250

Well, another year has commenced and finally we can put the Bicentennial Year behind us. As I am writing this in early November, I cannot comment on any recent happenings on the shortwave scene. Yet, the improvement in high frequency propagation has continued and the experts have been tipping that we could reach the peak of this Sunspot Cycle as early as the end of this year and the beginning of 1990, which would be indicated by what we are at present observing.

At the end of October there were substantial changes to the BBC World Service to emphasise an increased emphasis on news and current affairs. For example, at 2300 UTC, there is an hour-long program titled "Newshour", similar to the National Public Radio program we used to hear via the AFRTS in our local evenings. The best channels I have found are 15.140 and 9.570 MHz, both from the BBC Far Eastern Relay in Singapore. As well, there is a communications magazine on the "Beeb" at 0730 on Thursdays. Try 7.150 or 12.095 MHz for this.

The half-hour "Newsdesk" is now heard four times a day, with an extra bulletin at midnight UTC as well as the regular 0400, 0600 and 1800 releases. "Twenty Four Hours" basically remains unaltered with the 2009 release being deleted. A new weekly news review program called "Worldbrief" will also be heard on Sundays at 2009, but I don't have the other releases at present.

And while we are on the BBC, the Seychelles Relay comes in well here on 15.420 and 17.885 MHz at 0430, with programs in the BBC African Service. The other shortwave broadcaster from the Seychelles is FEBA, a gospel broadcaster and I hear an English release at 0545 on 17.820 MHz, on Fridays. The latter station does verify, whilst the BBC issues a response reply card to all the many thousands of reports they receive.

This leads into the subject of QSL cards. More international broadcasters are dispensing with issuing QSLs as being too time-consuming. They are interested in comments about the program content, for this is the primary reason why they do engage in broadcasting. Most broadcasters have monitoring panels to draw on to get technical reports and are interested especially in audience feedback on the programming side. Naturally this has upset some of the DX "purists". The issue came to a head at the 1988 EDXC Conference, when the DX community largely boycotted the Conference, because of the emphasis on international broadcasters and comments on program content. As a result, the 1989 Conference is in doubt at this stage, for Radio Australia International, who were originally going to sponsor it, withdrew citing the expected poor attendances.

To be blunt, DXers are a decreasing breed and the allure that the hobby had 30 or 40 years ago has well and truly dissipated. In those times, it certainly was some achievement to pullout an obscure low powered drifting signal down in the lower range of frequencies, constantly drowned out by static and then identify the language and the country, etc. The broadcasters were only too eager and pleased to confirm their broadcasts were going far and wide. These days, I am sure most of them are not interested or motivated to reply to the thousands of reports they receive each week, compared to the *hundred or so they got over* an entire year, a generation or more ago.

The Australian Radio DX Club has this interesting definition:

"DXing means the systematic reception of distant and/or overseas radio transmissions without regard to message content, where transmission is by electromagnetic means".

Bob Padula has written a four page article in the October 1988 "AXDN" entitled "DXing — What it really Means". He is scathing of the trend towards program listening among some members of that club, reminding the readers of what the objectives of the ARDXC are, the monitoring of stations and collection of verification cards (QSLs) by members.

Now, do I regard myself as a DXer or just an ordinary shortwave listener? To be honest, I tend towards the latter. I just don't seem to have the time to systematically monitor the bands and dispatch reams of reports throughout the world. Occasionally I do send reports to some stations , usually with comments on the programming. It is the same with my amateur activities, as I have seemingly restricted my operating to working mainly friends and not getting involved in the "DX rat-race". I do enjoy listening over the HF utility spectrum in articular.

I would like to eventually improve the antennas at this OTH. Alas, I fear that putting up a beam would meet quite a few obstacles. As well, I voluntarily restrict my transmitting to outside normal television broadcasting hours, although I haven't received any complaints.

Where this year will lead me, I do not know at this stage.

Well, that is all for this month. Until next time, the very best of listening and 73 — Robin VK7RH.

ar

Radio Amateur Old Timers' Club

Kevin Duff VK3CV
10 Stanley Grove, Canterbury, Vic. 3126

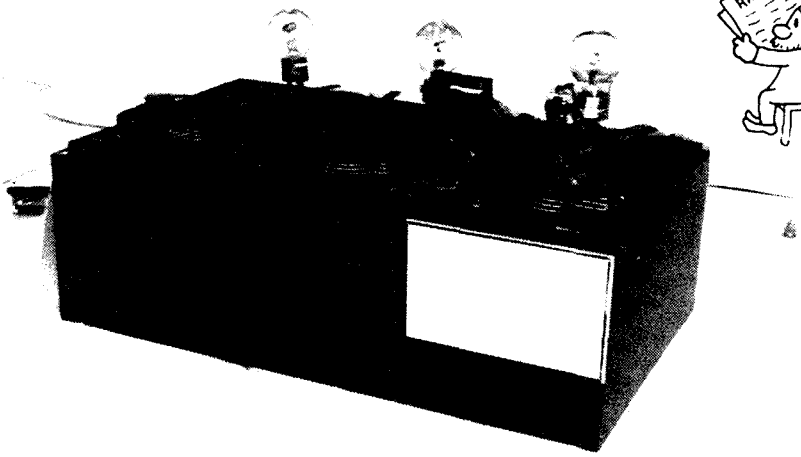
The Radio Old Timers' Club (Victoria) held its Annual Luncheon and get-together on Wednesday, September 21, 1988, at the usual venue, The City and Overseas Club, in Windsor. There were 60 members present and among the guests were Jim Linton, Bill Roper and Chris Long. The President, Bill Gronow, welcomed members and then the first half-hour was devoted to "eye-ball" QSOs and much gossip.

By arrangement with the Melbourne Science Museum, Allan Doble VK3AMD, displayed the original receiver, designed and built by Max Howden A3BQ, which was used for the first two-way amateur contacts with the USA in 1924. (This unit was shown on the cover of *Amateur Radio* in May 1985 during the Institute's 75th Anniversary). A fine photograph of A3BQ operating this receiver and his transmitter during 1924 was shown and a large collection of Maxwell Howden papers were also arranged for members to peruse.

After lunch, members were privileged to enjoy a slide show and talk by historian Chris Long, who is a contract worked for the Melbourne Museum and the National Film and Sound Archives. This covered much ground and Chris explained the role of museums in the collection of old and valuable historical equipment and documents.

He described the early equipment of the late "Mac" McConnell VK3RV. The transmitter and receiver were built in 1934 and were still going 54 years later. The microphone was a "Reece" with carbon granules.

There were many slides showing the collection of early radio speakers and receivers, etc, by the former president of the Historical Radio Society, Ray Kelly.



The A3BQ receiver.

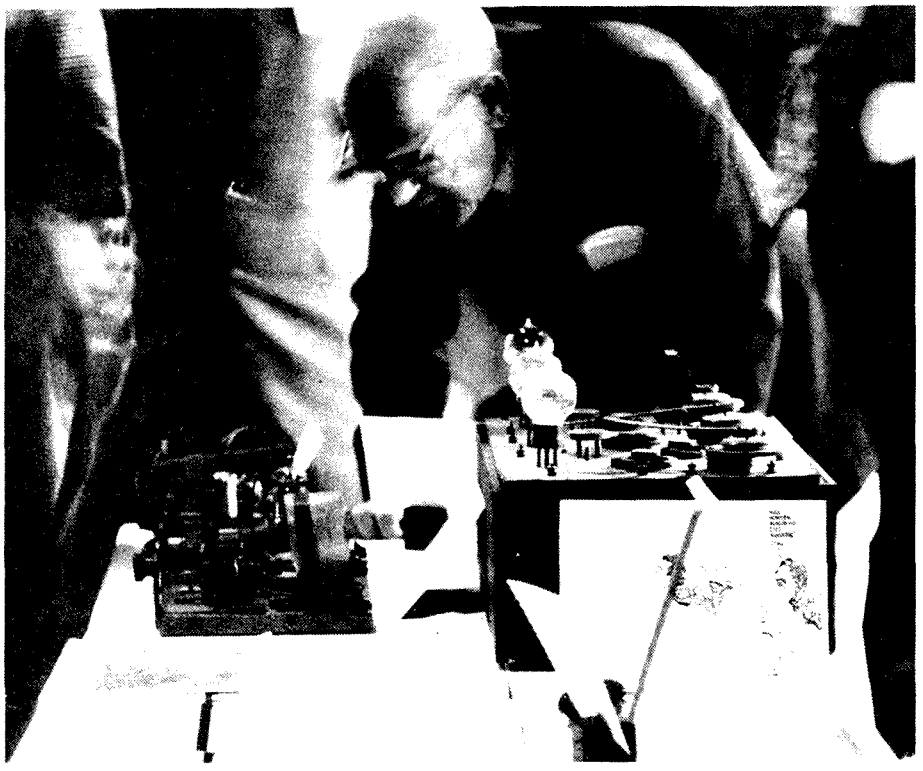
Chris then spoke about one of the very early "tape" recorders built by the Marconi Company in 1934, which used steel tape two millimetres wide and went through the heads at one and a half metres per second! The ABC brought one of these monsters. The spools were almost a metre in diameter and were best loaded into the machine by two people. There were two half-horsepower motors involved. The steel tape ran for about 30 minutes and the program was then changed to disc recording while the new tape was loaded. This

MAX HOWDEN (3 BQ), OF BOX HILL, VICTORIA, THE FIRST AUSTRALIAN AMATEUR TO EFFECT TWO-WAY COMMUNICATION WITH AMERICA.

Max Howden 3BQ, of Box Hill, Victoria, the first Australian Amateur to effect two-way communication with America.

The photograph was taken in late-1924 and appeared in *Wireless World (UK)*. The caption on the original photograph states:

"Transmitting with an input of half a kilowatt on 86 metres, the aerial current is 0.9 ampere. An aerial 80 feet high, situated on top of a hill is employed. On the left of the illustration is the receiver, and on the right the transmitter. A feature of the station is its simplicity. No elaborate apparatus is employed."



The A3BQ display at the RAOTC Luncheon.

machine could be a hazard to the unwary because sometimes the tape would break and flip around at one and a half metres per second. This machine was used at the Royal Melbourne Show a few years ago but they had difficulty with the snapping of the tape because the tapes were, after all, 50 years old!

Chris also spoke about the "lifting" of audio from wax cylinders, another one of his jobs. An Edison dictating machine was used for this and it was set into a 90 pound concrete block (about 40 kilograms) to get rid of rumble, hard going! It could be that many of these cylinder transfers, from the turn of the century, will be available on tapes.

Chris suggested if members had any items of historical value or interest and would like them to be preserved, the Museum would be a very suitable place for their permanent deposit.

President Bill Gronow thanked Chris for his interesting and informative display and said that it was amazing just how these ancient pieces of equipment recall many memories to us all.

And so concluded another very successful Luncheon of the Radio Amateurs Old Timers' Club of Australia.

ar

How's DX?

CHANGE OF PREFIX

As of December 23, 1988, at 0001 UTC, the prefix structure for all Omani amateur radio station was revised as per provisions 2119 and 2120 when read with No 2101.1 of Radio Regulations.

Oman stations are now using the prefix A4 plus a digit, ie 0 to 9.

The following prefixes are being used by the Royal Omani Amateur Radio Society:

A41AA — A41ZZ	Local Omani Amateur Radio Stations
A42AA — A42ZZ	Reserved
A43AA — A43ZZ	Special Event Stations
A45AA — A45ZZ	Expatriates and Visiting Stations
A47AA — A47ZZ	Club Stations

—Contributed by Salim Abdulla Al Kitani A41XJV, QSL Manager, Royal Omani Amateur Radio Society

October was a relatively busy month for the people living at this QTH. We spent the school holidays in sunny Brisbane doing the same thing that millions of other Australians did — visited Expo.

We all should congratulate Queensland for putting the fine exhibition together.

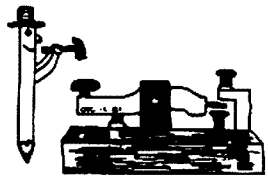
Then, it was onto JOTA where this operator had only a few days to finalise last minute details before going off and setting up at the local Scout Hall to participate in the event. Again, for those who gave their time and expertise, and to AUSSAT for the use of its satellite, we must express our thanks. I know that from my end the boys and girls had a good time.

HEARD AND WORKED ON 20 IN WOODBINE

7/10: K2US.
8/10: HB0/DK1DN (QSL DK1DN), DJ3HJ, CE2AK.
9/10: CT1BOP.
14/10: AD3V.
17/10: ZL2AXI, K7OWJ/BV2 (QSL C/- Heathkit Co, Benton Harbour, Michigan, 49022).
22/10: NE8Z/OA4 (QSL K8LJG), UZ0FWM.
29/10: VE6OU/3, KS9K, KH6FKG, LU5F, AZ4M, TH0X (QSL F6GMB), K3TUP, KX4S, JA6YCU, CE5BYU, JA7YFB, CE4TA, N4ZC, LU4FM, ND3A, W3LPL, RA0JJ, YB0BAQ, JA0ZRY, VU2QQ, VE1ZJ, 3D2DVV (QSL OH2BA), 3D2XX (QSL WB6GEJ).
30/10: FO5IW, LU4FM, CE0ZIJ, NE9O, CE6OS, K2TR, W2GD, W8BI, JA3YBF

—Contributed by Bob Demkiw VK2ENU

ar



Pounding Brass

Gilbert Griffith VK3CQ
7 Church Street, Bright. Vic. 3741

ELECTRONIC KEYER AND PADDLE TECHNIQUE

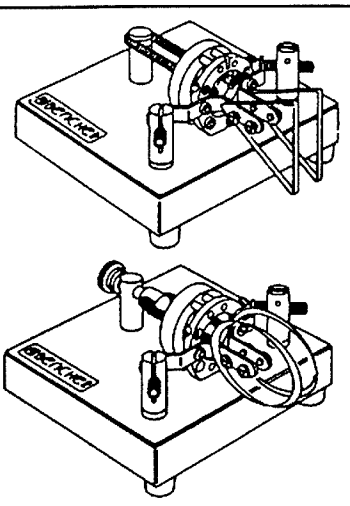
Over the last few months I have been getting an increasing number of inquiries on keyers and a few intrepid home-brewers have even asked me about a kit for the Gilcher paddle! I will not be ordering any more Curtis chips (8044) but you can easily get them direct, and maybe there will be an outlet in Australia soon.

Most Morsiacs at some time or other put aside their hand pump and try a paddle and keyer combination. Many enthusiasts have a stable of keyers and a number of paddles and one of those combinations ends up as the favourite. This can cost quite a bit these days, so it pays to have a feel of another amateur's equipment if you get a chance.

The unofficial standards for right handed operation are dots on the thumb, dashes the finger/s, with shielded twin lead from the paddles to a quarter inch stereo plug, with the dot paddle connected to the tip. The dash paddle to the other shielded wire and the earth to the braid (to shield against RF). Most transceivers with in-built keyers use this system of wiring so you can try your paddles in many rigs.

Whether you are using a kit or a professional keyer will govern how much experimenting you do, but it pays to open up the keyer and install a polarity switch on the input. You can do this on the paddle if you like but most keyers have panel space to spare. Now you can try sending with your left hand. With the dots on the left thumb, etc, this is not as hard as you might think, and if you let your hand do the work you will find that the mistakes come only when you think about what you are doing. It will take a little practice to get up to speed, especially with a few of the letters. My trouble comes with p, x and z, but you might have different ideas. Anyway, this will leave your right hand free to handle the pen or the tuning dial, or whatever. I wish I had learned left handed from the start, so if you can do so, start with your non-writing hand if at all possible, even though it is easy enough to retrain later.

There are two types of paddles used today, and I am not going to refer to mechanical bugs, which, in my view, should be in museums. (But that is another story).



Bencher Keyer Paddles. They come on lambic or single lever paddles with black, chrome or gold base.

The most common paddle is the iambic or 'twin lever' paddle, called iambic because you can squeeze both paddles together to get the iambic rhythm of dikdahdidahdidah. Non-iambic paddles have only one lever and are sometimes called slap paddles because you have to slap them from side to side to generate each element. As a rule, people who learn to use slap paddles hardly ever bother to re-learn iambic sending when they get a twin lever paddle. They should consider that they could be cutting their movements by about 57 percent by learning the proper techniques of the particular iambic letters which are r, k, f, l, c, q and y. Sometimes call the 'lambic Seven'.

Modern transceivers usually have a keyer as part of their design, or at least available as an option costing about the same as a kit of parts would cost without the box. So if you are paying for all the bells and whistles on the new unit, it will pay you to build or buy a good paddle and learn to use it properly. There is nothing to stop you from banging a few nails into a block of wood and bending a piece of shim brass to suit and trying iambic paddling. Or you can spend a couple of hundred dollars on the best you can find. (Something a *lot* of people seem to be doing).

Most electronic keyers have as a part of their design a thing called a dot-memory. Imagine you are going to send a 'k'. You can close the dash paddle then the dot paddle, then the dash paddle again! The timing of the dot is in the order of milliseconds. With dot-memory you close the dot paddle anytime after the dash paddle and up to when it is needed after the dash, this gives you nearly four times the leeway in timing, which can be critical on a slap paddle. What happens, is the keyer holds the instruction from the dot paddle in memory until the correct time (after the dash) to send it. That little dot will be sent, even if you have closed the dash paddle again before it is sent. It is also why the keyer sends iambicly (remember didahdidahdidah) and some blurb sheets refer to it as a dot-dash memory. To confuse people like me I guess!

The classic example of the advantage of using iambic sending is illustrated in the letters c and q. In conventional manual or slap keying the operator moves the lever to the dash side, the dot side, the dash side and back to the dot side before releasing (for a c). Then back to the dash side twice, or hold these for two dashes, over to the dot side, back to the dash side and then release. Result, CQ, the most commonly sent letters in eight movements.

The iambic operator merely squeezes the two paddles, making sure to lead with the dash paddle, waits until the second dot starts, and releases both paddles together. After waiting for a 'letter' space the dash paddle is pressed and held, and after the second dash starts, gives a flick on the dot paddle, finally releasing the dash paddle when the dot is sent. Result, economy in motion.

Here are a few tips which may be helpful if you wish to convert from non-iambic to iambic sending. Stick with your decision and retire your old paddle to the cupboard, your old habits will be impossibly hard to break if you keep going back to them. For the first few days try to relax and just send CW until you get used to the feel of the new paddles. This is best done off-air, perhaps reading from a book, until you make few mistakes. When you have time to think you can start by thinking about one letter at a time and after a little exclusive practice on that letter, you can start sending it iambicly in context. You may feel like trying more at one time but I recommend sticking with the one letter until you can send it iambicly without thinking, then go on to the next. I started with k and r then added c and full stop and left f and l to the last as they seemed to me to be the most difficult. Don't be discouraged if you occasionally slip back to the old habits on one or two letters, especially if you are excited at the time. This usually means you are like me and not getting enough practice, nothing more.

If you are already using iambic techniques there is another choice to make when selecting a keyer. You may have heard about the type "A" and type "B" devices from Curtis Electro Devices. It is very hard to describe the difference but the type "B" device is explained as adding an element of the opposite type when you release the paddles. If you are a type "B" operator and you run across a type "A" device try sending "CQ". If the device is type "A", you will probably get "KG" or possibly "KQ". If you are a type "A" operator you will probably get an extra dash a the end. Most in-built keyers and memory keyers on the market are type "B" so if you must choose, I suggest starting with the most common. The new 8044 ABM chip has both and the "A" type seems much harder to use to me. The effect is similar to that which I get when I switch off the dot-dash memory on my ETM-8C keyer.

The other feature which many people will have seen is the auto-word-space as found on the accu-keyer kits. (EA March 1978, I think).

Auto-word-spacing is a very handy feature in that it makes the sending less critical for perfect Morse. I wonder why it is not incorporated on the Curtis chip? What happens is that the keyer remembers when the last character or element was sent, and if the next element is sent too late (longer than three dot lengths is the letter spacing if I remember correctly) the keyer waits a further few dot lengths before starting to send the next element. That is, provided you wait a little longer than a letter space you will automatically get a full word space. This feature is excellent for speeds up to about 30 words per minute after which, depending on your expertise and your paddle, mistakes such as "ET" when you want "A" or "EQ" when you want a "P". At this time you will be going pretty fast anyway and should be able to handle the word spacing without help so you can switch the auto-word-spacing off.

If you are like me you will have two or three keyers and assorted paddles, maybe all on the bench at the same time, with the hand pump tucked away in the corner somewhere. Iambic keyers are for the lazy, if you want to send reasonably good Morse for the least energy output, then they are for you. I have nothing against the hand key or the purists who don't want to give them up. It is a welcome change to reach for the old brass key and have a try from time to time, but for efficiency, the only way to beat the keyer and paddle combination is to use a computer or keyboard. And that is not hand sending, so it seems to lose a bit of the fun. I am a little surprised that they are not as yet allowed when taking the licence examinations.

A new approach to electronic keyers is the "Triambic Keyer" featured in *Practical Wireless* February 1985, by Mike Rhodes G4FMS. Unfortunately, his article is copyright but if you care to drop me a line expressing your interest, I will see if I can arrange a reprint and maybe some details on any kits.

73, Gil VK3CQ

ar

Club Corner

BALLARAT AMATEUR RADIO GROUP

The Ballarat Amateur Radio Group again held their annual Hamvention on Sunday, October 30.

This year's event attracted a huge group of amateurs and their families from most Australian States.

The hall was packed with well-stocked trade displays who had a steady stream of buyers despite stiff-competition from others with pre-loved equipment and treasures-of-the-past.

The display of packet radio, by Peter VK3AVE, gave many amateurs the urge to fire up on the packet radio mode.

The Department of Transport and Communication also gave a great display of information in hand-out form while Ian VK3AXH and Merv VK3AW, answered many questions on the new regulations. BARG ladies again served up 300 of their famous barbeque lunches along with afternoon tea.

The outstanding fox-hunter of the day was Greg VK3BZQ, with the runner-up being Tom VK5EE.

Winner of the club raffle was Fred VK3KQF, while Franz VK3DVD won the door prize.

The Ballarat Hamvention continues to attract a great number of exhibitors and visitors and is a great example of amateur radio fellowship.

The Ballarat amateurs look forward to enjoying the company of fellow amateur radio operators again this year. Thank you all for making this Hamvention another great day for amateur radio!

—Contributed by Kevin Hughes VK3WN

ar

NORTH EAST ZONE WIA

Following the AGM of the Zone held on October 30, at the Wangaratta TAFE College, the following members were elected to office:

President — Greg Sargeant VK2EXA
Vice-President — Gil Griffith VK3CQ
Secretary/ — Peter Presutti VK2CIM
Treasurer

I thank the outgoing committee for their past efforts. The next meeting will be at the Benalla Rose Gardens on February 12, 1989. This meeting is hoped to be a family outing.

—Contributed by Peter Presutti VK2CIM, Secretary

ar

JOTA AND THE DARLING DOWNS RADIO CLUB

Once again the ever-ready volunteers of the Darling Downs Radio Club gave their time and loaned and operated their equipment to maintain continuous support over many years to the Scouts and Guides of the Toowoomba area.

One team set up three transmitters and the necessary antennas to cater for the Girl Guides on one side of the city whilst the other team, under canvas, attended to the needs of the combined Scout Olympics and Jamboree on the Air.

An estimated total attendance at both venues was in the vicinity of 700 budding amateurs.

The Olympics were held on the opposite side of the city at the Newtown Football Oval. Some of the members worked for two or three days to make the event run as efficiently as possible, in spite of Murphy!

Graham VK4AGN and Dereck (the Treasurer), put in many arduous and busy hours to enable the Guides and Brownies to participate in JOTA, whilst Tom VK4BTW, Keith VK4NCM, Theo VK4KHM and Eric VK4ADA, worked arduously at their transceivers using both the club call sign, VK4WID, and their own to keep up with the steady stream of microphone-shy youngsters.

It was felt that visits to various Scout huts to demonstrate microphone technique and procedure prior to subsequent JOTAs would be a definite advantage.

Valuable help was given by club members, David and Col, whose attendance and assistance was greatly appreciated by the busy operators.

The club looks forward to continuing to support these very worthwhile organisations in the future.

—Contributed by Eric Wissemann VK4ADA, Public Relations Manager, DDRC

ar

GOSFORD FIELD DAY

The club holds a Field Day annually on the Sunday following the third Friday in February each year. This is usually attended by 700 to 900 persons and is recognised as being one of (if not THE) best amateur field days in Australia. A wide range of the latest equipment is displayed by traders, events such as fox-hunts are held and as many as 1000 pre-loved items are lodged for sale through the "Disposals" section for a small charge. If you would like to know more, send a SASE to the Field Manager, PO Box 238, Gosford, NSW. 2250. Many amateurs make a point of holidaying on the Central Coast at the time of the Field Day. Why not you? ? ?

ar

SOUTHERN PENINSULA AMATEUR RADIO CLUB (SPARC)

The Southern Peninsula Amateur Radio Club on Victoria's Mornington Peninsula, decided to try something new and invite primary school students to day-time lectures and hands-on experience of amateur radio.

SPARC received a warm response to the idea from local schools. Groups of sixth grade pupils visit the club's rooms for one hour sessions, which include an introductory lecture on radio and electronics, followed by actual on-air contacts.

Car transport for these unique school excursions has been provided by parents. The students receive a printed confirmation of having participated.

The schools involved have been Eastbourne, Dromana, Rye, Tootgarook and Rosebud. Eastbourne Primary School deputy principal, Wal Bernal said: It's an excellent activity."

The idea is to broaden the horizons of the children and give them an awareness of communication, Mr Bernal said.

SPARC Publicity Officer, Joe Donald VK3AXM, said the exercise had proved very successful and could be adopted by other amateur radio clubs to promote the hobby in their area.

He said SPARC wants to exchange its ideas and experience with other clubs, and would like to see a regular net set up to allow students to have on-air contacts on a prearranged basis.

The Southern Peninsula Amateur Radio Club address is Post Office Box 206, Rosebud, Vic. 3939.

ar

TOWNSVILLE AMATEUR RADIO CLUB POSITIONS FILLED AT ANNUAL GENERAL MEETING

About 50 members and families attended the recent Annual General Meeting of the Townsville Amateur Radio Club. The meeting was held at the James Cook University Club, and followed a dinner evening. An indication of the stability of the TARC was the attendance at the meeting of six past presidents.

A total of 31 positions were filled for the coming year's activities, as shown below. This incredible result gives a good indication of the continuing support for the club.

President	Rob Male VK4MRE
Vice-President	Evelyn Bahr VK4EQ
	Geoff Chapman VK4CET
Secretary	Ken Morris VK4KWM
Treasurer	Ian Sutton VK4ZT
Publicity Officer	Peter Renton VK4PV
Class Manager	Rob Male VK4MRE

Phil Carne VK3AAM, with students from Eastbourne Primary School, at the SPARC Clubrooms. The pupils get some hands-on experience with radio equipment under the watchful eye of the licenced members of the club.

Editor	Iain Morrison VK4KIG
Librarian	Mike O'Keefe VK4YOB
Station Manager	John Stevens VK4AFS
Club WICEN Co-ordinator	Ian Sutton VK4ZT
WICEN Co-ordinator Region 1A	John Stevens VK4AFS
Deputy WICEN Co-ordinator Region 1A	Gary Kimber VK4KGK
Intruder Watch Co-ordinator	to be advised
Committee Members	Graeme Wilson VK4FXL Terry Merritt VK4YTM Bob Mann VK4WJ Roger Cordukes VK4CD
Slow Morse Co-ordinator	Bill Sebbens VK4XZ
Slow Morse Operators	Alan Stephenson VK4PS Vern Crabb VK4FVC Charlie Bahr VK4BQ Noel Kohler VK4BDV Col Hayes VK4FUV Neil Butterworth VK4AQD
Auditor	to be advised
QSL Officer	Robin Potlet VK4KRP
Disposals Officer	Bill Sebbens VK4XZ
Activities Officers	Geoff Chapman VK4CET Bob Mann VK4WJ
Life Member (recognised)	Evelyn Bahr VK4EQ
Honorary Members (confirmed)	Professor Jim Ward Tom Gaveston
Trustees	Alan Stephenson VK4PS Charlie Bahr VK4BQ Jim Sturges VK4DH

The president for the preceding 12 months, Evelyn Bahr VK4EQ, read the President's Report as follows:

It is my pleasure to present this report on the activities of the Townsville *Amateur* Radio Club during this the Bicentennial year of 1988.

On the whole, we have had a good year, with just a few worries. A letter from Telecom advising us of the installation of a paging system at Mount Inkerman, differing only by 62 kHz from our two metre repeater, and then advice from the Department of Transport and Communications requesting our amateur television repeater be turned off for a commercial service to carry out field strength tests, have been of some concern. So much for band sharing, but negotiations will continue on these issues.

Mount Stuart, Mount Saint John and Mount Inkerman still house our repeaters and beacons. There have been many working bees to keep the sites and equipment up to standard. We now have a digipeater operational, and as well we have purchased a transceiver with six metre capabilities. This should especially be very handy for field days.

Again this year we were participants in the John Moyle Field Day, and as usual it was a wonderful family weekend. Our yearly trip to Mission Beach was another great success. This year we conducted a raffle, and the drawing took place on the Sunday evening. Thank you to our donor and to all those who supported us. The Bowen Club was most generous in their hospitality, when we paid them a weekend visit.

Our monthly meetings have been quite well supported and, on almost every occasion, we have had a guest speaker. Subject matters have been varied and interesting. These have included paging systems, AUSSAT satellite and its part in the Australia-wide television hook-up, Airport and Aircraft communications, computer log keeping for the Remembrance Day Contest, VHF and Wireless Institute matters and pre-war memories of Townsville and early Radio Teletype work.

As the sunspot cycle changes, the bands have become much more active, and this is reflected in the number of OSL cards being handled.

We all look forward to receiving our backscatter each month, and it is pleasing to note many more technical articles appearing. Keep up the good work.

Jamboree on the Air was again a feature on our calendar, and quite a few of our members participated.

The idea of the TAFE running a class on amateur radio was not widely accepted, and so once again, we are conducting our own classes. The slow Morse operators are also doing their part to help newcomers.

This year we have held two displays. The first was the Leisureama held at Lavarack Barracks, followed four months later by the Bicentennial Display at North Ward. Both were successful, but a great deal more effort went into the latter. Many articles of historical interest, as well as modern equipment was featured. Without a doubt it created much interest and over 500 contacts were made using the special call sign, VI88QLD.

Unfortunately, incorporation has not eventuated as yet. The sub-committee has done many hours of work, and we feel sure the matter will be resolved in the near future.

Much work is still to be done, and it is interesting to notice the priorities of our technical committee. May the list grow much smaller in the near future.

WICEN has again been a feature of our year's activities. Our portable repeater has been used with much success in exercises at Bluewater, Major's Creek and Hervey's Range. However, it was of immense importance during the recent search for a woman lost at Mount Spec. Many of our members spent many days in the area, whilst others loaned hand-helds and equipment. It is a tragedy that the work was to no avail, but we do sincerely thank those who assisted.

No names have been mentioned in this report, because you have been a great team working together. To you all collectively may I thank you for your help and support. Here's to another great year coming up.

Evelyn Bahr VK4EQ, President.

—Contributed by Peter Renton VK4PV, Publicity Officer, TARC

ar

MACKAY & CENTRAL QUEENSLAND DIVISION WIA (Rockhampton)

The Mackay and Central Queensland Division WIA (Rockhampton) have been holding an annual get-together at a small coastal report called Clairview for the last five years. The last meeting was held over the weekend, October 22/23, 1988, at the Golden Mermaid Caravan Park. Clairview is located about 210 kilometres north of Rockhampton.

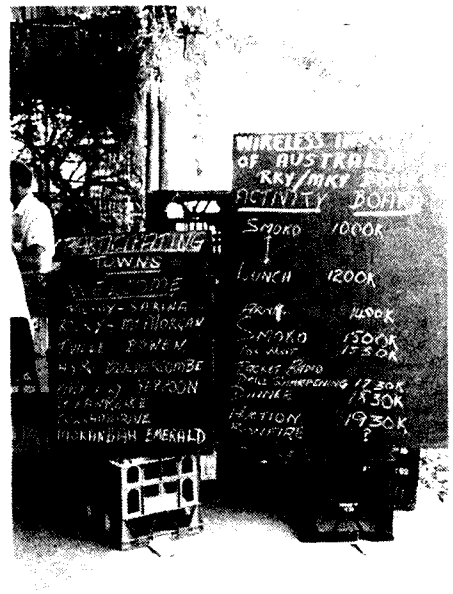
The attendance was gratifying with 29 call signs from 13 different Central Queensland towns and a total 62 adults, plus a number of harmonics enjoying near perfect weather.

Activities included a demonstration of 10 GHz ATV in colour and monochrome by Frank VK4CAU, a very well received and informative demonstration of packet and the temporary installation and successful operation of a digipeater working into a bulletin board at Rockhampton. This was well demonstrated by VK4ZAR, VK4ZHL, VK4JPE, VK4TKA and his son Alister.

For the ladies there was a very well received demonstration of Indonesian Batik styles by Arni, wife of VK4CMA, whilst the children enjoyed the swimming pool.

The usual fox hunters were catered for at a leisurely pace on foot through the grounds of the Caravan Park. The first hunt had a fiendish twist with both a high and low power fox running simultaneously, the high power fox being keyed intermittently. It proved very interesting and more than a little confusing! The three winners were Frank VK4CAU, Dallas VK4BWN and Jeff VK4ABJ.

Saturday even was off to a swing start with barbeque followed by a video showing the erection



The Welcoming Board.

of a new repeater by a helicopter lift from the base of a hill to the site atop. This was presented by Ritchie VK4RR.

Then it was on to the night's main event, an auction of useful, possibly useful and useless pre-loved equipment and some bits and pieces dating back to the 1920s. The ladies and children were catered for here with special interest items and a number of "mystery" items. Auctioneer for the night was Rob VK4TKA, raising $377.50 which was divided between the two clubs.

Many face were put to the Central Queensland call signs at the other end of the QSOs. It may be of interest to note that many of these contacts are being made of late on two metres and 70 centimetres whilst good ducting conditions are present. As a change from coastal ducting, Wally VK4AIV, from Mackay, worked ZL on both two bands and is now anxiously awaiting a return QSL from ZL1TTS in Auckland for confirmation.

One aerial that had outstanding interest for most HF operators was the latest version of the "tractor operator's special" as featured last year in AR and ably explained by Robin VK4FUE, who wrote the original article. When asked where he got the idea, he answered he just thought of it and there was plenty of time to think when driving a tractor! It seems incredible how simple and quick it is to change bands and retune the aerial remotely from the driving seat and be on your way again on any band from 10 to 160 metres.

Well, all good things come to an end and it was with much reluctance that most packed up and departed throughout Sunday. There was only one thing to mar the weekend and that was the news that Ritchie VK4RR's, father-in-law, George Eves VK4FGE, aged 82, had passed away. George is survived by six licensed amateurs, either directly or by marriage. They are: VK4s — RR, KIZ, FFQ, ATY, DY and VK2DNI. To them all and the rest of George's family we extend our sympathy for their sad loss.

Now that the weekend is over everyone is looking forward to a bigger, brighter and more fun-filled weekend next year and we hope to see some interstate visitors next time!

I was pleasing to see John VK3ZFN, this time, so how about a few more out-of-staters next year? You can be assured you will enjoy yourself.

—Words contributed by Ted Roberts VK4QI, photographs by David Christmas VK4MQC

ar

VK2 Mini-Bulletin

Tim Mills VK2ZTM
VK2 MINI BULLETIN EDITOR
Box 1066, Parramatta, NSW. 2150

Hello and welcome to 1989. These notes were prepared early in November with a longer than usual lead time. New member listings for November and December will be included in the February notes.

VK2 AWARDS

The award "Bicentenary of Australia — 1788-1988" which requires either VK2 amateurs to contact 200 other amateurs, or those outside to work 200 VK2s, ended on December 31. Claims must reach the Awards Manager, PO Box 1066, Parramatta, NSW. 2150 by June 30, 1989. From the start of 1989 this award is replaced with a worked VK2 Award. Further details may appear in a following Awards Column.

BROADCASTS

The VK2WI news sessions for 1989 resume on Sunday, January 8, 1989. A reminder that the NSW Division telephone news headlines are available on (02) 651 1489. Should any item of importance occur during the Christmas break, it will be included on the tape. The start of 1989 is also the change-back to the VK prefix in place of the optional AX prefix. There may be some special operation from VK2WI on Australia Day. The broadcasts will advise.

FIELD DAYS

A reminder that the Gosford Field Day will be held at the Gosford Showground on Sunday, February 19.

Wagga Amateur Radio Club held a well-attended two-day field over the weekend of November 5-6. They hope to be able to hold another about November 1989. A report will appear in a later AR.

Don't forget to plan for the Urunga Convention at Easter and the Oxley Region at Port Macquarie in June.

NEW DIVISIONAL YEAR

A reminder to members that the new Divisional year commenced on January 1, 1989. The Annual General Meeting will be held about April. Reports should now be submitted to the Secretary for inclusion in the annual report. It is also time to start thinking about election of the new council.

The Divisional fee structure for 1989 is $41.50 for full members, $39.50 Associate and $34.50 Pensioner grade. The Federal component is $33.00. The balance is what the Division receives. If you are on annual billing, that is, your subscription becomes due on January 1, I hope that you have already paid and perhaps taken advantage of the three-year option.

ROSS HULL CONTEST

If possible, take part in this annual event and help populate the six metre band. It should be noted however, that no VK2 operation is permitted below 52 MHz while there is *any* Channel 0 transmitter on air.

The Postcode Contest on December 30 was six metres all mode. The Postcode Contest for January will be the last Friday, January 27, between 9 and 11 pm.

ar

VK3 WIA Notes

WIA VICTORIAN DIVISION
412 Brunswick Street, Fitzroy, Vic. 3065

MEMBERSHIP SUBSCRIPTIONS

It is again that time of the year when most of us should have very recently renewed our membership for a further 12 months.

In this age and economic climate, it is understandable if some of us find it increasingly difficult to find the appropriate sum of money.

The WIA Victorian Division realise that some of its pensioner-grade members face financial hardship. Pensioner grade members can now pay their 1989 membership subscription in two equal six monthly installments. This option is only available to pensioner grade members who are in financial difficulty.

QSL BUREAUS

VK3BWI has recently broadcast a series of articles entitled "How to use the VK3 QSL Bureau".

The response to this series has led us to realise that there are many members who do not know how to best avail themselves of these valuable services.

Information sheets are now available explaining all the details of operation of the bureaus.

If you would like one, please drop a line to the Victorian Divisional Secretary and one will be sent to you.

Members will be notified of the new address of the Victorian Divisional Headquarters through this publication and via the Sunday Morning Broadcast.

WEEKLY NEW BROADCAST

VK3BWI, the broadcast station of the Wireless Institute of Australia, Victorian Division transmits news and information of interest to amateur radio operators and shortwave listeners at 10.30 am (local time) every Sunday morning.

The bulletin usually runs for about 40 minutes, and may be received via the following outlets:

1.840 MHz AM from Lyndhurst
3.615 MHz LSB from Lyndhurst
7.085 MHz relayed via VK3RC near Seymour
and via two metre repeaters:
VK3RMM, Mount Macedon
VK3RWG, Mount Baw Baw
VK3RMA, Mildura
and via the 70 centimetre repeater VK3RMU, Mount Saint Leonard.

Call backs are conducted on 80 metres, 40 metres and on two metres (VK3RMM) after the broadcast.

—Contributed by Bill Trigg VK3PTW

ar

THREE-YEAR MEMBERSHIP OF THE WIA

If you are a Full, Associate, Pensioner, or Family member of the Institute, and your membership renewal is due on or after January 1, 1989, you will be able to avail yourself of a new facility for members.

A three-year membership.

If you want to renew your membership for three years, instead of just one year, simply multiply the amount appearing on your membership renewal notice by three and forward your payment to the Federal Office in the usual manner.

Obviously, with inflation and fees rising each year, this facility will save you money.

ar

ANTENNA IMPEDANCE METER

S E Widgery VK3SE
8 York Street, Ballarat, Vic. 3350

Feed RF into input terminals, calibrate with non-inductive resistors and mark dial according to Ohms, connected to unknown terminals. It will read about five to 500 Ohms. Calibrate the dial in Ohms. Once calibrated, use it for antenna impedance measurements. Used with low power RF, it will tell you the impedance of your antenna at a given frequency.

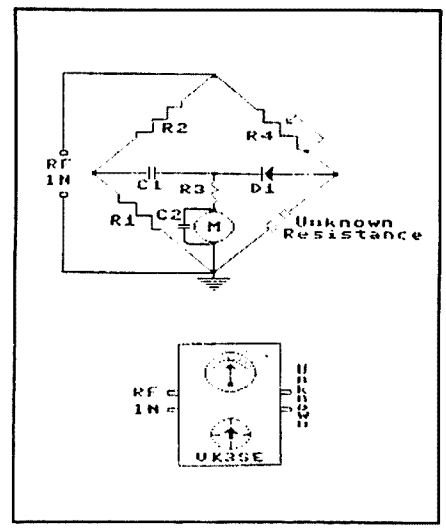


Figure 1.

R1-R2	200 Ohms.
R3	10 k Ohms.
R4	500 Ohm carbon pot only.
M	0-100 uA meter.
C1-C2	0.047 uF discs.
D1	OA85, OA95 or similar Germanium diode only.

ar

Five-Eighth Wave

Jennifer Warrington VK5ANW
59 Albert Street, Clarence Gardens, SA. 5039

A very happy 1989 to you all, and may it be a god year for amateur radio (both the magazine and the hobby!) and the WIA in particular.

As part of our policy of giving members more for their money, or the non-member less, as from January 1, 1989, outwards QSL cards can only be sent through the VK5 Bureau by *WIA members.* And how (you may ask) do I prove I am a member? All cards passing out through the bureau must now bear a sticker. These stickers can be purchased through *John Gardiner VK5KJG,* the *Publications Officer.* John will check your name on a current EDP listing either at the meeting or when you apply to him by mail. You could also speed the process (particularly at meetings) by producing your current AR label.

As far as I am aware at this stage, the stickers will only be available from John Gardiner — not John Gough, the QSL Bureau Manager. They will be sold in rolls of 100 stickers for $5. We hope that the new system can be implemented without too many hiccups, but please bear with us if there are a few.

I would like to remind you that we are still looking for a Program Organiser and (at the time of writing) a *Broadcast Producer* for the Sunday Morning Broadcast (though hopefully, we will have filled one or both by the time you are reading this). Also, I have still only received one photograph of a past-president of this Division, that is Tom Laidler VK5TL. We deferred having Tom's photo framed so that we could have them *all* done together!

HOBBIES DISPLAY AT THE INTERNATIONAL EXPO

At this year's International Expo, at Wayville Showgrounds from May 12 to 21, they intend to have a section devoted to hobbies. We have been asked if we would be interested in having a stand showing amateur radio, etc. We feel that this is an opportunity that is too good to miss, but as usual, the main need will be "person power". It will not be easy finding enough people to run it for 10 days but we are hoping that perhaps the clubs can help with this. We have the display boards and we have the pamphlets, etc, but a static display is not really a great deal of use, visitors need to be able to talk to amateurs about the hobby and to be enthused by them.

There must be plenty of retired people who could be there during the day, and the non-retired could take over at night, so how about letting Council know if you (as an individual) or your club would be willing to help.

DIARY DATES

Tuesday, January 24. *Buy and Sell Meeting* — at the BGB. This will be preceded by ESC, QSL Bureau and Publications Sales (not forgetting the QSL stickers). We will endeavour to start at 7.30 pm.

Tuesday, January 31. No meeting!

ar

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

Over to You!

20 AMP POWER SUPPLY

by Doug Friend VK4AIZ

I refer to the Moorabbin and District Radio Club project article on pages 4-6 of August AR, I have constructed a power supply recently of my own design, but largely following the 723 and protection circuits published in the article.

I am writing to report that I found the design (I don't think it was my PCB design or wiring layout) susceptible to RF energy, notably at HF frequencies. The cure of the problem has been to place a 4µ7 25 volt tag tantalum capacitor between pin 3 of the 723 and earth, with short leads right at the IC pin itself.

I hope that this information may benefit other constructors attempting this, or a similar project.

Incidentally, my design uses a toroidal transformer, Schottky diodes and two MJ802 final output regulator transistors for a very compact and low heat dissipation supply.

Best wishes and thanks for the magazine.

Yours sincerely
Doug Friend VK4AIZ
35 Cronin Street
Annerley, Qld. 4103

ar

MAY I BE PERMITTED

by Terry Robinson VK3DWZ

The 20 metre band is wide open. DX is rolling in from everywhere. Suddenly I happen upon a station calling "CO Contest". I tune a bit further. More of the same. Then I notice the band is filled with "contesters". Wherever I tune I cannot escape them!

Sounds like fiction. No, it is a sad scenario that greets me every time I wish to work DX on the weekends.

Surely the time has come to call a halt to the ever-increasing number of contests that jam up our bands *every* weekend.

As a start, may I be permitted to offer the following set of rules that should be observed by *every* contestant:

1. No more than *eight* hours of operation by permitted (four hours a day).
2. Strict "frequency limits" to be observed, eg on 20 metres SSB, 14.150-14.250 MHz.
3. Contestants *compelled* to realise that many amateurs are *not* interested in their contest.
4. *Two* weekends a year (*only*) to be set aside for *all* contests. Absolutely *no* contest is to be held on *any other* weekend.

I realise that the above will probably make me unpopular, but I would like to work *some DX* on the weekends without fighting it out amongst any number of contestants.

Finally, the *worst* person on our bands is a tired, cranky operator near the end of a long contest. These people give our hobby a bad name.

Yours faithfully
Terry Robinson VK3DWZ
21 Russell Avenue,
Woodend, Vic. 3442

ar

EXPERIENCING JOTA

by Ormond Guy VK3ASY

The experience of participating in JOTA was, for me, an enriching one. I did not have Guides or Scouts with me in my shack but decided to act as a contact for stations where the young people were willing to have the experience.

On the Saturday, I made three contacts and was able to note the different styles of operation of the amateur operators.

Basically, there are two distinct styles:

1. The operator interviews, and
2. The guests take the mic.

Where the operator interviews the guests, it is a case of what is your name; do you like being a Cub/Brownie; what is your age? The guest answers in monosyllables or just a few words.

Where the guests take the microphone and, providing they have had some instruction beforehand, they ask questions, tell some details of themselves and say "Over". The receiving guest responds, or as in my case, I acknowledged the detail and asked further questions. I was able to draw the guests out so much so that by the end of about four to six guests having spoken in the presence of the rest of the group, the ones remaining to have their turn were more self-confident than the ones who came on earlier.

In this way, the youngsters learned quite an amount of communication technique and definitely learned that the microphone doesn't bite!

For my part, I felt a sense of satisfaction that I had helped a group of 10-11 year old Guides to speak on the air. Next year, all being well, I will either invite a few Scout/Guide members into my station or will set up the station at a hall.

But, I think it is essential to have some time with the guests first so that they can prepare their lines of questioning in advance and thus avoid the "hello" "over" "yes" "over" style of contact. The amateur operator can prepare a list of statements/questions so each guest can gradually develop a comfortable feeling.

There is no doubt about it, JOTA can be a great learning experience for the youth, but we as operators need to learn the techniques that will help with the learning.

Yours sincerely
Ormond Guy VK3ASY
10/276 Dorset Road
Croydon, Vic. 3136

ar

AMATEUR PERFORMANCE?

by Peter Parker VK6BWI

With a WARC looming in a few years time, governments around the world will be assessing the performance of the amateur fraternity. This performance will be determined by how well we fulfill our role in the complex web of international communications.

Governments world-wide will be looking at how well we work towards the following three objectives:

1. to carry out technical investigation
2. To communicate
3. To train ourselves continually for the above.

Australian amateurs and the WIA must ask themselves, "How well do we satisfy these requirements?"

I would suggest that, with the possible exception of the second point, Australian amateurs, as a group, perform poorly in the above.

Many amateurs may think that, if they donate some money to the WARC fund, everything will be alright. Sometimes this may be sufficient as (seemingly) in WARC 79, but there are indications that this may not apply to the next WARC. Certainly, WIA and IARU delegates are important to the future of the amateur service, but we are giving ourselves less than a good chance is we ignore the grass-roots of our fraternity, operators like you and me, and how well we fulfill our purpose.

The amateur service is being subsidised by Australian taxpayers and they have a right to an efficient and dynamic amateur service, a worthwhile national resource.

And, what can you do? Make a New Year resolution to build a transmitter, try ATV, join WICEN or the ATN (this is not an invitation for yet another debate on message handling, etc), get your CW up to 20 words per minute, transmit on 10 GHz or get your full call, etc. All of these are valid aspects of the amateur service and you will be contributing to our well-being if you take up the challenge.

All the very best for the New Year.
Peter Parker VK6BWI
C/- Post Office
Witchcliffe, WA. 6286

ar

MORSE PROCEDURE SCHOOL

by Peter O'Brien VK2YZD

Obtaining a licence of whatever grade is one thing; getting used to on-air practices and jargon, especially in Morse, is quite another. I suspect that almost all new amateurs have had their enthusiasm dampened by contacts spoiled because they were jumbled, and ended up in irritation and frustration on both sides.

You only learn on-air practices by being on-air, I hear you say? Not so. These days, people are running residential schools in every subject from Beekeeping to Yoga. All that is needed is to book the required number of on-site vans in a caravan park which has a community hall the school can use in case of rain. If it is at a beach so much the better because children and spouses have something to do. You also need top instructors of course, but with the number of people learning what training feats were performed in the services (10 WPM in as many weeks — letters AR No 10), this shouldn't be a problem. Surely over a weekend, enough guided practice could be had to make a newcomer confident and over a week; to get someone with five words per minute up to 12, say.

Having attended such schools in other subjects, I can say that everyone; instructors, participants and families, have a great time and the pupils learn at a tremendous rate. The special advantage of an AR school is that it needn't take up air space; practice can be done by local hook-up or very low power.

A certain amount of organising would be needed, of course. Getting pupils and instructors, preparing a program, collecting equipment, selecting a venue, collecting advance payments for the vans and van-sites. It would need to draw on a bigger pool of amateurs than just one club; therefore the WIA might have to take it on; but it would be well worth it in publicity amongst unaffiliated amateurs.

Yours faithfully
Peter O'Brien VK2YZD
27 Park Avenue
Chatswood, NSW. 2067

ar

NAVIGATION, NETS, ETC

by Donald Hopper VK4NN

With reference to *Topical Technicalities* by Lindsay Lawless VK3ANJ, in August 1988 issue of *Amateur Radio*, I offer the following information regarding the *lunar observations* and *tables* as used by

Captain Joshua Slocum in 1898, and comment on other aspect mentioned.

Lunar distance is the distance between the Moon and the Sun, Star or Planet, used at sea before the advent of reliable chronometers or timekeepers, for determination of Greenwich Mean Time (GMT) in connection with finding the ship's longitude.

With the sextant an observation was taken between the Moon's illuminated limb and the nearest limb of the Sun or centre of a star or planet. The value of this observation was converted to true or geocentric distance for comparison with that given in the Nautical Almanac as occurring at a certain Greenwich Mean Time.

Geocentric Lunar Distances were given in the Nautical Almanac for every third hour for the Sun, Venus, Mars, Jupiter, Saturn and certain selected stars.

Lunar observations For a solo sailor there was a time lapse between measuring the Lunar Distance and the taking of the Lunar Observation.

The rate of change in the Moon's angular distance from another body in, or near its orbit is about half a minute of arc in one minute of time, resulting in a longitude error of 30 times an error in the observed distance. It can be appreciated that, with a possibility of a two minute discrepancy in sextant observations under a solo sailor's sea conditions, the resultant longitude could be in error up to one degree. However, the average of several lunar observations and distances east and west of the Moon, or both directions from the moon produced reasonably satisfactory results.

Lunar tables were those used in "clearing distance" or correcting observed Lunar Distance for refraction, parallax and semi- diameter. These tables were finally deleted from the Nautical Almanac in 1913.

The satellite Lindsay referred to used by Captain Joshua Slocum in 1898 to assist in his celestial navigation was of course the Moon, but also involved was a planet or star in or near the Moon's orbit at the time.

The American FCC approved Amateur Radio Maritime Mobile operation in 1932. Initially this involved amateurs who were radio officers on ships. Gradually amateurs on yachts became involved. In the last decade we have seen yachts become dependent on amateur radio for communications at sea. A basic reason for this is the lower cost of amateur radio against the cost of "type approved" commercial radio for communications with Coast Radio Stations.

As a follow-on, we now have yachties obtaining amateur operator's licenses for the sole purpose of marine communications.

This development led to opposition in Australia by some amateurs (including myself) and Coast Radio Station Operators. Finally, the Department of Communications was urged to clarify the situation. After a two-year investigation and consultation with other authorities, the Department advised (M83/973) on April 6, 1984, that it had no objection to the passing of weather information or to the operation of Maritime Mobile Nets, subject to the provisions in the *Amateur Operator's Handbook*. In spite of this clarification, there are amateurs not prepared to accept the Department's ruling and who continue to give Maritime Mobiles a "hard time".

The yachties are currently well catered for during their voyages across the Pacific and Indian Oceans, with the following nets operating — taking position reports and making weather information available. The nets are also used as a contact point for communication with other yachts and shore-based amateurs. The American yachts also take advantage of phone patch facilities to speak with their families in the USA.

Tony's Net — At 2100 UTC on 14.315 MHz. Covering the South-West Pacific. This net is of particular interest to me as from it I contact yachts heading west to Australia and fill out the Sea Safety Report form for Canberra. This form has proved of great value when yachts have had an emergency.

Pacific Maritime Mobile Net — A group of stations in the South West Pacific and in Western Australian interested in safety at sea. My radio shack contains a ship's chart table and marine reference books. Yachts approaching Australia check with me regarding chart amendments in Notice to Mariners, port information, Customs procedures, etc. This group are on 14.315 MHz at 0200 UTC.

Travellers Net — At 0300 UTC on 14.106 MHz. Covering the Western Indian Ocean and northern Australian waters.

Seafarers Net — At 0300 UTC on 14.314 MHz. Covering the Eastern Pacific Ocean.

Pacific Maritime Mobile Net — At 0400 UTC on 14.314 MHz. Covering the Pacific Ocean. I monitor this net noting movement of yachts heading west towards Australia.

German Maritime Mobile Net — On 14.313 MHz at 0600 UTC. Covering the Western Indian Ocean, Mediterranean and Eastern Atlantic Ocean.

South African Net — At 0600 UTC on 14.316 MHz. Covering the Indian Ocean. The Traveller's Net passes yachts heading west from Australia over to this net.

Pacific Inter Island Net — At 0800 UTC on 14.315 MHz and covering the Pacific Ocean.

South African Net — At 1130 UTC on 14.316 MHz covering the Indian Ocean.

There are three "Pirate" nets on 14.320 MHz at 0001, 0400 and 1000 UTC. Unfortunately licenced operators and Australian novices check into these nets. It is not good for the blood pressure to hear pirate net controllers taking position reports from licenced amateurs.

Regarding Lindsay's comment that advances in navigation and radio over the last 90 years are due in no small measure to amateur yachtsmen and amateur radio operators, I find this indeed difficult to accept. In my years of instructing yachtsmen in navigation, I found very few "experienced" yachtsmen who came to me with a good grasp of the science. In fact, I found none who used parallel rules for the placing on or taking off of courses on charts. They all used old sailing ship circular protractors or maybe a fancy protractor such as the "Jean Cras".

I recall one emergency involving a yacht crew who had a sextant but could not do the calculations to establish a position line so I did the calculations for them. I asked yachts in the South West Pacific monitoring the drama to also do the calculations. Only one yacht with a lady navigator did the calculations accurately and she used a navigation computer. One chap did not even know how to use the Nautical Almanac.

I cannot guess as to how amateur yachtsmen could have contributed anything to the development of the sextant, chronometer, computed tables of altitude and azimuth, Omega, Loran, Satellite Navigation or navigation computers.

On the communications aspect, I cannot think of any contribution a non-professional (radio) amateur radio operator on a yacht could have made to the advancement of marine communications, except the establishment of maritime mobile nets.

In 50 years of membership of the IEEE (IRE) I have not seen one article written by a yachting amateur radio operator in the Institutes publications.

Keep up the good work Lindsay, *Topical Technicalities* are always of interest.

Don Hopper VK4NN
23 Lloyds Road
Springbrook, Qld. 4213

ar

SUBMISSION ON PACKET

by John Dowsett VK6UD

While acknowledging that there is a problem of mutual interference on 20 metres between packet operation and that of SSB, we believe the problem cannot be solved by the WIA in this State or in AUstralia, as the solution is by agreement of all amateur radio bodies in all three regions of the IARU.

Members of the Southern Electronics Group support the Travellers' Net, and some have been users of this very worthwhile facility over many years. There is no simple answer to the present problem, and to find a possible solution we have to look at the overall band usage.

It has been evident that packet is the fastest growing mode in amateur radio with the number of stations participating world wide increasing each week, and with the growing number of multi-mode "Black Boxes" being used, there is evidence that the previous decline of RTTY and AMTOR is starting to change with mode signals appearing in the upper part of 14.000 to 14.100 MHz. This should increase into the future. While the 30 kHz may seem a lot for these two modes, each contact requires a clear channel, making provision for only a limited number of stations to fill the segment. Packet operation by its nature is able to have numerous contacts operate on the same frequency, giving greater usage of any frequency segment. With the possibility of future additional digital modes being introduced, there is a need to provide for future growth.

Were it not for the comparatively recent expansion of the American phone operation down to 14.150 from 14.200 MHz, there could have been reasonable argument to provide for packet operation from 14.100 to 14.125 MHz, thus giving the SSB operators world-wide, 75 kHz for communication with other low power SSB operators away from the "Californian Kilowatts". Presently there is only 50 kHz for this operation as well as packet.

When we consider that 200 kHz for SSB is set aside for less than 30 percent of the world amateur population to communicate between themselves and the world, while 70 percent of the amateur population have to try and communicate on SSB together with packet in 50 kHz the inequality becomes obvious.

What really needs to be done is for the Americans to give up say, 25 kHz by having each of the three class bottom boundaries move up 25 kHz for SSB, provide for 14.100 to 14.125 MHz exclusive packet (digital modes) operation, leaving 50 kHz available for 70 percent of the world amateurs for SSB communications between themselves when they wish, without interference from either packet or the "Californian Kilowatts".

For this to be achieved, we believe the WIA should adopt a policy along these lines and endeavour to have this proposal adopted as Region 3 policy at the next Region 3 Conference later this year, while at the same time endeavour to have Region 1 and 2 adopt the same policy. (At the Region 3 Conference in October, an upper limit for digital modes of 14.122 MHz was recommended. Ed).

This would entail the Travellers' Net being relocated in the lower part of the new SSB segment, close to 14.125 MHz (or 14.112 if the R3 recommendation is adopted. Ed).

If this proposal has the support of the WIA, then consideration could be given to early relocation of the Travellers' Net to alleviate the current mutual interference condition.

In addition to this proposal, we further request that an agenda item for the next Federal Convention be submitted:

> Make whatever moves are necessary for an extension of 150 kHz to the top end of the 20 metre band at the next proposed WARC.

This will obtain bandwidth compatibility with 15 metres and provide for less interference between stations as this band has greatest usage worldwide, being used at all phases of the sunspot cycle. (There seems some confusion here. The proposal would make 20 metres 500 kHz wide. Width of 15 metres is 450 kHz. Ed).

Neither of these proposals is going to be achieved in the short term; but if the proposals are seen to be desirable, then all efforts should be made to have them implemented.

John Dowsett VK6UD
Honorary Secretary
Southern Electronics Group
PO Box 664
Albany, WA. 6330

ar

MORE ON KEY CLICKS

by Lindsay Lawless VK3ANJ

This is an interim response to the letter from Jeff VK2BYY of the October 1988 AR.

I am aware of the theoretical spectrum resulting from rectangular pulse modulation of a carrier. The frequency spectrum and sideband energy distribution depends on the pulse duration, the duty cycle and the PRF; those parameters are almost random in a manual telegraph transmission. Spectral analysis of that sort of transmission, together with the fact of low level band pass filters followed by a linear amplifier and aerial coupling unit and resonant aerial band pass filtering and not forgetting receiver response, indicate that the popular theory may be incomplete or incorrect.

The explanation given in my Topical Technicalities of August AR was copied from the Royal Air Force Signal manual. The RAF was often the "only one in step" and their theory didn't have the merit of popularity, nevertheless it is worth considering in the light of the deficiencies of the popular theory. The popularity of a theory is often its only merit.

With your concurrence I will pursue the matter in more detail in a future TT. Meantime, I reassure readers that TT remains undeterred by the risk of spreading "horror and dismay" among our savants and dogmatists. I hope that most members keep up the amateur tradition with similar inclinations and that your editorial policies continue to foster an open minded spirit of inquiry. If we ever have technical censorship forced on us it will surely kill enthusiasm and a large proportion of the enjoyment.

Yours sincerely
Lindsay Lawless VK3ANJ
PO Box 112
Lakes Entrance, Vic. 3909

ar

CONSIDER. . .

by Peter Tomsett VK6AAL

It is a healthy sign to see the survey in AR. I can only hope it does not suffer from apathy in its return.

I have a suggestion I wish to air. A large number of our members are suffering considerable harassment by shire councils and other government planning bodies with relation to the erection of radio masts. It is a well-known fact that *justice* is only available to those who can afford it. The situation is usually a case of one poorly financed amateur fighting a very well financially supported shire. The outcome is inevitable as the limited resources of the victim of bureaucratic injustice are stretched to the limit.

If all amateurs were levied $100, multiply this by the number of amateurs in Australia, and invested it in fixed deposits, you would then have more resources available to the amateur-in-distress than the most powerful shires in this country. Suddenly we, the amateurs, can stop begging for our share of justice and enjoy our hobby for what it is supposed to be — *free of politics, race or discrimination.*

Personally I have succeeded in my bid to erect a mast after considerable compromise, but many have compromised more than myself and are still waiting years later while the poorly financed wheels of justice grind slowly.

This idea requires some considerable thought and refining but it has some unusual potentials. Consider the case of "Amateur Blogs" — a survey shows all neighbours are willing to allow him to erect his mast except for one who is blocking his application through the shire.

COURSE OF ACTION

1. Enter into lengthy expensive litigation with the shire.
2. Try bluffing the neighbour with counter suit of restriction of personal liberties pointing out the resources available to back the action.
3. Neighbour is offered a good price for his property (everyone has their price), house is purchased by the fund, and placed back on the market with a no objection clause in the bill of sale. The loss incurred by the fund, if any, can be absorbed by returns from interest-bearing term deposits. This will obviously require management but has the potential for putting justice back into the affordable bracket for most amateurs.

This service could be made available to all WIA members. It is now we need to insure our very existence in the community with its changing attitudes to restricting peoples' freedom of choice. Amateur radio is in real danger by the fact that it differs greatly from the "norm" and is practiced by a much misrepresented minority.

These are not unsupported words. After considerable expense involved in attaining my Building Permit I have also donated to the local fighting fund for those less fortunate than myself. I only wish all amateurs could see their way clear to spend as little as one tenth of what most amateurs would spend in one year on securing the future of this truly great hobby. Alas, this probably is just a fool's dream, for the only true reality that needs any consideration is that while you sit working your DX, a growing number of amateurs are being denied this pleasure on purely aesthetic grounds.

Yours sincerely
Peter Tomsett VK6AAL
12 Towerhill Road
Alexander Heights, WA. 6064

ar

DISMAL. . .

by Arthur Trevaskis VK7SE

After many years of patience I must put pen to *paper. Last* weekend, I operated a portable JOTA station (VK7SCM) which involved a group of Venturer Scouts carry all the radio equipment nearly two kilometres up a mountain in near blizzard conditions.

Imagine my dismay when, soon after commencing operation, a station called his mate on a sched, only a few hundred Hertz from me and immediately commenced to complain about the QRM on the frequency. I immediately began calling the stations and it took several overs before I could break in to explain that I was the "QRM". Yes! *I was using the frequency!* Apologies were offered and accepted and they moved as expected of gentlemen. All this was of great amusement to the other party in my QSO.

Another time, I overheard another amateur complaining bitterly to his mate about someone using "their" frequency that they had used for years for their scheds. "What right had these JOTA stations" to use frequencies normally used by others?

I had similar experiences when I took a QRP unit on a touring holiday to the outback on my motorcycle last year. Stations came over the top of me, and when challenged by the more powerful end of my QSO, retorted "Oh I heard him but he was a bit faint".

Gentlemen, if someone is using a frequency, you can't have it. It's as simple as that! Isn't it?

73 to all
Arthur Trevaskis VK7SE
RSD 1745
Penguin, Tas. 7316

ar

RESTRUCTURING

by Garry Page VK3ZGP

I like the style of the VK4XP proposal to restructure the existing licence structure (see October AR), even though I disagree with the details of the theory/modes/bands/power suggestions.

Morse code proficiency is a current requirement of international regulations and reciprocal licensing arrangements. It is not appropriate to delete it from current licence conditions or proposed systems. Access to HF bands should be restricted in line with these regulations.

I do not believe the proposal can be accepted in the suggested form at the present time. A suitable compromise might be:

Cease issuing call signs in the current series.

Create the three level structure with a rationalised call sign series.

Give existing licence holders the option of transferring to their appropriate level and receiving a new call sign.

Any new licences would be granted in the new system

Add Morse code speed as an endorsement to the licence to allow access to the HF bands. The tested Morse code speed is documented without changing call sign. Only change call signs when changing between licence levels.

I believe the licensing system does need to be restructured. As the operator with the worst two metre signal in Melbourne (Motorcycle Mobile), I would not presume to speak for all amateurs, but I believe a variation of the VK4XP proposal should receive serious consideration.

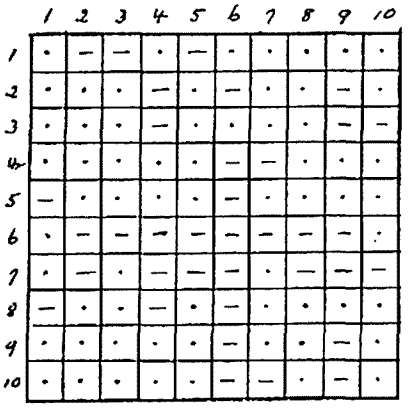
Yours sincerely
Garry Page VK3ZGP
PO Box 575
Clayton, Vic. 3168

ar

SOLUTION TO MORSEWORD 23

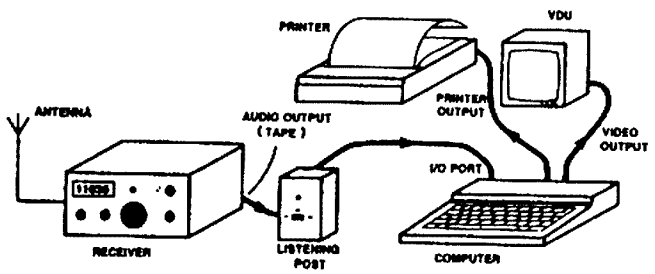
Across: 1 etch 2 stain 3 view 4 seats 5 Beth 6 jog 7 roam 8 tears 9 suite 10 hake

Down: 1 said 2 dims 3 base 4 page 5 bats 6 root 7 vast 8 seems 9 pay 10 fits

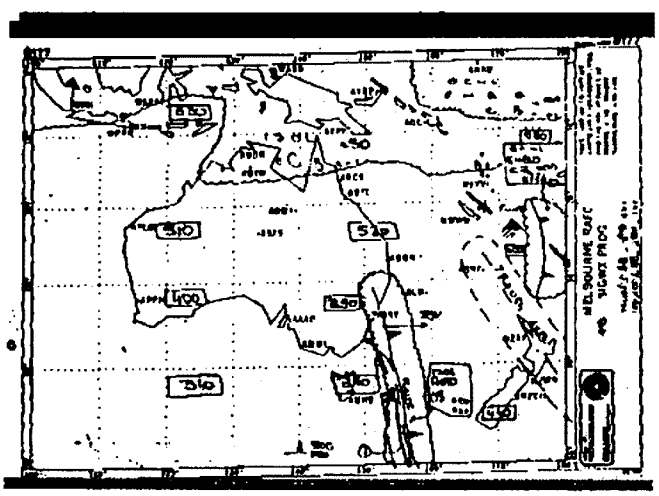


RECEIVE FAX, RTTY & MORSE ON YOUR COMPUTER

Using the Australian Electronics Monthly "Listening Post" (AEM3500) project, you can tune-in to the myriad of non-voice transmissions on shortwave and decode them! All you need is a shortwave receiver with SSB reception, the AEM3500 Listening Post, computer and software. Be the first on your block to receive weather pictures and foreign news bulletins – USEFUL and FASCINATING.



Get the Most Out of Your Receiver!



MONSIEUR LE SECRETAIRE GENERAL, DES VOTRE NOMINATION A LA HAUTE FONCTION QUE VOUS OCCUPEZ VOUS AVEZ MARQUE AVEC FORCE L'IMPORTANCE QUE VOUS ATTACHIEZ A CE QUE L'ORGANISATION RETROUVE LES PRINCIPES QUI L'AVAIENT FONDEE : ''NOUS NOUS SOMMES, DISIEZ-VOUS, SANS CONTESTE, BEAUCOUP ECARTES DE LA CHARTE CES DERNIERES ANNEES. NOUS SOMMES PERILLEUSEMENT PROCHES D'UN NOUVEL ETAT D'ANARCHIE INTERNATIONALE''. ET UN PEU PLUS LOIN VO

Available in two packages:

- **SOFTWARE ONLY**
  Apple, Commodore 64, Microbee – **$25.00**

- **FULL PACKAGE – software & pc board.**
  Apple, Commodore 64, Microbee – **$35.00**

Both packages include full instructions for building the Listening Post project and application notes for your computer.

Send to: "AEM Listening Post Software", 1st Floor, 347 Darling St, BALMAIN 2041 NSW.

*You must include a blank C10 cassette or **formatted** disk.*
Please Tick.

☐ *Software Only*
☐ *Full Package*

☐ Microbee – Epson FX80/100 printer
☐ Microbee – C.Itoh 8510 printer
Microbee: ☐ 5¼" and ☐ 3½" disk

☐ Commodore C64/128 (most printers)
Commodore: ☐ 5¼" disk or ☐ cassette

☐ Apple (most printers)
☐ 5¼" disk ONLY

☐ Cheque ☐ Money Order
☐ B/Card ☐ M/Card ☐ Visa
(make cheques or money orders payable to "Australian Electronics Monthly")

Card No ..... Expiry .....
Signed .....
Name .....
Address .....
.....
..... P/Code .....

Regd Address:
1st Floor, 347 Darling Street, Balmain, NSW 2041

IONOSPHERIC SUMMARY

The Ionospheric Summary from IPS Radio and Space Services contains the following information for the month of September.

The monthly averages were:
10 cm Flux — 152.4
Sunspot Number — 120.8
A Index — 10.4
I Index — 110.3
Flares — 10.

Solar activity was moderate during the month with a total of 10 M class flares observed. Much of this solar activity occurred at the end of the month during the period September 25-30. The largest flares for the month were the M7 flares on September 27 and the M6 flares on September 28.

The 10 cm flux continued the trend of recent months by varying considerably in the course of the month. A high of 189 occurred at the start of the month while another peak was reached in September at a value of 180. Overall, the monthly averaged flux value was 152.4 which is vary similar to that of the previous two months. The monthly averaged sunspot number was 120.8, the highest value for this solar cycle. The flares occurred with two on September 8, one on September 19, 22, 25, two on September 27, and one on September 28, 29 and 30.

The geomagnetic field was active to minor storm levels until 1500 UTC on September 1, after which time the disturbance subsided to unsettled conditions. There were periods of active conditions again during the first half of September 2. The geomagnetic field became disturbed after 0000 UTc and was at storm levels after 0900 UTC on September 11 and continued into September 12, and the disturbance declined during the day.

The field became active early on September 17, and remained disturbed until the end of September 19. There were intervals of storm conditions between 0000 and 0600 UTC on September 18, and 0600 and 0900 UTC on September 19.

The field was disturbed throughout September 21. As is common during the Equinox periods, geomagnetic disturbances were more common during September than has been the case over recent months. The most disturbed day was September 11 when the A index reached a value of 33. September 18 was also quite disturbed. High solar flux during the month meant that MUFs on HF circuits were mostly high. The geomagnetic disturbance on September 11 could have produced some difficulties in HF propagation.

All indications are that the current cycle will be very large, and may well usurp Cycle 21, for the place of second highest on record. The benefits that a large solar cycle brings, unfortunately can be accompanied by more frequent disturbances to circuits due to solar-induced shortwave fade-outs.

Apart from the field of communications, a large solar cycle may also produce other benefits. One of these comes from the small increase in ultraviolet radiation that accompanies increasing solar activity.

Another benefit of a large solar cycle is too clear out some of the unwanted artificial space debris that is currently circling in low Earth orbit. Of the 7000 pieces of material currently tracked in orbit, only five percent represent operational satellites. Hopefully, a large Cycle Number 22 will help to further remove unwanted items from this man-made reservoir of potentially lethal projectiles.

—Compiled by Frank Hine VK2QL from IPS Radio and Space Services Data

ar

WICEN News

ST JOHN/WICEN EXERCISE (BICENTENNIAL DISASTER)

Paul Walton VK3PW
PO Box 106, Mitcham, Vic. 3132

The proposed plans for a joint exercise had been laid-down for months but no one in WICEN knew what was going to happen or when — just as it had been planned. Colin Smith VK3AKQ, of St John Ambulance was asked to create a scenario for an exercise whereby WICEN Region 13 call-out procedures and preparedness for an activation could be tested to the full. It wasl

Col's restrictions were that the exercise should be held on a weekend in October or November with allowances made for any prior commitments to other exercises by WICEN. To test the willingness of our members to participate, Col stretched the friendship by electing for a call-out date of October 2 — Bathurst race day and the last day of the Olympics.

A call to the Region Co-ordinator, Paul VK3PW, at 10 am on the Sunday morning saw Col requesting assistance from WICEN to provide communications facilities to St John as their radio network had collapsed. Initial requirements were for stations at St John Headquarters, in Melbourne, two in Region 13 at Ringwood and Diamond Valley, and for one station in Region 28 at Rosebud. These stations were located at Pony Club Meets. Messages were to consist of situation reports, general traffic and a few "Furphys" for good measure.

Gwen and David Tilson, VK3DYL and VK3UR, received the next call with directions to establish a base station at their house to begin the ringing of all WICEN members. Parallel calls were made by Paul to other leaders and administration staff. State Co-ordinator, Leigh VK3CDP, was informed of the need for other regions to become involved and the possible escalation of requirements around the State. At the end of the day requests had been made for stations at Rosebud, Camperdown, Winton Raceway, Avenel, and Pyramid Hill, near Kerang. Locally the call-out produced 20 members from Region 13 to handle the net establishment and the stations at Melbourne, Ringwood and Diamond Valley with other members on standby in the event that the situation worsened.

A debriefing was held with some of the participants resulting in many constructive ideas evolving from the discussions. In answering previous questionnaires, members had indicated they could be ready to leave on an activation within 30 to 60 minutes of receiving a call-out, but that in practice had found that the equipment wasn't always where it had been assumed to be when put to the test. Answers to newer members on message and net handling techniques were not always forthcoming, prompting another night meeting to discuss these topics. With the recent printing of the VK3 Operator's Manual many of these subjects should be more confidently handled in the future.

Overall, the exercise was deemed very successful by both WICEN and St John prompting the thoughts of holding another one this year (not Bathurst weekend!). Thanks must go to all who participated, especially those country regions who didn't even know the event was to be held, and to Col and St John for organising the exercise. Let us hope with the coming fire season all WICEN members ask themselves the question — how prepared am I?

ar

HOW TO JOIN THE WIA

Fill out the following form and send to:

THE MEMBERSHIP SECRETARY
WIRELESS INSTITUTE OF AUSTRALIA
PO BOX 300
CAULFIELD SOUTH, VIC. 3162

I wish to obtain further information about the WIA.

Mr, Mrs, Miss, Ms: .....

Call Sign (if applicable): .....

Address: .....

.....

State and Postcode: .....

Silent Keys

It is with deep regret we record the passing of:

MR E BRAND	VK2BXV
MR ERIC K CHIPPINDALL	VK4XR
MR DAVID W COHEN	VK3CWC
MR F J EVANS	VK2XFE
MR J C FIELDS	VK3ANU
MR J N FULLER	L20038
MR D A NORMAN	VK3UC
MR TOM SOUNDY	VK2ETS
MR G C R WATERS	VK3AWV

HAMADS

TRADE ADS

AMIDON FERROMAGNETIC CORES: Large range for all receiver and Transmitting Applications. For data and price list send 105 x 220 millimetre SASE to: **RJ & US IMPORTS**, Box 157, Mortdale, NSW. 2223. (No inquiries at office please . . . 11 Macken Street, Oatley). Agencies at: Geoff Wood Electronics, Lane Cove, NSW. Webb Electronics, Albury, NSW. Truscott Electronics, Croydon, Vic. Willis Trading Co, Perth, WA. Electronic Components, Fishwick, Plaza, ACT.

COAXIAL RELAYS: 110VAC 24VDC, BNC-N-BNC $38. Valves: 6148B (GE) $40.60. 6JS6 (GE) $30.20. 8950 (GE) $34.80. EC 8010 (for HP608E) $39, and many more . . . D. Dauner, 51 Georges Crescent, Georges Hall, NSW. 2198. Ph: 724 6982. Telex: AA 178 401.

RADFAX2: Hi-Res radio facsimile Morse & RTTY program for IBM PC/XT on 360K 5.25" floppy + full Doc. Need CGA, input port, SSBhf FSK/Tone decoder. Has re-align auto-start view save print. Also "RF2HERC" same as above but suitable for Hercules card and "RF2EGA" for EGA card (640X350 mode). Programs are $30 each + $3 postage ONLY from M Delahunty, 42 Villiers Street, New Farm, Old. 4005. Ph: (07) 358 2785.

WANTED — VIC

MAGAZINES: Do you have any spare copies of AR magazine. The Federal Office needs the following to complete our files. All of 1963. All copies prior to 1955. Please forward details to WIA Executive Office, PO Box 300, Caulfield South, Vic. 3162.

HELP! Information wanted on your attempt to receive the 10 kHz pulse originating from North West Cape, WA. Richard Burden VK3FKB, 50 Tamar Street, Bayswater. Vic. 3153. Ph: (03) 729 7149.

Hamads

PLEASE NOTE: If you are advertising items FOR SALE and WANTED please use a separate form for each. Include all details; eg Name, Address, Telephone Number (and STD code), on both forms. Please print copy for your Hamad as clearly as possible.

* Eight lines free to all WIA members, ninth line for name and address. Commercial rates apply for non-members. Please enclose a mailing label from this magazine with your Hamad.

* Deceased Estates: The full Hamad will appear in AR, even if the ad is not fully radio equipment. (A courtesy note will be forwarded that the ad has been received and will appear in . . . . . issue of AR.

* Copy in typescript, or block letters to PO Box 300, Caulfield South, Vic. 3162

* QTHR means address is correct as set out in the WIA current Call Book

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.

Conditions for commercial advertising are as follows:

$22.50 for four lines, plus $2.00 per line (or part thereof)

Minimum charge — $22.50 pre-payable

Copy is *required* by the Deadline as indicated on page 1 of each issue.

STATE : .....

MISCELLANEOUS ☐

FOR SALE ☐

WANTED ☐

Name and Call Sign: .....

Address: .....

Phone Number (if applicable): .....

WANTED — QLD

CRYSTAL-LOCKED: 2m xtal locked or tunable tcvr. Price to VK4FX, QTHR. Write or ph: (071) 71 3968.

KR500, 2C39, 8122 BASE: 2300 MHz converter. 12mm fixing "N" socket. Xtal between 44.5 MHz and 44.6 MHz. 94 MHz xtal superflex N male & female connectors. VK4TL, 16 Kambara Street, White Rock, Qld. 4871. Ph: (070) 54 3677.

SYSTRON DONNER SERVICE MONITOR: type R1200. Any condition. Reply to VK4AO, 41 Spencer Street, Iluka, NSW. 2460. Ph: (066) 46 6587.

WANTED — WA

MICROPHONE: Original factory microphone for Yaesu FTDX-400. Specifications for G5RV wire antenna & any other wire antennas. Terry VK6NTJ, QTHR.

FOR SALE — NSW

FREQUENCY METER: BC-221-T & Calibration book with built-in AC power supply. $20. AR 1983-84-85-86-87 $10 the lot. Old ARRL Handbooks 1937-1945-1950-1960, Antenna Book 1944, Radio Handbook 9th Edition (1942), 73 Dipole & Long Wire Antennas. Any reasonable offers. All articles plus freight/postage. Alan VK2AHR, QTHR. Ph: (064) 95 9275.

ICOM IC-04AT: as new in box. IC-4E, IC-40 from $300. Also Icom CT-10 computer demod, NP too 4 radios $400. All excellent condition. Don VK2EYI. Ph: (02) 627 3669. Licenced amateurs only for transceiver.

KENWOOD TR-7950 2M FM TCVR: 45W 21 memories. $525. Kenwood KPS10 power supply $225. As new ideal for base or high power mobile station. VK2XFE deceased estate. Ph: (02) 449 3135.

POWER SUPPLY: 25 amp peak power. Master home-brew 13.8 volts, never used. $200. 2 metre 7 element Yagi. Home-brew 10 dB gain 1.2:1 VSWR over whole band. Never used, tested only with excellent results. Icom 04A H/H 70 cm tcvr. Used only once. All accs, etc. $375. Jim VK2KAX. Ph: (043) 41 7693.

SHACK CLEAROUT: Transceivers — Yaesu FT-207R 2 metre hand-held $225. Wilson WE-800 2 metre portable/mobile $275. Philips FM321 70 cm mobile $200. Weston HF-1000 28/27 MHz hand-held $40. Antennas — 10 metre quarter wave mobile whip $25. 40 metre helical mobile whip $35. Roof rack with ball mount $15. Printers, VDU kits, keyboard, crystals, etc. Gareth VK2ANF. Ph: (02) 981 1395.

SWAN 700CX POWER SUPPLY: Muffin instruction book. Very good condition. $500 negot. Oscar Block perfect $70. VK2SU. Ph: (069) 68 1556.

FOR SALE — VIC

COMPUTER: Pioneer PX7. MSX Instr Manuals. 18 copies Computer Forum, 1 copy. The MSX Book. All mint cond. $160 the lot. VK3BAX QTHR. Ph: (052) 9 7401 after 7 pm.

KENWOOD TS-940 HF TRANSCEIVER: includes auto ATU & general coverage rx. $3700 ONO. Brand new (still in box) never been used. Owner transferred overseas. John. Ph: (03) 794 8077 BH or (03) 232 6587 AH.

FOR SALE — QLD

BELCOM LINER 432 MHz SSB/CW TRANSCEIVER: $300 ONO. Drake SSR1 comms receiver. 0.5-30 MHz $150 ONO. Kenwood TS-120V HF SSB tcvr, suit novice. Digital readout $500 ONO. 2 AR245A 5W 2m FM hand-helds with telephone touch-tone keypad. Nicads included but no charger. $600 ea or $1000 pair. Never used. Inspect at 379-391 Middle Road, Greenbank, Qld. 4124. Ph: (07) 800 6798 AH.

DICK SMITH HORNET CB: converted to cover 28.245-28.685 MHz, 40 channels with slider. Very good condition $150 ONO. Also, RTTY modem for VZ200/VZ300 computer. Works well. $50 ONO. Steve VK4KHQ, QTHR. Ph: (077) 43 4508.

ICOM 430 MHz LOW NOISE PREAMPLIFIER: New, never used. Still in orig box. Freq range 420-450 MHz. Gain 15 dB. Power requirement 9 to 15V DC. Maximum feed thru RF 15 watts. $70. Brian VK4ATQ. Ph: (07) 374 1008 AH.

STOLEN EQUIPMENT

Kenwood two-metre FM VHF transceiver, Model TR-7850. Serial Number M 2020561. This unit was stolen from the University of NSW Campus, Sydney on Saturday, October 22, 1988.

Any reader with information about this unit please contact the Maroubra Police Station (02) 349 9224, the *owner* Les Kirchmajer VK2ALK, or your local police station.

ar

Advertiser's Index

ATN ANTENNAS 40
AUSTRALIAN ELECTRONICS MONTHLY ... 61
CAPTAIN COMMUNICATIONS 57
CELL TECH COMMUNICATIONS PTY LTD .. 10
DICK SMITH ELECTRONICS 5
E.F.P. 52
ELECTRONICS TODAY INTERNATIONAL . IBC
EMTRONICS 37
IAN J TRUSCOTT'S ELECTRONIC WORLD 62
ICOM AUSTRALIA PTY LTD ..... BC
KENWOOD ELECTRONICS AUSTRALIA PTY LTD ..... IFC
QD ELECTRONICS 63
STEWART ELECTRONIC COMPONENTS PTY LTD 48
WEST-AM RADIO 36
WIA (NSW DIVISION) NOVICE LICENCE 47
WIA BICENTENNIAL CALL BOOK ..... 12 & 40
ZZV ANTENNA FARM 57

OUT NOW

Just released

Electronics Today INTERNATIONAL

JANUARY

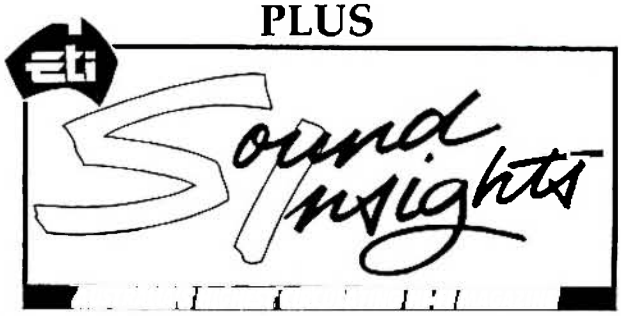
eti

ELECTRONICS · TECHNOLOGY INNOVATION

NASA: Getting over Challenger

Autoguide: let the machine do the driving

PLUS



Sound Ideas — Sound Advice — Sound Products

More information and 84 pages of colour!

CAN YOU AFFORD NOT TO READ IT?

THE NEW ICOM IC32AT, OVER. WITH ITS DUPLEX FACILITY, OVER. MEANS YOU WON'T HAVE TO TALK LIKE THIS, OVER AND OUT.

The IC32AT is the newest dual band handheld transceiver by Icom.

It has been designed with the most advanced VHF technology the electronics industry can offer.

And this little 2 metres and 70cm compact handheld offers full duplex facility.

Which means instead of a broken conversation, you can now simultaneously transmit on one band and receive on the other. Just like a telephone conversation.

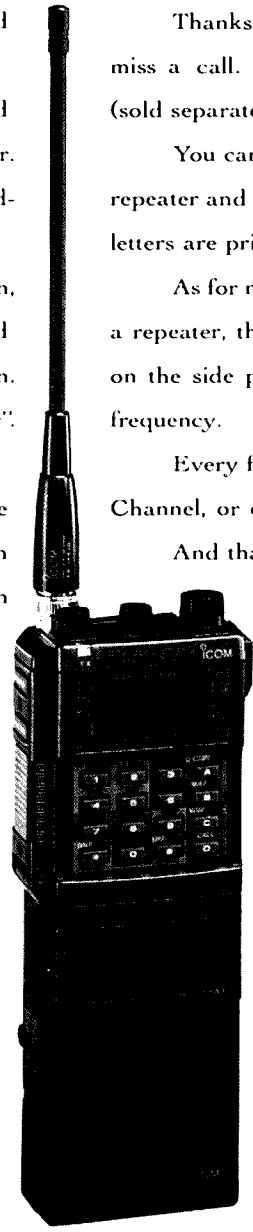
No longer do you have to wait for a long "Over". It's full "Break in".

And with its high output power, you can be sure your words are heard. The IC32AT uses a custom designed power module as the final amplifier. Which means this transceiver puts out 5.5W on 2 metres and 5W on 70cm.

So you will never be at a loss to make that repeater.

What's even more incredible, each of the twenty memory channels can store two frequencies: operating frequency and offset frequency are just a couple of examples.

The Programmed Scan function scans all the frequencies between two programmable scan edge frequencies, while the Memory Scan function scans all memory channels in succession, except, of course, those you lock out. In short, you can scan 2 metres, 70cm or all channels.



Thanks to the handy little pocket beep, you'll never miss a call. By installing the UT-40 Tone Squelch Unit (sold separately) the transceiver functions as a pager.

You can use the built-in DTMF keyboard to access a repeater and to make a phone patch. The key numbers and letters are printed large for quick and easy reading.

As for monitoring the input frequency when you work a repeater, that's as simple as pushing the Monitor switch on the side panel to open the squelch and check the frequency.

Every five seconds, Priority Watch monitors the Call Channel, or one or all the memory channels in succession.

And that's while you operate!

When you want to change the frequency or the memory channel fast, the Dial Select changes the 1MHz, 100kHz digit or the memory channel directly. One push of the button does it.

All these functions not only make the Icom IC32AT the most advanced dual band handheld transceiver available, but also very easy to use.

Call (008) 338 915 for your nearest Icom stockist today.

The telephone conversation in itself will be a very good demonstration of the IC32AT's duplex facility.

Over and out.

ICOM

The Ball Partnership ICO 0024

Amateur Radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA
VOL 57, NO 2, FEBRUARY 1989

SPECIAL REFERENCE ISSUE

KENWOOD

AMATEUR LINE-UP

Kenwood's amateur lineup for 1988 incorporates the latest developments in communications technology

Superior front end specifications are accompanied by the latest developments in transmitter design. Automatic antenna tuning and advanced digital & microprocessor technology make these the easiest to operate Kenwoods ever

Personal computer control is available on several models.

HF

TS-940S

Competition Quality HF Transceiver. Transmitter SSB CW AM FM and FSK 160 10 metres bands Output 250W PEP Automatic antenna tuner Receiver 150kHz 30MHz continuous 40 memories programmable and band scans Power requirement 240VAC 50 60Hz

TS-440S

Compact HF Transceiver. Transmitter SSB CW FM AFSK 160 10 metre bands Output 200W PEP Optional automatic antenna tuner Receiver 100kHz 30MHz continuous Power requirement 12 16VDC 20A max

1.8-50MHz

TS-680S

High performance HF & 6 metre Transceiver. Transmitter SSB CW AM and FM modes 160 6 metre bands Output 100W PEP (160 10m) 10W (6m) Receiver 500kHz 30MHz continuous Memory scan band scan Power req 12 16VDC 20A max

VHF UHF

TR-751A
TR-851A

All-mode Transceivers. Frequency Range TR-751A 144 148MHz TR-851A 430 440MHz Transmitter SSB CW FM modes Output 25W Receiver sensitivity less than 0 11uV (TR-851A) Features include Auto mode selection dual digital VFOs 10 memories plus COM channel Optional Digital Channel Link System Power req 13 8V +15% 7 5A max

TH-25A
TH-45A

FM Handheld Transceivers. Frequency range TH-25 144 148MHz TH-45 430 440MHz Output 5W Receiver sensitivity less than 0 16uV (TR 25) 14 multi function memories memory scan and band scan Power req 6 0 16VDC 1 2A max

TS-711A
TS-811A

All-mode Transceivers. Transmitters modes SSB CW FM Frequency range TS 711 144 148MHz TS 811 430 440MHz Output 25W Receiver sensitivity less than 0 2uV (TS 811) Features include 40 multi function memories programmable band scan and memory scan plus programmable memory channel lockout Power req 240VAC 13 8V DC 8 0A max

TM-221
TM-421

FM Mobile Transceivers. Transmitters Frequency range 144 148MHz (TR221) 430 440MHz (TR 421) Output 4W (TM 221) 35W (TM 421) Low power switch to 5W Receiver Frequency Range 130 173 995MHz (TR 221) 438 449 995MHz (TR421) Sensitivity less than 0 16uV Power requirements 13 8VDC +15% 9 5A max

TH-215A
TH-415A

FM Handheld Transceivers. Transmitters Frequency Range 144 148MHz (TH 215) 430 440MHz (TH 415) Output 5W 0 5W (Low) Receiver 141 163MHz (TH 215) 430 440MHz Scan modes include band memory and programmable band scans with 3 scan stop modes Power requirements 7 2 16V 2 0A max

VHF/UHF DUAL BANDER

TM-721A **NEW**

Dual band FM Transceiver with across band duplex. New for 1988 with dual watch selectable full duplex cross band operation automatic band change 30 memory channels Transmitter Frequency Range 144 148MHz 430 440MHz Output 45W (VHF) 35W (UHF) Receiver sensitivity 0 16uV (UHF)

RECEIVERS

R-5000

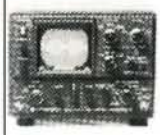
Communications Receiver. The R-5000 is a competition class communications receiver It receives all modes (SSB CW AM FM FSK) Frequency coverage is 100kHz to 30MHz in 30 bands Selectable IF filters and dual mode noise blanker are incorporated Power requirements 240VAC or 13 8V DC

RZ-1

Wide Band Receiver. The RZ 1 covers 500kHz 905MHz Features include AM and FM reception 100 easy to operate multi function memory channels Scan modes include VFO scan and memory scan plus programmable channel lockout Power requirements 11 16V DC 1A max

MISC.

STATION MONITOR



SM-220

Based on a wide-frequency range oscilloscope it combines a two tone generator a wide variety of waveform observing capabilities

HF LINEAR AMPLIFIER

TL922

A class AB1 grounded grid linear amplifier Covers 160 10m for SSB CW and RTTY modes Drive Power 80W for full output RF Input Power 2 000W PEP (SSB)

ANTENNA TUNER

AT-250

Optional automatic antenna tuner for the TS-680S Features full coverage of 160 10 metres Insertion loss less than 0 8dB Through power 150W

REMOTE CONTROL HANDSET

RC-10

Connects to models TM 221 TM 421 TM 721 Provides all functions on the front panel Will link together models TM 221 TM 421

Kenwood Electronics Australia Pty Ltd

4E Woodcock Place, Lane Cove
Sydney, 2066, New South Wales
For your nearest dealer, please contact
PH: (02) 428 1455

Amateur Radio

Cover:
WICEN check-point on the Melbourne - Sydney Bicentennial Bike Ride (see story page 8) Leanne Saunders of Hampton, Victoria, checking details with Tom Corrigan VK3XBG, and Richard Counsel VK3YLZ. Picture taken by Barry Wilton VK3XV.

Deadline for Mar 89 is 8 Feb.

Special Features

1989 Reference Section — 23-50
(includes band plans, VK and ZL beacons and repeaters, VHF, UHF and SHF records, DXCC countries list, AMSAT information, and much, much more!)

New Features

WIA Directory — 3
WIA News — 4

Technical Feature

Kenwood TS-530S Improved Selectivity by Con Murphy **VK6PM** — 60

Regular Features

Advertiser's index — 69
ALARA — 11
AMSAT Australia — 21, 60
Awards
ARRL Diamond — 51
DXCC Updates — 52
Club Corner — 14
Contests
Calendar — 17
1989 John Moyle — 17
Commonwealth 1989 — 19
Commonwealth 1988 Results — 19
BARTG RTTY — 20
Editor's Comment — 2
Education Notes — 15
EMC Report — 61
Five Eighth Wave — 12
Forward Bias — 8
Hamads — 67
How's DX — 13
Over to You - members' opinions — 61
Pounding Brass — 9
Silent Keys — 64
Spotlight on Swing — 10
VHF-UHF An Expanding World — 55
VK2 Mini Bulletin — 52
VK3 WIA Notes — 54
VKG Bulletin — 53
WICEN News — 8

Amateur Radio

Published monthly as the Official Journal by the Wireless Institute of Australia, founded 1910. ISSN 0002 - 6859. Registered Office: 3/105 Hawthorn Road, Caulfield North, Vic 3161. Telephone: (03) 528 5962.

EDITOR
Bill Rice VK3ABP

NEWS EDITOR
Jim Linton VK3PC

TECHNICAL EDITING CO-ORDINATOR
Peter Gibson VK3AZL

TECHNICAL EDITORS
Evan Jarman VK3ANI
Gil Sones VK3AUI

MARKETING
Bruce Kendall VK3WL

CONTRIBUTING EDITORS
Frank Beech VK7BC
Joy Collis VK2EBX
Brenda Edmonds VK3KT
Ron Fisher VK3OM
Norm Gomm VK1GN
Ken Gott VK3AJU
Gilbert Giffith VK3CQ
Roy Hartkopf VK3AOH
Robin Harwood VK7RH
Ron Henderson VK1RH
Bill Homer VK4MWZ
Eric Jamieson VK5LP
Tim Mills VK2ZTM
Hans Ruckert VK2AOU
John Sparkes VK6JX
Jennifer Warrington VK5ANW

DRAFTING
Liz Kline, Ken Kline

Inquiries and material to: The Editor. P O Box 300, Caulfield South, VIC 3162.

Advertising: Ann McCurdy (03) 528 5962

Materials should be sent direct PO Box 300, Caulfield South, Vic. 3162, by the second Wednesday of the month preceding publication. Check page 1 for deadline dates. HAMADS should be sent direct to the same address, by the following Tuesday.

Acknowledgement may not be made unless specifically requested. All important items should be sent by Certified Mail. The editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying a reason.

TRADE PRACTICES ACT

It is impossible for us to ensure the advertisements submitted for publication comply with the Trade Practices Act 1974. Therefore advertisers and advertising agents *will appreciate* the absolute need for themselves to ensure that, the provisions of the Act are complied with **strictly.**

VICTORIAN CONSUMER AFFAIRS ACT

All advertisers are advised that advertisements containing only a PO Box number as the address cannot be accepted without the addition of the business address of the box-holder or seller of the goods.

TYPESETTING : Redfords Media Suite 1, 5 Walworth Ave, Caulfield Nth, 3162 Tel: (03) 523 0035

PRINTING: West Web, Barwon Heads Rd, Belmont

MAIL DISTRIBUTION: Polk Mailing Co. PO Box 140, Collingwood, Vic 3066 Tel:(03) 417 5161

EDITOR'S COMMENT
AMATEUR RADIO FEBRUARY 1989

This issue is different

As mentioned last month, that issue (January 1989) was the last to be produced by Betken Productions. This issue, for February, is different for several reasons.

Firstly, production, typesetting and printing are now all being carried out by different people than those involved before.

Secondly, for several reasons all of which involve saving expense to you, our members, we are publishing in this issue all the administrative and operating data which in the past has been published in the Call Book, but from now on we plan to publish it each year in the February issue of AR.

Thirdly, as many of you have told us over the last several years, the size and spacing of our typescript has, although improved over that period, still been a little small for comfortable reading, particularly by some of our older members, So, in this issue we decided to "go the whole hog" and increase the type size too!

Finally, although it is yet to be confirmed that we can keep up the pressure, with this issue we are operating on a much shorter lead-time from receipt of copy to publication, So things like DX information, news items etc should be more up to date from now on. But please don't judge us on that from this Issue, because the Christmas-New Year holiday period has introduced some extra delays, as it does every year.

Due to the number of pages needed for the data section, we have had to cut down this month in several other areas, notably technical articles, but we will be back to our normal balance of material in all other months but February each year.

One other factor which we hope has had little unwelcome effect is that your editor and his good lady have just returned from a rather hectic but very enjoyable holiday in Tasmania, during which we talked (and listened much more!) to some of the VK7s on 2m FM as we drove around the Island, covering 2500 km in 10 days. Tasmania doesn't look all that big on a map, by comparison with VK6 or VK4, but its distances should not be under-estimated either!

So there it is - the February 1989 issue. It may not be perfect but it's certainly different!

Bill Rice VK3ABP
Editor

QSP

Subscription drive winner

The WIA Executive Office has been pursuing the reasons in recent times as to why some members do not renew their membership. This is done to ascertain what the WIA needs to change to be able to retain its members.

Last year, we implemented a drive to find out why members had not renewed their subscription, and offered an incentive prize to those who were prepared to participate.

We thank all who participated.

WIA is pleased to advise the winner was Alan, VK7ZLA, who has now received a refund of his membership subscription.

WIA DIRECTORY

Federal Council

Kevin Olds	VK1OK	ACT Councillor
Peter Jeremy	VK2PJ	NSW Councillor
Peter Mill	VK3ZPP	Victorian Councillor
David Jerome	VK4YAN	Queensland Councillor
Rowland Bruce	VK5OU	SA Councillor
Neil Penfold	VK6NE	WA Councillor
Joe Gelston	VK7JG	Tasmanian Councillor

Federal Co—ordinators

Amsat	Graham Ratcliff	VK5AGR
Awards Mgr	Ken Gott	VK3AJU
Contest Mgr	Frank Beech	VK7BC
Education	Brenda Edwards	VK3KT
EMC	Hans Ruckert	VK2AOU
Historian	John Edmonds	VK3AFU
Intruder Watch	Bill Horner	VK4MWZ
Int'l Travel Host Exch	Ash Nallawaila	VK3CIT
QSL Mgr	Neil Penfold	VK6NE
Standards	Peter Page	VK2APP
Tapes (Federal News)	Bill Roper	VK3ARZ
	Ron Fisher	VK3OM

Executive

Peter Gamble	VK3YRP	Federal President
Ron Henderson	VK1RH	Vice Chairman
David Wardlaw	VK3ADW	Immediate Past Federal President
Brenda Edmonds	VK3KT	Federal Education Officer
Bill Rice	VK3ABP	Editor Amateur Radio
George Brzostowski	VK1GB	Federal Executive
Peter Page	VK2APP	Federal Executive
Ray Roche	VK1ZJR	Federal Executive
Bill Wardrop	VK5AWM	Federal Executive
Kathy Gluyas	VK3XBA	Federal Executive

Executive Office

Bill Roper	VK3ARZ	General Manager & Secretary
Ross Burstal	VK3CRB	Assistant General Manager
Ann McCurdy		Advertising & Admin. Manager
Helen Wageningen		Membership & Circulation Mgr
June Fox		Accounts & EDP Manager
Earl Russell	VK3BER	EDP Consultant
Heather McWhirter		Typist/Receptionist
Ron Fisher	VK3OM	Librarian

DIVISIONS

VK1 — ACT Division

GPO Box 600
Canberra ACT 2601

Officers		
President	Alan Hawes	VK1WX
Secretary	Alex Johnson	VK1ZDX
Treasurer	Ken Ray	VK1KEN

Broadcasts
3.570 MHz
2m ch 6950
70cm ch 8525
2000 hrs Sun

Fees

Full (F)	$44.00
Assoc A	$44.00
Full (C)	$44.00
Assoc (T)	$44.00
Pens. (G)	$33.00
Stud. (S)	$31.00
Family (X)	$25.00

VK2 — NSW Division

109 Wigram St
Parramatta NSW 2150
(PO Box 1066 Parramatta)
Phone (02) 689 2417

Officers		
President	Roger Henley	VK2ZIG
Secretary	Andrew Keir	VK2AAK
Treasurer	David Horsfall	VK2KFU

(R Denotes repeater) Times 1100 and 1930 on Sun
1.845 MHz AM, 3.595 SSB, 7.146 AM (1100 only)
28.320 SSB, 52 120 SSB 52.525 FM
144.120 SSB 147.000 FM(R) 438.525 FM(R)
585.500 (ATV Sound) Relays also conducted via many repeaters throughout NSW.

F	$41.50
A	$39.50
C	$41.50
T	$39.50
G	34.50
S	31.00
X	24.50

VK3 — Victorian Division

412 Brunswick St
Fitzroy Vic 3065
(to be changed early 1989)

Officers		
President	Jim Linton	VK3PC
Secretary	Peter Mill	VK3ZPP
Treasurer	Rob Halley	VK3XLZ

1.840 MHZ AM, 3.615 SSB,
7.085 SSB, 147.250 FM(R) Mt Macedon
147.225 FM(R) Mt Baw Baw
146.800 FM(R) Mildura
438.075 FM(R) Mt St Leonard 1030 hrs on Sun

F	$50.00
A	$45.00
C	$50.00
T	$45.00
G	$38.00
S	$27.00
X	$27.00

VK4 — Queensland Division

GPO Box 638
Brisbane Qld 4001
Phone (07) 349 7768

Officers		
President	David Jones	VK4NLV
Secretary	John Aarsse	VK4QA
Treasurer	Neil Fittock	VK4NEF

3.650 MHz, 7.118, 14.342,
18.132, 21.175, 28.400,
52.525 regional 2m repeaters and
1296.100 0900 hrs Sunday
Repeated on 3.605 & 147.150 MHz, 1930 Mon

F	$45.00
A	$45.00
C	$45.00
T	$45.00
G	$36.00
S	$27.00
X	$27.00

VK5 — South Australian Division

Thebarton Rd
West Thebarton SA 5031
(GPO Box 1234)
Adelaide SA 5001)
Phone (08) 352 3428

Officers		
President	Don McDonald	VK5ADD
Secretary	Hans vander Zalm	VK5KHZ
Treasurer	Bill Wardrop	VK5AWM

3.550 MHz, 14.175, 28.470, 53.100,
147.000 FM(R) Adelaide
146.700 FM(R) Mid North
146.900 FM(R) South East
ATV Ch 34 579.00 Adelaide
ATV 444.250 Mid North
(NT)3.555, 146.500, 0900 hrs Sun

F	$44.00
A	$44.00
C	$44.00
T	$44.00
G	$35.00
S	$26.00
X	$26.00

VK6 — West Australian Division

GPO Box 10
West Perth WA 6005

Officers		
President	Christine Bastin	VK6ZLZ
Secretary	Fred Parsonage	VK6PF
Treasurer	Cliff Bastin	VK6LZ

146.700 FM(R) Perth, at 0930 hrs Sun,
relayed on 3.560 MHz, 7.075, 14.110, 14.175,
21.185, 28.485, 52.080, 438.525(R)
Country relays 3.582, 147.350(R) Busselton
146.900(R) Mt William (Bunbury)
Broadcast repeated on 3.560 at 1900 hrs.

F	$42.00
A	$42.00
C	$42.00
T	$42.00
G	$35.00
S	$22.00
X	$23.00

VK7 — Tasmanian Division

PO Box 1010
Launceston TAS 7250

Officers		
President	Mike Wilson	VK7ZWW
Secretary	Peter Frith	VK7PF
Treasurer	Peter King	VK7ZPK

146.700 MHZ FM (VK7RHT) at 0930 hrs Sun
relayed on 147.000 (VK7RAA), 146.750 (VK7RNW),
3.570, 7.090, 14.170, 52.100, 144.100 (Hobart)
Repeated Tues 3.590 at 1930 hrs

F	$42.00
A	$42.00
C	$42.00
T	$42.00
G	$38.00
S	$24.00
X	$22.00

VK* (Northern Territory) is part of the VK5 Division and relays broadcasts from VK5 as shown (received on 14 or 28 MHz).
Note: all times are local. All frequencies MHz.

WIA NEWS

JANUARY 1988...OOPS...1989 ISSUE OF AMATEUR RADIO

Most of us, when we make a mistake in our work, are fortunate that only one or two people (hopefully, not including the boss) ever find out about it. When the WIA makes a mistake with Amateur Radio, 8000 eagle-eyed members immediately have a talking point and rush to tell us about it. Particularly if the mistake is on the front cover of the magazine.

Are you wondering what I am talking about? Do you mean to say that you are the only member who didn't rush to tell me that we had the wrong year on the front cover of the January 1988..er..1989 edition of Amateur Radio?

One small saving grace is that at least we had the Volume Number correct, and the date is correct on the internal pages. What a pity that this error occurred on the last issue of the magazine that was produced by Betken Productions.

HAMADS

If you are an "average" reader of Amateur Radio then it is fairly safe to bet that the first part of the magazine you read each month is the HAMADS. And it is also fairly safe to assume that you have been wondering why the number of HAMADS has been so few over the past 12 months or so.

This matter has also puzzled the Publications Committee. One of the reasons was thought to be the rather long lead time before publication, usually at least 6 weeks.

With the new production methods in use as from this issue of the magazine, the lead time for HAMADS has now dropped to an incredible 2 weeks....yes, 2 weeks!!....from the time the HAMAD is received at the Executive Office to the time Amateur Radio is delivered to Australia Post for delivery.

Do you think that will encourage more members to use HAMADS? I certainly hope so, but guess that only time will tell.

Incidentally, I'll bet you were surprised when you saw the 60 plus HAMADS in this issue (which I know you scrutinized before you read this). So were we. I certainly hope that it is a sign of things to come.

By the way, the Executive Office acknowledges receipt of all HAMADS on the day that they are received in the post. If you do not receive your acknowledgement within a reasonable time, please let me know.

DELIVERY OF AMATEUR RADIO TO MEMBERS

For many years now, members have expected Amateur Radio to be delivered to their letter box on, or very close to, the 1st day of each month. One of the by-products of the new production methods which, among other things, have resulted in the substantially reduced lead times for copy, is that typesetting and printing are now tied to days of the week, and not days of the month.

One result of this is that the magazine will be delivered to the mailing house, Polk Mailing Company Pty. Ltd., on the last Friday of each month. Depending on the vagaries of Australia Post, members should then receive their magazine sometime during the following week.

Therefore, before contacting the Executive Office about non-receipt of your Amateur Radio, please check the date of the last Friday of the previous month, and work from there.

NEW COLUMNS

The Publications Committee is currently considering whether we should be introducing some new columns into the magazine. However, with the reduced content in the new look magazine, brought about because of the much demanded increase in print size, it may be difficult to fit in additional columns on a monthly basis. One option may be that some of the columns appear on a 2 monthly alternating basis.

It is suggested that one new column could deal with arguably the most exciting, rapid growth area of amateur radio today, packet radio. Another could deal with the use of computers in amateur radio today (ATV, SSTV, CW, AMTOR, logkeeping, etc.). And yet another column could deal exclusively with antennas, an area of our hobby which intrigues and involves us all.

What do you think? Are there any members who have the necessary skills to write such columns for the magazine? If so, please let me hear from you.

CONTRIBUTIONS ON DISK

Whether you are a regular columnist, or an occasional author, we would be pleased to receive your manuscript on a floppy disk. The only limitations at present are that the disk must be a 5 1/4 inch disk in IBM format. The Executive Office can deal with all of the major word processors. However, if in doubt, an ASCII dump will probably be quite adequate.

EMTRONICS 1989 ELECTRONICS & COMMUNICATIONS CATALOGUE

Several members, having noticed that the excellent 1989 Catalogue issued by Emtronics (a major advertiser and long time supporter of Amateur Radio) was included as a supplement in a couple of other magazines, queried why the Catalogue did not appear as a supplement to our magazine.

I can assure members that it was not for the want of trying. Over the period of a few days from the time we were first approached by Emtronics, all of the production problems involved with the inclusion of such a large "insert" into Amateur Radio were resolved, and a mutually satisfactory price was agreed between Emtronics and the WIA.

Then the fun started. As members know, Amateur Radio is distributed entirely by post, and is mailed as a Category B item which attracts a substantial concession in postage costs. However, one of the Category B rules states that the insert or supplement to such a magazine cannot be of a greater size or mass than the magazine itself. Emtronics Catalogue is the same size, and the same number of pages as Amateur Radio but, because of a higher quality paper, its mass is greater. No amount of pleading, argument and cajoling was successful in getting APO to change their ruling.

If we had proceeded with the inclusion of the Catalogue in the magazine, we would have lost the Category B classification, and incurred a blowout in the postage costs of several thousand dollars.

Emtronics and the WIA had a number of discussions, attempting to find a viable alternative method of providing the Catalogue to members, but to no avail.

1988 AUSTRALIAN BICENTENNIAL RADIO AMATEUR CALLBOOK

What a saga this turned out to be. We wrestled for months with the problems associated with the listing of callsigns and addresses supplied to us by DOTC, in an effort to minimise

the high error rate. The staff of DOTC in Canberra were most co-operative, and we eventually thought that we had corrected most of the more obvious errors, despite delaying quite considerably the schedule for printing.

Then the gremlins got to work with a vengeance.

At least, we felt, the WIA members details would be correct because they came from our own database. But then, as you know, due to a computer malfunction which was not discovered until the Call Book was printed and on sale, two page blocks of callsigns were omitted, hence the insert in December issue of the magazine. (Incidentally, if you did not receive this insert, please let me know, and I will forward one to you immediately.)

As one tends to expect from computer malfunctions, it wasn't very fussy about who was left out. For example, the missing callsigns not only included the editor of Amateur Radio Action magazine, Chris Edmondson, VK3YID, but also the President of the WIA, Peter Gamble, VK3YRP.

The 1988 Call Book was also to include the DXCC listing, Australian repeaters, and the Australian band plans. They didn't make it, and thereby added to the list of problems.

Despite all the difficulties, however, the Call Book is selling quickly, and there are not many copies left.

The next Call Book, to be published later this year, can only be better.

WITHDRAWAL OF 576 - 585 MHz AMATEUR BAND

This band is allocated on a primary basis to the broadcasting service, and on a secondary basis to the fixed and mobile services. A footnote to the Australian Frequency Allocation Table (AUS 30) allows amateur use of this band until such time as it is required for use by the Broadcasting Service.

Some years ago the WIA sought assurances on the continued use of the band. At that time a limited assurance was given for 3 years. That time has now expired. During the WIA/DOTC Joint Meeting in Canberra on November 22nd and 23rd, 1988, the WIA representatives were advised that, as a result of the Federal Government's television equalisation scheme which has placed considerable pressure on the limited amount of UHF spectrum available for broadcasting purposes, the 576 - 585 MHz band was to be resumed in the near future. Negotiations were entered into, exploring a number of options, including the possibility of using an "adjacent" channel to the 576 MHz band. (DOTC have subsequently advised that there is no such spectrum space available on an Australia wide basis.)

In a letter dated 24th December 1988, DOTC have officially notified us that they are going to withdraw the use of the 576 - 585 MHz band by the amateur service as from 1st March 1989.

At first it seems that the long drawn-out inevitable has finally happened. No more 576 MHz operation. No more 576 MHz ATV.

But all is not lost.

DOTC have agreed to one of the WIA proposals and advise that "Existing Amateur television repeater stations allocated in the affected band will be permitted to continue to operate until the frequency band is required for the respective area. However, no applications for new Amateur Television repeaters will be accepted for the band 576 - 585 MHz."

The letter from DOTC goes on to say "...as Amateurs may receive on any band, in the short term there will be no significant disadvantage to ATV operators. This approach will also allow each repeater licence to be reviewed on a case by case basis as a Broadcasting Service moves into the area."

Obviously, it will now be necessary for any groups proposing a new ATV repeater to opt for either an "in-band" 70 cm repeater, or a repeater output on 23 cm. This latter band has proved popular in the UK and the USA where the technology required has been amply demonstrated.

AMATEUR LICENCE EXAMINATION DEVOLVEMENT

Early in 1988, the Department of Transport and Communications (DOTC), conducted a number of public forums on the devolution of Amateur operator certificate examinations. At that time DOTC announced that it planned to commence the new procedure in the latter half of 1988 and called for submissions from clubs and educational bodies interested in participating. In response to that request, a large number of submissions were received by DOTC. However, nothing has been heard from DOTC since that time.

As a result of the matter being raised at the recent WIA/DOTC Joint Meeting, DOTC now advise that, largely due to problems in the filling of positions within the Department in the examinations area, they have not been in a position to implement the new procedure, or to advise applicants of the precise details of the accreditation process.

DOTC further advise that, while the majority of the work has been completed, some refinement of the examination question banks, and other administrative arrangements, is still required. However, although DOTC state that they will be implementing the new procedure at the earliest opportunity, they also include the proviso that the final implementation will be dependent on resource availability to complete the outstanding tasks, and to process applications.

50 MHz BAND

Currently, as members are aware, there are a number of restrictions on the use of the 50.0 to 52.0 MHz section of this band by radio amateurs. During the transmitting hours of Channel 0 television stations, radio amateurs in VK1, 2, 3, & 4 cannot legally use that portion of 6 metres; VK5, 7 & 8 radio amateurs can operate with a power limitation of 25 watts; and VK6 radio amateurs can operate without restriction.

Concern has been expressed by the DOTC in a recent letter to the WIA about the number of radio amateurs who have been operating in this portion of the 6 metre band illegally.

The WIA is currently negotiating with DOTC with a view to achieving a set of operating conditions for the 50 MHz band which will be acceptable to all Australian radio amateurs. Continual illegal operation in this band may well prejudice our negotiations.

The WIA has been seeking advice from a number of prominent 6 metre operators to ensure that our proposals to DOTC are truly representative of the considered views of a majority of the users of this band. The submission is expected to be presented to DOTC by the beginning of February, and I should be able to inform you next month of the details of the WIA proposals.

AMATEUR RADIO MAGAZINE & WIA MEMBERS SURVEY

A significant number of members completed and returned the Survey form included with the October issue of Amateur Radio. The task of collating the information is proving to be even bigger than was originally estimated. At this stage, only about 2/3rds of the Surveys have been punched into the computer, and it may be a month or two yet before we will be able to provide complete results and analysis.

Many members sent in additional detailed comments and suggestions attached to their Surveys. All of these letters are

being read and note is being taken of their comments. As was expected, many of the suggestions and criticisms are most interesting and should be useful.

If you sent in an additional letter with your Survey, and have not yet received a reply, please be patient. The Executive Office is currently receiving an average of over 100 letters a day, many of which require a response. This "normal" mail is replied to within 24 hours of receipt but, because of the work pressure over the past few months with the Call Book, the Survey, the main subscription run (6000 members were due to renew their annual membership subscription as at 31st December 1988), and the changed production procedures with Amateur Radio, the replies to the Survey letters have had to be put aside for the time being.

The draw for the winners of the Survey gifts was held on 22nd November 1988 under the auspices of Mrs. D. Cumpstey of the Australian Electoral Commission. The winner of the Alinco ALX-2T 2 metre FM handheld transceiver was Barry White, VK2AAB. Winners of the 1989 ARRL Handbooks (which are still on their way to us from ARRL) were Mr. R. L. Carden, VK4XRL; Mrs. B. D. Hebiton, VK6DE; Mr. R. J. Richards, VK2ZGI; Mr. P. N. N. Wong, VK3VNN; and Mr. R. L. Osmond, VK5AOR. Congratulations!

MEMBERSHIP SUBSCRIPTION NOTICES

As was announced a few months ago, some commercial changes were made to membership renewal procedures. No longer do we send out the second reminder notice. Also, people who do not renew, now only receive one issue of Amateur Radio after their subscription expires.

The non-receipt of the magazine is turning out to be the best reminder notice we could use!

In an endeavour to make it clear to members that the first subscription reminder notice was to be the only notice forwarded, it was decided to place a warning to this effect on the notice itself. Therefore, in accordance with standard commercial practice, all notices forwarded out since the beginning of October had the notation "FIRST/FINAL NOTICE" printed on them.

This has upset several members, who felt that this notation was rather arrogant and demanding, reminiscent of a final demand from a finance company. The WIA is now a customer driven organisation, no longer a systems driven organisation. We have listened to this critical feedback, and acted.

All subscription reminder notices from now on will bear the notation "FIRST/ONLY NOTICE". I am sure those of you who were offended by the original notation will be pleased to observe the change.

ASSISTANT GENERAL MANAGER

After several months of analysis of the Executive Office workload, and clarification and determination of job specifications, it was decided to create the position of Assistant General Manager.

After having determined the desirable criteria, the head-hunting began. After several weeks of approaching people, interviews and discussions, I am pleased to announce the appointment of Ross Burstal, VK3CRB, to the position of Assistant General Manager, at a salary of $23,920.00 per annum.

Ross is an active amateur, has just taken early retirement from a senior banking position, and is familiar with the workings of the WIA, having served as the Federal Treasurer for a number of years.

The Executive, and the Executive Office staff, consider themselves fortunate to have gained the services of a person with the skills, ability, knowledge and experience that Ross has, and I am sure all members wish Ross well in the challenging task which he has already commenced.

NON-RENEWAL OF MEMBERSHIP WITH THE WIA

Each year about 400 - 500 members of the WIA do not renew their membership. Although these non-renewals are compensated for by new recruits, it was decided back in August 1988 to write to all those people who had allowed their membership to lapse in the 5 month period from the 1st January to the 31st May 1988.

In all, 438 letters were sent out. In those letters we asked people what was the reason for their non-renewal. Was it a conscious decision, or an oversight? Was it because of something that the WIA did wrong, or did not do at all? Was it financial?

And as an incentive to renew, we offered the chance of a free membership for a year to those who renewed before a certain date.

The response was most interesting. Quite a number of people renewed their membership. And quite a number wrote advising of the reasons for their non-renewal.

This feedback has given us quite a bit of food for thought and we are continuing the analysis of these comments and suggestions, and taking them into consideration as we review our procedures and plan future policies.

Of those people who elected to renew their membership as a result of the letter, we are pleased to announce that the lucky winner of the refund of his renewal subscription is VK7ZLA in Ravenswood, Tasmania. Congratulations!

FEDERAL INTRUDER WATCH CO-ORDINATOR

This vital, but often frustrating and thankless task, has been performed professionally and competently by Bill Martin, VK2COP, for many years. Early in 1988 Bill advised that he would be resigning from the position as from 31st December 1988, and the hunt was on for someone to step into Bill's shoes, a very difficult task indeed.

However, at the same time as the WIA and its members say a very sincere thank you to Bill for all his hard work over the years and for a difficult job very well done, I am pleased to announce the appointment of another Bill, this time Bill Homer, VK4MWZ, to the position of Federal Intruder Watch Co ordinator. I am sure Bill Homer can count on members' support in the time consuming and potentially frustrating job ahead of him.

APPOINTMENT OF WIA CERTIFICATION MANAGER FOR ARRL WAS AWARD

As most HF operators know, one of the most popular awards in amateur radio is the Worked All States (WAS) award offered by the American Radio Relay League (ARRL). Up until now, Australian radio amateurs seeking this award have had to send their package of QSL cards to the ARRL in the USA in order to apply for the award certificate.

All this has changed now with the appointment by the ARRL of the WIA Federal Awards Manager, Ken Gott, VK3AJU, as their Australian certifying manager. If you want to claim this ARRL award, simply follow the usual application procedures, but send your application and QSL cards to Ken.

Ken has also been appointed as the Australian certifying

manager for the ARRL VHF/UHF Century Club award, but I don't think Ken is going to be rushed with applicants for this particular award.

JOTA 1988

A recent letter from June Retallack, National JOTA Liaison officer for the Girl Guides Association of Australia, states that the Girl Guides Association would like to thank all radio amateurs throughout Australia for their untiring help during JOTA 1988. June goes on to say "Each state expressed their sincere appreciation for the wonderful time the Guides and Scouts had and the patience the operators had with them. Thank you very much."

AMATEUR RADIO 75TH ANNIVERSARY FIRST DAY COVERS

During a recent clean up of the Executive Office, a box of 360 of these first day cover envelopes was found. They each have a 33 cent stamp imprinted on them, and are currently selling in stamp collecting shops for upwards of 50 cents each.

If you would like to obtain some of these collectors items, we will post a bundle of 10 to you on receipt of your remittance of $4.50. I expect these will be very popular, and it has been decided to limit the supply to one bundle of 10 to a member. Simply post your cheque or credit card details to the Executive Office at P.O. Box 300, Caulfield South, Vic., 3162.

DIVISIONAL NEWS BROADCASTS

The dissemination of news to the members of the WIA is quite a task. The pages of Amateur Radio provide a very good vehicle to let members know what is happening, but the WIA has not really used this medium to advantage in recent times. Perhaps the long lead times were partly responsible for this. Often the news was stale by the time members received the magazine.

With the lead time now reduced to about 2 weeks for stop press items, we should be able to reverse this situation. From this issue onwards, the Executive Office staff will do their best to let you, the member, know what is going on in the Federal scene of your organisation, the WIA. Let me know if you are not happy with what we are doing.

Another very important medium for keeping members abreast of WIA and amateur radio news, is the Divisions' Sunday news broadcasts. These are very competently produced and presented, and provide you with an opportunity to catch up with some local news that is not included in Amateur Radio.

Also, as most Divisions' news broadcast transmissions can be heard in most other Divisions, on one frequency or another, if you miss out on your local broadcast, you can often catch up with the Federal news on another Division's broadcast, and learn a little of what goes on in that Division at the same time.

The WIA Directory, on an earlier page of this magazine, will tell you the frequencies and times of the Divisional news broadcasts, and lots of other information about Divisions as well. It is expected that this WIA Directory will appear in all future issues of Amateur Radio.

1989 FEDERAL CONVENTION

It is now over nine months since the 1988 Federal Convention of the WIA, the 1988 business year of the WIA has finished, and your Executive and the Divisions are in the throes of forward planning for the 1989 Convention. This will be held at the Brighton Savoy Hotel in Melbourne from Saturday 22nd April to Tuesday 25th April, 1989.

The theme for the 1989 Convention is "Planning for the Future", with a minimum of review of what has been done in the past which cannot be altered.

Naturally, the usual reports and agenda items from Executive, Divisions, and Co-ordinators will need to be received at the Executive office in sufficient time to be distributed to all Divisions prior to the Convention. Under the Articles of Association of the WIA, the closing date for receipt of these items is 22nd March 1989.

However, this year we are asking all people concerned to make the effort to ensure that all reports and agenda items reach the Executive Office 7 days earlier than that date, so that they can be published in the April 1989 issue of Amateur Radio magazine.

Therefore, if everybody co-operates, all members should have the opportunity this year to be aware of what is to be discussed at the Convention several weeks beforehand.

If you have a matter or proposal that you believe should be raised at this Annual General Meeting of the WIA, you still have time to approach your Divisional Council.

Bill Roper, VK3ARZ,
General Manager &
Secretary
ar

DX NEWS

Stop press

SPRATLY ISLANDS

There is a possibility that there will be a very short (40 hours) operation from the Spratly Islands in the South China Sea. Tentative date is on the 29 and 30 Jan 1989. The operators will be UL 7 PAE and UL 7 PCZ. At this stage we do not know the call-sign.

VIETNAM

A new DX expedition will visit Vietnam shortly. This time the expedition is organized by a US group.

The date is from the 30 Jan 1989 to the 22nd Feb 1989. The usual WARC bands will be worked both on SSB and CW. The provisional call sign is 3WØA.

Contributed by Steve Pall
VK2PS.

WICEN

Melbourne-Sydney Bicentennial Bike Ride

The Caltex Bicentennial Bike Ride saw 2,200 cyclists and 400 officials and support crew travel over 1,000 kilometres from Melbourne, through Victoria's eastern Gippsland district, Canberra and Sydney.

The riders ranged in age from 5 to 72 years. Two men, one who could only walk with the aid of sticks and another with two artificial hands, both proudly finished the ride.

About a quarter of the riders came from the United States. Many of those tourists here for Australia's 200th birthday flew Canadian flags on their bikes to disassociate themselves from some fellow country folks who continually complained about the weather, the food , and you name it. It appears many visitors brought light weather clothing for "Australia's hot summer", but got drenched to the skin! The ride which began on November 26 and ended December 10, was exceedingly wet for the first three days and the last two.

One rider suffered a broken hip, another a fractured collarbone, and two others concussion. They were quickly attended to by St John first aid units on the ride.

The exercise from WICEN point of view was to provide safety and emergency communications along the route. Most days WICEN control handled about 500 messages through HF, VHF, and UHF CB.

Total WICEN operators were 53, including 19 from VK1 which took over the exercise once the ride reached Bombala.

The ride started out on November 26 with heavy rain and by the time it reached Rosedale in Victoria's east on day 2 the camping ground chosen for an overnight stop was flooded.

The local council activated the State Disaster Plan and the local SES and Red Cross found alternative accommodation in the district. This was the first time the disaster plan had been implemented for a recreational activity.

WICEN Victoria has covered bike rides for 5 years, so knew what to expect from experience and came well equipped and prepared. There was an obvious difference in operating techniques between the Victorian and NSW WICEN groups. Victoria seems to be more experienced in long-distance based activites such as bike rides, canoe marathons and car rallies. It appeared WICEN NSW were more used to providing communications via hand held radios within a relatively confined area. The WICEN ACT members commented on the efficiency, sharpness and friendly style of their colleagues from Victoria.

The first-timers who joined WICEN Victoria for the ride had their eyes opened to the professional manner in which the organisation performs. They learnt something and readily offered their congratulations on the efficiency of WICEN's operation.

Those listening on repeaters along the route also offered their compliments to WICEN control, and on occasion provided a relay or monitored the channel during times of communications difficulties.

This is heartening and shows a willingness by many radio amateurs to do their bit when needed — and they will be in time of disaster. **ar**

FORWARD BIAS

Monthly Meetings

The October meeting saw a presentation by Duncan, VK2XMI, on the Molonglo Terrestrial Radio Telescope (also known as the Molonglo Observatory Synthesis Telescope - MOST).

The telescope which belongs to Sydney University is situated near Captains Flat in NSW. Duncan, with a small team of three helpers runs the telescope on a budget of $150K (eat yer heart out NASA).

The station operates 365 days per year and last year recorded 345 successful observations. Not a bad record for an operation on a shoestring budget. Each observation takes 12 hours to complete.

The primary targets of the telescope are:

Supernova
Active Flare Stars
Quasars
Pulsars
Extended Extra Galactic Objects
Irregular Transient Effects

The telescope is based on the rotation synthesis principle which relies on the Earth rotation to provide scanning on one axis. It consists of two parabolic troughs each 778 m long. Within the troughs are 7 800 individual ring dipoles. The reflector is 12.5 X 25.5 mm galvanised wire mesh. The troughs are tilted in a N/S plane to provide the other scanning axis. The physical and electrical apertures are 18 000 and 10 000 sq metres respectively.

The frequency of operation is 843 MHz, and as one wit said "you don't have to have HF to work DX!">

Duncan took us though the mechanicals and the electronic make-up of the telescope. The talk included some hard copies of observations taken by the station. The presentation can best be summed up in the words of our erstwhile President "the mind boggles!".

Duncan is happy to arrange for groups to visit the actual station. Any such visits should be arranged through the VK1 Committee. This offer extends to groups outside VK1, but again please arrange them through the Committee.

The November meeting was largely an end of year social activity. There was a short presentation by Ian, VK1IC, complete with slides of some of his underwater dives. Many of us were surprised to find that many species of coral grew along the South coast of NSW. You learn something every day.

Future Meetings

February is our Annual General Meeting and election of office bearers. Your attendance is vital to ensure we choose the best possible committee.

Some members may actually want to serve on the committee, but are either too shy to put their names forward, are worried about the workload or concerned that they may not have sufficient skills or experience. If you fall into this category have a quiet word with one of the existing committee members and maybe those fears may disappear.

The March meeting will include discus-

sion on possible items for inclusion in the Federal Convention.

Meeting dates for 1989 are :

February 23
March 27
April 17
May 22
June 26
July 24
August 28
September 25
October 23
November 27

John Moyle Field Day 1989

It is planned to operate the John Moyle Field Day Station VK1WI, at Bull's Head In the Brindabellas.

Planned frequencies are DC to microwaves (whatever they are?). A special award for contacts with radio clubs Is planned.Operators expressing interest so far include: VK1GB, VK1WX, VK1KEN, VK1KRM and VK1GN. If you are interested please contact me, Norm, VK1GN on 54 8512 at home.

QSL Bureau

A further reminder to make life a bit easier for our volunteer bureau operators. Please make sure that you sort your cards into call areas before depositing them with the bureau. In addition, the call sign of the destination area should be written on the top right hand comer of the back of the card.

VK1 cards go to the inwards bureau, not outwards.

VK1 Technical Workshop

The Division is still running Technical Workshlps each month. The Workshops aim to expose all amateurs who have the slightest technical interest to a wide range of varied hands-on activities and in so doing to raise the general level of technical competence within the Division. It's not just aimed at those who already have the skills but to all amateurs who aspire to get more out of this hobby. The main emphasis is on explaining the basics of various RF techniques, modes, measurements, construction and equipment.

The Workshop is held on the second Monday of each month in Room 3 of the Griffin Centre (Upstairs) at 7:30 for an 8:00 pm start. Contact Neil VK1KNP (062) 644654-W(062)543 225-H or listen to the VK1 divisional broadcast for future details.

Packet Activities

The ACT Packet Group normally meets on the first Thursday of each month, but this is subject to variation. Details of venues and dates are beaconed on VHF by Richard, VK1UE, about one week before a meeting.

Details on the ACT Packet Group activities can be obtained from Carl VK1KCM on telephone 062 897819 (work) or 062 583921 (home).

VK1 Awards net

The VK1 Awards net is run every Sunday night immediately after the Divisional broadcast (2000 local time) on 3.570 MHz. The net controller and awards manager for this activity is Bob VK1DE.

Alan Hawes - VK1WX

As most of you know (if you listen to the broadcast) Alan will not be standing as President this year. In announcing his intentions, Alan muttered something about the size of the swamp, the number of alligators residing in it, and certain attributes of the swampee.

Alan has served as President of the VK1 Division for several years during a time when amateur radio was, and is, passing through a difficult period of soul-searching and external pressure.

Alan has laboured hard and long on our behalf, often at personal expense, and with little reward other than the knowledge of a job well done.

Well done Alan Hawes - may the deity who hands out good DX smile favourably on you. ar

POUNDING BRASS

Audio Filter

Gilbert Griffith VK3CQ
7 Church St, Bright, Vic 3741

As I write this month. Bright is filling up with tourists (called turkeys by the locals) and tomorrow I am due back at work after only two extra days off. December has been hectic with many letters and requests for circuits. If I have missed a letter you have sent, apologies, and please try again, with a stamped address envelope please. A lot of my answers are of circuit details previously available in Pounding Brass columns or in the ARRL handbook or other publications that are usually and should be, a part of every shack's appointments so you might save time looking there first.

For those Morsiacs who like to muck around with boards and bits, Gary Bold, author of "The Morseman" column in Break-In featured the following circuit for an active audio filter in his November column.

..."Figure 1 shows the op-amp circuit almost invariably used Technically this is an 'IGMF' (infinite gain multiple feedback) network with a bandpass voltage transfer characteristic. That is, the gain is low at both low and high frequencies, and maximum at some centre frequency fo. If R2 is greater than about 10 times R, its response is exactly like that of a tuned circuit having the values of fo and Q shown below the schematic, and a gain of 1 at the resonant frequency fo. My filter has C=22

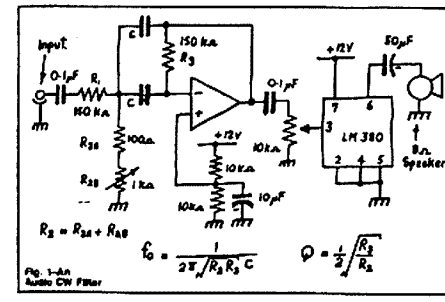


Fig. 1-An Audio CW Filter

nF, and R2b (the preset pot) adjusts both fo and Q. If R2 is about 550 ohms then fo Is about 800 Hz and Q is about 8. I actually use TWO such identical op-amp stages in series; only one of which is shown for simplicity. The biasing network connected to the "+" (non-inverting) op-amp input sets the quiescent voltage to half the supply voltage. The other stage also has its "+" input connected here. I feed the first stage from the headphone jack of the TS520S, so that when I plug it in the receiver audio mutes and only the filter sounds. The overall 3 dB bandwidth of this two stage combination is about 64Hz, which I find excellent up to about 35 WPM. The filter drives an LM380, in the 8 pin DIP (there's also a 14

pin DIP). This admirable audio power amplifier chip, here connected in its simplest configuration, will easily drive either phones or a speaker. I use it as a standard output stage for all sorts of things. The chip give 34 dB of audio gain, hence the gain control potentiometer at the input. The output is short-circuit protected.

Many thanks to Gary for this circuit as I know I will be building one ASAP. My passive filter is OK in conjunction with the narrow IF filters in my main rig but not good enough when used with my homebrew gear, and this sounds like a nice project.

Something for which I do not have a circuit, and none of my books could help me with, was described to me by Jim VK4HZ in his recent letter. Jim wore a hearing aid and was having problems with reflected sound in various rooms. He found that the hearing aids had acoustic coils in them and fitted a few rooms with 3 wire loops around the outside. He now can listen to the rig or TV etc. (depending which is connected) anywhere in the house. A similar set-up was used in the local school for typing lessons via headphones, and I remember their use in my own Morse exam as when I concentrated I tilted my head and found that the sound faded as the headphones changed their angle to the field. Can anyone give me details as to how this set-up works? I am sure there are many amateurs who would be interested. I know that my headphone lead picks the most inconvenient moments to get in the way.

Thanks to Jim VK3AZT who sent the following.

From "Over the Top" Official Journal of the Ringwood RSL Sept 1988.

Bill

Bill was a lineman in the then PMG
When lines were lines like they ought to be
This story will tell you what he had to risk
When out on a job there's a fault he must fix

He'll remember that Saturday when he was called out
To fix up a fault on the old Merbein route
He collected his mate and his ladder and pliers
And drove along slowly, one eye on the wires

Well they spotted the fault and offloaded their roll
And set up the ladder to climb up the pole
Our Bill went up nimbly with hardly a stop
Then climbed up the arms to the one at the top

On top was a wire of galvanised iron
They say its been there since the beginning of time
Back before telex and that modern stuff
The original line for the morse telegraph.

Bill looked just the part, like a king of the sports
In nothing but safety belt, boots and his shorts
But the shorts he had on were those old fashioned kind
With the wide open legs and baggy behind

Then as Bill swung up over to get a bit higher
What was up his shorts came down on that wire
Poor Bill sat there yelling, his eyes gave out flashes
In time with the rhythm of the dots and the dashes

His mate on the ground who was footing the ladder
Was laughing so madly he near burst his bladder
He yelled up to Bill "What a thrill so sublime
On Saturday arvo and on overtime

When I saw your eyes flashing and your voice pulsing hoarse
I grabbed out my pencil and decoded the morse
Though my code's a bit rusty I saw your eyes spell
Best honeymoon wishes and hope all goes well".

Max Tulloch
Houldsworth Rd
Eaglehawk 3556

There has been a recent search for the code for the exclamation mark (!). The Morseman for October 1988 gives it as 'KW'.

However, another source I received in the mail (from whom I cannot recall because it was on a separate sheet from the letter) gives the ! as dah dah dah dit (- - - .) which seems more appropriate as this code is often used as a small laugh as distinct from HI. The same source gives the American code for ampersand (&) as. . . . hence ES for "and".

Thanks for listening, and many thanks for your letters, see you next month.

Gil, VK3CQ *ar*

SPOTLIGHT ON SWLing

Jammers desist

Robin L Harwood, VK7RH
52 Connaught Crescent,
West Launceston, 7250

Early in December of last year, a significant change to shortwave listeners was noticed, when the estimated 2,500 jamming senders through the Soviet Union and Eastern Europe were suddenly turned off. The effect has been very dramatic, with both broadcasters and listeners adapting to the absence of electronic pollution from these jammers on HF.

Recent political changes within the USSR with a greater openness in the media and society, known as "Glasnost" have led to a more tolerant climate. Yet what made the decision imperative, was the huge economic cost in maintaining the 2,500 senders exclusively devoted to jamming western and clandestine broadcasters in Russian and other local languages of the Soviet bloc. There were periods when jamming subsided, but not a complete absence of deliberate interference, particularly with the Radio Free Europe/Radio Liberty operation.

Initially, only two language services were still experiencing jamming, after the lifting and these were the Czech and Bulgarian services of RFE, but these were free of interference by mid-December. The result of this welcome action has been that some low powered signals long blocked by the jammers have become audible. There is less congestion on the bands also. Some of the oldtimers used to rely on the jammers as markers, particularly on uncalibrated receivers, but today's receivers have good readout, either digitally or analogue.Although some significant jamming has ceased, It Is well to remember that a marked deterioration in either the domestic or international situation could conceivably see them re-appear. Jamming of broadcasts still continues, particularly In the Peoples' Republic of China, for broadcasts to the Mainland from Taiwan are constantly jammed, eg the white noise on 7.15 MHz in the evening hours. Iraq also jams various broadcasts in Arabic, especially from Iran. Their jammer sounds like an ambulance klaxon.

Just a few days after the jammers were turned off, a massive earthquake hit Armenia, with a huge death toll in the tens of thousands. Initially, the World Service of Radio Moscow was slow to appreciate the magnitude of the disaster, compared with Soviet domestic print and electronic media. Their Initial reports were pessimistic, and the international media relied on their reports until foreign reporters and observers arrived in Armenia, and found the reports to be true.

The communications infra-structure within the affected region was completed destroyed and military communication

facilities had to be airlifted into Armenia. Even they became overloaded and amateur radio links had to be pressed into service to ease the congestion. A Packet Radio link between Yerevan and Moscow was established. Queries from Armenians abroad, particularly in the USA saw a teleport between San Francisco and Moscow stretched to the limit handling health and welfare and other relief traffic from Stateside hams and the affected areas. The Soviet end had difficulty tracking down individuals because of the chaotic nature of the quake.

The World Service of Radio Moscow started broadcasting In Russian as from the first of January. To Australia, there are releases between 0200 and 0500 UTC as well as 1000 to 12 UTC in the 13, 16, 19, 22 and 25 metre broadcasting allocations, probably on existing World service frequencies to this area. This Is In addition to the other Russian language stations such as "Radio Rodina - Voice of the Homeland" as well as relays of the domestic "Mayak", programme.

Fewer international broadcasters are taking advantage of the Increased sunspots, especially on the 11 metre broadcasting allocation. In fact, several stations that were using the band as an experimental service, have dropped them. Radio Norway, Radio Denmark and Radio Abu Dhabi have put in very good signals on 11 metres recently, yet all have ceased using them. Now there is only the BBC World Service and Radio France International left. Deutsche Welle in Cologne recently told one of their Australian monitors that they had no plans to use 25 MHz as only sophisticated models possessed by DXers were capable of receiving them. The vast majority of their audience use portable, cheap models which don't have 11 metre coverage. Hence they see no need. 11 metres therefore will probably become a feeder frequency and possibly be made available to Fixed and PTP services.

Well, that is all for February. Until next time, the very best of 73 and good listening! ar

ALARA

Joy Collis VK2EBX, P O Box 22, Yeoval NSW 2868

Contest a success despite setbacks

The ALARA Contest was held on 12th November, 1988, a date which unfortunately coincided with the Japanese International DX Contest, European RTTY Contest and OK DX Contest. This may have been one of the reasons for the smaller OM participation this time around.

Mavis (VK3KS) operated the Bicentennial call sign VI88WIA on phone and CW during the contest, giving anyone who had missed out on this one a chance to work it.

It was disappointing to hear no North American girls, but I understand some of them were on air, I guess I wasn't on the right band at the right time.

My "Contesting" was a bit spasmodic, unfortunately, and during the last three hours the "gremlins" struck with an untimely power cut, necessitating an early end to operations for me. I enjoyed the day, and particularly catching up with some people I don't hear very often.

Due to some confusion regarding the address of the Contest manger, the final date for receival of Contest logs was extended to 16th January, with provision being made to attempt to get mail forwarded on from the Wentworth address. (The correct address for VK3JAW, the Contest Manager, was published in November Amateur radio, ALARA column).

The late arrival of some logs may delay the publication of results, but hopefully we will have them in time for April Amateur Radio.

Mavis Stafford Bicentennial Trophy

All logs for the Mavis Stafford Bicentennial Trophy should by now have been received, and results will be given in this column when they come to hand.

ALARA Award Update

Cert No	Date	Name	Callsign	Sticker	Bicent sticker
142	27.09.88	Rita Judd	GOEIX	1	1
143	14.10.88	Fumi Abe	JA1AEQ	1	1
144	20.11.88	Rick Dawson	VK4NWH	2	1
Stickers					
71	19.10.88	Elva Henry	ZL1BIZ	4	1
136	19.10.88	Dawn Young	ZL2AGX	3	
48	21.10.88	Joy Collis	VK2EBX	10	1
92	2.11.88	Kim Wilson	VK3CYL	1	

We would like to extend to Valda, VK3DVT, a vote of thanks for designing and producing the attractive Bicentennial stickers issued during 1988.

Bits and Pieces

With improving propagation it has been good to work YLs from several "medium rare" DX locations, including Iris Colvin ZC4ZR (Cyprus), Meralda VR6MW (Pitcaim Island) and Robyn VKOAE (Macquarie Island,) to name just a few.

We were saddened to hear that Marjorie VK3HQ, an amateur for 56 years, and early member of ALARA, became a silent key on 9th December.

ALARA played a major role in the operation of the Bicentennial callsign VI88WIA, with a total of 3,230 contacts logged. Other bicentennial callsigns used by ALARA at times throughout the year included VI88VIC, VI88QLD, VI88WA and VI88SA.

Information has been received from Christine GM4YMM regarding a new YL net which has commenced on 14.246 MHz.

The net begins Thursdays at 1700 UTC, which is unlikely to prove a popular time for VK YLs, except very early risers and those suffering from insomnia!

That's about it for this time. 73/33 ar

5/8 WAVE

Picnic frolic

Jennifer Warrington VK5ANW
59 Albert Street
Clarence Gardens 5039

They say a picture is worth a thousand words, so I'll leave it to the pictures to do most of the talking this time! They were taken by Janet Bulling VK5NEI at the WIA (VK5 Div) Picnic on November 20th, 1988. I think they show that a good time (and lots of donuts!) was/were had by all, despite the very inclement weather. Thanks Janet for these photos which will now go into the archives for posterity!

I am pleased to be able to tell you that I have had a second photograph of a Past President donated. Phil Williams VK5NN has give me one of himself taken at about the time that he was President. The photograph is a small one but that won't matter, we can easily have it enlarged. Thanks Phil, and anyone else who only has a small photograph that he didn't think was suitable, we would still be grateful to receive it (or even to get it copied and then hand it back).

Diary Dates

Tues 28th February

Video on crystal grinding by Clem Tilbrook VK5GL

ar

Steve VK5AIM & Sue VK5XYL

WIA Picnic, Donut eating contest, 1988. L to R: Barry VK5KCX, Steve VK5AIM, Arno VK5ZAR

VK5 Div president, Don Mc Donald VK5ADD.

HOW'S DX

Vietnam, Mellish, temporarily active

Some Australian Amateurs were pleased to find Vietnam 'XV' on the air for a limited period.

Vietnam was activated by a Hungarian group of amateurs who travelled to Vietnam without any sponsorship at their own costs in the middle of October, 1988.

The group: HA5MY, HA5WA and HA5PP activated Vietnam under two special call signs. 3W8DX for SSB contacts and 3W8CW for CW contacts.

They were active on the 28, 21, 14, 7 and 3.5 MHz bands.

Direct QSLS should be sent to the following addresses: for SSB contacts: Box 271 Vienna, Austria, Zipcode 1141.

For CW contacts to Box 131 Vienna, Austria, Zipcode 1141 with the appropriate self addressed reply envelope and IRCS or green stamps.

The group started operations on the 23rd October, 1988 and were scheduled to leave Vietnam on the 30th November, 1988.

Up to the 12th November 1988 they made 37000 QSO's. We regret that this information is far too late to work them. We did not received it until mid-November. It seems unlikely that Vietnam will again be active in the near future.

Mellish Reef DX-Expedition

A group of US, Canadian and South African amateurs finally succeeded in landing on Mellish Reef on the 8th of January 1989 and commenced operation around 0400 Z on 21.195 MHz.

The small boat carrying the expedition - VE3IEO, KG9S and ZS2KN among them, arrived near Mellish in the early hours of 7th January 1989. Because of strong wind and rough seas, they had to approach from the easterly direction, got into some difficulty and were forced to anchor 2km off the Reef. There were 3 metre waves on the western side.

Whilst trying to land they lost some blades of the propeller of their aluminium boat.

They landed two operators and one crew member on Mellish at the first attempt and it was 24 hours later before they were able to get closer to the Reef, land the equipment, food, water, generators, etc.

They became operational at about 0400 UTC on Sunday the 8th January 1989.

So far they have operated on 21195 and 14195 working split frequency and listening from 21200 to 21220 and 14200 to 14220 -

The call sign is : VK9ZM

QSL Manager is : NM2L

On their return they will activate Willis Island with the call sign VK9ZW.

They expected to be on the Reef about 7 days.

Contributed by Stephen Pall, VK2PS

Interesting DX QSO's on the East Coast during the months of October-November 1988. Information received from Stephen Pall VK2PS

P O Box 93

Dural NSW 2158

14 MHz

FM5DN - Leon on the French Island of Martinique. QSL to W3DJZ or direct: P O Box 1134, Fort De France, Martinique, Caribbean Zip 97249.

TK5EL - QSL to F6FNU : Antoine Baldeck, 7 Res Du Val, Ollainville F-91290 Arpajon, France.

HP2XDD - Fauzi, QSL direct to: P O Box 3010, free Zone, Colon, Panama.

6V6A - Jean Marie In Senegal, special event station In connection with World Association for children.QSL to: F6FNU, address as above.

5Z4RT - Hermann - QSL to bureau or to: H E Friedrich Sachse Box 14425 - Nairobi - Kenya.

ZL5BA - Sojo on the N Z section of the Antarctic. QSL to: KB4GID Jean Pierre Frossard, 119-4, Ashley Cir. Athens, GA 30605 USA

VP2VA - Arthur on British Virgin Islands QSL via VE3MJ. Morton J Wafson 305 Rosemary Road, Toronto, Ontario, M5P3E4, Canada.

CR5CQK - Phillip in Sintra. QSL via CT1CQK via bureau

ZS88AOO - QSL via WA3HUP Mary A Crider, 2485 Lewisberry road, York Haven, PA 17370, USA

5N9GM Giorgio in Nigeria - QSL via bureau.

3W8DX - Hungarian DX expedition In Vietnam. QSL direct to P O Box 271 Vienna, Austria Zip 1141.

KG4JO - US Base in Guantanamo Bay, Cuba, QSL direct to Guantanamo ARC, Box 73 FPO New York, 09593, USA.

SU1ER Ezzat, QSL direct to: Ezzatss Ramadan P O Box 78 Hellopolls, Cairo 11341, Egypt

YN3CC - CW QSO. Jose in Managua QSL to Box C89 Managua, Nicaragua

UG6GAT - Ken in Yerevan, Armenia. P O Box 54 Yerevan 10, Armenia, USSR

W200DW Jim - 200 Years Anniversary of the U S Constitution Special QSL. Direct to : Raleigh ARS P O BOX 17124 Raleigh, North Carolina - 27619, USA

HV3SJ - Pino In Vatican. QSL to : IODUD, Giuseppe d'Aurelio Via Antonio Fogazaro, 87 I-00137, Roma, Italia.

TA2BK, Bahri in Turkey. QSL via DJOUJ ; Bahri Kacan Schuhmacherring 31, D-8000 Muenchen 83, Western Germany.

5V7WD Dany in Togo. QSL to WB4LFM Paul E Greaves, 122 Swinton Dr. RT. 10 Greenville, South Carolina 29607 USA.

LX1WH, Henry in Luxembourg, QSL via Buro.

SV9ABG, Manuel on Crete. QSL to P O Box 133 Iraklion - Crete, - 71110 - Greece.

FOOBEF/P Fabian on the Island of Ua-Huka in the French Polynesian Marquesas Archipelago. QSL via FE1JCN via Buro.

21MHz

UD6DFF - CW- Leon in Baku Azerbaijan

KP2A - US Virgin Island QSL via Buro

P40S - Aruba Island in the Caribbean. SSB contest station. QSL to : Aruba Amateur Radio Club QSL Bureau Box 273 San Nicolas, Aruba

HKONZI Canal on St Andres Island, PO Box 1019 St Andresisl Colombia - South America.

5W1GT Carol (YL) on Western Samoa QSL to N5CX; Lawrence Williams P O Box 652 San Antonio TX 78293

EA9EA - CWQSO - CQ WW CW contest QSL via bureau.

YS1MAE - Mario in El Salvador QSL via WN5K ; Paul F. Perck 41067 Highway, 931 Gonzales, LA 70737 USA

28 MHz

CP6IH - Marcelo in St Cruz. QSL via bureau
GD4PTV Brian on The Isle of Man QSL via bureau
3D2XX QSL via VK8XX
PJ1B QSL to K2SB Stephen P Branca. 202 Minnetonka Raod Hi Nella, NJ 08083 USA
HD8DZ Luis in Galapagos Islands. QSL to Luis Hidalgo. HC2DZ P O Box 777. Guayaquil, Ecuador, South America
P40V - Aruba - See address above
3W8DX - Hungarian DX-Expedition in Vietnam - See QSL address above.
CW5A - QSL via CX5AO
HB0CZS - QSL via Bureau
YJ8NJS - Box 431 Port Vila, Vanuatu
JH7EAY/PJD1 - Minami Torishima val QSL Bureau
3W8CW - CW QSO - Hungarian DX Expedition in Vietnam QSL direct to:
P O Box 131 Vienna - Austria Zip 1141
Unless specifically marked all QSO's were in the SSB mode.
Levent, TA3F was heard with a good signal on the East Coast. QSL direct to P O Box 66 Izmir, Turkey.
YS3CB was active on SSB with a good signal strength. QSL direct to Carlos, P O Box 3733 Managua, Nicaragua.
Hassan from Iran, EP2HZ was heard working the East Coast on 14 MHz SSB. QSL direct to P O Box 16765 - 3133, Teheran, Iran.
Worked C56/F2CW, - Jackie in Gambia on SSB, 14MHz. Qsl to F2CW callbook address.
The Russian "Glasnost" creates interesting situations in the amateur world. More and more USSR DX stations are requesting QSLS direct to their private box numbers, - and in turn posting QSL cards direct and not via Box 88 Moscow.

News submitted by Steve VK2PS

Are you looking for Mozambique?

A station is operating for three days a month from the Swedish Embassy in Mozambique under the callsign C9MKT.

Already a number of Australians had worked this station on both the ANZA net and during the CQ World Wide Contest. But if you missed C9MKT listen during February 17-19 on the 21MHz band. The QSL information is via SM5KDM.

The following is a list of stations either heard or worked in November 1988, by Bob Demkiw VK2ENU

Date	Time	Band	Station	QSL Information
05-11	0840	20	CR5CQK	Special call sign commemorating 500 years of Spanish exploration in the world. QSL to Philipe, CT1CQK
	0912		LU8QK	
	0926		P29JD	P O Box 5878 Boroko, PNG
19-11	1156		BY4AA	
	1206		JA3NWO	
	1218		A35KK	SM7PKK
28-11	0530		EA7LM	
	0647		YT3LC	
	0819		F6BFH	
	0832		VK3BWX	
04-12	0652		DJ3HJ	
	0705		YU7WX	
	0755		CN8EP	Lofti, P O Box 5335, Casablanca, Morocco.
	0759		OE9BGI	
05-12	0740		CTIAYN	
	0818		GOCOS	
	0835		YB8ASX	
	0846		GW2ARP	

Conditions on this day were peculiar as propagation to various parts of the United Kingdom varied. The GOCOS station was very weak and 2X contact almost impossible. However, the GW2ARP station was heard for at least one hour from 0800 with signals of 5X9. In fact this station was used to relay information for YB8ASX whose signals were very weak and almost unreadable at this QTH.

11-12	0518		WA2EXQ	
	0719		NR3B	
	0818		F6GOC	QSL Direct
14-12	0935		ZL1AJI/QRP	

Avery ZL1AJI was an interesting but brief contact as he was running an Argonaut on a motor bike battery with an output of 2 watts into a quad antenna. Although signals were down between VK and ZL, he was heard working into Brazil and the United Kingdom. Just proves that a little power goes a long way when conditions are right.

17-12	1238	20	6Y5FHN	Box 135, Kingston 15, Jamaica
18-12	0753		ED1DX	
21-12	1024		FM5WE	
28-12	0807		VK4EAB	
	0819		IV3DXW	
	0832		G3BKG	
	0847		JI2EMF	
	0859		K200QHD	KF5PE
	2338	10	VK9NS	
29-12	0621	20	3D2HO (HEARD)	G0GLJ
	0641	15	JL3WSL	
31-12	0144	20	VK3ABS	
	0652		FK8FU	

CLUB CORNER

Disabled radio Amateurs' club

Dates for 1989

General Meetings - 1st Saturday of each month, (except otherwise indicated commencing at 2.00 pm).

February	4th	
March	4th	
April	1st	
May	6th	AGM
June	3rd	
July	1st	
August	5th	
September	9th	(NWARG Field Day on Sat 2nd Sept)
October	7th	
November	4th	
December	2nd	Christmas Break Up starting at 12.00 noon.
	NB	Dates may alter according to public holidays.

Other Club Functions

Every other Saturday afternoon in each month between 2.00 pm & 5.00pm
Every Thursday evening after 7.30pm.
If members wish to use club facilities at other times please ring beforehand to gain approval at residents convenience.
NB Transmitting Equipment must only be used under supervision of respective Licenced Operator.

Field Days and Social Activities etc.

These are organized during the year as suggested at meetings
Annual Membership Fee is currently $5.00 due In May.
To cut back on phone calls and postage, keep in touch by being present at meetings and making contact with fellow members.
We have a saying.. You QSO with us and we'll QSL with you All the best and 73's for 1989. From, Kelvin J Lee, Hon Sec DRAC VK3ZZ (Sec, A/H Phone 391.6310) (MS Unit Phone 367.3000).

Orange Radio Club

The Orange and District Amateur Radio Club will be setting up a stand at the Australia National Sports and Leisure Show 10 to 12 March 1989 at the Australian National Field Day Site West of Orange on all facets of Amateur Radio.

The club is hopeful that with appropriate sponsorship that a special QSL card will be available for all contacts made over the 3 days.

The club extends a welcome to all amateurs who attend the show to call and say gi'day.

More details will be forthcoming.

EDUCATION NOTES

Emergency procedures

Federal Education Officer
Bronds Edmonds
VK3KT
PO Box 883
Frankston 3199

I have just returned from annual "holiday" as part of the WICEN team providing communications for the Murray River Canoe Marathon. Each year I return impressed by the enthusiasm and dedication shown by those who attend. There are the inevitable disagreements about interpretation of instructions or procedures, but these are minor in comparison with the value of the training and experimentation in emergency procedures.

I am reluctant to write about the importance of WICEN as a facet of the hobby, and the importance of all amateurs being prepared for emergency or disaster operation because the last time I did so, three weeks after its publication we were caught up in the Ash Wednesday disaster. I do not wish to precipitate a similar disaster this year, but again I stress that we hold a number of our privileges by virtue of our ability to assist in emergencies, and that some degree of training in this type of communication will pay off by enhancing our image in the community as well as by providing personal satisfaction when we have to cope with the unexpected.

The main trouble, of course, is that in general the need for disaster services does not occur often enough. By the time the next one comes, the lessons learnt in the previous one have been forgotten, the personnel have changed and the next generation has no time for the advice of their elders.

However the basic requirements for emergency operations do not change. They comprise an ability to foresee possible needs or hazards, a willingness to adapt to variable conditions and a knowledge of correct procedure for efficient operation. When a genuine emergency arises, amateurs, like most of the rest of the population, are quick to volunteer. Unfortunately the untrained or inexperienced can cause problems to the organisers and to the teams to which they are rostered. There is no time in a disaster for on—the—job training. We have all heard of the volunteer fire fighter who turns up at the fire in shorts and thongs and without drinking water. The amateur who volunteers without giving thought ot the adequacy of his/her) equipment, — vehicle, power supply and personal requirements as well as radios — is a similar hazard to himself and the rest of the emergency personnel. The amateur who brings to the emergency net the extended waffle, unnecessary repetition, poor audio quality or an inability to put down the mike is a threat to the whole network.

How then can the 'average' amateur acquire some training in emergency procedures?

Some self training is possible. Listen to yourself and others on air, and become aware of the amount of unnecessary verbiage that is transmitted.

Could the information contained in that three minute QSO have been sent in half the words in a quarter of the time? Is it necessary to tell the other station what he has just told you?

Does your listener have to ask for repeats because of poor audio quality or your poor diction? Once we become aware of bad habits, they can be corrected.

Field Days were originally intended as a way of practising operating under emergency conditions. As contests, they emphasise listening skills, clear speech and efficient use of on-air time as well as practice in setting up with emergency power and portable equipment.

I am not fully aware of the activities of WICEN groups in other states, but in VK3 there are numerous training exercises in conjunction with events ranging from half day 'fun runs' to the extended activities such as the Canoe Marathon and the Great Victorian Bike Ride.

As well as providing practice in message handling, these extended events provide practice in maintaining long periods of silent watch in uncomfortable conditions, which is a lot harder than many people realise.

All these, however, are artificial in that they are pre-arranged. The operator can spend weeks finding a site, preparing equipment, packing and setting up.

The only realistic practice for emergency operation is one that simulates a genuine disaster by having a call-out notice of only 1-2 hours, sends participants into unknown country, includes overnight operation and a significant weather change, has built-in equipment failure, and includes psychological pressures and minor physical injuries. In addition, it needs to involve liaison with other disaster co-ordinating groups.

It is, of course, hard to plan such an exercise, but I believe some groups are occasionally practising short notice exercises.

It is possible to make individual preparations for a sudden emergency. If the equipment is well maintained and a limited amount of portable gear available, all that is needed is to pack the vehicle.

Make a list of what might be needed and prepare the items which need to be added. One or more portable dipoles, a 2 metre ground plane and an expandable mast with guy ropes if necessary make the basis of an antenna system.

A spare car battery can run both HF and VHF transmitters for several hours. Add a basic tool kit, some ropes, writing materials and a table and chair and you have a set-up which can be adapted to most situations.

Naturally, at the time of packing, you add the personal requirements of extra or protective clothing, a hat, some form of shade and enough food and drink (non-alcoholic) to be self sufficient for at least one day. Do not go out expecting to be 'looked after' by the welfare groups.

A few 'Don'ts': - Do not assume that you will be able to operate from your vehicle at all times. Do not assume that there will always be trees suitable for suspending antennas.

Do not assume that a hand held is all that you need to take if sent to a remote site. Above all, do not become a liability to the rest of the disaster organisation by failing to realise your limitations.

I hope that all this has been a complete waste of my time and yours, in that the emergencies do not arise.

But they are inevitable at some time, and a little time devoted to planning when there is no pressure certainly beats a last minute panic.

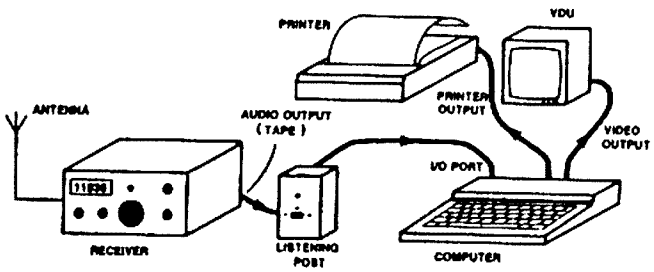
Find out when WICEN activities go on in your area, and join in some of the exercises. It can be quite good fun.

My best wishes to those sitting the February exams. Remember, READ THE QUESTIONS, and ALL the answers.

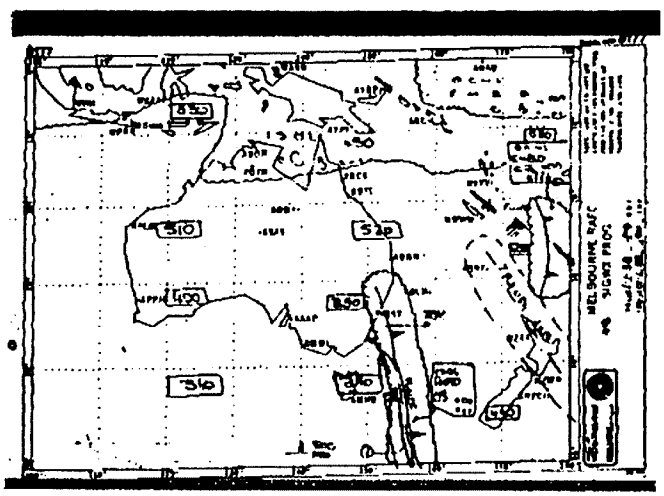
Brenda, VK3KT.
ar

RECEIVE FAX, RTTY & MORSE ON YOUR COMPUTER

Using the Australian Electronics Monthly "Listening Post" (AEM3500) project, you can tune-in to the myriad of non-voice transmissions on shortwave and decode them! All you need is a shortwave receiver with SSB reception, the AEM3500 Listening Post, computer and software. Be the first on your block to receive weather pictures and foreign news bulletins – USEFUL and FASCINATING.



Get the Most Out of Your Receiver!



MONSIEUR LE SECRETAIRE GENERAL, DES VOTRE NOMINATION A LA HAUTE FONCTION QUE VOUS OCCUPEZ VOUS AVEZ MARQUE AVEC FORCE L'IMPORTANCE QUE VOUS ATTACHIEZ A CE QUE L'ORGANISATION RETROUVE LES PRINCIPES QUI L'AVAIENT FONDEE : ''NOUS NOUS SOMMES, DISIEZ-VOUS, SANS CONTESTE, BEAUCOUP ECARTES DE LA CHARTE CES DERNIERES ANNEES. NOUS SOMMES PERILLEUSEMENT PROCHES D'UN NOUVEL ETAT D'ANARCHIE INTERNATIONALE''. ET UN PEU PLUS LOIN VO

Available in two packages:

- **SOFTWARE ONLY**
  Apple, Commodore 64, Microbee – **$25.00**

- **FULL PACKAGE – software & pc board.**
  Apple, Commodore 64, Microbee – **$35.00**

Both packages include full instructions for building the Listening Post project and application notes for your computer.

Send to: "AEM Listening Post Software", 1st Floor, 347 Darling St, BALMAIN 2041 NSW.

You must include a blank C10 cassette or ***formatted*** *disk.*
Please Tick.

☐ *Software Only*
☐ *Full Package*

☐ Microbee – Epson FX80/100 printer
☐ Microbee – C.Itoh 8510 printer
Microbee: ☐ 5¼" and ☐ 3½" disk

☐ Commodore C64/128 (most printers)
Commodore: ☐ 5¼" disk or ☐ cassette

☐ Apple (most printers)
☐ 5¼" disk ONLY

☐ Cheque ☐ Money Order
☐ B/Card ☐ M/Card ☐ Visa
(make cheques or money orders payable to "Australian Electronics Monthly")

Card No ..... Expiry .....
Signed .....
Name .....
Address .....
.....
..... P/Code .....

Regd Address:
1st Floor, 347 Darling Street, Balmain, NSW. 2041

CONTESTS

Contest Calendar

Federal Contest Manager
Frank C Beech VK7BC
37 Nobelius Drive
Legana Tas 7277

February

11—12	QCWA CW party.
11— 12	YLRL YL/OM SSB contest.
11—12	VERON Dutch PACC contest.
18—19	ARRL DX DW contest
24—26	CQ WW 160m SSB contest.
27—27	YLRL YL/OM CW contest.
25—26	UBA Belgian DX SSB contest (rules January AR)

March

4— 5	ARRL DX SSB contest.
11—12	RSGB Commonwealth contest.
18—19	NZART Field day contest.
18—19	WIA John Moyle Memorial National Field Day contest. (Rules this issue)
25—26	CQ WW WPX SSB contest.
18—20	BARTG Spring RTTY contest 1989 (Rules this issue)

April

12—14	YLRL DX—YL to NA—YL CW contest.
19—21	YLRL DX—YL to NA—YL SSB contest.

I have received the results of the British Amateur Radio Teleprinter Group's Spring 1988 RTTY contest and will list the Australian amateurs mentioned. In the single operator section VK5RY was the top scoring VK, he came in at number 32 with 285,360 points.

84 was	VK2BQS	with	75,432 points
90 was	VK7AE	with	56,610 points,
91 "	VK2SG	"	53,312 "
93 "	VK3EBP	"	52,032 "
99 "	VK2EG	"	44,400 "
101 "	VK1GN	"	42,100 "

I could only find one ZL station In the results, ZL2AKI with 161,436 points.

In the single operator Section the top world score was TG9VT with 1,030,160 points.

145 logs are in the single operator section, 17 in the multl operator and 13 in the SWL section.

John Moyle Memorial National Field Day contest 1989.

It became apparent after the 1988 contest that an Imbalance was obvious in the overall scores and activity between the eastern Australian states and Western Australia, with respect to the New Zealand field day stations that we are encouraging you to work now that our two National field day contests coincide: This was due to the time zone and propagation differences between VK6 and ZL that enabled the eastern states to work into ZL almost continuously on the bands used by the ZL stations whilst the VK6 stations have only limited paths to ZL on 80 and 40 metres. For this reason I have loaded the scores of the VK6 stations when working into New Zealand.

Rules For The 1989 John Moyle Memorial Contest

Contest Period:

From 0100 UTC March 18th 1989 until 0800 UTC March 19th 1989.

Object of the contest:

To encourage portable operation on the amateur bands by Australian amateurs, and is intended to help amateurs become familiar with portable operations and thus assist in training them for emergency situations. Emphasis is placed on working between portable stations.

Call area definition:

A Within own call area ie, VK6 to VK6.
B Outside ones own call area ie, VK5 to ZL.

1 Divisions:
There will be Two divisions:
Division A 24 hours.
Division B 6 hours
In each division the operating period must be continuous within the time period allocated for the contest.

2 Sections:
In each division there will be separate sections as follows

A Portable field station. Tx phone. Single operator.
B Portable field station. Tx CW. Single operator.
C Portable field station, Tx open, Single operator.
D Portable field station, Tx Phone, multi operator.
E Portable field station, Tx Open, multi operator.
F Portable field station, Tx VHF, Single operator.
G Portable field station, Tx VHF, multi operator.
H Home transmitting station, Emergency powered.
I Home transmitting station, Mains powered.
J Receiving stations.

3 Station Definition:
A portable station is one which operates from a power supply which Is independent of any permanent installation, ie, batteries, solar, wind, portable motor generators.
A single operator station is one where the work involved in setting up the station Is carried out by the person who operates the station. No assistance can be received apart from the provision of food and security etc,
In both cases however, a log keeper is permitted.
A Multi operator station is self explanatory.

4 Installations:
No radio station apparatus may be erected on the site more than 24 hours before the contestant/s begin/s operating.

5 Bands:
All amateur bands may be used with the exception of the 10,18 and 24 MHz bands.

6. Contacts:
Cross band contacts are not permitted.
Cross mode contacts are permitted, however they will count only as phone contacts for scoring purposes.

7 Size:
The size of any portable station shall be restricted to approximately that of an 800 metre diameter circle.

8 Multi Operator Stations:
Such stations shall provide a separate log for each band.
Only one transmitter may be used on a given band at any one time, be it operating in a phone or CW mode.
Only one call sign may be used from a multi operator station.

9 Contest Exchange:
The exchange between stations will consist of a number/letter combination comprising the RS/T report as applicable followed by a serial number commencing with 001 and increasing by one for every contact. Following the serial number, a letter must be added indicating the Section (A) to (J) in which the station Is competing. For example, the number sent by a station operating in the VHF multi operator section would for the first contact be 57001G.
Both cyphers sent and received must be recorded in the log.

10 Repeaters:
Operation through any active terrestrial repeater is not allowed for scoring purposes, however, the use of such is allowed for the purpose of making contact arrangements.
Contact made by using orbiting satellites or EME as a medium are acceptable.

11 Modes of Operation:
AM,FM,SSB, all count as phone.
RTTY and CW are both regarded as CW.
It would not be expected that the more exotic modes would be used in this contest.

12 Scoring
Scoring For Portable FieldStations — Contacts Within
Australia.
A Portable/mobiles outside ones own call area (20 points)
B Portable/mobiles within ones own call area (15 points)
C Home stations in section H, outside ones own call area . . . 10 points,
D Home station sin Section H, within entrants call area . . . 5 points,
E Home stations In section I, 2 points Irrespective of call area,
Scoring For Home Stations Emergency Powered: Contacts Within Australia.
A Portable/mobile stations outside entrants own call area . . . 15 points.
B Portable/mobile stations within entrants own call area, . . . 10 points.
C Home stations section H, irrespective of call area . . . 5 points.
D Home stations section I, irrespective of call area . . . 2 points.
Scoring For Home Stations Mains Powered: Contacts Within Australia.
A Portable/mobile stations outside entrants call area . . . . 10 points.
B Portable/mobile stations within entrants call area . . . 5 points.
C Home stations in section H, irrespective of call area . . . 2 points.
Scoring For Contacts With New Zealand Stations:
The NZART Field Day Contest will coincide with this contest, and the bands used are 3.5 and 7 MHz.
To avoid confusion ZL field Day Stations will prefix their callsigns with words Field Day or FD.
VK stations are encouraged to work these stations and may claim points as follows
Portable field stations Contacts with ZL FD stations, . . . 20 points.
Home stations emergency powered, contacts with ZL FD stations . . . 15 points.
Home stations mains powered, contacts with ZL FD stations, . . .2points.
To allow for the propagation conditions that are normal between VK6 and ZL on the 3.5 and 7 MHz bands during the contest period the score between VK6 and ZL field day stations will be as follows;
A For portable VK6 stations . . . ZL FD stations. score . . . 30 points.
B For home stations emergency powered VK6 stations. ZL.FD score . . . 25 points.
C For home stations mains powered VK6 stations, ZL FD score . . . 5 points.

13 CW Contacts:
In all categories CW to CW contacts will earn double points.

14 Bonus Points:
For any contact made by using a natural power source, a bonus score of 10 points may be added. A natural power source is regarded as one where power is derived from solar cells, wind, methane gas, etc, as well as from batteries which are completely charged by natural means. All power produced In this category must have been derived independently of commercial mains or the use of petroleum derivatives.

15 Repeat Contacts:
Portable field stations and home stations under section H may contact other stations within these categories (Sections A to H) provided that a period of at least three hours has elapsed since the last contact with the station concerned. This applies for each band and mode. This repeat contact rule will apply also to those ZL portable stations that are operating in the NZART field day contest

16 Receiving Stations:
Stations in this section must record the serial numbers being sent by the stations operating In the contest within section (A to G) inclusive. QSO points will be on the *same* basis as for Home stations section (I).

17 Log Format:
All logs shall be set out under the following headings and in the order shown;
Date: Time UTC: Band: Mode: Callsign of station worked. RS/T & serial number sent:
RS/T & serial number received: QSO Points. Multiplier. Bonus Points. Total Points Claimed. Each log page must carry a progressive total points score claimed at the bottom of each sheet. Scores claimed must be calculated by first multiplying the QSQ points score by any applicable multiplier and then adding any bonus points.

18 Summary Sheet:
For bonus points to be claimed, suitable evidence must be provided as to the method of natural power generation employed. Such evidence could take the form of a photograph of the generating equipment used or a signed statement by another amateur showing his callsign, declaring that he has inspected the generating equipment referred to.

19 Front Sheet:
Each log must be accompanied by a front cover sheet that provides the following information:
Name: Address: Callsign: Division (6 or 24 hours), Section (A to J), Number of Contacts: Claimed Score. This sheet must also indicate station location, equipment used, power generating system used and, in the case of multiple operator stations, a list of operators names and callsigns, together with their signatures. This front sheet must also carry a declaration signed by a licenced amateur as follows:
Declaration. I hereby certify that this station was operated in accordance with the rules and spirit of the contest.
Signed ..... Date.....

20 Multiple Station Operation:
In the case of amateurs who have entered the contest in the six hour single operators section it is allowable for them, upon returning to their home station, to make contacts with portable field stations. For this purpose they must submit a separate log which will be regarded as a check log only; ie they cannot enter into more than one section of the contest for competitive purposes. Operators who are interested in providing more field day activity are encouraged to adopt this practice where possible. It should be noted however, that the practice of multi—operator station participants considering themselves to be portable stations and making contacts with the portable field day station so as to bolster that sta-

tion's score is deemed to be not in the spirit of the contest, and,as such, contravenes the intent of the declaration on the front sheet./

21. Certificates And Trophy:
Certificates will be awarded to the winner in each section in both the six and twenty four hour divisions of the contest. The six hour certificates cannot be won by the 24 hour entrants. The contest manager also reserves the right to award other certificates where the effort made by a particular station is of special worthiness. The highest CW scorer outright in the contest irrespective of the section of the contest entered will receive a trophy in the form of the President's Cup to hold for a period of twelve months. This award is intended as an encouragement to operators to utilize the CW mode whenever possible.

22 Disqualification:
The general contest disqualification criteria as published in "Amateur Radio" in June 1988 apply to this and all WIA contests. It is again pointed out that you should read the above rules properly so as to understand them and ensure that your log does comply with the contest rules laid down.

23 Log Submission:
Logs should be forwarded to the WIA Federal Contest Manager, 37 Nobelius Drive, Legana. Tasmania 7277. The front of the envelope should be endorsed John Moyle Memorial Field Day Contest. Closing day for entries is 29th April 1989.

Commonwealth Contest 1989

Apparently, due to problems caused by the 75th Anniversary Celebrations of the RSGB, the unchanged rules for the 1989 Contest have not yet (December) been published in Radio Communications.

However, the Contest will run from 1200 UTC Saturday 11th March 1989 to 1200 UTC Sunday 12th March 1989
See rule details Amateur Radio December 1987, page 46.
Address for logs:

RSGB HF Contests Committee
PO Box 73
Lichfield Staffs WS13 6UJ
England

Commonwealth Contest 1988

The Commonwealth Contest, with its rules and scoring system unchanged since the early 1960s provides a basis for almost unending statistical comparisons. The total number of logs submitted was 36 down on last year's 149 which was perhaps on the high side due to the Golden Jubilee of the Contest. Australian logs were down eight to 36, our most meagre representation for some years. Last year's *top three*, VE7CC, VE6OU/3 and 6Y5HN again finished in the same order, VE7CC making 104 contacts less than the second runner but winning comfortably with 194 bonuses in his 471 contacts. Top QSO maker was ZC4AP with 592 — his operating was a delight to listen to, but his problem was to get bonus points through the G QRM.

Under reasonable band conditions, the 1988 scores were up on the previous year, but when bonus totals are considered, the top two at 194 and 171 hardly compared with the 228 and 213 that they recorded when again running 1,2 in 1982 which is not really remembered as an outstanding year.

We have a new winner for VK in 1988 in D F Kiesewetter VK2APK, who advanced from second last year. Russ Coleston, AX4XA was not far behind, and both were well clear of third place.

Among the more exotic areas noted in the results were ZB2, VP2, Z2, 5N, VO1, VU2 and 9J2 but it was again disappointing to see only 3 entries from ZL. GB5CC the RSGB HQ station was again active, and welcome for bonus points.

Top Ten

1	VE7CC	6213	6	ZC4AP	4470
2	VE6OU/3	6206	7	G3PEK	4447
3	6Y5HN	5709	8	G4BUO	4437
4	G3FXB	4985	9	AX4XA	4384
5	VK2APK	4529	10	VE5RA/6	4333

Australian Scores

5	VK2APK	4529	62	VK3MR	1440
9	AX4XA	4384	62	VK7RY	1387
14	AX2BQQ	3479	64	VK3DNC	1372
15	VK2AYD	3150	64	VK4TT	1372
20	AX3XB	2781	67	VKICA	1330
24	VK2AQF	2499	68	AX3KS	1279
25	VK6LW	2478	71	VK3MJ	1216
28	VK5GZ	2382	76	VK3BDH	1070
29	VK7RO	2377	78	VK3DOV	1037
30	VK2DID	2325	84	VK2AIC	942
31	VK4XW	2302	88	VK4BKM	832
32	VK8AV	2255	90	VK3XF	780
35	VK6RU	2120	92	VK5AGX	735
38	VK3DQ	1960	94	VK6IT	710
43	VI88SA	1860	98	VK5HO	575
48	VK40D	1761	101	VK7ZO	467
55	VK3JI	1640	102	VK5BS	460
61	VK6AJ	1460	111	VK7CH	217

Single band entries among the above were:

7 MHz	VK6IT	Overseas winner
14 MHz	VK6AJ	Overseas winner, VK3MR, VK4TT, VK4BKM, VK7CH

Receiving Section

3 Eric Trebilcock BCRS 195 1763

Pacific Area Scores

13	ZL1AIZ	3720
26	ZL1HV	2450
85	ZL3AGI	905

VK Team Event

Five years in a row — that is the VK2 record of success in the four man team event, this time nearly 4000 points ahead of VK4 with a further 2000 odd back to VK3. By next March, surely some of those VK8s should be recovered from their CQWW efforts to front up and give VK2 a run for their money!

Teams	1988	1987	1986	1985
VK2	13657	10811	11890	16272
VK4	9819	8013	10143	8359
VK3	7821	9988	10391	8784
VK6	6768	8988	9618	6482
VK5	5552	8773	8910	8761
VK7	4448	5109	6274	7982

Australian Awards

The Gold Medallion for the leading VK entrant was won by DF Kiesewetter VK2APK.

The Silver Medallions for the remaining members of the leading State Team were won by K. Nad VK2BQQ, DA Pilley VK2AYD, and E. Carruthers VK2AGF

How The Leaders Made Their Scores

QSOs/Bonus per band 80—10 metres (claimed)

VE7CC	41/33	65/42	223/51	104/41	38/27
VE6OU/3	49/20	127/50	222/45	159/41	18/15
6Y5HN	39/17	136/40	270/55	106/29	7/7
G3FXB	36/25	63/41	112/69	61/33	11/11
VK2APK	29/23	107/42	147/44	54/30	4/4
ZC4AP	17/6	115/9	230/44	145/14	85/9
Most QSOs		ZC4AA	592	VE6OU/3	575
Most Bonuses		VE7CC	194	G3FX8	179

Commonwealth Contest 1988

The fifty—first Commonwealth Contest attracted 113 entries — a significant reduction on last year, when the "Golden Anniversary" contest was held. Conditions were described variously as mixed, disappointing and (from some parts of the globe) — the best LF conditions ever! An increasing irritant to many entrants was the persistence of a number of non—Commonwealth stations in calling rare contest participants, to the general annoyance of all. It may be that this in some way accounts for the disappointing entry from outside the "large" Commonwealth countries.

The winner of the 1988 contest is, yet again, Lee Sawkins, VE7CC, but with his lead cut to only seven points over John Sluymer, VE6OU/3. In third place is Nigel Hoyow, 6Y5HN. The top three positions are a re—run of the 1987 result. Top British station is again Al Slater, who achieved fourth position overall.

The shortwave listeners section is won by Brad Bradbury, BRS 1066, with Don Piccirillo as runner—up.

Award Winners

Senior Rose Bowl: L. Sawkins, VE7CC

Junior Rose Bowl:	J. Sluuymer,	VE6OU/3
Col Thomas Rose Bowl:	A. Slater,	G3FXB
Receiving Rose Bowl:	CA Bradbury,	BRS 1066

Single Band Winners

7MHz UK	G3DYY
14MHz UK	G4CP
21 MHz UK	G3PJT
3—5 MHz O/s	VE1EP
7 MHz O/s	VK6IT
14 MHz O/s	VK6AJ
21 MHz O/s	VE3PTQ
28 MHz O/s	ZC4EE

Activity And Conditions

Again 14MHz supplied by far the majority of the traffic in the contest. 21MHz provided reasonable G to VK/ZL traffic, but has yet some way to go before it really shows its potential. 28MHz was the disappointment, with a few significant openings. To repeat the comment in last year's contest report, "perhaps next year?

The path from G to VK/ZL on 7MHz and 3.5MHz was disappointing, with very few contacts with ZL on 3.5, and a *marginal* path to VK6. 7MHz, although better, did not live up to expectations for long—haul contacts.

Several stations commented that although the old faithful callsigns were in there again this year, there were disappointingly few newcomers evident. The logs show some new faces but there must be some concern that the cw "art" is a dying one. Many entrants commented on the unique nature of the Commonwealth Contest and the regular entrants pledge continuing support. The HF Contents Committee would like to have seen more logs from the rarer countries, known to have been active in this year's contest, but who chose not to submit an entry.

GB5CC was again active, this time from QTH of G3OZF, and made over 400 QSOs, operating the full 24 hrs. However, the main TS930 transceiver developed a fault in the first hour of the contest, and for the majority of the contest a small TS680 was used which, although very effective, lacked the receive dynamic range necessary on 3.5 and 7MHz in such conditions. Apologies to all those who heard GB5CC but could not attract his attention!

Once again, thanks are due to a number of stations who submitted check logs — G3WP, G4OTU, G4UOL, GD3HDL, GW3SB, VE3EK and VE7COP. Particular mention should also be made of John Tutton, VK3ZC, who mounted a mini dx—peditlon to VK1 for the contest, to operate as VK1CA.

Several stations who submitted entries will find their claimed scores have been drastically changed — in some cases upwards, in other cases downwards. It pays to read the rules when completing your log!

A number of entrants asked why last year's results contained scores which did not divide by five — given the scoring basis for the contest. The answer is that the adjudicator deducts points according to a defined formula for errors in QSO exchange information, which, as again this year, leads to scores which do not necessarily remain divisible by five.

The Commonwealth Contest will be back next year.

See you in there! G3OZF

(Information re Commonwealth Contest Contributed and Compiled by John Tutton VK3ZC)

British Amateur Radio Teleprinter Group

BARTG Spring RTTY Contest 1989

When? 0200 GMT Saturday March 18th until 0200 GMT Monday March 20th 1989.

The total contest period is 48 hours but not more than 30 hours of operation is permitted. Time spent as listening periods count as operating time. The 18 hours of non operating time can be taken at any time during the contest period, but off periods may not be less than 3 hours at a time. Times on the air must be summarized on the summary sheet.

Who? There will be separate categories for single operator, multi operator and short wave listener stations.

Bands — 3.5, 7.0, 14.0, 21.0, and 28 MHz Amateur Bands.

Stations — Stations may not be contacted more than once on any one band but additional contacts may be made with the same station if a different band is used.

Countries — The ARRL DX Countries list will be used, and in addition, each W/K, VE/VO and VK Call area will be counted as a separate country.

Note: W/K, VE/VO and VK count once each only for QCA purposes.

Messages — Messages will consist of:—

(A) Time GMT: This must consist of a full four figure group and the use of the expression "same" or "same as yours" are not permitted.

(b) RST and Message Number : The number must consist of a three figure group and start with 001 for the first contact made.

Points — Points can be claimed as follows:—

(A)All two-way RTTY contacts with other stations within one's own country will score two points.

(B) All two-way contacts with other stations outside one's own country will score ten points.

(C)All stations can claim a bonus of 200 points for each country worked, including their own. Note that any one country may be counted again if worked on a different band but continents are counted once only.

Note:— Proof of contact will be required in cases where the station worked does not appear in any other contest log received or station worked does not submit a check log.

Scoring — (A) Two—way contact points times the total of countries worked.

(B) Total country points times 200 times the number of continents worked (max 6)

(C) Add (A) and (B) together to obtain the final score.

Sample calculation:—

Exchange Points (302) X Countries (10) = 3020

Country Points (10) X 200 X Continents (3) = 6000

(A) and (B) Added together to give a score 9020

Log And Score Sheets: — Use a separate sheet for each band and indicate all times on the air. Logs To Contain:— Date, Time GMT, Callsign of each station worked, RST and Message number sent, Time, RST and message number received and the points claimed.

Note:— Logs received from short wave listeners must contain callsign of station heard, report sent by that station and callsign of the station being worked. Also date and time GMT that the QSO was logged. Incomplete loggings are not eligible for scoring and will be classified as check logs. The summary sheet should show the full scoring, the times on the air, address for correspondence, and in the case of multi operator stations, the names and callsigns of all operators involved with the operation of the station during the contest.

All Logs Must Be Received By May 27th 1989 In Order To Qualify.

Summary and Log Sheets:— Are available from the Contest Manager at the address shown below, in the UK on receipt of a large (A4) SAE. All other countries outside the UK require no envelope but will need 6 IRC's to cover the cost of postage.

Send Your Contest Or Check Log To
Peter Adams G6LZB
464 Whippendell Road
Watford
Herts
England WD1 7PT

The judge's decision will be final and no correspondence can be entered into in respect of incorrect or late entries. All logs submitted shall remain the property of the

British Amateur Radio Teleprinter Group.

Certificates will be awarded to the leading stations in each of the three groups, the top station in each continent and to the top station in each W/K, VE/VO and VK call area.

Additional Notes:— If a contestant manages to contact 25 or more different countries on two—way RTTY during the contest, a claim may be made for the quarter century award (QCA) issued by BARTG and for which a charge of 4 dollars US or 18 IRC's is made.

Holders of existing QCA Awards should indicate and list new countries to be added to their existing records.

Make your claim at the same time you send in your log.

However, in view of the high volume of work which the Contest Manager will have to deal with, it will not be possible to prepare and dispatch any new awards or to up—date any existing records until the final results of the contest have been evaluated and published.

Additionally, if any contestant manages to contact stations on two—way RTTY within each of the six continents and the BARTG Contest Manager receives either a contest log or a check log from each of the six stations concerned, a claim may be made for the WAC Award issued by the American RTTY Journal.

The necessary information will be sent to the journal after the contest results have been evaluated and despatched. The journal will issue the WAC Award. A charge is now made for this award. **ar**

AMSAT AUSTRALIA

Information Nets

Colin Hurst VK5HI
8 Alndell Rd
Salisbury Park 5109

National Co-ordinator
Graham Ratcliff VK5AGR
Control : VK5AGR
Amateur Checkin : 0945 UTC Sunday
Bulletin Commences : 1000 UTC
Primary Frequency : 3685 kHz
Secondary Frequency : 7064 kHz
AMSAT SW PACIFIC
2200 UTC SATURDAY
14.282 MHz.

Participating stations and listeners are able to obtain basic orbital date including Keplerian elements from the AMSAT AUSTRALIA net. This information is also included in some WIA Divisional Broadcasts.

Swansong

This issue of Amateur Radio is my last column for AMSAT-Australia. For nearly six years I have been endeavouring to ensure that satellite communicators and general enthusiasts of Amateur Radio Satellites were well informed on the "latest" news and information relating to the Oscars and Russian RS Satellites and of course the respective American and Russian Radio Amateurs who have provided contacts from space. It is interesting to note that this column has had only two columnists over the last 12 years, namely, Bob Arnold VK3ZBB and myself. Bob has over the last six years contributed the Launches and Returns of all objects into space, thereby effectively contributing to the AMSAT-Australia column for a period of 12 years. Thanks once again Bob for your support and encouragement. Similarly I must thank Graham VK5AGR for his total and uncommitted support over the last six years. Which brings me my successor, namely Maurie Hooper VK5EA who has kindly volunteered to do the honours for the years to come. Welcome Maurie. I trust that readers

will enthusiastically support and assist Maurie as they have supported me.

AMSAT-AUSTRALIA Newsletter and software

The fine monthly publication AMSAT-AUSTRALIA Newsletter published on behalf of AMSAT-AUSTRALIA by Graham VK5AGR now has 300 plus subscribers. Should you also wish to subscribe then send a cheque for $20 made payable to AMSAT-AUSTRALIA and post to:

AMSAT-AUSTRALIA c/o PO Box 2141, GPO Adelaide SA5001.

The Newsletter provides the latest news items on all Satellite activities and is a must for all those seriously interested in Amateur Satellite activities.

Graham also provides a Software Service of general satellite programs made available to him from various sources. The only requirements to make use of this service is to send Graham a Diskette nominating your requirements, a nominal $10 donation to AMSAT-Australia and sufficient monies for return postage and packing. To obtain details of the programs available and other AMSAT-AUSTRALIA services send an SASE to Graham.

Useful AO-13 equations by G3RUH

One of the most prolific writers of satellite technical articles in recent years has been James Miller G3RUH. Once again we have the opportunity to present some extremely useful nitty gritty formulae and computer programs, written in the inimitable G3RUH manner.

To: All AO-13 Number Crunchers, Computers and Calculating Engines:

AO-13 users will have noticed the spacecraft's MA counter loses about 6 seconds per day when compared with ground-based software. You can use the following formula to predict actual events to within a second or so:

T event = (Orbit + MA/256)* 0.476905484 - 199.767268 days UTC. 1989

Example: Mode B off, Orbit 449, at MA 240 happens at

Tevent=(449+240/256)* 0.476905484 - 199.767268 = 14.8103932 = 1989 Jan 14 (Sat) @ 1926:58 UTC

NASA Keplerian element sets have AO-13's orbit number wrong by 1.

"Correct" value is telemetered by AO-13. You can compute the correct one for 1989 from the following formula:

ONO = INT(DATIM*2.096994 + 418.885)

where DATIM = DAY + (HR +MIN/60)/24 (= epoch time in kep sets) and INT means "integer part of"

You can check a kep set by simply plugging in the epoch time at "DATIM"

Oscar-13 Keplerians (Smoothed)

Epoch year=1988: Epoch Day Number=330.289337: Inclination=57.43:

RAAN=230.40: eccen=0.6610 ARG of per=194.35: Mean Anomaly=0.0

Mean motion=2.09699368 rev/day: REV=344: SMA=25783

These are based on smoothing all kep sets (about 6) to date. Please print these

equations out and pin them to your shack wall — you need never want again.

Mode L SSB Uplink power requirements

EIRP = (R/40000)^2/(COS(SQ))^12 kW assuming RHCP, and a SQ < 30 where R = range in km from your QTH to AO-13, and SQ = spacecraft "squint" or pointing angle in degrees. This formula is based on empirical data collected from dozens of measurements. It gives a "minimum" SSB return of about 6 dB SNR. The spread is MAX = 37.5 dBW @ 40000 km with a squint angle = 30 degrees: MIN = 27.0 dBW @ 28000 km at 0 degrees squint angle. All these calculations assume that the transponder noise floor is audible and normal loading. Double the power requirement for linear polarization.

To: All Algorithmists and leap year haters

The following notes are reproduced from my full article that was widely circulated in 1986 (and just as widely ignored!).

30.6 days hath September

by James Miller G3RUH

All satellite programs involve manipulating dates in some way and if you ever need an example of ugly coding, look no further than the typical amateur calendar routine! I recently came across one famous "Loony" program that took over 30 program lines just to manipulate two dates AND got it wrong. Here's a right way!

Algorithm 1: Date to day number

Takes a date in the form of year, month and day of month and calculates its day number. Valid from 1582 onwards:

```
DO = -722528:REM For AMSAT day number
DO = -428:REM For GENERAL day number
DO = 1720982:REM For Julian Day at noon
(Choose one of the above three only)
REM enter wih Year YR e.g. 1989, Month MN. Day DY. Result is Day Number DN  Y = YR: M = MN: D = DY: REM Preserve YR. MN. DY
IF M <= 2 THEN M = M+12: Y = Y-1
DN = -INT(Y/100)+INT(Y/400)+15 + INT(Y*365.25) + INT((M+1)*30.6) + D + DO
```

NOTES:

1. You can usually omit the century parts of the calculation so that:

```
DN = INT(Y*365.25) + INT ((M+1)*30.6) + D + DO
```

This restricts the algorithm to 1900 Mar 01 until 2100 Feb 28.

2. Three values for DO are given: choose only one though!

ALGORITHM 2: Day number to date

```
REM Enter with day number (DN), Results are Year (Y), Month (M) and
REM Day (D), the day (D$), and month (M$) as strings.
D = DN - DO:     REM Note 1
DW = (D+5) - 7*INT((D+5)/7): REM Note 2
D = D + INT (INT((D+36387)/ 36524.25) * 3/4) - 15:     REM Note 3
Y = INT((D-122.1)/365.25): D = D-INT(Y*365.25)
M=INT(D/30.61): D=D-INT(M*30.6)
M=M-1: IF M > 12 THEN M=M-12: Y = Y+1
D$ = MID $("Sun Mon Tue Wed Thu Fri Sat".3*DW+1.3):REM Note 2
M$=MID $("Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec ".3*M-2.3): REM Note 4
```

Notes:

1. Value for DO must be as chosen for date to day number algorithm 1.

2. DW is day-of-week, and is O for Sunday. Omit if you don't need.

3. You may omit this line for dates within 1900 Mar 01 - 2100 Feb 28

4. Omit if you don't want the month in letters.

5. Date$=STR$(Y)+ " " +M$+" "+STR$(D) +" ["+D$+"] will generate a string like: 1988 Dec 25 [Sun]

QUICK ALGORITHMS 3:

The following two algorithms will give you GENERAL day numbers from the year and day of the year (Jan 1st = 1):

```
Date to Day Number
DN = INT((YEAR-1)*365.25) + DAY
Day Number to Year/Day of Year
YEAR = INT((DN+365)/365.25)
DAY = DN - INT((YEAR-1)*365.25)
```

Valid from 1901 Jan 01 - 2100 Dec 31 (General day numbers 693976 thru 767024).

The GENERAL day number here is the SAME as for algorithms 1 and 2 above.

WARNING - Don't Ignore This

Int(X) means "the largest integer smaller than X". Thus Int(-1.5) is -2. Some machines will give -1. The definition given is regular through zero.

If your machine gives -1 take great care - and complain to the manufacturer! In addition it is assumed that your computer/calculator can multiply 0.6 by 5, or divide 21 by 7 and get the result 3, not 2.9999999. If it doesn't you may need to take corrective action.

Best wishes - James G3RUH, Cambridge, England.

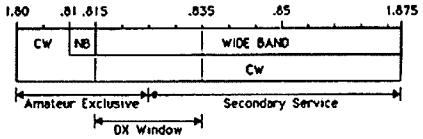
1989 Jan 03 [Tue] (General day number 726120, Amsat day 4020)

SK de Colin VK5HI.

BAND PLANS FOR THE AMATEUR RADIO SERVICE

1 The MF Band

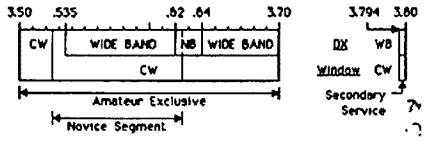
1.1 The 1.8 MHz Band (160 metres)
1.800 — 1.875 MHz



1.870 +/- 4 kHz
Avoid these frequencies

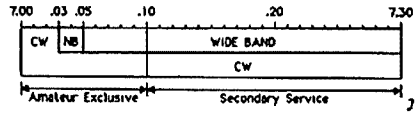
2 The HF Bands

2.1 The 3.5 MHz Band (80 metres)
3.500 — 3.700 MHz
and 3.794 — 3.800 MHz

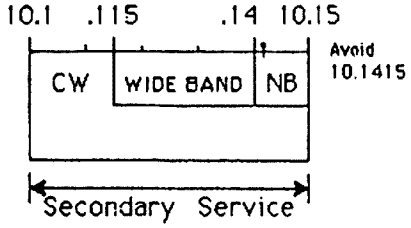


3.794 + 1 kHz
Avoid these frequencies

2.2 The 7 MHz Band (40 metres)
7.000 — 7.300 MHz

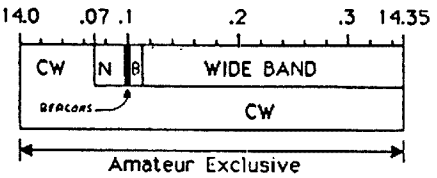


2.3 The 10 MHz Band (30 metres)
10.100 — 10.150 MHz



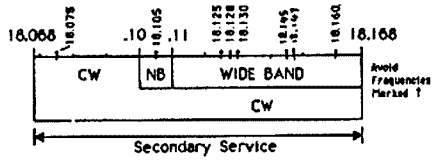
10.1415 +/- 4 kHz
Avoid these frequencies

2.4 The 14 MHz Band (20 metres)
14.00 — 14.350 MHz



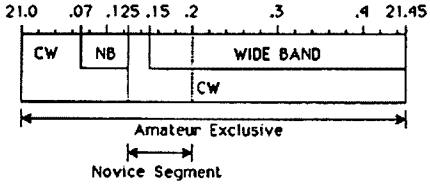
14.100 +/- 500 Hz	Beacon Guard Band
14.230	SSTV calling frequency
14.250	FAX calling frequency
14.095—14.112	Packet Radio (NB: avoid beacons 14.100)

2.5 The 18 MHz Band (17 metres)
18.068 — 18.168 MHz



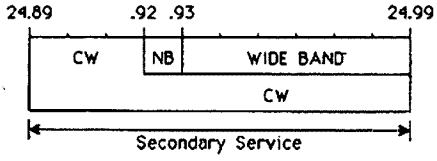
Avoid these frequencies
18.075 +/- 4 kHz
18.105 "
18.125 "
18.128 "
18.130 "
18.145 "
18.147 "
18.160 "

2.6 The 21 MHz Band (15 metres)
21.000 — 21.450 MHz



21.150 +/- 500 Hz	IBP Beacon Guard Band
21.340 +/- 5 KHz	SSTV

2.7 The 24 MHz Band (12 metres)
24.890 — 24.990 MHz



Avoid these frequencies
24.900 +/- 4 KHz
24.930 "

W.1.A. 1989 DATA LIST

The following information has been compiled as a service to members.

The contents came from various sources and our thanks must go to those who contributed, some being VK6HA, VK6HU, VK2DAY, VK5AGR, VK1RH, VK3XEF, FTAC, VK2AOU, ARRL, along with several others who assisted indirectly.

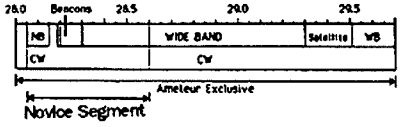
Information has been checked as correct at the time of compilation, but some errors will be inevitable. Should any individual, group or organisation have amendments or suggestions for future data editions these will be most welcome and should be addressed to :

Data Information Update,
WIA Executive Office,
P.O. Box 300,
Caulfield South Vic 3162.

Only by this type of feedback can we hope to maintain an up to date and accurate data base.

Bruce R. Kendall VK3WI.
Data Editor

2.8 The 28 MHz Band (10 metres)
28.000 — 29.700 MHZ



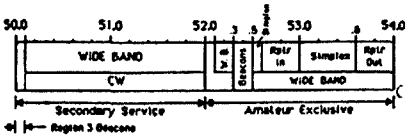
28.190 — 28.200	IBP Beacon Segment
28.200 — 28.300	Existing Beacons until 1 Jan 1990
28.680 +/- 5 kHz	SSTV
29.300 — 29.510	Satellite Down Link
29.510 — 29.700	Wide Band (FM)
29.520 — 29.580	FM Repeater Inputs (Note 1)
29.600	FM Simplex
29.620 — 29.680	FM Repeater Outputs (Note 1)

Note 1: Four repeater channels have been allocated, spaced at 20 kHz with 100 kHz

offset.

3 The VHF Bands

3.1 The 50 MHz Band (6 metres)
50.0 — 54.0 MHz



50.000 — 52.00	Restricted use segment (Note 1)
52.000 — 52.01 0	EME
52.010 — 52.050	DX CW
52.025	CW calling frequency
52.050	MS calling frequency
52.050 — 52.100	DX CW/Phone
52.075	RTTY calling frequency
52.100	Phone calling frequency (primary)
52.200	Phone calling frequency (secondary)
52.300	SSTV calling frequency
52.300 — 52.400	Beacons - secondary (Note 3)
52.400 — 52.500	Beacons - primary (Note 3)
52.525	International FM Calling
52.600 — 54.000	FM simplex and repeaters (Note 2)
52.600 — 52.975	Repeater inputs - allocated two/state
53.500	National FM calling
53.600 — 53.975	Repeater outputs

Notes: 1) DOC provided the conditions for use of 50-52 MHz in two letters as follows:

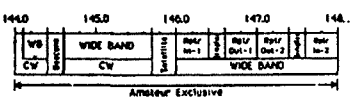
(a) DOC M83/037 of 7 Jun 84, and
(b) DOC M83/637 of 9 Oct 84.

Letter (a) sets out the conditions of use and letter (b) revised the relaxed South Australia and Tasmania conditions to apply after the revised SBS termination of channel O Melbourne, viz 6 Jan 86. Note that this is the subject of current WIA/DOC joint quarterly meetings.

2) It was proposed at the 1986 Federal Convention that the repeater split be increased from 600 kHz to 1 MHz and that a transition period for this change be allowed. The band plan has been modified accordingly.

3) The beacon frequencies are allocated in accordance with the beacon plan on a state basis.

3.2 The 144 MHz Band (2 metres)
144.0 — 148.0 MHz



144.0 0 — 144.01	EME
144.01 — 144.05	DX CW
144.025	CW calling
144.050	MS calling
144.05 — 144.10	DX CW/Phone
144.075	RTTY calling freq
144.10	Phone calling (primary)
144.20	Phone calling (secondary)
144.30	SSTV calling
144.40 — 144.50	Beacons — primary (Note 3)
144.50 — 144.60	Beacons — secondary (Note 3)
144.800 — 144.900	Data Transmission
144.925 — 144.975	CW Beacons
146.450	Primary voice
146.500	National Calling (primary)
146.600	RTTY
147.300	ATV Liaison
147.325	RTTY
147.350	RTTY
147.400	ATV Liaison
147.425	ATV Liaison
147.450	ATV/SSTV/FAX
147.475	SSTV/FAX Liaison
147.500	National Calling (secondary)
147.550	Micro nets
147.575	Data nets
147.600	Data packet

Notes 1) FM channel spacing is 25 KHz and repeater offset is 600 KHz.

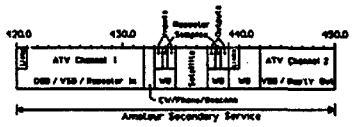
2) FM channel numbers designated by last four digits of (repeater out put) frequency.

3) The beacon frequencies are allocated in accordance with the beacon plan on a state basis.

4 The UHF Bands

4.1 The 420 MHz Band (70 centimetres)
420.0 — 450.0 MHz

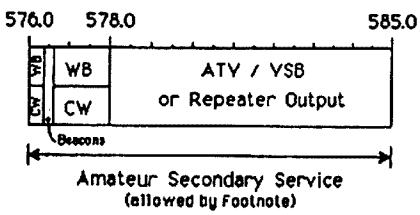
420.00 — 432.00	ATV channel 1 DSB/VSB
426.25	Vision
431.75	Sound
420.05 — 421.00	Repeater linking - A pairs (Note 4)
432.00 — 432.01	DX EME
432.01 — 432.025	DX CW
432.025	Calling frequency
432.025 — 432.050	DX MS
432.050	Calling frequency
432.050 — 432.075	DX RRTY
432.075	Calling frequency
432.075 — 432.100	DX Phone
432.100	Calling frequency (primary)
432.100 — 432.200	Phone
432.200	Calling frequency (secondary)
432.200 — 432.300	SSTV
432.300	Calling frequency
432.300 — 432.400	CW/Phone
432.400 — 432.600	Beacons (Note 5)
432.600 — 433.000	General all modes
433.025 — 434.975	FM repeater inputs and simplex
433.025 — 433.725	FM repeater inputs
433.750 — 434.250	Simplex
434.275 — 434.975	FM repeater inputs
435.000 — 438.000	Satellites
438.025 — 439.975	FM repeater outputs and simplex
438.025 — 438.725	FM repeater
438.025	Mobile voice
438.075	Mobile voice (secondary)
438.125	RTTY
438.175	Mobile voice
438.225	Mobile voice (secondary)
438.275	WICEN portable
438.325	Mobile voice
438.375	Mobile voice (secondary)
438.425	Mobile voice
438.475	Mobile voice
438.525	Mobile voice (national primary)
438.575	Data
438.625	WICEN portable
438.675	Mobile voice (secondary)
438.725	RTTY
438.750 — 439.250	FM simplex
438.775	RTTY
438.800	WICEN
438.825	Voice (secondary)
438.875	Data
438.925	SSTV
439.000	Voice (national primary)
439.050 — 439.075	Data packet
439.125	Voice secondary
438.275 — 439.975	FM repeater outputs
439.275	Mobile voice
439.325	RTTY
439.425	Mobile voice
439.475	RTTY
439.575	Mobile voice
439.725	Mobile voice
439.875	Mobile voice
439.975	SSTV
440.050 — 441.000	Repeater linking - B pairs (Note 4)
440.000 — 443.000	Experimental — all modes



443.000 — 450.000	ATV channel 2 VSB
444.25	Vision carrier
449.75	Sound carrier

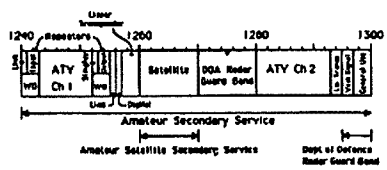
Notes: 1) FM channel spacing is 25 kHz and repeater offset is 5 MHz.
2) FM channel numbers designated by last four digits of (repeater out put) frequency.
3) FM channels with no specific rec ommended use may be used for any purpose.
4) A pair of frequencies are to be used repeater linking. Maximum power for inter repeater linking is 5 watts.
5) The beacon frequencies are allocated in accordance with the beacon plan on a state basis.

4.2 The 576 MHz Band (50 centimetres)
576.— — 585.0 MHz



Frequency (MHz)	Details
576.00 — 576.01	EME
576.01 — 576.05	DX CW
576.05 — 576.10	DX CW/Phone
576.10 — 576.40	General CW/Phone
576.40 — 576.50	Beacons - secondary
576.50 — 576.60	Beacons - primary
576.60 — 578.00	General all modes
578.00 — 585.00	ATV, VSB or Repeater output
579.25	Vision carrier
584.75	Sound carrier

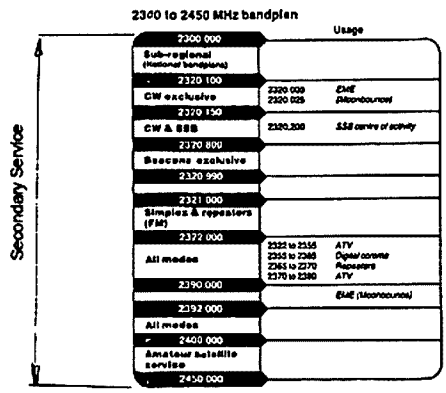
4.3 The 1240 MHz Band (23 centimetres)
1240.0 — 1300.0 MHz



Frequency (MHz)	Details
1240.00 — 1241.00	FM Relays and Links (Note 3)
1241.00 — 1243.00	FM Repeater inputs
1243.00 — 1252.00	ATV channel 1
1246.25	Vision carrier
1251.75	Sound carrier
1252.00 — 1253	FM simplex
1252.1	RTTY
1252.2	RTTY
1252.3	Voice (secondary)
1252.4	Voice (secondary)
1252.5	Voice (national simplex)
1252.6	Voice (secondary)
1252.7	Voice (secondary)
1252.8	Data
1252.9	Data
1253.0	ATV Liaison
1253.05 — 1255.00	FM Repeater outputs
1253.05	RTTY
1253.10	Mobile voice
1253.15	RTTY
1253.20	Mobile voice
1253.25	Data
1253.30	Mobile voice
1253.35	Data
1253.40	Mobile voice (secondary)
1253.50	Mobile voice (primary)
1253.60	Mobile voice (secondary)
1253.70	Mobile voice
1253.80	Mobile voice
1253.85	ATV Liaison
1253.90	Mobile voice
1253.95	ATV Liaison
1254.00	Mobile voice
1254.10	Mobile voice
1254.15	RTTY
1254.20	Mobile voice
1254.25	RTTY
1254.30	Mobile voice
1254.35	Data
1254.40	Mobile voice
1254.45	Data
1254.50	Mobile voice
1254.60	Mobile voice
1254.70	Mobile voice
1254.80	Mobile voice
1254.90	Mobile voice
1255.00	Mobile voice
1255.05 — 1256.00	FM Relays and Links (Note 3)
1256.00 — 1257.00	Digital and Packet Radio
1257.00 — 1260.00	In—band and cross—band Linear Transponder
1260.00 — 1270.00	Satellite Communication (WARC 1979)
1270.00 — 1280.00	General use except in areas where these fre quencies are in use for Radio Location (Note 4)
1280.00 — 1293.00	ATV channel 2
1287.25	Vision carrier
1292.75	Sound carrier
1293.00 — 1295.00	In—band Linear Transponder
1295.00 — 1297.00	Weak signal modes, except in areas where these frequencies are in use for Radio Location (Note 4)
1296.40 — 1296.59	Beacons (Note 5)
1297.00 — 1300.00	General use except in areas where these fre quencies are in use for Radio Location (Note 4)

Notes: 1) FM channel spacing is 25 kHz and repeater offset is 12 MHz.
2) FM channels with no specific rec ommended use may be used for any purpose.
3) A pair of frequencies are to be used repeater linking. Maximum power for inter repeater linking is 5 watts.
4) In Australia, some Department of Aviation RADARs are centered on 1275.0 MHz and 1305.0 MHz, while some Department of De fence RADARs are centered on 1300.0 MHz. Accordingly the fre quencies 1270.0 to 1280.0 MHz and 1295.0 to 1300.0 MHz are allocated as a guard band to ensure no harmful interference is caused to the primary user.
5) The beacon frequencies are allo cated in accordance with the beacon plan on a state basis.

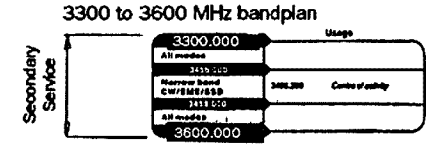
4.4 The 2300 MHz Band (13 centimetres)
2300.0 — 2450.0 MHz



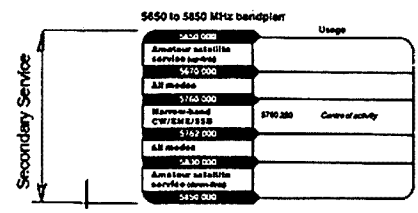
5 The SHF Bands

5.1 The 3300 MHz Band (9 centimetres)
3300.0 — 3600.0 MHz

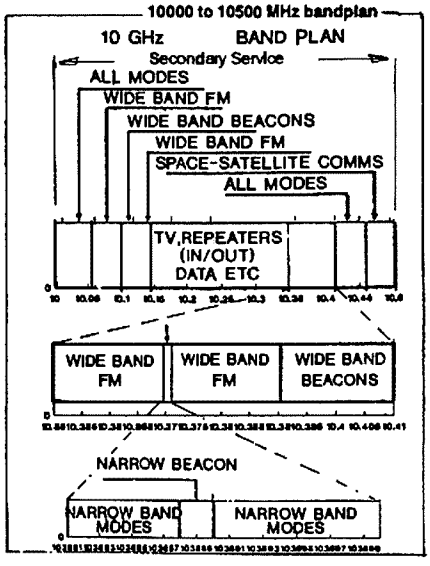
3300 to 3600 MHz bandplan



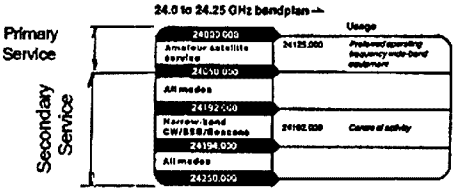
5.2 The 5650 MHz Band (5 centimetres)
5650.0 — 5850.0 MHz



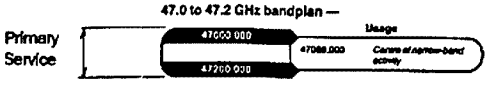
5.3 The 10 GHz Band (3 centimetres)
10.0 — 10.5 GHz



5.4 The 24 GHz Band Plan (1 centimetre)
24.00 — 24.25 GHz



5.6 The 47 GHz Band Plan (6 Millimetre)
47.00 — 47.20 GHz



U.S. 10M FM REPEATERS

Out	In	Callsign	Out	In	Callsign
29.62	29.52	N6AHW			N8EEG
		KC4CI			WB3FKO
		KE4IO			WB7DRU
		WDOALH			WB5ITT
		KB5VC			K5TYV
		K3SP			W9ZYO
		W1BHD			
		WD80XD	29.66	29.56	N9PL
		WOJZY			N6BPK
		WA2TMZ			WOIA
		KD8C			KC3AM
		KC50U			N3AUY
		W5HZZ			W9LM
		K3CFY			AEON
		WD8CIY			K2MZ
		KC50Q			WA6GBC
		WB9ZRB			KC5EJ
		VE3TFM (Canada)			
29.64	29.54	WB4QVT	29.67	29.57	KAIDFI
		KE4QC			
		K6GZK	29.68	29.58	KD4VD
		KI4CA			N9DVF
		W04B			KD4DN
		WAONSH			KA3KPV
		KOGBZ			W2SEX
		N5ARU			WB9STA
		W3DID			KD9FA
		WBOARL			W4MM
		K2KLN			KA4ZAY

CALL SIGN SUFFIXES

Amateur station call signs normally commence with the letters "VK" followed by a numerical State identifier (ie 1/2/3/4/5/6/7/8/9/ or 0). However, to commemorate special events the use of "VI" or "AX" may be authorised on a temporary basis. The alphanumeric series outlined is suffixed with up to three letters which indicate the class of amateur licence held and the individual identity of the station. Call sign suffixes are allocated according to the following table:

Two Letter Suffixes:

All two-letter suffixes except "AA" and "WI" indicate a full call licensee.
AA = Offical DOTC call sign.
WI = Allocated to the Wireless Institute of Australia.

Three Letter Suffixes:

AAA—AZZ	= Full call licensees
BAA—BZZ	= Full call licensees
CAA—CZZ	= Full call licensees
DAA—DZZ	= Full call licensees
EAA—EZZ	= Full call licensees
FAA—FZZ	= Full call licensses
GAA—GZZ	= Full call licensees (Note: GGA-GGZ-allocated to the Girl Guides Association)
HAA—HZZ	= Not allocated
IAA—IZZ	= Not allocated
JAA—JZZ	= Combined licensees
KAA-KZZ	= Combined licensses
LAA—LZZ	= Novice licensees
MAA—MZZ	= Novice licensees
NAA—NZZ	= Novice licensees
OAA—OZZ	= Not allocated
PAA—PZZ	= Novice licensees
QAA—QZZ	= Not allocated, can be confused with Q Codes
RAA—RZZ	= Beacons and repeaters
SAA—SZZ	= Full call licensees (Note: SAA—SDZ — allocated to the Scout Association)
TAA—TZZ	= Limited licensees
UAA—UZZ	= Limited licensees
VAA—VZZ	= Novice licensees
WAA—WZZ	= Full call licensees.

(Note: WIA—WIZ allocated to the WIA)

XAA—XZZ	= Limited licensees
YAA—YZZ	= Limited licensees
ZAA—ZZZ	= Limited licensees

Note: Certain "non—standard" suffixes are allocated including:
RAN, GGx, TTx, ITU, BSx, SJx, etc.

NEW ZEALAND AMATEUR REPEATERS

TWO METRE BAND—FM REPEATERS

Name	Site	Output Freq.	Height mASL	EIRP
Far North 710	Mount Maungataureia	147.100	513	12
Kaikohe 715	Browns Hill	147.150	388	10
Whangarei 720	Parakiore	147.200	392	25
Dargaville 7175	Pukewharariki	147.175	320	20
Rodney 730	Dome	147.300	341	20
Auckland 690	Ruaotewhenua	146.900	391	25
Bombay 670	Mount Puketutu	146.700	376	25
Auckland 6625	Port Waikato	146.625	403	1000
Tairua 6975	Tairua	146.975	349	100
Waikato 695	Mount Te Aroha	146.950	944	40
Tauranga 680	Mount Minden Te Puna	146.800	286	10
Edgecumbe 700	Mount Edgecumbe	147.375	777	20
Waitomo 7375	Rangitoto Range	146.850	869	100
Tokoroa 7025	Whakamaru	147.025	743	50
Rotorua 735		147.350	869	7
Taupo 675	Maruanui	146.750	897	12
Taumarunui 715	Hikurangi	147.150	770	50
Kakaramea 7275	Kakaramea	147.275	1313	25
Poverty Bay 680	Kaiti Hill	146.800	122	10
Gisborne 690	Whakapunake	146.900	950	10
Napier 725	Taraponui	147.250	1308	25
Hawkes Bay 670	Kahuranaki	146.700	652	20
New Plymouth 720	Power Station Chimney	147.200	190	12
Egmont 705	East Mount Egmont	147.050	1559	100
Wanganui 690		146.900	658	11
Taihape 6775		146.775	799	
Southern Hawkes Bay 665	Mount Wharite	146.650	915	25
Manawatu 7125	Pahiatua Track	147.125	488	8
Levin 720	Moutere	147.200	50	40
Masterton 680	Mount Rangitumau	146.800	604	25
Rewa 735	Mount Rewa	147.350	604	25
Holdsworth 7175	Mount Holdsworth	147.175	1470	25
Barton 7325	Mount Barton	147.325	1300	25
Southern Wairarapa 715	Warrens Airstrip	147.150	500	20
Kapiti 685	Mount Field	146.850	615	50
Climie 730	Mount Climie	147.300	867	100
Titahi Bay 675	Onepoto Reservoir	146.750	90	10
Belmont 710	Mount Belmont	147.100	450	100
Lower Hutt 700	Mount Fitzherbert	147.000	377	90
Golden Bay 735	Richmond Hill	147.350	620	13
Motueka 670	Mount Campbell	146.700	1328	25
Nelson 720	Grampians	147.200	392	40
Blenheim 695	Jamies Knob	146.950	277	4
Murchison 680	Mount Murchison	146.800	1469	40
Westport 675	Cape Foulwind Lighthouse	146.750	91	150
Westport 715	Mount Rochfort	147.150	1041	20
Kaikoura 690	Kaikoura Peninsula	146.900	91	15
Greymouth 695	Sewell Peak	146.950	834	20
Christchurch 675	Marley Hill	146.750	488	20

Cont next page

AUSTRALIAN BEACONS

Call Sign	Frequency MHZ	Site
VK2RCW	3.699	Dural
VK5WI	28.260	
VK2RSY	28.262	Sydney
VK6RWA	28.264	
VK6RTW	28.266	Albany
VK8VF	28.268	Darwin
VK4RTL	28.270	Townsville
VK6RPH	50.066	Perth
VKOCK	52.150	Macquarie Island
VK8VF	52.200	Darwin
VK2RBH	52.300	Broken Hill
VK6RTT	52.320	Carnarvon
VK2RHV	52.325	Newcastle
VK3RGG	52.330	Geelong
VK4ABP	52.345	Longreach
VK6RTU	52.350	Kalgoorlie
VK7RST	52.370	Hobart
VK1RCC	52.410	Mt Majura
VKOMA	52.418	Mawson
VK2RSY	52.420	Sydney
VK2RGB	52.425	Gunnedah
VK3RMV	52.435	Hamilton
VK4RTL	52.440	Townsville
VK4RIK	52.445	Cairns
VK5VF	52.450	Mt Lofty
VK6RPH	52.460	Perth
VK6RTW	52.465	Albany
VK7RNT	52.470	Launceston
VK8RAS	52.485	Alice Springs
VK6RBS	144.022	Busselton
VK4RTT	144.400	Mt Mowbullan
VK1RCC	144.410	Mt Majura
VK2RSY	144.420	Sydney
VK3RTG	144.430	Melbourne
VK3RMV	144.435	Hamilton
VK4RIK	144.445	Cairns
VK4RTL	144.445	Townsville
VK6RTW	144.465	Albany
VK7RMC	144.470	Newham
VK8VF	144.480	Darwin
VK8RAS	144.485	Alice Springs
VK3RGG	144.530	Geelong
VK3RGI	144.535	Gippsland
VK5RSE	144.550	Mt Gambier
VK6RPB	144.565	Port Hedland
VK6RTT	144.600	Carnarvon
VK5VF	144.800	Mount Lofty
VK2RCW	144.950	Sydney
VK3RCW	144.950	Melbourne
VK6RPH	145.000	Perth
VK6RBS	432.066	Busselton
VK6RPR	432.160	Nedlands
VK1RBC	432.410	Canberra
VK6RTT	432.410	Wickham
VK2RSY	432.420	Sydney
VK3RTG	432.430	Melbourne
VK3RMV	432.435	Hamilton

Continued next page

VK4R	432.440	Brisbane
VK4RIK	432.445	Cairns
VK4RTL	432.445	Townsvilie
VK3RAI	432.450	Melbourne
VK6RTW	432.465	Albany
VK3RGG	432.530	Geelong
VK3RMB	432.535	Ballarat
VK4RAR	432.545	Rockhampton
VK6RPB	432.565	South Headland
VK6RPB	576.753	South Headland
VK6RBS	1296.198	Busselton
VK1RBC	1296.410	Canberra
VK2RSY	1296.420	Sydney
VK4RSD	1296.440	Brisbane
VK4RIK	1296.445	Cairns
VK6RPR	1296.480	Nedlands
VK6RPB	1296.695	South Hedland
VK2RSY	2304.420	Dural
VK4RIK	2304.445	Cairns
VK4RSD	2306.440	Brisbane
VK6RVF	10300.000	Roleystone
VK3RGZ	10368.00	Melbourne
VK4RIK	10445.000	Cairns

Selected Pacific Region Beacons

H44HIR	50.005	Honiara
KH6JJK	50.080	Hawaii
JG1ZGW	50.490	Japan
P29BPL	52.013	P.N.G
ZK2SIX	52.100	Niue

AERONAUTICAL BEACONS USEFUL FOR PROPAGATION TESTS

VK1	Canberra	NDB	263	khz	CB
		VOR.	116.7	MHz	
VK2	Sydney	NDB	317	kHz	SY
		VOR	115.4	MHz	
	Lord H. Is	NDB	272	kHz	LH
VK3	Melb	NDB	344	kHz	LV
		VOR	114.1		ML
VK4	Brisbane	NDB	302	kHz	BN
		VOR	113.2	MHZ	
	Cairns	NDB	364	kHz	
VK5	Adelaide	NDB	362	kHz	AD
		VOR	116.4	MHz	
VK6	Perth	NDB	400	kHz	PH
		VOR	113.7	MHz	
	Pt Hedland	NOB	260	kHz	PD
		VOR	114.1	MHz	
VK7	St Helens	NDB	392	kHz	STH
	Strahan	NDB	257	kHz	SRN
	Hobart	VOR	112.7	MHz	
VK8	Alice Sps.	NDB	224	kHz	AS
		VOR	115.9	MHz	
	Darwin	NDB	344	kHz	DN
		VOR	1124	MHz	
VK9	Cocos Is.	NDB	305	kHz	CC
	Norfolk Is.	NDB	260	kHz	NF
	Christmas Is.	NDB	341	kHz	XMX

Name	Site	Output Freq.	Height mASL	EIRP
Christchurch 725	Herbert Peak	147.250	926	20
Tekapo 680	Mount Rollesby	146.800	1341	20
Timaru 6625		146.625	332	15
Waimate 695	Mount Studholme	146.950	1088	20
Oamaru 670	Station Peak	146.700	886	20
Alexandra700	Fruitlands	147.000	1478	15
Queenstown 685	Double Cone	146.850	2286	22
Ounedin 665		146.650	310	
Dunedin 690	Mount Cargill	146.900	674	25
Balclutha 675	Kuriwao	146.760	638	20
Gore 695	McLeod's Hill	146.950	640	100
Invercargill 680	Bald Hill, Otautau	146.800	798	15

SEVENTY CENTIMETRE BAND—FM REPEATERS

Name	Site	Output Freq.	Height mASL	EIRP
Auckland 850	Mt Eden	438.500	200	25
Auckland 900	Port Waikato	439.000	403	1000
Hunua 895	Clements Hill	438.950	300	10
Waikato 860	Mount Te Aroha	438.600	944	70
Tauranga 885	Mt Minden, Te Puna	438.850	280	10
Tokoroa 865	Whakamaru	438.650	793	50
Waitomo 870		438.700	869	
Rotorua 855	Mount Ngongotaha	438.550	757	10
Egmont 4025	East Mount Egmont	434.025	1509	100
Waimarino 875	Turoa Skifield	438.750	2050	125
Hawkes Bay 900		439.000	793	250
Hawkes Bay 870	Peak House	438.700	389	20
Marton 865		438.650		
Manawatu 8525		438.525	488	
Kapiti 885	Paraparaumu Beach	438.850	30	100
Climie 860	Mount Climie	438.600	867	100
Tawa 895	Tawa	438.950	70	150
Wellington 850	Mount Victoria	438.500	195	40
Wellington 900	Mount Belmont	439.000	450	150
Blue Duck 3975	Blue Duck	433.975	1021	
Christchurch 900	Marley Hill	439.000	488	
Hornby 850	Cass Peak	438.500	522	25
Dunedin 850	Mount Cargill	438.500	674	8
Invercargill 870	Invercargill City	438.700	45	5

Split — 5 MHz, except for Egmont and Blue Duck link repeaters which are +5 MHz.
ATV repeater input 443.25 MHz vision, 449.75 MHz sound, output 615.25 MHz vision, 620.75 sound.

TWENTY-THREE CENTIMETRE BAND—FM REPEATERS

Name	Site	Input Freq.	Output Freq.	Height mASL	EIRP
Wellington 120		1291.200	1271.200	100	

DATA REPEATERS

Name	Site	Input Freq.	Output Freq.	Height mASL	EIRP
Pukoti Data	Manginangina	146.175	146.775	378	10
Whangarei Data	Parakiore	146.075	146.650	392	25
Waitomo Data		147.825	147.225	869	
Hawkes Bay AX.25		144.600	144.600	792	
Manawatu Data	Pahiatua Track	144.600	145.725	488	8
Wellington Data	Hawkins Hills	146.025	146.625	533	100
Christchurch AX.25	Marley Hill	144.650	144.650	488	

TELEVISION, AM AND LINEAR REPEATERS

Name	Site	Input Freq.	Output Freq.	Height mASL	EIRP
Auckland ATV	(Temporary)	615.250	1000		
Rotorua Linear		144.950	144.350	685	
Wellington ATV	Mt Belmont		615.250	450	500
Dunedin Linear	Highcliff	144.950	144.350	210	2
Invercargill AM	Bluff Hill	144.650	145.775	265	15

Wicen Co-ordinators

Fed	Ron Henderson 171 Kingsford Smith Dr Melba ACT 2615	VK1RH	062 58 7904 h 062 65 5550 w
VK1	Richard Elliott 93 Shackleton Clr Mawson ACT 2607	VK1ZAH	062 86 2736 h 062 68 7233 w
VK2	Steven Boyd 4 Wisdon St Annandale NSW 2038	VK2DNN	02 660 4783 h 02 265 8909 w
VK3	Leigh Baker 552 Canterbury Rd Vermont Vic 3133	VK3CDP	03 873 3417 h 03 603 5555 w
VK4	Ken Ayers 142 Castlehill Dr Nerang Qld 4211	VK4KD	075 58 2293 h
VK5	Graham Iles 78 Mawson Rd Meadows SA 5201	VK5AT	08 388 3458
VK6	Arthur Baxter 12 Caroline Green Marangaroo WA 6064	VK6NBG	09 342 5002 h
VK7	Norm Thorley Box 326 Ilfraville Tas 7270	VK7KTN	003 83 4129 h
VK8	Trevor Connell Box 40441 Casuarina NT 0810	VK8CO	089 27 9256 h 089 20 4431 w

EMERGENCY

First aid in case of shock.
Ref.P.112 (last page) 1988 Call book.

Police

ACT VK1	(062)	45 7377/45 7444
NSW VK2	(02)	2 0960/ 2 0966
VIC VK3	(03)	11 444
QLD VK4	(07)	226 6001
SA VK5	(08)	11 444/223 0223
WA VK6	(09)	421 8222
		325 0121
TAS VK7	(002)	38 1101
NT VK8	(089)	27 8888/81 5555

Ambulance

ACT VK1	(062)	49 8133
NSW VK2	(02)	2 0920
VIC VK3	(03)	11 441
QLD VK4	(07)	839 2222
SA VK5	(08)	272 8822
		223 2044
WA VK6	(09)	277 8899
TAS VK7	(002)	34 3131
NT VK8	(089)	27 9000

All emergency services, all states,
Dial 000.
Federal Sea Safety and Surveillance Centre
(062) 47 6666/47 5244
Natural Disasters Organisation
(062) 46 6600
(charges can be reversed)

Wireless Institute Civil Emergency Network (WICEN)

Primary	Secondary Frequencies
3.600 MHz	(+25 kHz S S B
7.075	-25 kHz C W)
14.125	
21.190	
28.450	

Wicen Nets

VK1	None		
VK2	THU	1100Z	7150 repeater
VK3	SUN	1030Z	3.600 MHz
VK4	SUN	2230Z	7.075 MHz
(as required Brisbane Stormwatch 7000 repeater)			
VK5	WED	1000Z	(+30 summer time) 7000 repeater
		1000Z	(+1h summer tim) 3.600 MHz
VK6	WED	1200z	3.600 Mhz
VK7	None		
VK8	Refer VK5.		

AUSTRALIAN AMATEUR REPEATERS

Listing of Repeaters by Frequency

Callsign	Frequency (MHZ) OutPut	Input	Time Out (min)	Mode	Site	Elevation M	Service Area
VK6RHF	29.630	29.530		Voice	Darling Scarp		Perth
VK3RHF	29.640	29.540		Voice	Mt Dandenong		Melbourne
VK3RMH	53.550	52.550			Wattle Glen		Melbourne
VK2RSN	53.625	52.625		Voice	Mt Sugarloaf		Newcastle
VK3RTN	53.675	53.075	5.0	Voice	Lake Mountain	1500	Melbourne
VK4RGA	53.725	52.725		Voice	Amys Peak	920	Central Queensland
VK4RIK	53.725	53.125		Voice	Mt Haren	480	Cairns
VK6RTH	53.800	52.800		Voice	Tic Hill		Perth
VK2RWI	53.850	52.850	3.5	Voice	Dural	240	Sydney
VK3RMS	53.900	53.300	2.5	Voice	Mt Dandenong		Melbourne
VK1RGI	144.800	144.800		Packet	Mt Gininl	1770	ACT & SE NSW
VK2RMB	144.800	144.800		Packet	Terrey Hills	150	Sydney
VK3RPK	144.800	144.800		Packet			Melbourne
VK2RWI	144.850	144.850	0.5	Packet	Dural	240	Sydney
VK4RZB	144.850	144.850		Packet	Constitution Hill	230	Brisbane
VK2RPH	144.900	144.900		Packet	Homsby	200	Sydney
VK3RPP	144.900	144.900		Packet	Lysterfield		Melbourne
VK4RAR	144.900	144.900		Packet	Mt Archer	600	Rockhampton
VK4RBS	144.900	144.900		Packet	Mt Goonaneman	650	Bundaberg
VK4RZC	144.900	144.900		Packet	Wilkes Knob	470	Sunshine Coast
VK2RPL	145.050	145.050		Packet	Mt Nardi	800	Lismore
VK4RBT	145.050	145.050		Packet	Mt Cotton	233	Brisbane
VK2RBB	146.625	146.025	3.0	Voice	Byron Bay	150	Lismore, Casino
VK2RLD	146.625	146.025	4.5	Voice	Razorback Range	330	Sydney
VK4RGT	146.625	146.025		Voice	Mt Maurice	225	Gladstone
VK7RAD	146.625	146.025	5.0	Rt/Data	Mt Duncan	600	Tasmania
VK2RCH	146.650	146050	3.0	Voice	Bruxner Park	300	Coffs Harbour
VK2RDX	146.650	146.050	3.5	Voice	Mt Bindo—Oberon	1362	Western Blue Mts
VK2RMI	146.650	146.050	4.0	Voice	Terry Hi Hi	660	Moree/Invereli
VK3REG	146.650	146.050	2.5	Voice	Donalds Knob	560	East Gippsland
VK3RGV	146.650	146.050	3.5	Voice	Mt Wombat	800	Shepparton
VK4ROM	146.650	146.050		Voice	Grafton Range	550	Roma
VK5RNC	146.650	146.050		Voice	Naracoorte		Naracoorte
VK6RSW	146.650	146.050	5.0	Voice	Bunbury	20	Bunbury
VK8RMS	146.650	146.050		Voice	Gove		Gove
VK2RTY	146.675	146.075		RTTY	Blacktown	72	Sydney
VK4RTA	146.675	146.075		Voice	Longland Gap	1170	Atherton
VK4R	146.675	146.075		Voice	Mt Kiangrow	1140	
VK5RSV	146.675	146.075		RTTY	Willunga Hill		McLaren Vale
VK6RCA	146.675	146.075		Voice	Carnarvon		Carnarvon
VK2RAO	146.700	146.100	3.0	Voice	Mt Canobolas	1417	Orange
VK2RMU	146.700	146.100	2.5	Voice	Milton	152	Ulladulla
VK2RPM	146.700	146.100	3.5	Voice	Middle Brother Mtn	552	Taree
VK3RML	146.700	146.100	2.5	Voice	Mt Dandenong	600	Melbourne
VK3RNC	146.700	146.100	2.5	Voice	Mt Mitta Mitta		Corryong
VK3RON	146.700	146.100	2.5	Voice	Ouyen		Ouyen
VK4RAR	146.700	146.100	4.0	Voice	Mt Archer	608	Rockhampton
VK4RAT	146.700	146.100	4.5	Voice	Mt Stuart	584	Townsville
VK4RGC	146.700	146.100		Voice	Springbrook	500	Gold Coast
VK4RMI	146.700	146.100	3.5	Voice	Four Mile Hill	500	Mt Isa
VK5RMN	146.700	146.100	5.0	Voice	The Bluff	730	Port Pirie
VK6RAP	146.700	146.100	3.0	Voice	Roleystone	360	Perth

VK6RKI	146.700	146.100		Voice	Koolan Island		Koolan Island
VK6RWH	146.700	146.100		Voice	Derby		Derby
VK6RWR	146.700	146.100		Voice	Wickham		Wickham
VK7RHT	146.700	146.100	2.5	Voice	Mt Wellington	1310	Hobart
VK8RDA	146.700	146.100		Voice	Karama		Darwin
VK2RAG	146.725	146.125	3.0	Voice	Somersby	318	Gosford/Wyong
VK4RSB	146.725	146.125		Voice	Mt Gordon	20	Bowen
VK6RAL	146.725	146.125		Voice	Albany		Albany
VK2RFS	146.750	146.150	3.5	Voice	Mt Mumbulla	870	Bega
VK2RTM	146.750	146.150	3.0	Voice	Mt Crawney	1430	Tamworth
VK2RWG	146.750	146.150	3.0	Voice	Mt Flackney	490	Wagga
VK3RBA	146.750	146.150	3.0	Voice	Mt Buninyong	750	Ballarat
VK4RDD	146.750	146.150	4.5	Voice	Mt Lofty	715	Toowoomba
VK6RLM	146.750	146.150	2.0	Voice	Lesmurdie		Perth
VK7RNW	146.750	146.150	5.0	Voice	Ulverstone	160	Tasmania
VK2RTZ	146.775	146.175	3.0	Voice	Sugarloaf Range	400	Lake Macquarie
VK2RCC	146.800	146.200	3.5	Voice	Needle Mountain	1100	Coonabarabran
VK2RIC	146.800	146.200	3.0	Voice	Parrots Nest	85	Lismore, Casino
VK2RLE	146.800	146.200	3.5	Voice	Heathcote	240	Sydney
VK2RTD	146.800	146.200	4.0	Voice	Mt Kendall	930	Tumut
VK3RLV	146.800	146.200	2.5	Voice	Mt Tassie	730	Latrobe Valley
VK3RMA	146.800	146.200	2.5	Voice	Mildura	50	Mildura
VK4RBU	146.800	146.200	4.0	Voice	Mt Goonaneman	620	Bundaberg
VK5REP	146.800	146.200		Voice	Coolanie		Eyre Peninsula
VK6RTH	146.800	146.200	5.0	Voice	Tic Hill	230	Perth
VK6RWP	146.800	146.200		Voice	Karratha		Karratha
VK2RGN	146.825	146.225		Voice	Mt Gray	750	Goulburn
VK4RDT	146.825	146.225		Voice	Gabbinbah	723	Toowoomba
VK6RAA	146.825	146.225	3.0	Voice	Mt Barker	430	Albany
VK2RAB	146.850	146.250	4.0	Voice	Porcupine Res	440	Gunnedah
VK2RAW	146.850	146.250	4.0	Voice	Mt Murray	769	Wollongong
VK2RGF	146.850	146.250	2.5	Voice	Mt Bingar	450	Griffith
VK4RSC	146.850	146.250		Voice	Buderim	450	Sunshine Coast
VK5RHO	146.850	146.250	3.5	Voice	Houghton	410	Adelaide
VK6REX	146.850	146.250		Voice	Tower Zero		Exmouth
VK6RKB	146.850	146.250		Voice	Kambalda		Kambalda
VK2RMB	146.875	146.275	3.0	Voice	Terrey Hills	150	Sydney
VK4RCH	146.875	146.275		Voice	Red Hill	340	Chinchilla
VK1RAC	146.900	146.300	4.0	Voice	Black Hill	870	Canberra
VK2RAN	146.900	146.300	5.0	Voice	Mt Sugarloaf	300	Newcastle-Lwr Hunter
VK2RRT	146.900	146.300	5.0	Voice	Boona Mount	441	Condobolin
VK3RBS	146.900	146.300	2.5	Voice	Smeatons Hill		Ballarat
VK3REB	146.900	146.300	2.5	Voice	Nungumer		Baimsdale
VK3RSH	146.900	146.300	2.5	Voice	Swan Hill	60	Swan Hill
VK4RAI	146.900	146.300	4.5	Voice	Mt Stradbroke	120	Ipswich
VK4RGA	146.900	146.300	4.0	Voice	Amys Peak	920	Gladstone
VK5RMG	146.900	146.300	5.0	Voice	Mt Gambier	100	Mt Gambier
VK6RBY	146.900	146.300	5.0	Voice	Mt William	520	Bunbury
VK6RMN	146.900	146.300		Voice	Mt Newman		Mt Newman
VK7REC	146.900	146.300	2.5	Voice	Snow Hill	970	Eastern Tasmania
VK2RGR	146.925	146.325	2.5	Voice	North Ryde	30	Sydney
VK4RRC	146.925	146.325		Voice	Mt Mee	520	Redcliffe
VK1RGI	146.950	146.350	3.0	Voice	Mt Ginini	1770	ACT & SW NSW
VK2RNE	146.950	146.350	4.0	Voice	Mt Rumbee	1503	Glen Innes
VK3RWZ	146.950	146.350	2.5	Voice	Mt William	1170	Grampians
VK4RCA	146.950	146.350	4.0	Voice	Mt Bellenden Ker	1650	Cairns
VK6RPD	146.950	146.350	3.0	Voice	Bentley	70	Perth
VK6RSG	146.950	146.350		Voice	Shay Gap		Shay Gap
VK2RAN	146.975	146.375	5.0	RTTY/VO	Mt Sugarloaf	300	Newcastle
VK4RRR	146.975	146.375		Voice	Blue Mtn NEBO	600	Sarina (linked to VK4RHR 8500)
VK6REE	146.975	146.375		Voice	Portable		WICEN
VK2RWI	147.000	146.400	3.5	Voice	Dural	240	Sydney
VK3RGL	147.000	146.000	2.5	Voice	Mt Anakie	400	Geelong
VK3RNE	147.000	146.400	2.5	Voice	Mt Big Ben	1158	Wodonga

VK4RBN	147.000	146.400	2.0	Voice	Mt Glorious	630	Brisbane
VK4RMK	147.000	146.400	5.0	Voice	Black Mountain	60	Mackay
VK5RAD	147.000	146.400	3.5	Voice	Crafers	610	Adelaide
VK6RAK	147.000	146.400	5.0	Voice	Kalgoorlie	400	Kalgoorlie
VK6RAW	147.000	146.400	5.0	Voice	Mt Lathan	400	Wagin
VK6REE	147.000	146.400		Voice	Portable		WICEN
VK6RGN	147.000	146.400	5.0	Voice	Geraldton	400	Geraldton
VK6RNW	147.000	146.000		Voice	Port Hedland		Port Hedland
VK7RAA	147.000	146.400	5.0	Voice	Mt Barrow	1400	NE Tasmania
VK8RCA	147.000	146.400	3.5	Voice	Alice Springs		Alice Springs
VK8RTE	147.000	146.400		Voice	Palmerston		Darwin
VK2ROT	147.025	147.625	3.0	Voice	Paddington	90	Sydney
VK3RGS	147.025	147.625	2.5	Voice	Mt Fatigue		Toora
VK2RBM	147.050	147.650	3.5	Voice	Mt Druitt	20	Blue Mtns/Nepean
VK3RVL	147.050	147.650	2.5	Voice	Robinvale		Robinvale
VK3RWL	147.050	147.650	2.5	Voice	Mt Warrnambool		Warrnambool
VK6RTY	147.050	147.650		RTTY	Roleystone		Perth
VK3RCR	147.075	147.675		Voice	Montrose		Melbourne
VK2RWM	147.100	147.000	3.0	Voice	Grenfell	575	Grenfell
VK2RZL	147.100	147.000	3.0	Voice	Mt Arthur	800	Upper Hunter
VK3RPB	147.100	147.700	2.5	Voice	Mt Porepunkah		Bright
VK3RSG	147.100	147.700	3.0	Voice	Bass Hill		South Gippsland
VK4RGY	147.100	147.100	4.0	Voice	Mt Boulder	496	Gympie
VK6RWC	147.100	147.700	5.0	Voice	Lesmurdie		Perth
VK2R	147.125	147.725		Voice	Portable		WICEN
VK3RGC	147.125	147.725	2.5	Voice	Montpellier		Geelong
VK2RWS	147.150	147.750		Voice	Chatswood	140	Sydney
VK3RCV	147.150	147.750	3.0	Voice	Mt Alexander	730	Bendigo
VK4RAG	147.150	147.750	3.5	Voice	Spring Hill	90	Brisbane
VK4RWI	147.150	147.750		Voice	Portable		WICEN
VK2R	147.175	147.775		Voice	Portable		WICEN
VK3REC	147.175	147.775	2.5	Voice	Mt Dandenong	600	Melbourne
VK6RIC	147.175	147.775		Voice	Portable		WICEN
VK2RSD	147.200	147.800	4.0	Voice	Mt Cambewarra	600	Nowra
VK6RCT	147.200	147.800		Voice	Cataby		Cataby
VK2RST	147.225	147.825	4.0	SSTV/Vo	Lane Cove	25	Sydney
VK3RWG	147.225	147.825	2.5	Voice	Mt Baw Baw		West Gippsland
VK2RNS	147.250	147.850	3.5	Voice	Asquith	225	Sydney
VK3RMM	147.250	147.850	2.5	WICEN	Mt Macedon	1011	Melbourne
VK6RMS	147.250	147.850		Voice	Mt Saddleback		Boddington
VK7RAF	147.250	147.850		Multi			Hobart
VK2RIL	147.275	147.875	4.0	RTTY/Vo	Sublime Point	398	Wollongong
VK3ROW	147.275	147.875		Voice	Otway Ranges		Colac
VK2RTS	147.300	147.900	3.0	Voice	Lower Blue Mtns	370	Sydney
VK3RWP	147.300	147.900		Voice	Portable		WICEN
VK4RQT	147.300	147.900	3.5	Voice	Mt Glorious	630	Brisbane
VK6REN	147.300	147.900		Voice	Ocean Hill		Eneabba
VK2RHR	147.350	147.950	3.0	Voice	Mt Gibraltar	862	Southern Highlands
VK3RTY	147.350	147.950	10.0	RTTY	Mt Dandenong	600	Melbourne
VK6RBN	147.350	147.950		Voice	Busselton		Busselton
VK2RAO	147.525	147.525	0.5	Packet	Mt Canobolas	1417	Orange
VK2RPT	147.525	147.525	5.0	Packet	Mt Tumorroma	1231	Tumut
VK3RBB	147.525	147.525		Packet	Mt Tassie		Gippsland
VK3RMC	147.550	147.550		RTTY/BB	Lilydale		Melbourne
VK2RAW	147.575	147.575	1.0	Packet	Mt Murray	769	Wollongong
VK2RCH	147.575	147.575		Packet	Bruxner Park		Coffs Harbour
VK2RPL	147.575	147.575	3.0	Packet	Mt Nardi	85	Lismore
VK2RPM	147.575	147.575		Packet	Taree	552	Port Macquarie
VK2RPN	147.575	147.575		Packet	Sugarloaf Range	400	Lake Macquarie
VK2RPS	147.575	147.575		Packet	High Range	827	Southern Highlands
VK2RPW	147.575	147.575		Packet	Grundys Mt		Tamworth
VK2RSD	147.575	147.575		Packet	Mt Cambewarra	600	Nowra
VK3RGV	147.575	147.575		Packet	Mt Wombat		Shepparton
VK3RMU	147.575	147.575		Packet	Mt St Leonards		Melbourne
VK3RNU	147.575	147.575		Packet	Mt Stanley		Wodonga

VK3RPA	147.575	147.575		Packet	St Albans		Melbourne
VK6R	147.575	147.575		Packet			Perth
VK2RAG	147.600	147.600	3.0	Packet	Somersby	313	Gosford/Wyong
VK3RPA	147.600	147.600		Packet	St Albans		Melbourne
VK3RPK	147.600	147.600		Packet	Broadmeadows		Melbourne
VK4RZA	147.600	147.600		Packet	Springbrook	940	Gold Coast
VK4RZB	147.600	147.600		Packet	Constitution Hill	230	Brisbane
VK4RZC	147.600	147.600		Packet	Wilkes Knob	470	Sunshine Coast
VK4RZD	147.600	147.600		Packet	Mt Perseverance	700	Toowoomba
VK4RBT	147.650	147.050		RTTY/Vo	Mt Cotton	233	Brisbane
VK4RBT	147.675	147.075	4.5	RTTY/Vo	Mt Cotton	233	Brisbane
VK4REG	147.825	147.225		Voice	Manly West	50	Brisbane
VK4RII	147.950	147.350		Voice	Mt Inkerman	218	Burdekin
VK7RTV	426.250	444.250		ATV	Mt Duncan		NW Tasmania
VK2RTK	438.025	433.025	2.0	Voice	High Range	827	Southern Highlands
VK4RTQ	438.025	433.025		Voice	Mt Tamborine		Brisbane
VK2RAG	438.075	433.075	3.0	Voice	Somersby	323	Gosford/Wyong
VK3RMU	438.075	433.075	2.5	Voice	Mt St Leonards		Melbourne
VK4RSC	438.075	433.075		Voice	Buderim	450	Sunshine Coast
VK2RMB	438.175	433.175	3.0	Voice	Terrey Hills	150	Sydney
VK2RNT	438.175	433.175	3.0	Voice	Armidale		Armidale
VK3RUG	438.175	433.175		Voice	Devils River		Alexandra
VK2RUW	438.225	433.225	4.0	Voice	Port Kembla	100	Wollongong
VK3ROU	438.225	433.225	2.5	Voice	Mt Dandenong	600	Melbourne
VK4RAT	438.225	433.225		Voice	Mt Stuart	584	Townsville
VK4RGC	438.225	433.225	3.5	Voice	Springbrook	500	Gold Coast
VK6RTH	438.225	433.225		Voice	Tic Hill		Perth
VK2RWS	438.275	433.275		Voice	Chatswood	140	Sydney
VK3RWE	438.275	433.275		Voice	Portable		WICEN
VK2REE	438.325	433.325	3.0	Voice	Mount Marie	930	Taree
VK2RWM	438.325	433.325	3.0	Voice	Grenfell	575	Grenfell
VK1RIR	438.375	433.375	3.5	Voice	Isaacs Ridge	790	Canberra
VK2RUT	438.375	433.375	3.0	Voice	Kurrajong	500	Blue Mountains
VK3RGU	438.375	433.375	4.0	Voice	Carrajung		Gippsland
VK4RWM	438.375	433.375		Voice	Ipswich	60	Ipswich
VK2RUH	438.425	433.425	4.0	Voice	Hurstville	100	Sydney South
VK4RMU	438.425	433.425		Voice	Boveys Lookout	50	Mackay
VK5RBV	438.425	433.425		Voice	Angaston		Barossa Valley
VK2RRS	438.475	433.475	4.0	Voice	Chatswood	50	Sydney
VK4RHR	438.500	433.500		Voice	Drummond Range	520	Clermont (linked to VK4RRR 6975)
VK7RIN	438.500	433.500		Voice	Barren Tier		
VK1RGI	438.525	433.525	3.5	Voice	Mt Ginini	1770	ACT & SE NSW
VK2RPM	438.525	433.525	3.0	Voice	Taree	552	Port Macquarie
VK2RWI	438.525	433.525	3.5	Voice	Dural	240	Sydney
VK3RAD	438.525	433.525	2.5	Voice	Mitcham	100	Melbourne
VK3RNU	438.525	433.525	2,5	Voice	Mt Stanley	1051	Wangaratta
VK3RRU	438.525	433.525	2.5	Voice	Merbein		Mildura
VK4RBC	438.525	433.525	2.0	Voice	Mt Coottha	560	Brisbane
VK5RVP	438.525	433.525		Voice	Crafers		Adelaide
VK6RUF	438.525	433.525		Voice	Roleystone		Perth
VK7RIT	438.525	433.525		Voice	Sandy Bay		Hobart
VK7RAB	438.550	433.550	3.0	Voice	Mt Arthur	1190	NE Tasmania
VK7RTC	438.600	433.600		Voice	Mt Nelson		Hobart
VK2RUM	438.625	433.625	3.0	Voice	New Lambton	50	Newcastle
VK3RWI	438.625	433.625		Voice	Portable		WICEN
VK4RAG	438.625	433.625		Voice	Spring Hill	90	Brisbane
VK4RWI	438.625	433.625		Voice	Portable		WICEN
VK7RAC	438.650	433.650		Voice	Table Cape		NW Tasmania
VK2RAN	438.675	433.675	5.0	Voice	Mt Suglarloaf	300	Newcastle
VK2RSC	438.675	433.675	3.0	Voice	Mt Nardi	100	Lismore Casino
VK2RTW	438.675	433.675		Voice	Willans Hill		Wagga
VK3RWU	438.675	433.675	3.0	Voice	Mt William	1170	Grampians
VK4RBU	438.675	433.675		Voice	Mt Goonaneman	620	Bundaberg
VK6RBN	438.675	433.675		Voice	Busselton		Busselton

VK4RDB	438.700	433.700	5.0	Voice	Mt Mowbullan	1000	Darling Downs
VK2RIL	438.725	433.725	4.0	RTTY/Vo	Sublime Point	398	Wollongong
VK4RGY	438.825	433.825		Voice	Mt Boulder	496	Gympie
VK2RPL	438.875	438.875	3.0	Packet	Mt Nardi	85	Lismore
VK4RBA	438.950	433.950		Voice	Redbank Plains	180	Redbank
VK3RMM	439.275	434.275	3.0	Voice	Mt Macedon	1011	WICEN
VK4RDU	439.275	434.275		Voice	Picnic Point	710	Toowoomba
VK4RIK	439.350	434.350		Voice	Mt Haren	480	Cairns
VK3RDU	439.425	434.425	2.5	Voice	Chessney Vale		Benalla
VK3RGL	439.575	434.575	2.5	Voice	Mt Anakie	400	Geelong
VK3RPU	439.725	434.725	2.5	Voice	Arthurs Seat		Melbourne
VK5RCN	444.250	426.250		ATV	Baninga Range		Clare Valley
VK2RTG	579.250	444.250		ATV	Karlong	200	Gosford/Wyong
VK2RTN	579.250	426.250		ATV	Newcastle		Newcastle
VK2RTS	579.250	426.250	3.0	ATV	Lower Blue Mtns	370	Sydney
VK2RTV	579.250	426.250		ATV	Chatswood		Sydney
VK2RTW	579.250	444.250	30.0	ATV	Willans Hill	300	Wagga
VK3RMZ	579.250	426.250		ATV	Bendigo		Bendigo
VK3RTV	579.250	444.250		ATV	Mt Dandenong	600	Melbourne
VK4RAT	579.250	426.250		ATV	Mt Stuart	584	Townsville
VK4RTV	579.250	444.250		ATV	Springhill	140	Brisbane
VK5RTV	579.250	426.250		ATV	O'Halloran Hill		Adelaide
VK7RAE	579.250	444.250		ATV	Kelceystier		Devonport
VK2RTS	584.750	431.750	3.0	ATV Snd	Lower Blue Mtns	370	Sydney
VK5RWH	1246.250	444.250		ATV	Willunga Hill		McLaren Vale
VK3RMU	1253.500	1241.500		Voice	Mt St Leonard		Melbourne
VK5ROH	1253.850	1241.850		Voice	Willunga Hill		McLaren Vale
VK4REX	1281.650	1293.650	4.0	Voice	Brisbane City	100	Brisbane

THE SCOUT ASSOCIATION OF AUSTRALIA

Jamboree — On — The — Air

General:

Jamboree—on—the—Air is one week—end every year when Scouts (with Guides now invited) talk by courtesy of Amateur Radio to other Scouts and Guides overseas, in other states, to our country areas or "just over the back fence".

It teaches the meaning of the "brotherhood and sisterhood" of Scouting and Guiding, demonstrates the International aspect of the movements, introduces young people to electronics and shows the necessity for correct communication procedures (phonetics, overs — not like a telephone). In some stations high levels of co-operation and organization are evidenced and there can be opportunities for Scouts and Guides to put other aspects of their training to practical use (pioneering, communicating, catering). IN the process it is fun and young people learn of programmes and activities of others and tolerance and understanding of other races.

The first JOTA was in May 1958 following a meeting of Scouter Amateurs at the Jubilee Jamboree at Sutton Coldfield, UK, in 1957 at which they agreed to meet each other "on air in 12 months time".

It has become the largest event in the international calendars of Scouting, Guiding and Amateur Radio with 300,000 participants in 100 countries. Australia has close to 600 stations on air during the week—end.

For the first few years various dates were selected and inevitably they clashed with an Amateur Contest. To avoid this conflict the International Amateur Radio Union and World Scout Bureau agreed on the third full week-end in October for JOTA each year. For simplicity and to allow flexibility of operation the times agreed are all Saturday and Sunday LOCAL TIME everywhere so that for 24 hours all stations around the world could be operating.

To facilitate contacts a set of World Scout Calling Frequencies was chosen and, for various reasons, modified or extended for Australia:

World Scout Calling Frequencies

Band	CW	DX Phone	VK Phone
80 metres	3.590 MHz	3.740 MHz	3.590 MHz
40 metres	7.030 MHz	7.090 MHz	7.090 MHz
20 metres	14.070 MHz	14.290 MHz	14.190 MHz
15 metres	21.140 MHz	21.360 MHz	21.190 MHz
10 metres	28.190 MHz	28.990 MHz	28.390 MHz

Callsigns:

Because of the growing popularity of JOTA and electronics the 2nd National JOTA Conference of Scout Branch JOTA Organizers and State Liaison Guiders in Brisbane in 1983 decided to apply to the Department of Communications (now DOTC) for a special range of callsigns VKxSAA to VKxSDZ and VKxGGA to VKxGGZ for Scout and Guide stations. The Department accepted the idea and agreed that Organizers in each State would pre-allocate callsigns and keep a register. Many of these can now be found in the Callbook and the letters have special significance to the Stations involved.

Scout Nets:

Many years ago the then National Coordinator Noel Lynch VK4BNL started host-

ing regular nets on Sundays.

An Australian Scout Net on the first Sunday each month at different times operated on 7.090 MHz, 21.190 MHz and 14.190 MHz for any station "with Scout affiliation" — own station or callsign, or an operator for or interested in Scout Radio. Many ex Scouts now Amateurs also called in.

A JOTA net for Branch Organizers was conducted on the third Sunday. Many questions were answered and much JOTA information was disseminated in these nets.

When Noel stepped down from that position he was asked to continue hosting these nets and continued until early 1988. The 20 metre segments are continuing and other possibilities will be discussed at the 4th National JOTA Conference in Adelaide in January 1989.

The Australian Scout Net is run by National Co-ordinator for JOTA Peter Hughes VK6HU on 14.190 MHz (+/- QRM) on the First Sunday morning of each month at 0215Z (or as soon as possible after the VK6 WIA news).

The JOTA Organizers Net is run at the same time and frequency on the Third Sundays — but all are welcome.

Most other Sunday mornings (pm eastern seaboard, no change for daylight saving) some enthusiasts have a regular sked on the net time and frequency. ar

14 MHZ BEACONS

This series is sponsored by the Northern Californian DX Foundation. The beacons all operate in turn on the one frequency of 14.100 MHz. The series starts on the hour. They send the following series of signals at the power indicated:

QST de (call sign)	100W
.—	100W
..—	10W
...—	1W
....—	0.1W

sk de (call) 100W

The call sequence is as follows:

T+0 min	4U1UN/B	New York
T+1	W6WX/B	Stanford
T+2	KH6O/B	Honolulu
T+3	JA21GY/B	Ise City
T+4	4X6TU/B	Tel Aviv
T+5	OH2B	Espoo
T+6	CT3B	Funchal
T+7	ZS6DN/B	Pretoria
T+8	LU4AA	Santa Cruz
T+9	HK4LR/B	Colombia

NEW ZEALAND BEACONS

Name	Site	Call	Freq. MHZ	Mode mASL	Height	EIRP
Upper Hutt 10m	Mount Climie	ZL2MHF	28.230	F1	867	1
Auckland 6 m	Nihotupu	ZL1UHF	51.020	F1	330	25
Hawkes Bay 6m	Napier	ZL2MHB	51.030	F2	3	10
Taranaki 6m	Inglewood	ZL2VHT	51.225	F2	239	30
Manawatu 6m	Pahiatua Track	ZL2VHM	52.250	F1	488	8
Upper Hutt 6m	Mount Climie	ZL2MHF	52.510	F1	867	4
Blenheim 6m	Blenheim	ZL2SIX	52.490	F1	60	10
Christchurch West 6m	Aylesbury	ZL3MHF	52.310	F1	11	50
Auckland 2m	Mount Otau	ZL1VHF	145.100	A1	337	10
Waikato 2m	Hamilton	ZL1VHW	145.150	F1	97	10
Rotorua 2m	Kakanui	ZL1VHR	145.175	A1	504	6
Hawkes Bay 2m	Napier	ZL2MHB	145.240	F2	3	10/1/0.1
Taranaki 2m	Inglewood	ZL2VHT	145.225	F1	239	20
Wellington 2m	Hawkins Hill	ZL2UHF	145.200	F1	533	20
Takaka 2m	Takaka Hill	ZL2VHN	145.280	A3	915	2
Christchurch 2m	Christchurch	ZL3VHF	145.300	F1	30	30
Dunedin 2m	Rotary Park	ZL4VHF	145.400	F1	160	20
Invercargill 2m	Southland Hospital	ZL4VHI	145.425	A1	25	5
Auckland 70cm	Nihotupu	ZL1UHF	433.100	F1	330	20
Waikato 70cm	Hamilton	ZL1VHW	433.150	F1	97	20
Hawkes Bay 70cm	Napier	ZL2MHB	433.240	F2	3	5
Taranaki 70cm	Inglewood	ZL2VHT	433.225	F1	239	10
Wellington 70cm	Hawkins Hill	ZL2UHF	433.00	F1	533	12
Takaka 70cm	Takaka Hill	ZL2VHN	433.080	A3	915	2
Christchurch 70cm	Marleys Hill	ZL3UHF	433.200	F1	488	2
Auckland 23cm	Nihotupu	ZL1UHF	1297.100	F1	330	10
Waikato 23cm	Hamilton	ZL1VHW	1297.150	F1	97	10
Hawkes Bay 23cm	Napier	ZL2MHB	1297.240	F2	3	1
Taranaki 23cm	Inglewood	ZL2VHT	1297.225	F1	239	5
Wellington 23cm	Hawkins Hill	ZL2UHF	1297.000	F1	533	5
Rodney 13cm		ZL1SHF	2320.803	F2	305	5
Rodney 6cm		ZL1SHF	5765.0	F2	305	0.5
Wellington 3cm	Hawkins Hill	ZL2UHF	10.25 GHz	F2	533	0.3

ARTICLES ON EMC

January 1982 Purpose and Activities, National EMC Advisory Service.

March 1982RFI Directory of Assistance.

April 1982 Justice, Pot—Pour—RI, Persecution?

May 1982 The Radio Communications Act, Responsibility Incidental Radiation, Directory of Assistance.

June 1982EMC — "The Total Problem"

July 1982 High and Low Pass Filters

August 1982Power To Control Interference.

September 1982 Cable Television — North American Experience

October 1982Practical approach to VHF Co—location Problems

November 1982Electromagnetic Energy Near Our Station.

December 1982 On Principles Of RFI

January 1983 Quietening Switching Power Supplies

February 1983 RSTV. CATV. DBS. Australian Comment.

March 1983 USA Government Gives Power To Regulate EMC/RFI Susceptibility To FCC.

April 1983 " A Fair Go"

May 1983 The Radio Communications Bill, EMC Comment.

June 1983 "No Worries?"

July 1983 "The Computer Controlled Car".

August 1983"A Warning From Canada".

September 1983 ESD — "The Electronic Killer".

October 1983 Power Line Interference etc.

November 1983Audio Frequency Interference (AFI).

December 1983 "The Light At The End Of The Year".

January 1984 Electromagnetic Pulse Threat From Nuclear Blast.

February 1984 Designing Against Electromagnetic Emissions.

March 1984West Germany Deals With EMI (EMC).

April 1984 The Need For Improvements To TV Receivers.

May 1984 Interference — "Don't Live In The Past".

June 1984 Electromagnetic Pollution — Are They Zapping You?

July 1984 EMC Standards.

August 1984 Intermodulation, Control

Continued Page 50

10 METRE BEACONS

Freq.	Call	Location	Notes
28.050	PY2GOB	Sao Paulo, Brazil	15W, vertical
28.175	VE3TEN	Ottawa, Ontario, Canada	10W, ground plane
28.195	IY4M	Bologna, Italy	20W, 5/8 ground plane
28.200	GB3SX	Crowborough, England, U.K.	8W, dipole
28.200	KF4MS	St. Petersburg, Florida, USA	75W, ground plane
28.201	LU8ED	Buenos Aires, Argentina	5w
28.2025	ZS5VHF	Durban, Rep. of South Africa	15W, ground plane
28.205	DL0IGI	Mt. Predigtstuhl, W. Germany	100W, vertical dipole
28.207	W8FKL	Venice, Florida, USA	10W, vertical
28.208	WA1IOB	Marlborough, Mass., USA	75W, vertical
28.210	3B8MS	Mauritius	ground plane
28.210	K4KMZ	Elizabethtown, Kentucky, USA	20W, vertical
28.212	EA6RCM	Palma de Mallorca, Span	4W, 5el NNE
28.2125	ZD9GI	Gough Is., South Atlantic	ground plane
28.215	GB3RAL	Slough, Berkshire, U.K.	20W, ground plane
28.215	LU4XI	Puerto Deseado, Argentina	
28.2175	WB9MVY	Oklahoma City, Okl, USA	4W, ground plane
28.220	5B4CY	Zyyi Cyprus	26W, ground plane
28.222	W9UXO	Lake Bluff, Illinois, USA	10W, ground plane
28.2225	HG2BHA	Tapolca, Hungary	10W, ground plane
28.2275	EA6AU	Mallorca, Balearic Is., Spain	10W 5/8 ground plane
28.230	ZL2MHF	Mt. Climie, New Zealand	50W, vertical dipole
28.231	N4LMZ	Mobile, Alabama, USA	2W, 5/8 ground plane
28.232	W7JPI/AZ	Sonoita, Arizona, USA	5W, 3el Yagi NE
28.233	KD4EC	Jupiter, Florida, USA	7W, ground plane
28.235	VP9BA	Hamilton, Bermuda	10W, ground plane
28.2375	LA5TEN	Oslo, Norway	10W, 5/8 ground plane
28.240	OA4CK	Lima, Peru	10W
28.2405	5Z4ERR	Kiambu, Kenya	
28.2425	ZS1CTB	Capteown, Rep of South Africa	20W, 1/4 vertical
28.245	A92C	Bahrain	dipole, NW/SE
28.247	EA3JA	Barcelona, Spain	
28.2475	EA2HB	San Sebastian, Spain	6W, ground plane
28.248	K1BZ	Belfast, Maine, USA	5W, vertical dipole
28.250	Z21ANB	Bulawayo, Zimbabwe	15W, ground plane
28.250	4N3ZHK	Yugoslavia	1W, vertical
28.252	WB4JHS	Durham, North Carolina, USA	7W, vertical
28.255	LU1UG	Gral Pico, Argentina	5W, ground plane
28.2575	DKOTEN	Konstanz, West Germany	40W, ground plane
28.260	VK5WI	Adelaide, SA, Australia	10W, ground plane
28.262	VK2RSY	Sydney, NSW, Australia	25W, ground plane
28.264	VK6RWA	Perth, WA, Australia	
28.266	VK6RTW	Albany, WA, Australia	
28.266	KB4UPI	Birmingham, Alabama, USA	50W, 1/4 vertical
28.2685	W9KFO	Eaton, Indiana, USA	0.75W, vertical
28.270	ZS6PW	Pretoria, Rep of South Africa	10W, 3el Yagi on G-land
28.270	VK4RTL	Townsville, QLD, Australia	
28.2725	9L1FTN	Freetown, Sierra Leone	10W, vertical dipole
28.275	AL7GQ	Jackson, Mississippi, USA	0.5/1W, broadside loop
28.2755	N6RDX	Stockton, California, USA	20W, 3el Yagi
28.2775	DFOAAB	Kiel, West Germany	15W, ground plane
28.280	YV5AYV	Caracas, Venezuela	10W, rotary beam on Europe
28.280	LU8EB	Buenos Aires, Argentina	5W
28.282	VE1MUF	Fredrickton, NB, Canada	0.5W, dipole
28.284	VP8ADE	Adelaide Is., Antarctica	8W, vertical beam to G-land
28.286	KA1YE	Rochester, New York, USA	2W, vertical dipole
28.287	W8OMV	Asheville, North Carolina, USA	5W, ground plane
28.287	H44SI	Honiara, Solomon Is.	15W, ground plane
28.288	W2NZH	Moorestown, New Jersey, USA	5W, ground plane
28.290	VS6TEN	Mt. Matilda, Hong Kong	10W, vertical
28.2925	LU2FFV	San Jorge, Argentina	5W, ground plane
28.295	WB8UPN	Cincinnati, Ohio, USA	10W, vertical
28.296	W3VD	Laurel, Maryland, USA	1.5W, vertical dipole
28.297	WA4DJS	Ft. Lauderdale, Florida, USA	10W, 76 meter longwire
28.300	PY2AMI	Sao Paulo, Brazil	10W, vertical dipole
28.300	VE2HOT	Beaconsfield, PQ, Canada	5W, vertical dipole
28.300	ZS1LA	Stillbay, Rep. of South Africa	20W, 3el Yagi NW
28.315	ZS6DN	Irene, Rep. of South Africa	100W, vertical
28.888	W6IRT	North Hollywood, Cal, USA	5W, gnd plane, code practice
28.992	DL0ANN	Nuernberg, West Germany	1W, delta loop

STANDARD FREQUENCY TRANSMISSIONS

WWV and WWVH

The National Bureau of Standards broadcasts standard time and frequency transmissions continuously through stations WWV and WWVH.

Station WWV is located at Fort Collins, Colorado, and broadcasts continuously on the radio frequencies of 2.5, 5, 10, 15 and 20 MHz. Station WWVH is located at Kauai, Hawaii and broadcasts continuously on the radio frequencies of 2.5, 5, 10 and 15 MHz.

Both stations are controlled by caesium atomic oscillators. The frequencies are stable to better than one part in 10^{11} at all times, compared with the primary atomic standards maintained at the NBS Boulder laboratories. Changes in the propagation medium cause frequency changes which are several orders greater than the uncertainties described above.

Standard Time Signals

Seconds pulses are transmitted, continuously, even during tones and announcements, and are derived from the same oscillator which generates the carrier frequency. Each minute, except the first of the hour begins with an 800 millisecond tone of 1000 Hz at WWV and 1200 Hz at WWVH. The first minute of the hour begins with an 800 millisecond tone of 1500 Hz from both stations.

All time announcements are referred to in terms of Co-ordinated Universal Time, UTC. More precisely, the actual time scale is the co-ordinated Universal Time Scale as maintained by the NBS.

The 0 to 24 hours system is used starting with 0000 at longitude zero. The first two figures give the hour and the last two figures give the minutes past the hour when the tone returns. The time announcement refers to the end of an announcement interval, i.e., to the time when the 0.8 second long audio tone begins.

At WWV a male voice announcement of Co-ordinated Universal Time is given during the last 7.5 seconds of each minute. At 10.35 UTC for instance, the voice announcement, given in English, is: "At the tone, ten hours thirty-five minutes Co ordinated Universal Time".

At WWVH a female voice announcement of UTC is given during the period 45 seconds to 52.5 seconds after the minute. It should be noted that the voice announcement of WWVH precedes that of WWV by 7.5 seconds. However, the tone markers referred to in both announcements occur simultaneously, although they may not be so received due to propagation effects. The use of a female voice at WWVH and a male voice at WWV assists in distinguishing the two stations.

Universal Time Corrections

With the use as from the beginning of 1972 of the atomic time scale as the International time scale and because the rate of rotation of the earth is not constant, differences between mean solar time (UT1) and the atomic time will accrue which in time could become inconvenient. It is therefore necessary to make periodic adjustements to the atomic scale so that it roughly approximates UT1. Therefore, instead of frequent small corrections, as in the past, large corrections of one full second will be made at infrequent intervals., which are not expected to average more than one a year and will usually be made on the last day of either June or December.

An adjustment was made on December 31 1987 of one second so that the atomic time scale now leads UTI by 24 seconds. The atomic time scale will thus be at all times within one second of mean solar time. These corrections will be encoded and broadcast once every minute from both stations.

The method of coding UT1 corrections uses a system of double second pulses. The first through the eighth second pulse, when marked by a double pulse, will indicate a "plus" correction, and from the ninth through the fifteenth a "minus" correction. The amount of correction is determined by counting the number of second pulses which are doubled. For example, If the first, second and third second pulses are doubled, the UT1 correction is 0.3 seconds. Or if the ninth, tenth, eleventh, twelfth, thirteenth and fourteenth second pulses are doubled, the UT1 correction is "minus" 0.6 seconds. The UT1 correction is also encoded in the IRIG-H BCD code.

Standard Audio Frequencies

Standard audio frequencies of 440 Hz, 500Hz and 600Hz are broadcast by the two stations. The duration of each transmitted tone Is approximately 45 seconds. A 600 Hz tone is broadcast by WWV during odd minutes and during even minutes by WWVH. A 500 Hz tone is broadcast during alternate periods unless voice announcement sor silent periods are scheduled. The 440 Hz tone is broadcast beginning one minute after the hour at WWVH and two minutes after the hour at WWV. The 440 HZ tone is omitted during the first hour of the UTC day to act as a day marker.

No audio tones or special announcements are broadcast during a semi-silent period from either station. The periods are from 45 to 50 minutes after the hour from WWV and from 15 minutes to 20 minutes after the hour at WWVH.

The 29th and 59th seconds are omitted in each minute. Each pulse is preceded by 10 milliseconds of silence and followed by 25 milliseconds of silence.

Propagation and Geophysical Forecasts

A broadcast of radio propagation conditions and solar activity is broadcast in voice during part of every eighteenth minute of each hour from WWV. The announcements are short term forecasts, updated as required, every six hours if needed. Those operators particularly interested should consult QST, January 1975, page 84, for specific details.

Omega navigation system status reports are broadcast in voice from WWV at 16 minutes after the hour and from WWVH at 47 minutes after the hour. The International Omega Navigation System is a very low frequency radio navigation aid operating in the 10 to 14 kHz frequency band. Eight stations are in operation around the world. Omega, like other radio navigation systems is subject to signal degradation caused by ionospheric disturbances at high latitudes. The Omega announcements are given to provide users with immediate notification of such events. The Australian station in East Gippsland is on 13 kHz.

VNG

The Australian national frequency and time signal service, which had been provided by the station VNG at Lyndhurst Victoria, was closed down by Its operators, Telecom Australia, for financial reasons in October 1987.

A consortium of organisations interested

in re—activating the service has been formed. It is called the VNG Users Consortium and the address of its secretary is :

Dr Marion Leiba
26 Flmister Circuit
Kambah ACT 2902

At the time of writing VNG is operating on 5 MHz only from a transmitter site at Llandilo near Sydney. Further frequencies are pending . Those who need the latest information on the status of VNG may contact Dr Leiba on (062) 49 9355 (BH), (062) 31 9476 (AH), or the transmitting station on (02) 628 9777.

Time Signal Systems

The system is the complete grouping of dots and dashes which lead up to and follow the hour signal. The majority of stations conform to one of the following systems.

English

Continuous series of 0.1 SEC pulses every second, lengthened to 0.4 SEC every minute. The commencement of each pulse is the timing reference point. Radiated for 5 MIN preceding the time signal.

British Broadcasting Corporation

Six pulses (five 0.1 SEC pulses) representing successive seconds, followed by a final pulse (of 0.5 SEC) the beginning of the final pulse make the minute.

United States

Radiated for 5 MIN preceding the time signal. Series of pulses every second, 29th second of each minute, and certain seconds after the 50th second of each minute are silent.

Guam (NPN)

Frequency 21,760 kHZ, 17,530 kHZ, 13,380 kHZ, 8,150 kHZ, 4,955 kHZ

Time: 0555-0600, 1155—1200, 1755—1800, 2355—000

System: United States. Time between 56—59 sec every MIN.

Honolulu (Hawaii) (NPM)

Frequency: 22,593 kHZ, 13,655 kHZ, 9050 kHZ, 4,525 kHZ, 131.05 kHZ, A1A 15kw

Time: 0555—0800, 1155—1200, 1755—1800, 2355—000.

System: United States. Time between 5659 sec every MIN.

Remarks: Correct to 0.5 SEC.

Kauai (Hawaii) (WWVH)

Frequency:15,000 kHZ, (10kw), 10,000 kHZ (10kw), 5,000 kHZ (10kw), 2,500 kHZ (5.0kw) A3E.

Time: H24

Details of Signals:Voice announcement of time every minute.. Ticks every second except on 29th & 59th seconds; 5 MIN interruption HR + 15.

Source: National Bureau of Standards, Coulder, Colorado

Wellington (ZLW) (ZMO)

Frequency: 417.5 kHZ

Time: 2254—2300

Preparatory Signals:54 MIN 10 SEC — 54 MIN 40 SEC, ZMO (4 times)

Time Signal: 55 SEC — 60 SEC.

System: English

Source: New Zealand Time Service, Wellington (ZMO), Automatic Transmission.

Remarks: Error does not ex ceed 0.01 SEC.

AUSTRALIAN VHF, UHF AND SHF RECORDS

CORRECT AS AT 01 OCT 88

Legend
* — Australian record
\# — New record since last edition

1. Home/Portable Category

Australian Capital Territory						
50 MHz	#	No claim				
144 MHZ	#	VK1RH	to	VK1ZJR	1/03/87	16.3 km.
New South Wales						
50 MHz	#	VK2AGZ	to	VE1ASJ	06/04/81	16,653.4 km.
144 MHz	#	VK2ZRU	to	VK6AOM	13/12/86	2,697.9 km.
432 MHz	#	VK2ZAB	to	ZL1AKW	13/01/88	2,299.8 km.
576 MHz		VK4ZRF/2	to	VKZ4SH/4	11/12/81	255.4 km.
1,296 MHz		VK2BDN	to	ZL1AVZ	9/12/82	2,132.7 km.
2,300 MHz		VK2ZAC/2	to	VK2BDN/2	19/05/73	159.9 km.
3,300 MHz		VK2AHC/2	to	VK2SB/2	16/01/77	114.1 km.
5,650 MHz	*	VK2AHC/2	to	VK2SB/2ZND/2	12/04/75	114.1 km.
10,000 MHz		VK2AHC/2	to	VK2SB/2ZND/2	12/04/75	114.1 km.
Victoria						
50 MHz		VK30T	to	VP2VGR	17/03/81	16,663.3 km.
144 MHz		VK3YLR/3	to	VK6KZ/6	23/01/80	2,784.2 km.
432 MHz	*	VK3ZBJ	to	VK6KZ/6	23/01/80	2,715.9 km.
576 MHz		VK3AOT/3	to	VK3ZKB/3	11/07/71	237 km.
1,296 MHz	#*	VK3ZBJ	to	VK6WG	18/03/88	2,449.3 km.
2,300 MHz		VK3ZHP	to	VK7HL	12/01/85	427.3 km.
3,300 MHz	#	VK3KAJ/3	to	VK3ZBJ	25/01/86	244.3 km.
5,650 MHz		No claim				
10,000 MHz	*	VK3KAJ/3	to	VK3ZBJ/3	8/02/86	252.1 km.
Queensland						
50 MHz		VK4AYX	to	DL3ZM/YV5	18/03/81	15,582km.
144 MHz	*	VK4ZSH/4	to	JA7OXL	24/04/83	6,616.9 km.
432 MHz		VK4LC	to	ZL3TAL	24/11/82	2,283.4 km.
576 MHz	*	VK4ZRF/4	to	VK4ZSH/4	7/12/81	377.6 km.
1,296 MHz		AX4NO/4	to	AX4ZT/2	12/04/70	402 km.
2,300 MHz		No claim				
3,300 MHz		No claim				
5,650 MHz		No claim				
10,000 MHz		VK4ZNC/4	to	VK4ZSH/4	9/11/81	170.6 km.
South Australia						
50 MHz		VK5KK	to	XE1GE	9/04/79	14,078 km.
144 MHz		VK5ZEE	to	ZL1HH	15/01/86	3,458.8 km.
432 MHz		VK5NY	to	VK7JG	21/05/85	995.0 km.
576 MHz		VK5ZJL/5	to	VK5QZ/5	28/12/69	314 km.

Continued next page

1,296 MHz	*	VK5MC	to	VK6KZ/6	23/01/80	2,289.4 km.
2,300 MHz	*	VK5QR	to	VK6WG	17/02/78	1,885.5 km.
3,300 MHz	#*	VK5QR	to	VK6WG	25/01/86	1,885.5 km.
5,650 MHz		No claim				
10,000 MHz		VK5CU/5	to	VK5MW/5	30/12/71	95.7 km.
Western Australia						
50 MHz		VK6BE	to	JA8BP	30/10/58	8,833 km.
144 MHz		VK6KZ/6	to	VK3YLR/3	23/01/80	2,784.2 km.
432 MHz	*	VK6KZ/6	to	VK3ZBJ	23/01/80	2,715.9 km.
576 MHz		VK6KZ/6	to	VK6HK	16/01/83	196.4 km.
1,296 MHz	#*	VK6WG	to	VK3ZBJ	18/03/88	2,449.3 km.
2,300 MHz	*	VK6WG	to	VK5QR	17/02/78	1,885.5 km.
3,300 MHz	#*	VK6WG	to	VK5QR	25/01/86	1,885.5 km.
Tasmania						
50 MHz		VK7JG	to	W5FF	17/04/82	13,765 km.
144 MHz		VK7ZAH	to	VK4ZAZ	1/01/67	1,910 km.
432 MHz		VK7JG	to	VK5NY	21/05/86	995.0 km.
1,296 MHz		VK7ZAH	to	VK3AKC	17/02/71	439 km.
2,300 MHz		VK7HL	to	VK3ZHP	12/01/85	427.3 km.
Northern Territory						
50 MHz	*	VK8GB	to	9Y4LL	10/04/82	18,665.4 km.
144 MHz		VK4ZSH/8	to	JA7OXL	24/10/82	6,460.9 km.
2. EME Category						
144 MHz		VK3ATN	to	K2MWA/2	28/11/66	16,761 km.
432 MHz		VK6ZT	to	K2UYH	29/01/83	18,726.4 km.
1,296 MHz		VK3AKC	to	W2NFA	6/10/73	16,713 km.
3. ATV Category						
432 MHz		VK7EM/T	to	VK3ZPA/T	13/12/72	413 km.
4. Mobile Category						
144 MHz	#	VK3KAJ/M	to	VK6BE	25/186	2,224.5 km.
432 MHz	#	VK3KAJ/M	to	VK6BE	25/1/86	2,224.5 km.
5. Digital Modes Category						
52 MHz	#	VK4KHG	to	VK2YVG	17/12/87	1,253.5 km.

A GUIDE TO THE AMATEUR SATELLITE SERVICE

AMSAT-Australia Is the name used by the wing of the **Wireless Institute of Australia** that supports all Amateur Satellite Activities in Australia. It is actually managed by one of the W.I.A.'s Federal Officers, **Graham Ratcliff**, VK5AGR who has the title of **National Co-ordinator**. AMSAT—Australia has a **monthly column** in **"Amateur Radio'**, however, in April 1985 AMSAT-Australia began production of a **Newsletter** with two aims in mind, one to supply the latest information quickly and secondly to raise a modest sum of money per subscriber to go directly towards the purchase of hardware for future amateur satellites. To obtain a complimentary copy of the Newsletter send a self-addressed stamped envelope (S.A.S.E.) to **AMSAT-Australia C/- GPO Box, 2141, Adelaide S.A. 5001.** Currently, the Newsletter costs $20 for one year's airmail subscription and entitles you to receive 12 issues each mailed on the last Saturday of month. **AMSAT—Australia** also offers a number of other 'Services' for the Amateur Satellite enthusiasts.

Amsat—Australia Net

This Net commences at 0945Z every Sunday night on 3.685 MHZ primary 7.064 MHz secondary +/- QRM with early check-ins. The Net is co-ordinated by Graham Ratcliff, VK5AGR and officially starts at 1000utc with one or two sets of Keplerian Elements (required by Satellite Tracking Software) followed by Reference Orbits for the circular orbit satellites, this is then followed by a roundup of the latest information on the Amateur Satellite Service from around—the—world. This is followed by a correspondence report and the Net concludes with a 'round—robin' discussion in a weekly rotational State order. AMSAT S.W. Pacific Net 14.282 MHz Sat 2200Z

AMSAT—Australia Software Service

AMSAT—Australia has satellite tracking and decoding software for almost every variety of home computer. The normal procedure for obtaining an Amateur Satellite Tracking or Decoding Program is to send the appropriate blank media (tape or disk) plus sufficient to cover return postage plus a donation to AMSAT—Australia of $10 per program requested. Please, when sending requests for software always include a complete description of your computer system hardware to ensure that I can supply the appropriate software for your particular hardware configuration. Depending on the brand of computer I may need to know things like memory size, type of printer, operating system, etc.

Amateur Satellite Handbooks

AMSAT—Australia can supply a number of handbooks on Amateur Satellites. The UoSAT Handbook contains 61 (A4) pages and was produced by University of Surrey. The Fuji OSCAR—12 Technical Handbook contains 74 (A5) pages and was produced by AMSAT—UK as was the RS10/11 Handbook which contains 20 (A5) pages. AMSAT—UK also produced another booklet called 'Amateur RadioSatellites — The first 25 Years' which contains 34 (A5) pages. AMSAT—Australia can also supply copies of the ARRL publication, **'The Satellite Experimenters Handbook' by Martin Davidoff,** which is recommended reading for all newcomers to the Amateur Satellite Service.

Printed Circuit Boards

AMSAT—Australia can also supply a number of PCBs for projects to decode satellite telemetry and bulletins from UoSAT Oscar 9 & 11, Oscar 13 and Fuji—Oscar 12. All three projects were designed by James Miller G3RUH and the PCBs are produced by AMSAT—UK. For more details contact AMSAT—Australia C/— GPO Box 2141, Adelaide S.A. 5001 and please include an S.A.S.E.

Continued next page

Amateur Satellite Frequency Guide

UoSAT OSCAR—9

Beacons on 40 metres, 20 metres, 15 metres, 10 metres, 2 metres, 70 centimetres and 13 centimetres — no transponders.

2M Beacon	145.825 MHz	(P)
70 cm Beacon	435.025 MHz	(S)

The 2M & 70cm beacons carry primarily 1200 baud ASCII 7 (or 8) bit telemetry & bulletins using Kansas City tones of 1200 & 2400 Hz.

(Propagation Study Experiments)

40M Beacon	7.050 MHz
20M Beacon	14.002 MHz
15M Beacon	21.002 MHz
10M Beacon	29.502 MHz
SHF Beacon	2401 MHz
SHF Beacon	10470 MHz

The propagation study beacons transmit either morse code or a steady carrier. The 2401 MHz beacon can also carry the standard telemetry format.

UoSAT OSCAR—11

Beacons on 40 metres, 20 metres, 15 metres, 10 metres, 2 metres, 70 centimetres and 13 centimetres — no transponders.

2M Beacon	145.826 MHz	(P)
70cm Beacon	435.025 MHz	(S)
13cm Beacon	2401.5 MHz	(S)

The 2M, 70cm & 13cm beacons carry primarily 1200 (or 4800) baud ASCII 7 (or 8) bit telemetry & bulletins using Kansas City tones of 1200 & 2400 Hz.

AMSAT OSCAR—10

Due to radiation damage to the Onboard Computer memory the Mode L transponder & beacons are no longer active. However, the Mode B transponder and beacons continue to operate when there is sufficient solar illumination on the solar panels.

Mode B Transponder

Uplink Passband

435.027 - 435.179 MHz

Downlink Passband

145.977 - 145.825 MHz

The transponder is linear and inverting, i.e. LSB on the uplink results in USB on the downlink, and the translation equation is:

Downlink Frequency = 581.004 — Uplink Frequency = +/- Doppler Shift

The General Beacon is on 145.810 MHz and the Engineering Beacon is on 145.987 MHz. Due to the OBC memory failure the General Beacon only transmits

Continued next page

RTTY AMTOR

Frequency Shift

The Standard amateur Frequency shift for **RTTY** is 170 Hz.
The Standard international Frequency shift for **AMTOR** is 170 Hz.
It can be obtained by two different methods:—

(a) By using the inbuilt Frequency Shift Keying (FSK) method, which is found on H.F. only transceivers and is usually a TTL input.

(b) By injecting the appropriate audio tones into the microphone circuit. The tone pairs used in Australia are **2125 Hz** for the **Mark** tone and **2295 Hz** for the **SPACE** tone.

Commercial stations use various shifts on RTTY, but the most common are 170, 425 and 850 Hz shifts.

Standard Speeds

The standard international speed for amateur RTTY stations is 45 Baud (or 60 words per minute).
Some countries use 50 Baud (or 66 words per minute) internally as do some local VK amateur Sunday broadcasts. Commercial traffic users have various speeds, but the main ones used are 50, 57, 75 and 110 Baud.
The speed for AMTOR is 100 Baud. This speed is laid down in the internationally agreed CCIR 476-4) recommendation and is used by amateurs, ships, Interpol, embassies and various other commercial stations etc.

Calling and Net Frequencies

RTTY	AMTOR
1.825 MHz call	1.825 MHz call
3.545MHz call, net, bct	3.545 MHz call, net
3.630 MHz call	3.630 MHz call
7.045 MHz call, net, bct	7.045 MHz call, net, bbs
10.145 MHz call	10.145 MHz call
14.090 MHz call, net, bct	14.075 MHz call, bbs
18.100 MHz call	18.100 MHz call
21.090 MHz call, net	21.075 MHz call, net, bbs
21.125 MHz call	21.125 MHz call
24.920 MHz call	24.920 MHz call
28.090 MHz call, net	28.075 MHz call, net
52.075 MHz call	52.075 MHz call
146.600 MHz call, net, bct	146.600 MHz call, net
146.675 MHz call, net, bct, bbs, rptr	146.675 MHz call, rptr
432.075 MHz call	432.075 MHz call
1,252.1 MHz call	1,252.1 MHz call

HF Mailboxes (AMTOR)

The days of RTTY mailboxes were numbered when AMTOR first appeared on the scene in later 70s. Below is a list of MAJOR AMTOR mailboxes and whether or not they support the new APLINK system. APLINK is the new forwarding method for AMTOR to Packet or Packet to AMTOR mailboxes. All mailboxes listed below are 24Hr per day systems.

Country	Callsign	SELCAL	Frequency	Other Information
Australia	VK2AGE	VAGE	7.045 MHz 14.073 MHz 14.074 MHz 14.075 MHz 14.076 MHz 14.077 MHz	Listens for 12 seconds on each freq. and has APLINK facilities.
U.S.A.	WA8DRZ	WDRZ	14.072.5 MHz 14.073.5 MHz 14.076.5 MHz 14.075.5 MHz	Listens for 12 seconds on each freq. and has APLINK facilities.

England	G3PLX	GPLX	3.587.5 MHZ 3.588.0 MHz 3.588.5 MHz 3.589.0 MHz 14.075 MHz 14.076 MHz 14.077 MHz 14.078 MHz 21.075 MHz 21.076 MHz 28.075 MHz 28.076 MHz	Listens for 12 seconds on each freq. and has APLINK facilities
Malaysia	9M2CR	NMCR	14.078 MHz	
Sweden	LA90K	LAOK	3.588 MHz 7.030 MHz 14.073 MHz 14.075 MHz	
Holland	PAORYS	PRYS	3.583 MHz 3.588 MHz 3.585 MHz 14.073 MHz 14.075 MHz 14.077 MHz 21.075 MHz 28.075 MHz	Listens for 12 seconds on each freq. This station uses LOW tones so will seem off freq by 925 Hz
Guatemala	TG9VT	TGVT	14.073.5 MHz	
Kuwait	9K2KA	NKKA	14.070 MHz	
Egypt	SU1ER	SUER	14.070 MHz 14.075 MHz	Thought to be 12 seconds per freq.
Japan	JA5TX	JATX	14.076 MHz 14.078 MHz 14.080 MHz	Listens for 12 seconds on each freq.

RTTY/AMTOR Clubs:— including Broadcast times and frequencies

Australian Amateur Radio Teleprinter Group Inc (AARTG)

Club Callsign:— VK6TTY
ADDRESS:— 12 Selway Rd, Brentwood, WA 6153
Broadcasts: — Local RTTY news Sundays.
Evening — 10.30 Z on 3.535 MHz and 146.600 MHz.

Australian National Amateur Radio Teleprinter Society (ANARTS)

Club Callsign:— VK2TTY
Rptr Callsign:— VK2RTY — 146.675 MHz
Address:— PO Box 860 Crows Nest, NSW 2065
Broadcasts:— National, International and Local RTTY news on Sundays
Morning RTTY — 00.30 Z on 7.045 MHz, 14.090 MHz, 14.095 MHz and 146.675 MHz.
Morning AMTOR (Mode B) — 00.30 Z on 14.073 MHz
Evening RTTY — 09.30 Z on 3.545 MHz and 146.675 MHz
Broadcast can also be found on various AMTOR Mailboxes and Packet Radio Bulletin Board Systems.

Queensland Amateur Radio Data and Teletype Association Inc. (QARDATA)

Club Callsign:- VK4TTY
Rptr Callsign:— VK4RBT — 147.650 MHz
Address:— PO Box 184 Fortitude Valley, Qld 4006
Broadcasts:— International and local RTTY news Mondays.
Evening — 20.00 local on 3.630 MHz, 7.045 MHz, 14.090 MHz and 147.650 MHz.
Broadcasts can also be found on various Packet Radio Bulletin Board Systems.

a steady carrier. The Engineering Beacon is now rarely ever heard.

FUJI OSCAR—12

Fuji OSCAR 12 has two transponders and two associated beacons.

Mode JA Transponder — Analogue (i.e. voice)

Uplink Passband	Downlink Passband
145.9 - 146.0 MHz	435.9 - 435.8 MHz

Beacon — 435.795 MHz +/- Doppler Shift

The transponder is linear and inverting, i.e. LSB on the uplink results in USB on the downlink and the translation equation is:

Uplink Frequency = 581.800 — Downlink Frequency +/- Doppler Shift

The beacon transmits telemetry information in morse code.

Mode JD Transponder — Digital (1200 baud PSK)

	Uplink Freq	Downlink Freq
Channel 1	145.850	435.910 MHz
Channel 2	145.870	435.910 MHz
Channel 3	145.890	435.910 MHz
Channel 4	145.910	435.910 MHz

Beacon — 435.910 MHz +/- Doppler

Uplink is 2M FM and the downlink is 1200 baud PSK on SSB and uses AX.25 V2 Packet Radio protocol.

RS — 10

RS—10 is one of two Russian Amateur Satellite Transponders attached to the Russian Navigational Satellite COSMOS 1861.

Mode	Uplink Band	Downlink Band
K	21.160 - 21.200	29.360 - 29.400
T	21.160 - 21.200	145.860 - 145.900
A	145.860 - 145.900	29.360 - 29.400
KT	21.160 - 21.200	29.360 - 29.400 & 145.860 - 145.900
KA	21.160 - 21.200	29.360 - 29.400 & 145.860 - 145.900

Beacons: 29.357, 29.403, 145.857 and 145.903

Robot Transponders

Mode	Uplink	Downlink
T	21.120	145.857 or 145.903
K	21.120	29.357 or 29.403
A	145.820	29.357 or 29.403

RS—11

RS—11 is the second of the two Russian Amateur Satellite Transponders attached to the Russian Navigational Satellite COSMOS 1861.

Mode	Uplink Band	Downlink Band

Continued next page

K	21.210 - 21.250	29.410 - 29.450
T	21.210 - 21.250	145.910 - 145.950
A	145.910 - 145.950	29.410 - 29.450
KT	21.210 - 21.250	29.410 - 29.450
KA	21.210 - 21.250	29.410 - 29.450 & 145.910 - 145.950

Beacons: 29.407, 29.453, 145.907 and 145.953

Robot Transponders

Mode	Uplink	Downlink
T	21.130	145.907 or 145.953
K	21.130	29.403 or 29.453
A	145.830	29.403 or 29.453

The transponders on RS10/11 are linear and non-inverting transponders i.e. USB on the uplink produces USB on the downlink. Also note that a frequency on the low end of the uplink passband corresponds to a frequency on the low end of the downlink passband. Beacons transmit telemetry information in morse code.

Ground Stations (eg VK5ABC) would have a CW QSO with these Robot Transponders by sending RS10 DE VK5ABC AR on the uplink frequency and the ROBOT will respond on one of the downlink frequencies VK5ABC DE RS10 QSL NR 123 OP ROBOT TU QSO NR 123 73 SK.

AMSAT OSCAR-13

Mode B Transponder:

Input	435.420 MHz to 435.570 MHz
Output	145.825 MHz to 145.975 MHz
General Beacon	145.812 MHz
Engineering Beacon	145.985 MHz

Necessary transmit power at a ground station = 1w to a 12 dBic antenna (right—hand circular).

Mode L Transponder:

Input 1	1269.620 MHz to 1269.330 MHz
Output 1	435.715 MHz to 436.005 MHz
Input 2	144.425 MHz to 144.475 MHz
Output 2	435.990 MHz to 435.940 MHz
General Beacon	435.651 MHz
RUDAK Input	1269.710MHz
RUDAK Output	435.677 MHz

Necessary transmit power at a ground station = 3 w to a 24 dBic antenna (right—hand circular).

Mode S Transponder:

Input	435.601 MHz to 435.637 MHz
Output	2400.711 MHz to 2400.747 MHz
Beacon	2400.325 MHz

Necessary transmit power at a ground station = 10 w to a 12 dBic antenna (right—hand circular).

ar

AMATEUR RADIO CLUB NETS

Australian Ladies Amateur Radio Association (ALARA)
4th
Mon 3.580 MHz 1030Z

Australian National Amateur Radio Teleprinter Society (ANARTS)
7.045 MHz 0300Z
14.090 " "
14.095 " "
146.675 " "
3.545 " 0930Z
146.675 MHz "

Land Forces Amateur Radio Group
Wed 3.595 MHz 0930Z

Royal Naval Amateur Radio Society (RNARS)
Mon 3.613 MHz 1000Z
Mon 3.620 MHz 1100Z
Tue 3.575 MHz 1030Z

Royal Signal Amateur Radio Society (VK Chapter)
Wed 3.615 MHz 1030Z
Sat 14.175 " 0600Z

"28" Chapter Ten-Ten International Net Inc
Sun 28.560 MHz 0230Z

Schools Across Australia
Fri 21.180 MHz 0430Z

VK8

Alice Springs Amateur Radio Club
Sun 21.180 MHz 0400Z
" 28.490 MHz "

Darwin Amateur Radio Club
Sun 3.555 MHz Following VK5 B/Cast
" 146.500 MHz " "

VK1

Australian Capital Chapter of Ten-Ten Int. Net Inc.
Fri 28.595 MHz 2300Z

VK2

Armidale & District Amateur Radio Club
DLY 3.588 MHz H24
146.950 " "
438.025 " "

Blue Mountains Amateur Radio Club
Tue 147.050 MHz 1000Z
438.375 " "

Central Coast Amateur Radio Club
Tue 3.560 MHz 1000Z

Chifley Amateur Radio Club
DLY 28.490 MHz 1000Z
147.550 " "

Fishers Ghost Amateur Radio Club
Fri 3.580 MHz 1000Z
Sun 28.520 MHz 1000Z

Gladesville Amateur Radio Club
Wed ATV Tests (CH 35 UHF TV) 0930Z

Glen Innes & District Amateur Radio Club
Tue 146.500 MHz 0730Z
Sun 3.580 MHz 1000Z

Goulburn Amateur Radio Club
Sun 3.615 MHz 1100Z

Griffith Radio Club
Wed 28.480 MHz 1100Z

Hornsby & District Amateur Radio Club
Mon 28.370 MHz 1000Z
" 147.250 " "

Illawarra Amateur Radio Society Inc
Sun 3.562 MHz 1000Z

Mid South Coast Amateur Radio Club
Wed 3.617 MHz 0930Z
" VK2RMU 1030Z

North West Amateur Radio Group
Mon 3.575 MHz 1030Z

Novice Amateur Radio Group of NSW
Tue 28.385 MHz 1000Z

Orana Region Amateur Radio Club
Wed 3.620 MHz 1000Z

Orange Amateur Radio Club
Sun 146.700 MHz 1030Z

Oxley Region Amateur Radio Club
Thu 3.595 MHz 1000Z

Shoalhaven Amateur Radio Club
DLY VK2RSD 0800Z

St George Amateur Radio Society
Sat 3.555 MHz 2200Z
Tue 14.110 " 0930Z
" 28.520 " "
Thu 146.800 " 1000Z

Southern Highlands Amateur Radio Society
Sun 3.615 MHz 1015Z

Tamworth & District Amateur Radio Club
Sun 3.620 MHz 0100Z
Wed " " "

Taree & District Amateur Radio Club Inc
Mon 3.620 MHz 0930Z
" 146.500 " 1000Z

Twin Cities Radio 4 Electronics Club
1st, 3rd, 5th
Mon 28.490 MHz 0930Z

Wagga Amateur Radio Club
(Award net)
Tue 3.605 MHz 1030Z
Sun 7.165 " 0200Z
DLY 28.490 " H24

Waverley Amateur Radio Society
1st,3rd,4th,5th
Tue 147.075 MHz 0930-1015Z
" 28.505 " 1000 1015Z*
*(CW Practice net)

Western Suburbs Amateur Radio Club
Sun 28.560 MHz 1000Z

Westlakes Amateur Radio Club
Thu 147.100 MHz 1000Z

VK3

Ballarat Amateur Radio Group (BARG)
Thu 3.610 MHz 1000Z

Eastern & Mountain District
Radio Club (EMDRC)
Tue 147.350 MHz 1000Z
(RTTY)
Wed 3.572 " 1000Z
Sat 28.474 " 2330Z

Frankston & Momington Peninsula
Amateur Radio Club
(FAMPARC)
Wed 3.570 MHz 1000Z

Geelong Radio & Electronics Society
Mon 3.560 MHz 1000Z

Gippsland Gate Radio & Electronics Club
Thu 3.585 MHz 1000Z

Moorabbin & District Radio Club
Mon 3.567 MHz 1000Z

Southern Peninsula Amateur Radio Club
Tue 3.620 MHz 0930Z
Sat " " 2330Z

Sunbury Amateur Radio Group
Wed 146.450 1100Z

Tallangatta Radio Club
Fri 3.600 MHz 0930Z

Victorian Railways Institute Wireless Club
Wed 3.585 MHz 0900Z
Sun 52.080 " 2315Z

Western & Northern Suburbs Amateur
Radio Club
Tue 145.450 MHz 0930Z
" 28.470 " 1030Z

WIA Eastern Zone
Sun VK3RLV 0930Z

WIA East Gippsland Zone
Mon 3.585 MHz 1000Z

WIA Midland Zone
Tue 14.200 MHz 1000Z
Thu 3.595 " "

VK4

Brisbane Amateur Radio Club
Mon 28.440 MHz 0930Z
Wed 146.550 " 0930Z

Brisbane North Radio Club
Mon 28.420 MHz 0930Z

Cairns Amateur Radio Club
Sat 3.572 MHz 22230Z
Wed " " 1000Z

Central Highlands Amateur Radio Club
SAT 3.572 MHz 0930z

City of Brisbane Radio Society
Sun 3.575 MHz 1000Z

Darling Downs Radio Club
Sat 3.587 MHz 0930Z

Gladstone Amateur Radio Club
Thu 3.570 MHz 0900Z

Gold Coast Amateur Radio Society
(GCARS)
DLY 146.700 MHz 2200Z
Sat 3.615 " 2200Z
Tue 28.450 " 0930Z*
*(WICEN Training Net)
Mon 1.840 MHz 0930Z
Wed 3.605 " "

Ipswich & District Radio Club
Thu 28.500 MHz 0930Z
(Oct— Apr)
" (Apr—Oct)

Mackay Amateur Radio Club
Fri 3.615 MHz 1030Z

Mount Isa & District Amateur Radio Club
Tue 3.610 MHz 1000Z

Queensland Amateur Radio Data &
Teletype Association (QARDATA) Inc
Mon 147.650 MHz 1000Z
(B/Cast)
3.630 "
7.045 "
14.090 "

Redcliffe Radio Club
Sun 3.612 MHz 0930Z

Roma & District Amateur Radio Club
Fri 3.610 MHz 1000Z

South East Queensland ATV Group
Tue (147.300 MHz) 0930Z
(579.250 ")

Sunshine Coast Amateur Radio Club
Thu 3.595 MHz 0900Z

Townsville Amateur Radio Club
Sun 3.605 MHz 0930Z
Sun VK4RAT 2100Z

WIA Queensland Division
Thu 3.605 MHz 0930Z
" " " 1000Z

VK5

Central North ATV Group
Wed 444.250 1000Z
" 147.300 "

Lower Eyre Peninsula Amateur Radio
Club Inc (LEPARC)
DLY 3.560 MHz 0930Z

Lower Murray Amateur Radio Club Inc.
Mon 3.620 MHz 1000Z

Port Adelaide Radio Club
DLY 28.440 MHz 1000Z

Port Augusta Amateur Radio Club
Thur 3.600 MHz 1000Z
Fri 28.490 " 2330Z
" 146.500 " "

South Australian ATV Group
Wed VK5RTV
" VK5RCN
" 147.400 MHz
" 147.300 MHz

South Coast Amateur Radio Club
Tue 3.595 MHz 1000Z

South East Radio Group
Mon 3.585 MHz 1100Z
" 146.900 " "

Whyalla Amateur Radio Club
Tue 3.595 MHz 0900Z
Sat 28.525 " 0230Z

VK6

Australian Amateur Radio Teleprinters
Group (AARTG)
Sun 146.600 MHz 1030Z
3.535 "

North West Radio Society
Sun 3.605 MHz 1130Z
" 28.445 " "

Peel Amateur Radio Group
Sun 3.575 0030Z

Southern River Amateur Radio Club
(SRARC)
DLY 145.250 MHz H24

South-West Amateur Radio Group
(SWARG)
Last Tue 3.605 MHz

ARRL DXCC COUNTRIES LIST

Note: # Third party traffic permitted with special events stations in the United Kingdom having the prefix GB only, with the exception that GB3 stations are not included in this agreement.

Note: * Indicates current list of countries for which QSLs may be forwarded by the ARRL membership outgoing QSL service.

Note: † Indicates countries with which U.S. amateurs may legally handle third-party message traffic.

Prefix	Country
A2*	Botswana
A3*	Tonga
A4*	Oman
A5	Bhutan
A6	United Arab Emirates
A7	Qatar
A9*	Bahrain
AP–AS*	Pakistan
BV	Taiwan
BY, BT*	China
C2*	Nauru
C3*	Andorra
C5†*	The Gambia
C6*	Bahamas
C8–9	Mozambique
CA—CE†*	Chile
CE9/KC4▲*	Antarctica
CEø*	Easter I.
CEø†*	San Felix
CEø†*	Juan Fernandez
CM, CO†*	Cuba
CN*	Morocco
CP†*	Bolivia
CT*	Portugal
CT3*	Madeira Is.
CU*	Azores
CV—CX†*	Uruguay
CYø	Sable I.
CYø	St. Paul I.
D2—3*	Angola
D4*	Cape Verde
D6[26]	Comoros
DA—DL2*	Fed. Rep. of Germany
DU—DZ*	Philippines
EA—EH*	Spain
EA6—EH6*	Canary Is.
EA8—EH8*	Balearic Is
EA9—EH9*	Ceuta and Melilla
EI—EJ*	Ireland
EL†*	Liberia
EP—EQ*	Iran
ET	Ethiopia
F*	France
FT8W*	Crozet
FT8X*	Kergueien Is.
FT8Z*	Amsterdam & St. Paul Is.
FG*	Guadeloupe
FJ, FS[1*]	Saint Martin
FH[26]*	Mayotte
FK*	New Caledonia
FM*	Martinique
FO*	Clipperton I.
FO*	Fr. Polynesia
FP*	St. Pierre & Miquelon
FR/G[4*]	Glorioso Is.
FR/J,E[4]*	Juan de Nova, Europa
FR*	Reunion
FR/T*	Tromelin
FW*	Wallis & Futuna Is.
FY*	Fr. Guiana
G*#	England
GD*	Isle of Man
GI*	Northern Ireland
GJ*	Jersey
GM*	Scotland
GU*	Guernsey & Dep.
GW.*	Wales
H4*	Solomon Islands
HA, HG*	Hungary
HB*	Switzerland
HBø*	Liechtenstein
HC—HD†*	Ecuador
HC8—HD8†*	Galapagos Is.
HH†*	Haiti
HI*	Dominican Republic
HJ—HK†*	Colombia
HKø†*	Malpelo I.
HKø†*	San Andreas & Providencia
HL*	Korea
HO—HP†*	Panama
HQ—HR†*	Honduras
HS*	Thailand
HV*	Vatican
HZ	Saudi Arabia
I*	Italy
ISø, IMø*	Sardinia
J2*	Djibouti
J3†*	Grenada
J5	Guinea—Bissau
J6†*	St. Lucia
J7†*	Dominica
J8†*	St. Vincent & Dep.
JA—JS*	Japan
JD1[5]*	Minami Torishima
JD1[6]*	Ogasawara
JT—JV*	Mongolia
JW*	Svalbard
JX*	Jan Mayen
JY†*	Jordan
K,W,N, AA—AK	United States of America
KC6[29](E. Caroline Is.)	Micronesia
KC6[29](W. Caroline Is.)	Belau
KG4†*	Guantanamo Bay
KH1†	Baker, Howland Is.
KH2†*	Guam
KH3†	Johnston I.
KH4†*	Midway Is.
KH5†	Palmyra, Jarvis Is.
KH5K†	Kingman Reef
KH6†*	Hawaiian Is.
KH7†	Kure I.
KH8†*	American Samoa
KH9†	Wake I.
KHø†*	Mariana Is.
KL7†*	Alaska
KP1†	Navassa I.
KP2†*	Virgin Is.
KP4†*	Puerto Rico
KP5[27]†	Desecheo Is.
KX6*	Marshall Is.
LA—LN*	Norway
LO—LW†*	Argentina
LX*	Luxembourg
LZ*	Bulgaria
OA—OC†*	Peru
OD*	Lebanon
OE*	Austria
OF—OI*	Finland
OHø*	Aland Is.
OJø*	Market Reef
OK–OM*	Czechoslovakia
ON—OT*	Belgium
OX*	Greenland
OY*	Faroe Is.
OZ*	Denmark
P2[7]*	Papua New Guinea
P4*[31]	Aruba
PA—PI*	Netherlands
PJ2,4,9*	Bonaire, Curacao(Neth. Antilles)
PJ5—8*	St. Maarten, Saba, St. Eustatius
PP—PY†*	Brazil
PPø—PYø†*	Fernando de Noronha
PPø—PYø†*	St. Peter & St. Paul Rocks
PPø—PYø†*	Trindade & Martin Vaz. Is.
PZ*	Suriname
S2*	Bangladesh
S7*	Seychelles
S9	Sao Tome & Principe
Sø[1,32]	Western Sahara
SA—SM*	Sweden
SN—SR*	Poland
ST*	Sudan
STø*	Southern Sudan
SU*	Egypt
SV—SZ*	Greece
SV5*	Dodecanese
SV9*	Crete
SV/A*	Mount Athos
T2[16]	Tuvalu
T3ø	W. Kiribati (Gilbert & Ocn Is.)
T31	C. Kiribati (Brit. Phoenix Is.)
T32	East Kiribati (Line Is.)
T5	Somalia
T7*	San Marino

TA—TC*	Turkey
TF*	Iceland
TG, TD†*	Guatemala
TI,TE†*	Costa Rica
TI9†*	Cocos I.
TJ	Cameroon
TK*	Corsica
TL[8]	Central African Rep.
TN[9]	Congo
TR[10]	Gabon
TT[11]	Chad
TU[12]	Ivory Coast
TY[13]	Benin
TZ[14]	Mali
UA1,3,4,6*	European Russian R.S.F.S.R.
UA1*	Franz Josef Land
UA2*	Kaliningrad
UA9,ø*	Asiatic R.S.F.S.R.
UB, UT, UY*	Ukraine
UC*	Byelorussia
UD*	Azerbaijan
UF*	Georgia
UG*	Armenia
UH*	Turkmenistan
UI*	Uzbekistan
UJ*	Tadzhikistan
UL*	Kazakhstan
UM*	Kirghizia
UO*	Moldavia
UP*	Lithuania
UQ*	Latvia
UR*	Estonia
V2†*	Antigua & Barbuda
V3†*	Belize
V4[15]†	St. Christopher & Nevis
V8*	Brunei
VE, VO, VY†*	Canada
VK†*	Australia
VK†*	Lord Howe I.
VK9†*	Willis I.
VK9†*	Christmas I.
VK9†*	Cocos—Keeling Is.
VK9†*	Mellish Reef
VK9†*	Norfolk I.
VKø†*	Heard I.
VKø†*	Macquarie I.
VP2E[15]	Anguilla
VP2M[15]*	Montserrat
VP2V[15]*	Br. Virgin Is.
VP5*	Turks & Caicos Is.
VP8*	Falkland Is.
VP8, LU*	South Georgia I.
VP8, LU*	South Orkney Is.
VP8, LU*	South Sandwich Is.
VP8,CE9,HFø,LU,4K1*	South Shetland Is.
VP9*	Bermuda
VQ9*	Chagos
VR6†	Pitcalm I.
VS6*	Hong Kong
VU*	India
VU*	Andaman & Nicobar Is.
VU*	Laccadive Is.
XA—XI†*	Mexico
XA4—XI4*	Revilla Gigedo
XT[17]	Burkina Faso
XU	Kampuchea
XW	Laos
XX9	Macao
XY—XZ	Burma
Y2—9[3]*	German Dem. Rep.
YA	Afghanistan
YB—YH[21]*	Indonesia
YI*	Iraq
YJ*	Vanuatu
YK*	Syria
YN†*	Nicaragua
YO—YR*	Romania
YS†*	El Salvador
YT—YU, YZ*	Yugoslavia
YV—YY†*	Venezuela
YVø†*	Aves I.
Z2*	Zimbabwe
ZA	Albania
ZB2*	Gibraltar
ZC4*[30]	UK Sov. Base Areas on Cyprus
ZD7	St. Helena
ZD8*	Ascension I.
ZD9	Tristan da Cunha & Gough I
ZF*	Cayman Is.
ZK1*	So. Cook Is.
ZK1*	No. Cook Is.
ZK2	Niue
ZK3	Tokelau Is.
ZL—ZM*	New Zealand
ZL7*	Chatham Is.
ZL8*	Kermadec Is.
ZL9*	Auckland I. & Campbell I.
ZP†*	Paraguay
ZR—ZU*	South Africa
ZR2—ZU2*	Prince Edward & Marion Is.
ZR3—ZU3*	(Namibia) S.W. Africa
1Aø[1]	Sov. Mil. Order of Malta
1S[1]	Spratly Is.
3A*	Monaco
3B6,7*	Agalega & St. Brandon
3B8*	Mauritius
3B9*	Rodriguez I.
3C	Equatorial Guinea
3Cø	Pagalu I.
3D2*	Fiji
3D6†*	Swaziland
3V	Tunisia
3W,XV	Vietnam
3X	Guinea
3Y*	Bouvet
3Y*	Peter I.
4J1	Malyj Vystotkij Is
4P—4S*	Sri Lanka
4U†*	ITU Geneva
4U	HQ, United Nations
4W	Yemen
4X, 4Z†*	Israel
5A	Libya
5B*	Cyprus
5H—5I	Tanzania
5N—5O*	Nigeria
5R—5S	Madagascar
5T[16]*	Mauritania
5U[19]	Niger
5V*	Togo
5W*	Western Samoa
5X	Uganda
5Y—5Z*	Kenya
6V—6W[20]	Senegal
6Y†*	Jamaica
7O	People's Dem. Rep. Of Yemen
7P*	Lesotho
7Q	Malawi
7T—7Y*	Algeria
8P*	Barbados
8Q	Maldive Is.
8R†*	Guyana
9G[22]†	Ghana
9H*	Malta
9I—9J*	Zambia
9K*	Kuwait
9L†*	Sierra Leone
9M2, 4[23]*	West Malaysia
9M6,8[23]*	East Malaysia
9N	Nepal
9Q—9T*	Zaire
9U[24]	Burundi
9V[25]*	Singapore
9X[24]*	Rwanda
9Y—9Z†*	Trinidad & Tobago
J2/A*	Abu Ail, Jabal at Tair

Notes

[1]Unofficial prefix.

[2](DA—DL) Only contacts made September 17, 1973, and after, count for this country.

[3](Y2—9) Only contacts made September 17, 1973, and after, count for this country.

[4](FR) Only contacts made June 25, 1960, and after, count for this country.

[5](JD, KA1) Formerly Marcus Island

[6](JD, KA1) Formerly Bonin and Volcano Islands.

[7](P2) Only contacts made September 16, 1975, and after, count for this country.

[8](TL) Only contacts made August 13, 1960, and after, count for this country.

[9](TN) Only contacts made August 15, 1960, and after, count for this country.

[10](TR) Only contacts made August 17, 1960, and after count for this country

[11](TT) Only contacts made August 11, 1960, and after, count for this country.

[12](TU) Only contacts made August 7, 1960, and after, count for this country.

[13](TY) Only contacts made August 1, 1960, and after, count for this country.

[14](TZ) Only contacts made June 20, 1960, and after, count for this country.

[15](VP2) For DXCC credit for contacts made May 31, 1958 and before, see page 97, June 1958 QST.

[16](T2,VR8) Only contacts made January 1, 1976 and after, count for this country.

[17](XT) Only contacts made August 5, 1960, and after, count for this country.

[18](5T) Only contacts made June 20, 1960,and after, count for this country.
[19](5U) Only contacts made August 3, 1960, and after, count for this country.
[20](6W) Only contacts made June 20, 1960, and after, count for this country.
[21](8F, YB) Only contacts made May 1, 1963, and after, count for this country.
[22](9G) Only contacts made March 5, 1957, and after, count for this country.
[23](9M2,4,6,8) Only contacts made September 16, 1963, and after, count for this country.
[24](9U, 9X) Contacts made July 1, 1962, and after, count for this country.
[25](9V) Contacts made September 16, 1963 to August 8, 1965, count for West Malaysia.
[26](D6, FH8) Only contacts made July 5, 1975, and after, count for this country.
[27](KP5, KP4) Only contacts made March 1, 1979, and after, count for this country.
[28](KC6) Includes Yap Is. January 1, 1981, and after.
[29](KC6) Includes Yap Is. December 31, 1980, and before.
[30](ZC4) Only contacts made August 16, 1960, and after, count for this country.
[31](P4) Only contacts made January 1, 1986, and after, count for this country.
[32]Contacts with Rio de Oro (Spanish Sahara), EA9, also count for this country.
▲Also ATØ, DPØ, FT8Y, LU, OR4, VKØ, VP8, Y8, ZL5, ZS1, ZXØ, 3Y, 4K1, 8J1, etc. QSL via country under whose auspices the particular station is operating. The availability of a third—parly traffic agreement and a QSL Bureau applies to the country under whose auspices the particular station is operating.

Deleted Countries

Credit for any of these countries can be given if the date of contact with the country in question agrees with the date(s) shown in the corresponding footnote.

Prefix	Country
AC3[1,2]	Sikkim
AC4[1,3]	Tibet
C9[4]	Manchuria
CN2[5]	Tangier
CR8[6]	Damao, Diu
CR8[6]	Goa
CR8, CR10[7]	Portuguese Timor
DA—DM[8]	Germany
EA9[9]	Ifnl
ET2[10]	Eritrea
FF[11]	Fr. West Africa
FH, FB8[12]	Comoros
FI8[13]	Fr. Indo—China
FN8[14]	French India
FQ8[15]	Fr. Equatorial Africa
HKØ[16]	Bajo Nuevo
HKø, KP3, KS4[16]	Serrana Bank & Roncador Cay
I1[17]	Trieste
I5[18]	Italian Somaliland
JD1/7J1[19]	Okino Tori—shima
JZØ[20]	Netherlands N. Guinea
KR6,8,JR6,KA6[21]	Okinawa (Ryukyu Islands)
KS4[22]	Swan Islands
KZ5[23]	Canal Zone
P2,VK9[24]	Papua Territory
P2,VK9[24]	Terr. New Guinea
PK1—3[25]	Java
PK4[25]	Sumatra
PK5[25]	Netherlands Borneo
PK6[25]	Celebe & Molucca Is.
UN1[26]	Karelo—Finish Rep.
VO[27]	Newfoundland, Labrador
VQ1,5H1[28]	Zanzibar
VQ6[29]	British Somaliiland
VQ9[30]	Aldabra
VQ9[30]	Desroches
VQ9[30]	Farquhar
VS2, 9M2[31]	Malaya
VS4[31]	Sarawak
VS9H[32]	Kuria Muria I.
ZC5[31]	British North Borneo
ZC6, 4X1[33]	Palestine
ZD4[34]	Gold Coast, Togoland
1M[1,35]	Minerva Reef
70/VS9K[26]	Kamaran Is.
8Z4[37]	Saudi Arabia/Iraq Neutral Zone
8Z5, 9K3[38]	Kuwait/Saudi Arabia Neutral Zone
9S4[39]	Saar
9U5[40]	Ruanda—Urundi
[41]	Blenheim Reef
[42]	Geyser Reef

Notes

[1] Unofficial prefix.
[2](AC3) Only contacts made April 30, 1975, and before, count for this country. Contacts made May 1, 1975, and after count as India (VU).
[3](AC4) Only contacts made May 30, 1974, and before, count for this country. Contacts made May 31, 1974, and after count as China (BY).
[4](C9) Only contacts made September 15, 1963, and before, count for this country. Contacts made September 16, 1983, and after count as China (BY).
[5](CN2) Only contacts made June 30, 1960 and before, count for this country. Contacts made July 1, 1960, and after count as Morocco (CN).
[6](CR8) Only contacts made December 31, 1962, and before, count for this country.
[7](CR8, CR10) Only contacts made September 14, 1976, and before, count for this country.
[8](DA—DM) Only contacts made September 16, 1973, and before, count for this country. Contacts made September 17, 1973, and after count as either FRG (DA—DL) or GDR (Y2—Y9).
[9](EA9) Only contacts made May 13, 1969, and before, count for this country.
[10](ET2) Only contacts made November 14, 1962, and before, count for this country. Contacts made November 15, 1962, and after, count as Ethiopia (ET).
[11](FF) Only contacts made August 6, 1960, and before, count for this country.
[12](FH, FB8) Only contacts made July 5, 1975 and before, count for this country. Contacts made July 6, 1975, and after, count as Comoros (D6) or Mayotte (FH)
[13](F18) Only contacts made December 20, 1950, and before, count for this country.
[14](FN8) Only contacts made October 31, 1954 and before, count for this country.
[15](FQ8) Only contacts made August 16, 1960, and before, will count for this country.
[16](HKØ, KP3, KS4) Only contacts made September 16, 1981, and before, count for this country. Contacts made September 17, 1981, and after, count as San Andres (HKØ).
[17](I1) Only contacts made March 31, 1957, and before, count for this country. Contacts made April 1, 1957, and after count as Italy (I).
[18](I5) Only contacts made June 30, 1960 and before, count for this country.
[19](JD1/7J1) Only contacts made from May 30, 1976, to November 30, 1980 count for this country. Contacts made December 1, 1980, and after, count as Ogasawara (JD1).
[20](JZØ) Only contacts made April 30, 1963 and before, count for this country.
[21](KR6,9,JR6, KA6) Only contacts made May 14, 1972, and before, count for this country. Contacts made May 15, 1972, and after, count as Japan (JA).
[22](KS4) Only contacts made August 31, 1972, and before, count for this country. Contacts made September 1, 1972, and after count as Honduras (HR).
[23](KZ5) Only contacts made September 30, 1979, and before, count for this country.
[24](P2, VK9) Only contacts made September 15, 1975 and before, count for this country. Contacts made September 16, 1975, and after count as Papua New Guinea (P2).
[25](PK1—6) Only contacts made April 30, 1963 and before, count for this country. Contacts made May 1, 1963, and after count as Indonesia. (YB).
[26](UN1) Only contacts made June 30, 1960, and before, count for this country. Contacts made July 1, 1960, and after, count as European RSFSR (UA).
[27](VO) Only contacts made March 31, 1949, and before, count for this country.
Contacts made April 1, 1949, and after, count as Canada (VE).

[28](VQ1, 5H1) Only contacts made May 31, 1974 and before, count for this country. Contacts made June 1, 1974, and after, count as Tanzania (5H).

[29](VQ6) Only contacts made June 30, 1960, and before, count for this country.

[30](VQ9) Only contacts made June 28, 1976, and before, count for this country. Contacts made June 29, 1976, and after, count as Seychelles (S7).

[31](VS2, VS4, ZC5, 9M2) Only contacts made September 15, 1963, and before, count for this country. Contacts made September 16, 1963, and after, count as West Malaysia (9M2) or East Malaysia (9M6,8).

[32](VS9H) Only contacts made November 29, 1967, and before, count for this country.

33(ZC6, 4X1) Only contacts made June 30, 1968, and before, count for this country. Contacts made July 1, 1968, and after count as Israel (4X).

[34](ZD4) Only contacts made March 5, 1957 and before, count for this country.

[35](1M) Only contacts made July 15, 1972, and before, count for this country. Contacts made July 16, 1972, and after count as Tonga (A3).

[36](7O/VS9K) Only contacts made March 10, 1982, and before, count for this country.

[37](8Z4) Only contacts made December 25, 1981, and before, count for this country.

[38](8Z5, 9K3) Only contacts made December 14, 1969, and before, count for this country.

[39](9S4) Only contacts made March 31, 1957, and before, count for this country.

[40](9U5) Only contacts made from July 1, 1960 to June 30, 1962 count for this country. Contacts made July 1, 1962, and after, count as Burundi (9U) or Rwanda (9X).

[41](Blenheim Reef) Only contacts made from May 4, 1967 to June 30, 1975, count for this country. Contacts made July 1, 1975, and after, count as Chagos (VQ9).

[42](Geyser Reef) Only contacts made from May 4, 1967, to February 28, 1978, count for this country.

Prefix Cross References

A8 = EL
AC (before 1972) = A5
AH = KH
AL7 = KL7
AM - AO = EA
AT - AW = VU
AX = VK
AY - AZ = LU
CF - CK = VE
CL= CO
CQ - CS = CT
CR3 (before 1974) = J5
CR4 (before 1976) = D4
CR5 (before 1976) = S9
CR6 (before 1976) = D2
CR7 (before 1976) = C9
CR9 (before 1985) = XX9
CT2 (before 1986) = CU
CXØ = CE9/VP8
CY—CZ = VE
CY9 (before 1985) = CYØ
DM-DT (before 1980) = Y2 - 9
EAØ (before 1969) = 3C
EK, EM—EO, ER—ES, EU—EZ = U
FA—FF (after 1981) = F
FA (before 1963) = 7X
FB8 (before 1961) = 5R
FB8 (before 1985) = FT
FC (before 1985) = TK
FD8 (before 1961) = 5V
FE8 (before 1961) = TJ
FL (before 1978) = J2
FU8 (before 1982) = YJ
GB = G
GC (before 1977) = GJ/GU
H2 = 5B
H3 = HP
H5 (Bophutatswana) = ZS
H7 = YN
HE = HB
HM (before 1982) = HL
HT = YN
HU = YS
HW—HY = F
J4 = SV
KA1 = JD1
KA2AA—KA8ZZ = JA
KB6 (before 1979) = KH1
KC4 (Navassa) = KP1
KG6 (before 1979) = KH2
KG6I (before 1970) = JD1
KG6R, S,T (before 1979) = KHØ
KJ6 (before 1979) = KH3
KM6 (before 1979) = KH4
KP4 (Desecheo) = KP5
KP6 (before 1979) = KH5
KS6 (before 1979) = KH8
KV4 (before 1979) = KP2
KW6 (before 1979) = KH9
L2—9 = LU
LY = UP
M1 (before 1984) = T7
MP4B (before 1972) = A9
MP4M (before 1972) = A4
MP4Q (before 1972) = A7
MP4T, D (before 1972) = A6
NH = KH
NL7 = KL7
NP = KP
OQ (before 1961) = 9Q
P4 (before 1986) = PJ
PX (before 1970) = C3
RA, RN = UA
RB—RR = UB—UR
RS—RZ = U
S4 (Ciskei) = ZS
S8 (Transkei) = ZS
T4 = CO
T4 (Venda) = ZS
TH, TM, TO—TQ, TV—TX = F
UN, UV, UW, UZ = UA
V9 (Venda) = ZS
VA—VG = VE
VH—VN = VK
VK9 (Nauru) = C2
VP1 (before 1982) = V3
VP2A (before 1982) = V2
VP2D (before 1979) = J7
VP2G (before 1975) = J3
VP2K (before 1984) = V4 or VP2E
VP2L (before 1980) = J6
VP2S (before 1980) = J8
VP3 (before 1967) = 8R
VP4 (before 1963) = 9Y
VP5 (Jamaica) = 6Y
VP6 (before 1967) = 8P
VP7 (before 1974) = C6
VQ2 (before 1965) = 9J
VQ3 (before 1962) = 5H
VQ4 (before 1964) = 5Z
VQ5 (before 1963) = 5X
VQ8 (before 1969) = 3B
VQ8 (Chagos) = VQ9
VQ9 (Seychelles) = S7
VR1 (before 1980) = T3/31
VR2 (before 1971) = 3D2
VR3 (before 1980) = T32
VR4 (before 1979) = H4
VR5 (before 1971) = A3
VR8 (before 1979) = T2
VS1 (before 1966) = 9V
VS5 (before 1985) = V8
VS7 (before 1949) = 4S
VS9A, P, S (Before 1968) = 70
VS9M = 8Q
VS90 (before 1961) = A4
VX-VY = CY/VE
WH - KH
WL7 = KL7
WP - KP
XJ-XO = VE
XP=OX
XQ-XR = CE
XV -3W
XX7 (before 1976) = C9
YL = UQ
ZB1 (before 1965) = 9H
ZD1 (before 1962) = 9L
ZD2 (before 1961) = 5N
ZD3 (before 1966) = C5
ZD4 (before 1958) = 9G
ZD5 (before 1969) = 3D6
ZD6 (before 1965) = 7Q
ZE (before 1981) = Z2-9
ZK9 (1983) = ZK2
ZM6 (before 1963) = 5W
ZM7 (before 1984) = ZK3
ZS7 (before 1969) = 3D6
ZS8 (before 1967) = 7P
ZS9 (before 1967) = A2
ZV-ZZ = PY
3B-3C (before 1968) = VE

3G = CE
3Z = SP
4A-4C = XE
4D-41 = DU
4J-4L = U
4M = YV
4N-4O = YU
4T = OA
4U1VIC = OE
4V = HH
5J-5K = HK
5L-5M =EL
6C = YK
6D-6J = XE
6O = T5
6T-6U = ST
7A-7I = YB
7G (before 1967) = 3X
7J-7N = JA, JD
7S = SM
7Z = HZ
8A-8I = YB
8J-8N = JA
8O = A2
8S = SM
9A (before 1984) = T7
9B-9D = EP
9E-9F = ET

Allocation of International Call Signs

Call Sign Series	Allocated to
AAA-ALZ	United States of America
AMA-AOZ	Spain
APA-ASZ	Pakistan (Islamic Republic of)
ATA-AWZ	India (Republic of)
AXA AXZ	Australia
AYA-AZZ	Argentine Republic
A2A A2Z	Botswana (Republic of)
A3A-A3Z	Tonga (Kingdom of)
A4A-A4Z	Oman (Sultanate of)
A5A-A5Z	Bhutan (Kingdom of)
A6A-A6Z	United Arab Emirates
A7A-A7Z	Qatar (State of)
A8A-A8Z	Liberia (Republic of)
A9A-A9Z	Bahrain (State of)
BAA-BZZ	China (People's Republic of)
CAA-CEZ	Chile
CFA-CKZ	Canada
CLA-CMZ	Cuba
CNA-CNZ	Morocco (Kingdom of)
COA-COZ	Cuba
CPA-CPZ	Bolivia (Republic of)
CQA-CUZ	Portugal
CVA CXZ	Uruguay (Oriental Republic of)
CYA-CZZ	Canada
C2A-C2Z	Nauru (Republic of)
C3A-C3Z	Andorra (Principality of)
C4A-C4Z	Cyprus (Republic of)
C5A-C5Z	Gambia (Republic of the)
C6A-C6Z	Bahamas (Commonwealth of the)
C7A-C7Z*	World Meteorological Organisation
C8A-C9Z	Mozambique (People's Republic of)
DAA-DRZ	Germany (Federal Republic of)
DSA-DTZ	Republic of Korea
DUA-DZZ	Philippines (Republic of the)
D2A-D3Z	Angola (People's Republic of)
D4A-D4Z	Cape Verde (Republic of)
D5A-D5Z	Liberia (Republic of)
D6A-D6Z	Comoros (Federal and Islamic Republic of the)
D7A-D9Z	Republic of Korea
EAA-EHZ	Spain
EIA-EJZ	Ireland
EKA-EKZ	Union of Soviet Socialist Republics
ELA-ELZ	Liberia (Republic of)
EMA-EOZ	Union of Soviet Socialist Republics
EPA-EQZ	Iran (Islamic Republic of)
ERA-ESZ	Union of Soviet Socialist Republics
ETA-ETZ	Ethiopia
EUA-EWZ	Byelorussian Soviet Socialist Republic
EXA-EZZ	Union of Soviet Socialist Republics
FAA-FZZ	France
GAA-GZZ	United Kingdom of Great Britain and Northern Ireland
HAA-HAZ	Hungarian People's Republic
HBA-HBZ	Switzerland (Confederation of)
HCA-HDZ	Ecuador
HEA-HEZ	Switzerland (Confederation of)
HFA-HFZ	Poland (People's Republic of)
HGA-HGZ	Hungarian People's Republic
HHA-HHZ	Haiti (republic of)
HIA-HIZ	Dominican Republic
HJA-HKZ	Colombia (Republic of)
HLA-HLZ	Republic of Korea
HMA-HMZ	Democratic People"s Republic of Korea
HNA-HNZ	Iraq (Republic of)
HOA-HPZ	Panama (Republic of
HQA-HRZ	Honduras (Republic of)
HSA-HSZ	Thailand
HTA-HTZ	Nicaragua
HUA-HUZ	El Salvador (Republic of)
HVA-HVZ	Vatican City State
HWA-HYZ	France
HZA-HZZ	Saudi Arabia (Kingdom of)
H2A-H2Z	Cyprus (Republic of)
H3A-H3Z	Panama (Republic of)
H4A-H4Z	Solomon Islands
H6A-H7Z	Nicaragua
H8A-H9Z	Panama (Republic of)
IAA-IZZ	Italy
JAA-JSZ	Japan
JTA-JVZ	Mongolia People's Republic
JWA-JXZ	Norway
JYA-JYZ	Jordan (Hashemite Kingdom of)
JZA-JZZ	Indonesia (Republic of)
J2A-J2Z	Djibouti (Republic of)
J3A-J3Z	Grenada
J4A-J4Z	Greece
J5A-J5Z	Guinea-Bissau (Republic of)
J6A-J6Z	Saint Lucia
J7A-J7Z	Dominica
J8A-J8Z	St Vincent and the Grenadines
KAA-KZZ	United States of America
LAA-LNZ	Norway
LOA-LWZ	Argentina (Republic of)
LXA-LXZ	Luxembourg
LYA-LYZ	Union of Soviet Socialist Republics
LZA-LZZ	Bulgaria (People's Republic of)
L2A-L9Z	Argentina (republic of)
MAA-MZZ	United Kingdom of Great Britain and Northern Ireland
NAA-NZZ	United States of America
OAA-OCZ	Peru
ODA-ODZ	Lebanon
OEA-OEZ	Austria
OFA-OJZ	Finland
OKA-OMZ	Czechoslovak Socialist Republic
ONA-OTZ	Belgium
OUA-OZZ	Denmark
PAA-PIZ	Netherlands (Kingdom of the)
PJA-PJZ	Netherlands Antilles
PKA-POZ	Indonesia (Republic of)
PPA-PYZ	Brazil (Federative Republic of)
PZA-PZZ	Suriname (Republic of)
P2A-P2Z	Papua New Guinea
P3A-P3Z	Cyprus (Republic of)
P4A-P4Z	Aruba
P5A-P9Z	Democratic People's Republic of Korea
QAA-QZZ	(Service abbreviations)
RAA-RZZ	Union of Soviet Socialist Republics
SAA-SMZ	Sweden
SNA-SRZ	Poland (People's Republic of)
SSA-SSM	Egypt (Arab Republic of)
SSN-STZ	Sudan (Democratic Republic of the)
SUA-SUZ	Egypt (Arab Republic of)
SVA-SZZ	Greece
S2A-S3Z	Bangladesh (People's Republic of)
S6A-S6Z	Singapore (Republic of)
S7A-S7Z	Seychelles (Republic of)
S9A-S9Z	Sao Tome and Principe (Democratic Republic of)
TAA-TCZ	Turkey
TDA-TDZ	Guatemala (Republic of)
TEA-TEZ	Costa Rica
TFA-TFZ	Iceland
TGA-TGZ	Guatemala (Republic of)
THA-THZ	France
TIA-TIZ	Costa Rica
TJA-TJZ	Cameroon (United Republic of)
TKA-TKZ	France
TLA-TLZ	Central African Republic
TMA-TMZ	France
TNA-TNZ	Congo (People's Republic of the)
TOA-TQZ	France
TRA-TRZ	Gabon Republic
TSA-TSZ	Tunisia
TTA-TTZ	Chad (Republic of
TUA-TUZ	Ivory Coast (Republic of the)
TVA-TXZ	France
TYA-TYZ	Benin (People's Republic of)
TZA-TZZ	Mali (Republic of)
T2A T2Z	Tuvalu
T3A-T3Z	Kiribati Republic
T4A-T4Z	Cuba
T5A-T5Z	Somali Democratic Republic
T6A-T6Z	Afghanistan (Democratic Republic of)
T7A-T7Z	San Marino (Republic of)
UAA-UQZ	Union of Soviet Socialist Republics
URA-UTZ	Ukrainian Soviet Socialist Republic
UUA-UZZ	Union of Soviet Socialist Republics
VAA-VGZ	Canada
VHA-VNZ	Australia
VOA-VOZ	Canada
VPA-VSZ	United Kingdom of Great Britain and Northern Ireland
VTA-VWZ	India (Republic of)
VXA-VYZ	Canada
VZA-VZZ	Australia
V2A-V2Z	Antigua and Barbuda
V3A-V3Z	Belize
V4A-V4Z	St Christopher and Nevis
V8A-V8Z	Brunei
WAA-WZZ	United States of America
XAA-XIZ	Mexico
XIA-XOZ	Canada
XPA-XPZ	Denmark
XQA-XRZ	Chile
XSA-XSZ	China (People's Republic of)
XTA-XTZ	Burkina Faso

XUA-XUZ Democratic Kampuchea
XVA-XVZ Viet Nam (Socialist Republic of)
XWA-XWZ Lao People's Democratic Republic
XXA-XXZ Portugal
XYA-XZZ Burma (Socialist Republic of the Union of)
YAA-YAZ Afghanistan (Democratic Republic of)
YBA-YHZ Indonesia (Republic of)
YIA-YIZ Iraq (Republic of)
YJA-YJZ New Hebrides
YKA-YKZ Syrian Arab Republic
YLA-YLZ Union of Soviet Socialist Republics
YMA-YMZ Turkey
YNA-YNZ Nicaragua
YOA-YRZ Romania (Socialist Republic of)
YSA-YSZ El Salvador (Republic of)
YTA-YUZ Yugoslavia (Socialist Federal Republic of)
YVA-YYZ Venezuela (Republic of)
YZA-YZZ Yugoslavia (Socialist Federal Republic of)
Y2A-Y9Z German Democratic Republic
ZAA-ZAZ Albania (Socialist People's Republic of)
ZBA-ZJZ United Kingdom of Great Britain and Northern Ireland
ZKA-ZMZ New Zealand
ZNA-ZOZ United Kingdom of Grreat Britain and Northern Ireland
ZPA-ZPZ Paraguay (Republic of)
ZQA-ZQZ United Kingdom of Great Britain and Northern Ireland
ZRA-ZUZ South Africa (Republic of)
ZVA-ZZZ Brazil (Federative Republic of)
Z2A-Z2Z Zimbabwe (Republic of)
2AA-2ZZ United Kingdom of Great Britain and Northern Ireland
3AA-3AZ Monaco
3BA-3BZ Mauritius
3CA-3CZ Equatorial Guinea (Republic of)
3DA-3DM Swaziland (Kingdom of)
3DN-3DZ Fiji
3EA-3FZ Panama (Republic of)
3GA-3GZ Chile
3HA-3UZ China (People's Republic of)
3VA-3VZ Tunisia
3WA-3WZ Viet Nam (Socialist Republic of)
3XA-3XZ Guinea (People's Revolutionary Republic of)
3YA-3YZ Norway
3ZA-3ZZ Poland (People's Republic of)
4AA-4CA Mexico
4DA-4IZ Philippines (Republic of the)
4JA-4LZ Union of Soviet Socialist Republics
4MA-4MZ Venezuela (Republic of)
4NA-4OZ Yugoslavia (Socialist Federal Republic of)
4PA-4SZ Sri Lanka (Democratic Socialist Republic of)
4TA-4TZ Peru
4UA-4UZ* United Nations Organization
4VA-4VZ Haiti (Republic of)
4WA-4WZ Yemen Arab Republic
4XA-4XZ Israel (State of)
4YA-4YZ* International Civil Aviation Organization
4ZA-4ZZ Israel (State of)
5AA-5AZ Libya (Socialist People's Libyan Arab Jamahiriya)
5BA-5BZ Cyprus (Republic of)
5CA-5GZ Morocco (Kingdom of)
5HA-5IZ Tanzania (United Republic of)
5JA-5KZ Colombia (Republic of)
5LA-5MZ Liberia (Republic of)
5NA-5OZ Nigeria (Federal Republic of)
5PA-5QZ Denmark
5RA-5SZ Madagascar (Democratic Republic of)
5TA-5TZ Mauritania (Islamic Republic of)
5UA-5UZ Niger (Republic of the)
5VA-5VZ Togolese Republic
5WA-5WZ Western Samoa
5XA-5XZ Uganda (Republic of)
5YA-5ZZ Kenya (Republic of)
6AA-6BZ Egypt (Arab Republic of)
6CA-6CZ Syrian Arab Republic
6DA-6JZ Mexico
6KA-6NZ Republic of Korea
6OA-6OZ Somali Democratic Republic
6PA-6SZ Pakistan (Islamic Republic of)
6TA-6UZ Sudan (Democratic Republic of the)
6VA-6WZ Senegal (Republic of the)
6XA-6XZ Madagascar (Democratic Republic of)
6YA-6YZ Jamaica
6ZA-6ZZ Liberia (Republic of)
7AA-7IZ Indonesia (Republic of)
7JA-7NZ Japan
7OA-7OZ Yemen (People's Democratic Republic of)
7PA-7PZ Lesotho (Kingdom of)
7QA-7QZ Malawi (Republic of)
7RA-7RZ Algeria (Algerian Democratic and Popular Republic)
7SA-7SZ Sweden
7TA-7YZ Algeria (Algerian Democratic and Popular Republic)
7ZA-7ZZ Saudi Arabia (Kingdom of)
8AA-8IZ Indonesia (Republic of)
8JA-8NZ Japan
8OA-8OZ Botswana (Republic of)
8PA-8PZ Barbados
8QA-8QZ Maldives (Republic of)
8RA-8RZ Guyana
8SA-8SZ Sweden
8TA-8YZ India (Republic of)
8ZA-8ZZ Saudi Arabia (Kingdom of)
9BA-9DZ Iran (Islamic Republic of)
9EA-9FZ Ethiopia
9GA-9GZ Ghana
9HA-9HZ Malta (Republic of)
9IA-9JZ Zambia (Republic of)
9KA-9KZ Kuwait (State of)
9LA-9LZ Sierra Leone
9MA-9MZ Malaysia
9NA-9NZ Nepal
9OA-9TZ Zaire (Republic of)
9UA-9UZ Burundi (Republic of)
9VA-9VZ Singapore (Republic of)
9WA-9WZ Malaysia
9XA-9XZ Rwanda (Republic of)
9YA-9ZZ Trinidad and Tobago

 ar

ABBREVIATIONS FOR CW WORK

AA	After All
AB	All Before
ABT	About
ADR, ADS	Address
AGN	Again
ANT	Antenna
AR K	End of transmission
AR VA	Final end of transmission
AS	Wait
BCI	Broadcast interference
BCL	Broadcast listener
BK	Break; I wish to break—in (interrupt) a transmission in progress
BN	All between; been
BUG	Semi—automatic key
B4	Before
C	Yes
CFM	Confirm; I confirm
CK	Check
CL	I am closing my station; call
CLD, CLG	Called; Calling
CPI, CPY	Copy
CQ	Calling any station
CS	Callsign
CT	Commence traffic
CUAGN	See you again
CUD	Could
CUL	See you later
CW	Continuous wave, ie, radio telegraphy
DE	From
DLD, DLVD	Delivered
DR	Dear
DX	Distance, foreign countries
ER	Here

ES	And; &
FB	Fine business, excellent
FER	For
FM	Frequency modulation; From
GA	Go ahead, continue sending: good afternoon
GB	Goodbye
GBA	Give better address
GE	Good evening
GG	going; grounded grid
GM	Good morning
GN	Good night
GND	Ground
GUD	Good
HI	Laughter; High
HPE	Hope
HR	Here; Hear; Hour
HV; HVE	Have
HW	How
K	Go ahead
KN	specific station go ahead
LID	A poor operator
MA; MILS	Milliamperes
MNI	Many
MSG	Message
N	No; North
NCS	Net control station
ND	Nothing doing
NIL	Nothing: I have nothing for you
NM	No more
NR	Number
NW	Now
OB	Old boy
OC	Old chap
OG	Old girl
OM	Old man
OP; OPR	Operator
OT	Old timer; Old top
PBL	Preamble
PSE; PLSE	Please
PWR	Power
PX	Press
R	Received as transmitted; are (sometimes also used as a decimal point, eg 1R5)
RCD, RCVD	Received
RCVR; RX	Receiver
REF	Refer to; Referring to; Reference
RFI	Radio frequency Interference
RIG	Station equipment
RPRT; REPT	Report
RPT	Repeat; I repeat
RTT; RTTY	Radio teletype
RX; RCVR	Receiver
SA	Say
SASE	Self-addressed, stamped envelope
SED	Said
SIG	Signal
SINE	Operator's personal initials or nickname
SKED	Schedule
SRI	Sorry
SSB	Single sideband
SUM	Some
SVC	Service
T	Zero (ø)
TFC	Traffic
THO	Though
THRU; THRO	Through
TNX; TKs	Thanks
TT	That
TU;TKU	Thank you
TVI	Television interference
TX	Transmitter
TXT	Text
U	You
UR	Your; You are (sometimes YR)
URS	Yours (sometimes YRS)
VFO	Variable frequency oscillator
VY	Very
WA	Word after
WB	Word before
WD; WDS	Word; Words
WID	With
WKD; WKG	Worked; Working
WL	Well;Will
WUD	Would
WX	Weather
XCVR	Transceiver
XMTR; TX	Transmitter
XTAL	Crystal
XYL; YF	Wife
YL	Young lady
73	Best regards
88	Love and kisses

ar

ARTICLES ON EMC

Continued from page 36

	Of Modulation Interference (TVI, BCI, AFI, ETC)! External — Internal Modulation
September 1984	"EMI — UK—EMC"
October 1984	Auto—EMI/EMC
November 1984	Corona Discharge Power Line Interference.
December 1984	The Role Of Integrated Circuits Decoupling In Electromagnetic Compatibility.
Jan 1986	75 Ohm High Pass Filter.
September 1986	Amateur Radio And Electro—Magnetic Compatibility.
October 1986	(Comments On EMC Matters).
November 1986	TVA Cases And How They Were Solved In DL And Not In VK..
December 1986	TV Receiver Design In West Germany With High Immunity. . . . Coaxial Cable Stubs As Filters.
January 1987	Testing Of VCRs, And The RF Field Strength Around The Amateur Station And House.
February 1987	From Here And There, Jack Ravenscroft VE3SR—QRTI
March 1987	Shielding: The Lost Art.
May 1987	Equal Duties, Equal Rights.
June 1987	TV & FM—BC—Pre—amplifiers And Their Problems.
July 1987	RFI Assistance List In Practice.
August 1987	RFI In Great Britain — Where Do We Stand In DL?
September 1987	Are We Alone? EMC Symposium In Europe.
October 1987	RF Leakage From Amateur Transmitters, Harmonics.
November 1987	Shielding, Earth Loops Filter Design Problems.
December 1987	An Effective High—Pass Filter.
January 1988	Buying An Appliance? You May Get RFI You Didn't Bargain For.
February 1988	What Can We Learn From An Improvised Jacky Test?
March 1988	EMC Advice Pamphlet For RSGB Members (Part 1).
April 1988	As Above (Part 2).
May 1988	EMC Test Of TV Sets And Typical Results.
June 1988	Radiation Immunity Of VCRs, VCI.
July 1988	A Law Is Only As Good As Its Policing Is Effective.
August 1988	Trouble With Hifi Equipment, TV Etc Equipment?
September 1988	Trouble With Hifi, TV And VCR Equipment, The Legal Position, Tips To Overcome Disagreements.
October 1988	Ferrite Core Choke Solves EMC Problem.
November 1988	The VE3SR Case

(List compiled by Hans Ruckert VK2AOU)ar

AWARDS

Odd awards

Federal Awards Manager
Ken Gott VK3AJU
38A Lansdowne Rd
St Kilda 3183

If you want to be the first in your street with some odd-ball awards, here's the book for you. How about the Monk's Beer Award of the Abbey of Giemboux (Belgium), the Onion Award of the Radio Society of Aatst (also in Belgium), the 1066 Award (from Hastings, naturally), or the 't Gooi Award

(yes, that's what I said: 't Gooi Award). That one's from Holland.

(Listen mate, you've heard of an apostrophe s. Why shouldn't there be an apostrophe t, if the Dutch want one?)

The book is Amateur Radio Awards (2nd ed.) written, edited and distributed by G1TZU, Sue Squibb, 36 Frognal Gardens, Teynham, Sittingbourne, Kent ME9 9HU, UK.

It will cost you £5, US$10 or 20IRCs plus £3.22 airmail postage.

It lists some 300 awards for amateur radio (and most are available on a received basis to SWL too), giving succinct summaries of the conditions/rules, cost and addresses from which the award or application forms can be obtained. All awards on listed alphabetically in an index.

Amateur Radio Awards has obviously been prepared on a word processor, printed on only one side of the paper, and bound with a slide clip. Although this presentation makes it look far from professional, it has the very great advantages that revisions and corrections can be made quite easily and at little cost.

Sue G1TZU is to be congratulated on preparing this mammoth compilation of awards (it even includes the DX Widow Award administered by Maurie VK3XEX).

Sue's book received a brief mention in the November issue of AR on page 52, but I though it deserved a bigger review. besides, I've been able to quote you the cost of airmail postage.

The ARRL has kindly supplied a spelled-out list of its sections and those of the Canadian Radio Relay League (CRRL) which form the basis of the ARRL Diamond Jubilee Award, marking the 75th anniversary of the foundation of the ARRL in 1914.

Rules for winning this award were outlined in the January issue of AR but at that stage I only had a list of abbreviations for the ARRL and CRRL sections. Having worked in the USA for seven years, I was able to decipher most of them, but there were some some that had me puzzled. The spelled-out list appears below.

Eileen Sapko, ARRL Awards Manager, also responded promptly to my request for a sample copy of the Diamond Jubilee certificate. I can certify that it is a conspicuously handsome creation with a deep blue background at the top shading to magenta at the bottom. The award title is in red embossed script, and the ARRL logo is reproduced against a silver background. The certificate is made of sturdy card and measures 28 cm wide by 36 cm deep. An adornment ot any shack, as they say.

Unfortunately the certificate does not lend itself to reproduction in black-and-white printing, so you will have to take my word for its impressive design.

As mentioned in last month's AR, the qualification period for the award is calendar 1989, as defined in UCT.

American Radio Relay League and Canadian Radio Relay League Geographical "Sections" to be used in qualifying for ARRL Diamond Jubilee Award

1
Connecticut
Eastern Massachusetts
Maine
New Hampshire
Rhode Island
Vermont
Western Massachusetts
2
Eastern New York
New York City-Long Island
Northern New Jersey
Southern New Jersey
Western New York
3
Delaware
Eastern Pennsylvania
Maryland-DC
Western Pennsylvania
4
Alabama
Georgia
Kentucky
North Carolina
Northern Florida
Tennessee
Virginia
Virgin Island
5
Arkansas
Louisiana
Mississippi
New Mexico
North Texas
Oklahoma
South Texas
West Texas
6
East Bay
Los Angeles
Orange
Santa Barbara
Santa Clara Valley
San Diego
San Francisco
San Joaquin Valley
Sacramento Valley
Pacific
7
Arizona
Idaho
Montana
Nevada
Oregon
Utah
Washington
Wyoming
Alaska
8
Michigan
Ohio
West Virginia
9
Illinois
Indiana
Wisconsin
10
Colorado
Iowa
Kansas
Minnesota
Missouri
Nebraska
North Dakota
South Dakota
VE
Maritimes
Quebec
Ontario
Manitoba
Saskatchewan
Alberta
British Columbia
Yukon/Northwest Territories

It's been some time since AR published updates for DXCC rankings and names of

COLUMNS

winners of various WIA awards. Blame it on my settling in period being a little longer than I expected. DXCC updates appearing above were inherited from my prodecessor, Ken Hall VK5AKH. From now on, I'm on my own. I hope I do as well as he did. 3AJU

DXCC Updates

	CW	Phone	Open	
4LC		311/346		
5AB		315/349		
5WO	201/208	313/338	314/342	
2DTH		287		
6AJW		294/296		
5AB		316/350		
3AJU		125		
3JF	234/249			
3OT		302/306	305/309	
5OU		281/293		
3CSR		282/285		
4BG		284/295	291/305	ar

VK2 MINIBULLETIN

New Administrative Secretary

Mrs Margaret Morris will be joining the Division from February as our new Admin Secretary. This will be the first day for 1989 for the office to be open again 5 days a week. 11 am to 2 pm for visits and phone calls. (02 689 2417). Until then the office will be open on Wednesday nights 7 to 9 pm and a few other days as advised in the Sunday VK2WI broadcasts, transmitted at 1045 and 1915 hours local time.

Annual General Meeting

Members are advised that it is approaching that time of year for AGM, Council elections and annual reports.

The various dates will be advised in the Minibulletin notes in the March issue of 'Amateur Radio'. Nominations for Council and agenda items for the AGM will close during March and the AGM will be held towards the end of April.

The next Conference of Clubs will be hosted by St George ARS mid April and agenda items for the Federal Convention will be discussed at that meeting.

Group Happenings

The Central Coast (Gosford) Field Day will be held on Sunday 19 February. The VK2WI morning broadcast for the 19th will be aired at the alternative time of 1800 hours on the previous Saturday evening (18th). The Sunday evening broadcast will be as usual, starting at 1915 hours. Mid South Coast ARC will be conducting their AGM at Hancock Ranch, Milton on Saturday 11 February . . . Orange ARC start a Novice course soon, contact Geoff VK2KJX 063 62 7520. Orange ARC will be setting up a stand at the Australian National Sports and Leisure Show on all facets of Amateur Radio, March 10 to 12. Gladesville ARC start their new courses late this month. Video taped lectures also available. PO Box 48 Gladesville 2111 or phone (02) 427 0530 after 5.30 pm.'

Callbooks

The current callbook is still available, but please include $1.50 to cover pack and post. Posted price to Members is $10.00 or $8.50 collect from office. A list of current bookshop publications is included. There are also a few 2 metre handheld (Alinco's) still available, $325.00 plus $7.50 pack and post. Include a current AR address label with orders.

New Members

A warm welcome is extended to the following recent new members.

New Membership Applications

November, 1988

F S. Anderson	VK2MFM	San Remo
S J Aston-Brien	VK2MEM	Orange
G J Butler	VK2XGB	Emu Plains
J P.Csoma	VK2CSZ	Greenacre
L Garron	Assoc	Salisbury Downs
P R.Gibson	Assoc	Alice Springs
O R Heaps	VK2PTO	Hurstville
J C Jennings	Assoc	Blaxland
L G Kihlstrom	VK2FPK	Canterbury
C Lindeman	VK2CKL	Allambie Heights
J Lindstad	VK2WF	North Ryde
M J McNeill	VK2FNF	Angourie

S D Mottram	VK2MCL	Wildes Meadow
D W J Pallister	VK2PDW	Wagga Wagga
J F Pepper	VK2XJP	Kootingal
P G Read	VK2FPN	Dapto
A R M Siede	VK2TAS	Bathurst
S B Timms	VK2MDR	Baulkham Hills
A J Van Der Kolk	VK2XIU	Curl Curl North
R .P Wadey	VK2ELO	Rooty Hill

December, 1988

J P Ayling	Assoc	Maroubra
J Bays	VK2SB	Cammeray
E W Callow	Assoc	Rydalmere
H W Cowled	VK2FUN	Mannering Park
A Dark	VK2XAT	Leichhardt
E S Dening	VK2MFP	Kempsey
W Fiedler	Assoc	Raymond Terrace
M F Haylor	Assoc	Riverstone
C S Higgins	VK2LO	Wentworthville
B.E Horspool	Assoc	Sunny Corner
R Iwasenko	VK2ATC	Engadine
K A Kennedy	VK2PRK	Dulwich Hill
H Lepke	VK2ZHL	Cambridge Park
B Jordan	Assoc	Gladesville
R Loftus	VK2ADG	West Ryde
H Maslak	Assoc	St Marys
B J McNeil	VK2FP	Heathcote
I.R Millhouse	Assoc	Croydon Park
L R Newman	VK2LRN	East Morisset
W J Paul	VK2EXX	Turramurra
S Reisenfeld	VK2FPJ	Broadway
W Steptoe	VK2ZZF	Marrickville
W J Stone	VK2JBS	Wollongong
D Van Dyk	VK2MCM	Dora Creek

January, 1989

R D French	VK2VYE	Blacktown
P J Heggie	VK2ZPH	Thornleigh
P A McGrath	VK2BPM	St Marys
G R Miles	VK2XNI	Scotland Island
C G Palmer	VK2BSD	Hazelbrook
P Sgarlata	VK2DQA	Parkes
J J Toland	VK2XKX	Lismore
D J Vernon	VK2TDV	Gladesville

said the Group was very pleased with the response and assures me that after an excellent effort this year, next year's will be brilliant!

I hope you all had a merry and safe Xmas, and may I take this opportunity to wish you all a happy and prosperous new year.

Thought for the New Year

I'd be a member of the WIA even if they did nothing else for me but represent my hobby on an international basis.

What good is a top class QSL bureau if there's no frequency allocations left to QSO on?

73's
John Sparkes VK6JX

Notice of AGM

It is hereby notified that the Annual General Meeting of the Western Australian Division of the Wireless Institute of Australia will be held on the 18th April 1989 following the General Meeting which commences at 8pm. The Meeting will be held at the Westrail Centre, East Perth.

Agenda

1. Consideration of the Council's Annual Report
2. Consideration of the Financial Report
3. Consideration of other Reports
4. Election of Office Bearers, viz. President and Vice President of the Division and seven other Councillors.
5. Election of two Auditors.
6. Appointment of a Patron
7. General Business which has been duly notified.

Notices of motion for the AGM must be received by the Secretary not less than 42 days prior to the meeting and must be signed by at least three members.

Nomination of a candidate for election to Council must be received by the Secretary in writing not less than 42 days prior to the meeting with an intimation that such candidates are willing to act. A candidate may submit a statement not exceeding two hundred words outlining his or her case for election and experience. Each nomination shall be signed by two members proposing the candidate. Candidates must posses a current amateur licence.

Proxies

Any financial member entitled to vote may appoint a proxy, who must also be a financial member entitled to vote, to speak and vote on his/her behalf. Each such proxy must be in the hands of the Secretary prior to the meeting and be in the following form:-

I .....a member of the Institute hereby appoint ..... also a member

VK6 BULLETIN

Kalamunda Festival

John Sparkes VK6JX
83 Anemone Way
Mullaloo 6025

20km to the east of Perth is a line of hills called the Darling Range. Lurking amongst the hills and valleys therein are the Hills Amateur Radio Group Inc. Affiliated with the WIA, WA Division, they are an enthusiastic band of amateurs who will gladly push the Amateur Radio barrow whenever the opportunity arises.

To this end, on Saturday 22nd October, 1988 they set up an operational display at the Kalamunda Festival.

VK6YJ, UV and CF were there at 7am to be ready for the 10am start. A tent was erected, and an HF station put on the air with a vertical antenna. Two VHF antennas were made operational - one each for voice and packet radio.

A load of interesting material was put on display with the theme being "Public Education" - or, how to make Amateur Radio come alive for the man in the street.

Highlights of these displays were - Emergency Operations; a large display of Amateur Radio oriented newspaper cuttings; explanations of CW, RTTY, QRP, etc - all aimed at promoting public awareness, and an understanding of what "that bloke down the road with the big TV antenna" does in his spare time!

The emphasis was NOT on picture of 5 element monobanders at 100 feet as this will probably create public animosity - not understanding and awareness.

Other displays included - QSL display, with pointers to the relevant country on a large world may.

A great circle map centred on Perth created a lot of interest - not many people have ever seen Australia as the centrepiece of a world map!

The group had a good location - everyone walking from one end of the Festival grounds to the other had to pass the "shack". About the only problem on the day was PAI - phantom CQ calls were sometimes loud and clear over the Festival PA system! This was not surprising as a quick investigation revealed the PA equipment area was "nest of worms" with lots of resonant dipoles terminating therein!

Other amateurs assisting on the day were VK6SU, HQ and ZTN.

Propagation was awful, but lots of stations were contacted - a big improvement planned for next year will be an external monitor speaker so that the public will be attracted from even greater distances. Possibly a sign could be put up indicating the country currently being worked.

The Group's publicity officer, Norm VK6UV

COLUMNS

of the Institute to act for me as my proxy and in my name to do all things which I myself being present could do at the meeting of the Institute held on .....
Signed ..... Witness ..... Date .....

VK3 DIVISION NOTES

New Members

The following applications were received for the months of October and November, 1988:-
Accepted by Council 23rd November, 1988.

COOPER, Geoffrey Ronald	P O Box 27, North Altona 3025	-
DIGGINS, Mark Douglas	1 Pembroke Crescent,Cheltenham 3192	-
EBISU, Tsuneyuki	2/57 Albert Street , Mt Waverley 3149	VK3EYD JH3QYD
FLETCHER, Peter Robert	P O Box 221, Rosanna 3084	-
FOSTER, John Gordon	P O Box 352, Hastings 3915	VK3AOE
* GARDINER, Frank Stanley	12 Bailey Raod, Mt Evelyn 3796	VK3VAV
GEORGE, Robert Alexander	RMB 1632, Kyabram 3620	VK3NRG
* HAMLIN, Michael	4 Mullawar Street, Tallangatta 3700	-
HARRISON, E A	36 Elliot Street, Knoxfield 3180	VK3BSD
* HEALESVILLE Amateur Radio Group (HARG)	P O Box 285, Healesville 3777	-
* KAY, Simon Edward	26 Bertram Street, Burwood 3125	VK3XSK
KONING, John	Unit 4, 1 Mais Street, Reservoir 3073	-
* McDONALD, Randall	10 Panorama Drive, North Croydon 3136	VK3RM
MERRIFIELD, Steven John	C/- Post Office, Newlyn 3364	VK3MBO
* MOHAMED, Rashad	5 Gowar Avenue, Camberwell 3124	VK3DIW
O'GRADY, Ron W	P O Box 980, Traralgon 3844	VK6BAM VK3DXY
PEARSON, Donald Eugene	41 King Albert Ave, Leitchville 3567	VK3MCK
* ROCHESTER, Peter	11 Horsmunden Road, Moorabbin 3189	VK3MCD
* ROGERS, Anthony John	10 Balmoral Street, Kilsyth 3137	VK3MCF
* SCHUHEN, Klaus Dieter	30 Bexsarm Crescent, Rowville 3174	VK3KKD
* SWAINGER, Alfred John	28 Lording Street, Ferntree Gully 3156	VK3IP
* TYERS, Peter Dennis	40 Lucknow Street, Ascot vale 3032	VK3VNZ
* WINTERBINE, Vincent	41 Thomas Street, Mitcham 3132	VK3AJO
WOODLAND, Peter Robert	5/14 Legan Road, Oakleigh South 3167	VK3ZPW

* Joined with pink invitation to Join form.

ar

1989 SUBSCRIPTION PRICES FOR VHF COMMUNICATIONS MAGAZINE

Although the German price has remained the same for 1989, due to currency fluctuations and the increase in our overheads, the 1989 subscription through the WIA Executive Office will be:

Airmail Subscription	**$28.00**
Surface Mail Subscription	**$25.50**

VHF/UHF AN EXPANDING WORLD

Record beacon list

Eric Jamieson VK5LP
9 West Terrace
Meningie 5264

All times are Universal Time Co-ordinated indicated as UTC

Amateur Bands Beacons

Freq	Call sign	Location	Grid square
50.005	H44HIR	Honiara	QI00
50.005	ZS2SIX	South Africa	KF25
50.011	JA2IGY	Japan	PM84
50.013	P29BPL	Port Moresby	QI30
50.015	SZ2DH	Greece	KM18
50.020	GB3SIX	England	I073
50.020	JA6ZIH	Japan	PM51
50.025	6Y5RC	Jamaica	FK17
50.028	JA7ZMA	Japan	QM07
50.029	CTOWW	Portugal	IN61
50.032	ZD8VHF	Ascension Is.	II22
50.035	ZB2VHF	Gibraltar	IM76
50.039	FY7THF	French Guyana	GJ35
50.045	OX3VHF	Greenland	GP60
50.050	GB3NHQ	England	I091
50.050	ZS6DN	South Africa	KG44
50.057	TF3SIX	Iceland	HP94
50.062	PY2AA	Brazil	GG66
50.064	WD7Z	Arizona	EL59
50.065	GJ4HXJ	England	IN89
50.065	NB30/1	Rhode Island	FN41
50.066	VK6RPH	Perth	OF78
50.075	VS6SIX	HongKong	OL72
50.078	TI2NA	Costa Rica	EK70
50.080	KH6JJK	Hawaii	BL11
50.080	HC8SIX	Galapagos Is	EI59
50.085	9H1SIX	Malta	JM75
50.086	VP2MO	Montserrat	FK86
50.088	VE1SIX	Canada	FN65
50.090	KJ6BZ	Johnston Is	AK56
50.092	W5GTP	Louisiana USA	EM40
50.099	KP4EKG	Puerto Rico	FK68
50.100	HC2FG	Ecuador	FI07
50.110	KG6DX	Guam	QK23
50.110	A61XL	U. Arab Emir	LL74
50.120	4S7EA	Sri Lanka	MJ97
50.321	ZS5SIX	South Africa	KG50
50.490	JG1ZGW	Tokyo	PM95
50.499	5B4CY	Cyprus	KM54
52.100	ZK2SIX	Niue	AH50
52.200	VK8VF	Darwin	PH57
52.320	VK6RTT	Wickham	OG89
52.325	VK2RHV	Newcastle	QF57
52.330	VK3RGG	Geelong	QF21
52.345	VK4ABP	Longreach	QG26
52.370	VK7RST	Hobart	QE37
52.420	VK2RSY	Sydney	QF56
52.425	VK2RGB	Gunnedah	QF59
52.435	VK3RMV	Hamilton	QF12
52.440	VK4RTL	Townsville	QH30
52.445	VK4RIK	Cairns	QH23
52.450	VK5VF	Mount Lofty	PP95
52.460	VK6RPH	Perth	OF78
52.465	VK6RTW	Albany	OF84
52.470	VK7RNT	Launceston	QE38
52.485	VK8RAS	Alice Springs	PG66
52.510	ZL2MHF	Mount Climie	RE78
144.022	VK6RBS	Busselton	OF76
144.400	VK4RTT	Mt Mowbullan	QG62
144.410	VK1RCC	Canberra	QF44
144.420	VK2RSY	Sydney	QF56
144.430	VK3RTG	Glen Waverley	QF22
144.445	VK4RIK	Cairns	QH23
144.445	VK4RTL	Townsville	QH30
144.465	VK6RTW	Albany	OF84
144.470	VK7RMC	Launceston	QE38
144.480	VK8VF	Darwin	PH57
144.485	VK8RAS	Alice Springs	PG66
144.550	VK5RSE	Mount Gambier	QF02
144.600	VK6RTT	Wickham	OG89
144.800	VK5VF	Mount Lofty	PP95
144.950	VK2RCW	Sydney	QF56
144.950	VK3RCW	Melbourne	QF22
145.000	VK6RPH	Perth	OF78
432.066	VK6RBS	Busselton	OF76
432.160	VK6RPR	Nedlands	OF78
432.410	VK1RBC	Canberra	QF44
432.420	VK2RSY	Sydney	QF56
432.440	VK4RSD	Brisbane	QG62
432.445	VK4RIK	Cairns	QH23
432.445	VK4RTL	Townsville	QH30
432.450	VK3RAI	Macleod	QF22
432.535	VK3RMB	Mt Buninyong	QF12
432.540	VK4RAR	Rockhampton	OG56
1296.198	VK6RBS	Busselton	OF76
1296.410	VK1RBC	Canberra	QF44
1296.420	VK2RSY	Sydney	QF56
1296.440	VK4RSD	Brisbane	OG62
1296.445	VK4RIK	Cairns	QH23
1296.480	VK6RPR	Nedlands	OF78
2304.445	VK4RIK	Cairns	QH23
2306.440	VK4RSD	Brisbane	OG62
10368.000	VK3RGZ	Pretty Sally Hill	QF22
10445.000	VK4RIK	Cairns	QH23

This month's beacon list is one of the longest I have presented for some years. It is necessary that six metre operators, in particular, have access to a world-wide beacon list. With the rapid rise in the solar flux for Cycle 22 as evidenced by the large number of contacts made by VK amateurs using the TEP and F2 modes, during September and October 1988, there is every possibility propagation will be as good or better during March and April 1989.

Ray Clark, K5ZMS, of SMIRK, sent me a world-wide list of six metre beacons requesting an update on the Australian beacons. My list has been sent to him and I have used his list to verify some of the overseas beacons I was going to include in this month's listing.

Ray's list contains quite a number of beacons listed in the USA which appear to be the call signs of the operators themselves. I have included a few of those running reasonable power. Most American beacons apparently operate between 50.060 and 50.080 MHz.

P29BPL appears to have changed frequency to 50.013 MHz.

Hat JA1VOK writes that the list of Australian beacons was out of step with the North and South American and the European lists, as they included power, antenna and grid squares. I am not certain there is a need for listing the power and antenna, but grid squares certainly help to identify more closely where a beacon is situated. Therefore, starting with this month, the Australian beacon list will include the grid squares. Most Australian beacons operate with a power of 10 to 20 watts and practically all have horizontally polarised antennas.

I do not propose publishing this long list every month. This time it will be February and March, then again in September. For quick reference I suggest you photocopy the list and keep it on your operating table. In practically every case, the beacons listed are in continuous operation. I prefer not to list beacons which operate on an intermittent basis or only when the owner is in the shack.

Prompt advice of any changes in beacon status would be appreciated please. According to a letter from Paul ZL1TZA, the beacons ZL1UHF on 51.020 and ZL2VHM on 52.250 are off the air. He made no mention of ZL2MHF on 52.510 so I assume it is operational.

Six Metres

Last month I reported at least six consecutive weekends of gale force winds in SA from mid-September through to early November. Finally the winds abated and David VK5KK was able to climb my tower to the 70 feet position and repair the broken driven element on my six metre beam. The

next day, 6/11, I was rewarded with the band opening to Japan at 0020, working JA7, 9 and 0, with signals over S9. From 0106 VK4JH, VK4ZJB, VK4KJL, VK4ACE, VK4AMV, VK4ALM and VK4AHW.

Over the past few weeks, I have been able to piece together the extent of the great number of exotic stations worked from Australia, but not by VK5LPI. Although a month late, for the sake of the record, I feel the following details should be recorded and I thank Col VK5RO, Roger VK5NY, John VK4ZJB, Wally VK4DO and Peter VK8ZLX for helping to fill in the blanks.

Early in September it became apparent that the almost daily logging of UA TV on 49.750 would lead to something interesting. A few signals from Japan started around 10/9 and by 13/10 the boys in North Queensland were having dally contacts with Japan, some commencing prior to 0000 UTC and extending through to 0400. On 18/9 VK4ZJB and a VK8 worked HL9CB. Around this time evening type TEP was becoming apparent and JAs were being worked as late as 1200 UTC. Although not worked in VK it was worth noting that JAs worked 3D2ER on 19/9 indicating someone was active from Fiji.

Hat JA1VOK reported that on 27/9 JR6HI in Okinawa worked 5H1HK in Tanzania on 50.110 at 1634 UTC and on 28/9 worked PY2BBL at 0211 UTC, both contacts being first time this Cycle for JA to Africa and South America.

One expects VK4s to work many JAs but it was noticeable that VK3s had almost daily openings to Japan, with VK3AMK, VK3AMZ and VK3XQ really chalking up tallies. They had a good day on 30/9 with the band more or less open all day and into the night until about 1030 UTC. Again the pointer was the Russian TV which was in all day.

1/10 was a day to remember. Warned by Russian TV at 0100 everyone was poised for a great day of activity. By Class 1 TEP the JAs came soon after and for the greater part of the day were S9 plus! All call areas were worked and the opening continued into the night. It was reported Jim VK3AZY worked more than 60 JAs in all call areas in about one and a half hours from 0815 when the propagation had changed to Class 2 TEP. Many VK4s were worked in Victoria and travelling with them was the news that at about 0000 Ross VK4RO had worked K6KST and N6OW. In the absence of other reports this would seem to be the first time VK has worked W for Cycle 22. VK2s were also working JAs.

The excellent conditions continued again on 2/10 with many Es contacts around Australia. The first JAs came in around 0300 and there had been an earlier report of AH6IO working into VK2. Northern VK4 had an afternoon session with JAs. This led to TEP openings later in the day for VK2 and VK3. A report filtered through that Jim VK9NS on Willis Island had forsaken 20 metres and was working JAs on six metres. Heavens, what next! VK8ZLX and VK8ZMA both worked HL9CB during the evening.

On 4/10 HL9CB was reported in Victoria along with some JAs. But on 5/10 the band got going again with JAs being worked by VK2, 3, 4, 5 and 8. Whether they had heard something or were just hoping, several VK4s were observed calling CQ BY. Via 28.885 MHz it was heard that NONQS had heard the GB3SIX beacon on 50.020. It was even reported that Steve VK3OT had worked HL5NAS. The ZLs had been conspicuous by their absence but VK2BA was reported working ZL2TPY late in the evening of 6/10, while on 8/10 VK4RO was reported working Hawaii and Guam.

On 9/10 a report on 28.885 said JAs had worked Chile and Brazil in South America via the long path. Also JA3EGE had worked 9H1BT in Malta while other JAs had used the long path to work SZ2DH in Greece and a Portugese station, all around 2300 UTC. The same day VK4DDG and VK4KU got out the key to work K6MYC and K6HCP on CW.

Lyn VK4ALM must have been thrilled to work ten W6s between 0100 and 0145 on 12/10. Among those worked were K6MYC, K6HCP and K6QXY twice. Around 0230 VK4RO worked K6HCP and VK4ALM rounded off his day by working KH6IAA at 0640.

On 14/10 again via 28.885, ZD8MB was reported working into Ecuador. The next day, 15/10, there were a number of reports that JA2 and JA3 had been hearing both video and audio from European television on 48.240 and 48.250 MHz. KG6DX worked into VK2 during the afternoon and at 1000 had worked OZ7GB in Denmark, crossband six to ten metres.

By 20/10 ZLs were being observed entering the fray with ZL2KT and ZL2CD working into Hawaii. A good day for VK2XJ who worked FK8EM, AH6IAA and KH6JJM. On 21/10 the band was open again between VK2 and KH6 at night.

On 22/10, 23/10 and 24/10 intermittent openings from JA to VK2, VK3 and ZL. 27/10 provided a good JA8 opening to VK3 from 0230. It was learned that Hide JA4MBM had worked W, CT1, SZ, CE, PY, LU and VK for four continents! These contacts gave him 85 countries on six metres. Class 2 TEP provided more JAs from 1000 into VK3, who seemed to be getting more than their fair share of openings. On 28/10 the band opened around 0400 to allow VK4s to work HL2, and VK2s worked KH6 and JAs. On 29/10 VK3AMZ, VK3XQ and others worked KH6IAA and KH6HI around 0230 to 0330. The KH6 stations said they could hear VK6HK and vice versa but were unable to make two-way contact. VK6KXW opened all stops for a contact but failed! At 0330 VK8ZLX and VK8ZMA worked KH6IAA with reasonable signals.

30/10 was a very good day judging by the reports on 28.885 and from VK4DO. W6BJI, W6XP, WA1KFJ/6, K6HCP, K6MYC, WA8LLY/6, WB6VYH and W6HBI were worked from 0030 by VK4DO, VK4FNQ, VK4GM, VK4PZ, VK4DV, VK4DDG and VK4KJL to name a few. From 0219 VK8ZLX, VK8ZMA, VK8KTM and VK8GF worked K6MYC, K6HCP, KH6IAA, KH6HI at 5x9. Neil VK8ZCU at Tennant Creek worked KH6HI at the same time. At 0330 Peter VK8ZLX worked KX6DS in the Marshall Islands. Peter said he had worked three new countries in two days!. VK2XJ, VK2BA, and VK2ZXT and others worked K6CXY and N6AMG followed by JAs.

31/10: At 0215 VK2XJ worked VE5LY with signals 449 each way. Not content with this, Roger went on to work WB6BYA, K6QXY, KH6IAA and rounding off with FK1TK. The VK2 to VE5 contact was the first from VK for this cycle. I have a vague recollection a VE1 was worked from VK in Cycle21 and VEs were certainly worked during cycle 20 back in 1958/59. Congratulations Roger.

From 0500 the band opened to Hawaii from VK2. With the band in such good shape it was not surprising to hear that JA1VOK had worked FT5ZB on Amsterdam Island at 5x9 at 1004 UTC. Reports came in that VK3s were heard in W6 and that WA6 and WA7 had been copied in VE5.

On 1/11 VK2 and VK3 were working KH6 around 0300. ZLs and FK1TS worked VK2XJ. The ZLs came in again at night and some were still available up to 1000. Some Es contacts between VK4ZJB and VK3s.

2/11: News on 28.885 stated JAs were working into VE7 from 0200. VK2s were working ZL1, 2 and 3 from 0130. Conditions on 3/11, 4/11 and 5/11 were showing signs of waning, although JAs were spasmodic into VK2, VK3 and VK4.

On 6/11 VK5LP was able to enter the fray following antenna repairs. JAs were very strong from JA7, JA9 and JA0 from 0020. At 0106 VK4s commenced working VK5. No doubt given some help from Es, the JAs were working VK1, 2, 3, 4, 5 and 7. I learn later some contacts had been made before 2200. VK3 were working VK4. Jim VK3AZY and other VK3s worked KX6DS. John VK4ZJB phoned to say he had worked KX6DS at 0230 with signals reaching 5x9. Others to work him were VK4ZNC (the first), VK4ZMI, VK4APG, VK4ZAZ and VK4PU

before the VK3s took over. Later the VK3s and VK4s exchanged contacts. VK5LP only had spasmodic contacts for the next fortnight, the occasional JAs and VK4s. Col VK5RO said propagation was reasonable at his location, 115 km further north than Meningie and quite a lot of JAs had been worked.

On 23/11 around 0311 the H44HIR beacon was copied in VK4.

24/11 turned out to be a good day. From 0625 VK5LP worked JA1, 2, 5 and 0 at 5x9. using 10 watts. At 0645 Mike VK8ZMA was 5x9. Around 0650 VK5BC, VK5AXV, VK5ZDR and VK5RO were all readable at Meningie via backscatter while they worked JAs. VK5LP worked VK4KJL at 0715 and he reported having worked VK6AMS, VK6KXW, VK6ATF and VK6CC from 0200. On 26/11 JA2 and JA6 around 0700 but signals were weaker than previously. From 0726 VK7 were working JAs. VK2KAJ and VK4KHQ and others into VK5 at 0718. On 27/11 VK8ZLX pounded into Meningie at 0220 and reported he was very pleased with six metres this year. although he agreed contacts had not been so prolific for a few days. 5/12 VK4JH was heard at 0030 and on 11/12 worked VK7ZIF at 0027. Roger VK5NY reported he had worked into HL.

On 12/12 at 2250 VK5LP worked Darrell VK2MZ who turned out to be ex-VK3AQR. Through 0000 UTC to 13/12 and 0038 found the next contact to be with Brian VK4DDC formerly VK2DDC. At 0100 worked Mike VK4DM to give him his first VK5 contact since moving to Queensland from Darwin where he had been VK8MR. Strange to work three stations in succession with changed callsigns. I also received a report that at 2300 on 52.050 VK9YQZ/0 from Macquarie Island had been worked. Doug indicated he would be on again the next day at 2300 but band conditions were not favourable, at least in VK5.

13/12: Wayne VK6WD was 5x9 at 0136 and reported Danny FT5ZB on Amsterdam Island was having contacts to JA and 9H1 (Malta). Bob VK6ZFY was a good contact at 0158 and he reported plans were in hand to couple the two Perth six metre beacons on 50.066 and 52.460 into the one antenna via a cavity filter and diplexer to allow checks to be made on differences in propagation between 50 and 52 MHz. Rounded off the day by working VK4ZJB 5x9 at 0120. John said he now had a new call sign VK4KK.

Two Metres and Above

Whilst six metres at this time of the year generally takes the plum for interesting contacts, there are those operators who do not overlook the higher bands. On 12/12 during the mornings there were contacts from VK5 to VK6WG and others at Albany, although I was surprised to find the VK6s rather weak at VK5LP. During the evening around 1100 some enhanced signals were apparent from VK3 with Maurice VK3XVB, Len VK3DLM and Les VK3ZBJ noted. Les was heard to mention a 3 cm beacon he has been working on with the call sign VK3RGV.

South Africa

The "ZS 50 MHz Report" for October 1988 shows that South Africans have been getting their share of interesting contacts across the equator and up as far as Europe. It is not hard to see why. South Africa extends from just above the Tropic of Capricorn down to almost 35 degrees latitude or roughly from just above Rockhampton down to a level a little above Canberra. The island of Malta is about the same latitude as Tokyo. If VK can consistently work into Japan then South Africa should work into southern Europe with as little trouble. And that is exactly what they have been doing.

Through October prefixes they worked included: 9H1, CT1, FC1, FD1, GJ4, I0, F1, G3, F8, F6, I4, F5, 5B4, SZ2, GW, GJ, PA, SV, EA1, CT4, FY7, ZD8, GM3, GW4, and EA7, or 13 countries/islands. In addition, there had been some intermittent operation from ZB0 or Gibraltar.

ZD8MB on Ascension Island had 134 six metre contacts from 8/10 to 31/10. In addition to working most of the above prefixes, he also worked LU2, LU9, CX4, TI2, CS8, KP4, PY2, PU3, PP7, HC2, LU8, PY7, YV4, PJ2, LU3, LU6, LU7, PU2, CX8, HC5, PZ1, TI4, KH6, PY5, LU5, P40, VP2, ZX0, F9. The following were heard but not worked: KV, ZS3, XE, FY, TR. Ascension Island is about eight degrees south of the equator and in line with the most western point of Africa, about midway between Africa and South America. Surrounded by thousands of kilometres of ocean, it must be one of the prime six metre locations of the world.

The above two lists represent 60 call areas in 34 countries/islands and indicates how widespread is the interest in six metres. Apparently there are many administrations prepared to allow 50 MHz operation, even if at times with some limitations, notwithstanding the widespread use of television in the same areas.

Through the Editor of AR came a letter from Mike Bosch ZS2FM dealing with a few matters in relation to 50 MHz and South Africa. I quote:

"The 25 watt beacon ZS2SIX on 50.005 at Port Elizabeth transmits 'W W de ZS2SIX KF25UX' which is repeated at 25 second intervals.

"Many ZS amateurs are equipped with all mode rigs and scan the spectrum from 50.100 to 50.125. During recent F2 openings many European stations were logged suggesting serious consideration be given to extending the SSB DX section up to 50.200 to avoid future QRM.

"Many more ZS amateurs have 15 to 25 watt 50 MHz FM transceivers. Some are also equipped with four and six element yagis and 100 watt amplifiers and this group are seeking to work FM DX between 50.400 and 50.600 MHz using a calling frequency of 50.400. Recently ZS6CE and ZS6XL worked SV1DO and F5QT on FM at 5x9 both ways.

"A two to six metre simplex repeater system operates at Cape Town. It comprises two FM transceivers coupled back to back. The six metre simplex input and output frequency is 51.400 MHz with an output power of 60 watts to a two element beam. This system can be compared with the two to ten metre FM repeaters in the USA which operate above 29MHz.

"A second repeater system is under construction in Pretoria for 51.500 MHz and a third planned for Port Elizabeth on 51.600 MHz. When the MUF rises above 51 MHz local two metre stations could work six metre FM DX via these channels.

"Please look for FM DX stations on 50.400 MHz and above".

Whilst one can understand ZS stations wanting to work the exotic European DX, the chances of working to VK are not enhanced by most South African beacons having directional antennas pointing north. Omnidirectional antennas similar to those used by Australian beacons would increase the chances of random contacts from areas away from the northern path in both this and their part of the globe.

Other News

Paul Jenner ZL1TZA advises some changes to the ZL beacon listing. He also says that a NZ FM station on 92 MHz combines with NZ Channel 1 TV, both on Mount Te Aroha, to produce a strong FM signal on 52.500 MHz, which could be audible in VK during suitable propagation. The stations have been advised but appear not to be concerned at the mixing!

Paul also mentioned that early in October there was a good two metre and 70 cm opening to VK2 and VK4, with a 70 cm contact to Mackay a possible record. On 25/10 he worked K6 and XE2; on 26/10 five contacts to K6, plus JA, all on six metres.

The small republic of Guinea Bissau on the western tip of central Africa and twelve degrees north of the equator has granted 50 MHz privileges. Dave Heil, J52US, an

American and active on the HF bands from the small State, has taken up the option to operate on 50 MHz, but at present has no equipment. Attempts are being made in the US to raise funds to provide him with a transceiver.

A long letter has come from Peter VK6BWI who has upgraded from a Novice and uses a converted two-way radio with whip antenna on the Busselton repeater (Ch 15), about 50 km distant. He operates from Witchcliffe and is believed to be the most south-western permanent amateur.

The repeater has an output of 10 watts to a 6dB gain antenna. The site is 450m asl, 200 km south of Perth and gives a mobile range of 80 to 100 km. The repeater is under populated and Peter says he is lucky to have two contacts a day. He therefore relies on enhanced propagation to allow stations more distant to access the Busselton repeater.

Believing that the "greenhouse effect" is inevitable, with the weather systems shifting outwards from the equator, Peter poses the following questions:

1. Will static (HF) be more prevalent?
2. Will the TEP on six metres change to put more Australian amateurs within range of Asian stations?
3. Will the MUF be higher?
4. Will there be more or less coastal ducting?
5. What will happen to sporadic E?

Anyone care to let me have some answers?

Calling CQ on VHF

Charlie VK3BRZ has asked me to make some comments in regard to calling CQ on VHF, aimed firstly at newcomers but aware that all might benefit from some of the problems which exist.

Charlie says: "How often do you hear an unfamiliar callsign on two metres or 70cm, calling CQ. As you turn the beam to try and peak the signal, the call disappears into the noise. By the time you swing the beam back in the other direction, the caller has gone?

"Time was when along with your callsign you also gave an appropriate location as well, perhaps not the obscure place you may be operating portable from but the nearest large town. After contact is established, further elaboration may be given if required."

I agree that it would be helpful to know more about a signal during initial reception. For several years, for about a week, I operated portable from a site known locally as Verrall's Hill close to a small place called Field. No one in their wildest imagination could be expected to know from where I was operating if I used those two place names. Thus my call was . . ." CQ de VK5LP/P on Verrall's Hill near Meningie, 115km south east of Adelaide."

(Even though I was 30km from Meningie!) A shortened call was "VK5LP/P at Meningie, south east of Adelaide." In either case it would take very little deduction say, for an operator in Townsville, to know where I was located. What we are really asking is for more information with your CQ call to assist beam headings and give you, at the other end, more chance to make a contact. With relatively strong signals this is not so important as contact can often be made without moving the beam, peaking it later if required. One other point, which I have mentioned before, is to give your call sign many times when calling CQ — I may be able to readily identify the "CQ" but could be having difficulty with the call, particularly if you are one of the many operators who slur their speech. There is nothing worse than CQ called six times and your call mentioned twice!

Closure

My notes for February usually are rather lengthy due to all the activities of the recent Es season and the inclusion of the Six Metre Standings. With a bit of luck, March/April and September/October this year should provide outstanding opportunities on six metres for long distance contacts via TEP and F2 propagation modes. During the next two years I am sure we will also see one or more stations in the northern hemisphere reach the goal of 100 countries verified on six metres, an achievement in itself and one thought largely unobtainable a few years ago.

But there is one thing I don't want to see and that is for overseas amateurs to claim they have worked all six continents without working Australia — some operators have already made such claims in the USA! To work an island in the Pacific Ocean and say you have worked all continents because the island may be in the vicinity of Australia, is just plain cheating and I'll make an issue of it whenever I reach such a claim, by publishing the offending callsign with suitable comment!

Closing with two thoughts for the month: "Let's remember that this ecology business is a matter of trade—offs. A certain amount of pollution in the atmosphere makes for more colourful sunsets" and "Inflation is when the creaking of the pillars of the economic system can't be heard above the rustling of the banknotes."

50-54 MHz standings

DXCC Countries based on information received up to 15 June 1988. Cross-band totals are those not duplicated by six metre two-way contacts. Credit has not been given for contacts made with stations when 50 MHz was not authorised.

Column 1: Six metres two-way confirmed
Column 2: Six metres two-way worked
Column 3: Cross-band (6 to 10) confirmed
Column 4: Cross-band (6 to 10) worked
Column 5: Countries heard on 50 MHz
Column 6: Countries heard on 52 MHz

CALL SIGN	1	2	3	4	5	6
VK8GB	42	42			13	
VK4ZJB	32	32				4
VK2BA	30	30				
VK2VC	27	27				
VK2QF	26	26				
VK2DDG	25	26		2	12	3
VK3OT	25	26			10	
VK3XQ	24	26			1	1
VK3AWY	22	22				
VK2KAY	21	23				
VK5LP	21	22			6	3
VK2BNN	20	21				
VK4ALM	20	20				
VK4TL	19	19				
VK7JG	18	20			2	
VK4ZAL	18	18				
VK3AMK	17	17				
VK9XT	17	21				
VK3AUI	17	21				
VK3NM	16	17				
VK4ZSH	15	16				
VK2ZRU	15	16			1	3
VK3ZZX	12	13				
VK9YT	12	14				
VK60X	10	10	1	1		
VK6RO	9	9	3	3	2	3
VK4KHZ	8	10				
VK6HK	8	13			3	2
OVERSEAS						
JA2TTO	48	48				6

A minimum of five countries confirmed (including VK) is required for an operator to be listed.

The list position is determined by the number of confirmed contacts. Where two or more operators claim the same total, those first date listed with that total can only be displaced by another having a greater number of confirmed contacts.

The next list will appear in August 1989 and entries will need to be on my desk no later than 15 June 1989.

Claimants are reminded that full details of all contacts are required; viz: date of contact, time in UTC, call sign of station worked, country, mode, report sent and received, QSL sent and whether received, split frequency contacts should be indicated.

Please add your own call sign, signature and date.

I reserve the right to request and examine any QSL cards which may be needed to support an application for listing. To assist your claim a useful idea is to include photocopies of the front and back of QSL cards.

Kenwood TS-530S Transceiver Improved Selectivity For RTTY Reception

Con Murphy VK6PM

A short note on the above subject appeared on page 18 of the December 1988 Amateur Radio. Unfortunately, it was incomplete. The following gives further details on this modification.

The rig here is a TS530S in which I have fitted the 500Hz filter (YK-88C) primarily for RTTY operation.

Having installed the filter for CW only, I began to wonder if it could also be made to operate with the mode switch in the USB or LSB position. The narrow filter normally only comes into operation when the mode switch is in the CW position and the "Narrow" button is pushed In.

Inspection of the circuit diagram showed that it should be possible to use the narrow filter in the USB and LSB mode if the posts marked SSB-n and CW on the IF board were tied together. When this was done, the YK-88C was now working In the USB and LSB modes when the "Narrow" button was operated.

Selectivity for RTTY operation is now greatly improved. However, the IF SHIFT control must be operated (on the PLUS side) to suitably position the signal within the narrower passband. **ar**

AMSAT NEWS

Satellite activity

1. Launches

The following launching announcements have been received:

Int'l Number	Satellite	Data	Nation	Period min	Apg km	Prg km	Inc deg
1988							
090A	Molniya,3—33	Sep 29	USSR	11h48m	388937	464	62.9
091A	3—33	Sep 29	USA	91.0	336	306	28.5
091B	TDRS—C	Sep 29	USA	1434.8	35803	35719	0.1
092A	Cosmos, 1974	Oct 09	USSR	11h49m	39342	613	62.8
093A	Cosmos, 1975	Oct 11	USSR	97.8	679	649	82.5
094A	Cosmos, 1976	Oct 13	USSR	90.2	396	206	72.9
095A	Radunga, 22	Oct 20	USSR	24h33m	36522		1.5

2. Returns

During the period ninetyfour objects decayed including the following satellites:—

1969—064A	Intelsat 3 F—S	Oct 14
1987—031A	Cosmos 1834	Oct 14
1988—070A	Cosmos 1963	Oct 02
1988—088A	Cosmos 1973	Oct 10
1988—091A	Cosmos 1968	Oct 03

3. Notes

1988—089A NOAA 11

Orbital Elements are:— Period 102.1 min
Apogee 865 km
Perigee 849 km
Inclination 98.8 deg
Frequency 136.77 MHz
137.77 MHz

1988—091B TDRS—C

This Tracking and Relay Satellite was deployed from the orbiting STS—26 on September 29, 1988.

Satellite Activity For October/November 1988

1. Launches

The following launching announcements have been received:—

Int'l Number	Satellite	Oue	Nation	Period min	Apg km	Prg km	Inc deg
1988—							
096A	Cosmos 1977	Oct 25	USSR	1149m	39432	613	62.8
097A	Cosmos 1978	Oct 27	USSR	90.2	394	206	72.9
098A	TDF 1	Oct 28	France	1435.1	35983	35562	0.1
099A	USA 33	Nov 06	USA				
100A	Buran	Nov 15	USSR	See note			
101A	Cosmos 1979	Nov 18	USSR	92.8	432	408	65.0
102A	Cosmos 1980	Nov 23	USSR	101.9	880	852	71.0

2. Returns

During the period one hundred and sixteen objects decayed including the following satellites:—

1966—03A	Cosmos 118	Nov 23
1986—021A	Cosmos 1735	Nov 17
1987—007A	Cosmos 1815	Nov 15
1988—084A	Cosmos 1969	Nov 13
1988—094A	Cosmos 1976	Oct 27
1988—097A	Cosmos 1978	Nov 10
1988—100A	Buran	Nov 15

3. Notes

1988—100A Buran.

This is a reusable orbital spacecraft which was placed in near—earth orbit by the rocket Energiya. After circling the earth twice, it re—entered the atmosphere and landed successfully.

ar

EMC REPORT

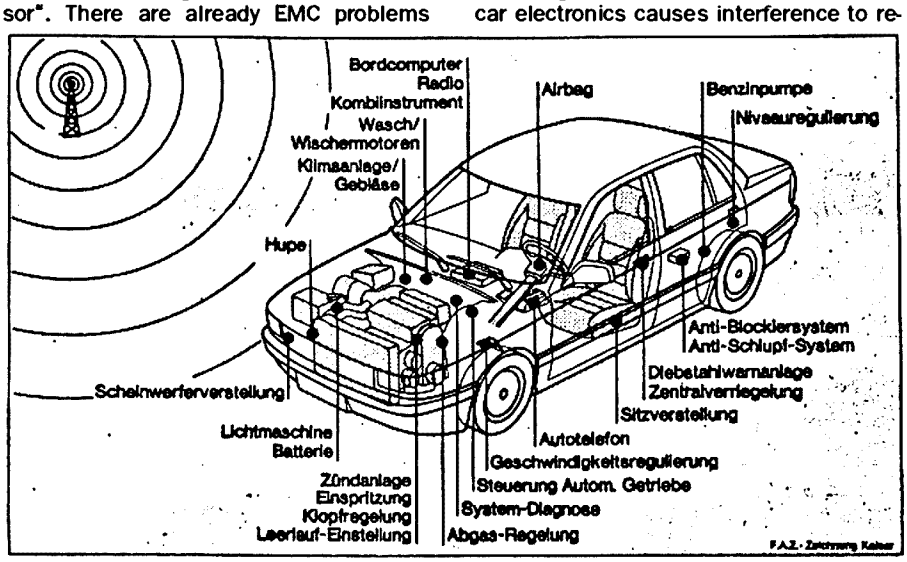
Hans Ruckert, VK2A0U, EMC Reporter, 25 Berrille Rd, Beverly Hills, 2209

Problems with microprocessors in motor cars

The more modern the car, the more microprocessors are installed and the more EMC problems can be expected. The car we wish to purchase may not allow us to use a transmitter in it. "QST" reported that one smart car dealer in the USA recommended to the amateur car owner that he should shield his antenna to avoid interference with the microprocessor which controls the engine operation! More and more car manufacturers will have to shield the car electronics and use ferrite chokes and coaxial filter capacitors wherever necessary.

VK6WQ kindly sent me several pages of the well known West German newspaper "Frankfurter Allgemeine Zeitung", which has a large circulation in DL (and overseas). The full two page publication has the title "Electro-Magnetic Compatibility- Concerto Grosso for Ignition and Microprocessor". There are already EMC problems between the various electronic components within a car, to which we radio amateurs will add those occurring from the rf field of our mobile transmitters. The critical areas within the modern car are shown on the picture. They are, from left to right:

Idling speed control, engine knocking control, fuel injection, ignition, battery, alternator, headlight adjustment, horn, air conditioning and blower, windscreen wiper, washer motor, dash instruments, radio, computer, air bag, petrol pump, suspension level control, anti-locking brake system, anti-slip system, burglar alarm, central door locking, seat adjustment, car phone, cruise control, automatic gears, power steering, system diagnosis, exhaust control. This list may not even be complete. It would seem advisable to take at least a 5 watt hand-held transceiver along when shopping for a car, to find out whether the car electronics causes interference to reception; and whether the transmitter upsets the car electronics under all car operating conditions. There could be surprises for the radio amateur and the other salesman tool



"Interference causes and victims in an automobile, without claim to completeness. Electromagnetic compatibility involves much expense." (Illustration from Frankfurter Allgemeine Zeitung)

HELP!

Have you got six QSL cards?

Have you got six (or more) QSL cards that you could spare to help build up a reference QSL collection for the future?

The WIA QSL Collection curator, Ken VK3TL (ex VK9TL Norfolk is, CS1TL and C29ED Nauru Is) has donated all 13,000 QSLs to this collection. Many others have donated generous numbers of QSLs but if every amateur could donate only six QSLs that he/she feels would be a most useful addition, what a collection we would have for the future!!! Historians may borrow certain QSLs from the collection and also photostat copies of QSLs can be sent to them free of charge. We want all the cards we can get, but especially welcome commemorative QSLs, special and rare prefix QSLs, especially allocated call QSLs (eg VK4RAN), rare DX QSLs and special event QSLs as well as any VK or pre-War QSL. It doesn't matter very much whether it's the WIA that makes the collection or not, the really important thing is that a collection will be there for the future. There are some VKs who have never seen a PK QSL or even a VQ4. These have gone, never to return. Most of them have been consigned to the tip. Young amateurs know little of the history of DX despite the fact that it is an integral part of the history of amateur radio. We must remember that today's DX will become tomorrow's history - even after a few years.

Our best response has unfortunately been from the widows and families of 'silent keys' who have felt that their loved ones would have wanted it that way. A very special thanks to those amateurs who have consigned QSL cards from their silent key friends to the WIA collection instead of destroying them. There are so many top-class DX-ers in VK land, and although some have played a valuable part, we must say

that we are a little disappointed at the response from this quarter. Nobody can be blamed for holding on to their hard-earned QSLs like grim death, but maybe six wouldn't be missed?? Too much to ask?

Will you help? - Do it today!

The address is: PO Box 1, Seville Vic 3139 Ph (059) 643721 for pick-up or arrangements for the consignment of larger quantities of cards. All donations will be personally acknowledged by the curator with sincere thanks.

SUN SPOTS

Most Intense for 30 Years?

It seems that working DX on the HF bands is capturing the imaginations of both the newcomers and old-timers in the hobbies of amateur radio and shortwave listening.

We are on the upward part of the 11-year sunspot cycle which brings with it improved DX propagation.

The current sunspot cycle forecast to peak late this year could be the second most intense since Italian astronomer-physicist, Galileo first saw the solar eruptions in 1610.

But apart from improving shortwave propagation - some scientists think this cycle's sunspot radiation might knock satellites off course and disrupt long-distance ground based radio and cable communications.

Sunspots emit solar flares, explosions that send protons, X-rays, electrons and other radiation streaming outward, sometimes causing magnetic storms on earth by disrupting the planet's magnetic field.

Predictions that the sunspot cycle would be exceptionally large were first issued in early 1987. But scientists say this cycle won't be quite as large as the 1958-59 solar maximum. The last sunspot cycle peak was in late 1979, and the cycle minimum was in September 1986. The upcoming maximum is expected as early as late 1989; earlier, scientists were forecasting a peak in 1991.Magnetic storms are not dangerous to people on earth. But they pose a potentially lethal proton radiation hazard for spacewalking astronauts and spacecraft electronics. Excess ultraviolet light from solar flares heats the earth's atmosphere, expanding it to produce drag that can make satellites in low orbits fall to earth prematurely.

The US Spacelab fell to earth after an intense solar flare at the peak of the last cycle in 1979.

OVER TO YOU

The six metre band (1)

Rarely do I decide it is time to write a letter to any publication; however, I am moved to do so because of the gravity of a situation which has become very apparent during the past few weeks. I refer to those amateurs who transmit on portions of the six metre band when they are not permitted to do so.

Under the terms of document DOC 71 as issued by DOTC, the band 50.000 to 50.150 MHz may be used without restrictions in VK6. During the transmissions hours of any Channel 0 television station, amateurs in VK5, VK7 and VK8 may use that portion of the band with a power restriction of 25 watts at the transmitter; amateurs in VK1, VK2, VK3 and VK4 are not permitted to use that portion of the band during the broadcasting hours of Channel 0 television stations.

That which is outlined above seems plain enough to me. Yet there are scores of amateurs in those four eastern call areas who appear to be daily ignoring the regulations and operating on 50 MHz when they are not permitted to do so. In so doing, they are placing in jeopardy those negotiations currently proceeding between the WIA and DOTC for a set of conditions which would allow all amateurs to be permitted use of that world-wide segment of six metres.

It is disturbing to note that contacts of a domestic nature (rag-chewing) during Sporadic E openings are being conducted on 50 MHz by amateurs in VK1, 2 3 and 4, when such contacts could just as easily have been made on 52 MHz. To some degree, I suppose, one can understand a brief contact being made with a station in another country or continent. Even that does not condone out-of-hours operating, but to have extended contacts is surely courting trouble.

It must be pointed out that such contacts cannot be considered for inclusion in the Ross Hull Contest, DXCC, WAC, WAS, WAVKCA, Six Metre Standings Lists in both VK and the USA, distance records claims, the newly suggested VHF Field day etc.

Amateurs in the USA and other overseas countries are not going to be very happy when their application for DXCC and Worked All Continents (WAC), which are based upon working some stations in Australia, are refused because the remote half of their contacts were with stations not legally permitted to operate. A letter received yesterday from the editor of a well-known VHF newsletter in the USA said that for some time they had suspected such operations from VK1, 2 ,3 and 4 were illegal and US operators were being advised accordingly and requested to stop working the VKs involved.

From on-air observations, it appears VK3 and VK4 amateurs are the main culprits. I cannot say whether this is due to amore favourable path distance providing more Es openings or whether amateurs, in Melbourne and Brisbane in particular, feel such a sense of relief at having their capital city Channel 0 stations removed, after years of being deprived of general six metre useage, that they have now gone overboard and "to hell" with the rules, simply to satisfy a short term expediency. Is it a case of "we cannot now operate legally at the best propagation times, so what have we to lose?"

This week, in a telephone conversation with the Federal Office of the WIA, I was assured that negotiations were proceeding with DOTC, on this matter of band useage. I was informed the present out-of-hours operations would do little to enhance the VHF amateurs' image and tended to show there were many irresponsible operators in our midst. With discussions at such a delicate stage, it behoves ALL amateurs to play the game according to the rules. Amateurs in VK5, 6, 7 and 8 should refuse 50 MHz contacts with VK1, 2 3 and 4 and the latter with each other.

I know some will say it is all very well for me to speak when I can use 50 MHz (with limited power) and will accuse me of adopting a "holier-than-thou" attitude, but I am prepared to wear this in the over-all interests of the amateur fraternity. My own personal transgressions so far in this matter result from having been involved in three contacts with stations on 50 MHz, at which stage I suddenly realised such contacts should not have taken place. My position as Editor of 'VHF/UHF - An Expanding World" in Amateur Radio demands that I set a reasonable example in operating practices. I am both surprised and disappointed in some of the callsigns involved in these operations - I always believed they would know better!

Not only VK5 and VK8 are concerned, but also VK6, with correspondence and telephone calls to support the concern. Is it a case of "we cannot operate legally at the best propagation times so what have we to lose?" My answer to that is that we have much to lose. During the last sunspot maxima we had no useage of 50 MHz at all with the consequent loss of many good DX contacts. Some of us worked hard to inform overseas countries of our position with the result some good contacts were made because a number of stations shifted to 52 MHz to work us. No such lobbying has been done for this Cycle because of the ability for some operation to take place on 50 MHz. If the impatient action of so many in the eastern States causes all Australian amateurs to lose 50 MHz operating privileges then we will be even greater losers because few overseas stations are geared for 52 MHz working.

With the distinct possibility that we may be close to having a more equitable Australia wide useage of 50 MHz, it behoves ALL Australian amateurs to adhere to the rules and not prejudice our chances of achieving a very worthwhile improvement to our operating privileges, for the sake of any short term satisfaction; that is of course, if an illegal contact gives satisfaction. If a 25 watt power limit was applied to VK1, 2, 3 and 4 on a non-interference basis as in VK5, 7 and 8, it would be a great step forward. Those who decide they must run more power and cause interference should be made to suffer the consequences. I seek your co operation in giving such a situation a chance to become part of our regulations and to restore my faith in the amateur movement. 73

Eric Jamieson VK5LP
9 West Terrace
Meningle SA 5264

Six metre band (2)

Dear Sir,

This is the first time ever but I must put pen to paper over this issue.

DOTC has in its wisdom provided us with a set of conditions in which we can operate on the band 50 - 50.15MHz. These are set out clearly in document DOC 71 and have been published in both Amateur Radio and Amateur Radio Action; also publicity has been given on the WIA broadcasts.

These conditions may not be to our liking but nevertheless they are the rules.

Still, we see the rules broken daily by stations operating during Channel O programme hours and running far above the power limit provided. Daily we hear on 50 MHz "I am running a pair of 4CX250B's" or "The pair of 4/1000Z's are running cold at 500 watts" or words to that effect.

Surely, fellows, should we not do our bragging about power levels on 20 metres? In fact why cannot we run legally during this trial period?

Do we remember our "horror" when the 11 metre band was taken over by the then un-licensed CBers? Are we any different?

Don't we think we are fortunate to be able to work on 50 MHz at all seeing that we are smack in the middle of Channel O video?

Wouldn't you know that many a bright spark would be claiming new countries and swapping contest numbers illegally?

How silly, nay stupid are we?

Me thinks that before this reaches print we well may have this privilege taken from us.

Colin A Moore, VK5RO
34 Ryan Ave
Woodville West SA 5011

Murphy strikes again

Reference my article "Not Another Article on the G5RVI" in Amateur Radio, January 1989 (front cover is a year behind the inside!).

Thank you very much for printing my article. I appreciate it very much. Unfortunately, as is always the way, I have noticed an error. In the second paragraph which partly reads:

"....From the centre of the antenna, a quarter wavelength of open wire..." should read:

"...From the centre of the antenna, a half wavelength of open wire..." The Table 3 correctly shows the matching line as 0.5 wavelength at 14.2 MHz.

I apologise for any inconvenience which this may cause the reader.

Don Knox VK1DK
79 Harrington Circuit
Kambah ACT 2902

inflation Control?

During the year I wrote to my local newspaper asking if any of its readers could explain inflation to me. Perhaps the most lucid response came from a former private secretary to one of our late Prime Ministers. Inflation, she said, was just the natural flow-on of the "greed creed", everyone in the community demanding more with or without good reason.

At what stage, I asked myself should I rebel against this phenomenon from which as a retired person I am totally unprotected. I decided that the time was now and I moved quickly to implement this decision including the non-renewal of club memberships and magazine subscriptions. Against this background came the WIA announcement of increased fees and I contemplated taking down my Certificate of Membership which had long held pride of place at my operating position.

But then came George Brzostowski's letter on page 29 of the November issue of Amateur Radio Magazine. His clear-cut statements persuade me to continue my membership. I also see merit in the structure referred to in his letter. The survival of Amateur Radio as we know it today rests with strong, well run local Radio Clubs, offering member services direct from a Federal body, preferably Canberra based.

Organised in such a way, efficiency may arrest this pathetic increase year by year of subscription charges.

Joe Ellis VK4AGL
Burnside Rd
Nambour 4560

Program Update

In the September 1988 issue of AR you published an article by me 'Oh No, Not another log-keeping program!'. Rather to my surprise there was considerable interest in the program, although the article and program were written mainly to illustrate sound programming principles. Users have reported times of half a second to retrieve from disk and display entries from logs of upwards of 1000 entries. Times would be a little slower for floppy disk users.

As a result of feedback from users, several improvements have now been incorporated into the program. It now has the facility to amend and delete existing log entries. The menu system has been completely revised and data entry should also be faster in most cases. The writing of data to the screen has also been speeded up considerably.

For those who acquired Version 1 of the program from me an update to Version 2 is available for $10. This includes the disk, postage and instructions. The disk contains the new program, plus a second program to convert the Version 1 log entry files to the new format. For those who did not purchase version 1, the new program is available for $20, again including the disk and postage.

Kevin L Feltham VK3ANY
PO Box 61
Port Albert 3971

Packet Frequency Advice Please

The Australian Amateur Packet Radio Association is considering the installation of a HF packet network using ROSE nodes to enable packet user groups in isolated areas to communicate with capital city and other isolated networks.

The method of operation would be that an amateur in an isolated area such as Townsville would connect via their local two metre packet repeater to the network and the repeater would make connection on HF to the requested HF repeater node in the destination city. Packets are transmitted by the user on two metres then by the repeater on HF to the HF node in say Sydney and the packets would emerge in Sydney on two metres or on the 70cm links in the Sydney area.

If a path to the requested city was not available due to propagation the repeater would attempt to find a path via previously programmed alternative repeaters.

The most difficult decision to make is what frequency should we use. We wish to avoid the controversy that occurred with the Travellers Net. The proposed bandplan changes give us a guide to what portions of the particular band we should use. The bands which appear to offer the best prospects are 7MHz, 14 MHz and 18.1 MHz. 10.1MHz is not likely to be possible as we have received an indication that as 30 metres is not an exclusive amateur band we would not receive approval. A pity as it would probably be the best band for the distances required. On 7MHz a frequency of 7.030 appears to be suitable and on 14MHz 14.104 approximately could be shoehomed in, but this will require users of 14.105 and 14.103 to use receivers with narrow band characteristics.

The baud rate used would be 600 bd with a shift of perhaps 400 or 600 cycles. The bandwidth will therefore be approximately 1.2kHz which is about twice that of the bulletin boards currently operating on HF. The reason for the wider shift and higher speeds is to provide the faster response and better reliability that is required for attended operation.

We would like to receive comment on this proposal from HF operators generally as well as packet operators as we wish to get it right the first time. As this type of HF network will be a world first we have no overseas experience to guide us.

Packet groups interested in taking part in this network should write to the association indicating their interest. 73

Barry White VK2AAB
AAPRA 59 Westbrook Ave
Wahroonga NSW 2076

Why should you join the WIA ?

Let's run through the immediately obvious things, then go further.

The magazine AR and all of its many features.

QSL Bureaux
WIA broadcasts
Contests
JOTA
WICEN
Callbook
DOC representation
IARU representation
WARC representation.

Now what else?

During the period that I have been licensed-since early 1950-the following changes have occurred (happened?). Been conceived and negotiated would be a better description.

From 14 wpm to 10 wpm for full calls
100 watts to 400 watts PEP
80 metre band
160 metre band
144 and 430 MHz bands and bands up to gigahertz.
The WARC bands
Z, K and N calls with their various privileges.
Multiple choice exams
Revised regulations.

And these are just some of the many gains.

Of my own experience, I can recall many many hours of negotiation with DOC, together with other members of the Executive, which culminated in the issuing of Novice licences and deciding the bands on which they would operate. Is it possible to appreciate the thousands of hours contributed annually by members of the WIA executive, federal councillors, chairmen of committees, the AR editor, federal and state broadcasts, WICEN co ordinators, state and zone and club committees, not to mention disposals, intruder watch, slow morse, satellite info, muf info, and the many other services which are almost entirely offered voluntarily in your service to that you may enjoy your hobby, in your own way.

WICEN is an organisation which stands ready and well-trained to offer reliable communications in already well-proven emergency-type situations. Their members are prepared to give something back to the community. Amateur Radio is a unique, self-regulating hobby, which anyone with the inclination and the application can enjoy.

But it didn't just happen!

Inaction and non-interest breed loss of privileges.

Changes for the better don't just happen.

Many dedicated amateur radio operators, over many years, have contributed and are still contributing vast amounts of their leisure (for leisure you can also read operating) time TOWARDS IMPROVING the conditions under which we exist and to the reality that our hobby does exist!

Many talented and concerned people are doing their best to protect its existence on your behalf-each of you-whether you are members of the WIA or not!

The WIA is not perfect and has never pretended to be so. After all, it only represents the opinions of about half of its potential members and they are not always in agreement. But those who are members are making some contribution to the continuing and expanding list of privileges which we, as amateurs enjoy.

If you are not a member of the WIA because you disapprove of its policies or for some other reason, then don't just shrug it off.

If you wish to criticize the actions of the WIA (and I am sure that your constructive criticisms would be wlecomed) then join in at some level, so that you may hear both sides and thus be in a better position to offer a balanced viewpoint.

So, how much better could the WIA be, if it could represent <u>all</u> opinions and be assisted, advised and supported by the undoubted talents of those people who have yet to commit themselves.

Can you, in all honesty, say that your enjoyment of your hobby occurs solely through your own efforts?

Can you not think of some way in which you could repay the Amateur Radio Service for that enjoyment?

Can you not find some way to support the WIA in ensuring that, at the WARC table and at the DOC level, the privileges for amateurs are not only maintained but are enhanced.

Please re-think your reason for not being a member of the WIA and stack those reasons up against the very potent reason why you should be bearing some of the responsibility for ensuring the continuing viability of our very privileged hobby.

Jack Martin, VK5EJ (ex VK3TY)
President of the Lower Eyre Peninsula Amateur Radio Club Inc
P O Box 937
Port Lincoln 5606

QSL procedure

I look forward to receiving my monthly AR magazine and generally find I cannot put it down until I have read it from cover to cover. All appreciated and keep up the good work to all concerned.

I wonder if you can help me. I have looked back through my collection of AR and cannot find an article explaining the ins and outs of how to QSL correctly. If this subject has already been an article can you pleased advise me of which AR it is in. If not as a suggestion this subject could be made into an article for my benefit and many others also.

An interesting itesm was raised in "Over to You" some months ago about a loose leaf booklet for "Operating Manual/Procedures" utilizing a ring binder. With the increase in new operators and also existing operators, subject matter covering modes of operation, frequency allocation (gentlemans agreement), description on how and where to operate on different modes, QSL procedures, etc. would be of great value to all. Even a callbook could be fitted into this system. Once set up cost of maintaining this manual would be cheaper than buying a new callbook every edition, it would be a matter of purchasing the amended pages relating to call signs/procedures.

I realise this would be a tall order to fulfill. How do others feel about this idea?

Jeff Powe, VK4CEM
2 Ulogie Court
Biloela Qld 4715

Prominent Amateurs

The Australian Traffic Net is constantly being requested by the press and electronic media for interviews and information about the hobby of Amateur Radio.

As a result of the emerging media interest in our hobby and activities, we feel it a duty more effectively to communicate with the public through the press about the hobby. Accordingly, I am compiling a file of interesting snippets of information about the hobby and of the kind that the press devours hungrily. During the course of live radio and television interviews throughout Australia and New Zealand, I have sometimes been asked about what well known Australians have been or are licensed Amateurs. It may not, for example, be too well known that country and western star and travelling hypnotist, Robert (Tex) Morton was a licensed ham. I first met him at Gosford (NSW) field day back in the early seventies. There may be others equally well known to the public but whose amateur activity was not generally known. I would also be very grateful for the names of other prominent personalities, not necessarily Australian, who are or were hams.

Can anyone with more information, please write direct to me at the above address. It will help the public identify with

us more closely if they can see that personalities they either know about or love are secretly disguised amateur radio operators at heart...

Robert W Walker, VK2YRX
Australian Traffic Net WIA Liaison Officer
P O Box 279
Drummoyne NSW 2047

Virtually Active

I notice that most DXpedition operators have streamlined QSOs, no doubt in the interest of speed and voice economy, down to suffixes and 59. An improvement on that would be to simply announce all the suffixes in a string with 59 at the end.

Come to think of it, why not make the QSO truly virtual. Just tell all those hearing the call to send the necessary to the appropriate DX manager for a QSL card to be returned - blank so that details could be filled in to the recipient's satisfaction. Even better, an announcement in AR or the like that XY55QRZ will be in virtual operation on 10 or whatever on dd:mm:yy should suffice. Then we wouldn't even have to turn our rigs on!

Rex Newsome VK4LR
58 Prospect Terrace
St Lucia Qld 4067

Reliably Lethal?

I refer to the letter from Graham Rogers VK6RO titled 'Lethal Packet' (Dec 88 AR, Vol 56 #12, p60):

One can then conclude (from the statement that the Royal Navy used packet to receive orders from London) that the British Government apparently feels that HF packet is a highly reliable means of long distance communication!

Brian J Field VK6BQN
Box 102, Wanneroo WA 6065

Olympic Games Traffic Net

At the request of Sam Voron AX2BVS I am forwarding to you a brief summary of the third party traffic net, which was organised to permit such communications by amateurs during the 24th Olympic games held in Seoul Korea. (These arrangements were the result of negotiations between the WIA, DOTC and the Australian administration on the one hand and KARL and the Korean administration on the other. Ed)

Unfortunately, due to commitments with IARN who were providing assistance to Jamaica due to cyclone devastation, Sam was unable to take net control with Korea, and requested that I should take control on his behalf.

Australian amateurs participating were VK6AP Harry, VK3JCQ Carl, VK3PKE Ken and myself VK6RQ Ray. Felix 4Z40X in Kiryat Yam and YB1BI; Harry were also on the net to handle any traffic intended for their countries and to render assistance if required. On the Korean end of the net was YL USUK HL1ATL net control, operating from the Olympic village under the special call sign of 6K24SO.

Only twenty two (22) messages were passed, not a very busy net under the circumstances, but a very interesting one. To pass a message from the participants to their families and then to see them in action in the events was a most exciting experience. The traffic passed was via USA amateurs for countries with which we had no third party agreements, however, as the largest proportion of messages were to and from the USA no message went undelivered.

Looking back through the log I find that the first QSO took place on 17-9-88 on 21.220 MHz at 0900 UCT, and the last took place on 3-10-88. Skeds were daily at 0800 UCT on a nominal freq of 21.160 MHz with extra skeds at 0600 UCT and 2359 UCT if required. The QSY freq was 14.275 if no contact on 21 MHz. Conditions were such that extra skeds and QSY were not required and signals were R5S7 on every QSO. A little difficulty was experienced at first due to Korean accent but this was soon overcome by USUK who spelt out each word phonetically. It of course took a little longer to send traffic, but accuracy was assured.

Usuk who is editorial director of KARL requested QSL cards, and photographs of the VK participants, as she was writing up an article on the net for KARL journal. I received a personal letter thanking us all for our cooperation and that she would be QRV on 14 and 21 MHz for any VK stations who may wish to QSO with her.

A most interesting net which I enjoyed very much.

Raymond Gray VK6RQ
160 Hardey Rd
Belmont WA 6104

OBITUARIES

Jack Pickles VK2YK

With deep regret I announce the passing of Jack In November. Well known for his devotion and operation on CW, and a good friend to many "on air" operators.

One would have to reach back many years to find the beginning of Jack's Radio career. Like so many others from that era, his Radio grounding covered Broadcast, Mercantile, Aeradio, Coastal and his own servicing. Quite unlike anything required these days, but in itself quite as important to the operators of those times. They were days of true communications, with no excuses of "poor propagation" or aerials slanted the wrong way.

His experience was called upon during the War years, when he spent time on an Allied Patrol Boat. His experiences have yet to be written. Sufficient to say, that he was captured and exposed to the wrath of the Japanese which left physical scars to the day of his death. He had his own thoughts of his treatment also. His retirement was spent mostly on the Amateur Bands demonstrating skills and experience leamt over the years. There was nothing Jack could not copy in Morse Code. The best and the worst was acknowledged, and for many years 7025kc was known as Jack's own spot on the dial. Many fortunate operators have found that spot and had the pleasure of working with Jack.

During his latest illness he was ably and kindly assisted by local friends and amateurs and many calls enquiring of his health were asked on air.

SILENT KEYS

Mr EJA Chittick	**VK3AUB**
Mr CW Savory	**VK6ACS**
Mr CC Waring	**VK3YW**

It is with sadness we say goodby to one of the True Greats of Radio Communications.

Gordon Lanyon, VK2AGL

Kenneth John Pryce VK2BNN

With deep regret we announce the passing of Ken Pryce on 21st November 1988 at the age of 48 years after bravely enduring many years of severe physical handicap.

Ken's interests were many and although physically handicapped he was expert at model ship building - manufacturing of jewellery, opal being his specialty and an expert philatelist, to mention a few.

To know Ken personally was an enjoyable and unforgettable experience. If Ken liked you well he might draw a cartooon or two depicting you. Just as you would never want to be.

A sense of humour to be sure, a generous sensitive man, who loved his music and had that special gift of being able to communicate with young children, a much loved "Uncle Ken".

By profession Ken was a tool-maker and then became a very active partner in his family's business in the manufacture of jewellery and dress ornamentation.

After a motor accident Ken's physical mobility became heavily handicapped and he turned his interest towards amateur radio and obtained his first licence in 1977. A limited call VK2ZPP and later elevated to VK2BNN.

Ken could be heard on any band from 80m to 70cm. His favourites were 10m and 6m. It is believed Ken was the first VK to work into Shemya Island WA4TNV/KL7 on 52 MHz. Ken never ran more than 70w pep into his antenna on 6m and although running limited power, he had some 24 countries to his credit on 52 MHz. No mean achievement and this included a confirmed contact into W6 as well.

When not on air Ken might well be found heavily engaged with his computer system; one was not sure who was coming out on top!

Ken will be sadly missed by his many friends and sincere sympathy is extended to his devoted mother - Mrs Dorothy Pryce, his good and ever helpful friend, Joy and to his family in their sad loss.

Vince Angus, VK2VC

Douglas Allan Norman VK3UC

Doug Norman passed away on October 19, 1988 aged 68 years after a year of suffering especially in the last several months but he was never one to complain.

As an amateur radio operator, Doug loved the CW medium, mainly on 14 and 21 MHz for both DX and ragchewing contacts.

In the business world, Doug was an architect by profession and during WW2, served with the RAAF with both distinction and great fortitude.

It never became generally known that as Sergeant Norman, RAAF, Doug's "fist" was that which transmitted the first "Air raid in progress" signal from the mainland of New Guinea, in mid-January 1942, at which time Doug (and the writer) were members of a combined Civil and Service unit, engaged on a "secret" mission, at a point north of Australia.

This writer recollects that Doug, having let the world know of enemy air attacks on our location, dashed out of the Sigs hut in time to see an enemy aircraft shooting over his head into a loaded RAAF bomber (parked in his immediate vicinity) and a high octane fuel dump, all of which exploded in flames so hot that the ground around Doug melted. Fortunately, for Doug, he reached a covered trench in time but could not avoid severe smoke inhalation. Soon afterwards, Doug escaped into the jungle, where for the next 8 months, he wandered and with others eluded the enemy successfully until finally being rescued. For his war effort, Sgt Doug Norman was mentioned in Despatches and received a BEM.

Following New Guinea, Doug served as Signals Officer at Mallacoota (Vic).

The writer offers sincere thanks to Mrs Elsie Norman (Doug's widow) and Ivor Stafford VK3XB (who served with Doug at Laverton HF DF Station) for supplying some of the information used to compile this obituary.

Eric Trebilcock L3-0042/VK5

Phillip C Lewthwaite VK3CCV

My father Phillip C Lewthwaite VK3CCV died on the 7th August, 1988.

He had been a radio amateur ever since I was old enough to have memories and was among the pioneers of radio in South Africa.

After spending time in North Africa, Egypt and Jerusalem area during the Second World War, where he met up with the Australian forces, he returned to South Africa and once more took out his Radio Amateur Licence. He owned his own Radio business until he retired and was very active on the air.

A member of the South African Radio League, he kept exceedingly busy on the emergency network radio, assisting people injured in car accidents and many other difficult problems by relaying the messages to his nearest police station. He lived in both Johannesburg where he used the call sign ZS6XH and in Durban where he was known as ZS5XH. For a while he also operated from Rhodesia as ZE5JR. He enjoyed his radio tremendously. About 4 to 5 years ago he decided to immigrate to Australia to be near my sister Daphne. Dad and Mum eventually moved into a unit in Forest Hill. He did a bit of DX operating under his Australian Call Sign of VK3CCV and also operated on 40 metres whilst in Forest Hill. He was a great deal more active in South Africa before his health started to fail.

Cynthia W Hill VK3EDG (ex ZS6ACT)

Allen George Jacobs VK4BAJ

The untimely death of Allen Jacobs on Sunday, 13th November 1988 was a great shock to all who knew him, especially to members of the Cairns Amateur Radio Club.

Allen, VX136038 originally from Melbourne, participated in WW2 with the 2nd Australian Field Regiment as a signaller, serving in Australia, Papua New Guinea, New Britain and Borneo. The tropics having whet his appetite, he eventually moved from Melbourne to Cairns in 1953.

Allen, a bachelor, when working at a local sugar mill met George Le Grand who, with George's wife Phyl (now VK4CPL) became Allen's "family" and dear friends.

After being introduced to amateur radio at the CARC's display at the annual Cairns show in 1977, Allen joined the club and obtained his Novice call to be shortly followed by his AOCP. He was a loyal and dedicated club member holding the offices of QSL Manager, Awards Manager, Station Manager and WICEN Officer, still holding

the latter position at the time of his death.

He will be remembered for his neatness and discipline in all things tackled and as WICEN Officer for his precise plotting of all northern cyclones, more recently cyclone Winifred at which time sleep was foreign to him.

Allen is mourned by the Cairns Amateur Radio Club and will be warmly remembered by the general amateur fraternity.

Sincere sympathy is extended to his sister Lorna and family in Melbourne and to his very dear friends Phyl VK4CPL and OM George.

Anne Benson VK4FAB

Harold "Huck" Berry VK5JU

It is with regret we record that "Huck" passed away on 21st November 1988 after a short illness. "Huck" received his AOPC and call sign VK5JU in 1930 and continued to be an active operator until a few days before his death. His interest in latter years was mainly on 7MHz.

He was operator of 8GF the station of the Granites (NT) Goldfields maintaining daily schedules with Peter Sinclair at Wave Hill Radio VJD for a period of six months until the position was taken over by the writer.

Apart from "Huck's" enthusiasm for Ham radio, he was also well known and respected in musical circles in Adelaide as an accomplished saxophone and clarinet player and performed in many leading dance bands.

Before taking up ham radio as a hobby, he was keen on motor bike racing and often competed as a sidecar passenger at Sellicks Beach, a popular venue for speed meetings in the 20s.

To his daughter Barbara and family we extend our deepest sympathy.

A.E. Williams VK5BO

Jack Ravenscroft VE3SR

Jack Ravenscroft of Ontario, Canada, fought for the right to engage in his hobby at home, after a court decision put him off the air following an interference complaint from a neighbour.

Jack's story and his costly legal battle through the courts system should be well known to all active radio amateurs throughout the world. It had been referred to a number of times in Amateur Radio magazine.

In a saga lasting three years, Jack was ordered off the air by a lower court. Massive support from Canadian and foreign radio amateurs saw him engaged in a lengthy and difficult preparation for an appeal to a higher court.

A new ruling, while not perfect, made it possible for Jack to get back on air after suppressing his neighbour's equipment against RF susceptibility. The work to suppress the equipment had virtually been completed.

He was admitted to hospital in October after suffering what appeared to be a minor stroke. Unfortunately, doctors found an inoperable malignancy — and he died two weeks later.

Bill Sargent VK3SC

It is with regret that I record the passing, after a long illness of W G Sargent (Bill) VK3SC. Bill came to Camperdown before World War 2 and joined the local hams 3GQ, 3GC, 3GY, 3NY, 3NK, 3WQ and 3PE. He was a very keen AM operator and worked also on CW. He worked here as a radio serviceman. During the war, he served with a radio unit in the RAAF. After the war, he returned to Camperdown and resumed his employment and extending into TV until illness caused his early retirement. Deepest sympathy is extended to his wife Doris and his family, Dawn, Miriam, Bruce and Alan.

Jim Ballinger VK3NK

NEWS FLASH

Rotuma is a new DXCC country

By unanimous vote, the ARRL Awards Committtee has accepted the recommendation of the ARRL DX Advisory Committee to add Rotuma to the ARRL DXCC Countries List. Rotuma is an island located at approximately 285 statute miles north-northwest of Fiji.

DXCC credit will be given for contacts on or after November 15, 1945. Thus, both the recent 3D2XX operation and the 1982 3D2XR operations, if any, will be accredited upon receipt of complete documentation.

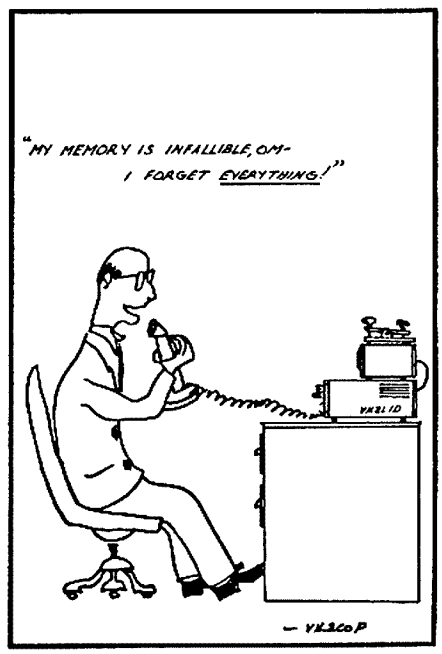
QSL cards may be submitted for Rotuma credit on or after June 1, 1989. Cards submitted before that date will be returned with no action.

There are a few DXCC members who have been given Fiji credit based on a 3D2XR or other Rotuma QSO. They may resubmit this QSL card for proper Rotuma credit (along with a Fiji card for Fiji credit) on or after June 1, 1989. For further information contact Don Search, W3AZD, DXCC Manager, at HQ.

What is a "10-10 number?"

Amateurs operating on 10 metres are often bewildered by requests for "10-10 numbers." 10-10 numbers are assigned by the 10-10 International Net Inc. A number is available to any amatuer who works ten 10-10 members and submits the log data to the appropriate 10-10 Call Area Manager. The purpose of 10-10 is to promote interest and activity on the 10-metre band. For further information, send a business-size SASE to Chuck Imsande, W6YLJ, 18130 Bromley St, Tarzana, CA 91356.

From "ARRL Letter", Vol 8, No 1, 13th January 1989



HAMADS

TRADE ADS

RADFAX2: ---Hi—RES radio facsimile morse & rtty program for IBM PC/XT on 360K 5.25" floppy + full Doc. Need CGA, input port, SSBhf FSK/Tone decorder. Has re—align auto—start view same print.
Also
"RF2HERC" same as above but suitable for hercules card, and "RF2EGA" for EGA card (64OX350 mode). Programs are $30 each + $3 postage ONLY from M. Delahunty 42 Villiers St. New Farm 4005 QLD. Ph. (07) 3582785.

FOR SALE - NSW

1. --- **YAESU FRG7700** with Pre—amp & Handbook $500.
2. --- **0—250 kHz** Laboratory Frequency Counter — Period Meter $50.
3. - **Test Set OAFI** Transmit—Receive 10 kHz to 70 MHz AM—FM—CW complete with handbook $400.
4. **Commodore 64** Computer with tape data recorder handbook and three books of software $250.
5. - **Eddystone 770R Receiver** 19 to 165 MHz with handbook $100.
6. **Eddystone 770U Receiver** 150 to 500 MHz with handbook. $100.
7. **H.P. Sig—gen** 10—420 MHz AM—CW with handbook.
8. **AWA Low Distortion** Audio oscillator with handbook $80.
9. **Flexible Heliax** 40m $120.
10. **HT Transformer** 3000V 350mA. $120.
11. **Heater Transformer** 5V. C.T. 15 Amp. $30.
12. **4CX250B** $50.
13. **Hammond L100 Organ** $400.
14. **Leslie Speaker** with Inbuilt 60 watt drive Amps $450.
15. **MFJ** CW/RTTY Interface Module for the Commodore 64 complete with software and manual. $240.
16. **Hickock Test Set** Main Frame with plug—ins for 100 MHz frequency counter, capacitance meter. $100. Ray VK2FW (QTHR) Ph. (063) 653410

ANTENNA TRAP VERTICAL: Hustler 4—BTV 10 to 40 metres in good condition and with Manual. Electronic Keyer, Katsumi Mk 1024 6 to 60 WPM has internal monitor speaker and manual. VK2AXR Al, Tel:- (02) 4776275.

DECEASED ESTATE VK2MCO
1x FT757GSX as new. $1,250.00
1x FT 102 as new. $1,000.00
1x FL100Z as new. $1,200.00
2x MDI Base Microphones as new $130.00 ea.
1xSP 102 as new $60.00.
1xFC 102 as new. $250.00
1x Kenwood R 1000 Receiver $500.00
1x SM220 Monitor as new. $600.00.
1x SP520. $50.00
1x Kenwood DM81 Dip Meter. $110.00
1x CA35 DX 5ELE Tri Band Yagi as new. $470.00.
1x 4 Element Quad Hardware Complete. $250.00
1x Daiwa 1KW CN720 SWR Meter. $140.00
1x Emotator 105TSX and Clamp (new). $400.00.
1x 1KW Filter AP572938. $100.00.
1x KLB 1100DX HF Solid Amp. $150.00.
1x Dick Smith Multi Tester Q1140 (New). $75.00
1x Clipsal Morse Key 610 (New). $50.00
2x .64 Verticals (as new) for 10mtr use. $75.00 ea.
Mrs Pam Welldon (049) 904468
Contact: VK2PKB—(049) 328935 After 4.30pm week days for all information.

YAESU FT200 & FP200 Power Supply, Manual, Mike & Compressor in original cartons no mods as new $275. Complete Set new valves and relay for above $100. 6JS6C Valves $55 pair, 12BY7A (3) $15 ea. IC21A with manual & cables, 7 Repeater & 4 simplex channels as new $140. "Butternut" HF6V Vert. Antenna $210. 30 egg porcelain insulators plus 2 large $10 the lot. Freight/postage extra.
Alan, VK2AHR, QTHR Ph. (064) 959—275.

FOR SALE: TH6—DXX Hy—gain Thunderbird 6 element
3 band beam c/w baiun $450.00. Buyer
VK2AYD (02) 452 5441.

TH6DXX: Excellent condition . New traps. All stainless hardware. $500 . Also W.WULF 10m YAGI . Brand new. Needs boom. $85. John. VK2MUV. Ph: (043) 851388.

SIEMENS TELEPRINTER 100: Not working. Manual and demodulator. Any offers. Call in. Nick L20106 2/ 9A. Old Berowra Road, Hornsby, 2077.

YAESU YO-100 MONITORSCOPE : with cables and manual RTTY facility VK2BKS. Ph: (063) 823069.

KENWOOD TR2400: H/held. C/W. Base stand charger ST-1. Mic. Excel. Cond. $275 Max VK2GE. Ph: (065) 855 732.

KENWOOD SP-930 Comm. Spkr inbuilt. Switchable audio filters. Matches any 8 ohm tour. Exc cond. $150 Max VK2GE Ph: (065) 855 732

YAESU FT 209R: Two metre handheld, YM-24A Remote speaker/microphone, NICAD charger, SB-1 PTT switch with maintenance service manual. $325. KIRT, VK2DOJ. PH: (02) 436 2618.

YAESU FT-757GX TRANSCEIVER, FC-707 ANTENNA TUNER: FP-707 power supply, $1750. 40 foot Telmast $150. Black Products Antenna Unit $100. Mobile Antenna $50. Kenwood GDO $125. Emtron noise bridge $75. Other accessories and test equipment. QTHR Col, VK2CFC. Ph: (02) 771 5708.

VAC. CAPACITORS JENNINGS CERAMIC 25-1000PF 10,000 VOLTS: Brand new . Latest. Suit large linear - ATU. Ph: (02) 918 3835.

TOWER APP 45' HEAVY DUTY TWO SECTIONS TELESCOPIC. Breaks into 4 sections for transport. Winch - $500. Ph: (02) 918 3835.

ICOM. 751 : with voice synth. and additional **FILTER** Top condition. $1800. **ICOM 735:** As new. Never used. $1600. Ph: Wal. VK2ZQ (02) 467 2354.

COAX RELAYS N-TYPE 120V COIL: New $20 Heavy duty tower 45' Telescopic 4 sections for transport winch. $500. Ph: (02) 918 3835.

YAESU FT370R 70cm FM TRANSCEIVER: $380. **YAESU** FV107 External VF0 5-5.5MHz $50. Chris VK2YMW (02) 692 1473 BH 487 2764 AH

FOR SALE - OLD

AMIGA amateur radio public domain programmes, 3 disks, $20 posted, terminal progs, BBS progs, beam heading & distance calculations, Sat tracking, wefax, morse practice, packet and more. Herb Marriage VK4KM, MS 514, Kingaroy 4610

KENWOOD UHF FM Transceiver Type 8400 mint condition with mobile bracket leads etc. Instruction book in original carton. $350.00
HHW Hansen VK4SV, 4 Bradnor St, Carina QLD 4152 (07) 398 6732

YAESU FV101DM 150 TA7205P IC's new unused. FT101E serv. manual and set of extender boards mint cond. What offers. VK4AJ (071) 284960 Box 373 Piaiba 4655.

KENWOOD Hand held TR2600A Extra Battery Pack Mobile MS1. Soft case 5/8 wave antenna & charger. $475.00
4CX250B C/W Socket and chimney new tube $120.00. Sony KX20PSI Profeel Multisystem TV monitor. $600.00. Tom VK4DDG Gold Coast. (075) 339948.

YAESU FT1, including YAESU external speaker and YAESU desk mike. Recently professionally service checked. $2650. Will consider near offer. John VK4SZ. QTHR. Ph: 070 613 286

FT200/FP200 Serial 350273 PSVGC intermittent fault on final bias. RXOK no TX on 15 and 10 handbook ZL Club book G8BI clipper no mike full set new valves including finals make an offer. Allan V Bull VK4FBB. QTHR. Ph: 071-921948

FOR SALE - VIC

SPARE TRAPS for Hygain TH6DXX 10M 878749 15 M 878637 $40 each VK3AQL. QTHR (03) 8578475.

WANTED Vic Bug Keys VK3AQL. QTHR (03) 857 8475

KENWOOD TS180S HF Transceiver fitted with all options. Exc cond. $750.00. 16 Element 2m YAGI exc. DX-Antenna $135.00 VK3DVD QTHR (03) 726 7137

DECEASED ESTATE Shortwave listener: 12 band allwave transistor receiver with digital frequency counter which can be used portable, in car or 240V. $200 ono. Peter VK3VWQ. Ph: (052) 438837.

KENWOOD R-5000 Fitted VHF. VC 20 12VDC attachment. Scan & 100 Mem, New Oct 87 Owner Now VK3EIM. $1,650. Doug 6/3 Winton Rd 3145. 2117219.

DATONG. ACTIVE ANTENNA. AD370. Outside. Receive 0.2/100 MHz. Mains power unit adaptor 11/ 14V & 9M. Coax. $190. Doug 6/3 Winton Rd, Vic 3145. 211 7219.

KENWOOD TS-520 Transceiver, excellent condition, complete with MC-50 Microphone, Handbook, and 2 new spare 6146 final valves. $500. VK3CO, QTHR

058/25-1585 or VK3CI, Peter, (03) 7284023 after 7 pm.

ICOM IC490: A 70 cm all mode, dual VFO, Memories, scanning, AGC, NB, 10W output Inc power cable, manual, mobile cradle. $675 Kenpro rotator KR250, New unused with 10m of connecting cable $180.00. IC202 linear 10w output $20. Roger (VK3XRS) Ph: 051 568291.

KENWOOD TM201B 2MX FM45watts with all features, with handbook and original carton. $520 ono. VK3AYK QTHR Ph: (03) 5239405.

---

4 ONLY QB 3.5/750S (4-250S), plus 2 ceramic sockets to suit, all new, never used. Best offer. Don VK3DBB, Ph: (059) 411 351 after hours only, please.

GENERAL ELECTRIC REVIEW MAGAZINES bound in black linen, Hardcovers, Gold printing, years 1925, 1926, 1929, 1931. Complete with monthly covers, advertisements, etc. Excellent condition. Best offer. '73' magazines, 1964-68, years incomplete, 30 Issues, $10. Ph: (055) 62 6016

SKILL SNAPLOCK 2-Speed drill, 10 mm, with attachments incl. 5" and 6" circular saws, orbital sander, Jig saw, most parts new. In original boxes, all ex cond. $150. Ph: (055) 62 6016

VK3HM has free old valves, books, mags, tank condx. $15 pair twin cone spkrs. Amer ham radio mags. 88 Egan St, Richmond entry from Punt Rd.

COMPONENTS: (3) 2CW4 Nuvistor triodes $24, (2) 2C39 Triodes $40, Microwave FET - MGF 1402 $25, CX-520D Co-Axial relay $80, 432 MHz to 1296 MHz Tripler with filter $45, 1296 MHz. Inter-digital converter $45. Roger VK3XRS QTHR. Ph: (051) 568291

GRUNDIG GRID DIP OSCILLATORS I & II 100 kHz-8MHz, 3MHz-250 MHz. Orig boxes ex cond $60 ea; Hallam Magnetics Power transformer 240V in 1100V out new $30; Sinclair digital multimeter PDM 35 new $45; Kyoritsu clamp AC volt amp meter new $40; Newtronics swivel ant base new $20. Ph: (055) 62 6016.

LUCAS LAMP or Helio tripod MK1 RMB 1943 $30.00. Contact Bill VK3BWS. Ph: (052) 93337.

YAESU FT2FB 2M, fitted 8 assorted channels includes manual bracket etc. GC $140. STC ISIB 25 watt VHF 10 CH Mobile on 2 metres has CH 40 C/W Manual spare boards etc. GC $85. Heathkit HW100 HF SSB XCR, Valve Unit, No case or manual needs TLC. Offers? Jeff Sparks VK3ZJS. PO Box 86, Riddells Creek 3431, Ph: (03) 6107116 (BH), (054) 286309 (AH).

DSE 15M MONOBAND transceiver VFO, Digital display, with microphone and manual $280 DSE " Centurion" 12V/2A regulated PSU, excellent condition $40 "WPO' 15M QRP Transceiver DC Receiver, DSB/CW FET Transmitter, VFO, Digital display excellent condition, manuals $120. Bob VK3BMA QTHR. Ph: (03) 657 3708 (W)

FOR SALE - SA

YAESU 430 MHz transverter module. Has Ga As FET front-end. Suits FT-107/R, FT-901/R and FTV-707. Hardly ever used, original packing, hard to obtain unit. $220. VK5WD Ph: (08)2511093

TRANSMITTER 6V6G osc 6V6 Dblr 6V6 Dblr 807 buffer 829 PA 160 to 6 MX (750-CT-750) on final. TX Tubes 4-65A, 4E27 (813); 829B+socket VCR 139 & Socket; Grundig reel to reel recorder (valves) Post War Tubes RX & TV. VK5LC. Ph: (08) 271 6841. Les E Catford.

FOR SALE - TAS

KENWOOD TS680S 160-6m T/CEIVER: Inc. GEN/COV. receiver & 6 meters. New. $1530. Tokyo. HY-Power HL1KGX 160 Inc.WARC Linear Amp Inc. New 4CX250B tubes Linear built in power supply 1200W input.
New $1560 003 317914 VK7AN.

YAESU: 730R 70CM FM $400 ONO InfoTech multi mode code receiver TOR ASCII Baudot $400 ONO ICOM R71A $1200 YAESU FT-101 $250 70CM Power amp. $80. Ph: VK7PU (004) 313020.

WANTED - OLD

TV 502/TV506 T'verter or IC202/IC502 will pay reasonable price reply to VK4-DXD 9 Thomas St, Narangba 4504 Ph: (07) 8881904

YAESU Transverter for FT107. 144/50 MHz option desired. Working condition. Noel, VK4BIF, QTHR or 265-5052.

WANTED 2 Tubes 3A4 to restore army 128 set also manual or details WWII army AT21 transmitter VK4EF 97 Jubilee Tce, Bardon, Brisbane 4065. Ph: (07) 366 1803 AH please

---

WANTED 'Expanse' AWA Morse hand key WWII. Also semi-auto keys. Any type, condition. VK4SS. 35 Whynot St, Westend, Brisbane 4101.

CIRCUIT AND/OR MANUAL FOR WESTON RADIO TELEPHONE: Type L M 52 or any information. Willing to bear the cost. J. Gacesa, 37 Bandara St. Wacol 40076. Ph: 2712692

DICK SMITH COMMANDER 2M TRANSCEIVER: Any condition. VK4DI QTH-R. Ph: (079) 22 4402.

WANTED - VIC

BOOK Handbook of electron tube & vacuum techniques by Fred Rosebury. Price to: John Lundy

VK3AZ 8 Arlington Court, Dingley Vic 3172, Ph: (03) 551 2873

WESTON 661. Commercial UHF FM Mobile transceiver. 25 W approved to RB. 234. Designed with separate transmitter & receiver sections so can be used as fixed station/repeater. To swap for a medium duty antenna rotator, any condition but must be working. Danny VK3KKW. Ph: (03) 749 1476.

WANTED Servicemens Technical information sheets, Service Manuals, Data Sheets, Books etc. for valve type broadcast receivers 1930's to 1950's. Ralph VK3CQK, QTHR. Ph: (058) 521372.

WANTED VIC Rotator Stolle or Tandy Archer C/W control box in working order. Ph: (03) 8791896 VK3BK Peter QTHR.

A SPLIT PHASE 24 volt AC Electric Motor, to suit a **DAIWA DR7600X** Antenna rotator. Ph: Vincent 8732301 VK3AJO. 41 Thomas Street, Mitcham, Vic 3132. Area Code 03.

WANTED - ACT

INSTRUCTION MANUAL: (Tube element settings) for U.S.A. Lafayette Tube Tester Model TE-55. Company out of business. Will pay photocopy and postage costs. Please help! Jock Fisher. QTHR. Ph: (062) 86 6920 anytime. VK1LF.

MICROPHONE: Kenwood desk-top type MC-60A. Price and condition to Jock. VK1LF. QTHR. Ph: (062) 86 6920.

HAMAD WANTED: 2M radio for packet. Xtal control acceptable. Must be reliable. Kevin VK1OK. Ph: (062) 54 7129.

NALLY TILT OVER TOWER: Unused in as new condition. Surplus to requirements. Contact Richard VK1UE. QTHR.

WANTED - NSW

MICROLOG AIR-1: CW, RTTY cartridge for Commodore C64 computer. VK2NW QTHR Ph: (02) 464358.

FTDX401 TRANSCEIVER: In working condition. VK2BQQ. Ph: (02) 9576808.

WANTED KENWOOD TS-130s OR TS-120s: Frank VK2CWL. Ph: (068) 890535.

YAESU FT301 HF TRANSCEIVER WITH MATCHING FP301 POWER SUPPLY: $600. Ph: (047) 514257 for on air test or further details John VK2VJD QTHR.

WANTED - SA

SWAP SALADMASTER COOKWARE SET: 21 piece 5 ply stainless steel, brand new, never used - for late model HF transceiver. Will pay cash difference. VK5KBE. Ph: (08) 250 7259.

FOR SALE - WA

PACKET TERMINAL PACCOM TNC 220: with extra H.F. tuner Inbuilt, cost $425. Sell $300. Amstrad CPC 6128 computer, monitor., disk drive, RS232 interface, 25 discs $950 or partex H.F. transceiver plus cash. Transport arranged at cost, K Bainbridge VK6XH (Formally VK6BRK) (09) 279 4923

WANTED - TAS

1296 MHZ 432 MHZ TRANSVERTERS: 144 or 28 MHz IF. Need not be state of art must be GW0 Wayne VK7WD QTHR. PH: (002) 672356 A.H.

ADVERTISER'S INDEX

ATN Antennas 52
Australian Electronics Monthly 16
Captain Communications 62
Dick Smith Electronics ..... IBC
Electronics Today International 56
Emtronics 63
Ian J Truscott's Electronic World ... 12
Icom ..... OBC
Kenwood Electronics Australia P/L IFC
Stewart Electronic Components 54
West - AM Radio 11
WIA NSW Division Novice Licence .. 60
WIA Bicentennial Call Book 52
WIA - VHF Communications 54
ZZV Antenna Farm 22

HAMADS

Please Note: If you are advertising items For Sale and Wanted please use a separate form for each. Include all details; eg Name, Address, Telephone Number (and STD code), on both forms. Please print copy for your Hamad as clearly as possible.

*Eight lines free to all WIA members, ninth line for name and address Commercial rates apply for non—members. Please enclosed a mailing label from this magazine with your Hamad.

*Deceased Estates: The full Hamad will appear in AR, even if the ad is not fully radio equipment.

*Copy typed or in block letters to PO Box 300, Caulfield South, Vic 3162, by the deadline as indicated on page 1 of each issue.

*QTHR means address is correct as set out in the WIA current Call Book.

*A courtesy note will be forwarded to acknowledge that the ad has been received.

Ordinary Hamads submitted from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re—sold for merchandising purposes.

Conditions for commercial advertising are as follows: $22.50 for four lines, plus $2.00 per line (or part thereof) Minimum charge — $22.50 pre—payable. Copy is required by the

Deadline as Indicated on page 1 of each issue.

State: .....

- ❑ Miscellaneous
- ❑ For Sale
- ❑ Wanted

Name: .....

Call Sign: .....

Address: .....

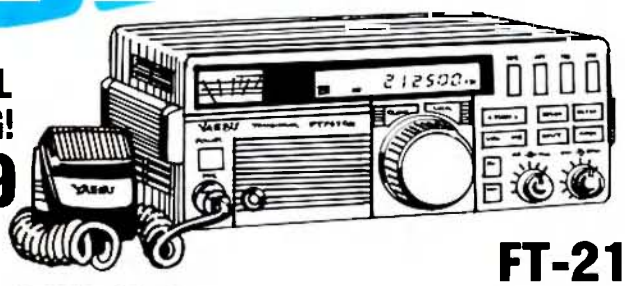
.....

YAESU

Proven Performance

Yaesu's Budget FT747GX:

IDEAL FIRST RIG!
$1349



Everything you need without the frills! Yaesu recognised the fact that amateur transceivers were getting out of the reach of the average person. So they did something about it: The FT747GX. A full 100 W with all amateur bands between 1.8 and 30MHz SSB, CW, AM and optional FM; receiver is 100kHz to 29.9999MHz continuous. If you're looking for value along with performance, there's simply not a better rig than the FT747GX; anywhere! Cat D-2930

Portability Plus!

FT-290MkII

2M portabiltiy, versatility and performance at its best, The Yaesu FT-290MkII is just what you need for real amateur value! Features include All Mode (LSD, USB, CW & FM), 10 memories, 2.5W output, twin VFO's and much more. Cat D-2875

$875

FBA-8 Batt Holder optional Cat D-2876 **$49.95**

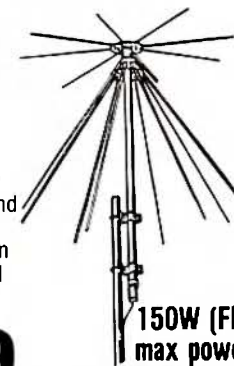
FT-690RII also available **$899**

FT-211RH

45W 2M Mobile Transceiver with mic, mounting bracket. Cat D-3493 **$675**

Plus bonus 5/8 wavelength antenna Cat D-4207 ***(Save $15)***

Broad Band VHF/UHF Discone Antenna



Use it for transmitting and receiving! Save $40 on this high quality, Japanese made, broad band discone antenna that covers scanning, 2M, 70cm, UHF CB... the lot. 3dB gain and less than 1.5:1 SWR between 80 & 480MHz! Sensational value at this astounding low price. Cat D-4315

Was $169 Only $129

150W (FM) max power rating

And the ultimate HF/VHF/UHF transceiver: FT767GX

With bonus microphone!

Combine the best features of the renowned FT-757GX with the FT-726 and what do you have? The all band FT767GX. DC to light (well, almost) covering all HF, VHF and UHF bands up to and including 70cm!

Sure, the FT767GX isn't cheap. In any sense of the word! It has all the features and performance you'd want from your amateur station — because it is a complete amateur station — in one! Cat D-2935

Save over $300 off Catalogue price

$4595

• Every amateur band between 160m and 70cm!
• A complete amateur station in one handy package!

DICK SMITH ELECTRONICS

• **NSW** • **Albury** *21 8399* • **Bankstown Square** *707 4888* • **Blacktown** *671 7722* • **Bondi Junction** *387 1444* • **Campbelltown** *(046)27 2199* • **Chatswood Chase** *411 1955* • **Chullora** *642 8922* • **Gore Hill** *439 5311* • **Gosford** *25 0235* • **Hornsby** *477 6633* • **Liverpool** *600 9888* • **Maitland** *33 7866* • **Miranda** *525 2722* • **Newcastle** *61 1896* • **North Ryde** *88 3855* • **Parramatta** *689 2188* • **Penrith** *(047)32 3400* • **Railway Square** *211 3777* • **Sydney City** *267 9111* • **Tamworth** *66 1711* • **Warringah Mall** *905 0441* • **Wollongong** *28 3800* • **ACT** • **Fyshwick** *80 4944* • **VIC** • **Ballarat** *31 5433* • **Bendigo** *430388* • **Box Hill** *890 0699* • **Dandenong** *794 9377* • **East Brighton** *592 2366* • **Essendon** *379 7444* • **Footscray** *689 2055* • **Frankston** *783 9144* • **Geelong** *43 8804* • **Melbourne City** *326 6088* • **Richmond** *428 1614* • **Ringwood** *879 5338* • **Springvale** *547 0522* • **QLD** • **Brisbane City** *229 9377* • **Buranda** *391 6233* • **Cairns** *311 515* • **Chermside** *359 6255* • **Redbank** *288 5599* • **Rockhampton** *27 9644* • **Southport** *32 9863* • **Toowoomba** *38 4300* • **Townsville** *72 5722* • **Underwood** *341 0844* • **SA** • **Adelaide City** *232 1200* • **Beverley** *347 1900* • **St. Marys** *277 8977* • **Elizabeth** *255 6099* • **Enfield** *260 6088* • **WA** • **Cannington** *451 8666* • **Fremantle** *335 9733* • **North Perth** *328 6944* • **Perth City** *481 3261* • **TAS** • **Hobart** *31 0800* • **NT** • **Stuart Park** *81 1977*

WITH ALL THE FEATURES IN ICOM'S NEW MOBILE TRANSCEIVERS, IT'S A WONDER THEY'RE STILL MOBILE.

Icom have packed so many functions into the IC228A and IC3210A mobile transceivers, you'd think there was no way you could still make them so compact. (It might explain why nobody else has made a transceiver with so many features.)

Some of the features both transceivers share is the multi-colour LCD display for easy viewing. Orange, red and green highlight the numbers and letters displayed in black.

There are various power outputs across the range, from 25W to 45W.

For novices, the 228A can be reduced to 10W.

The Programmed Scan function scans all frequencies between two programmable scan edge frequencies, while the Memory Scan function scans all memory channels in succession, except, of course, those you lock out.

Thanks to the pocket beep, you'll never miss a call. By installing a UT-40 Tone Squelch Unit (this is sold separately) the transceiver functions as a pager. When the frequency of a received tone equals the tone frequency you set, a thirty second alarm is emitted over the speaker.

As for monitoring the input frequency when you work a repeater, that's as simple as pushing the Monitor Switch on the front panel to open the squelch and check the frequency.

Every five seconds, Priority Watch monitors the Call Channel, one or all memory channels in succession. And that's while you operate! No longer do you have to flip back and forth between frequencies.

While the IC228A has 20 memory channels, the more advanced IC3210A has 40. Each channel stores all the information required to work a repeater.

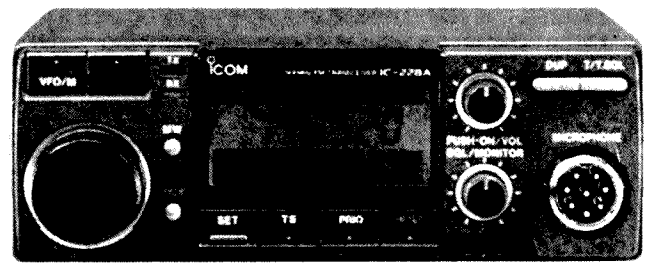
With the IC3210A, there are 20 double-spaced memory channels for 2 metres and 70 cm.

What's more, the IC3210A offers full duplex facility. Which means you can now simultaneously transmit on one band and receive on the other. You never have to wait for a long "over". You have full "break in". In fact, you can talk as easily as talking over the phone.

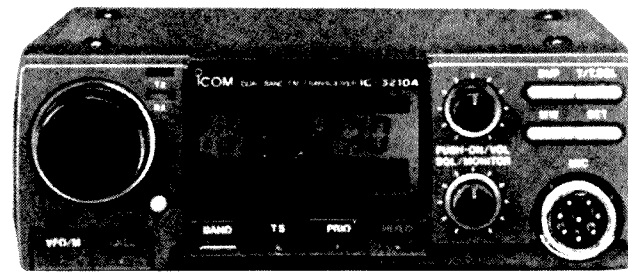
Call (008) 338 915 for your nearest Icom stockist today. (The telephone conversation in itself is a very good example of IC3210A's duplex facility.)

With all these functions in one small compact mobile, it really is a wonder they're still so compact and mobile.

ICOM



IC-228A



IC3210A

Amateur Radio

JOURNAL OF THE WIRELESS INSTITUTE
OF AUSTRALIA
VOL 57, NO 3, MARCH 1989

SPECIAL REPORT
VNG UPDATE

INTRODUCTION TO THE SUPER HETERODYNE

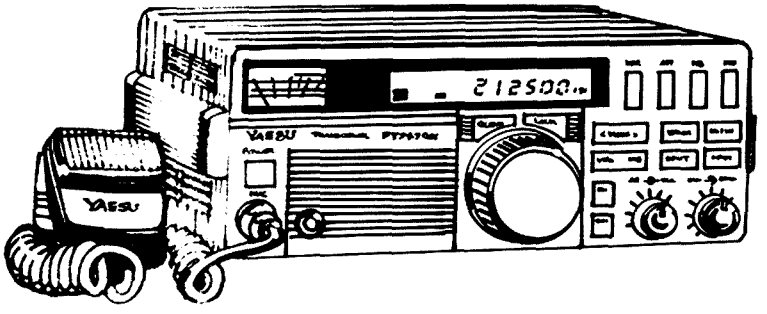
WIA PACKET POSITION

PLANS FOR WARC 1992

YAESU

Proven Price

2 YEAR WARRANTY!



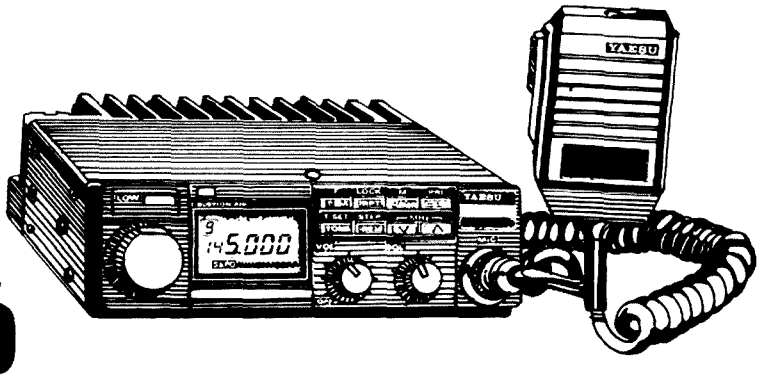
Yaesu's Budget FT747GX:

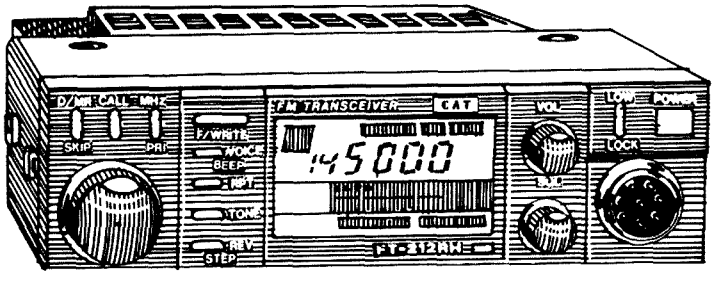
Everything you need without the frills! A full 100 watts with all amateur bands between 1.8 and 30MHz SSB, CW, AM, (optional FM); receiver is 100KHz to 29.99MHz continuous, with narrow CW and wide AM filters fitted as standard! Convenience features include dual VFOs; mode dependent tuning steps (with fast/slow selection) and 20 memories which store mode and skip-scan status. Includes bonus D- 2110 mic. Cat D-2930
See ARA review Vol II issue II.

IDEAL FIRST RIG! **$1349**

SCOOP PURCHASE!
FT-2311R 23cm Transceiver

Get in quick for Australia's best value 23cm FM transceiver! Similar in design to the popular FT-211RH, it features 1240 — 1299MHz coverage, 10W output, user-settable repeater offsets, and a large backlit LCD screen. CatD-3320
Hurry stock won't last at this price! **$649**





FT-212RH

A rugged yet compact 2 metre FM transceiver featuring 45 watts output for extended range, 20 memory channels coupled with a flexible "band" and "memory" scanning system, hand-held mic, optional DVS-1 digital voice recording module, and a 2 year extended warranty. Isn't this the reliable 2 metre mobile you've been looking for? Cat D-3494

$699

FT-712RH

35W 70cm also available. Cat D-3330 **$649**

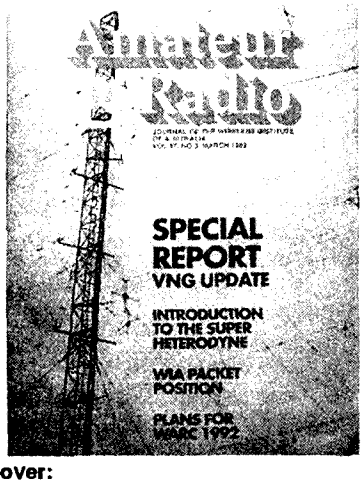
Optional DVS-1 module. Cat D-3497 **$179**

DICK SMITH ELECTRONICS

• **NSW** • **Albury** *21 8399* • **Bankstown Square** *707 4888* • **Blacktown** *671 7722* • **Bondi Junction** *387 1444* • **Campbelltown** *(046)27 2199* • **Chatswood Chase** *411 1955* • **Chullora** *642 8922* • **Gore Hill** *439 5311* • **Gosford** *25 0235* • **Hornsby** *477 6633* • **Liverpool** *600 9888* • **Maitland** *33 7866* • **Miranda** *525 2722* • **Newcastle** *61 1896* • **North Ryde** *88 3855* • **Parramatta** *689 2188* • **Penrith** *(047)32 3400* • **Railway Square** *211 3777* • **Sydney City** *267 9111* • **Tamworth** *66 1711* • **Warringah Mall** *905 0441* • **Wollongong** *28 3800* • **ACT** • **Fyshwick** *80 4944* • **VIC** • **Ballarat** *31 5433* • **Bendigo** *43 0388* • **Box Hill** *890 0699* • **Dandenong** *794 9377* • **East Brighton** *592 2366* • **Essendon** *379 7444* • **Footscray** *689 2055* • **Frankston** *783 9144* • **Geelong** *43 8804* • **Melbourne City** *326 6088* • **Richmond** *428 1614* • **Ringwood** *879 5338* • **Springvale** *547 0522* • **QLD** • **Brisbane City** *229 9377* • **Cairns** *311 515* • **Cbermside** *359 6255* • **Redbank** *288 5599* • **Rockhampton** *27 9644* • **Southport** *32 9863* • **Toowoomba** *38 4300* • **Townsville** *72 5722* • **Underwood** *341 0844* • **SA** • **Adelaide City** *223 4122* • **Beverley** *347 1900* • **St. Marys** *277 8977* • **Elizabeth** *255 6099* • **Enfield** *260 6088* • **WA** • **Cannington** *451 8666* • **Fremantle** *335 9733* • **North Perth** *328 6944* • **Perth City** *481 3261* • **TAS** • **Hobart** *31 0800* • **NT** • **Stuart Park** *81 1977*

ORDER BY PHONE TOLL FREE (008) 22 6610 for DSXpress 24 HOUR DESPATCH.

Amateur Radio



Cover:

Amongst a festoon of "skywires" this tower is one of those supporting a number of Wells Quadrant aerials at the Llandilo transmitting station near Penrith NSW. The newly-reactivated standard time and frequency transmission, best known by its callsign VNG, is radiated by these aerials. See story, page 15.

Photo by Marion Leiba

Deadline for April issue is 8 March, except for Hamads which will be accepted up to 14 March.

Special Features

The resuscitation of VNG by Marion Leiba 15
Aussies Chat with Space by Lim Linton VK3PC 10
Packet Radio Position Paper 42
Packet Radio Survey Form 56
John Flynn Place - Cloncurry by Alan Shawsmith VK4SS 13
Planning for WARC 1992 39
Redcliffe's Field Day 8
by Jo-Anne Dudley VK4CYL and Rick Rodgers VK4HF
What an Inspiration by Bruce Kendall VK3WL 42

Technical Articles

Introduction to the Superheterodyne Receiver
by Lloyd Butler VK5BR 21
Aircraft Enhancement - Another View by Ian Cowan VK1BG 18
A Digital VFO for your FT-101ZD by Bob Fincher VK3BRF 28

Regular Features

Advertiser's Index 64
ALARA 54
AMSAT Australia 46
Awards
- Special LX 35
- DXCC Updates 35
- WAVKCA issues 35

Club Corner
- Moorabbin, Orange 36

Contests
- Calendar 30
- Commonwealth Rules 1989 30
- VK-ZL-O Results 1988 32

Divisional Notes
- Forward Bias (VK1 Div) 40
- Minibulletin (VK2 Div) 52
- VK3 Notes 53
- 5/8 (VK5 Div) 10
- VK6 Bulletin 53

Editor's Comment 2
Education Notes 34
Equipment Review FT-736R 12
Hamads 62
How's DX? 45
Intruder Watch 36
Morseword No. 24 52
Over to You - members' opinions 60
Pounding Brass 38
QSLs of the WIA Collection 50
Silent Keys 61
Spotlight on SWLing 38
Topical Technicalities 7
VHF - UHF An Expanding World 47
WIA Directory 3
WIA News 4

Amateur Radio

Published monthly as the Official Journal by the Wireless Institute of Australia, founded 1910. ISSN 0002 - 6859. Registered Office: 3/105 Hawthorn Road, Caulfield North, Vic 3161. Telephone: (03) 528 5962.

EDITOR
Bill Rice VK3ABP

NEWS EDITOR
Jim Linton VK3PC

TECHNICAL EDITING CO-ORDINATOR
Peter Gibson VK3AZL

TECHNICAL EDITORS
Evan Jarman VK3ANI
Gil Sones VK3AUI

MARKETING
Bruce Kendall VK3WL

CONTRIBUTING EDITORS
Frank Beech VK7BC
Joy Collis VK2EBX
Brenda Edmonds VK3KT
Ron Fisher VK3OM
Norm Gomm VK1GN
Ken Gott VK3AJU
Gilbert Griffith VK3CQ
Roy Hartkopf VK3AOH
Robin Harwood VK7RH
Ron Henderson VK1RH
Bill Homer VK4MWZ
Eric Jamieson VK5LP
Tim Mills VK2ZTM
Hans Ruckert VK2AOU
John Sparkes VK6JX
Jennifer Warrington VK5ANW

DRAFTING
Liz Kline, Ken Kline

Inquiries and material to the Editor: PO Box 300, Caulfield South, VIC 3162

Advertising: Ann McCurdy (03) 528 5962

Material should be sent direct to PO Box 300, Caulfield South, Vic. 3162, by the second Wednesday of the month preceding publication. Check page 1 for deadline dates. HAMADS should be sent direct to the same address, by the following Tuesday.

Acknowledgement may not be made unless specifically requested. All important items should be sent by Certified Mail. The editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying a reason.

TRADE PRACTICES ACT

It is impossible for us to ensure the advertisements submitted for publication comply with the Trade Practices Act 1974. Therefore advertisers and advertising agents will appreciate the absolute need for themselves to ensure that, the provisions of the Act are complied with **strictly**.

VICTORIAN CONSUMER AFFAIRS ACT

All advertisers are advised that advertisements containing only a PO Box number as the address cannot be accepted without the addition of the business address of the box-holder or seller of the goods.

TYPESETTING : Redfords Media Suite 1, 5 Walworth Ave, Caulfield Nth, 3162 Tel: (03) 523 0035

PRINTING: West Web, Barwon Heads Rd, Belmont

MAIL DISTRIBUTION: Polk Mailing Co. PO Box 140, Collingwood, Vic 3066 Tel:(03) 417 5161

EDITOR'S COMMENT

Slightly nautical

Just two years ago, in March 1987, I wrote on this page under the heading "Mainly Nautical" an account of our annual attempt on what so far has seemed a forlorn hope, namely some measure of success in the Marlay Point Overnight Sailing Race on the Gippsland Lakes. I went on to discuss the related topic of amateur radio in the maritime-mobile scene.

This time, I thought I might just briefly mention (for those one or two still in suspenseful wonderment!) what did happen in the 1987 and 1988 races, with the 1989 event now only a few weeks away, and then pass on to another topic of strong interest at least vaguely related to all this.

To cut a long story short, the 1987 race was postponed twice, about six hours each time, and then cancelled soon after sunrise. In the 19 previous years cancellation had never been necessary, but this time the weather was really bad with winds of up to 60 knots. We did actually sail across Lake Wellington anyway, along with about 100 other boats, and were hit by one strong storm-front which we survived undamaged. Some others were not so lucky, and seven were sunk but their crews were rescued unhurt.

Last year, the weather was almost a carbon copy of 1987, but after postponement again until morning the race was sailed in a strong south-westerly and some very fast times recorded. Unfortunately, within sight of the finish we were forced to retire with a split centre-board among other problems!

This year, who knows? It is very obvious though, that the boat needs more attention and the crew more practice (skipper included). Now that Amateur Radio is largely being produced at the Executive Office, rather than by contract, your Editor has even less time to go sailing, poor chap! And since I did not retire from full-time work to become almost as tied to a voluntary part-time job, we now have a vacancy for a PAID PART-TIME EDITOR!

I suppose I could forego sailing a while longer, and take on the job. But this would then preclude me from remaining on Executive, whose members are not permitted to be WIA employees. I think I have been Managing Editor long enough. Is there any suitably qualified active Melbourne radio amateur who would like to take it on?

The job involves about ten full days work each month, and the salary will be attractive and negotiable. It would best suit someone who already has another part-time job, or who has retired early. Demonstrated competence in English technical journalism is essential, preferably at tertiary level.

Who among you can take me out of the Editor's chair (except as a executive figurehead) and put me at the helm of my trailer-sailer? We are all eager to see if someone will accept the challenge!

Bill Rice VK3ABP
Editor

PUBLICATION COMMITTEE AWARDS

At its December meeting the Publications Commiteee considered all contributions published in Amateur Radio during 1988 and selected three authors whose work merited the annual awards given by the WIA.

The winners are:

1. The Al Shawsmith Journalistic Award, for the article on a radio theme considered best to display literary merit. $100 and an engraved plaque to Ken England VK4JPE for his article entitled "The Wilga Tree".

2. The Higginbotham Award for meritorious service to amateur radio generally, not necessarily only to the magazine. $100 to Lloyd Butler VK5BR for his continuing contributions on a wide range of topics.

3. The Technical Award for the best technical article/s of the year. $100 to Drew Diamond VK3XU for his "Novice Notes" series and particularly the article on VFO construction.

WIA DIRECTORY

Federal Council

Kevin Olds	VK1OK	ACT Councillor
Peter Jeremy	VK2PJ	NSW Councillor
Peter Mill	VK3ZPP	Victorian Councillor
David Jerome	VK4YAN	Queensland Councillor
Rowland Bruce	VK5OU	SA Councillor
Neil Penfold	VK6NE	WA Councillor
Joe Gelston	VK7JG	Tasmanian Councillor

Federal Co—ordinators

Amsat	Graham Ratcliff	VK5AGR
Awards Mgr	Ken Gott	VK3AJU
Contest Mgr	Frank Beech	VK7BC
Education	Brenda Edmonds	VK3KT
EMC	Hans Ruckert	VK2AOU
Historian	John Edmonds	VK3AFU
Intruder Watch	Bill Horner	VK4MWZ
Int'l Travel Host Exch	Ash Nallawalla	VK3CIT
QSL Mgr	Neil Penfold	VK6NE
Standards	Peter Page	VK2APP
Tapes (Federal News)	Bill Roper	VK3ARZ
Videotape	John Ingham	VK5KG

Executive

Peter Gamble	VK3YRP	Federal President
Ron Henderson	VK1RH	Vice Chairman
David Wardlaw	VK3ADW	Immediate Past Federal President
Brenda Edmonds	VK3KT	Federal Education Officer
Bill Rice	VK3ABP	Editor Amateur Radio
George Brzostowski	VK1GB	Federal Executive
Peter Page	VK2APP	Federal Executive
Ray Roche	VK1ZJR	Federal Executive
Bill Wardrop	VK5AWM	Federal Executive
Kathy Gluyas	VK3XBA	Federal Executive

Executive Office

Bill Roper	VK3ARZ	General Manager & Secretary
Ross Burstal	VK3CRB	Assistant General Manager
Ann McCurdy		Advertising & Admin. Manager
Helen Wageningen		Membership & Circulation Mgr
June Fox		Accounts & EDP Manager
Earl Russell	VK3BER	EDP Consultant
Ron Fisher	VK3OM	Librarian

DIVISIONS

Div	Address	Officers			Broadcasts	Fees	
VK1	ACT Division GPO Box 600 Canberra ACT 2601	President Secretary Treasurer	Alan Hawes Alex Johnson Ken Ray	VK1WX VK1ZDX VK1KEN	3.570 MHz 2m ch 6950 70cm ch 8525 2000 hrs Sun	Full (F) Assoc (A) Full (C) Assoc (T) Pens. (G) Stud. (S) Family (X)	$44.00 $44.00 $44.00 $44.00 $33.00 $31.00 $25.00
VK2	NSW Division 109 Wigram St Parramatta NSW 2124 (PO Box 1066 Parramatta) Phone (02) 689 2417	President Secretary Treasurer	Roger Henley Andrew Keir David Horsfall	VK2ZIG VK2AAK VK2KFU	(R Denotes repeater) Times 1100 and 1930 on Sun 1.845 MHz AM, 3.585 SSB, 7.146 AM (1100 only) 28.320 SSB, 52 120 SSB 52.525 FM 144.120 SSB 147.000 FM(R) 438.525 FM(R) 585.500 (ATV Sound) Relays also conducted via many repeaters throughout NSW.	F A C T G S X	$41.50 $39.50 $41.50 $39.50 $34.50 $22.50 $24.50
VK3	Victorian Division 38 Taylor St Ashburton Vic 3147 Phone (03) 259 9162	President Secretary Treasurer	Jim Linton Peter Mill Rob Hailey	VK3PC VK3ZPP VK3XLZ	1.840 MHZ AM, 3.615 SSB, 7.085 SSB, 147.250 FM(R) Mt Macedon 147.225 FM(R) Mt Baw Baw 146.800 FM(R) Mildura 438.075 FM(R) Mt St Leonard 1030 hrs on Sun	F A C T G S X	$50.00 $45.00 $50.00 $45.00 $38.00 $27.00 $27.00
VK4	Queensland Division PO Box 638 Brisbane Old 4001 Phone (07) 349 7768	President Secretary Treasurer	David Jones John Aarsse Neil Fittock	VK4NLV VK4QA VK4NEF	3.650 MHz, 7.118, 14.342, 18.132, 21.175, 28.400, 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday Repeated on 3.605 & 147.150 MHz, 1930 Mon	F A C T G S X	$45.00 $45.00 $45.00 $45.00 $36.00 $27.00 $27.00
VK5	South Australian Division Thebarton Rd West Thebarton SA 5031 (GPO Box 1234) Adelaide SA 5001) Phone (08) 352 3428	President Secretary Treasurer	Don McDonald Hans van der Zalm Bill Wardrop	VK5ADD VK5KHZ VK5AWM	3.550 MHz, 14.175, 28.470, 53.100, 147.000 FM(R) Adelaide 146.700 FM(R) Mid North 146.900 FM(R) South East ATV Ch 34 579.00 Adelaide ATV 444.250 Mid North (NT)3.555, 146.500, 0900 hrs Sun	F A C T G S X	$44.00 $44.00 $44.00 $44.00 $35.00 $26.00 $26.00
VK6	West Australian Division GPO Box 10 West Perth WA 6005	President Secretary VK6PF Treasurer	Christine Bastin Fred Parsonage Cliff Bastin	VK6ZLZ VK6LZ	146.700 FM(R) Perth, at 0930 hrs Sun, relayed on 3.560 MHz, 7.075, 14.110, 14.175, 21.185, 28.485, 52.080, 438.525(R) Country relays 3.582, 147.350(R) Busselton 146.900(R) Mt William (Bunbury) Broadcast repeated on 3.560 at 1900 hrs.	F A C T G S X	$42.00 $42.00 $42.00 $42.00 $35.00 $22.00 $23.00
VK7	Tasmanian Division PO Box 1010 Launceston TAS 7250	President Secretary Treasurer	Mike Wilson Peter Frith Peter King	VK7ZWW VK7PF VK7ZPK	146.700 MHZ FM (VK7RHT) at 0930 hrs Sun relayed on 147.000 (VK7RAA), 146.750 (VK7RNW), 3.570, 7.090, 14.170, 52.100, 144.100 (Hobart) Repeated Tues 3.590 at 1930 hrs	F A C T	$42.00 $42.00 $42.00 $42.00

VK8 (Northern Territory) is part of the VK5 Division and relays broadcasts from VK5 as shown (received on 14 or 28 MHz).
Note: all times are local. All frequencies MHz.

WIA NEWS

Bill Roper, VK3ARZ, General Manager & Secretary

THIRD PARTY TRAFFIC

The current literal dictionary interpretation by the Australian amateur radio licensing authority, the Department of Transport and Communications, of what constitutes legal amateur third party traffic in this country, is out of step with the majority of other countries who permit third party traffic operation by their licensed amateur radio operators.

The WIA has been negotiating with DOTC for some time in an effort to ease the unnecessarily harsh contraints of their rulings on Third Party Traffic. John McKendry, an Assistant Secretary with DOTC at the time, gave an undertaking to the WIA at the 1988 Federal Convention, that DOTC would not take any further action about Third Party Traffic until after the 1988 IARU Region 3 Conference in Seoul and receipt of a subsequent detailed submission from the WIA.

You can imagine our surprise when DOTC appeared to dishonour this undertaking by John McKendry when they forwarded a letter, addressed personally to the General Manager of the WIA, on 31st October 1988 setting out their interpretation of the rules for Third Party Traffic operation by Australian amateurs.

This unexpected letter was received only a few days after the Seoul Conference and well before the WIA delegates to the Conference had an opportunity to discuss the findings of the Conference with Executive, let alone prepare a submission.

When tackled at the recent WIA/DOTC Joint Meeting about this apparent breach of undertaking, the DOTC spokesman advised that "the letter of 31st October 1988 was sent to simply clarify the current situation and that DOTC is ready and willing to negotiate".

As a result of the discussions that followed, the WIA is assembling material from the IARU Region 3 Conference in Seoul, the recent United Kingdom DTI rulings, and rulings from other sister societies in order to support a submission to vary the Australian Third Party Traffic rules to bring them in accord with the majority of other countries.

The WIA deliberately did not publicise the letter of 31st October 1988 from DOTC, *firmly* believing that to do so would only further complicate an already confusing issue.

You can imagine our surprise when this private letter to the WIA suddenly appeared on a packet radio bulletin board, and was subsequently published in at least 2 non-WIA publications.

We know that the letter was not released by the WIA, so the question is, who publicly released this private letter?

Is the DOTC yet another Government Department to 'spring a leak'?

Full details of the WIA submission on Third Party Traffic will be made available in the pages of Amateur Radio, as soon as they become available.

INTRUDER WATCH

Intruder Watch, the service provided by a number of volunteer amateurs who monitor the amateur bands, logging unauthorised non-amateur transmissions and reporting them to the authorities, is a very essential part of the continuing effort by the WIA to protect our bands.

This is a very important operation to the future of *amateur* radio.

But, for one reason or another, all too few amateurs seem prepared to put in the necessary small amount of time per week to assist. Bill Horner, VK4MWZ, the newly appointed Federal Intruder Watch Co-ordinator, is presently wanting to recruit some more Intruder Watchers, particularly State Intruder Watch Co-ordinators.

For instance, at present, there is no Intruder Watch Co-ordinator in VK2 and VK7; and in VK1 the Divisional President has been temporarily filling in, but would like some relief.

If you would like to put something back into the hobby of amateur radio, from which you gain so much enjoyment, here is an opportunity for you. For a small amount of time and effort each week, you can become an important part of the continuing battle to protect our bands from intruders.

Bill Horner, VK4MWZ, can be contacted by writing to him at 26 Iron Street, Gympie, Queensland, 4570, or by telephoning him on 071 82 5272.

DELIVERY OF AMATEUR RADIO

One of the most tangible benefits of being a member of the WIA is the monthly receipt in your letter box of the WIA journal, Amateur Radio.

Each month just on 8000 copies of the magazine are posted out to members all over Australia and overseas. And each month the Executive Office receives calls from an average of 20 members querying why they have not received the latest copy of AR.

In most cases the post office has temporarily misplaced the magazine and it turns up a few days later than it should have done. In some cases the magazine is returned to the Executive Office with the notation "Left Address" or "Not Known at this Address", when in fact the address is quite correct. And in other cases, changes of address have not been notified to us in time.

The magazine is delivered from the printers to the mailing house on the last Friday in each month. The mailing house normally delivers the wrapped and addressed magazines to the post office within 48 business hours, which usually means on the following Tuesday.

Then it is up to Australia Post. However, bear in mind that Amateur Radio is sent as a Category B item, which is effectively second class mail.

If you have not received your copy by about, say, the middle of the month, and the post office have not temporarily misplaced it, the chances are that you have not renewed your annual membership subscription.

In these circumstances, a quick telephone call to the Executive Office on (03) 528 5962 between the hours of 9.30 AM and 4.30 PM on weekdays, will quickly clarify your membership situation.

2 METRE SIMPLEX CALLING FREQUENCY

The Executive Office has received several complaints recently about amateurs operating in the 2 metre band on the old channel 40 frequency of 146.00 MHz.

I wonder how many new operators on this band realise (and how many old operators have forgotten) that this once common simplex FM frequency causes interference to satellite downlinks?

Please do not use 146.00 MHz simplex FM operation.

And talking about 2 metre FM operation, it is probably worth a reminder that the CALLING CHANNEL of 146.50 MHZ, or the old channel 50, is intended to be just that, a CALLING CHANNEL, and not a frequency for general conversation.

As Arthur, VK7SE, wrote in a recent letter, "We should use 6425, 6450, 6475, 6525, 6550, and 6575, etc. (some of which have been allocated to separate purposes) for general

conversation. This makes it easy to locate others, but if we all talk on the CALLING CHANNEL, well, it's just like tying up a repeater instead of going simplex...."

If you have any doubts about what are the preferred frequencies for your operation, please refer to the Band Plans for the Amateur Service, VHF Bands section, on page 24 of February 1989 issue of Amateur Radio.

IONOSPHERIC PREDICTIONS

I wonder how many members realise that Radio Australia provides a comprehensive ionospheric predictions service 5 times a day at 4 hourly intervals commencing from 4.25 hrs UTC, on Mondays to Saturdays. The information for this service is provided by IPS Radio and Space Services located in Sydney.

Last week the WIA was advised that IPS Radio and Space Services was going to reduce their supply of predictions from 7 days a week to 5 days a week, leaving no service on weekends on Radio Australia.

The WIA Executive Office immediately FAXed off a strong protest to IPS Radio and Space Services, but we have now learnt that the predictions service is definitely being reduced to only 5 days a week.

The good news is that, not only has Radio Australia been able to come to an arrangement with WWV in Boulder, Colorado, USA to be able to obtain predictions over the weekends, but it is expected that in May of this year, Radio Australia will extend their present 6 day a week ionospheric predictions service to 7 days a week.

Mike Bird from Radio Australia is presently preparing a detailed article on his ionospheric predictions service for publication in the April issue of Amateur Radio.

50 MHZ BAND AND CHANNEL 0

As previously advised the WIA is currently negotiating with DOTC with a view to achieving a set of operating conditions for the 50 MHz band which will be acceptable to all Australian radio amateurs, and will permit radio amateurs located in the mainland east coast states of Australia to operate below 52 MHz in coexistence with channel 0 television.

On 20th January 1989 a submission was lodged with DOTC, which included a supporting 23 page technical report. This report examined the technical aspects of sharing between the Amateur Radio Service and the Broadcasting Service of a small segment of the spectrum centred on approximately 50.10 MHz.

A major portion of the report was a discussion which determines a minimum radial distance at which an amateur radio station may operate on frequencies around 50.10 MHz without causing significant interference to a channel 0 television service.

The 7 major recommendations of the report are as follows:-

(a) To conform more closely with international amateur radio operation, the existing shared segment 50.00 - 50.15 MHz should be shifted 50 kHz higher in frequency, with no increase in bandwidth, to a segment 50.05 - 50.20 MHz.

(b) Operation in the proposed shared segment 50.05 - 50.20 MHz by the Amateur Radio Service should be on a strictly secondary non-harmful interference basis to channel 0 television services. If harmful interference to a channel 0 service is caused by an amateur station operating in the shared segment 50.05 - 50.20 MHz that amateur station must cease operation.

(c) In all amateur call areas of Australia, except the ACT (VK1), the following radial distance separation restriction should apply between an amateur radio station operating on 50.05 - 50.20 MHz and any on air channel 0 television service. The proposed radial distance restrictions are:

(i) no amateur operation less than 120 km from a channel 0 main station;

(ii) no amateur operation less than 60 km from a channel 0 television translator station, and

(iii) no amateur operation less than 60 km from any television translator station which has an off-air channel 0 input signal.

(d) In the ACT amateur call area (VK1) the radial distance restrictions in (c) above should apply, except that a minimum radial distance separation of 110 km be allowed from national main station ABMN-0, Mt Ulandra. Maximum transmitter peak envelope power output allowable in the ACT should be 100 watts.

(e) In all call areas where there are operating channel 0 services (currently New South Wales, Queensland and Tasmania) the maximum amateur transmitter peak envelope power should be limited to 100 watts.

(f) In the proposed shared segment 50.05 - 50.20 MHz the only allowable amateur transmission modes should be single sideband suppressed carrier (J3E) and CW (A1A); and finally

(g) All other existing agreements covering the use of the spectrum 50 - 52 MHz for call areas VK5, VK6, VK7, VK8, VK9 and VK0 to remain unaltered if the agreements are more favourable than the above recommendations.

As readers will appreciate, it has been difficult to determine details of a submission which will have a good chance of success, and the WIA appreciates the considerable help and advice received from a number of prominent 6 metre operators.

We understand that the submission has to be examined by something like four separate sections of DOTC before eventually finding its way to the Broadcasting Council. Obviously, we are unlikely to get a decision very quickly, but we will keep you advised of progress.

PACKET OPERATION ON 20 METRES

The Federal Technical Advisory Committee of the WIA (FTAC) has recently received advice from an Australian spokesman for HF packet systems operators that HF packet signals have been heard above 14.112 MHz LSB. This frequency is the International Amateur Radio Union (IARU) Region 3 agreed bandplan upper limit for data modes.

Australian radio amateurs will appreciate that this band plan was detailed in the January 1989 issue of Amateur Radio by FTAC and is proposed for adoption in this country at the coming April 1989 Federal Convention in Melbourne.

The HF packet spokesman was concerned that HF packet operators were not aware of the implications of the upper limit, and the declared sideband in that limit.

He sought publicity for the packet channel frequencies conventionally used on the 20 metre amateur band. These are at 2 kHz spacings and are as follows:-

14.095 - 14.0995 MHz Use with caution and avoid RTTY BBS.

14.100 +/- 500 Hz Time shared beacon service and guard band.

14.101 MHz For QSOs and experimentation.

14.103 MHz For QSOs and experimentation.

14.105 MHz User channels - open access.

14.107 MHz User channels - open access.

14.109 MHz and 14.111 MHz. International forwarding - closed channels - available only for forwarding.

14.112 MHz LSB is upper limit of IARU Region 3 data segment.

PACKET RADIO POSITION PAPER

And talking about packet radio, elsewhere in this issue of Amateur Radio is the long awaited WIA packet radio position paper prepared by FTAC. This paper attempts to establish guidelines and policy, rather than specific detail which will be developed in due course in conjunction with packet enthusiasts and FTAC.

If you are at all interested in packet radio, make sure that you read the paper and provide your comments to your Divisional Federal Councillor prior to the 1989 Federal Convention commencing on 23rd April 1989.

WARC 92

Arguably, never before in the history of amateur radio has there been such pressure on the amateur bands from commercial interests as there is at the present time. As a result of changing commercial and political interest in our frequencies, the decisions made at the World Adminstrative Radio Conference (WARC) scheduled to be held in 1992, will most certainly have far reaching effects on amateur radio as we know it.

The WIA is already well into the stages of preparation for this important event. Make sure that you read the paper on WIA Planning for WARC 1992 which is published elsewhere in this issue of Amateur Radio.

The WIA is the single biggest voice representing amateur radio in Australia. But we need more members.

The more members we have, the more notice government will take of what the politicians class as a minority group.

What are you doing to increase membership in the WIA?

ADVERTISEMENT OF DISPOSALS NEWS ITEMS ON AUTHORISED WIA DIVISIONAL NEWS BROADCASTS

Following representations by the WIA, the DOTC agreed, on 17th May 1985, that authorised WIA Divisional news broadcasts could include the advertising of disposals news items, subject to certain conditions.

This facility has proved to be popular and is regularly featured in the majority of weekly Divisional news broadcasts.

One of the conditions has been that all telephone calls in response to the disposals news items broadcast had to be made to the WIA volunteer contact officer. This has caused problems in some Divisions because of the number of telephone enquiries being received by the contact officer for up to several days after each weekly broadcast.

Some time ago the VK6 Division was permitted by the State DOTC office to broadcast the telephone numbers of the individual buyers and sellers, and this system has been working quite satisfactorily.

The WIA has now requested that this variation to the original ruling be permitted to all Divisions, and I shall advise members of the official response in due course.

However, in the course of discussions with DOTC in Canberra, the DOTC spokesman expressed concern that a number of club stations, including those with packet facilities, appear to have misunderstood the DOTC ruling, and are including disposal news items in their own broadcasts.

He asked the WIA to publicise the fact that the 17th May 1985 ruling permitting this facility limited it to AUTHORISED WIA DIVISIONAL NEWS BROADCASTS only!

COLIN J. HURST, VK5HI

The WIA, the oldest amateur radio society in the world, has survived and grown over the years mainly because of the unselfish efforts of many volunteers.

And, like many other volunteer organisations, the WIA has often accepted the tremendous contributions of many of these volunteers without much fanfare or recognition.

One of these tireless workers behind the scenes (if one could say that of a person who has contributed a regular column "AMSAT AUSTRALIA" to Amateur Radio for the past 6 years) is Colin Hurst, VK5HI.

As you read in last month's Amateur Radio, Colin has now handed over the column to Maurie Hooper, VK5EA, and is taking a well deserved rest from meeting monthly deadlines.

I am sure that all members, satellite enthusiasts or not, will join with me in thanking Colin for a job very well done.

Volunteers of Colin's calibre are few and far between. The WIA needs more volunteers like Colin, and I trust that Colin's well deserved rest is only for a short time.

MEMBERS SURVEY

Have you been wondering what happened to the WIA survey? The one that you pulled out of your October 1988 issue of Amateur Radio, filled in and sent off to the Executive Office.

There was a very encouraging response to the survey, but the problem has been in processing. There have been no paid staff free from other work to key punch the information from each returned survey into our computer, and the processing has been dependent on the availability of volunteers.

At this time, about 75% have been processed, sufficient to give an indication of what the final results may be.

For instance, the average age of members completing the survey is 51.1 years. Not as old as some people seemed to think, and almost exactly the same as the average age of radio amateurs in the USA.

By far the most numerous OCCUPATION is "Retired" (does this simply mean that retired members have more time to fill in surveys?), with "Professional" and "Technical" next in order.

Apart from "Other Employment", the major POSITION of members is as a "Manager" or as a "Supervisor". While the most popular INDUSTRY is "Communications".

MAJOR HOBBIES AND INTERESTS, in addition to amateur radio, clearly showed "Computers" in the lead, followed by "Photography" and "Gardening".

In assessing the performance of the WIA, members indicated that our major FREE SERVICE strength is "Beacons and Repeaters", closely followed by "DOTC/Government Liaison" and "News Broadcasts".

Strangely enough, the FREE SERVICE indicated as needing the most improvement, is also "DOTC/Government Liaison". This is further emphasised as the service that the WIA should give most FUTURE EMPHASIS to.

The major PAID SERVICE strength is seen as "QSL Bureau", closely followed by "Magazine"; the main PAID SERVICE needing improvement is "Licensing and Technical Advice"; and the PAID SERVICE seen as needing most FUTURE EMPHASIS is "Town Planning Advice".

The completed survey results will be available to the 1989 Federal Convention, and will give the Federal Council and the Executive valuable assistance in their discussions about future planning.

ar

TOPICAL TECHNICALITIES

A bitty analysis of the Morse Telegraph Code

The Morse telegraph code has survived in spite of many attempts to declare it obsolete and to banish it from the list of required operating skills. Like many old fashioned ideas it will finally disappear, probably only for the reason that it is old fashioned. Now might be a good time to review some aspects in the light of 'modem' ideas.

A telegraph is an apparatus for transmitting messages or signals to a distance.

An electric telegraph is an apparatus which transmits signals and messages to a distance by making and breaking an electric circuit.

The Morse electric telegraph code encodes messages and signals by assigning to each message character a unique series of makes and breaks. The time duration of each make or break is an integral multiple of the shortest.

For the purposes of this discussion I will refer to the shortest make or break as a bit. The justification for that is the two state or binary nature of the code; additional justification is the fact that binary digits are older fashioned than the Morse code and were elevated to bits only recently.

The Morse code, as any novice will tell you, is a code using combinations of dots and dashes to represent language letters or number system digits. A dot is two bits, a make and a break, a dash is four bits, a make of three bits followed by a break of one bit.

Characters (letters or numbers) forming a group or work are separated by a space three bits long.

A group of characters or a word is separated from the next by a space seven bits long.

In binary numbers a dot is 01 or 10, a dash is 1110 or 0001 and spaces are 000 or 111 or 0000000 or 1111111.

The English alphabet in Morse code has an average letter length of 11 bits including three bits for letter spacing. (Note - the average information value is only four bits).

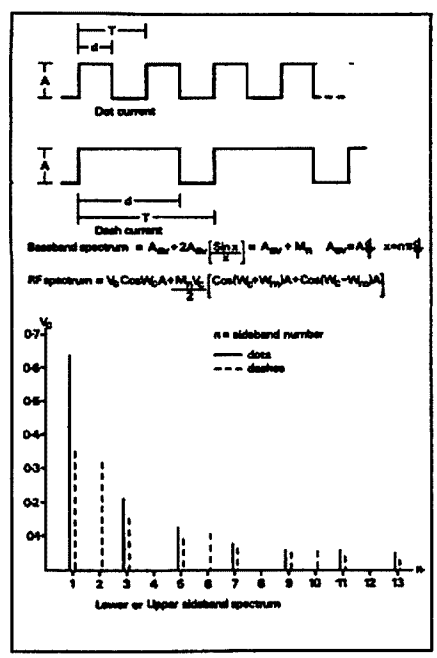
An average word is five characters long, therefore there are 62 bits in the average word including a seven bit space.

Sixty two bits a minute is one word per minute (wpm) or one bit per second (bps).

1 wpm = 1 bps ..... (1)

That approximation is close to the approximation stated in the ARRL handbook and near enough for our purposes. The approximation could be refined by a statistical analysis of word lengths and the relative frequency of each character. Someone else might like to tackle that!

A good telegraphist can send and receive plain language messages at 30wpm and 5 letter code groups at 25 wpm. Those speeds are 30 bps and 25 bps respectively which compares well with 50 baud machine telegraphy.



Relative sideband amplitude

In addition to his code speed an operator could touch type at 50wpm at least and that, coupled with word and sentence abbreviations, resulted in very satisfactory message handling speeds. How many amateur machine telegraphists touch type?

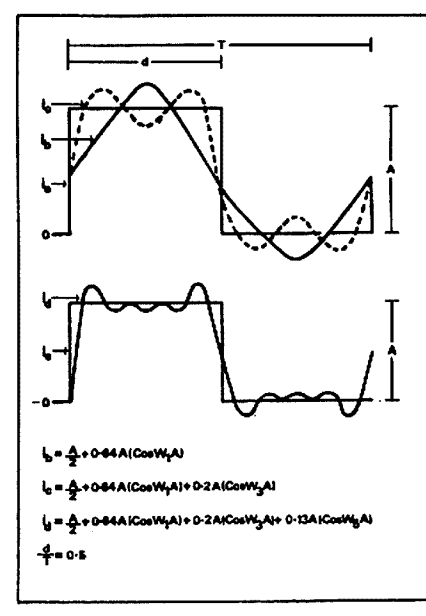
Actual point to point message signalling speeds are not as dependent on telegraph speed as on message handling, typing and etc. There is a parallel with air travel. The time from city centre to city centre in many cases hasn't been reduced, despite a tripling of aircraft speeds.

It seems a waste of effort, except for the experience or the fun of trying, for an amateur net to be capable of 4800 bps to handle 50 wpm typed traffic. There might be justification for including touch typing in the AOCP exam.

'Wireless Telegraphy" is achieved by make and break keying of a radio frequency oscillation coupled to an aerial system. In the beginning the oscillation was generated by a spark gap. The following description of that machine is from a 1903 wireless amateur journal.

"Depressing the telegraph key immediately produced a powerful electric spark between two highly polished metal balls. This spark gap is adjustable the metal balls being set about 2 inches apart. Every tap of the key produced a torrent of 2 inch sparks of great energy, the duration of the sparks being long or short according to key movement. One ball is in direct connection with the aerial, the other ball being always earthed. Every spark gives rise to pecular electric oscillations in the ether which surrounds the molecules of all matter. These oscillations are called Hertzian waves. They radiate in all directions."

And, this recent comment from an old timer - "The spark transmitter was raucous and noisy, only half as efficient as subsequent valve equipment, but, by golly, it was spectacular to the point of being awesome. All radio operators (what happened



Periodic dot Spectrum (Part)

to wireless?), whether sending or receiving, loved its rasping grating noise."

Returning to technicalities. The baseband current waveshapes resulting from key manipulation are illustrated at Fig 1. Repeating dots and dashes at constant speed have the form of Fig 1 (a&b) and for those -

the dot period is 2 bits duration

the dash period is 4 bits

the dot duty cycle is 0.5 , and

the dash duty cycle is 0.75

The PRF from (1) is half the wpm for dots and 1/4 of the wpm for dashes.

The baseband spectrum of the dot and dash periodic currents comprise an average undirectional component plus alternating sinusoidal components which are harmonics of the PRF. Theory asserts that each baseband harmonic component when translated to RF by multiplication with a carrier produces an upper and lower sideband separated from the carrier by integral multiples (1,2,3,4,5..n) of the PRF.Fig 1 illustrates the relative amplitudes of those sidebands.

Note that -

(a) about 80% of the sideband energy is concentrated in the band 2/d hertz, where d is the dot or dash duration,

(b) about 93% of the total RF energy is concentrated in that band.

Therefore the popular practice of 'shaping' keying current waveshape with a low pass filter possibly reduces only 7% of the energy, that which is outside a bandwidth of 20 Hertz at 10 wpm and 40 Hertz at 20 wpm.

Fix 2 represents a synthesised rectangular wave in three stages. That introduces another puzzling feature of the theory. If all the baseband components except the first are filtered out the fundamental will overmodulate a carrier ofthe correct amplitude. Similarly retaining only the first, third, and fifth will result in carrier overmodulation. The higher order components determine the final amplitude as well as the rise time. ar

CLUB WEEK END

Redcliffe's Field Day

Jo-Anne Dudley VK4CYL
Rick Rodgers VK4HF
Redcliffe Radio Club
PO Box 20 Woody Point 4019

Have you ever wondered how to score 12448 points in the multi-op section of the John Moyle?

Serious planning, months of site selection, recruiting seasoned contesters, tonnes of state-of-the-art equipment, countless hours of training, brilliant leadership by a most accomplished DX-er, weather from a travel brochure and bulk good luck?

All of these are important, a combination of most would get you through, but that's not how it happened.

A couple of weeks prior to the '88 John Moyle, a few of us in the Redcliffe Radio Club reflected on our 3rd place result in the '87 contest and decided to test the fluke and go for broke.

A different site from that for '87 was chosen. Then, forestry approval under our belt, the next most important thing on the list was to fill the 190 litre esky with XXXX and ice. Our seasoned contesters were nil. Our equipment was begged, borrowed and stolen. Leadership non-existent ..... and the weather, if any of you doubt that snow and blizzard can be part of life on Old's Sunshine Coast, then you should have been at Dean's Hill, due west of Caloundra on the day some prawn decided it would be good to go field portable!

After 50% of the equipment was set up, the cyclonic winds brought the rain which heralded the arrival of the good old Aussie blue tarps (spinnakers).

The contest started at 11.00 am local. About this time, our only antenna (40m dipole) snapped under the strain. The soldering iron needed power, the truck-mounted diesel generator needed somebody who knew how to operate it.

Meanwhile the tri-band yagi with a reflector at each end, (obviously Marconi's first attempt) was fighting the wind on a 12m lattice mast. Just how did Charlie VK4YZ manage to erect this?

Half our operators were late arrivals, having first to circumnavigate the world in an endeavour to follow the simple directions.

VHF/UHF was eventually operational but the contest had started 2 hours before. Club president arrived. Ignoring comments like,

'Where's the snow plough?' he uttered the memorable comment.

'It'll clear in half an hour'.

Apart from all this, everything went as planned!

We worked a pile of J's on 6m courtesy of a 2m mobile whip, complete with directional magnetic base and RG58 coax.

ZL's were lining up on 40m to work us. Bob VK4MR was working the world on 10.

From left Rick VK4HF, Jo VK4CYL, and the "Zerk" (VK4ZRC). Note the clever positioning of equipment.

Paul VK4NCC and his family had positioned the 4-wheel drive Valiant Charger in a seemingly irretrievable position.

Situation normal

With this well oiled contest machine, all working in unison towards a common goal, yours truly, VK4HF adjourned to the 190L esky, but alas, shock! Horror! the Zerk (not short for ber-zerk, but for VK4ZRC) was already feeling no pain!

After hours of calling, and original logsheets looking like James Cook's first attempt to circumnavigate the bathtub, 11pm had arrived, and the contest was half over. By now the young, the sick and the elderly, had joined Zerk in the land of nod.

'Twas here that the men were separated from the boys. We all awoke at 7am to find our reliable Kilowatt Texas Boston (alias KW4KTB Trevor) still at the wheel of his 520S. Having spent the entire night punching holes in 80m, the lines on his eyes closely resembled his logsheet.

Mid-Sunday morning found the sun drying out the wreckage that we lovingly called Radio and Camping equipment. We finished our 24 hour section looking like spat-out lollies and with a feeling of apprehension, wondering how we stacked up against the rest.

Lowering the 40' mast and the tribander, the two became separated in mid-lower. How the beam and rotator missed everybody, was the first bit of good luck we'd had all weekend! After surveying the bent and twisted TH3, it was decided that it was fortunate that the owner of the equipment had elected to stay home.

Five tonnes of radio equipment, three tonnes of camping gear, twenty tonnes of rubbish, a lot of weary looks later, we all headed off in our separate directions, rabbling on 2m - recalling some of the more humorous moments of the weekend.

Monday: The Redcliffe Radio Club met at 7.30 pm with half a dozen of us rewriting and scoring logsheets. Already we had noted areas where we could improve, but would it be as much fun?

The '89 John Moyle will see the use of some of our most dastardly secret weapons, and hopefully better tactics. So fasten your seat belts - and watch out for VK4IZ!

FOOTNOTE:

Special thanks to those members of the Redcliffe Radio Club who worked so hard to put this successful weekend together.

Trevor VK4KTB, still at the wheel of his 520S.

Bob VK4MR to VK4KRJ Joe, "Faster Joe, faster!"

5/8 WAVE

Nominations?

With last month's magazine you should have received your form for Council Nomination. I wonder what happened to it, did you even consider standing? So many people whinge and moan on the air, when they could be a member of Council and really make their opinions count. If it isn't already too late, have another think about it and get the form filled in. Next month we hope to have a list of nominees for you to vote on. Once again, you get the chance to have a say in who represents you and works for you on Council. Don't Forget that our AGM this year will be held on the 2nd of May as our normal meeting night would fall on Anzac Day.

The Clubs' Convention will be held on the weekend of 7th-8th-9th of April. If you haven't sent in your agenda items, I would say that it is too late for those going to the Federal Convention as they had to be in Melbourne by March 15th (and they first have to go to a VK5 Council meeting) there may still be time for the local ones though. No doubt we shall, once again, be very pleased to hear from anyone who could help with the catering.

I'm not sure if it was the excitement of seeing Bob Hawke and Angry Anderson, all in the same day, or the stress of helping to look after all those Scouts at the Jamboree, but shortly after all these events we were informed that our President Don McDonald VK5ADD, had undergone some Heart Bypass Surgery at the RH. I'm pleased to report that at the time of writing, Don is making a good recovery and we hope that it continues.

Diary Dates

Tues 28th Mar:	Speaker for our general meeting will be Rick Matthews (ex VK5ZFQ) on 'Cellular Phones' 7.45 p.m.
April 7-8-9	Clubs' Convention weekend at Aldinga Beach
April 25th	NO MEETING
May 2nd	A G M
May 12th-21st	Display Station at EXPO (Wayville Showgrounds) lots of volunteers will be required to help with this event.. ar

VKS WORK MIR

Aussies chat with space

Jim Linton VK3PC
4 Ansett Crescent
Forest Hill 3131

Researching this story has been difficult because the Russian cosmonauts were not available for interview for their side of the story. It was not possible to check their log record. The author hopes further research on the MIR operation will verify historical aspects of the communications between the cosmonauts and VK radio amateurs.

History was made when Australian radio amateurs communicated with a cosmonaut on the orbiting Russian space station MIR — believed to be the first communication of its type between east and west.

It took the Russian Government's policy of glasnost (openness) to a new frontier — space.

Two cosmonauts, Mousa Manarov and the station commander, Vladimir Titov, had been given permission to transmit while off duty from space station tasks using low-powered transceivers on the amateur radio VHF two-metre band.

The MIR amateur station consisted of a quarter-wave ground plane antenna mounted outside the spacecraft by the cosmonauts during a space walk to carry out repairs to the KVANT module, and a two watt Yaesu FT290R FM transceiver donated by UA6HZ and transported to MIR by Progress 38 space freighter on September 9 1988.

The transceiver was expected to be upgraded to a 10 watt version during crew changeover last December.

This is the story about three radio amateurs - Tadge Zaremba VK6ATZ in Bunbury, Andy Squires VK3DTO of Horsham, and Bob Arnold VK3ZBB in Melbourne.

Andy is believed to be the first Australian to hear Mousa U2MIR on November 14, during a pass over Australia and he finally worked U2MIR on November 16.

"I heard Mousa calling CQ (on November 14) and tried to work him using a split frequency," Andy said.

Among a considerable amount of disinformation spread about MIR was that the cosmonauts would use different transmitting and receiving frequencies - this turned out not be be true.

After hearing U2MIR Andy alerted Bob and others who were waiting the next day planning to contact U2MIR simplex.

Unaware of the excitement and anticipation in VK3 about the space station, Tadge was transmitting ATV and looking for a contact, when by sheer accident he worked the space station.

John Zaremba, aged 7, called out to his father that UHF channel 28 was being received with a clear picture from Perth.

Unknown author!

We have received a two-page article on a QRP CW transmitter based on AR articles in April 1986 and January 1988. The envelope was postmarked Adelaide some time in January 1989, but the precise date is unreadable. The author gave neither his name nor call-sign. Would he mind letting the Editor know who he is, please?

This is an indication that the 70 cm amateur band is open.

Tadge went to his shack, turned on both 70 cm and two metres. He called the regulars on ATV using what he thought was the ATV liaison frequency of 145.500 MHz.

"In my excitement (at the thought of a 70cm opening for ATV) I dialed 145.550MHz," he said.

"Then I noticed that the mute was breaking and then someone calling CQ, so I answered with my callsign, and he replied with his callsign U2MIR."

Bob Arnold VK3ZBB, Second Australian to work MIR

Tadge being sceptical paused a moment to consider whether he was the victim of a prank. "Then I asked him his location so that I could beam on to him - thinking he could be on a ship - and he replied he was in space."

The contact then faded, and Tadge looked at his clock to log U2MIR at 1021 UTC. The antenna system was a skeleton slot pointing due north.

Closely behind Tadge's flukey contact was Bob, who had his two metre satellite beam programmed to track the MIR orbit to achieve the second contact with U2MIR.

Initially it was thought Bob was the first VK to make contact with U2MIR. But a close listen to a tape recording made by Andy found Mousa acknowledging VK6ATZ prior to VK3ZBB.

Thanks to Harry Atkinson VK6WZ, the WIA Western Australian Division broadcast officer, Tadge was tracked down and his remarkable story revealed.

Andy recorded the transmissions from U2MIR, but disappointingly was not able to make contact himself until the following day.

Bob, a radio amateur for 50 years, and a keen satellite enthusiast had been keyed up for some days waiting a chance to contact the station. He had also supplied regular bulletins for the WIA Victorian Division VK3BWI broadcast about the prospect of working the space station and provided updated information on the expected frequency of operation.

An elated Bob rang Jim VK3PC minutes after making contact to give him the news, which was quickly converted into a WIA news release and issued to the media.

Commercial and ABC radio interviewed Jim Linton as WIA Vic Div President about the history making event, and the interviews were played on stations throughout Australia.

The following day newspapers, radio and TV stations were eager for more details. The Muriel Cooper afternoon chat show on 3AW lined up to interview Bob, who also roped in Andy.

Muriel Cooper asked Bob how he felt having spoken with space, and he replied "I was absolutely over the moon, it was tremendous, to me a tremendous thrill."

He told listeners how in a brief transmission Mousa U2MIR said: "My name is Mousa and I am in the space station MIR, which means peace".

Andy had recorded the voice of Mousa, and by playing this down the phone-line the many listeners to the programme heard the signals from space.

Bob had been waiting for U2MIR since learning the cosmonauts had on the previous weekend made contact with radio amateurs in the Soviet Union.

The transmission from VK3ZBB was brief and in the style of a true gentleman he left the channel clear for others.

"I didn't want to hog the frequency so others could have a chance, so I kept my conversations very short and just wished him all the best for the future," he said.

There was an obvious admiration of Manarov and Titov, who Bob described as space pioneers who having spent 12 months in orbit had been in space longer than any other person.

Both returned safely to earth in December. Manarov and Vladimir U1MIR later spoke to radio amateurs in Australia and overseas.

Andy's tape also recorded U2MIR acknowledging George Nelson VK4GF in Maryborough, possibly the third VK contact.

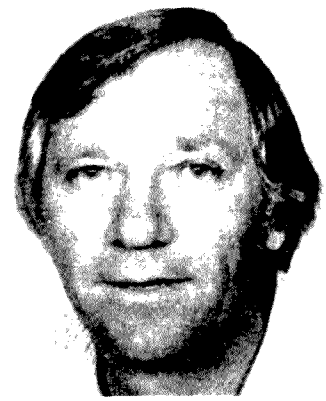
Some time later Angus Garland VK4QV of Brisbane made contact. Network 10 television were keen to interview a radio amateur who had contacted MIR, and the WIA helped them track down Angus.

He was interviewed about his achievement, and effectively used the opportunity to plug our hobby's role in international relations. Network 10 used the interview on its evening news in Brisbane and Melbourne and possibly elsewhere.

Angus said later he was quite sure the cosmonaut he contacted told him in a deep, fairly gruff and slowly spoken voice: "I am Valeri."

This raised the possibility of him contacting cosmonaut Dr Valeri Poliakov who can only speak Russian. Was Valeri trying his hand at talking to the west with limited English phrases under the supervision of Mousa?

AMSAT bulletins reported that it was not until December 1 that Valeri U3MIR came on air speaking Russian only. Another unconfirmed aspect to the story which only the Russians can clarify.



Tadge Zaremba VK6ATZ, First Australian to work MIR

Angus described his contact as being "just a sheer fluke". He set his Yaesu FT480R on scanning mode across the expected MIR frequencies and went to bed, and soon after heard U2MIR at good strength.

After trying to make an initial contact using low power, Angus rushed to his shack and with a linear amplifier feeding a co-linear vertical snared a contact, and wished Valeri all the best from Brisbane.

In the days ahead many radio amateurs lined up waiting for a shot at MIR. Sadly

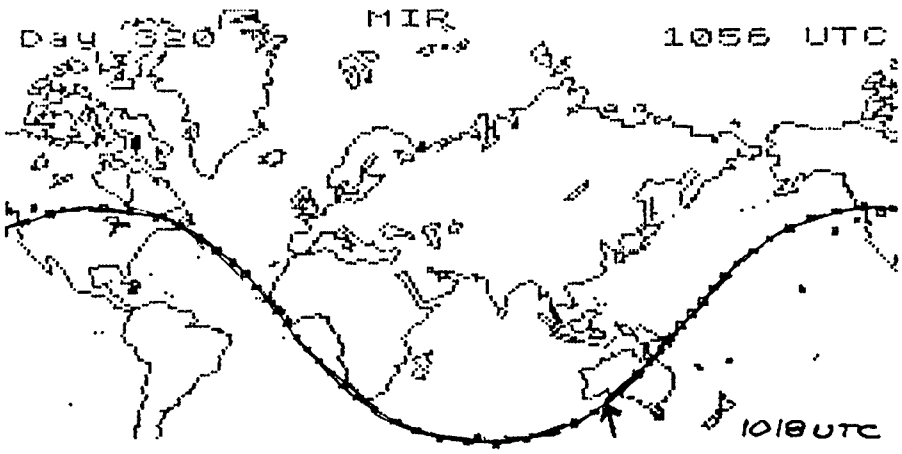


Figure 1: MIR subsatellite track of orbit on which contacts were made

some VK stations waiting for MIR chatted with each other on the prime channel and missed MIR which moved to an adjacent clear channel.

In the northern hemisphere there were reports of chaotic pile-ups which from observations on earth appeared too much for the tired cosmonauts.

There were clear indications that MIR could have been silent for several days after working VK, before the next crew rest period enabled contacts with the United States and Europe.

If you worked either U1MIR or U2MIR the QSL information is via UW3AX, B. Stephanov, PO Box 679, Moscow 107207, USSR.

Mousa Manarov and Vladimir Titov with French cosmonaut Jean Loup Chretien returned to earth in December on board a Soyuz TM-6 space capsule. They were named Heroes of the Soviet Union after a record-breaking 366 days in orbit. And French President Francois Mitterrand bestowed on them the Legion of Honour, one of France's most prestigious awards.

Dr Valeri Poliakov U3MIR remained aboard MIR with Commander Alexander Volkov and Flight Engineer Alexander Serebrov who are scheduled for an extended stay. Valeri is expected to return to earth in the European Spring this year.

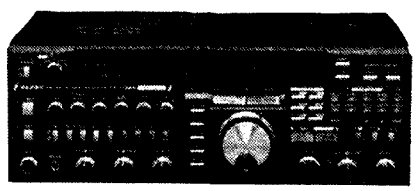
The MIR station will continue to operate on the amateur bands with future crew expected to use progressively the calll-signs U4MIR through to U0MIR. ar

REVIEW

FT736R Multiband Multimode Transceiver

By Gil Sones VK3AUI,
30 Moore St,
Box Hill South,
3128

The FT736R is a rather large and in some ways daunting transceiver. Four VHF/UHF bands can be provided in the one case with all modes available. ATV on the 1296 MHz band is also possible with an adaptor. The standard basic transceiver comes with 144 MHz and 432 MHz as standard. Additional modules can be fitted for 52 MHz and 1296 MHz if so desired at extra cost.



Modes which are provided are SSB, CW and FM with a wide range of features and operating conveniences. Many of the features are the result of the advanced computer driven design whilst others are provided by circuitry. The receiver sports IF Shift and a Notch together with a noise blanker. The transmitter has a speech processor and VOX. Preamp switching is provided to control external preamps which you may desire to incorporate in your system. These are not incorporated or sold as accessories. On these bands any really serious operator will have one between the antenna and the large diameter hardline coaxial cable.

One hundred memories are provided plus call channels and a variety of other memory features. Extensive satellite features are provided which should be of interest to those who work the repeater in the sky. Terrestrial repeaters also have extensive features provided. This may seem an overkill but even with such a transceiver, it may sometimes be necessary to resort to the repeater.

An inbuilt power supply is provided. This power supply will support the transceiver with all four bands fitted. The power supply is a switching type and as a result of the circuitry used, can accommodate a wide range of input voltage. This could be quite handy if you live in an area with a wide range of supply voltage variation. Protection from supply voltage spikes is provided by VDR's.

Specified output is 25 watts on 144 MHz and 432 MHz and 10 watts on 52 MHz and 1296 MHz. Quite adequate to drive any of the popular external amplifiers for serious work. The review model easily met these specifications on all four bands.

The receivers on the four bands are of good sensitivity and whilst not measured, gave a good account of themselves on all four bands. On 432 and 1296 MHz dual gate GASFETS are used. These provide a low noise front end and with a masthead preamp would provide an outstanding receive system. In the transceiver, they are of course at the mercy of the coaxial cable that you put in front of them. For these bands only large diameter hardline really cuts the mustard.

The circuitry used on 52 and 144 MHz shows promise of good performance in the face of strong local signals. However, it was not possible to evaluate this feature objectively. No obvious evidence of such problems was evident.

Operation of the transceiver was simple. Some reference to the manual must be made as the range of features is so large. Indeed to make intelligent use of the capabilities of the transceiver would take a

considerable degree of familiarisation. So set aside some time to learn how to drive it after you take delivery.

The scope of the features and operating facilities is quite amazing. The control system is very sophisticated and really provides every conceivable feature.

Servicing the FT736R should be relatively straight-forward once you have got over the fright of viewing the circuits. Ideally you should leave this side of things to an expert as it is really a very complex and sophisticated piece of equipment. Bull-nose pliers, a large screwdriver and the old scope soldering iron really have no place in servicing such equipment. All the boards are readily accessible and the front panel hinges to expose the processor and display circuitry.

On air the transceiver acquitted itself creditably although it was not possible to find a DX dogpile on six or some really weak and elusive DX on the other bands.

The transceiver is well packed and protected.

Minor annoyances were the lack of a microphone in the standard package as well as the lack of a DC lead. Both are available as accessories. However, their exclusion with such an otherwise well presented transceiver would seem to be an oversight. Yaesu still have some room to improve.

The connector used for 144 MHz was the familiar UHF type. The Type N would be preferable on this band and indeed would be welcome on 52 MHz as well. Both the 432 and 1296 MHz connectors were Type N. At VHF and UHF a constant impedance connector is essential for the serious work that the FT736R is capable of.

The only hard part about the FT736R is paying for it. The price must be viewed in perspective with what you get. No so long ago such a piece of equipment would have been inconceivable. We pay similar prices for other technological marvels. So dig deep and help populate the VHF and UHF bands. ar

60 YEARS OF RFDS

John Flynn Place - Cloncurry

Alan Shawsmith VK4SS
Historian
WIA Queensland Division

A ceremony of great historical significance to amateurs past and present and all people of the Outback took place on the 4 October 1988 at Cloncurry in north-west Queensland. On this day John Flynn Place was officially opened by the Duke and Duchess of York, Prince Andrew and Sarah (Fergie).

Construction of John Flynn Place was largely a community effort by the people of Cloncurry and surrounding areas as their part of an Outback Bicentennial Project to commemorate the establishment of the Royal Flying Doctor Service, previously the Australian Inland Mission (AIM), at Cloncurry in 1928 by the Rev John Flynn. To date the project has cost approximately $2 million. It will function as a town memorial and tourist centre and houses a cluster of five separate entities, viz:

Alfred Traeger Cultural Centre
Allan Vickers Outdoor Theatre
Fred McKay Art Gallery
Royal Flying Doctor Service Museum
Cloncurry Gardens

Areas of most interest to visiiting radio amateurs are the Alfred Traeger (VK5AX/VK8XT) Cultural Centre and Royal Flying Doctor Service Museum. On display are various exhibits from the first ever pedal wireless and mechanical morse keyboard (brain-child of VK5AX) to the present modern SSB State of the Art.

John Flynn's persistent dream in the early 1920s as a minister of the AIM was to provide 'A Mantle of Safety' for those who ventured into the frightening isolation of the Australian Outback. He understood the potential of radio communication, particularly in these areas, because he was a radio amateur using the callsign 8AC and a WIA member. However, the first main obstacle to the realisation of his dream was the ready availability of a regular power source. The accumulator, or car battery, needed regular re-charging and was prone to fail in times of crisis. One lucky day in 1926 Flynn met Alfred Traeger who listened to the problems and shortly after (1927) came up with a solution which led to the development of the now world famous pedal radio and the mechanical morse keyboard - both incredible pieces of ingenuity for their time.

At this point it may be pertinent to mention a few, just a few, of those radio amateurs who laid the groundwork for what would become the Australia-wide Royal Flying Doctor Service (RFDS):

1. Hudson (Later Sir Hudson) Fysh VK2EF (SK) of QANTAS, who discussed with Rev Flynn the possibility of an Outback Aerial & Medical Service (1921) and made concrete suggestions for its establishment.

2. Alfred Traeger VK5AX (SK) mentioned above.

3. Harry Kinzbrunner VK4HK (SK) who worked closely with Traeger for many years in a technical capacity.

4. Vern (Marconi) Kenna VK4FK/VK2JR (SK). He re-wrote the Flying Doctor Service constitution to give it a Royal Charter and enable it to become the RFDS in 1955.

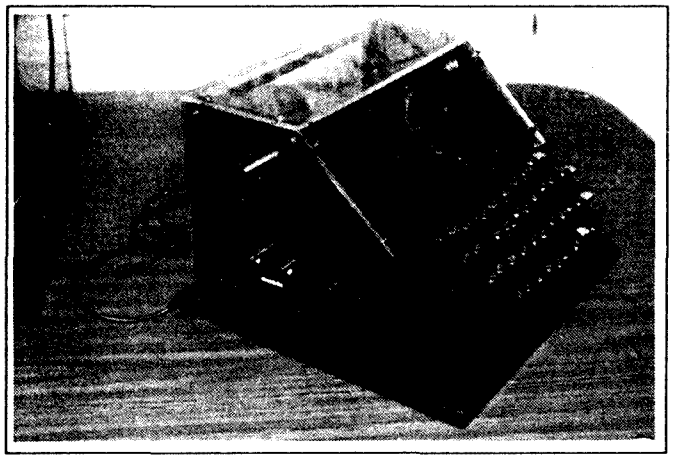
5. Maurie Anderson VK5MA (SK). First wireless operator with AIM's Australian Aerial Medical Service at its first base in 19928 at Cloncurry.

6. Vernon Kerr VK4LK (SK) spent 43 years with the Service as technical officer, controller and announcer. He became one of the best-known voices in the west. He was honoured by the Society of Wireless Pioneers with Life Membership.

7. Rev Fred McKay CMG MBE VK8YS. As Flynn's successor he has spent a lifetime expanding and updating all RFDS facilities.

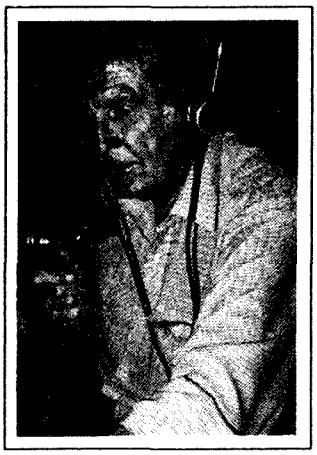
One radio amateur who played his part in setting up the display of early equipment for the Royal opening was Mervyn Eunson VK4SO. Merv has been a long time supporter of the RFDS, spending endless hours restoring and classifying equipment right back to the first pedal sets. It was realised that Prince Andrew might want to operate a sixty-year old set. Because of his specialised technical knowledge, Merv was sent for immediately.

He received an official invitation from the John Flynn Place Committee to attend the opening in the presence of their Royal Highnesses, the Duke and Duchess of

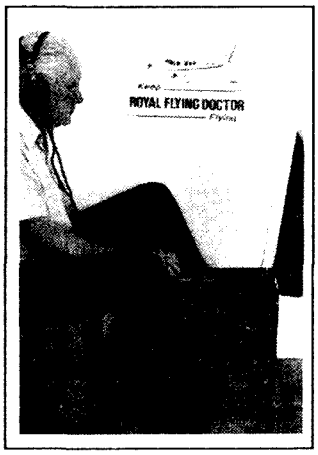


A unique instrument - a morse typewriter used by Flying Doctor pre War 11. Max speed 10 wpm

Cloncurry's centrepiece - John Flynn Place



Padre Fred 8 YS remembers the drill



Mervyn Eunson VK4SO operates a portable pedal set. The big question is the XXXX carton full or empty?

Padre Fred 8YS shows the first base at Cloncurry. Who can know the toil, heartbreak, blood, sweat and tears between this shed and the erection of John Flynn Place

Alf Traeger VK5AX and his technical miracles 1928

York. Prior to the big day, Merv spent a fortnight bringing the vintage gear up to its best condition tor display - the very first pedal transceiver (No 1) built by Traeger, the original portable set used by Patrol Padre Fred McKay, and that now famous mechanical morse typewriter. Merv found there were no radio amateurs in Cloncurry but those in Mt Isa, in the true spirit of the fraternity, provided him with any assistance within their means.

Merv sought only to get on with the job in hand but, even so, he turned out to be something of a celebrity being interviewed by the local radio stations, journalists for various newspapers and taped for an overseas broadcast segment on all aspects of Flying Doctor history. He was even asked to thumbnail the early history of pedal radio from the pulpit of the Presbyterian Church's Sunday morning service (not bad for an Irishman!) Quite by chance he became the 'toast of the town' - the drinking fraternity that is, which is considerable in 40 C+ heat. On his first visit to one watering hole, he was asked to spin the Lottery Wheel. He hit the jackpot for every drinker in the pub and was consequently chaired shoulder-high and deposited on the bar - and for the next hour the rest can be guessed.

Association with so much Flying Doctor history and the eyeballing of those pioneers still living, particularly Rev Fred McKay and the widows of Vern Kerr, Harry Kinzbrunner and Alf Traeger - to mention just a few - were humbling and unforgettable experiences for Merv. So many friends made in such a short time could only happen in the Outback!

A visit to John Flynn Place Cloncurry is a MUST for all radio amateurs travelling in outback NW Queensland. Like the Stockman's Hall of Fame, it is destined to become a landmark in VK4 - a place of pride - for without the tireless efforts of the abovementioned members of our early fraternity, John Flynn Place could still be a dream rather than a reality. ar

AN OVERVIEW

The resuscitation of VNG

Marlon Leiba
Honorary Secretary,
VNG Users Consortium
26 Fimister Circuit, Kambah, ACT
2902

The August and October 1988 "Over to You' sections of Amateur Radio included letters written by me outlining progress in the resuscitation of VNG. Listeners to Mike Bird's "Communicator" programme on Radio Australia each Sunday will know that much has happened since then and that the story of VNG has turned into a veritable saga! Consequently your Executive has asked me to write this article giving an overview of the "adventures of VNG" since its closure.

What is VNG?

VNG is Australia's standard frequency and time signal service. It is a high frequency radio station transmitting accurate time signals on stabilised carrier frequencies. In addition to amateur radio operators, its users included seismologists, astronomers, upper atmosphere physicists, surveyors, yachtsmen, geophysicists studying the Earth's magnetic field, and electric power networks. It is used in Australia, neighbouring countries, and Antarctica.

There has been some speculation regarding the origin of the call sign, VNG. Immediately after it was turned off, there was a newspaper article stating that VNG stood for "very narrow gauge". As far as I can ascertain, there is no substance in this assertion. VNG may have been a randomly allocated call sign, or the last two letters may have been derived from the call sign, XNG, which belonged to time signals transmitted from OTC coastal radio stations twice a day for marine navigation. Maybe the NG stood for "navigation"!

The demise of VNG

For 23 years, from 21 September 1964 to 1 October 1987, VNG broadcast from Lyndhurst, Victoria. It was funded by Telecom Australia, and the R&D and monitoring were done by Telecom Australia Research Laboratories at Clayton. It was switched off because Telecom no longer needed VNG and because the Government wanted to sell the Radio Lyndhurst site in 1988. Telecom offered either to run VNG at $12000 per month until March 1988, or to give the VNG equipment free of charge to any organisation willing to run it. It warned that VNG would cost prospective bodies $144000 pa to run, and that they would soon be up for a capital outlay of over $1 million to replace the transmitters, as they are about 20 years old. No organisation was prepared to take sole responsibility for VNG under those conditions, so at 0000 UTC on 1 October 1987, Max Fowler, the OIC at Lyndhurst, had the sad duty of switching off his third HF radio station for the year. The ABC's VLH and VLR had suffered a similar fate in June 1987,. Max had been at Radio Lyndhurst since 1950. He retired in February 1988 - the ending of an era.

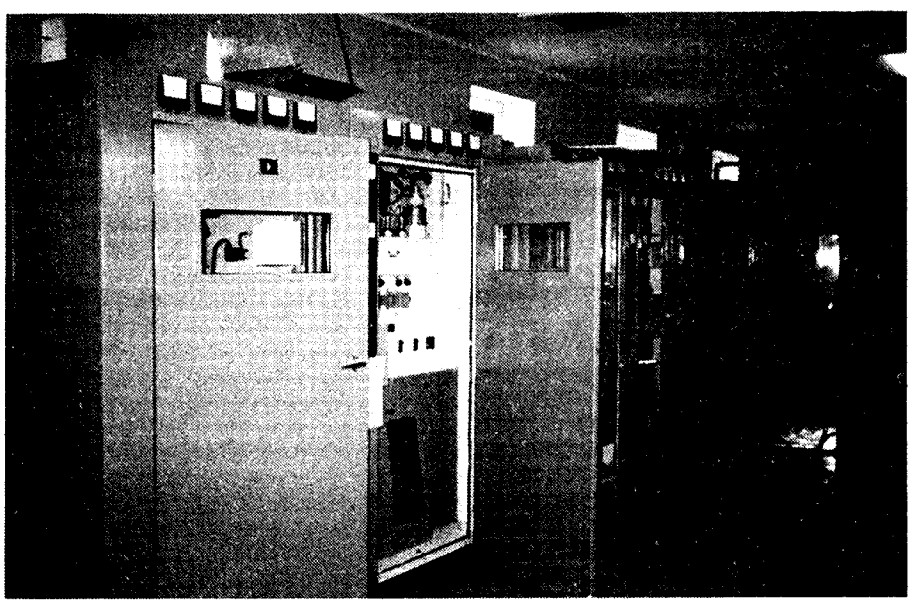
What next?

On 1 December 1987 the National Standards Commission called a meeting of former VNG users and other interested parties to decide what action, if any, should be taken to ensure that Australia had a medium accuracy (ie millisecond accuracy) time signal service following the closure of VNG. The National Standards Commission's interest in time is through its Precise Time Working Group consisting of Dr John Luck (Orroral Geodetic Observatory), Dr Grahame Harvey (National Standards Commission), Mr Ian Harvey (National Measurement Laboratory, CSIRO), and Mr Rob Harris (Telecom Research Laboratories - he used to be in charge of VNG). Nearly 100 people attended the meeting and resolved that the Precise Time Working Group should investigate ways of reviving VNG.

During the ensuing two and a half months, the Precise Time Working Group identified a prospective site for VNG at Llandilo, and obtained Telecom's agreement to donate the VNG equipment to the National Standards Commission.

The VNG users consortium

In mid February 1988, Grahame Harvey and John Luck phoned me about the necessity to remove the VNG equipment from Lyndhurst. The site was expected to go up for sale possibly as early as March. While Telecom was supplying the VNG equipment free of charge, it was going to charge $4500 for its dismantling and packing. As there was insufficient time to arrange Government funding for this, it

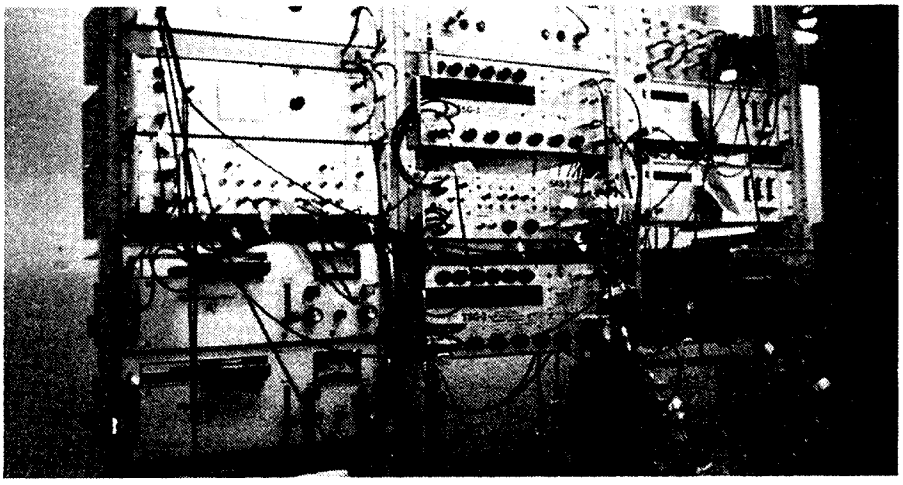


The three VNG transmitters at Liandilo on 7 November 1988. The transmitter nearest the camera is tuned to 4.5 MHz; that in the centre needs one week's work to be operational; the farthest is in use for the 5.0 MHz transmission.

was necessary to ask users for contributions. It was not considered appropriate for a Government body to write asking people and organisations to dip into their own pockets, so we decided to form a VNG Users Consortium.

The committee of the VNG Users Consortium consists of Dr John Luck (Chairman), Mr Ian Harvey (Vice Chairman), Dr Gary Hovey (Mt Stromlo Observatory - Treasurer), Mr David Herald (Canberra Astronomical Society - Assistant Treasurer), Mr Gary Gibson (Seismology Research Centre, Phillip Institute of Technology) and myself (an Earthquake Seismologist).

Our inaugural meeting was held on 25 February 1988 and we decided that our objective would be "to re-establish and maintain a national HF standard frequency and time signal service". We also agreed to mail a letter to all known VNG users requesting contributions to equipment acquisition costs, and to the running costs, if necessary.



The VNG frequency and time signal generation equipment at Llandilo

The response

The response from VNG users and sympathisers has been heartwarming. Private individuals (many of whom are not paid for the activities for which they use VNG) have contributed $2 - $100 out of their own pockets to save this national facility. One of these, an amateur radio operator, was unemployed at the time, but he still contributed because he felt strongly that we should have our own standard frequency and time signal service. I was very touched by that gesture.

Organisations, small and medium-sized, paid $20 - $2000 each to the Consortium. One small firm not only gave $500 for equipment acquisition, but also pledged $200 towards the running costs. It was not till they had heard the first new VNG time pips and voice announcement that they admitted that they had thought that what we were trying to do was impossible.

To date, the VNG Users Consortium has collected over $10000 from 55 users and sympathisers, enabling it to pay for the dismantling and packing of the equipment and its transport from Lyndhurst to Llandilo.

AUSLIG (the Australian Surveying and Land Information Group of the Department of Administrative Services) has paid the setting up costs at Llandilo. The balance of Consortium equipment acquisition funds will be used to partially re-imburse AUSLIG for this.

The move north

The new site for VNG is the Civil Aviation Authority's International Transmitting Station at Llandilo, north-east of Penrith, NSW. The bulk of the VNG equipment was moved from Lyndhurst to Llandilo by commercial carrier (the timing equipment and four transmitters occupied an entire semi trailer) on 16-17 June 1988. The remainder, 14 large capacitors containing PCBs, was transported to the new site by a relay of two pairs of VNG users, in a private vehicle, on 1—2 July 1988. The transmitters were so big that the doorway of the transmitter hall had to be enlarged to admit them!

First pips from Llandilo

As a result of some very hard work by the people at Llandilo, the initial VNG test transmission took place from there on 11 August 1988 on 4.5 MHz and 2.5 kW. A second test commenced on 12 August on full power (10kW). These tests were purely to test the equipment and were not on time.

On 17 August, staff from Telecom Research Laboratories and National Measurement Laboratory installed and set a rubidium standard and put VNG on time. The voice announcing cartridges were inserted for the first time in 10 months and those of us present for the occasion celebrated with champagne! The voice was that of Radio Australia's Barry Seeber and the announcement was recorded free of charge by Radio Australia.

The problems start

Our celebrations were short-lived. With the appearance of the voice annoouncement, complaints started coming in from operators in the Sydney area, who had been allocated frequencies close to 4.5 MHz, that VNG was drowning them out. On 18 August, the Radio Frequency Licensing Branch of the Department of Transport and Communications ordered that VNG be switched off until the problem was sorted out.

At a meeting between Radio Frequency Licensing, the Precise Time Working Group and Llandilo on 21 September, it was pointed out that VNG's old frequencies, 4.5, 7.5 and 12.0 MHz, are outside the bands in the Australian Radio Frequency Spectrum allocated to standard frequency and time signal services. The complaints from local operators were also discussed. DOTC wanted to allocate 5.0, 10.0 and 15.0 MHz to VNG, to put it into the right part of the radio frequency spectrum. To have the old frequencies re-allocated would require alteration of the Spectrum Management Plan. This would take about 12 months. This option will probably be pursued but, to get VNG back on the air quickly, it decided to accept 5.0, 10.0 and 15.0 MHz as an interim measure.

The problems continue

There was a very negative reaction to the new frequencies from users with overseas interests because of the number of other frequency and time signal services on the same frequencies. For this reason we delayed applying for the licences.

VNG was granted a temporary licence to transmit for a few hours on 4.5 MHz on the nights of 21-22 August and 21-22 October so that astronomers could time grazing occultations. Aside from that it remained dormant and we seemed to be in an impass.

Finally, the VNG Users Consortium met in October and decided that the licences on the new frequencies should be paid, but that it should go on the air initially only on 5.0 MHz to cause minimum disruption on those crowded channels. Accordingly,

this was done, but then Radio Frequency Licensing found that the International Radio Regulations require international approval of a frequency change. Consequently our decision to go on air continuously on 5.0 MHz from 1 November was stymied.

DOTC granted a temporary licence for 5.0 MHz from 7—18 November so that VNG could be used as a back-up to Omega during annual station maintenance.

The new voice announcement was done by WIA member, Graham Conolly VK2BL, a Sydney ABC news reader prior to his retirement. He recorded it free of charge in the Brisbane studios of the ABC while on holiday at Expo. Aren't we VNG supporters a dedicated lot! Reception of Graham's pleasant tones has been reported from as far afield as India and USA.

Technical problems were experienced during this transmission. The aerial used for the 4.5 MHz transmission was a Wells Quadrant which resonated very close to that frequency resulting in a good voltage standing wave ratio (VSWR) of 1.5:1 and enabling VNG to go on the air at the full 10 kW power. The two Wells quadrant aerials usable for 5.0 MHz transmission are actually designed for the frequency ranges 2-5 and 5-10 MHz respectively. In each case, 5.0 MHz was right at the limit of their capabilities, resulting in high standing wave ratios and serious overheating of the transmitter on 10 kW. This resulted in transmitter failure on 11 November. After repair of the transmitter and temporary stubbing of the 5-10 MHz aerial, VNG was put to air on 11 November at 6 kW with an overall VSWR of 2.4:1.

The signal generation equipment

The heart of VNG is three small racks of electronics: precision quartz oscillators (controlled by a two-tone signal generated from caesium beam primary standards at Telecom Australia Research Laboratories), time signal generators, fixed frequency synthesisers, announcing machines, supervisory equipment, DUT1 code generators, civil time receivers, and power supplies. A rubidium standard is being used instead of the oscillators until Telecom installs the connection to the two-tone. The slow time code also awaits the installation of a private line.

The transmitters

The VNG transmitters are STC HF broadcast transmitters, designed to deliver an output of 10 kW carrier power over the frequency range 3.2-28.0 MHz. Except for the HT transformer mounted externally, the equipment is a self contained two unit cabinet.

When the full VNG service is running, one transmitter will be left tuned to each of the three frequencies; the fourth transmitter will be used as a standby. At present, one transmitter is tuned to 4.5 MHz, another to 5.0 MHz, a third is operational and the fourth needs a lot of work. The transmitters are quick and easy to re-tune.

The present situation

As of the time of writing (February 1989) VNG is transmitting on 5.0 MHz on a three months temporary licence which commenced on 8 December 1988. The aerial used initially was an omnidirectional monopole with a good VSWR of 1.4:1, so transmission took place at the full 10 kW power. However, complaints were received from people living near the transmitters that VNG was interfering with their videos. Although DOTC advised that the 5.0 MHz transmission fulfilled its requirements and was within the law, on 13 January 1989 it was decided to cease using the vertical aerial, because of the strong surface wave, and experiment with horizontal ones. At present, VNG is being transmitted using 5 kW power and a Wells quadrant aerial with a VSWR of 2.5:1. This is not causing video interference. An attempt will be made to tune the Wells quadrant aerial in the near future.

Permanent continuous transmissions will start as soon as approval is received from the International Frequency Registration Board.

We will be pleased to receive reception reports on the current VNG broadcast, and also expressions of support because, even with Government funding, a certain percentage of cost recovery will be required from users.

References

VNG, Standard Frequency and Time Signal Service, Lyndhurst, Victoria by R W Harris, Telecom Research Laboratories, Clayton, Victoria.

STC HF BROADCAST TRANSMITTER HANDBOOK

Interference investigating Charge

The Federal Government's cost recovery policy for the public sector will see DOTC making a charge for investigating interference to radio and rtelevision broadcast reception.

DOTC investigates 20,000 interference complaints a year. The Professional Radio and Electronics Institute of Australia — which representsDOTC field personnel who investigate interference complaints — believes a $50 charge is likely to be imposed.

AIRCRAFT ENHANCEMENT

Another view

Ian Cowan VK1BG
13 Mainoru Place, Hawker,
ACT. 2614

For some years now, VHF amateurs in Sydney, Canberra and Melbourne, and more recently elsewhere, have been making regular use of the Aircraft Enhancement (AE) mode of propagation of VHF signals to establish contact on 144 and 432 MHz.

Results have usually been good, and sometimes even spectacular, with, for example, 5 x 9 signals being exchanged between Melbourne and Canberra on 432 MHz.

There have been several articles in this magazine in recent years about this mode of propagation. The most notable have been by Doug McArthur VK3UM (who was the first to exploit this mode regularly), Gordon McDonald VK2ZAB, and Roger Harrison VK2ZTB. These articles are more fully indexed in the reference list below. In addition, VK2ZAB and the writer engaged in personal correspondence over a period of some months between May and September 1987. As readers of his contributions to AR on this subject will know, Gordon has very firm views regarding the mechanism responsible for the AE mode of propagation. I found the exchanges with him to be forthright, but otherwise very helpful to my developing an understanding of how it works.

None of the above authors offers a full explanation of the AE mode as I have observed it from my VK1 QTH. Gordon's calculations didn't fit and Roger's backward moving footprint didn't work either. As a result of my own observations and of my dialogue with VK2ZAB, I have concluded that, although there is likely to be a good deal of truth in the explanation provided by him concerning metallic reflection, there is also a mode of hot gas supported propagation which gives very good results indeed when the conditions are right. A favourable set of conditions would comprise:

(a) A baseline distance of, say, 450 kilometres (eg VK1 to Melbourne).

(b) Air reasonably still and stable (ie pilots do not report turbulence or strong winds).

(c) Ground-wave propagation is normal - big temperature inversions are unhelpful to AE, although they may be a blessing in other ways.

(d) The aircraft track is nearly parallel to the radio wave path, and the intersection of the two is close to the mid-point of the radio path.

(e) Both stations have line of sight to the aircraft.

(f) Both stations have sideband equipment; better than 20 watts transmitter power, reasonable antenna gain, and low noise receiver preamplifiers. It can work on FM, but the average FM operator lacks the necessary ERP and receiver sensitivity.

What does an aircraft do??

There are two important characteristics of the wake left behind an aircraft which make it potentially a very good refractor of VHF signals. Firstly, the aircraft delivers a large amount of heat to the atmosphere which creates a temperature anomaly, and second, the geometric shape of its wake is very like a two dimensional copy of the temperature inversions produced in nature which provide so much fun for serious VHF operators. Each of these properties will be considered in detail below.

Aircraft heat delivery

The following discussion makes use of a number of different information sources. In the text these are referred to by the surname of the source, except that WBE is used in lieu of World Book Encyclopaedia. A complete list of references is given at the end of this article.

The mixing of imperial and metric units is done for the sake of simplicity, given the variety of the source material.

Probert advises that the fuel consumption of a B747 aircraft in level flight, at cruising speed and at 35,000 feet, is between 0.016 nautical miles per pound (fully loaded) and 0.016 nautical miles per pound (fully loaded) and 0.026 nautical miles per pound (lightly loaded). A typical value could reasonably be taken as 0.02 nautical

miles per pound. This corresponds to 50 pounds per nautical mile.

50lb/NM = 50/1.852 lb/km, ie 26/lb/km

Now the cruising speed of a B747 is about 870 kilometres per hour, or 14.5 kilometres per minute. Thus the fuel consumption of the aircraft is about 27 x 14.5 pounds per minute, which equals 391.5 pounds per minute. Since the aircraft is in the level cruise equilibrium mode, all the heat of combustion of this fuel is released to the atmosphere, where it causes a temperature rise.

From Low, the lower calorific value of kerosene is 10,200 CHU/lb. Thus the heat liberated by the combustion of 391.5 pounds of fuel each minute by the aircraft is 391.5 x 10200 CHU, ie 3,990,000 CHU/minute. For those unfamiliar with these units, this corresponds to about 126 megawatts. Note that no vapour condensation is allowed for in this case. (Should condensation occur, the heat liberation would be greater, since the latent heat of vapourisation would then also be released.).

Atmospheric Heating

From WBE, the air pressure at 35,000 feet is about 3.45 PSI. The air temperature at this height varies quite a bit but -35 degrees Celsius (238 degrees Kelvin) may be taken as a typical value.

Low (p25) gives the volume of one pound of air at 14.7 PSI and 0 degrees Celsius (273 degrees Kelvin) as 12.39 cubic feet.

Using the universal gas law P1.V1/T1 = P2.V2/T2,

V2 = 14.7 x 12.39/273 x 238/3.45

= 46.02 cubic feet or 1.303 cubic metres.

That is, one pound of air at 35 000 feet and at -35 degrees Celsius, occupies approximately 1.303 cubic metres.

Low shows that the specific heat of air at constant pressure (Kp) may be calculated from:

Kp = 0.230 + 0.000038.t

where t is the temperature in degrees Celsius.

Thus at -35 degrees Celsius,

Kp = 0.230 - 0.00133

= 0.2287

Now it is possible to calculate the amount of air heated by a given amount per minute by the passage of the above B747. Let us work it out for, say, a 10 degree Celsius rise.

Weight of air so heated = CHU/Kp x 1/10

= 3,990,000/0.2287 x 1/10

= 1, 745, 000 pounds

The volume of this air at 35,000 feet is 1,745,000 x 46.02 cubic feet. That is 80 300 000 cubic feet. This equals 2,274,000 cubic metres of hot (10 degrees Celsius rise) air generated for each minute of passage of the aircraft.

Now, if the aircraft was producing a uniformly heated volume of air at 10 degrees Celsius temperature rise, and its speed is 14,500 m/minute, then the cross sectional area of the volume so produced (as seen from the tail of the aircraft) must be 2,274,000/14,500 square metres, ie 157 square metres.

As it happens, the aircraft is not producing a uniformly heated volume of air; obviously the efflux is hotter close to the aircraft than it is further away. However, there will be some point behind our B747 at which the efflux is 10 degrees Celsius above ambient, and the cross sectional area of the warm air at this point will be 157 square metres. The shape of this cross section can only be guessed at. However, given the geometry of the aircraft, the cross section will be rather wider than it is high.

Radio refractive index (RRI)

Jessop provides a detailed explanation of the refraction of radio waves in the atmosphere. The RRI is defined in terms of "N" units. It is stated that where a layer is encountered in the atmosphere in which the RRI falls at a rate greater than 157 N units per kilometre of increasing height then radio signals from Earth will be refracted sufficiently to return to Earth.

Jessop shows that the maximum water vapour pressure at -35 degrees Celsius is 0.3 mb (dew point). Now at -25 degrees Celsius (the temperature of the air heated by the aircraft as assumed for convenience in the above example) the saturation vapour pressure would be 0.8 mb, but this cannot apply in practice, since in our case we are not dealing with a closed system. Thus the water vapour pressure in the aircraft efflux is constrained by that of the general environment, ie 0.3 mb. This interesting anomaly is a consequence of Dalton's Law.

We have already seen that the air pressure at 35,000 feet is about 3.45 PSI. This corresponds to 117 mb.

From Jessop, the RRI of air is given by:

RRI = 77.6 x p/T + 373,300 x e x 1/Tsquared N units

where p = atmospheric pressure in mb

e = water vapour pressure in mb

T = air temperature in degrees Kelvin.

At 35,000 feet and - 35 degrees Celsius, (ie ambient conditions).

RRI = 77.6 x 1117/238 + 373,300 x 0.3 x 1/238 x 1/238

= 40.13 N units.

The RRI of air in this region which has been heated 10 degrees Celsius above ambient by the passage of our B747 will be

RRI = 77.6 x 117/248 + 373,300 x 0.3 x 1/248 x 1/248 = 38.43 N units.

The RRI of the heated air is therefore 1.70 N units lower than that of the unheated air immediately below it. Provided the vertical thickness of the heated layer is less than about 11 metres, (as seems very probable, since the warm air mass must significantly be wider than it is high) the RRI gradient will exceed the -157 N unit per kilometre which Jessop says is necessary to return a radio wave to Earth.

All this shows that radio refraction sufficient for our purposes can at least occur from an air mass which exists somewhere between the 10 degrees Celsius point and the aircraft. It will also work for lesser temperature rises than 10 degrees Celsius, but I have not attempted to work out what the critical temperature might be, if indeed there is one.

The distance behind the aircraft at which the efflux has cooled to just 10 degrees Celsius above ambient is not known. However, it has been reported that work done by the RAAF some years ago showed that the thermal footprint of an aircraft is easily detectable 20 kilometres behind the aircraft.

The above demonstrates that there is adequate heat generated by the passage of a sizable aircraft to be potentially useful for radio propagation purposes. However, having a suitable sharp rate of change of RRI is only part of the story - the RRI gradient must have the right topology.

Aircraft wake geometry

In his AR article, Roger Harrison drew attention to an item in the Aviation Safety Digest issue 121 (ASD) about the wake turbulence of aircraft. From this it appears that an aircraft in transit leaves behind it contra rotating vortices generated by the action of the wings; these are quite intense, and retain their form and physical dimensions for a considerable distance behind the aircraft. The vortices trap the heated efflux from the aircraft, and inhibit, rather than encourage, its dispersal.

Meanwhile, the wings of the aircraft act as a single blade of a very large fan which thrusts air downwards as the aircraft passes. It is by this means that the aircraft derives its lift. It appears from the above issue of the ASD that the wash from an aircraft typically sinks some 900 feet before stabilising, and that it reaches this level about 1.5 minutes after the aircraft passes. By the time the efflux has reached this sink level, therefore, the aircraft has moved forward by over 20 kilometres. Thus the efflux of hot air from the aircraft is V

shaped, the front half of the V (closest to the aircraft) being the sink resulting from wing action, and the rise thereafter being due to convection. Figure 1 shows this in diagrammatic form.

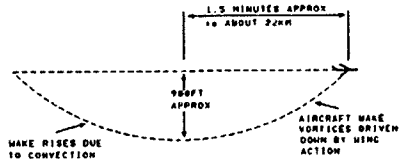


Figure 1.

What the aircraft is doing is dragging a kind of shallow, open, inverted two dimensional prism behind it, with the prism having a lower refractive index that the surrounding air. It therefore behaves in a reverse manner to that of the glass prism of our physics text books. It is instructive to do some wave tracing on some diagrams to illustrate the situation. Figure 2 shows how a ray of light behaves when passing through a prism having a refractive index higher than that of its surroundings. This is an inverted version of the diagram found in high school physics texts. As can be seen, the light ray is refracted upwards toward the base of the prism. Useless for our purposes. Figure 3 shows the situation when the refractive index of the prism is lower than that of its surroundings. In this case the wave front is refracted downwards. This is the situation created by the efflux of an aircraft. The efflux has an RRI less than that of its surroundings, and at its apex it has the form of an inverted prism.

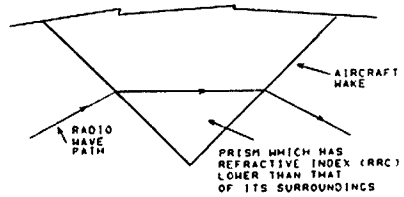


Figure 2.

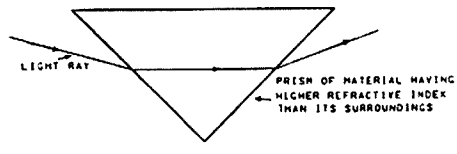


Figure 3.

The diagrams in Jessop's text show the distribution of -RRI gradients for a number of good, naturally occurring openings around Europe. Naturally occurring temperature inversions which are of use to amateurs seem to have the shape of large, broad, inverted cones, and appear to behave in a similar manner to that of the aircraft generated prism. The similarity of their cross-sectional topology is striking. Since they are roughly conical in form, naturally occurring inversions can be used over a relatively wide range of azimuth angles, whereas the aircraft generated prism, because it has two dimensional form only, proves to be quite directional in conferring its benefits.

Thus stations wishing to use this mode of propagation must be sited so that the line between them is closely parallel to, and underneath, the aircraft track.

CONCLUSION

It is shown above that a large aircraft is a heat generator of sufficient magnitude to create a temperature inversion at high altitudes and, as a result, is capable of causing significant refraction of radio waves.

The form of this inversion is such as to return the signals to Earth at a significantly distant point from the transmitter. From my investigations as explained in this article, metallic reflection from the aircraft skin is not the only mode of aircraft assisted propagation as VK2ZAB maintains. It also shows that there will be no need to put away our VHF equipment when non-metallic aircraft take to the skies.

REFERENCES

Articles on this subject in this magazine as follows:

MCARTHUR, D, VK3UM. July 1985

McDONALD, G.J., VK2ZAB. October 1985

HARRISON, R, VK2ZTB. November 1985

McDONALD, G.J, VK2ZAB. February 1986.

MARTIN & CONNOR. Basic Physics, Volume 1, 7th Edition.

LOW, D.A, Heat Engines

JESSOP. VHF/UHF Manual. 4th Edition.

World Book Encyclopaedia (WBE), 1977 Edition.

PROBERT, N. Principal Engineer, Flight Performance Section, Department of Aviation. Personal Communication. July 8, 1987.

Metric Practice. Metric Conversion Board, 1973.

Aviation Safety Digest No 121; Department of Aviation Australia, 1985.

Lloyd Butler VK5BR
Ottawa Ave
Panorama 5041

BASIC THEORY

Introduction to the Superheterodyne receiver

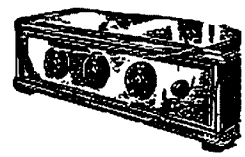


Figure 2: Separate Dials for each Tuned Stage.

Radio receivers have developed considerably over the years around a principle first evolved in 1918.

Following is a discussion on the principle of the superheterodyne and factors which affect its design.

Introduction

The subject of this article centres around basic principles of the superheterodyne receiver . In the article we will discuss the reasons for the use of the superheterodyne and various topics which concern its design, such as the choice of intermediate frequency., the use of its RF stage, oscillator tracking, bandspread tuning and frequency synthesis. Most of the information is standard text book material, but put together as an introductory article, it can provide somewhere to start if you are contemplating building a receiver, or if you are considering examining specifications with an objective to select a receiver for purchase.

TRF Receivers

Early valve radio receivers were of the Tuned Radio Frequency (TRF) type consisting of one or a number of tuned radio frequency stages with individual tuned circuits which provided the selectivity to separate one received signal from the others. A typical receiver

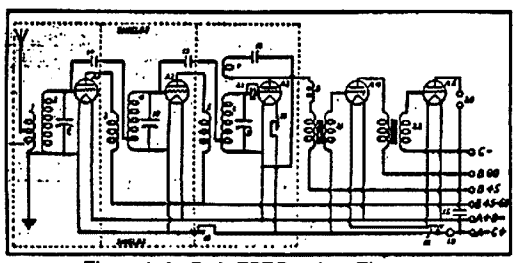


Figure 1: An Early TRF Receiver. The theoretical circuit shows that there are two stages of neutralised RF, and regenerative detector in the receiver while the audio stages are transformer coupled.
—from *The Listener In*, July 31, 1929

copied from a 1929 issue of The Listener In is shown in Figure 1. Tuned circuits are separated by the radio frequency (RF) amplifier stages and the last tuned circuit feeds the AM detector stage. This receiver belongs to an era before the introduction of the screen grid valve and it is interesting to observe the grid-plate capacity neutralisation applied to the triode RF amplifiers to maintain amplifier stability. In these early receivers, the individual tuning capacitors were attached to separate tuning dials, as shown in Figure 2, and each of these dials had to be reset each time a different station was selected. Designs evolved for receivers with only one tuning dial, achieved by various methods of ganging the tuning capacitors, including the ganged multiple tuning capacitor with a common rotor shaft as used today.

The bandwidth of a tuned circuit of given Q is directly proportional to its operational frequency and hence, as higher and higher operating frequencies came into use, it became more difficult to achieve sufficient selectivity using the TRF receiver system.

The superheterodyne principle

The superheterodyne (short for supersonic heterodyne) receiver was first evolved by Major Edwin Howard Armstrong, in 1918. It was introduced to the market place in the late 1920s and

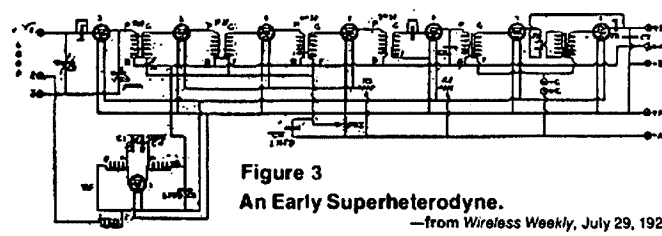


Figure 3
An Early Superheterodyne.
—from *Wireless Weekly*, July 29, 1927

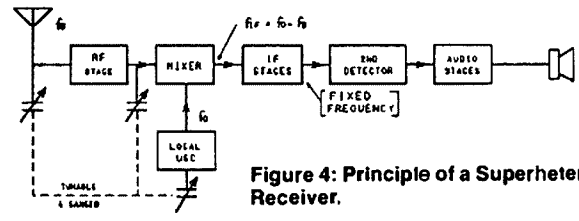


Figure 4: Principle of a Superheterodyne Receiver.

gradually phased out the TRF receiver during the 1930s. The circuit of an early superheterodyne, as published in a 1927 issue of Wireless Weekly, is shown in Figure 3.

The principle of operation in the superheterodyne is illustrated by the diagram in Figure 4. In this system, the incoming signal is mixed with a local oscillator to produce sum and difference frequency components. The lower frequency difference component called the intermediate frequency (IF), is separated from the other components by fixed tuned amplifier stages set to the intermediate frequency. The tuning of the local oscillator is mechanically ganged to the tuning of the signal circuit or radio frequency (RF) stages so that the difference intermediate frequency is always the same fixed value. Detection takes place at intermediate frequency instead of at radio frequency as in the TRF receiver.

Use of the fixed lower IF channel gives the following advantages.

1. For a given Q factor in the tuned circuits, the bandwidth is lower making it easier to achieve the required selectivity.

2. At lower frequencies, circuit losses are often lower allowing higher Q factors to be achieved and hence, even greater selectiv-

ity and higher gain in the tuned circuits.

3. It is easier to control, or shape, the bandwidth characteristic at one fixed frequency. Filters can be easily designed with a desired bandpass characteristic and slope characteristic, an impossible task for circuits which tune over a range of frequencies.

4. Since the receiver selectivity and most of the receiver pre-detection gain, are both controlled by the fixed IF stages, the selectivity and gain of the superheterodyne receiver are more consistent over its tuning range than in the TRF receiver.

Second channel or image frequency

One problem, which has to be contended with in the superheterodyne receiver, is its ability to pick up a second or image frequency removed from the signal frequency by a value equal to twice the intermediate frequency.

To illustrate the point, refer to Figure 5. In this example, we have a signal frequency of 1 MHz which mix to produce an IF of 455 kHz.

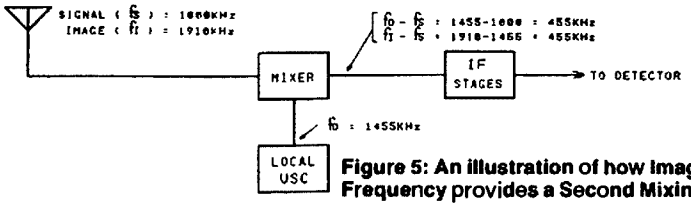


Figure 5: An illustration of how Image Frequency provides a Second Mixing Product at IF.

A second or image signal, with a frequency equal to 1 MHz plus (2 x 455) kHz or 1.910 MHz, can also mix with the 1.455 MHz to produce the 455 kHz.

Reception of an image signal is obviously undesirable and a function of the RF tuned circuits, ahead of the mixer, is to provide sufficient selectivity to reduce the image sensitivity of the receiver to tolerable levels.

Choice of intermediate frequency

Choosing a suitable intermediate frequency is a matter of compromise. The lower the IF used, the easier it is to achieve a narrow bandwidth to obtain good selectivity in the receiver and the greaater the IF stage gain. On the other hand, the higher the IF, the further removed is the image frequency from the signal frequency and hence the better the image rejection. The choice of IF is also affected by the selectivity of the RF end of the receiver. If the receiver has a number of RF stages, it is better able to reject an image signal close to the signal frequency and hence a lower IF channel can be tolerated.

Another factor to be considered is the maximum operating frequency of the receiver. Assuming Q to be reasonably constant, bandwidth of a tuned circuit is directly proportional to its resonant frequency and hence, the receiver has its widest RF bandwidth and poorest image rejection at the highest frequency end of its tuning range.

A number of further factors influence the choice of the intermediate frequency.

1. The frequency should be free from radio interference. Standard intermediate frequencies have been established and these are kept clear of signal channel allocation. If possible, one of these standard frequencies should be used.

2. An intermediate frequency which is close to some part of the tuning range of the receiver is avoided as this leads to instability when the receiver is tuned near the frequency of the IF channel.

3. Ideally, low order harmonics of the intermediate frequency (particularly second and third order) should not fall within the tuning range of the receiver. This requirement cannot always be achieved resulting in possible heterodyne whistles at certain spots within the tuning range.

4. Sometimes, quite a high intermediate frequency is chosen because the channel must pass very wide band signals such as those modulated by 5 MHz video used in television. In this case, the wide bandwidth circuits are difficult to achieve unless quite high frequencies are used.

5. For reasons outlinedpreviously, the intermediate frequency is normally lower than the RF or signal frequency. However, there are some applications, such as in tuning the Low Frequency (LF) band, where this situation could be reversed. In this case there are difficulties in making the local oscillator track with the signal circuits.

Some modern continuous coverage HF receivers make use of the Wadley Loop or a synthesised VFO to achieve a stable first oscillator source and these have a first intermediate frequency above the highest signal frequency. The reasons for this will be discussed later.

Standard intermediate frequencies

Various intermediate frequencies have been standardised over the years. In the early days of the superheterodyne, 175 kHz was used for broadcast receivers in the USA and Austrlia. These receivers were notorious for their heterodyne whistles caused by images of broadcast stations other than the one tuned. The 175 kHz IF was soon overtaken by a 465 kHz allocation which gave better image response. Another compromise of 262kHz between 175 and 465 wal also used to a lesser extent. The 465 kHz was eventually changed to 455 kHz, still in use today.

In Europe, long wave broadcasting took place within the band of 150 to 350 kHz and a more suitable IF of 110 kHz was utilised for this band.

The IF of 455 kHz is standard for broadcast receivers including many communication receivers. Generally speaking, it leads to poor image response when used above 10 MHz. The widely used World War II Kingsley AR7 receiver used an IF of 455 kHz but it also utilised two RF stages to achieve improved RF selectivity and better image response. One commonly used IF for shortwave receivers is 1.600 MHz and this gives a much improved image response for the HF spectrum.

Amateur band SSB HF transceivers have commonly used 9 MHz as a receiver intermediate frequency in common with its use as a transmitter intermediate frequency. This frequency is a little high for ordinary tuned circuits to achieve the narrow bandwidth needed in speech communication, however, the bandwidth in the amateur transceivers is controlled by specially designed ceramic crystal filter networks in the IF channel.

Some recent amateur transceivers use intermediate frequencies slightly below 9 MHz. A frequency of 8.830 MHz can be found in various Kenwood transceivers and a frequency of 8.987.5 MHz in some Yaesu transceivers. This change could possibly be to avoid the second harmonic of the IF falling too near the edge of the more recently allocated 18 MHz WARC band. (The edge of the band is 18.068 MHz).

General coverage receivers using the Wadley Loop, or a synthesised bandset VFO, commonly use first IF channels in the region of 40 to 50 MHz.

An IF standard for VHF FM broadcast receivers is 10.700 MHz. In this case, the FM deviation used is 75 kHz and audio range is 15 kHz. The higher IF is very suitable as the wide bandwidth is easily obtained with good image rejection. A less common IF is 4.300 MHz believed to have been used in receivers tuning the lower end of the VHF spectrum.

As explained earlier, a very high intermediate frequency is

necessary to achieve the wide bandwidth needed for television and the standard in Australia is the frequency segment of 30.500 to 36.000 MHz.

Multiple Conversion Superheterodyne

In receivers tuning the upper HF and the VHF bands, two (or even more) IF channels are commonly used with two (or more)

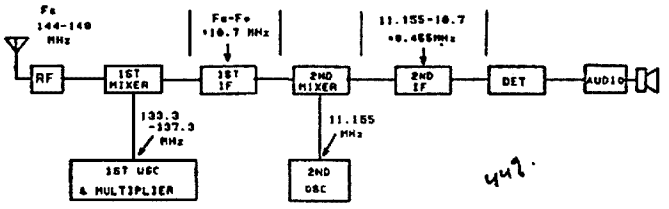


Figure 6: A Two-Metre Receiver using Double Conversion.

stages of frequency conversion. The lowest frequency IF channel provides the selectivity or bandwidth control that is needed and the highest frequency IF channel is used to achieve good image rejection. A typical system used in two metre FM amateur transceivers is shown in Figure 6 in which IF channels of 10.700 MHz and 455 kHz are used in a double conversion system. The requirement is different to that of the wideband FM broadcasting system as frequency deviation is only 5 kHz with audio frequencies up to 2.5 kHz. Channel spacing is 25 kHz and bandwidth is usually limited to less than 15 kHz so that the narrower bandwidth 455 kHz IF channel is needed.

Some modern HF SSB transceivers use a very high frequency IF channel such as 50 MHz. Combined with this, a last IF chaannel of 455 kHz is used to provide selectivity and bandwidth control. Where there is such a large difference between the first and last intermediate frequency, three stages of conversion and a middle frequency IF channel are needed. This is necessary to prevent an image problem initiating in the 50 MHz IF channel due to insufficient selectivity in that channel. For satisfactory operation, the writer suggests a rule of thumb that the frequency ratio between the RF channel and the first IF channel, or between subsequent IF channels, should not exceed a value of 10.

The RF amplifier

A good receiver has at least one tuned RF amplifier stage ahead of the first mixer. As discussed earlier, one function of the RF stage is to reduce the image frequency level into the mixer. The RF stage also carries out a number of other useful functions.

1. The noise figure of a receiver is essentially determined by the noise generated in the first stage connected to the aerial system. Mixer stages are inherently more noisy than straight amplifiers and a function of the RF amplifier is to raise the signal level into the mixer so that the signal to noise ratio is determined by the RF amplifier characteristics rather than those of the mixer.

2. There is generally an optimum signal input level for mixer stages. If the signal level is increased beyond this optimum point, the levels of intermodulation products steeply increase and these products can cause undesirable effects in the receiver performance. If the signal level is too low, the signal to noise ratio will be poor. A function of the RF amplifier is to regulate the signal level iinto the mixer to maintain a more constant, near optimum, level. To achieve this regulation, the gain of the RF stage is controlled by an automatic gain control system, or a manual gain control system, or both.

3. Because of its non-linear characteristic, the mixer is more prone to cross-modulation from a strong signal on a different frequency than is the RF amplifier. The RF tuned circuits, ahead of the mixer, help to reduce the level of the unwanted signal into the mixer input and hence reduce the susceptibility of the mixer to cross-modulation.

4. If, by chance, a signal exists at or near the IF, the RF tuned circuits provide attenuation to that signal.

5. The RF stage provides isolation to prevent signals from the local oscillator reaching the aerial and causing interference by being radiated.

Oscillator tracking

Whilst the local oscillator circuit tunes over a change in frequency equal to that of the RF circuits, the actual frequency is normally higher to produce the IF frequency difference component and hence less tuning capacity change is needed than in the RF

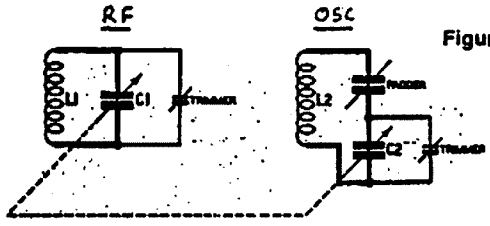


Figure 7: Tracking Circuit.

tuned circuits. Where a variable tuning gang capacitor has sections of the same capacitance range used for both RF and oscillator tuning, tracking of the oscillator and RF tuned circuits is achieved by capacitive trimming and padding.

Figure 7 shows a local oscillator tuned circuit (L2,C2) ganged to an RF tuned circuit (L1,C1) with C1 and C2 on a common rotor shaft. The values of inductance are set so that at the centre of the tuning range, the oscillator circuit tunes to a frequency equal to RF or signal frequency plus intermediate frequency.

A capacitor called a padder, in series with the oscillator tuned circuit, reduces the maximum capacity in that tuning section so that the circuit tracks with the RF section near the low frequency end of the band.

Small trimming capacitors are connected across both the RF and oscillator tuned circuits to adjust the minimum tuning capac-

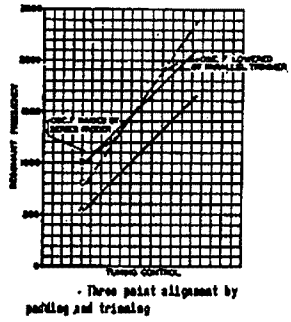


Figure 8: RF and Oscillator Tracking.

ity and affect the high frequency end of the band. The oscillator trimmer is preset with a little more capacity than the RF trimmer so that the oscillator circuit tracks with RF trimmer near the high frequency end of the band.

Figure 8 illustrates the principle. Curve A is the RF tuning range. The solid curve B shows the ideal tuning range required for the oscillator with a constant difference frequency over the whole tuning range. Curve C shows what would happen if no padding or trimming were applied. Dotted curve B shows the correction applied by padding and trimming. Precise tracking is achieved at three points in the tuning range with a tolerable error between

these points.

Where more than one band is tuned, not only are separate inductors required for each band, but also separate trimming and padding capacitors, as the degree of capacitance change correction is different for each band.

The need for a padding capacitor can be eliminated on one band by using a tuning gang capacitor with a smaller number of plates in the oscillator section than in the RF sections. If tuning more than one band, the correct choice of capacitance for the oscillator section will not be the same for all bands and padding will still be required on other bands.

Alignment of the tuned circuits can be achieved by providing adjustable trimmers and padders. In these days of adjustable magnetic cores in the inductors, the padding capacitor is likely to be fixed with the lower frequency end of the band essentially set by the adjustable cores.

Oscillator Stability

The higher the input frequency of a receiver, the higher is the first local oscillator frequency and the greater is the need for oscillator stability. A given percentage frequency drift at higher frequencies amounts to a larger percentage drift in IF at the detector. Good stability is particularly important in a single sideband receiver as a small change in signal frequency is very noticeable as a change in the speech quality, more so than would be noticeable in AM or FM systems.

Frequency stability in an osicillator can be improved by care in the way it is designed and built. Some good notes on how to build a stable variable frequency oscillator were prepared by Drew Diamond VK3XU, and published in Amateur Radio, January 19988. This is an article well worth reading.

One way to stabilise a receiver tunable oscillator is to use an automatic frequency control (AFC) system. To do this, a frequency discriminator can be operated from the last IF stage and its output fed back via a low pass filter (or long time constant circuit) to a frequency sensitive element in the oscillator. Many of today's receivers and transceivers also make use of phase locked loop techniques to achieve frequency control.

Where there are several stages of frequency conversion and the front end is tuned, the following oscillator stages, associated with later stage of conversion, are usually fixed in frequency and can be made stable by quartz crystal control. In this case, receiver

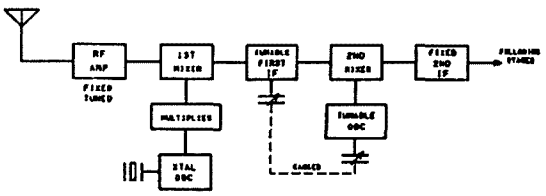


Figure 9: Tuning at the First IF and Second Heterodyne Oscillator Level.

frequency stability is set by the first oscillator stability.

One arrangement, which can give better stability, is to crystal lock the first oscillator stage but tune the first IF stage and second oscillator stage as shown in Figure 9. In this case, the RF tuned circuits are sufficiently broadband to cover a limited tuning range (such as an amateur band) but selective enough to attenuate the image frequency and other possible unwanted signals outside the tuning range. This is the method used when a converter is added to the front end of a HF receiver to tune say the two metre band. The RF circuits in the converter are fixed, the converter oscillator is crystal locked and the HF receiver RF and first oscillator circuits become the tunable first IF stage and second tunable oscillator, respectively. Since the HF receiver tunable oscillator is working at a lower frequency than the first oscillator in the converter, the whole system is inherently more stable than if the converter oscillator were tuned.

As stated earlier, the system is restricted to a limited tuning range and this leads to a discussion on bandspread tuning and other systems incorporating such ideas as the Wadley Loop.

Bandspread tuning

Receivers which tune over a wide frequency range as one band generally requires some form of fine tuning or bandspread tuning to enable easy resolution of the signals. A simple way to do this is to use two tuning gangs connected in parallel, one large to cover the whole range and which can be set at fixed bandset points, and one small which provides bandspread tuning around the bandset frequency. The difficulty with the system is in accurately positioning the bandset points. A 100 kHz marker harmonic generator is an essential part of such a receiving system to inject marker signals, at 100 kHz intervals, which provide calibration to set the bandset control accurately.

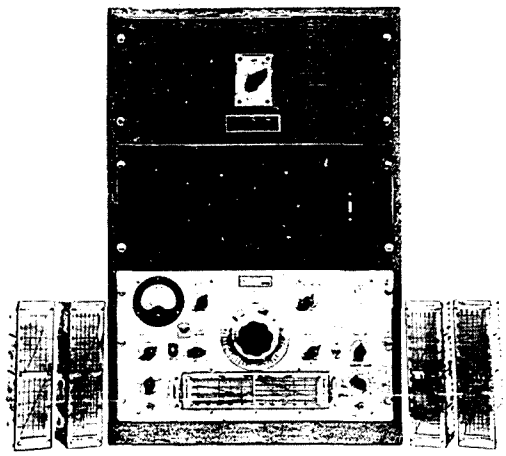


Figure 10: The Kingsley AR7 Receiver.

Many earlier communications receivers, such as the National HRO and Kingsley AR7 (Figure 10) used mechanical bandspread. In these receivers, the tuning capacitors are driven via a high ratio geared dial, quoted as having a range of 500 degrees over an equivalent length of 12 feet.

As discussed earlier, bandspread tuning can be applied with better frequency stability by tuning an IF stage, provided that the source of local signal injected into the first mixer can be frequency stabilised. For the general frequency coverage receiver, the injected source needs to be tuned or preset at fixed frequencies over a wide frequency range. It also needs to be able to be preset accurately and once set, it should maintain frequency stability. These requirements can be achieved with a system incorporating what is called the Wadley Loop which will be discussed in the next paragraph. They can also be achieved by using a frequency synthesis system to be discussed later.

The Wadley Loop

The Wadley Loop is a system used in HF receivers such as the Racal RA17 and the Yaesu FRG-7. (Figure 11). This system provides bandspread tuning in a lower frequency IF stage combined with a stable and accurate bandsetting arrangement which covers the wide tuning range of 1 to 30 MHz.

The RF stage of this type of receiver is fixed tuned and broadbanded to cover the full 1 to 30 MHz. A very high first oscillator frequency with a very high first intermediate frequency is

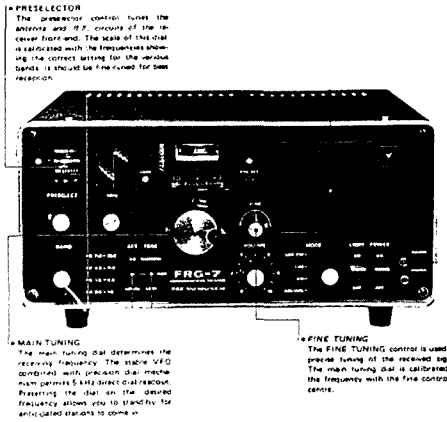


Figure 11: The Yaesu FRG-7 Receiver.

used to place the image frequency always well outside the RF passband. In the FRG-7, the first oscillator VFO is tunable between 55.500 and 84.500 MHz and the first IF channel is broadbanded over a frequency range of 54.500 to 55.500 MHz.

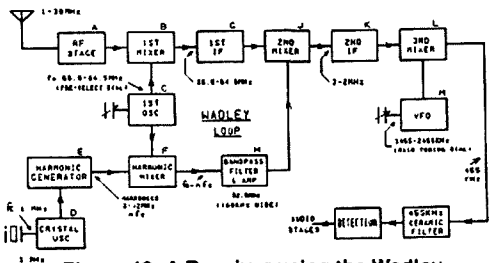


Figure 12: A Receiver using the Wadley Loop.

Referring to the block diagram, Figure 12, which is based on the FRG-7, the front end stability is controlled by a 1 MHz crystal oscillator D which drives a harmonic generator E. Harmonics of 1 MHz, within the range of 3 to 32 MHz, are fed to the harmonic mixer F and mixed with the signal from the variable first oscillator C.

The first oscillator is the bandsetting stage and this is preset by the operator to any 1 MHz increment within the 55.500 to 84.500 MHz range with a tolerance of plus or minus 80 kHz of the increment point. Beat components between this oscillator frequency and the harmonic frequencies of the 1 MHz oscillator are produced at the output of mixer F, however, only one of these can pass through the bandpass filter H which has a centre frequency of 52.500 MHz with a bandwidth of 160 kHz.

The first oscillator is also mixed with the incoming signals at B to produce a first intermediate frequency within the 55.500 to 54.500 MHz bandwidth range of the IF channel.

The first intermediate frequency is then mixed at J with the output of the bandpass filter H to produce a difference output frequency tuned by second IF stage K, within the frequency range of 3 to 2 MHz. Note that the lowest frequency at the RF input A becomes the highest frequency at IF level K and vice versa.

In using such a high frequency tunable first oscillator C, one could expect frequency instability, however, in the process of double mixing at B and J, using components derived from the same oscillator source, any shift ir the first oscillator frequency is cancelled out in the mixed IF output at K. Providing this oscillator is set so that the selected output product at F is within the 160 kHz tolerance of filter H, any given signal frequency at A produces the same IF signal frequency at K, independent of the actual frequency of the first oscillator C. The other frequency determining element, oscillator D, is crystal locked. In practice, the operator need only set the bandset control, coupled to oscillator C, approximately to the 1 MHz increment.

Bandspread tuning over a 1 MHz range is achieved by tuning variable frequency oscillator M, the output of which is mixed with the signal from the 3 to 2 MHz second IF channel to produce a third IF of 455 kHz. A 455 kHz ceramic filter in this IF channel then sets the signal bandwidth of the receiver. The 2 to 3 MHz IF stage must either be broadbanded over the 1 MHz range or tuned and ganged to the bandspread VFO tuning..

The Wadley Loop is a system which has been generally applied to receivers tuning the HF bands. Roger Harrison VK2ZTB, worked out a proposal for its use in the 30 to 100 MHz frequency region. This was published in Amateur Radio, December 1979, but at that stage the idea had not been put into practice.

Frequency Synthesis

Another method of frequency stabilising the bandset VFO is to make use of a phase locked loop (PLL) circuit with a crystal controlled reference oscillator. The VFO frequency is changed by voltage control and in the following discussion we will call it a voltage controlled oscillator (VCO). Figure 13 illlustrates the elements of this type of a circuit. In this circuit, the divided output (Fo/m) of the VCO is compared in a phase comparator with the

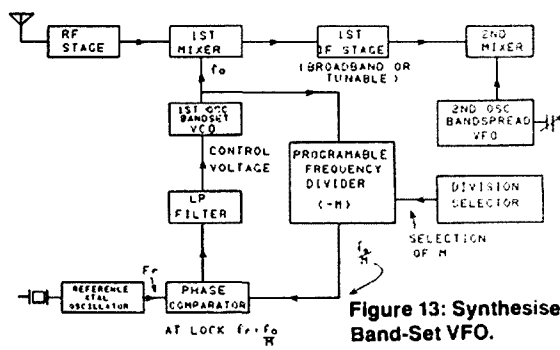


Figure 13: Synthesised Band-Set VFO.

output (Fr) of a crystal controlled stable oscillator. The phase comparator output is fed via a low pass filter to a frequency sensitive element in the VCO and this controls its frequency so that Fo/m equals Fr. The counter which does the dividing is programmable and its division ratio m is set by some form of control to control the VCO bandset frequency. The values of m are chosen to provide 1 MHz steps in the VCO frequency or whatever steps are desired for bandset spacing.

Bandspread is provided by fine tuning a VFO at a second stage of conversion, as described for the Wadley Loop receiver.

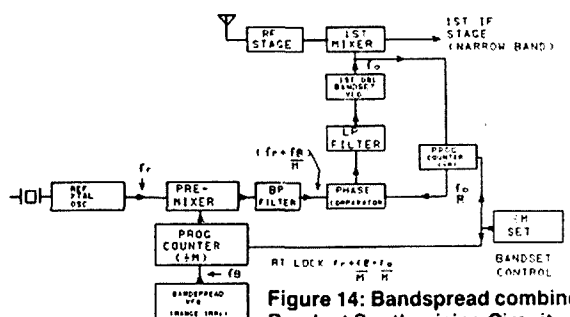


Figure 14: Bandspread combined with Bandset Synthesising Circuit.

An alternative method of providing the bandspread (refer Figure 14), is to insert an extra mixer stage into the reference oscillator circuit and inject bandspread VFO into the mixer. The reference signal into the phase comparator is then either the sum, or the difference, of the crystal controlled reference and the frequency of the bandspread VCO. For this operation, both bandset and bandspread oscillator outputs (Fo and Fb) are divided by the programmed value m and the bandset VCO is locked when (Fo/m) equals (Fr + Fb/m).

As in the previous system, the bandspread VCO tunes a low frequency range (such as 2 to 3 MHz) and is reasonably stable. An advantage of this second system is that a wideband or tunable following IF stage is not required.

Amateur Band Transceivers

Amateur radio operation in the HF region is limited to a number of bands of restricted frequency range and the bandset oscillator can be crystal controlled with crystals switched to change bands.

A system which has been used on various amateur single sideband transceivers, for a number of years, is shown in Figure 15. A single IF channel of 9 MHz is used with a ceramic crystal filter in that channel. The filter is used to limit the bandwidth of the receiver as well as being used as the sideband filter when the transceiver is switched to transmit. The local frequency source (Fo) to the mixer is generated by premixing a crystal bandset oscillator with a bandspread VFO covering the frequency range of 5 to 5.500 MHz. The frequency stability of the receiver is thus dependent on the stability of the bandspread VFO. It also determines the frequency stability of the transmitter, as on transmit, the whole system works in reverse by generating a 9 MHz SSB signal and beating it with the combined VFO source (Fo) to produce the transmit frequency. As the subject we are discussing is receivers, we will not elaborate further on the transmitter circuit.

The frequency mixing arrangement, as shown for different amateur bands in the table in Figure 15, utilises various combinations of sums and differences in the two mixing operations. The arrangement, which is that used in the Yaesu FT-200 transceiver, is one example of how this type of receiving system is applied. Observe that, on the 3.5 and 14 MHz bands, only one mixing process is applied and the 5 to 5.5 MHz VFO (Fb) is directly mixed with the incoming signal (Fs).

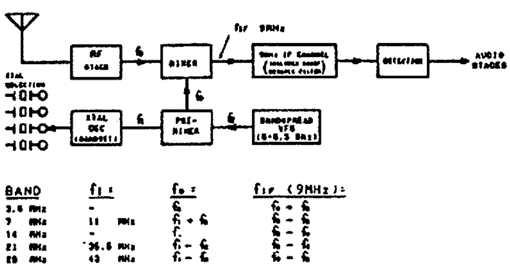
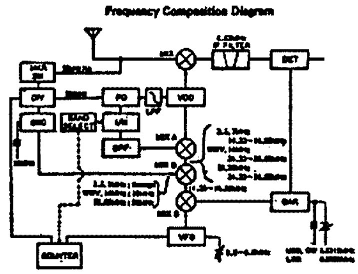


Figure 15: Receiving System in Amateur Band Transceiver using 9 MHz IF Channel.

More recent transceivers use the synthesised bandset system with the phase locked loop rather than individual selected crystals. Figure 16 shows the local signal generation system of the Kenwood TS-130. A 10 MHz crystal oscillator, divided down to 500 kHz, is the reference signal source for the phase detector. It is also divided down further to 25 kHz as a marker generator source.

The output of the voltage controlled oscillator (VCO), in the locked loop chain, is injected into the signal mixer at frequencies, for each of the amateur bands, as listed in the right hand table of Figure 14. The output of the signal mixer produces the intermediate frequency of 8.830 MHz. The slight deviation from the 9 MHz of earlier transceivers was mentioned earlier.The bandspread oscillator (VFO) tunes over a frequency range of 5.5 to 6 MHz and a derivation of this frequency range, resulting from premixing at mixers C and B, is further mixed with the VCO output at mixer A to produce a second signal, divided at 1/N, to feed the phase detector (PD). At lock, this second signal is the same frequency as the reference 500 kHz at the other phase detector input. Band selection is achieved by controlling the division ration at I/N.



HET FREQ(VCO)

BAND	FREQ(MHz)
3.5	12.33–12.83
7	15.83–16.33
10	18.83–19.33
14	22.83–23.33
18	26.83–27.33
21	29.83–30.33
24.5	33.33–33.83
28	36.83–37.33
28.5	37.33–37.83
29	37.83–38.33
29.5	38.33–38.83

Figure 16: Receiving System for the Kenwood TS-130.

In a single sideband receiver, it is necessary to reinsert a carrier signal to carry out detection and in Figure 114 the carrier oscillator is shown as the block CAR. Crystal selection for frequencies 1.5 kHz above and 1.5 kHz below the IF centre frequency provides selection of upper or lower sideband operation.

On the amateur bands, it has been the practice to consider the tuned signal frequency for single sideband as the frequency of the suppressed carrier. For transceivers with an installed digital readout, this is the frequency which is displayed. Shifting the carrier oscillator by 3 kHz to change sideband mode, as discussed in the previous paragraph, is therefore considered as a change of 3 kHz in the tuned signal frequency. To correct this shift so that the digital display reads tuned frequency equal to suppressed carrier frequency, the carrier oscillator output is also mixed with the bandspread VFO at mixer C so that a correction of the 3 kHz shift is reflected in the frequency of the VCO and the digital readout. Earlier systems, such as that shown in Figure 13, did not have a digital readout and did not have the correction fitted.

The output frequency range of mixer C is 14.330 to 14.830 MHz and this is mixed further in mixer B, with either the 10 MHz reference frequency or its second harmonic (20 MHz), to obtain various output frequencies for the different bands as shown on the diagram. These output frequencies are mixed at mixer A with the VFO output to feed the phase detector, via the band select divider 1/N, as discussed in a previous paragraph. All this might appear a little complicated but if you take each band, one at a time, a frequency conversion map can be worked out.

From an operational point of view in amateur band receivers, there is probably little difference in bandsetting using the locked loop system than in using separate crystals. In the TS-130 there are 11 bands of 500 kHz width and there is probably a cost advantage in using the phase locked loop in preference to 11 crystals.

As far as frequency stability is concerned, the weakest link in the receivers discussed is the manually tuned free running VFO. This can be improved by using a further synthesised system with a phase locked loop to control the VFO. However, the problem with such a system is that it must operate at discrete frequency steps separated by a frequency spacing equal to the reference frequency fed to the comparator. Receiving of SSB, CW and RTTY signals of random frequency on the HF bands demands tuning resolution to within hundreds of Hertz. This places a very stringent requirement on the number of discrete steps needed in the programmable divider to provide increments of a few hundred Hertz.

Synthesis on the VHF bands is not such a problem. One reason for this is that a large amount of communication utilises the not-so-frequency-sensitive FM mode. A second reason is that frequency channels have been established at a precise frequency separation. (On two-metres it is 5 kHz). As an example, a typical two metre transceiver might have a synthesised tuning system with 10 kHz steps covering the whole 144 to 148 MHz band. The intermediate 5 kHz points are further selected by switching in a 5 kHz offset to the locked loop. A third reason is that most VHF transceivers are restricted to the one band making tuning less complicated than if more than one band has to be covered.

Bandwidth Control

Ideally, the bandwidth of a communications receiver should be only just sufficient to pass the signal information with high rejection outside the band range. A bandwidth wider than necessary just admits more noise and adjacent channel interference. The bandwidth of the superheterodyne receiver is set by the bandwidth of the lowest frequency IF channel. Ideal bandwidths are several hundred Hertz for CW, 2 to 2.5 kHz for speech SSB, 4 to 5 kHz for speech AM and 14 kHz for 5 kHz deviation speech FM.

Most HF communication receivers have some form of bandwidth control in the last IF channel to select narrow band for CW or wide band for speech. The Kenwood TS-820S amateur band transceiver has a continuously variable bandwidth control together with a sharp notch to tune out an interfering signal close in frequency. Figure 17 illustrates this principle.

Comments on some modern trends

Some of the modern trends in receiver design tend to contradict basic theory outlined earlier. One trend is to use wideband RF

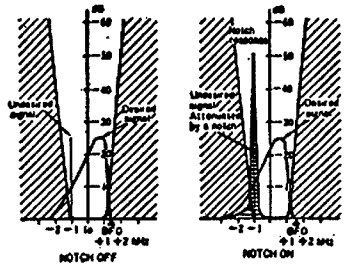


Figure 17: IF Notch in the Kenwood TS-820 Transceiver showing how the IF Notch works.

amplification at the front end of the receiver. This is in order providing the design is such that the image frequency on any part of the tuning range, falls outside the passband of the RF amplifier. This is achieved in general coverage receivers, such as those using the Wadley Loop, by operating a first IF above the maximum frequency of the RF tuning range. On the negative side, one could well expect that the broadband RF stage would be more prone to cross modulation from strong signals in the range, than an RF stage which was selectively tuned.

There have been various suggestions heard by the writer that, as modern MOSFET mixers have noise figures almost as good as straight amplifiers, the RF stage can be dispensed with. Whilst this argument might have some validity, it does overlook the other functions of the RF stage in reducing incoming signal level at the image frequency reducing signal level at the intermediate frequency, reducing cross modulation and regulating the signal level into the mixer for optimum performance.

Another area of change is the use of single conversion with an intermediate frequency higher than that previously considered suitable to achieve the desired selectivity. An example is the 9 MHz IF channel used in many amateur band transceivers. This has all changed because of the wide use of crystal filters which can be made with a controlled bandwidth characteristic and high out of band rejection. Earlier receivers relied on ordinary L and C tuning components which had insufficient Q to achieve the required selectivity at these higher frequencies.

Modern receivers and transceivers make use of digital techniques including the use of micro-processors to provide synthesis of VFO tuning, provision of memory to recall operator preselected frequencies, provision of digital frequency displays, provision of automatic scanning over fixed frequency steps and many other useful functions. This opens up a complete new area of discussion not specifically related to the principle of the superheterodyne and a little beyond the scope of this article. It might be prudent to comment that all these features make operating a dream at a price (in terms of money). However, they have nothing to do with receiver performance in terms of sensitivity, selectivity, signal-to-noise ratio, image performance, cross modulation and, in fact, the ability to resolve one weak signal from another, or to read it in the presence of noise. So think about that before you spend your fortune!

Summary

To summarise the material, we have looked at the basic superheterodyne receiver and varioous factors which must be considered in its design such as, the choice of intermediate frequency, the function of the RF amplifier, oscillator tracking and tuning stability. We have discussed methods of bandsetting and bandspreading including the Wadley Loop and frequency synthesis. We have discussed multiple conversion and application of the superheterodyne receiver in various amateur band transceivers.

As an introductory article, circuit detail and mathematical treatment have been avoided. As it stands, the article should provide some ground work for other more specialised topics on receivers. One topic which the writer feels should follow is the specification of receiver performance and what specific performance figures define a good receiver. A further topic could examine how the well-known amateur band receivers and transceivers all shape up against these figures. The second topic would be quite a task and clearly a job for someone more familiar with the wide range of different amateur equipment than is the writer.

References

1. BUTLER, Lloyd, VK5BR. A Discussion on Mixers, Amateur Radio, April 1988.

2. LANGFORD SMITH, F Radiotron Designers Handbook, Chapter 25 Section 3 - Superheterodyne Tracking.

3. KIRKPATRICK, CB. Three Point Tracking Formulae, IRE Proceedings, July 1947.

4. DIAMOND, Drew, VK3XU. Some Practical Tips on VFO Construction, Amateur Radio, January 1988.

5. A New Receiver Tuning Principle, Amateur Radio, July 1958.

6. Collectors Corner No 2 - The Yaesu FRG-7, Amateur Radio, August 1980.

7. HARRISON, Roger VK2ZTB. Considerations for the Wadley Loop VHF Receiver Front End, Amateur Radio, December 1979.

8. POULTNEY, AEJ. Trends in HF Communications Receiver Design, The Plessey Company.

Author's Footnote

Early in this article, reference was made to Major Edwin Armstrong as evolving the superheterodyne receiver in 1918. According to the publication Australian Radio - The Technical Story, by Winston T. Muscio, there were two patents filed on the supersonic heterodyne principle, one a French patent in 1917 by Lucian Levy of Paris and another in 1918 also in France by Major Armstrong. A further US patent was filed by Major Armstrong in 1919 and issued in 1920.

Whilst most publications give Major Armstrong the credit for the invention of the superheterodyne, there seems to be some question concerning this history! ar

SOLUTION TO INTERFACE PROBLEM

A digital VFO for your FT-101ZD or when is a black box not a black box?

Bob Fincher VK3BRF
60 Raleigh Street,
Forest Hill, 3131

As an amateur, new to the hobby, faced with a bewildering battery of high-technological, feature packed, gee-whiz rigs to choose from, a limited budget, and a pressing desire to get on the air as soon as possible, it was virtually inevitable that I should purchase a black-box! Not just any black-box, but a Yaesu-Musen FT-101ZD - a rig I have grown to love over the last few months because of its excellent performance, good signal reports, and particularly, because you have to "drive" it well to get the most out of it. No automatic antenna tuning, no automatic tuning of the finals circuitry, and not much automatic gain control either. But, still it is a nice rig.

Now that I am working some DX on 20 metres, becoming gradually more proficient, and working a few stations split band using an FV-107 external VFO, life is fairly comfortable. Or was, that is, until I spotted an advertisement for a new (no not mint) FV-101DM VFO, and yes it had all the bells and whistles like digital display, frequency scanning, memories, and more lights than a Christmas tree.

So, I bought the thing, sight unseen, from an out-of-city amateur and went to connect it to the ZD - the rig it was supposedly made for. But wait - what's this second interconnecting cable, and where is the "VFO-B" socket at the back of the rig? Alas, the FV-101DM could only be used with late model FT-101s with serial numbers above 240,000, and the number on mine was about 70,000 too low. A quick call to Stan Roberts VK3BSR, at Bail Electronics, Wangaratta, established that the earlier model FT-101s could indeed be modified to take the FV-101DM, but it was a task to be attempted only by the experienced experimenter, home-brewer or professional. Stan kindly sent me circuits to show what was involved.

To prove a point, Andrew VK3MBM had bought a rig so configured and had also connected a scanning microphone to allow easy frequency changing from the mic console. I have now successfully completed the modifications, repaired a number of incipient problems which could have led to disaster, and in so doing, learned a lot about the innards of black-boxes. In short, they are not so daunting, and anyone possessing normal metal-working and soldering skills, working carefully, should be able to effect the changes. Here is how to do it.

You will need:

2 - Three pin (or five pin) DIN sockets and plugs

1 - Eight pin DIN socket with integral switch (available from Bail Electronics)

or

1 - Eight pin DIN socket and separate DPDT switch

2 - Two lug tag strips

5 - General purpose silicon diodes (OA202 or similar)

1 - 16mm chassis hole punch

1 - Magnifying glass to read the numbers on the DINs

1 - Vacuum cleaner to remove metal and solder swarf

Shielded cable, hook-up wire, plastic cable ties, etc

Circuit diagrams of the FT-101ZD and FV-101DM

'You'll find that your trouble lies in a faulty anode connection in the high frequency stage . . .'

First, unplug the 240 volt mains supply, remove the lower cover of the FT-101ZD, and smartly zap the 900 volt supply electros to ground with an insulated screwdriver until they are discharged. Disconnect and remove Jacks J9 (IF out) and J14 (ATRIP in) from the rear panel, and enlarge their mounting holes to 16 millimetre diameter with the chassis punch. Don't drill the flange mounting holes for the DIN sockets just yet. Drill new holes immediately adjacent to the mains input socket, then refit and reconnect the two RCA sockets.

Solder 350 millimetre lengths of hookup wire to pins 1 to 6 and the switch of the 8 pin DIN socket and lengths of small-diameter shielded cable to pins 7 and 8. Then mount this assembly (VFO A socket) in the new 16 millimetre hole adjacent to the 12 pin Accessory Socket, drilling the flange holes to suit. You can see why bench pre-wiring is the only way! Stan Roberts supplied me with the special combination socket switch (about $6.00), but stocks are low so it is possible to use a separate DPDT switch instead. The switch serves only to restore internal VFO operation with plug A removed and could be omitted if the FV-101DM is always connected.

Mount one of the other three pin DIN sockets, similarly pre-wired, in the other 16 millimetre hole as socket C for mic controlled scanning. The existing six pin DIN socket remains as VFO B, but the ground connection from pin 6 must be removed. Disconnect and remove the four pin microphone socket from the front panel of the unit and replace with an eight pin socket. (And yes, you will need a microphone with scan buttons as well - say a YM-38).

Next, mount one of the tag strips under the left hand (when viewed from the front underside of the set) retaining the screw of the SELECT SW unit PB1966C. The other tag strip is fastened by the screw which retains the metal cover shielding the DRIVER UNIT/TRIMMER BOARD just near the feed-through insulators. Thus no holes need be drilled for these. Finally, cut a 16 millimetre hole in the rear panel of the FV-101DM and mount the other three pin DIN socket, again pre-wired.

Well, that 's the hardest part completed - the rest is routine wiring between the sockets and tag strips as shown in Figure 1 and described below.

1. Wire pin 1 socket A to + 12 volts pin on the RECT A board.

2. Wire pins 2 and 5 socket A to switch S3g USB and lsb positions respectively. Segment 'g' of S3 is identified by the wiring leading from it to J01 on the AF board PB 1964 AF.

3. Wire the five diodes between switch S1A and the new tag strip on the SELECT SQ unit, the cathode ends go to the 160, 80, 12, 10B and 10D switch positions respectively. This gives a 500 wire from pin 4 socket A to the diode anodes at the tag strip.

4. Wire pin 3 socket A to pin 8 on SELECT SW plug J701.

Wire pin 6 socket A to pin 5 on SELECT SW plus J701.

Wire pin 6 socket B to pin 6 on SELECT SW plug J701 via a normally open pair of contacts on the socket A switch. The normally closed contact goes to ground.

Note: Don't mis-count the pins on J701, there is a gap between pins 1 and 2. Ease out the pins on J701 with a small screwdriver to unlatch the lock tangs. Solder the new wires onto the pins.

Push back into J701 and lock.

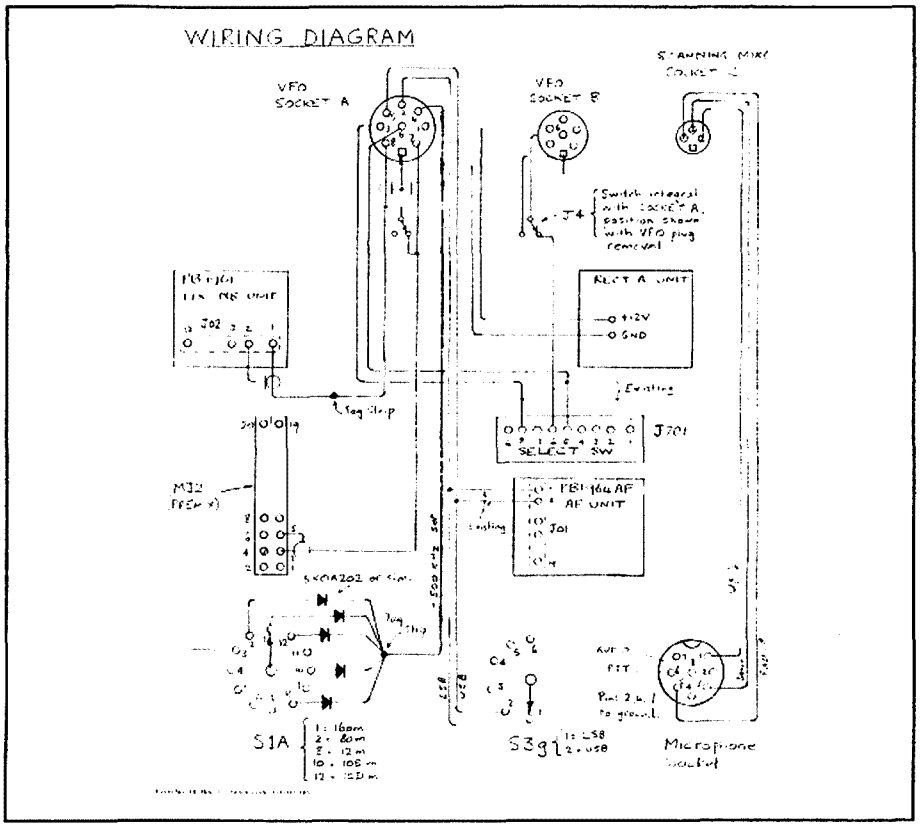
5. Disconnect shielded cable from pins three and five of the chassis-mounted edge-connect socket to the PREMIX board and rewire to the other tag strip. Connect the prewired shielded cable from pin 8 socket A to this point also.

6. Connect the other shielded cable from pin 7 socket A to pins 3 and 5 of the PREMIX edge connector vacated in (5) above.

Much of the wiring can be run in existing looms by squeezing it under and through the plastic cable ties; use new ties elsewhere for a neat finish. The FV-101DM comes with its own six and eight conductor connecting cables for sockets A and B, but a new cable for the mic scanning sockets C must be made up.

Whilst I was delving into the wiring near the rear panel of the FT-101ZD I discovered several wires with melted insulation and exposed inner conductors. These were low-current wires and I can only presume that high RF currents had circulated through them on previous occasions. I replaced the affected wires with the more rigid high-temperature insulation hook-up wire and neatly re-loomed the mess. A criticism of the ZD is that some signal and low-level wiring is routed dangerously close to 240 volt AC fittings. More judicious cable tying and some heat-shrink PVC tubing improved the situation.

After a final check of the wiring, a dab of the vacuum cleaner nozzle to remove those wayward metal particles and blobs of solder from the densely packed componentry, the covers were replaced and whole set-up smoke tested. Miraculously, everything worked straight-off and I am now enjoying the fruits of my labour and a brand new FV-101DM. No, the DX isn't any better, but the pleasure of driving all this technology is great and I certainly know a lot more about the insides of two great little black-boxes. ar



Wiring details

CONTESTS

Commonweath Rules, VK-ZL Results

Federal Contest Manager
Frank Beech VK7BC
37 Nobelius Drive
Legana 7277

Calendar

March	
4——5	ARRL DX SSB contest
11—12	RSGB Commonwealth contest (rules this issue)
18—19	NZART Field day contest
18—19	WIA John Moyle memorial Field day contest (rules February AR)
25—26	CQ magazine WW WPX SSB contest
18—20	BARTG Spring RTTY contest (rules Feb AR)
April	
12—14	YLRL DX/YL to N American YL CW contest
19—21	YLRL DX/YL to N American YL SSB contest
29—30	Swiss Helvetia contest

Rules for the 1989 RSGB Commonwealth contest

1. Date & time:

1200 UTC Saturday 11th March 1989 until 1200 UTC Sunday 12th March 1989.

2. Sections:

Single operator entries only. Entries may be single-band or multi-band only. Multi-band entries will not be eligible for single-band awards.

3. Bands & modes:

A1A only in the 3.5, 7, 14, 21, and 28 MHz bands. Keep in the bottom 30 kHz of each band with the exception of working novice stations in the novice segments. Cross band contacts will not count for points or bonus.

4. Operation:

Entrants must operate from one location only during the contest. As this is a single operator event no assistance whatsoever is allowed during the contest.

5. Exchange:

Contacts may be made with any station using a British Commonwealth prefix, except those within one's own call area.

A contact consists of RST and a serial number commencing with 001 and increasing by one for each contact made during the contest. Serial numbers sent by non-competing stations must be recorded.

6. Scoring:

Each completed contact will score five points. In addition a bonus of 20 points may be claimed for the first three contacts with a Commonwealth call area on each band. Commonwealth call areas for use in this contest are shown in the accompanying list. All UK call areas count as one call area, except for the special contest committee station GB5CC, which will count as a separate call area for all entrants.

7. Documentation.

Separate log sheets using the IARU preferred format (RSGB HFC1) showing; Time UTC, callsign of station worked, RST/serial number sent, RST/serial number received, points and bonus points claimed.

Separate band totals should be added together and the totals shown on the cover sheet. A sheet showing duplicate contacts will be appreciated.

Entrants should note that logs are carefully checked and unmarked duplicate contacts for which points are claimed are penalised at 10 times the number of points/bonus claimed. Logs containing more than five unmarked duplicates may be disqualified. The entry should include a signed statement stating that the station has been operated in accordance with the terms of the entrant's licence and that the rules and spirit of the contest have been observed.

8. Entries:

To the HF Contests committee RSGB, PO Box 73, Lichfield, Staffs, WS13 6UJ, England. Adjudication of this contest will commence on Monday April 10, 1989.

Overseas entrants are advised to forward their logs by airmail.

Entries received after the adjudication date will be treated as check logs.

Entries become the property of the RSGB and in the event of any dispute the ruling of the council of the RSGB will be final.

9. Awards:

(a) Multi-band section: To the overall winner the senior Rose Bowl; to the runner up the junior Rose Bowl and to the leading UK entrant the Col Thomas Rose Bowl.

(b) Single-band section: Certificates of merit to the leading overseas and UK entrants on each band.

(c) Certificates of merit to the leading multi-band station in each Call Area.

Receiving section:

Rules as for the transmitting section except as detailed below;

a) Only the entrant may operate the station for the duration of the contest. Holders of transmitting licences covering the frequencies below 30 MHz are not eligible to take part.

(b) To count for points, a station outside the entrant's own call area must be heard in a contest contact. CQ or test calls will not count for points. A station may be logged only once per band for purpose of scoring.

When both stations in contact are heard, they should be logged separately and points claimed for both entries provided that the stations are outside the entrant's call area. Each completed log entry will score five points. In addition, a bonus of 20 points may be claimed for the first three stations heard in each British Commonwealth call area on each band. All British Isle prefixes will count as one call area. A separate log is required for each band.

(c) The receiving Rose Bowl to the winner, certificate of merit to the leading entrant in each continent.

Commonwealth Call Areas

The following call areas are recognised for the purpose of scoring in the Commonwealth Contest, 1989.

A2	Botswana
A3	Kingdom of Tonga
C2	Nauru
C5	Gambia
C6	Bahamas
G/GB/GD/GI/ GJ/GM/GU/GW	UK
H4	Solomon Is
J3	Grenada
J6	St Lucia
J7	Dominica
J8	St Vincent
P2	Papua New Guinea
S7	Seychelles
T2	Tuvalu
T30	W Kiribati
T31	C Kiribati
T32	E Kiribati
V2	Antigua, Barbuda
V3	Belize
VE1	Maritime Provinces
VE1	Sable Is
VE1	St Paul Is
VE2	Province of Quebec
VE3	Province of Ontario
VE4	Province of Manitoba
VE5	Province of Saskatchewan
VE6	Province of Alberta
VE7	Province of Br Columbia
VE8	Nth West Territories
VK1	Aust Capital Territory
VK2	New South Wales
VK3	Victoria
VK4	Queensland
VK5	South Australia
VK6	Western Australia
VK7	Tasmania
VK8	Northern Territory
VK9L	Lord Howe Is
VK9M	Mellish Reef
VK9N	Norfolk Is
VK9X	Christmas Is
VK9Y	Cocos (Keeling) Is
VK9Z	Willis Is
VK0	Heard Is
VK0	Macquarie Is
VK0/VP8/	
VO1	Newfoundland
VO2	Labrador
VP2E	Anguilla
VP2K	St Kitts, Nevis
VP2M	Montserrat
VP2V	British Virgin Is
VP5	Turks & Calcos
VP8	Falkland Is
VP8	S Georgia
VP8	S Orkneys
VP8	S Sandwich Is
VP8	S Shetland Is
VP9	Bermuda
VQ9	Chagos
VR6	Pitcairn
VS5	Brunei
VS6	Hong Kong
VY1	Yukon
VU	India
VU7	Laccadive
VU7	Andaman & Nicobar Is
YJ	Vanuatu
Z2	Zimbabwe
ZB2	Gibraltar
ZC4	Cyprus (UK Bases)
ZD7	St Helena
ZD8	Ascension Is
ZD9	Tristan da Cunha, Gough
ZF	Cayman Is
ZK1	Cook Is
ZK1	Manihiki
ZK2	Niue Is
ZK3	Tokelau
ZL0	New Zealand
ZL1	New Zealand
ZL2	New Zealand
ZL3	New Zealand
ZL4	New Zealand
ZL7	Chatham Is
ZL8	Kermadec Is
ZL9	Auckland & Campbell Is
3B/B7	Agalega & St Brandon
3B8	Mauritius
3B9	Rodriguez Is
3D2	Fiji
3D6	Swaziland
4S	Sri Lanka
5B4	Cyprus
5H	Tanzania
5N	Nigeria
5W	Western Samoa
5X	Uganda
5Z	Kenya
6Y	Jamaica
7P	Lesotho
7Q	Malawi
8P	Barbados
ZL5	Antarctica
8Q	Maldives
8R	Guyana
9G	Ghana
9H	Malta
9J	Zambia
9L	Sierra Leone
9M2	W Malaysia
9M6/9M8	E Malaysia
9V	Singapore
9Y	Trinidad & Tobago

GB5CC RSGB HQ Station
Other HQ Station

1988 VK - ZL - Oceania Contest

VK and ZL phone results

ZL phone

	10	15	20	40	80	160	TOTA
ZL1BVK			66246	7448		4200	209000
ZL1BXA	8	17000	83187	5			150060
ZL1AGO			137522				137522
ZL1IM	1836	27722	380		45	420	69966
ZK2AH	26144	6660	51615				230996
ZL2ALF	2		2072	2021	605	420	22072
VK phone							
AX1RJ	1550	1820	2397	120			21726
VK1LF			8		195		
	285						
VK2KL	146608	110448	30660	245	2070	120	1018944
VK2APK	8816	41340	28896	3480	6240	640	492357
VK2AYK	162	51272	23241	150	1620	200	255404
AX2BAM	22100		26578		3840		181116
VK2PS	392	4872	6003		1440	200	68985
VK3AKK	474500						474500
VK3AJU	798	8664	41500		1890		164154
AX3SM	72	1188	32625				50343
VK3PSD	16280						16280
VK3XF					1800		1800
VK4LT	71906						71906
AX4PJ	1008	1050	17667	5			40640
VK4OD	4988						4988
VK5QX			231519	60	1800		310450
VK5NVW	112420						112420
VK6ANC	32	6528	65740		780		73080
VK6PJL		1248					1248
VI88XPO	Check log.						

SWL phone

ZL2259	1792	84	80410		2430		186276

ZL CW

	10	15	20	40	80	160	TOTAL
ZL1BSG		100128					100128
ZL1AIH					13800		13800
ZL2AGY	5814	32550	5084	52700	910	180	409276
ZL2AKT	1080	1056	2236				13090
ZL3KR	11220		64599		4370		201804
ZL3AGI			39591				39591
ZL0AJB (HB9CSA)			15132				15132
VK CW							
VK2APK	18560	31030	9040	72675	1680		595700
AX2BQQ	9322	40182	35076	209000			424101
VK2DID	448	26970	3038		1120		85412
VK2PS	1914	3456	6164		990		51324
VK3CQ	3876	7452	21700	450	1900	20	159300
VK3AHQ			115260				115260
VK3DNC	1998	15776	2544				51337
AX3XB	18104						18104
VK3AMD	2560						2560
AX3KS	220	672					1664
VK3XF					1280		1280
VK4TT			144840				144840
AX4XA	114100						114100
VK4XW	680	128	16	80	1800		11760
VK4SF		722	16	840	40		4884
VK5ADX	432	32028	10965	22550	480	20	258129
VK5AGX	1260	10492	29283	12255	960		226368
VK6AJ	81220	51208	7725				334712
VK7RY	200	648	3234		600		18426
AX8XX	52440	119024	44394	16080			863785

VK & ZL individual band scores

band	CW	phone	CW	phone	CW	Phone	CW	Phone
Open	VK2KL	1018944	VK8XX	863785	ZL2AH	230996	ZL2AGY	409276
	VK2APK	492357	VK2APK	595700	ZL1BVK	209000	ZL3KR	201804
	VK3AKK	474500	AX2BQQ	424101	ZL1BXA	150060	ZL1BSG	100128
10	VK3AKK	474500	AX4XA	114100	ZL2AH	26144	ZL3KR	11220
	VK2KL	146608	VK6AJ	81220	ZL1IM	1836	ZL2AGY	5814
	VK5NVW	112420	AX8XX	52440	ZL1BXA	8	ZL2AKT	1080
15	VK2KL	110448	AX8XX	119024	ZL1AGO	137522	ZL1BSG	100128
	VK2AYK	51272	VK6AJ	51208	ZL1BVK	66246	ZL2AGY	32550
	VK2APK	41340	AX2BQQ	31030	ZL1IM	27722	ZL2AKT	1056
20	VK5QX	231519	VK4TT	144840	ZL1BXA	83187	ZL3KR	64599
	VK6ANC	65740	VK3AHQ	115260	ZL2AH	51615	ZL3AGI	39591
	VK3AJU	41500	AX8XX	44394	ZL1BVK	7448	ZL0ABJ	15132
40	VK2APK	3480	VK2APK	72675	ZL2ALF	605	ZL2AGY	52700
	VK2KL	245	VK5ADX	22255	ZL1IM	45	———	
	VK2AYK	150	AX2BQQ	20900	ZL1BXA	5	———	
80	VK2APK	6240	VK3CQ	1900	ZL1BVK	4200	ZL1AIH	13800
	AX2BAM	3840	VK4XW	1800	ZL1IM	420	ZL3KR	4370
	VK2KL	2070	VK2APK	1680	ZL2ALF	420	ZL2AGY	910
160	VK2APK	640	VK3CQ	20	———		ZL2AGY	180
	VK2AYK	200	VK5ADX	20	———		———	
	VK2PS	200	———		———		———	

The contest manager speaks.....

This is the first time I have been on the receiving end of the contest logs - checking on who had worked what and when - but it has been an enjoyable experience, much helped by the many excellently presented logs. Computer prepared logs, or logs presented with computer prepared dupe sheets and summaries are on the increase, and this is welcomed. Some entrants will find their final score quite different from their calculation, but in most cases, this was due to them making a simple mathematical error!

What can be done to increase activity? Many overseas entrants commented on lack of activity, particularly from ZL. The results as published confirm this. On the other hand, I have been overwhelmed by the number of overseas logs received, particularly from Japan and Europe. So fellows..... your comments please; and again thank you to all participants. ar

John, ZL1AAS

EDUCATION NOTES

Survey Comments

Federal Education Officer
Brenda Edmonds VK3KT
PO Box 883
Frankston 3199

Over the last few weeks I have spent some time logging and collating the comments which were received from members along with their Survey returns.

These comments, criticisms, suggestions and compliments have been a totally unexpected bonus from the survey. It seems that members are prepared to put pen to paper when there is another reason for communicating, but from the tone of many of the comments they have not been prepared to write a special letter about the problem. Some strong feelings and long held 'gripes' have surfaced, so if the survey has allowed dis-satisfied members to 'sound off' it has served an extra purpose.

The only way we can be aware of members problems or complaints is if they let us know.

In several cases, the grudge could have been sorted out fairly simply and quickly if it had been brought to our attention at the time, but has grown and hardened with delay.

A number of interesting points have been raised. Some of them have already been or are being considered at either Divisional or Executive level. The new ones will be discussed by Executive or, if more appropriate, passed to the Division or Co-ordinator concerned (while still maintaining the confidentiality of the survey).

All will be noted and acknowledged as time permits, and a summary of comments will be published.

In an organisation as complex as the WIA, the communication channels are necessarily tedious and slow, and it is easy to miss out on some of the information which is being disseminated. In addition, member's interests are varied and subject to change, so it is hard to be sure that the information distributed is always received.

Comments from members are always welcome, but is has become obvious from this batch that members are not all aware of the usual channels.

The best place to start when commenting or seeking information is your local Division. Each Federal Councillor should be familiar with current and recent matters under discussion by the Division or the Executive, with matters to be raised at the Federal Convention and with the names of Co-ordinators or sub-committee chairpersons.

Do not wait until some other reason for writing occurs, especially if it means you are going to hold a grudge until the problem happens to be solved. But we cannot solve your problems or investigate your complaints unless we are told about them.

Incidentally, we did enjoy receiving the ones which were complimentary, encouraging or appreciative.

Thank you all for your interest, and the time and thought which went into those extra notes.

73,
Brenda VK3KT. ar

AWARDS

Best Yet Guide to Awards

Federal Awards Manager
Ken Gott VK3AJU
38A Lansdowne Road
St Kilda 3183

The most comprehensive guide to amateur radio awards is undoubtedly the one produced by the Radio Society of Great Britain. Its first edition was published in 1973 and now a third edition has just come off the press. It is simply called "amateur Radio Awards" and the editor is Chris Henderson G4FAM.

The book runs to 186 pages and is a model of systematic and precise presentation of data. Awards are arranged alphabetically by country and then by title. Details of each award are set out in a standard form, and most have checklists with space for entry of callsigns worked in progress towards winning the award. Even awards requiring several hundred QSOs have these checklists.

A numbering system is used not only for indexing and cross-referencing of awards, but also to indicate whether the information on award rules, costs, etc is quite up-to-date or only moderately so.

Awards are indexed by title and separately by subject (eg ITU and CQ zones, countries, continents, cities, regions, locator squares and other criteria).

The book is highly recommended to those interested in pursuing awards, including SWLS (where awards are available on a "heard only" basis this is stated). There is simply no better guide to awards and I will be keeping a copy in my shack.

The price is £8.18 to non-members of the RSGB and airmail postage to Australia is £3.18, surface mail £1.02. The address of the RSGB is Lambda House, Cranbourne Rd, Potters Bar, Hertfordshire EN6 3JE, Great Britain.

My appointment as VK certifying manager for the Worked All States Award of the American Radio Relay League is a good example of how the WIA is constantly expanding its services to members. However, while this saves members the cost of sending the 50 QSL cards to the USA (and getting worried about them), you must still make your own application to ARRL on the prescribed form. I merely certify that you have the cards. Return postage, please for those 50 cards.

Special LX Award

Luxembourg is one of the oldest countries in Europe, tracing its foundation back to AD863. However, for almost five centuries it was under foreign domination, including periods of Spanish, French, Austrian and Dutch rule.

In 1839 the main European powers signed the Treaty of London, granting Luxembourg independence under the King of the Netherlands. The last male descendent of the king died in 1889, and since then Luxembourg has had its own line of Grand Dukes as heads of state.

The Luxembourg amateur radio fraternity is now offering a special award to mark the 150th anniversary of modern Luxembourg under the Treaty of London.

Applicants must score 150 points by contacting LX stations during 1989. For VKs, each LX counts 20 points except QSOs with the country's club station (LXORL or LX150L) which count 30 points.

There are no restrictions on bands or modes, but each LX station may be contacted only once on each band.

A list of QSOs with date, hour, callsign, frequency and mode for each one, certified by a club official or two licensed amateurs should be sent to: Reseau Luxembourgeois des Amateurs d'Ondes Courtes, PO Box 1352, L-1013 Luxembourg, Luxembourg, along with 10 IRCs or US$6. A self-addressed adhesive label should also be enclosed.

Applications should bear postmarks dated prior to July 31, 1990.

DXCC Updates

	CW	Phone	Open
VK1ZL		272	
VK2AKP	117	230/292	290/2292
VK3OT		3003/3007	306/310
VK3QI	263/269	3009/316	311/318
VK3DYL	279		
VK4BG		286/297	291/307
VK4KS		318/349	318/357
VK5MS		319/366	
VK6AJW		295/297	

Awards issued recently

WAVKCA

1604	Yasuo Takenaka JK1HSQ
1605	Kazuo Kusano JA6WFK
1606	Peter Kratzl OE1ZL
1607	Minoru Nagata JA5EYW
1608	Gunawan Wibisono YB0BOK
1609	Kazuo Saito JE1GNG
1610	Hiromi Tokuchima JE3SAE
1611	Gunter Rehbein Y26XM
1612	Tony (Mack) McClure N4SKE
1613	Dave Paperman WQ5Y
1614	Toshio Muraji JA3BLN
1615	Kozo Sugatani JA3GD
1616	Martin Benoit VE2EDK
1617	Toshi Tayama JH1BRP
1618	Giorgio Micheletti 5N9GM
1619	Raymond Lee VS6UW
1620	Hirofumi Ochi JE1DTV
1621	Masao Sekine JA1PAH
1622	Frank Pedersen OZ3FS
1623	Katsumi Yoshida JA7MLG
1624	Zenya Koono JA1WJ
1625	Keishi Murakami JE4LPH
1626	John Reasoner WA4QMQ
1627	John N. Kirkham KC4B
1628	Russ Wilson VE6VK
1629	Arnold Oberson W2OB
1630	Peter J. Lamont ZS6AJG
1631	Gary J. Moles ZL2AKI

INTRUDER WATCH

New Co-ordinator

Bill Horner VK4MWZ
26 Iron Street
Gympie 4570

Hi, My name is Bill Horner, VK4MWZ. At the end of 1988, Bill VK2COP retired as Federal Intruder Watch Co-ordinator and I was elected as the new FIWC. I was first licensed in February 1987 as VK4MWZ. Since then I've been active on the DX bands like any other new ham. For the last 12 months I've served on the WIAQ Council as Research Officer. I'm a member of 2 clubs and enjoy them immensely. I moved to GYMPIE about 8 months ago with my new wife who doesn't give me too hard a time when it comes to AR. Other hobbies include; ten pin bowling, fishing, golf, indoor cricket, etc. If you have any queries then please drop me a line to the above address, or ring (071) 82 5272..

My first report.

Many thanks to those who have helped to make my first month go so smoothly. Reports received from VK2COP, VK4's AKX, BXC, BG, BHJ, BTW, MWZ, VK5's, TL, GZ, XW, VK6RO. It's very clear to me that we need many more people for the IW service. Please make sure that the deadline is adhered to, I have to send my full summary by the 12th day of each month.

We urgently require state IW co-ordinators in VK's 1,2,7. If you can help then please contact me.

There appears to be an ever increasing amount of intruders on the 40m (7MHz) band. If we wish to retain this band for amateur use we need to concentrate our reports thus. This doesn't mean that the other bands aren't important however the first band in danger of being lost is this band.

Finally I take this opportunity to say thank you to Bill Martin, VK2COP on doing a marvellous job with IW over the years. Bill take a well earned rest, from all many thanks.

ar

Bill Horner VK4MWZ

CLUB CORNER

Paper Chaser's Fiesta

The Moorabbin and District Radio Club is inviting all interested amateurs and SWLs to bring their award certificates, medallions, plaques and trophies for display at its clubrooms on the afternoon of Saturday, April 1.

The club has ample space for displays of awards, framed or unframed, on walls and tables.

Two prizes will be offered - one for the largest collection displayed, and the other for the most meritorious.

The club thinks that this gathering of award chasers may be the first of its kind in VK3, or even in the whole of VK.

It emphasizes that the prizes will be given on the basis of recognised amateur awards. Certificates earned as place-getters in contests or for participating in contests, will not count, although owners are welcome to display them.

Judging will commence at 2.30 pm but the rooms will open an hour earlier to enable entrants to set up their displays.

There is no formal entry form or fee, but those intending to display their awards are asked to phone the club secretary, Doug VK3CCY, at 583-4462 (H) or 553-4566 (O) so that the organisers can estimate space needs.

Entrants and visitors will be able to consult copies of the latest worldwide guides to amateur awards, eg Sue Squibb's guidebook (reviewed in last month's AR), the latest RSGB handbook on awards, and the chapter on awards in the ARRL Operating Manual. These sources give details of many hundreds of amateur awards.

Data sheets and application forms for many overseas awards will also be available for inspection and copying.

There will also be a "trading post" where those interested in buying or selling IRCs, green stamps, or other units of exchange can get together and do deals.

Orange and District Amateur Radio Club

Special-event, QSL Cards mailed direct to all Amateurs who contact Club Station VK2A0A/P is one feature of ODARC's Demonstration Station at the third Australian National Sports and Leisure Show in Orange, NSW on Friday, Saturday and Sunday, March 10, 11 and 12,1989. The attractive Card features full-colour photographs of Orange district scenes and, being unique to this event, will be highly prized world-wide. All Amateurs are invited to contact VK2AOA/P.

Club members will operate the Station from 2300 to 0600 hours UTC daily on these frequencies (SSB plus or minus QRM) 7.050 -

10.125 - 14.150 - 21.150 - 28.450 MHz. CW will also be used on occasions. VK2AOA/P will use as many other bands and modes as possible, including packet radio on two metres. ATV on 70cm, two metres FM and SSB (local daylight-saving times are 1000 to 1700 hours).

As the Sports and Leisure Show attracts many thousands of visitors from around New South Wales and from interstate and overseas, there are likely to be Amateurs coming as part of family groups. These operators are invited to call in at the Station at No 6 "A" Street (near the main entrance), "wet the whistle" with the friendly Orange Club people and, perhaps, help out for a while with operating and explaining to visitors what a great thing is this Amateur Radio, while the family do what they wish. Show Bags will be given to interested visitors and include information sheets, novice starter kits, typical magazines, enrolment forms for classes and exams, experimental circuits, catalogues and so on.

The Club's main aims in setting up this Station are to introduce Amateur Radio to the masses, to improve the image of our hobby in the eye of the media and the public, and to attract new recruits to the hobby via our classes (which start in March for the August DOTC exams at all levels). Since the Orange City Council's Tourist Centre is sponsoring the Station's special QSL Cards, yet another main aim is to invite visitors to this fair City.

If more information is required, please contact the Secretary of Orange and District Amateur Radio Club (Inc), Geoff Selwood VK2KJX, at PO Box 1065, Orange NSW 2800 or telephone (063) 61 5333 (Business), (063) 62 7520 (Private). If you work any Orange Stations, they should also be able to supply other details, if needed.

NEWS BRIEFS

Pay Television for Australia?

The Federal Government is considering whether to allow pay television on a spare UHF channel currently available in all capital cities.

Pay TV is a system where viewers using special decoders can receive a variety of programs by paying a basic monthly subscription with extra charges for special events and services.

Other options for the system are to use the Aussat satellite or provide the service through optical fibre cables.

The Australian Government imposed a four year moratorium in 1986 on pay TV which was already operating in most other advanced countries.

Its main advantage is that it gives viewers more choice with typical services offering specialist news, first run movies, sport, children's and music channels.

The Government has recently issued a discussion paper for public comment before it makes a decision on introduction of pay TV and the medium it should use for transmission.

SPOTLIGHT ON SWLING

Solar Activity

Robin L Harwood VK7RH
52 Connaught Cres
West Launceston 7250

As I am writing this in mid-January, we are experiencing phenomenal solar flux readings, which have produced exceptional conditions on the higher frequencies. There are, as well, accompanying solar flares which also can cause shortwave fadeouts. The predictions are now that this Cycle could possibly peak early in 1990 or even around September of this year. I find the daily propagational forecasts from the IPS in Sydney via Radio Australia indispensable. They are at 0425, 0827, 1227, 1625 and 2025 UTC. As well, WWV at Fort Collins, Colorado gives the Solar Flux and Indices at 18 minutes past the hour on the Standard frequencies of 5, 10, 15 and 20 MHz.

During the mid-January peak, I was hearing Radio RSA in Johannesburg, South Africa on 11760 kHz at 0200 UTC. It was in English and I suspect that I was hearing the back of the beam, as it was broadcasting in English to North America because the signal was fluttery. The next day, there was no sign of it, yet that was not surprising as there were frequent solar flares after the solar flux peaked around 0248. African signals generally don't come in well here in West Launceston, so I was pleased to hear propagation picking up. The only consistent African to come in regularly is the Radio Japan relay from Moyabi, Gabon. This is heard daily on 15235 kHz from 0500 till 0700 UTC in various European languages. The station was last year broadcasting to Oceania from Japan on the same channel simultaneously with the General Service and had to OSY to 15270 kHz to get a clear frequency. Unfortunately its service to Australia and N Z from 0900 to 1000 UTC on that channel experiences co-channel interference from the Voice of Free China in Taipei, which broadcasts to SE Asia in Chinese and has done so ffor many years.

There must have been a conscious decision by many international broadcasters to cease issuing full detail verification cards and issue standard response cards or slips. The latest to do so is Radio Japan. It is quite understandable that this is a tiresome chore and it is also noticeable that the broadcasters want more feedback on the programme content rather than signal quality. The art of DXing is declining as less are getting motivated to join any of the clubs while computers and other hi-tech pursuits have attracted the young. Most clubs have found that they have a more mature membership, mostly retired with time on their hands.

However, the number of listeners on shortwave is increasing, and particularly from the business and intellectual communities, who rely on primarily news and information, rather than any technical interests. The BBC World Service in October increased the number of financial bulletins from three to eleven daily, as well as bringing an hour-long "Newshour" daily at 2200 UTC. Radio Japan also regularly includes the latest information from the Tokyo financial markets in their news bulletins.

It also appears as if Radio Australia has made a decision to concentrate mainly on the Pacific and S E Asian audiences. The senders near Townsville should become operational soon and will be aimed at Melanesia. Also, Radio New Zealand is to get two 100 kW senders and concentrate on their Pacific audience. The callsign of the station will change, as it won't be a part of the BCNZ and will operate under contract to the Ministry of Foreign Affairs. Both organisations are acutely conscious of their large regional audience, who have come to rely on their impartiality in news and current affairs, during recent domestic crises within the region.

The next broadcasting period will commence on the 4th of March, yet the majority of international stations will make their seasonal frequency alterations on the 26th of March, when daylight saving commences in continental Europe. Both periods commence at 0100 UTC.

Well, that is all for March. Until next month, the very best of listening and 73 - Robin L. Harwood VK7RH.

ar

POUNDING BRASS

Mostly about keyers

Gilbert Griffith VK3CQ
7 Church St
Bright 3741

While browsing through the local newsagency the other day I came across a paperback book by Hugh Atkinson called "The Longest Wire", and bought it. The story is mainly a drama but it is based on the building of the overland telegraph between Adelaide and Darwin and is set in the early 1870's. I was a little disappointed that there was little or no reference to Morse Code as such, but it was a good yarn all the same. The many pitfalls encountered will amaze you.

Referring back to January's column where I featured Electronic Keyers and Paddle Technique. I have had some enquiries on the availability of kits, paddles and components. Unfurtunately I have not been approached with offers of second-hand equipment and will not part with any of my own in lieu. To save you time in searching I have the following information.

To date, you can get a Gatbraith paddle from Dick Smith for $25 (about $10 off) but they have limited stocks and will not be re-ordering.

I believe Emtronics have Bencher paddles and some electronic keyers but I don't have their latest catalogue yet.

Curtis 8044 chips are available direct from Curtis Electro Devices Inc., Box 4090, Mountain View,. CA 94040 or phone 415 964 3846 junk in some forgotten corner of your shack, please consider sending them to me as I have numerous requests to supply pre-loved gear of the Morse kind. By the way, VK3CNX, did you get the 8044 I sent? Please write as I've lost your address.

I have letters from many Amateurs who are taking their first steps to becoming fully-fledged Morsiacs. This is a step which, naturally, I can highly recommend, even for newly licensed lids. But Morse is a mode which should be given a decent try. Especially considering the effort most people put into passing their exams. While you are feeling your way into the WIA, local clubs, handbooks, conventions, etc.,. you can hunt up the key or keyer that you are sure to need. Place a wanted ad in the Hamads if necessary or maybe build a paddle using an old hacksaw blade, nails and a block of wood. Then if your rig has a built-in keyer, you can get right down to practice.

You will also have to learn to solder and I believe this should be a requirement of the Amateur exams. A cheap iron and some patience is all you need to master the art of soldering, and you will find plenty of things to fix around the house, as well as the fact that little jobs like antennas and cables will become a cinch. Don't be afraid to lash out on that 8044 chip you've always wanted even if you wire it up rats' nest fashion; no-one will notice if you stuff it in a nicely painted box, as long as it works — who cares?

If you spend a few evenings buiilding a keyer, and maybe longer getting the bug out, it will encourage you to spend the many hours

required on air to become easy and relaxed with the code. I can assure you that once you get to that stage you will wonder what all the fuss was about, and settle down to really enjoying yourself.

Finally this month I would strongly recommend reading everything you can get hold of, borrow stacks of old magazines if you can as they have plenty of interesting circuits and ideas. If you can afford it, get as many reference books as possible as they always come in handy, even if just to stand on to reach the top shelf.

73's es 88's. Gil VK3CQ (hardly ever on air myself these days). ar

(I know the problem only too well, Gil! Ed)

BACKGROUND

WIA Planning for WARC 1992

Administrative conferences of the International Telecommunications Union, or the International Telegraph Union as it was known as prior to 1932, have been dealing with radio since 1906. However, it was the 1927 Washington Conference that established the Amateur Service and ever since then each successive administrative radio conference has had some impact on the Amateur Service and since 1963 the Amateur Satellite Service.

The Amateur Service has had representation at all conferences since 1927 although limited at the earlier ones. In 1959 a WARC was held which gave all the indications of being critical to the existence of the Amateur Service. The WIA, being aware of this, lobbied hard and were successful in having John Moyle VK2JU accredited to the Australian delegation as an official observer.

Prior to John Moyle's attendance at the Conference in Geneva, a fund was set up to finance the project and the amateurs of Australia rose to the occasion with their support.

The next major WARC was in 1979 at which David Wardlaw VK3ADW and Michael Owen VK3KI were full members of the Australian delegation. In 1976 they also attended the Special Preparatory Meeting of the CCIR in Geneva which prepared the technical basis for the WARC in 1979. Australia presented one of the papers at this meeting which helped to lay the foundations for our success at WARC 79.

At the 1988 Federal Convention the Federal Council examined a number of future WARC related matters and provided guidance, including a detailed consideration of our attitude to each amateur band, for our IARU Region 3 delegation to the Seoul 88 conference. The Council also provided guidance on representation, both to the national authorities and through IARU for the next WARC which will be held in either 1992 or 1993.

At Seoul the regional societies adopted the report of Working Group 2 which concentrated upon international representational matters with emphasis on WARC92. That report has been published in Amateur Radio magazine for January 1989.

Aim

The aim of this paper is to establish WIA guidelines for WARC92 planning in Australia.

Considerations

This paper will follow the consideration sequence adopted by Working Group 2 at Seoul in Oct 88 where considerations were arranged in three major groupings as follows:

Spectrum allocation needs.

Regulatory matters.

Actions required in support of these objectives (principally

involvement in preparation for a WARC).

Spectrum Allocation Needs

As noted above the WIA at its 1988 Federal Convention set out in considerable detail a review of its attitudes to retention, expansion and seeking of new spectrum allocations in its negotiations with DOTC over the next few years. That Council resolution was submitted to the IARU Region 3 conference in Seoul and was considered by Working Group 2 when they reported upon spectrum allocation needs for the Region.

Looking first at allocations below 30 MHz, WG-2 recommended few variations from the WIA position. The user status for several bands varied slightly as did the proposed bandwidth to be sought, however, the greatest deviation was inclusion by the WG of a bid for a shared primary worldwide allocation at 5.005-5.060 MHz. The WIA delegation saw this addition as a useful objective because of its potential coverage within Australia.

Turning to allocations between 30 MHz and 10.5 GHz. Again apart from some changes to band user status, Regional additions to the WIA position include seeking 220-225 MHz and 902-928 MHz bands in Regions 1 and 3 to align with the Region 2 position.

Footnotes to the ITU frequency allocations make considerable changes to that table on a Regional or national basis. The IARU Region 3 position is to seek extensions or deletions of those footnotes where the changes proposed are to the advantage of the Amateur Service and the Amateur Satellite Service (for we must not forget this important aspect of amateur radio!)

Regulatory Matters

The principal regulatory matter concerning the Region and the WIA in particular is third party traffic. It is the consensus of the Regional societies that amateur to amateur through amateur communications should not be classed as third party traffic and prohibited internationally under ITU Radio Regulation 2733. In contrast societies had no difficulty with Radio Regulation 2734 concerning bilateral agreements between national authorities in order to permit third party traffic between persons not licensed amateurs.

At Region 3 Seoul 88 Working Group 2 recognised this constraint on third party communications and saw three possible avenues open to national societies. These are, in order of complexity to implement::

Firstly to make representations to the national authorities to permit the retransmission of information received from other amateur stations and that such reception and retransmission of amateur originated information be not treated as third party traffic as referred to in para 2733 of the Radio Regulations.

Secondly IARU member societies could press their national authorities to include a definition of "Third Party" for the Amateur Service in the Radio Regulations.

Thirdly IARU member societies could press their national authorities to review Article 32 and amend 2733 to permit third party traffic where the third party is a licensed amateur.

It is recommended the WIA follow the Region 3 guidance above.

Actions Required in Support of These Objectives

There were six broad action areas identified by Working Group 2 at Seoul which affect all member societies, including the WIA. They will be discussed in some detail in the following paragraphs.

The first action area involves getting national administrations to include proposals supporting the amateur radio objectives identified earlier in their national submissions to relevant ITU Conferences and CCIR Meetings leading up to WARC. This can only be achieved through amateur member involvement in the Australian Preparatory Group (APG) deliberations leading to the national position papers. That amateur representation must be regular, continuing and technically competent.

The second action concerns obtaining national authority support for proposals advanced by other administrations. Again an accredited amateur member of the APG is the means of achieving this aim.

The third action involves getting appropriately qualified members of the Amateur Service and the Amateur Satellite Service included in national delegations to appropriate ITU Conferences and Meetings. That is to conferences and meetings which have matters concerning our Services on their agendas. This can only be achieved through a process of developing the national authorities confidence in the skills and abilities of the amateurs identified and involved

in the APG.

A further consideration relevant to this action is the financing of any amateur members of the national delegation. Our government is usually willing to accept assistance in the form of accredited amateur additions to their delegation at noadditional government financial outlay, however, seeking financial support for the travelling allowances incurred may be very difficult. Consequently the Australian amateur movement and in particular the WIA must be prepared to outlay some $15000 per amateur delegation member (made up of $2700 fares and $8875 ($222-40 days) travelling allowance, based upon IARU Region 3 estimates and provisions together with $3500 for local travel to APG meetings).

On the subject of representation, no useful gains can be achieved by the WIA financing a member to join the IARU observer team. This is because the IARU has only observer status and representation by Region 3 is included in their budget. Furthermore, it is a matter for which the Regional Directors are responsible

The fourth action is concerned with the WIA developing relationships with key persons in ITU affairs to ensure those persons are fully briefed on amateur matters. This is a two fold action, firstly through amateur membership of the APG and secondly through special briefings targeted at key persons. Such briefings need to be co-ordinated to present a consistent viewpoint and carried out in a professional manner, obviously not a task for the casual "do-gooder".

The fifth action is one of keeping the Secretariaat IARU and the Secretary, Region 3 fully informed of national preparations. This action can be difficult to achieve because of the need for any amateur members of the APG to preserve the necessary confidences of that body. Nevertheless it should be possible to provide broad indications to the Secretary and through requests for additional information ostensibly for presentation to the APG, to provide an indication of problem areas. Any conflict of interest can be buffered through third parties such as IARU liaison officers.

The sixth and last action concerns re-affirmation of Regional Conference motions arising from Auckland 1985 to do with Regional Association preparations for future ITU Conferences and Meetings, including provision of adequate funds to carry out such actions. One specific item identified was amateur radio involvement in CCIR conferences including national preparatory work. Region 3, at Seoul 88, ih setting the budget for the next three years, made appropriate provisions for anticipated Conferences and Meetings. These included a WARC92 element to fund two Region 3 delegates to the IARU observer group each to be in Geneva for half of the Conference.

The implications of this action for the WIA are to devote attention also to CCIR preparatory meetings held in Australia.

CONCLUSIONS

WIA and IARU Region 3 preparations over the past few years have stood the amateur service in good stead in the build up to WARC92. The next step is for the Federal Council to endorse the planning carried out and determine how to fund its implementation.

RECOMMENDATIONS

It is recommended the Federal Council:

ENDORSE the spectrum allocation proposals adopted by IARU Region 3 at Seoul 88, to which the WIA contributed significantly through its detailed guidance arising from the 1988 Convention.

ENDORSE the proposal that the WIA follow IARU Region 3 guidance in its approach to the national authorities for less onerous third party traffic operating conditions.

ENDORSE WIA involvement in APG considerations for ITU Conferences and Meetings through the accreditation of one or more competent amateurs to that body, noting the associated internal travel expenses resulting during the period up to WARC92.

DIRECT/ENCOURAGE amateur members of the APG to influence that body's support of amateur proposals advanced by other administrations.

ENDORSE the WIA proposal to seek inclusion of one or more competent amateur members on the Australian delegation to ITU Conferences or Meetings at which amateur matters are included on their agendas. NOTING this will be confined to WARC92 in the first instance and that initial negotiations will aim to seek government funding of all or part of the delegates travel expenses.

ENDORSE the creation of an amateur radio movement WARC92 fund, managed by the WIA and tasked to generate $15 000 by the end of 1992.

ENDORSE the concept of cultivating the awarenes soft key persons involved in ITU affairs and NOTE that briefings must be co-ordinated and given in a professional manner.

DIRECT those WIA members involved in APG representation to keep the Secretary Region 3 fully informed of national preparations, NOTING any requirements to maintain such confidentialities as APG involvement incurs.

ENDORSE the continued involvement of WIA membaers in national CCIR preparations. NOTING this may place a significant workload upon a few volunteers. ar

FORWARD BIAS

VK1 awards net and broadcast

Norm Gomm VK1GN
Publicity Officer
VK1 Division

The Division is looking for additional volunteers to help man the VK1 Awards net immediately following our Sunday night broadcast. So if you would like to be an all-powerful net controller and propagate the good name of the VK1 Division, please contact me or any of the other Committee members.

Operators are also required for the weekly broadcast and or relaying on the other frequencies. You don't have to be a Committee member to do the broadcast and new faces (or voices) would be most welcome.

It was nice to hear a large number of callbacks to the broadcast recently. We know that there are many more listeners than callbacks and would like to encourage the "silent majority" to join in. It provides your Committee with feedback and makes the broadcaster feel that he or she is appreciated.

MONTHLY MEETING

The January monthly meeting was supposed to be a video night, but due to the ever watchful Murphy they didn't turn up. Flexible as ever, Rob VK1KRM and Paul VK1BX swung into action and gave us a top quality run-down on repeaters and their problems.

This dynamic duo covered siting, service area, antenna patterns, adjacent services, receiver and cavity design, among many topics. Their message was loud and clear. Amateur repeaters are competing with commercial services, therefore our repeater specs must be at least commercial standard if they are to survive.

An informative and thought provoking night. Thanks to Rob and Paul for stepping into the breach at very short notice.

VK6 TAPE

Courtesy of the VK6 Division, the VK1 Division was fortunate to be able to use a BBC segment on Amateur Radio on its weekly broadcast. Response from local amateurs was very positive. It was good to see a media organisation get its facts right and show the hobby in a good light.

Thanks to VK6 Division for the copy of the tape.

ALAN'S FAREWELL ADDRESS TO THE TROOPS

It is with considerable regret that I stand down from the Presidency after some five or six years in the job. It is a very crucial time for amateur radio and I would have liked to remain at or near the helm during this period, but as most of you know my work situation precludes this.

I have been moved by the numerous expressions of appreciation received in last days of this term of office. I thank you all, but very strongly make the point that none of it would have been possible without the support and efforts of committee members and other office bearers.

I will now look forward to playing amateur radio for a change and hopefully you will hear me at times other than broadcasts and contests. ar

73 de Alan

TEN YEARS AGO

What An Inspiration!

Bruce R. Kendall VK3WL
8 Walwa Place
Werribee 3030

I was one of many who knew Graham Clements. He was an inspiration to us all for one so young.

Graham was involved in many facets of Amateur Radio such as ATV, Satellites, HF, VHF and UHF, and took a keen interest in the many other modes and activities available to us.

It all started in 1968 while Graham was attending the Sunshine High School in Melbourne's West. He became interested in radio and electronics, joined the Youth Radio Club Scheme and qualified for several certificates issued by the YRCS.

During 1972 he became licensed as VK3ZLT. A receipt dated 18 March 1972 shows details of the purchase of 2M FM and AM transmitters, a 2M whip aerial and co axial cable for the sum of $122.00. The place of purchase was believed to be somewhere near the Mt Dandenong foothills. An unidentified signature appears on the bottom of this receipt.

On 21 March 1974 Graham took out what was to become a well known callsign around the traps, VK3TK.

Graham joined the WIA in 1972, the same year he also became a member of the Western Suburbs Radio Club, and the Melbourne University Radio and Electronics Club.

He went on to become a member of the committee of the WSRC in 1974, Victorian Division Broadcast Committee Chairman in 1975, President of the Royal Melbourne Institute of Technology Amateur Radio Club in 1976 and was elected to the Victorian Division Council in 1977.

In 1976 Graham gained his Associate Diploma of Engineering (Communications) and Bachelor of Engineering in 1978, the same year he was admitted as a member of the IREE.

Graham's abilities as an organiser, an engineer, and as an amateur operator were well known. His design skills were notable for ingenuity and awareness of the state of the art, both in amateur and professional circles.

The lasting impression that he left with many of us was his ability to inspire those around him. For one in his early twenties he was able to enliven people at both ends of the age spectrum with his drive, knowledge, technical abilities, and his diverse interests.

Personally, Graham and I were somewhat complementary to each other. He influenced me in the fields of amateur radio, good wine, and as a small scale entrepreneur. Conversely, I introduced him to snow skiing and flying.

Graham was well known socially for his vibrant nature. While often being provocative he also offered direction and stimulus to others around him.

Professionally Graham worked for the Government Aircraft Factories (now Aero Space Technologies of Australia) before taking up a position with the Department of Science at the balloon launching station at Mildura in North West Victoria during 1979. This task had much to offer and was also one that Graham could contribute to enormously.

On the afternoon of 6 March 1979 Graham took his first flying lesson at the Mildura airport adjacent to his place of employment.

After this lesson he accepted a lift home with a colleague but was involved in a motor accident not far from the aerodrome which resulted in his death at about 1800 hrs. Aged 24 years.

This tragedy was not just the loss of the youngest son of Reg and Joan Clements, but one of Amateur Radio's exceptional members.

Many will read this on the tenth anniversary of his passing with fond memories of the many enjoyable events that they experienced with Graham and the inspiration that he was able to produce.

The WIA and the amateur population in general along with his family and friends have lost greatly by his untimely passing, but are all the richer for having known him.

I began to assemble a list of callsigns whose holders, I knew, had associated with Graham, but, predictably, the list grew too long to publish here.

One can only speculate what Graham would be doing for amateur radio and his profession if he were here today.

ar

BACKGROUND

WIA 1989 Packet Radio Position Paper

The WIA has had a considerable involvement in the formulation of packet radio policy within Australia. The activities, policy papers, Federal Council resolutions, meetings, WIA papers to IARU Region 3 and submissions to DOTC can be summarised, roughly in chronological order as follows:

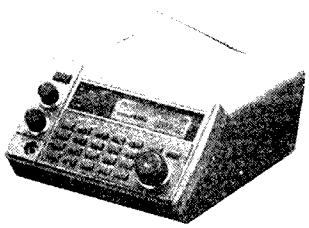
FTAC Packet Radio Paper, adopted by the 1986 Federal Convention.
FTAC Band Plans Paper, adopted by the 1986 Federal Convention.
Federal Council resolutions on the proliferation of HF BBS.
Federal Council resolution on packet radio protocols: AX25 not to be the only one.
IARU Region 3 Seoul 1988 Conference packet radio frequency issues.
Sysops meeting Brisbane Sept 88 - Code of Ethics proposed.
Third Party Traffic definitions - ongoing discussions andoorrespondence with DOTC.
IARU Region 3 Conference Seoul Oct 88 - Report of Packet Radio Working Group (WG 1-P).

The list above sets out the evolving nature of packet radio, which has been accompanied by a number of frustrations and several incomplete actions that require resolution and agreement by the Australian radio amateur community.

NEW!! MAGNIFICENT from AOR

the 21st Century communications receiver

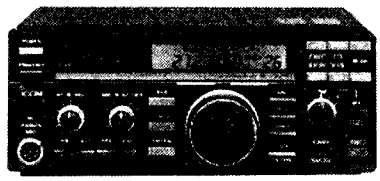
AR3000



Featuring:
Coverage
100 KHz - 2.036 GHz
Modes
NFM, WFM, AM, SSB CW
Memory
400 Memory channels
Scanning Rate
20 channels/second
Tuning Rate
50hz - 100hz selectable

NEW from the ICOM stable

The fantastic budget priced **IC725**



TERRIFIC TRANSCEIVER
TERRIFIC PRICE: ONLY $1550

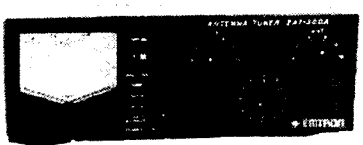
KENWOOD

Full range of all kenwood products available at competitive prices from our 3 stores

NEW 1KW EMTRON TUNER EAT-1000A Only $549

This new EAT-1000 A is EMTRON S latest antenna tuner built on special request by many amateurs. Built with finest components available. 5 position internal antenna switch, cross needle SWR/power meter, built in 3:1 balun for open feedline and antenna terminals for coax line, open feedline as well as longwire. EAT-1000A will tune almost everything from 1.8 to 30 MHz. At lowest price professional design and quality that EMTRON provides. MADE IN AUST

NEW 300W EMTRON TUNER EAT-300A Only $349



The finest 300 watt antenna tuner on the market with quality that only EMTRON can provide! Unique features such as
• Cross needle SW 12/forward & reverse power meter • Built-in 100 watt dummy load • Antenna switch including bypass • Built-in 1:4 balun for open feedline • Lowest price & professional design • Matches everything from 1.8-30 MHz • Made in Australia by Emtron

OVER 1000 FAMOUS EAT-300 SOLD

EMTRON S fastest selling 300 watt antenna tuner with SWR meter built in 1:4 balun, heavy duty ceramic switch and top grade components. Works with all rigs and is found in Amateur, Commercial and Marine services

Only $239

THPLinear Amplifiers

	was	now
Two Metres		
• HL 180 V Auto 170W	$599	$489
• HL1103/10w-120w	$479	$429
• HL 110V/25 25-120w	$449	$399
Seventy Centimetres		
• HL 130U Auto 120 w	$799	$749

KENPRO ROTATORS

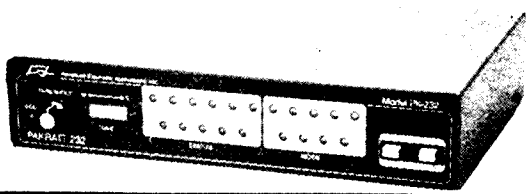
MODEL	BRAKING	ROTATING	PRICE
KR400	1530kg	400kg/cm	$369
KR400RC	1500kg/cm	400kg/cm	$429
KR800	4000kg/cm	800kg/cm	$659
KR2000	10,000 kg/cm	2000 kg/cm	$1299

All units include both top and bottom clamps, 8 core rotator cable available

JOIN THE PACKET REVOLUTION!

New PK-232 Breakthrough

A new software enhancement makes the AEA PK-232 the only amateur data controller to offer six transmit/receive modes in a single unit.
★ Morse Code ★ BAUDOT (RTTY) ★ ASCII ★ AMTOR ★ Packet ★ Weather FAX



PRICE $649 WITH FAX

NEW

PK-88 ™ PACKET CONTROLLER NOW $299

The PK-88 is not just another copy, it is much more. With all the packet program features of the Multi mode PK-232, the PK-88 is an economical new TNC designed to bring you enhanced completely compatible packet software plus new hardware features for improved packet operation.

BANKCARD
MASTERCARD & VISA
WELCOME

EMTRONICS

MAIL ORDERS WELCOME

NSW & HEAD OFFICE:
92-94 Wentworth Ave, Sydney
NSW. 2000. TLX:AA73990
P.O. Box K21 Haymarket, NSW. 2000
Ph: (02) 211 0988
FAX: (02) 281 1508

VICTORIA:
288-294 Queen St, Melbourne
Vic. 3000
Entrance from Lt. Lonsdale St.
Ph: (03) 670 8551 or 670 0330
FAX: (03) 670 0671

QUEENSLAND:
416 Logan Road, Stones Corner
Qld. 4120
Ph: (07) 394 2555
FAX: (07) 394 4316

Aim

The aim of this paper is to provide an up-to-date position for agreement at the 1989 Federal Convention in order to assist the future planning of packet in the short term.

Considerations

In elaborating on the issues which need to be considered in order to reach an agreed position for future planning of packet in the short term, it is useful to use the items identified in the recent IARU Region 3 Report of Packet Radio Working Group (WG 1-P) and further more to consider them in the order discussed in that report. (See Amateur Radio magazine Jan 89 for the Seoul reports).

The paper limits itself to the short *term, for* with an evolving mode like packet it is impossible to predict far into the future. What was impossible yesterday may well be achievable on only one or two VLSI chips next year, further more planning is often constrained or directed by regulatory factors which can be changed by representations with convincing arguments to the controlling authorities.

Technical Developments

At Seoul, Working Group 1-P identified a number of technical activities which warranted further investigation by packet researchers and developers. These were attached as an Annex to their report which has been published in Amateur Radio magazine January 1989. These activities, whilst providing guidance, also pose a dilemma for packet. For on the one hand standards are being proposed, eg AX25 was adopted at Region 3 Auckland 85 as the preferred protocol, yet now we are saying "keep the options open" but still intercommunicate and advance the mode!

Bandplans

The FTAC Band Plans paper of 1986 made some provisions for packet frequencies, more by providing band segments for emissions of differing occupied bandwidths rather than by mode specific allocations as has been done in some nations. Since amateur radio band planning in Australia is by "Gentlemans Agreement" rather than by regulation, and considering the increasing emphasis upon de-regulation, FTAC was guided to propose band plans which showed consideration of all anticipated radio amateurs requirements as well as be generally acceptable to all amateurs, members of the national society or not. FTAC was also mindful that band plans were to be dynamic, in an evolutionary manner and would require relatively minor adjustments every few years. Indeed this has come to pass with a FTAC paper to the 1989 Federal Convention updating the Australian band plans in the light of IARU Region 3 Seoul 88. (See Amateur Radio magazine January 1989). Naturally that update includes packet considerations, also arising from Seoul 88.

The IARU Region 3 Seoul 88 Report from Working Group 1 - Band Plans has also been published in Amateur Radio magazine for January 1989 and need only be highlighted here. A point of interest is the review by BACKGROUNDGroup 1 of the need for wider data mode segments within the band plans to accommodate the growth in data modes in recent years. The inability of packet to coexist with RTTY and AMTOR led to a recommendation to extend the data segment on 14MHz upwards above the time shared beacon frequency of 14.100MHz (+/- 500 Hz guard band) to 14.112MHz and to recommend other data modes including packet operate in this extension. Recommendations were also made for the 7 and 10MHz Auckland 1985 Region 3 Conference plans, plans which were adopted by the 1986 Federal Convention for Australia.

Turning to the VHF and UHF bands, provision has been made in the channelised segments for a number of FM packet channels. These are available with adequate frequency separation to permit co-siting of transceivers operating in the same frequency bands. Where packet requires wider bandwidth channels than presently anticipated, operation is still possible in the all mode segments identified in each band plan. What is important is to select frequencies wisely in the first place, taking into consideration all factors, then that selection will be satisfactory for a number of years without causing difficulties for others. (The days of using any available crystal are long gone!)

Third Party Traffic

Third party traffic considerations have raised more than their fair share of problems with packet. Some of this has been occasioned by a tfatalistic desire by some individuals to seek rulings from the authorities. Pursuit of such a ruling, knowing that it will have a high probability of being adverse, is not the sensible way to approach the matter. Sadly these supposedly well intentioned, but completely misguided, individual actions have been lauded to all as progress because "the issue HAD to be clarified".

An outcome of these machinations has been an apparent hardening on the part of the authorities to maintain a decision made, in our opinion, in haste and without consideration of all the factors, by relatively junior officers. Consequently we are faced with a literal dictionary interpretation of third party which makes the Australian amateur's *circumstances* as constrained as any in the world, including the USA which has some forty bilateral third party agreements in place to ease the pressure. Ironically the authorities have chosen not to rule traffic via an amateur satellite within their definition, no doubt because of the difficulty of disciplining the satellite!

At Region 3 Seoul 88, Working Group 2 recognised this constraint on amateur communications and saw three possible avenues open to national societies. Firstly to make representations to the national authorities to permit the retransmission of information received from other amateur stations and that such reception and retransmission of amateur originated information be not treated as third party traffic as referred to in para 2733 of the Radio Regulations. Secondly, IARU member societies could press their national authorities to include a definition of "Third Party" fro the Amateur Sevice in the Radio Regulations. Or thirdly IARU member societies could press their national authorities to review Article 32 and amend 2733 to permit third party traffic where the third party is a licensed amateur.

It is recommended the WIA follow the Region 3 guidance above.

Bulletin Boards

There are three matters worthy of consideration when examining bulletin boards, these are:

The availability and purposes of VHF/UHF bulletin boards, devoted primarily to providing end user connections.

The proliferation of HF bulletin boards, devoted primarily to bulletin and message forwarding.

A Code of Ethics for bulletin board Systems Operators (Sysops).

Whilst it is acknowledged VHF/UHF BBS provide the end connection to most users, a balance must be struck between a proliferation of auto forwarding BBS all carrying the same messages and occupying several frequencies or one BBS with the attendant difficulties and delays in gaining access or perhaps one general BBS supplemented by one or more specialist BBS with appropriately restricted contents. It is the feeling of the packet community that this last named option is preferred in major cities. Fortunately we are spared the international co-ordination problems of some of our regional neighbouring societies.

Region 3 Seoul 88 recognised the difficulties with the proliferation of HF BBS and recommended they be co-ordinated for orderly growth and be limited to the minimum number necessary. In Australia this equates to one per geographically smaller state and two (maybe three), suitably dispersed, for the larger states.

Concerns have been expressed at the *proliferation* of bulletins of questionable worth, eg junk mail or outside the BBS operator's license conditions, eg advertisements or indecent or profane text or even third party messages. It has also been observed that one man's junk mail is another's finest thoughts! The Sysops meeting in Brisbane in Sept 88 identified these problems and proposed to write a Sysops Code of Ethics. That project needs to be taken to conclusion and the Code agreed and adopted by the Federal Council.

Access to the Packet Network

IARU Region 3 Working Group 1-P recognised the desirability of retaining a simple means of access to the packet network by new comers, using relatively unsophisticated stations. They saw interoperability of systems, through interfaces as necessary, as essential objectives of packet development. At first glance this appears to conflict with the experimental and developmental nature of packet, however, it is not necessary or even desirable to provide this newcomer access at a high performance level. New devotees will be induced to upgrade their stations to take advantage of the bigger and better "bells and whistles" as they come on line, offering off their initial modest equipment to further new comers to the mode.

The development of networks and testing of

advanced protocols should not be inhibited, but rather run in parallel and be as transparent as possible to the mature data handling system.

For both networks and protocols, the role of the WIA should remain one of co-ordination, information dissemination and liaison with the national authorities, leaving the development of hardware and software to the specialist user groups involved.

Conclusions

Packet radio has reached the stage in its development where the guidance previously given by the Federal Council of the WIA should be revised. In the light of recent IARU REgion 3 developments the way ahead has been defined for the next evolution in its advancement.

Recommendations

It is recommended the Federal Council:

ENDORSE the changes made to the Australian band plans to update them and to accommodate the increasing demands for data mode spectrum.

ENDORSE the proposal that the WIA follow IARU Region 3 guidance in its approach to the national authorities for less onerous third party traffic operating conditions.

NOTE the areas of technology identified by IARU Region 3 for consideration in the development of packet and ENCOURAGE their pursuit by Australian enthusiasts.

ENDORSE the concept of one general purpose VHF/UHF bulletin board together with one or more special purpose limited topic boards in major cities.

ENDORSE the concept of limiting the number of HF bulletin boards to the minimum number necessary, taking as guidance one in each geographically smaller state and two in larger states.

ENDORSE the concept of a Sysops Code of Ethics and ENCOURAGE the active HF Sysops to complete that Code.

NOTE the desirability of retaining simple access to packet networks using unsophisticated stations with interfacing as necessary to permit use of most network facilities. OBSERVE that parallel development can proceed and acess to more facilities and faster system operations will be an inducement for newcomers to upgrade their stations.

Federal Technical Advisory Committee
Version 2 31 Jan 89
ar

HOW'S DX?

Stations worked

Stephen Pall VK2PS
PO Box 93
Dural 2158

Interesting DX QSOs on the East Coast during December 1988 and early January 1989. Alll contacts SSB

14MHZ

IM0GSA - Alfred on San Antioco Island, South West of Sardinia.

FM5WE - Guy on Martinique Island. QSL to call book address.

A4XKJ Siddiq in Muscat. QSL to call book address. Incidentally the Sultanate of Oman has changed prefix from A4X to A41 for the local Omani stations.

C56/F2CW - Jackie in Gambia - QSL to F2CW call book address.

EP2HZ - Hassan - QSL to PO Box 16765 3133 Teheran, Iran

GD4RAG - John in Port St Mary Isle of Man.

C31SD - Carlos in Andorra- QSL via Buro or to CT1AMK.

HK1ADM - Oscar in Colombia. QSL to PO Box 6149 Cartagena, Colombia.

NQ6X/SV5 - Bob on Rhodes. QSL to home QTH

VK0GC - Graeme on Macquarie Island. QSL to VK9NS.

CO2HT - Pedro in Havana.

YN3CB - Carlos - PO Box 3733, Managua, Nicaragua.

CU3AE - Jose in Angra, Azores. PO Box 157, Zip 9700, Azores.

KC6JC - Cav in East Carolines. QSL to call book address.

ZP5XDK - Tony in Asuncion, Uruguay.

4F6PC - Cris on Negros Island, Philippines. According to Cris this is the new prefix for The DU "Extra Class" Licence.

5Z4LL - Christine in Nairobi, Kenya. QSL to callbook address.

JX1UG - Ivar on Jan Mayen Island. QSL to LA5NM.

3D2RP - Ruven on Vanua Levu Island, PO Box 1267 Labassa, Fiji.

VK9ZM - Mellish Reef DX - Expedition. QSL to NM2L.

3D2HO - Hamish visiting Fiji. QSL to G0GLJ.

9M8PV - Andy in Sarawak. QSL to call book address.

C6ANI - Ric, Bahamas. QSL to callbook address.

ZL7TZ - Tai on Chatham Island. QSL via Bureau.

LY2ZO - QSL to UP1BZO.

YL2VZ - QSL to UQZGM.

OD5TS - Anthony. QSL to PO Box 175, 124 Beirut, Lebanon.

21MHz

GU3EJL - Stan on Alderney Island. QSL via Bureau.

8Q7MT - Masa in Male in Maldive Islands - QSL to JI1DBQ.

28MHz

About a dozen European Countries, among them U1AU, EA6XN.

Heard the following on 14MHz:

A35SK, QSL to SM5CQT - A35MJ QSL to KS7D.

IK2GNW/KH8 Adriano Active on American Samoa

How would you like to have an antenna tower erected

in the West German State of Baden Wurtemberg?

Easy! You do not have to have a permit if your tower is not higher than 10 metres above ground or the roofline!

Quite sensible I think.

Further DX Activity

From Bob Demkiw VK2ENU
18 Ettalong Place
Woodbine 2560

On 5th January, 1989, I worked Ian VE3IEO/MM on 20 metres who was somewhere in the Coral Sea and on his way to Mellish Reef. By now it is well known that Mellish Reef, VK9ZM, was activated and it was intended to activate Willis Island, VK9ZW, however, I do not know if this was achieved as that call was not heard at this QTH even though the designated frequencies were monitored.

I do believe, however, that more than 20,000 contacts were made with VK9ZM (this figure was announced on the 222 Net). The QSL manager for both of these stations is NM2L.

I have been advised by Joseph Petruff, 7J1ADJ, that he will be operating from Iwo Jima Island during the period 22nd - 29th March, 1989, and signing as either KA2IJ/JD1 or 7J1ADJ/JD1.

Iwo Jima Island is in the Ogasawara Group of islands located to the south of Japan and I understand that there are no licensed amateur radio operators in the island group at the present time, although there are people studying for their licences.

The QSL manager for Joseph is KB1BE. I enclose a photograph of Iwo Jima which you may be able to publish.

On 22nd January, 1989, the Liberian Amateur Radio League operated a special station, EL2LMP/40, to mark the 40th anniversary of the Liberian Maritime Program. QSLs should be sent direct to the Liberian ARL.

Stations heard/worked in January, 1989, as follows:

DATE	TIME	BAND	STATION	QSL INFORMATION
02-01	0557	20	ZL0ADL (Heard)	HB9KNA
	0758		12SM	
03-01	0738		A35SK (Heard)	SM5CQT
	0750		CU2AK	J.A. Vasconceios Raposo. R Ernesto do Canto 74-S, S Pedro, Ponta Delganda,
05-01	0705		VE3IEO/MM	NM2L
	0847		ZL2BAQ	
07-01	0947		BY4SZ	PO Box 51, Suzhou, China
10-01	0336		VK3DUO	
14-01	0908		CU2AK	
	1023		7J1ADJ	KB1BE
	1044		VK9ZM	NM2L
	1153		WH6CBB	
	1207		VK9LA	DJ5CQ
15-01	0816		VK6HQ	
	0914		VS6DO	WA3HUP
16-01	1302		W3MJF	
19-01	1152		HK1HHX	N4ENS
20-01	1228		UJ8JMM (Heard)	
	1236		A41KJ (heard)	PO Box 741, Masquat, Oman
21-01	0823		EL2E (Heard)	PO Box 136, Lafoa, New Caledonia
	0804		KC4USR	N5ETL
	0818		CQ8LN	CT1LN
0829	EA3FAH			
0909	G4SDP			
	0915		VK6QG	
31-01	0952		KK4WW	

Aerial view of Iwo Jima

AMSAT

New Columnist

Maurie Hooper VK5EA
11 Richmond Rd
Newton 5074
National Coordinator
Graham Ratcliff VK5AGR

Information Nets
AMSAT AUSTRALIA
Control: VK5AGR
Amateur check in: 0945 UTC Sunday
Bulletin commences: 1000 UTC

Primary frequency: 3.685 MHz
Secondary frequency: 7.064 MHz
AMSAT SW PACIFIC
2200 UTC Saturday, 14.282 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT Australia net. This information is also included on some WIA Divisional Broadcasts.

Thanks...

As you would have noticed in the February issue, Colin Hurst VK5HI has relinquished the job as AMSAT Australia columnist after six years' service. Thank you Colin, on behalf of all our readers, for a job well done.

I will endeavour to continue in providing a column of both topical and "historical" content, and will be pleased to receive reader feedback.

The following is the first part of a document describing the Microsat programme

THE FIRST FLOCK OF MICROSATS
COURTNEY DUNCAN, N5BF
JAN KING, W3GEY
11 January, 1989

This paper is derived from a series of four MICROSAT technical overview proposals given to four different organisations, buyers of the first four MICROSATS. It is prepared at the request of Mr Doug Loughmiller, President of the North American Radio Amateur Satellite organisation (AMSAT-NA) in order that prospective users of MICROSATS and other interested parties may be apprised of the capabilities of and intentions for this class of spacecraft.

Introduction

The names of the first group of MICROSATS are currently specified as follows:

Pre-Launch	After Launch	Organisation	Leader
MICROSAT-A	DOVE-OSCAR-XX	BRAMSAT	Junior T. DeCastro
MICROSAT-B	LUSAT-OSCAR-XX	AMSAT-LU	Carlos Haertas
MICROSAT-C	PACSAT-OSCAR-XX	AMSAT-NA	Doug Loughmiller
MICROSAT-D	WEBERSAT-OSCAR-XX	CAST	Robert Twiggs

Each "XX" designator will be replaced with the appropriate OSCAR number upon successful deployment on orbit. BRAMSAT is the Brazilian Amateur Radio Satellite organisation, MASAT-LU is the Argentinean Amateur Radio Satellite organisation, AMSAT-NA is the North American Amateur Radio Satellite organisation, and CAST is the Centre for AeroSpace Technology, Weber State College, Ogden, Utah.

In addition, significant volunteer and financial support are provided by the American Radio Relay League and the Tucson Amateur Packet Radio Corporation.

This paper details the feasibility, technologies, costs, and schedule associated with the MICROSAT project in its first four implementations.

Mission Goals

The respective missions are as follows:

DOVE - Provision of an easily received signal consisting of a voice modulated beacon for educational and scientific use. Planned uses include transmission of current telemetry and of amateur radio bulletins and messages in sveral languages.

LUSAT - Demonstration of radio amateur commitment to extending digital communications facilities fully into the Amateur Satellite Service; provision of an easily utilised, satellite based facility for data storage and forwarding using amateur packet radio techniques; and a demonstration of the feasibility of digital store-and-forward facilities within the amateur radio environment for educational and scientific purposes.

PACSAT - Essentially the same goals as LUSAT. PACSAT has the additional goal of research and experimentation with specialised protocols for efficient access and utilisation of digital data satellites.

WEBERSAT - Provision of an easily utilised, satellite based facility for video data acquisition and storage and transmission to amateur radio ground stations using amateur packet radio techniques

All of the missions share these common goals:

1) A demonstration to the International Telecommunications Union (ITU) that amateurs from each organisation involved have a strong interest in the use of the radio frequencies allocated to the Amateur Satellite Service for the improvement of amateur practices and in supporting the international amateur satellite community.
2. Provision of a test bed for evaluation and validation of hardware technologies and software to be employed.
3. Provision for advanced utilisation of the spectrum allocated to radio amateurs by the regulating authorities of the various countries involved and the International Telecommunications Union.

All of the missions share these common constraints:

1. The cost of the satellite and ground station equipment is to be minimised.
2. The mass and size of the satellite are to be minimised in anticipation that one means of launch could be man-assisted and recognising that many launch opportunities are potentially available for small, lightweight satellite packages.
3. The mission will build on user equipment, techniques, and capabilities already utilised in the Amateur Satellite Service for digital or voice communications wherever possible. The costs of ground station construction or modification are to be minimised.

de Maurie VK5EA
ar

VHF/UHF – AN EXPANDING WORLD

Busy on six

Eric Jamieson VK5LP
9 West Terrace
Meningie 5264

Times are Universal Co-ordinated Time and indicated as UTC

The Beacon List

For the first time in many years the list of beacons is not included. It has been deleted to conform to new printing arrangements for AR needing at least 20% reduction in material from all contributors, to permit larger print size.

My report for the March issue is normally larger because the summer Es period leads to increased VHF activity. To avoid depriving readers of vital information, I have removed the beacon list - they were fully listed last month and there have been no changes - to devote the space saved to band activities. It will also give me some idea how much pruning I have achieved. The beacon list will be back next month!

Six Metres

The six metre band is still in the news. Following the excellent conditions through September/October and into early November resulting in many TEP and F2 contacts to Japan and the USA in particular, (at least in VK1, 2, 3 and 4), the change to Es contacts with the approach of summer kept the band alive. Of particular interest were the contacts being made occasionally to Japan and to the USA, no doubt being assisted by Es. The solar flux remained close to 250 for several days around Christmas and averaged above 200 for December - little wonder exotic contacts were being made.

24/12: At 0755 Steve VK30T worked P29PL and P29ZJS, the latter reporting he was going to operate from 3D2 for one year. Phil VS6CT would be going to XX9 Macao soon. Steve said the best way to work a BY station would be to try and have him shift from 15 or 20 metres to six metres. Suggested BY1PK, BY4RV and BY5AA were likely contenders. Steve also is QSL Manager for VK9YQS/O at Macquarie Island and asks for a SASE for a QSL.

On 26/12 at 0956 the Perth beacons, VK6RPH on 50.066 and 52.460, were checked by VK5LP and the 50 MHz beacon found to be slightly stronger. This sort of test will not be meaningful until the beacons radiate the same power from a common antenna.

27/12: 0004 VK4JH to VK2XNK, followed by VK4FXX working ZLs. Lloyd said later that at 0345 TV from China had been into Townsville. He also heard JA2IGY and JA7ZMA beacons. Called CQ JA and FK1TS replied, signals were up to S9 for an hour. VK30T heard a station in AH5. At 0900 the band opened to Japan with JA1, 7, 9 and 0 being worked, plus HL9ASH.

On 28/12 at 0357 I worked Graham VK1BGG who reported hearing W6JRA weakly at 0153. During this time ZLs were working W6. FK1TS worked VK5NC and VK3LK. At 0630 on 29/12 the band opened to ZL3ADT, ZL3TIB both 5x9, others at varying signal strengths. Earlier in the day ZL3 had been working VK2 on two metres. ZLs had been working FK, KH6, HL and JAs, and ZL3NE worked five Ws.

30/12: The band opened early around 0030 to VK6KXW and VK6BE, then swung around to VK8ZCU (Tennant Creek) at 0100, a few minutes later to VK4KJL who said he had worked ZL3NE at 0147. At 0313 VK4ZAZ worked Henri FK8EB, then VK5BC. FM signals from FK (96 MHz) were copied in VK4. At 0430 VK5 stations were given a treat in working KH6IAA, KH6FOO, KH6JJI, KH6HI and others, all with S9 signals lasting for half an hour, in fact, signals were so good that VK5LP was receiving 5x9 reports with a power output of ten watts! At 0500 VK6BE, VK6WD and possibly others worked KH6IAA and heard FK1TS. So did VK8ZLX.

31/12: The band seemed quiet at VK5LP, at least up to 0000 hours, so I agreed to take the three teenage boys fishing in the Coorong. They caught enough for a meal and had a good day. At 1000 I was informed by Roger VK5NY that during my absence the band had opened to the US and VK2, 3, 4 and 5 had worked W5FF and others. Roger worked W5FF at 0214 when he was 5x5 and heard WA7CJO. W5FF apparently worked 23 stations in VK. KH6GFF was 5x7. Roger said there had been an X1 flare giving a solar count of 180. VK5NC worked W, and KH6 went into VK6 and VK8 again; Peter VK8ZLX worked K6MYC/KH6 and heard VK9NS. Ah well. The fish were good eating despite my remorse! Of course the Ws did not return the next day and neither did the boys want to go fishing!

On 1/1/89 an early opening around 0000 to ZL2TPY and several others. Kerry said VK2 were working ZL on two metres and some Ws on six metres. ZL2BGJ had set a new world record for EME by working WA4NJP but no details. On 2/1 strong signals from VK7 with VK7WD worked just before 0000. Then over to ZL2AJI who reported it had been open between ZL and W and XE. News came in that VK1BGG had worked N6, K6 and heard K7. Peter. VK8ZLX worked P29PL and KH6HI and heard the H44HIR beacon. Open from 0400 from VK4FNQ to W, VK4FXX and VK4BRG to KH6. At 0715 Steve VK4KHQ at Mount Isa worked VK8ZWM and VK8RH in Darwin at 5x6. Lyn VK4ALM in Rockhampton said he had worked five countries on this day, VK, P29, KG6, KH6 and JA8!

3/1: At 0000 ZL to VK3, 4, and 5. Norm VK3DUT worked ZL1, 2, 3 and 4 also VK9YQZ/O on Macquarie Island. JAs had worked ZL4 which was rare. VK4FXX and others working JA9. At 0925 VK8ZCU from Tennant Creek 5x9, then VK8ZLX 5x9 at 0945. Lyn VK4ALM making another appearance at 1015.

4/1 dawned with appearances of being a good day. Band open to VK2 and VK4 before 0000, VK3 were strong on backscatter and VK4

were working VK7. VK8 from Alice Springs were strong around 0900. Soon after VK8ZLX and VK8KTM were working VK5 and VK3 on two metres, Peter VK8ZLX started at Meningie at S3 then rose to S9 for a few minutes. Peter said he worked VK3DUT, 3APW, 3AIH, 5ZRK, 5ZRO, 5NC, 5ZDR and 5LP. Plenty of VK4s most of the day on six metres.

5/1: Relatively quiet until 0300 when VK6AOM came in, followed by VK2HT. Neville reported the Newcastle repeater on 52.625 was operational with 25 watts, soon to be raised to 80 watts, using crossed dipoles and situated 300 metres asl. VK6 then started working VK2. Hughie VK5BC worked a W6 this day. H44HIR beacon to VK5NY and VK5LP at 0400. About this time VK6KXW, 6YU, 6ZRY worked at 5x9. Roger VK5NY reported working VK8XX at 1430 UTC (that's 1am local time!) at 5x9. Roger said many of the eastern States beacons were audible at the time.

6/1: 0155 VK5BC and others to VK4FXX. 7/1: VK6KXW said everything was quiet. It certainly was, only the odd contact to VK3 and VK4. 0722 VK6BE 5x9. Hugh VK5BC making good use of CW for rustling up contacts. 12/1: VK2MZ working VK3 and VK7 at 2300, then VK6YU. 13/1: 0143 VK4DM worked VK1VP, then VK4PU. 0325 observed VK4KK, 4ZAL, 4ZNC working VK9ZM on Mellish Reef on 52.050, no sign of VK9ZM here. Open to VK4JH at 0615 at VK4KIT at Mount Isa at 0713 to VK5ZDR, 5AIM and 5LP.

15/1: 52.050 - 0315 VK4s working VK9NS. At 0330 VK9ZM to VK4ZMI, 4ZAL, 4ZJB, 4PU, 4VC, 4APG/M, 4KU, 4KJL and others, signals from S1 to S9. Also to VK7HL, 7KMR, at 0347 to VK2QF and northern VK2. 0430 Raj 3D2ER worked VK4KU, 4KJL, 4ZMI, 4ZJB, 4ZAL, 4PU, 4ZNC, 4ZAZ and others. As John VK4ZJB/VK4KK commented in his letter it was quite an eventful Sunday afternoon. Around 0930 he observed swarms of JAs presumably working VK9ZM on 50.110.

Also on 15/1 the east coast positively buzzed with excitement at the reported contact between John VK4TL in Cairns and G2BHI at 1000 UTC on six metres. Ever wary, I personally phoned John and asked for details. John asid a CW contact took place but he had doubts as to its authenticity as contact with Gs later on 10 metres revealed no listing of that callsign, it was either a new station or a hoax. John said he was beaming to the US at the time and G2 would be at right angles to his antenna. There was no doubt about the call sign as he has operated on CW since 1951, but the signal reports of 559 both ways and the reluctance of the other operator to give his name or location casts doubt on the contact. John stressed that under the circumstances, he was not promulgating the contact as having been authentic. If a QSL arrives then the matter can be decided at that time.

On 16/1 open to VK2 and 4 during day. On 18/1 VK3AUU and VK3AKK worked 3D2ER. VK8ZLX at 1010, VK8ZMA was 5x9 at 1021, said Channel 3 TV noted in Alice Springs. At 2338 short skip to VK3 with VK3AUU, 3DUQ and others 5x9. 19/1: VK7RST and VK7RNT beacons audible in Meningie most of day, then at 1020 VK7RMC two metre beacon strong - still no takers!

20/1: This was to turn out a great day. VK5LP and others worked all States on six metres! Started off at 0001 to VK7JG, then to VK4ALM at 0030, followed by VK2 and 3, 0120 to VK1BGG, VK6BE and 6ATF, to VK8 at 0030, and again at 2333.

Open again to Ray VK3LK and Steve VK3OT at 1200. Steve was a particularly good contact which lasted for some time.

21/1: 0039 VK8ZCU 5x9. Neil, from Tennant Creek, was a consistent contact this year. 0110 to VK4DO who was working ZLs. Wally said he had recently returned from a trip to China and had visited their amateur radio club in Beijing. He said there appeared to be one station set up for six metres, BY1PK. 0140 VK4FNQ. 0425 John VK4KK phoned to say he had just worked VK9ZM on Mellish Reef at 5x9, others were VK4ZAL, 4ZNC, 4KJL and 4AHW. Others included VK3s and VK7s; all were now hoping to work VK9ZW from Willis Island. 0530 VK4ALM. 26/1 VK4VV on CW, 0100 VK6KXW 5x9.

Panama worked

25/1: At 0216 Neville VK4ZNC worked HP3XUH of Panama with signals 5x5 both ways. The opening lasted for 15 minutes according to the message from John VK4KK. That's a rather spectacular contact and one of the best so far for Cycle 22. It is thought VK3AMZ may have worked him, not certain about any others.

25/1 was obviously a very good day for the eastern States. At 1200 Steve VK3OT heard with some difficulty, XX9KA from Macao at 3x1. At the time the JAs were working VK7 and Asian TV was very strong, including Thailand TV on 55 MHz, and many remote areas video signals were audible. AT 1305 video was available from G land, at 1310 he copied 9H1SIX from Malta. Steve said it was likely 8Q7 in the Maldives would be activated in March. 28/1: open to VK2 several times including 0914 to VK1VP, 0918 to VK2BFQ and VK2BHO.

News from Brunei

The above is a summary as I saw things at VK5LP. Following is a precis of the contents of various letters which arrived this month. Mindful of my reduced space the comments may seem terse but with so much to report this is necessary.

I have two letters from Andrew Davis V85DA (VK1DA) from Brunei. The first was dated 25/10/88 and was somehow overlooked. Using a TS600 and 10 watts on 20/10 he worked 130 JAs between 0700 and 0900, including 30 plus on CW. AT 0902 he worked HL2ASH. On 21/10 Andrew worked 60 JAs up to 1700 UTC (1am local) and 20 JAs on 24/10. He heard JAs working to VK6 but no sign of VK6. He is quite happy to work JAs on CW when conditions are poor, but believes 20 wpm to VK would be wasted! Andrew hopes to run 100 watts eventually.

Andrew says there is a two metre repeater in Sabah, on Mt Kinabalu, also a TV sound carrier on 53.750 MHz which could act as as good beacon for VK. However, this same channel precludes six metre operating from the Brunei capital, Bandar Seri Begawan. Fortunately, Andrew is at the south-western end of the 100km long country. A two metre repeater for the capital is under consideration, but mobile and portable operation is prohibited.

Andrew's later letter is dated 22/12/88 and sent from Canberra during his Christmas break. It includes a computer printout of his 340 or so JA contacts made on eight operating days from 20/10 to 13/11. He normally checks JA and VK beacons and VK/ZL TV sound each day but is not always able to operate due to various commitments. The JA beacons vary from S1 to S5, rarely stronger even during a good opening.

Andrew will return to Brunei with a 60 watt amplifier, a rotator and with thoughts on how to vary his HF antennas to accommodate VHF! He reports local interest in six metres has increased since he came on. V85GA has a transverter but needs an antenna.

I did work someone on Brunei at least on two occasions during Cycle 21. If you need to contact Andrew, his QSL is Andrew Davis, V85DA, C/- FIC Dept, BSP Co, Seria 7082, Brunei. The longer way around is via PO Box 999, Woden 2606.

New Zealand

John, ZL3AUU enclosed details of beacons in ZL. On 2/1/89 he worked W6XJ, XE2GBO, N6XQ, WA6BYA, K6MYC, KH6JJI, KH6FOO, KH6JJK, KH6HI, JAONAE, JHOHZO, JHOBBE and FK1TK. He regularly hears six metre beacons from VK2, 3, 4 and 7, has also heard JA1IGY, H44HIR and KG6DX.

California

Bob WA6BYA (grid CM87) reports a very good six metre opening on 2/1 to VK and ZL when he worked 15 stations in ZL and the following between 0142 and 0318: VK1BGG, 1RX, VK2QF, VK3OT, 3AMZ, 3AUU, 3AKK and FK1TS. Others in his area that night to work stations were K6HCP, K6MYC and N6AMG. VK stations were also worked by N7ICW (Nevada) and NOLL (Kansas).

Mike K6MYC (grid CM97) on 2/1 between 0153 and 0335 worked VK1BGG, 1RX, 1KAG, VK2QF, 2BHO, 2AKK, VK3AUU, 3AMZ, 3OT, 3AUI, 3AJW, 3BDL, 3YY, 3NM, VK4AMK, 4FNQ, 4BRG, 4RO, VK5TAF (?) (best DX that night) and FK1VK. From K6MYC/KH6 on 31/13 from 0255 to 0324 he worked VK4BRG, 4RO, VK6KXW, 6HK, VK8GF, 8ZMA and 8ZLX.

New South Wales

Nev, VK2QF has upgraded his six metre antenna system to a pair of six elements of W6SAI design, 5/8 wavelength apart and set at 20 metres. It has survived storm and tempest but not the ravages of cockatoos who ate through the lower 75 ohm phasing harness. All coaxial cable is now in half-inch garden hose! When Es collapsed at the end of 1987 Nev missed working T20AR but could hear coastal stations working him.

Very little six metre activity until 8/9/88 when the band opened to JA8 etc. On 5/10 all JA districts except 7 and 8 plus HL5BAS. Japanese contacts were very consistent almost on a daily basis leading up to a very large opening on

22/10. Then 27/10 JA; 29/10 KH6HI; 30/10 KH6HI, JA; 31/10 WA6BYA at 0220 at 5x1 on SSB; no DX of any note through November/December until 31/12 when told by VK2EMA that W6 and W7 had been heard to 0230. On 2/1/89 WA6BYA, K6MYC, KB3LY/6, K7KW, NOLL, N6AMG to S9 between 0200 and 0230. 4/1 H44HIR s9 0400.

So, ilke quite a few areas around the country, Es has not been plentiful this season at VK2QF, further evidence that we must be very close to the top of Cycle 22.

New Caledonia

Phill FK1TS, from Noumea writes that he experienced a good winter Es last July by working VK2,4, ZL1,2,3 and heard the H44 beacon. TEP contacts started 30/7/88 at 0744 to KH6; 1/8 0859 KH6, AH9; 6/8 0913 JA1,2,3,9; 7/8 0957 JA1,2,7; 8/8 0756 KH6; 9/8 0727 JA1,2,3,7,8,9,0; 11/8 0622 JA7.

From 15/8 to 31/10 he travelled with work commitments to KH8, 5W1, 3D2 and ZK1. As 3D2TS and with limited time he worked 160 JAs mostly on 15/9, KH6JJK on 14/9. Used an FT690 and 50 watt linear to a quarter-wave vertical. As ZK1XT at Arorangi, Rarotonga, in the Southern Cooks Group, the accommodation did not lend itself to operating - the only position for the antenna was taped to a wooden balcony! On 10/10 at 0131 he worked HL9CB and from 1037 about 60 JAs in JA2,3,4,5 and 6. He also heard JAs working a number of South American countries.

Back in New Caledonia on 1/11 from 0200 VK2QF, 2XJ; 0213 JA1,5,0, KH6 for 8 contacts; 2/11 0600 JAO, KH6 = 2; 3/11 0528 JA1,2,3,4,6,0 = 12; 4/11 0114 JA1,2,3,5,6,7,9,0 = 16; 6/11 0205 JA4 = 1; 11/11 0234 JA1,2 = 2; 12/11 0240 VK2,4 = 4; 0321 JA1,2,6,7 = 10; 13/11 0130 VK4KU; 15/11 2020 VK4KU, 4KJL = 2; 16/11 0522 JA1,2,0 = 4; 17/11 0650 VK2,4, JA1 = 4; 18/11 0300 JA6 = 1; 19/11 0255 JA1,2,3,4,5,6 = 10; 20/11 0244 JA1,4,7 = 3; 25/11 2320 ZL1,2 = 6; 26/11 0406 JA1,2,3,4,6,7,9,0 = 44; 2138 VK2,4,8, ZL2 = 35; 27/11 VK2,4 = 8.

Phill said that 1987 JA contacts stopped abruptly on 10/11, but in 1988 they were continuing right through November. In 1987 VK contacts did not start until 24/11 but in 1988 from 1/11 plus JA1 and KH6.

FK1TK worked three W6s on 19/9/88 but none since, but has observed ZLs working W6 and W7 with no sign in Noumea. Phil said he would be in Guam during March 1989.

Victoria

John VK3ZJC comments in his letter on the TV sound signals on the upper end of 51 MHz, saying they are very consistent this year, with the strongest and dirtiest signal being that from DDQ0 in Toowoomba, with S9 crud extending past 52.100 MHz (here in Meningie), for days on end. Small wonder the Brisbane amateurs were glad to lose that station - what it must be doing to other Channel 0 stations is anyone's guess!

Several VK6 stations have been reaching Melbourne with some regularity, mainly VK6AOM, 6KXW and 6AKT on 23/11 and 24/11 and VK6AOM again on 2/1 and 5/1. ZL contacts have not been frequent, in fact there have probably been more openings to JA. W6 and W7 have come in several times, the best being on 31/12 to N7BLS, K6FB, N6HBI and KB6SNC. John said the dogpiles were horrible! Melbourne stations have been working FK1TS, FK8EM and VK9NS , also Doug VK9YQS/O on Macquarie Island. Doug has a VK9 callsign because DOTC no longer issues VKO limited callsigns.

Gil VK3AUI sends some copies of SMIRK information. Included is the SMIRK Awards Programme and an application form to become a SMIRK member or extend your current membership with extra acknowledgements. At this stage Gil said he is prepared to provide a photocopy for SASE - If flooded with requests he may need to add a small photocopying charge - at the moment there is no charge. His address is: Gil Sones, VK3AUI, 30 Moore Street, Box Hill South, Victoria 3128.

Ray Clark, K5ZMS, of SMIRK, is seeking ideas regarding an International Award of Merit for six metres and would appreciate any ideas, either direct or they could go via Gil VK3AUI or VK5LP. Also, SMIRK has a deal with Worldradio for SMIRK members where $US25 pays SMIRK dues and a sub to Worldradio magazine.

Gil extracted a few points from the SMIRK newsletter: Holland has 50.0 to 50.45 MHz with 30 watts CW and an antenna gain limitation. Fred Simpson, VP8PTG is on six from the Falkland Islands. QSL via G4RFV. Finland has 50.0 to 50.5 MHz, 50 watts CW and 200 watts SSB, no antenna restrictions and 60 licences only for the present. Permits are slowly being issued in both France and Norway.

Due to space shortage this month further extracts from the SMIRK newsletter will appear next issue.

Japan

A massive list of stations worked by JAs appears in the November 1988 Japanese "ham radio" magazine, per courtesy Graham VK6ROO. Most are to VK4, but quite a list covering VK1,2,3,5,6 and 8 as well. Other areas/stations JAs have worked include 5W1GP, T20AA, P29ZEF, HL, KX6DS, H44GP, F05DR, 3D2TS, KX6BA, FK1TK, ZL1 to 4.

South Africa

"The ZS VHF News" for January 1989 reports ZS3E in northern Namibia has had contacts with US and Canadian stations. ZS6LN had a crossband contact with Finland, being the furthest north propagation was reported, while the longest tw-way contact completed from South Africa was to GM3WOJ in northern Scotland. With the solar flux above 200 for December European stations had almost daily openings to the east coast of the US and Canada, with frequent openings to the Caribbean and northern South America.

The South African Es season was an almost total washout with only a few ZS3 to southern South African contacts, with no short skip between ZS6 and ZS1/2. However, the South AFricans say that Cycle 21 produced ZS6 to KH6/JA/VK/ QSOs during April while North America to ZS peaked in November. Everything points to those expectations again and with more countries (over 120) now available the next two years should be exciting. Greece and Sweden are issuing operating permits allowing six metre operation on a limited trial basis.

Dave J52US has been very active since receiving six metre equipment. Zimbabwe is the latest southern African country to be granted permanent six metre operation, with Mal Z23JO active with 10 watts and a 4 element yagi.. CT3BX has been active and Tom 9Q5NW, in Kinshasa, now has 100 watts on six metres.

The Ross Hull Contest

I am sorry the Ross Hull Contest received so little enthusiastic support. The need to exchange a locator grid square number threw many operators into a mild flap with most not knowing their square. Fortunately, I realised in advance the inadequacy of the Maidenhead Locator Square map published in November 1987 AR, so purchased an atlas which for most of Australia and New Zealand, gave co-ordinates to two degrees of longitude and one degree of latitude. I used see-through marker pens to define the borders of the rectangles, wrote in the square number and was then able to help other operators decide their square number.

I cannot spend much space on the matter this month, but suffice to say that the Contest has lost all its incentives towards participation, eg a hard-won contact on 70cm is worth no more than an easy contact on six metres. Even on that band, I had to fight the eastern States QRM to work FK1TS who was kind enough to exchange numbers, but it was still only worth one point to me, plus the square multiplier. ZLs were not the least interested, what was one point when they could have a chat! The VK6s felt they were out on a limb again, especially with reduced Es openings. They gave a number if asked but mostly did not volunteer one! Wally, VK6KZ, probably summed it up by entering a log of one Ross Hull contact on two metres with Peter VK8ZLX!

Two metres and above

While much glory is obviously gone to six metres during the summer, nevertheless, two metres has had its interesting moments. 22/12 was one of the better Es days with two metres available in Queensland for much of the day. From Townsville John VK4FNQ worked VK3BDL, 3UM and 3AMZ and VK4FXX worked VK3AUU, 3UM, 3BB and 3AMZ. Bill VK4ZWH at Bundaberg worked VK3AUU, 3UM and 3ZJC. Rob VK4TKA in Rockhampton worked VK3AUU at 0821, VK3UM and VK3ZJC at 0844, VK1VP at 0855, VK5LP at 0942 at 5x9. VK4KJL in Brisbane worked VK2,3,5 and 7. Many other similar contacts are not reported. Last month I briefly reported the excellent opening on 24/12 at 0750 when VK8ZLX and VK8RF worked 12 stations in Perth, including Wally VK6KZ twice, once in his car. 27/12: John VK4FNQ mobile 160km west of Townsville heard the VK1RCC beacon on 144.100; after many calls VK1RX was heard, no contact made.

29/12 VK2 were working ZL3 around 0200.

30/12: VK2,3,4 working one another. 31/12: VK2 to ZL again. 3/1/89: Roy VK3AOS worked VK4BRG in Mackay; 4/1:L weak CW at 0919. VK4ZAZ and 4QE heard in Melbourne. From 0920 VK8ZLX worked VK3DUT, 3APW, 3AIH, VK5ZRK, 5ZRO, 5NC, 5ZDR, 5LP. VK8KTM also on. On 16/1 VK8 worked VK2,3 and 5. Unusual circumstances at 0530 on 21/1 when Roger VK5NY worked Wally VK6WG in Albany at S9 plus but S2 at VK5LP. It was either a very selective set of conditions or else the contact may have been via Es and not trcpo.

On 432 John VK3ZJC says contacts have been made with VK1BG, 1VP, 2ZAB, 3XRS, 5NC, and 7ZBT, 1296 MHZ stations worked in Melbourne recently include VK3BBU, 3KAJ, 3YTV, 3ZBJ, 3ZGJ, 3ZPW and 5NC. New stations on 1296 are Andy VK3WH, Wayne VK3AIV, Peter VK3ZYN and Geoff VK3YJM.

John also reports a group of Geelong amateurs are to install a 432 MHz beacon in a prime loation. It will radiate high ERP to have a chance of indicating conditions across the Great Australian Bight.

On the tropo scene, many contacts have been made across Southern Australia. 23/12 at 2238 VK5NC to VK3KXL and VK3ZBJ at S9 on 144, 432 and 1296 MHz. 27/12 0400 VK5NC, 5NY to VK3NM , 3APW. 28/12 VK5NC to VK3KXW, 3ACW and 3AUU on 144 and 432. 16/1: At 1010 John VK5KAF operating with a vertical antenna from Kangaroo Island, worked by a number of Adelaide stations and VK5LP, the first station I have worked on the Island. 18/1: VK7RMC beacon very strong at 1020 but no one to work. 20/1: From 0932 VK5s to VK3AUG, 3AOS, 3DLM, 3LK, 3ZGJ and 3YTV, the latter two on 144 and 432. 23/1: 1200 VK6WG strong to VK5NY, 5x2 at VK5LP, but was 5x6 on 432; at 1209 Brian VK6YAU 5x6. This a father and son combination, VK6WG and VK6YAU. It is to be hoped Brian does not drift off to packet radio to the exclusion of other modes as others have done. 28/1: excellent signals to VK5MC, 5NC and 5AKJ on 432 around 1200. 30/1 good tropo to Albany and Melbourne from VK5 on 144 and 432.

John VK3ZJC says aircraft enhancement and tropo scatter activity continues with VK1BG, 1RX, 1VP, 1BUC, VK2ZAB, 2ZRE, 2ARA, VK3ZJC, 3KUB, 3AQU and 3XRS being involved.

EME Report

Doug VK3UM sends brief information on recent EME activity. From 1740 on 26/11 he worked SM4IVE, PA3CSG, DK3BU, DL9KR, OE5JFL and F1FHI. AT 1940 Faraday rotation changed and wiped out all signals.

On 17/12 worked K2UYH, UA9FAD, RA3YCR, RB5LGX, SM4IVE, IN3HER, PA3CSG, OE5JFL. On 18/12 N4GJV, ZL3AAD, WAA3FFC, WA9FWD and W7FN, the latter three being random contacts.

Since the installation of eight extra yagis, Doug feels his QSOs have decreased in similar operating time due to more defined Faraday rotation interaction. When Faraday is OK signals are great but in working yagi stations there seems to be a decreased performance. Doug is giving serious thoughts to the installations of a dish antenna to overcome some of these problems.

VHF Field Day

Stangely, there seemed a little more enthusiasm for this 24 hour VHF Field Day held on 28/1 - it did not seem so hard to obtain grid square numbers, perhaps operators had been conditioned by the Ross Hull Contest!

Unfortunately for VK3 and VK5 the weather was extremely hot and no doubt prevented some stations from going portable. It is known that VK5BW/5 and VK3ATL/3 were out in the field. The hot conditions did not assist propagation and it is believed very few across the border contacts were made. A reasonable Es opening between VK5 and VK2 helped some operators.

It may be possible to report further on this Field Day next month. VK5LP managed to rake up 33 contacts using 52, 144 and 432 MHz.

Closure

These notes this month have been put together with some difficulty. In order to comply with the request/direction of The Editor that at least 20% must be pruned from all contributions, the mass of information available this month has required very careful sifting; hopefully, a balance between actual happenings and general reading has been preserved. At present I pass on as much overseas information as I feel is useful because I believe we will miss exotic contacts on six metres if we are not forewarned on available operators.

Whilst the bulk of F2 contacts will probably appear around the equinox, so much continues to take place at any odd times that one needs to be constantly alert for the unusual contacts. As the solar flux goes higher the area of F2 coverage will move further south thus bringing more operators on air. Truly exciting times are ahead on six metres.

Closing with two thoughts for the month: "One of Life's puzzling oddities is that every centenarian has either used alcohol most of his life or has let it strictly alone" and "One can easily judge the character of a man by how he treats those who can do nothing for him." 73. The Voice by the Lake.

LATE SIX METRE NEWS

Macquarie Island Works Japan

On 3rd February three stations in the JA2 area worked VK9YQS/0 who is on Macquari Island. This is the first occasion that Macquarie Island has been able to work Japan on six metres. The Japanese stations were JE2DWZ, JA2BZY and JR2AAJS. The opening was brief being from 0746Zto 0805Z

Well done to all concerned. Let's hope that many more Japanese stations can work Macquarie Island. With such excellent propagation the path to the USA may open as well.

Thanks to Hat JA1VOK for the good information.

Wake Island

AH9AC is on Wake Island with a beam and a TR9300. Tom is active every weekend. He has worked into Japan. Who will be the lucky VK?

Gil VK3AUI.

ar

QSL

QSL's of the WIA collection (11)

Ken Matchett
VK3TL
PO Box 1
Seville 3130

VK2JQ

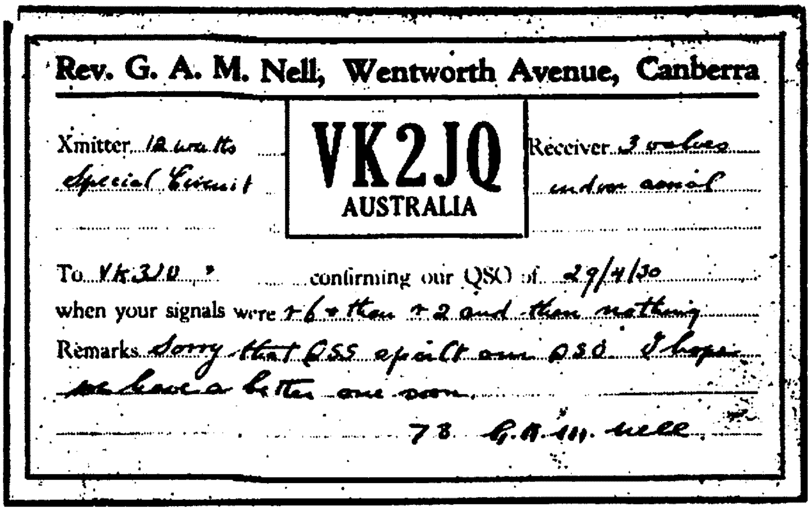
This QSL is one of very few pre-World War II QSLs from the Australian Capital Territory before the introduction of the VK1 prefix. The QSL is dated April 1930 just three years after the completion of the Federal Parliamentary building.

In the 1954 WIA Call Book there was only a NSW listing for VK2 but in the next year, station licencees of NSW and the ACT, although sharing the same prefix, were listed separately. It was in 1956 that the editor stated that the "most significant change to the call book" was the change in both listing and prefix of ACT licencees. This involved prefix change only, the remainder of the call being unchanged, ie VK2GU became VK1GU. In those days the VK1 prefix was also shared with Antarctica, Heard Is, Macquarie Is and Cocos Island.

The VK2JQ station was owned by the Rev GAM Nell who in later years operated in NSW with the same call-sign. Interesting are his notes "Xmitter 12 watts Special Circuit" and his receiver "3 valves, indoor aerial". Despite QRP and the indoor antenna, the Reverend Nell was quite successful in contacting VK3JU, a station owned in early years by H. Phillips of Mitcham.

VK5NR

One could not be blamed for associating this QSL with South Australian origins. In fact it was for a QSO from the Northern Territory. In the early years both South Australian and Northern Territory stations shared the same VK5 prefix. They still had the same prefix but were listed separately in the June 1956 edition of the WIA Call Book. It was not until 1st July 1960 that the


Rev. G. A. M. Nell, Wentworth Avenue, Canberra

VK2JQ
AUSTRALIA

Xmitter 12 watts special circuit

Receiver 3 valves indoor aerial

To VK3JU? confirming our QSO of 29/4/30
when your signals were r6 then r2 and then nothing
Remarks Sorry that QSS spoilt our QSO. I hope we have a better one soon.
73. G.A.M. Nell


"THE VOICE OF NORTH AUSTRALIA"
KATHERINE, NORTHERN TERRITORY

VK5NR

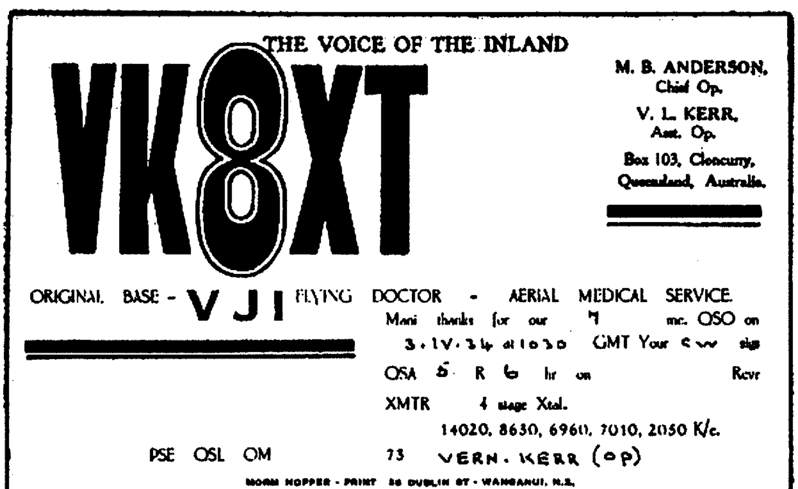
TRANSMITTER:
3 Stage Xtal,
Single 807 P.A.
25 Watts Input.

MODULATION:
Plate System,
using Class AB1
Push-Pull 6L6's

RECEIVER:
H.R.O.
11 Tube Super.

ANTENNAS:
3 Element Rotary Beam.
Long Wire "V" Beam (8 W/L long).

Confirming Two-Way 7 M/c. Phone C.W. QSO with Station VK8NK
on 11-11-46 at 1915 CST Ur Sigs R.S.T. 569
TKS Tnx QSO Jim, 73's, NOEL G. ROBERTS, Aeradio Station,
PSE QSL. Come down to 28mc/s some time – no QRM Katherine, Northern Territory, Australia.


THE VOICE OF THE INLAND

VK8XT

M. B. ANDERSON,
Chief Op.
V. L. KERR,
Asst. Op.
Box 103, Cloncurry,
Queensland, Australia.

ORIGINAL BASE – VJI FLYING DOCTOR - AERIAL MEDICAL SERVICE

Mani thanks for our 7 mc. QSO on 3.IV.34 at 1030 GMT Your CW sigs
QSA 5 R 6 hr on Rcvr
XMTR 4 stage Xtal.
14020, 8630, 6960, 7010, 2050 K/c.
PSE QSL OM 73 VERN. KERR (op)

NORM HOPPER - PRINT 86 DUBLIN ST - WANGANUI, N.Z.

NT stations assumed the VK8 prefix, being listed with the new prefix in the 1960/61 edition of the Call Book. Noel Roberts the "Voice of North Australia" was using the old faithful 807 power pentode tube with a couple of 6L6s in his modulator.

VK8XT

In the early days of radio the prefix VK8 was used for portable operation. In the June 1988 edition of "Amateur Radio" readers will recall that the historic 8AB-8AC QSL was featured. This was a QSL from the 1920s, the operator Harry Kauper stating on the card "Adelaide at present and wl (sic) go to Alice Springs later .....".

The VK8XT QSL presented this month belongs to a later era - it is dated April 1934 and was for a QSO emanating from Cloncurry, Queensland. This QSL like the 8AB - 8AC one, is of quite historical significance. The operator's name (on the bottom of the QSL) was Vern Kerr who took up his appointment of Assistant Operator in the same year as this QSO. The AIM (Australian Inland Mission) had chosen Cloncurry as the site of its first Flying Doctor Base. At that time the service was called the "Aerial Medical Service". The main reason for the choice was not only that the location was near both mining and pastoral areas but that it was the centre of operations of the newly established inland air service called QANTAS. The base became operational in May 1928 and it is interesting to note that Vernon Kerr was at that time its first Base Director. In the book entitled "A pictorial History of the Royal Flying Doctor Service" by Michael Page, there is a splendid photograph of Vern Kerr himself standing outside the old wooden Flying Doctor Base (it was not granted the Royal title until 1955). He is also featured in the excellent article in Amateur Radio Action Vol 10 No 2 entitled "John Flynn - The reluctant Amateur" by Mervyn Eunson VK4SO. The original Base Station (established by Alf Traeger) set up with six pedal radios found a place in the vestry of the Presbyterian Church with an electrical generator powered by a petrol engine being housed in a shed behind the church. The call 8XT (used before the allocation of the VK prefix to Australia) was, according to Mervyn operated by Alf Traeger, Flynn himself operating as 8XF. These were amongst the calls that were used when field tests were being conducted at Cloncurry in order to determine the best equipment to use. The VK8XT QSL states that the original base used the call VJ1. This was a licensed "ground station" as distinct from an experimental one. (The call VJ1 was later transferred to the Mount Isa Base where it is still used today). The other name, MB Anderson (Chief Operator), on the VK8XT QSL was in fact, the first Flying Doctor Base operator appointed by the Australian Inland Mission, which body did so much to establish radio communication between both aircraft and outback stations in those early days.

Correction

In the November 1988 issue of "Amateur Radio", page 50, an account was given of the QSL from 9M2TR. This in fact was received from a different Tunku Abdul Rahman and not the former Prime Minister of the newly-formed Malaysia. The operator of station 9M2TR also carries the title of His Highness and is closely related to the Sultan of Johore. He is a prominent business man in West Malaysia who received his schooling in Western Australia. An apology is offered for the misunderstanding.

SOLUTION PAGE 55

MORSEWORD 24

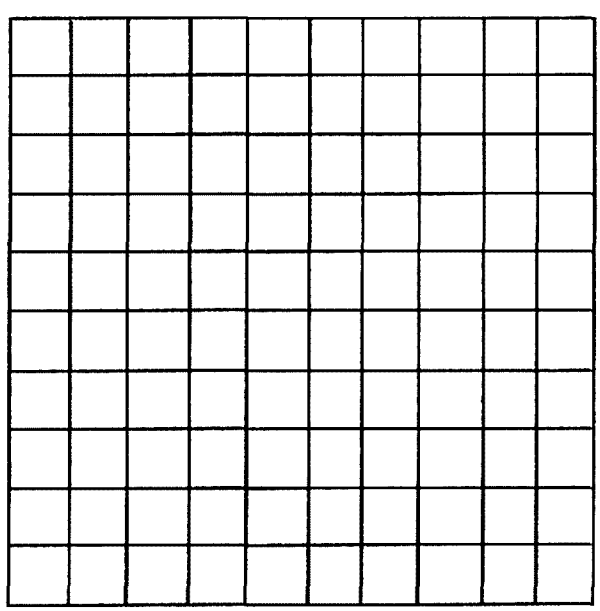
Clues to morseword 24

Across

1 Russian name
2 Chapeaux
3 Scythed
4 Avenue
5 Mature
6 Bantu warriors
7 Sulk
8 Aft
9 Digs
10 Fail to hit

Down

1 Simple
2 Very cold
3 Dim
4 Picture
5 Fright
6 Planet
7 Seed case
8 Flans
9 Attempted
10 Contests



VK2 MINIBULLETIN

Tm Mills VK2ZTM
Minibulletin Editor
PO Box 1066
Parramatta 2124

AGM 1988/89

VK2 Members are advised that the Annual General Meeting of the NSW Division will be held at Amateur Radio House, 109 Wigram Street, Parramatta on Saturday afternoon 29 April 1989 at 2 pm.

Matters for discussion at the AGM and nominations for next year's Council must be received in writing at the office of the NSW Division, 109 Wigram Street, Parramatta by 2 pm on 15 March 1989.

The AGM Agenda and annual reports will be conveyed to Members in early April.

Activities for March

The Orange ARC will be displaying Amateur Radio at the Sport and Leisure Show 10 to 12 March...WICEN exercise, cave rescue at Bungonia 11/12....Urunga convention on the North Coast over Easter.....Postcode contest on Friday 31 9 to 11 pm, is 2 metre FM.....Trash and Treasure will be held a week later, April 2, at VK2WI Dural (Normal day clashes with Easter).

Several visits to Clubs by Divisional Councillors have already been made. Any club interested in hearing more about the WIA from a Councillor should arrange this by writing to Council.

During February three nights of lectures on the Spectrum Analyzer were given at Amateur Radio House. Lectures on other topics will be delivered throughout the year, usually Friday nights. Details will be given on the VK2WI broadcasts.

Nomination forms for those who wish to serve on Divisional Council are available from the office. Can you assist?

Warm welcome to the new membership applications for February:

D.J. Barnard	VK2PYE	Round Corner
R.R. Black	VK2BBR	Lismore
S.H. Groes	Assoc	Galston
M.J. Hanscomb	VK2ZMJ	Botany
G.M. Kelly	VK2ZGK	Glenhaven
J.J. Meekings	VK2TJM	Mt Pleasant
C.J. Nutt	VK2DCT	Gladesville
L.K. Pearce	Assoc	Bega
L.J. Sim	Assoc	Padstow
A.B. Simeon	VK2EETH	Port Macquarie
B.W. Smith	Assoc	Kingaroy
K.S. Smith	Assoc	Mt Druitt
W.B. Smith	Assoc	Mt Druitt
L.R. Winzer	Assoc	Holbrook

Slow Morse Sessions

VK2BWI daily on 3550 kHz, 0930 UTC. Automatic transmissions provided by Hornsby

& DARC from VK2RCW on 3699 kHz and 144.950 MHz. Continuous.

Telephone News

A weekly news summary available by phone on 02 651 1489.

Correspondence Course

Available anytime, anywhere. Details from office.

Trash and Treasure

Sales last Sunday every odd numbered month at Parramatta car park

Postcode contests

Last Friday evening every month. Details broadcasts.

QSL Bureau

Provided by Westlake ARC for the Division at Teralba, PO Box 1 Teralba 2284. Details from them or the office.

WICEN

Details and information sheet available from the office.

Awards

A range of AWARDS was introduced by the VK2 Division during last year. A current list available from the office.

Parramatta Office

Houses the office, library and meeting area. VK2AWI station being established. A range of publications available from the Bookshop.

Dural Property

Site of VK2WI broadcast facilities, VK2RWI repeaters and VK2RSY Beacons. 5 acre site with barbecue facilities.

Most VK2 Clubs and Groups are affiliated with the VK2 Division. A Club Conference is held twice a year. The Divisional Education Service has published a range of books to help those wishing to enter Amateur Radio. Details from the office. Bulk and mail order purchases from PO Box 262 Rydalmere.

The weekly news broadcasts are preceded by a 15 minute technical and historic tape. Divisional, Federal and Club news, IPS reports and news of other happening included in the main session. Most of the news content is available on VK2RWI bulletin board and other boards. Telephone summary on 02 651 1489.

Please direct any inquiry to the VK2 Division during the office hours 11am to 2 pm weekdays or Wednesday evening 7 to 9pm. Address all mail to PO Box 1066 Parramatta NSW 2124. An expanded range of information sheets is available for collection from the office and is sent to all new Members. Most Affiliated Club Secretaries should have this information, check with them. ar

VK3 NOTES

New address

Bill Trigg
VK3PTW

The WIA Victorian Division has relocated its headquarters.

The new address is:-

38 Taylor Street,
Ashburton 3147

The new telephone number is 259 9261.

The year 1989 will see dramatic changes in the operation of the WIA Victorian Division. The Divisional Council, at its meeting on the 30th of January, appointed Barry Wilton VK3XV to become the Division's General Manager.

Barry will be responsible for overseeing the financial management and administration of the Division, the delivery of membership services, examining possible new services and sources of revenue, and operations at the new Divisional Headquarters.

He will handle membership service enquiries, computerise all records of the division, and be the first point of contact for those wanting to join the hobby of amateur radio or become a WIA member.

Barry will staff the Headquarters on Tuesdays and Thursdays between the hours of 9am and 4 pm. The possibility of opening on a week night or a Saturday is currently being carefully examined.

Using modem business communications technology including facsimile machines and personal computers, administration of the Division will be greatly streamlined.

The Council is confident that more efficient use of its resources will lead to better services for WIA members. ar

VK6 BULLETIN

VHF Group

John Sparkes VK6JX
83 Anemone Way
Mullaloo
6025

The VHF Group of WA Inc is one of the largest groups affiliated with the WIA, WA Division. It has around 100 members, 15 of which have been honoured with life memberships.

The Group's aim is to nurture and further activity and interest in VHF and higher bands within the great state of VK6.

General meetings are held on the 4th Monday of every month at Wireless Hill, starting at 8pm. This is an appropriate venue, as this site is home to a very large museum of radio equipment - some old, some recent.

The Group's new president, Craig VK6CC (QTHR), wishes to extend a very warm welcome to ALL amateurs or other interested parties who have not yet attended one of the Group's very interesting meetings, usually made even better by a technical lecture or presentation on some aspect of VHF communications.

Another crowd pleaser is the Junk Sale which usually occurs every 4 months at the General meeting. A lot of nifty bargains are generally snapped up at low prices.

Committee meetings are held on the 3rd Monday of each month. Shortly after, the Group's very informative monthly Bulletin is posted to all members. This journal is a good blend of local happenings and informative technical articles - and it's hardly ever late!

The Group runs a very well stocked Parts and Materials Shop at each monthly General Meeting providing standard as well as those "hard to find" items you'll need for that VHF homebrew project you've been planning.

Stock includes Doubly Balanced Mixers, Receiver R F Amplifier Devices, VHF/UHF P A transistors, ceramic and polystyrene trimmer capacitors, BNC connectors and heaps of top quality Belden 9913 coaxial cable which you'll definitely need if there's going to be any signal left for the antenna to radiate!

The main external activity sponsored by the Group is the monthly FOX HUNT. These occur on the Saturday evening preceding each Gen-

eral Meeting and start at 8pm from the Women's Memorial at King's Park overlooking the City of Perth. These are a heck of a lot of fun and ALL are welcome. If you are interested in joining in, it will pay you to be an observer initially, so contact one of the committee members who will try to get you included in one of the "GUN" teams!

Equipment required is a 2 metre receiver and a steerable beam antenna on your car. Once you run "Reynard" down, you'll then need a handheld "sniffer" antenna to track him to his lair. First in is the winner.

Fox hunters may then retire to a member's QTH to discuss next month's strategy over refreshments.

The Group is also establishing a monthly VHF QRP contest - generally operating on 146.500 MHz on the Sunday following the General Meeting between 11am and 12 noon. Scoring is simple, being based on power and distance - less of the former and more of the latter guarantees you a good score. There's even a multiplier thrown in for portable operation to help stir up some friendly competition!

The Group is gradually assembling a first-rate operational shack at Wireless Hill. The mast and various antennae are aloft, and custody of the now defunct WAIT Radio Club's equipment has provided the new shack with HF and all-mode VHF capabilities. To date, the RD contest and JOTA have been undertaken from the shack and the Group will soon be a force to be reckoned with on all bands. 73's

John Sparkes, VK6JX
ar

ALARA

Amateur Tourists?

Joy Collis VK2EBX
PO Box 22
Yeeoral 2868

Amateur radio is full of pleasant little surprises! Having completed shopping at the local supermarket one Friday afternoon recently the OM and I spotted a four wheel drive vehicle sprouting aerials, towing a caravan and looking a little "lost." We pulled up alongside and the conversation went something like this:

"Joy?" "Yes. Follow us."

Round the corner to the Collis abode.

"Who do we have this time?"

It turned out to be Marlene VK3FML and OM Jim VK3FFF calling in on their way south from a holiday trip. Jim's comment: "Do you always pick up strays like this?

They were somewhat surprised, on asking a "local" where we lived, not only to receive that information, but also to be told that we were doing our grocery shopping, and the type of car we were driving. That's what small towns are like, I guess, and Yeoval is no exception.

It was a great pleasure to meet them both, and put more "faces to voices".

Wanted: YL operators for Field Day 1989

Maggie VK3CFI is wondering if any YL would be interested in assisting her during the Field Day held this month:

"For Field Day 1987 I entered the six hour CW only section and I won! Actually I'm not all that concerned about winning. I am not an experienced contester. Just participating was a great experience. Is anyone out there interested? My preference is CW but I would be perfectly happy running phone or both modes.

I would like to operate from Red Rock, atop a dead volcano here in Colac. There are heaps of tall trees for stringing up antennas, plus shelter from the weather. Colac is exactly two hours from Melbourne by way of Geelong. Or perhaps some other place?

I would like to try the 24 hour section, but not without company. I will supply the rigs and antennas.

Well. What do you think? Please give it a thought and let me know." (Maggie Iaquinto, VK3CFI.)

Maggie's address for
any Interested YL is:
PO Box 285, Colac,
Victoria, 3250.
Please contact her as soon as possible.

Denise VK5YL, Val VK4VR, Meg VK5AOV, Myrna VK5YW, Jenny VK5ANW and Joy VK5YJ.
At the home of Denise VK5YL and David VK5RN to enable the VK5 girls to meet up with Val VK4VR and family while they were in SA 30/10/88

DX YL to North American YL contest

CW: Wednesday 12 April 1989 at 1400 UTC
Ends 14 April at 0200 UTC
Phone: Wednesday 19th April 1989 at 1400 UTC
Ends 21st April at 0200 UTC.

DX YLs call "CQ North American YL". Separate logs for each contest, working only 24 hours of the 36 hours in each contest. 1 point for each band a station is worked on. Multiply the number of QSOs by the number of different states/provinces/countries worked. Contestants running 150 watts or less on CW and 300 watts PEP or less on SSB at all times may multiply the total by 1.25 low power multiplier.

Log must be postmarked by 5th May 1989, and received no later than 26th May 1989 by:

Vice President YLRL, Carol Shrader WI4K, 4744, Thoroughgood Drive, Virginia Beach, VA 23455 USA.

Farewell to Marj VK3HQ

It is sad to advise that Marj VK3HQ has become a silent key. A lovely lady in all senses of the word. Marj joined ALARA on 3rd October 1976 and, with her OM Clive, came to any function she could.

Marj had completed 56 years as a holder of an amateur licence on 18 November 1988, and had been presented with a bud vase by ALARA earlier this year to mark such a wonderful achievement.

Alara award update

Cert No	Date 1988	Name	Call sign	Sticker	Bicent Sticker
37	9th Dec	Bev Hebiton	AX6DE	12	1
119	9th Dec	Alan Hughes	ZL3KR	2	
9	9th Dec	Mavis Stafford	AX3KS	9	1
33	9th Dec	Ivor Stafford	AX3XB	1	1
		(All CW.)			
46	14th Dec	Celia Reed	ZL1ALK	6	1
145	14th Dec	Charles Thorpe	L40018		1
		(All 14 MHz SSB)			

Marj's mother became VK3HM in the mid-1920s, the first licensed YL in VK3 to transmit, following the example of Alan VK3HL, her son and Marj's brother. Listening in on the headphones roused Marj's interest and she worked for and obtained her own licence.

In Japan with the British Commonwealth Occupation Force in 1947, Marj, a member of the RAAF Nursing Service, married Clive. They set up home at Bentleigh, Victoria, in 1949.

Though retaining an interest in amateur radio, Marj did not activate her station again, but kept her callsign. Marj was a highly respected member of her church as shown by the number at her funeral service there.

In addition to her church interest she had worked hard for the care of the intellectually handicapped.

To Clive, their children and their grandchildren, we offer the sympathy of all members of ALARA

(Mavis VK3KS and Bron VK3DYF.)

Here and there

Many ALARA members took to the road (and in some cases the air and the water) in 1988, among them Bev VK6DE, who "campervanned" around New Zealand with OM Brian VK6AI and son Colin, Helene VK7HD, who spent an enjoyable holiday in Canada and Gwen VK3DYL, our Sponsorship Secretary, who carried out an "inspection tour" of the USA. In every case the hospitality extended by overseas YLs and their families was overwhelming.

Wendy VK4BSQ, OM Geoff and family went voyaging in their vessel "Timshel" to Papua New Guinea, and learnt many interesting things about the lifestyle of the people with whom they came in contact.

Many VKs toured within their own country, and found that strange towns seem more friendly when there is someome to call on radio or visit along the way. Happily this is often the case with amateur radio operators.

Bits and Pieces

Joan VK3BJB (who learnt Japanese via amateur radio), was involved in two "search and rescue" operations for a lone Japanese yachtsman in 1988. She acted as Yacht Net controller, and was the first female controller of the Japanese Maritime Mobile Net. She also spoke on radio, at Rotary Club meetings and met many of her Japanese friends. At present she is busy learning to write simple Japanese characters, which she finds a very interesting and worthwhile occupation.

Many people who think the NZ WARO Century Award impossible to achieve will be pleased to know this is not the case. Dawn ZL2AGX has managed 100 WARO contacts.

Congratulations to Christine VK5KTY on her upgrade to VK5CTY and Jan VK6PJL, now VK6DJL.

Bev VK6DE has regular skeds with Trish VK6PBA/MM, last heard of at Phunket Island, Thailand. Several other ALARA members have talked to Trish during these skeds.

Although 1988 with all its activity is behind us, there are still at least two new YL Awards to work for: The YLRL 50th Anniversay Award (details November "AR") and the NZWARO Mountain Buttercup Award. (Details next month)

Listen for VK3FYL during April. This is Lois WB3EFQ, who, together with OM Tom, will be investigating life "down under."

Liz W3CDQ recently celebrated her 90th birthday, presumably our oldest member.

New members

Welcome to Margaret ZL1TDB, Walli DJ6US, Melva ZL4IO and Mary WB7SUQ. Good to-have you with us.

Until next month:
73/33
ar

A new challenge for DXERS - climb up the DX QSL contributors' ladder

The WIA QSL card collection is lacking several rare DX countries, prefixes and special commemorative QSLs.

The collection curator Ken Matchett VK3TL has come up with a novel idea to encourage the donation of this type of QSL card.

It's intended to publish a DXER's QSL Contributors Ladder each month naming those who contribute QSLs from the following three categories.

Fifty ladder points will be awarded for QSL cards from DX countries which are not yet part of the WIA collection.

QSLs for a callsign prefix new to the collection attract two points.

And each QSL from a special event, commemorative station, national radio club or society, or memorial amateur radio station gains one point.

At the end of 12 months the generosity of the DXERS at the top of the ladder will be rewarded.

Ken Matchett says he admits it's a bit of a gimmick but it should still be a lot of fun.

Perhaps you have QSL cards suitable for donation to the WIA collection? Maybe duplicate cards from a DX contact - these could make a valuabale addition to the collection.

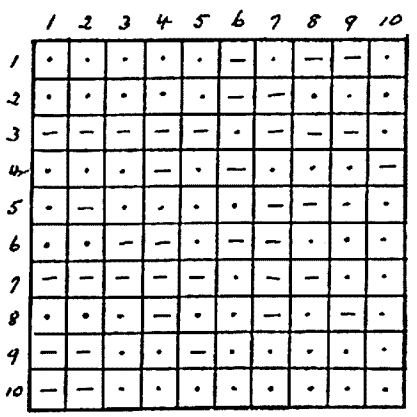
For further information contact Ken Matchett VK3TL, PO Box 1, Seville 3139, Victoria - or telephone (059) 64 3721 for a possible QSL card pick up.

The WIA QSL card collection is helping preserve an important aspect of the heritage of our hobby - amateur radio - can you help?

Answer to Morseword 24 Page 52

Across: 1 Ivan 2 hats 3 mown 4 street 5 ripe 6 Impi 7 mope 8 stern 9 mines 10 miss

Down: 1 easy 2 ice 3 fade 4 image 5 fear 6 Mars 7 pod 8 tarts 9 tried 10 vies



Packet survey

The aim of this survey is to find out a little about the current Packet Population and what they expect to see in the future.
Information gathered in this survey will be used to help plan the future of Packet Radio in Australia.
Please send your completed survey to:
Packet Survey
C/-
WIA ACT Division
PO Box 600
Canberra ACT
2601
Where there are multiple choices for a question answer Yes/No for all that apply.

1. What is your location? City/State .....

.....

2. How did you get interested in Packet Radio? .....

.....

3. What TNC type do you use? .....

.....

4. What radio type do you use? .....

.....

5. What is your main interest within Packet Radio?

AMSAT .....

TCP/IP - Networking .....

Ragchewing .....

File Transfer .....

HF .....

BBS Reading .....

Home Brewing .....

Other (Specify) .....

6. How often would you use of BBS?

Daily .....

Weekly .....

Fortnightly .....

Other .....

7. What types of messages do you normally read?

General Bulletin .....

Personal .....

Local interest .....

Special Interest Group .....

Other (Specify) .....

8. What is your biggest source of irritation concerning Packet Radio?

Digipeating .....

BBS's .....

Beacons .....

Politics .....

Junk Mail .....

Other (Specify) .....

9. Why is this irritating? .....

.....

10. What do you think is the biggest advantage that Packet Radio has? .....

.....

11. What do you think is the biggest disadvantage that Packet Radio has? .....

.....

12. Do you think the Packet Radio Network needs to be improved?

Yes .....

No .....

13. Where do you think Packet Radio is heading? (ie Is this all? What is next?)

.....

.....

14. Is this the 'Right' direction to head in?

.....

.....

PACKET SURVEY

15. Would you be prepared to upgrade your equipment (ie TNC, Modem, Computer or Radio) if necessary to help upgrade the total network?

Yes ..... No .....

If Yes, then by how much?

.....

.....

If No, then why?

.....

.....

16. Would you be prepared to make a monetary contribution towards upgrading the packet network? (Note this isn't asking you to pay up right now)

Yes ..... No .....

17. Please list all the organisations you know of that are involved in Packet Radio.

.....

.....

We are not interested in exactly who you are. If you don't wish us to know then omit your name from the envelope and survey form.

Carl Makin (VK1KCM)
Chairman
On behalf of the ACT Packet Radio Grou

End signalled for Morse code

As anticipated in an earlier article in AR magazine, the International Maritime Organisation (IMO) has given the go-ahead for the introduction of a system replacing Morse Code.

The global maritime distress and safety system will be introduced in 1993, from which time Morse will no longer be a requirement for ships at sea.

Under development since the 1970s, the new system will include the ability to send a distress signal including the vessel's co-ordinates by simply pushing a button.

The IMO said from 1999 the system will be compulsory on ships worldwide.

KENWOOD

AMATEUR LINE-UP

Kenwood's amateur lineup for 1988 incorporates the latest developments in communications technology.

Superior front end specifications are accompanied by the latest developments in transmitter design. Automatic antenna tuning and advanced digital & microprocessor technology make these the easiest to operate Kenwoods ever.

Personal computer control is available on several models.

HF

TS-940S

Competition Quality HF Transceiver. Transmitter SSB CW AM FM and FSK 160-10 metres bands Output 250W PEP Automatic antenna tuner Receiver 150kHz-30MHz continuous 40 memories programmable and band scans Power requirement 240VAC 50-60Hz

TS-440S

Compact HF Transceiver. Transmitter SSB CW FM AFSK 160-10 metre bands Output 200W PEP Optional automatic antenna tuner Receiver 100kHz-30MHz continuous Power requirement 12-16VDC 20A max

1.8-50MHz

TS-680S

High performance HF & 6 metre Transceiver. Transmitter SSB/CW AM and FM modes 160-6 metre bands Output 100W PEP (160-10m) 10W (6m) Receiver 500kHz-30MHz continuous Memory scan band scan Power req 12-16VDC 20A max

VHF IIHF

TR-751A
TR-851A

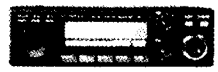
All-mode Transceivers. Frequency Range TR-751A 144-148MHz TR-851A 430-440MHz Transmitter SSB CW FM modes Output 25W Receiver sensitivity less than 0.11uV (TR-851A) Features include Auto mode selection dual digital VFOs 10 memories plus COM channel Optional Digital Channel Link System Power req 13.8V ±15% 7.5A max

TH-25A
TH-45A

FM Handheld Transceivers. Frequency range TH-25 144-148MHz TH-45 430-440MHz Output 5W Receiver sensitivity less than 0.16uV (TH-25) 14 multi-function memories memory scan and band scan Power req 6.0-16VDC 1.2A max

TS-711A
TS-811A

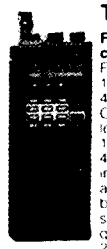
All-mode Transceivers. Transmitters modes SSB CW FM Frequency range TS-711 144-148MHz TS-811 430-440MHz Output 25W Receiver sensitivity less than 0.2uV (TS-811) Features include 40 multi-function memories programmable band scan and memory scan plus programmable memory channel lockout Power req 240VAC 13.8V DC 8.0A max



TM-221
TM-421

FM Mobile Transceivers. Transmitters Frequency range 144-148MHz (TR221) 430-440MHz (TR-421) Output 45W (TM-221) 35W (TM-421) Low power switch to 5W Receiver Frequency Range 130-173.995MHz (TR-221) 438-449.995MHz (TR421) Sensitivity less than 0.16uV Power requirements 13.8VDC ±15% 9.5A max

TH-215A
TH-415A



FM Handheld Transceivers. Transmitters Frequency Range 144-148MHz (TH-215) 430-440MHz (TH-415) Output 5W 0.5W (Hi low) Receiver 141-163MHz (TH-215) 430-440MHz Scan modes include band, memory and programmable band scans with 3 scan stop modes Power requirements 7.2-16V 2.0A max

VHF/UHF DUAL BANDER

TM-721A **NEW**

Dual band FM Transceiver with across band duplex. New for 1988 with dual watch selectable full duplex cross band operation automatic band change 30 memory channels Transmitter Frequency Range 144-148MHz 430-440MHz Output 45W (VHF) 35W (UHF) Receiver sensitivity 0.16uV (UHF)

RECEIVERS

R-5000

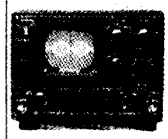
Communications Receiver. The R-5000 is a competition class communications receiver. It receives all modes (SSB CW AM FM FSK) Frequency coverage is 100kHz to 30MHz in 30 bands Selectable IF filters and dual mode noise blanking are incorporated Power requirements 240VAC or 13.8V DC

RZ-1

Wide Band Receiver. The RZ-1 covers 500kHz-905MHz Features include AM and FM reception 100 easy to operate multi-function memory channels Scan modes include VFO scan and memory scan plus programmable channel lockout Power requirements 11-16V DC/1A max

MISC.

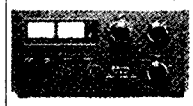
STATION MONITOR



SM-220

Based on a wide frequency range oscilloscope it combines a two tone generator a wide variety of waveform observing capabilities

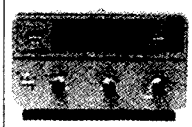
HF LINEAR AMPLIFIER



TL922

A class AB1 grounded grid linear amplifier Covers 160-10m for SSB CW and RTTY modes Drive Power 80W for full output RF Input Power 2 000W PEP (SSB)

ANTENNA TUNER



AT-250

Optional automatic antenna tuner for the TS-680S Features full coverage of 160-10 metres Insertion loss less than 0.8dB Through power 150W

REMOTE CONTROL HANDSET

RC-10

Connects to models TM-221 TM-421 TM-721 Provides all functions on the front panel Will link together models TM-221/TM-421

Kenwood Electronics Australia Pty Ltd

4E Woodcock Place, Lane Cove
Sydney, 2066, New South Wales
For your nearest dealer, please contact
PH: (02) 428 1455

Corrected circuit for Q-Meter

(AR November 1988). Original had several errors which have been removed in this version

Lloyd Butler VK5BR

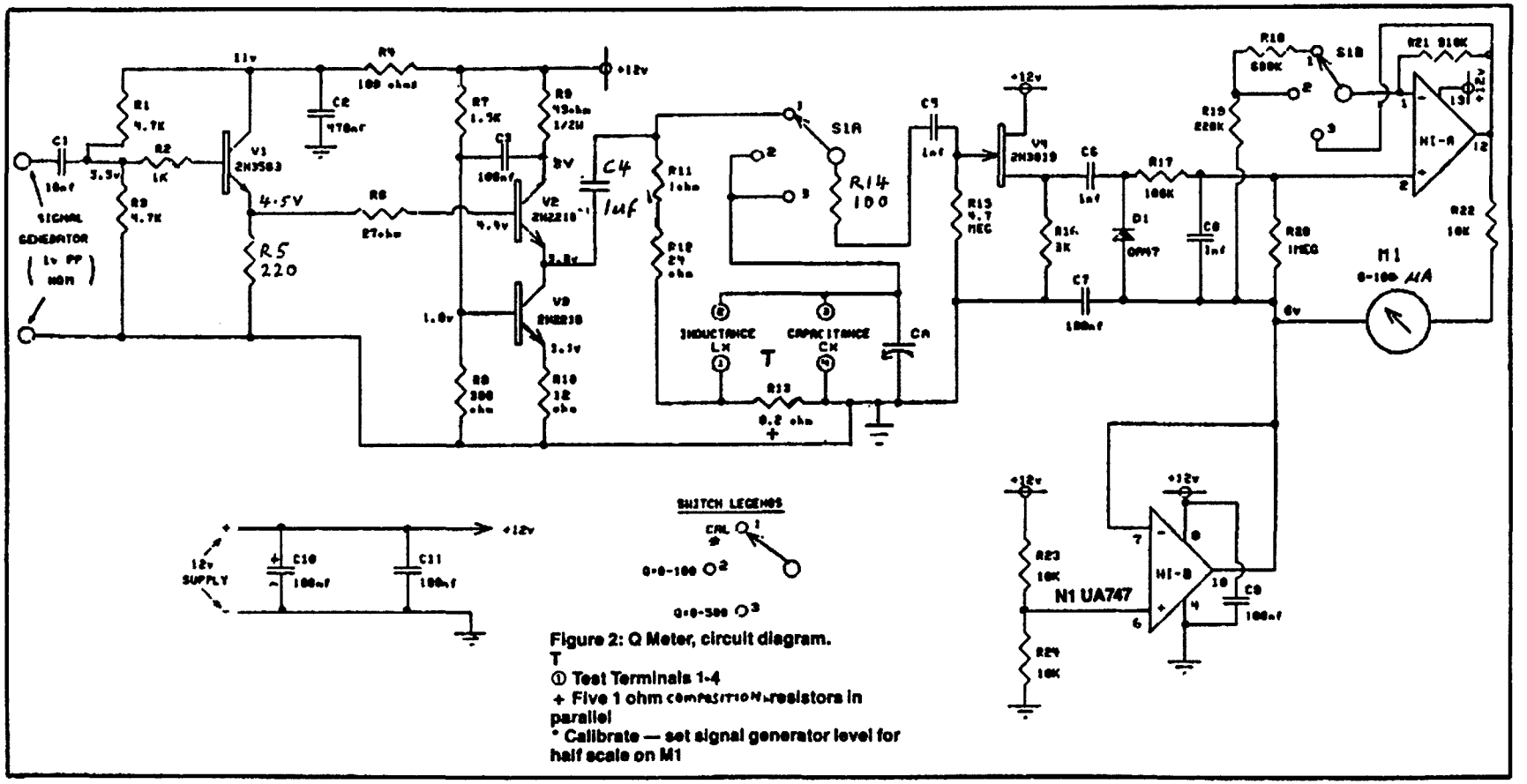


Figure 2: Q Meter, circuit diagram.

T

① Test Terminals 1-4

+ Five 1 ohm composition resistors in parallel

*** Calibrate — set signal generator level for half scale on M1**

OVER TO YOU

Not Felonious?

I note in September AR that the Central Highlands Amateur Radio Club of Tasmania raises revenue by fining members for various "felonies". While "sloppy radio procedure" and "misbehaving on air" may warrant a penalty, I disagree with discouraging the use of "Q Code" on phone. To me, the use of Morse abbreviations such as the "Q code" serve to aid memory retention. Frequent use lessens the likelihood of forgetting them, so I would encourage their use, by voice and in print.

A vexation to me is the use in print of terms such as: 73's, 73s, D.X., Q.S.L., mHz (millihertz) and Mhz for MHz, KW or Kw for kW, etc. It is very strange that many people actually add to an already self-explanatory abbreviation. Just why do they put in full stops, an extra letter and an apostrophe? (I wonder how many readers who don't use CW could immediately recite the Morse for apostrophe?). Perhaps a penalty could be applied to all amateur radio operators, SWLs and others who "should know better", for such abuses of abbreviations and symbols. The most confusing "felony" would be the use in typewriting of capital I instead of lower case l for the figure 1 when the typewriter does not have this digit.

73
Ian J. Stanley VK3CIS
PO Box 70
Ormond, 3204

Maritime Amateurs

The letter from Don Hopper in your January edition is very interesting. I had no idea that there were so many maritime nets in operation, neither did I realise that Don offers such 'on air' services as chart amendments, port information and so on.

Don mentions the difference in price between an amateur transceiver and 'type approved' marine equipment as a probable reason for yachts at sea preferring to use amateur radio. This is no doubt part of the reason, but I think you would find that most cruising yachts carrying amateur radio are carrying approved ship-to-shore equipment as well. In my experience the kind of commercial equipment suitable for installation on a yacht is of little use for communication over the distances that Don is talking about, ie distances such as to require the use of the 20m band. Until recently 'approved type' meant crystal control, another disadvantage compared to amateur equipment. Perhaps the wide and successful use of synthesized amateur equipment at sea helped bring about the development and approval of similar equipment for small yachts.

Don's letter was triggered by Lindsay Lawless's 'Topical Technicalities' in the August edition, in which Lindsay made the comment that advances in marine communication during the past 90 years have been due 'in no small measure to amateur yachtsmen and amateur radio operators'. Don can find no instances of this and does not agree.

Very few instances do come to mind, but the subject could easily repay some research. I can think of Francis Chichester, as an amateur yachtsman, introducing the use of aircraft navigation tables to marine navigation; Douglas Mawson, a private expeditioner to the Antarctic, introducing the use of a radio relay station (on Macquarie Island) in his 1911-13 expedition, and I suppose Marconi was both a radio amateur and an amateur yachtsman!

What does come to mind is the demand from a sizeable community of yachtsmen and radio operators in small vessels for light-weight, reliable equipment, for simplified navigation equipment and systems, gear that can be used by a tired person in a small yacht in a seaway. One contribution the amateur makes is to back this demand up by buying, installing, using and feeding back information on such equipment as it is developed.

Don mentions that none of the yachtsmen who came to him for instruction used a parallel rule. This might tell a story in itself. I use an articulated parallel rule (not a roller) at sea and in rough conditions it can be a very frustrating instrument.

At such times I have used a 'Douglas' protractor type parallel rule, which may come into Don's definition as 'fancy', but it works.

Retired professionals, as I imagine Don to be, make a fine contribution to our community, whether they be yachtsmen, musicians, navigators or whatever. The evaluation of new equipment, ideas and systems must test their professionalism, as must the occasional efforts of amateurs. The contribution of amateurs, however, to our arts and sciences has been significant and stems from the earliest of times. It deserves recognition.

Don Richards VK2BXM/VKOAT
The Ski Inn, Sackville Rd
Ebenezer 2756

Scout Communications

The Scout movement has for many years relied on Amateur Radio Operators, Radio Clubs and other Electronic enthusiasts for support when radio and electronics related activities are run for the Scouts each year. The support of these outside organisations and individuals is greatly appreciated by the leaders and the youth members, who understand the work that goes into these activities.

Looking forward to 1989 and beyond there is a need to provide an increasing amount of support for the Scout movement and to start helping the Scouts themselves become partly self- sufficient in these activities. Many large activities require communications within the camp. Large camps (eg Jamborees) provide Radio and Electronics related activities for the youth members. These require the same resource, skilled people.

In order to service the aims of the Scout movement, it is proposed to establish a Radio & Electronics Service Unit within the Victorian Branch of the Scout Association of Australia. This unit is open to all sections of the Scout movement, and other interested people.

This Radio and Electronics Service Unit will aim to provide the following services to the Scout Movement within Victoria.

1. A reliable group of radio operators with equipment to provide mobile and portable radio communications for large activities.
2. Skilled instructors to provide training to both leaders and youth sections in radio and electronics related activities.
3. Assistance and encouragement to all Scouting personnel in obtaining radio licences relevant to their needs.

It is emphasised that the aim of this Unit is not to close the ranks of the Scout movement to the people who have helped the movement before. Your help will still be welcomed. The aim is to use our own resources first and be supplemented by outside help.

If interested in joining this unit or for more information please contact the undersigned.

Philip Adams VK3JNI
Lot 1 Kangaroo Ground Rd
Wattle Glen 3096
Phone (03) 438 3013

Contest Bandwidth

Could I respond to Terry VK3DWZ who wrote in AR January 1989 about contests.

No, Terry, you don't make yourself unpopular with your comments. You do, however, look as if you are playing a little fast and loose with the facts. Letters such as yours have been appearing for a number of years and if you had bothered to do a little research you would have discovered:-

1. Many of the minor contests in the world do specify particular frequencies or particular bands of frequencies for their operations. In fact in IARU region 1 the member societies have agreed this should be policy.
2. There are contests on every weekend of the year. There are also some contests that do occupy a lot of band space. To then draw the conclusion that every weekend of the year has bands excessively

ooccupied by contests is either harmless hyperbole or deliberate misrepresentation.

3. For each mode (CW and SSB) there are currently only three contests a year that really do tie up the bands with a lot of traffic. They are ARRL DX, CQ WPX, and CQ WW. Some others tie up particular bands but not all bands. Even these do not use the new WARC bands.
4. The last time someone raised this nonsense I decided to investigate and found in the middle of the CQWWSSB there were no contest stations above 14.290 or below 14.130 for the vast bulk of the weekend.
5. A lot of rare DX only gets on during contests as the stations are specifically set up or operated particularly for the contest.

Don't feel that we don't want you on our bands, Terry, because we do. It's just that we prefer that people develop their operating skills rather than their whingeing skills. We prefer that people work on improving their station rather than working on ways that others can be COMPELLED to their opinion.

There are many ways to enjoy this hobby, if you have found that you are not very good at DX then try TV, or RTTY, or home brewing, but if you are going to take up letter writing then get your facts straight first.

Martin Luther VK5GN
GPO Box 931
Adelaide 5001

2m Simplex

I recently talked with a couple of novices on 2m who live in a remote area with no repeaters. They all used to listen on channel 50 until one of them bought an old set in which the only simplex frequency is 146.000 (channel 40). They all wished to use a common frequency, so they unwittingly changed to channel 40.

I wonder how many other novices (and/or others) do not realise or have forgotten that this once common simplex frequency now interferes with satellite downlinks? Please have a look at the bandplan or the data section of Dick Smith Catalogue, etc, for confirmation if required.

Also it seems to be little known that channel 50 (146.500) is a CALLING CHANNEL and not one for general conversation. We should use 6425, 6450, 6475, 6525, 6550 (ch 51), and 6575 etc, (some of which have been allocated to separate topics), for general conversation. This makes it easy to locate others, but, if we all talk on the CALLING channel, well, it's just like tying up a repeater instead of going simplex (but not to ch 50!).

Arthur Trevaskis VK7SE
RSD 1745
Penguin 7316

Key Clicks

The interim reply from Lindsay Lawless to my letter has left me even more confused than his original article on key clicks. My main objection to his article concerned his initial statement that 'a deliberately shaped transmitter output wave will radiate sidebands on key down and key up: an unshaped output will not'. This is quite false. It can be readily demonstrated, both mathematically and experimentally, that unshaped (ie rectangular) keying produces lots of sidebands.

In his reply to my letter, Lindsay says he is aware of the spectrum resulting from rectagular pulse modulation of a carrier, yet his article was based entirely on a belief that rectangular pulse modulation did not produce a spectrum of sidebands.

He then says that the original article was copied from an RAAF manual (but there was no acknowledgement or reference to this in the article), and that 'it is worth considering in light of the deficiencies of the popular theory'. But he does not say what the deficiencies are in the theory.

In my letter I sketched the spectrum of a single rectangular pulse of a sinusoidal carrier, and Lindsay appears to accept this as being correct. To obtain the spectrum of a sequence of Morse characters, one need only add up the spectra of the individual pulses making up the sequence, after taking into account the relative timing and width of the pulses. This is a straightforward, if somewhat tedious procedure, and the result obtained is that there are sidebands produced by the keying, and that it is these sidebands which are heard as key clicks. The effect of any filters in the transmitter is to modify the distribution of the sideband energy, but these filters are generally much broader than the channel spacing between CW stations. In any case, the response of such filters could be taken into accout in the analysis if need be. I am therefore puzzled by Lindsay's statement that spectral analysis of such a signal suggests that the 'popular' theory may be incomplete or incorrect. On what evidence is this statement based?

As a professional engineer I know that just because I can't get theory and practice to agree doesn't mean that the theory's wrong. In such a situation one should firstly ask 'is my understanding of the theory correct', and then 'am I applying the theory correctly to the situation'. Only if all else fails and the evidence is clear should one start to question the basic theory, and then if you're right you'll probably get a Nobel prizel

If this approach makes me a dogmatist, then so be it. I have no wish for technical censorship, but by the same token I cannot let an article which is based on an assumption that is blatantly and demonstrably false go by without challenge.

What concerns me the most is that some poor reader with a key click problem is going to accept Lindsay's article at face value, and decide that he can cure his key clicks by removing any wave shaping components, and then blame any further reports of clicks on the receiver's selective filters or antenna coupling units.

This would indeed be cause for despair.

Jeff Pages VK2BYY
11 Graham St
Calala, Tamworth 2340

SILENT KEYS

We regret to announce the recent passing of
Mr Alan R Herald VK2AHR
Mr P Cudmore VK2AMK
Mr Roy Kerr ex VK4DK
Mr Alex Smith VK8MQ
Mr N S Johnston L 20452
Mr J L Marshall L 40654

Alan R Herald VK2AHR

Alan passed away suddenly on December 21, 1988 at his home in Tura Beach, near Merimbula NSW, aged 70 years.

His interest in radio went back to the 1930s when he lived in Hamilton, Vic, building one and 2 valve regenerative receivers. In 1947 he obtained his AOCP (Call VK3AJP) and quickly became active on CW, an interest he kept up all through his amateur years. A keen constructor, Alan was sorry when the complexities of receiver/transmitters forced him to buy his faithful FT200, a rig he was using to the last.

While not involved in WIA organization, he nevertheless had a deep interest in WIA affairs.

After living at Surrey Hills for over 30 years, he moved to Tura Beach NSW where he resumed activities on 144, 14, 7 and 3.5 CW and SSB using the call VK2AHR, the closest he could get to his initials.

Although in latter years he suffered from severe back problems, he maintained a cheery attitude which was reflected in his many QSO skeds. His voice and fist will be greatly missed on air.

VALE my lifetime friend, Alan VK2AHR.
Stanley I Zeunert - VK3SZ

Roy Kerr ex-K4DK

Roy, VK4DK, slipped quietly from the ranks of the OOTers and became an SK in Brisbane on 13th October 1988.

He commenced his professional career as a clerk/telegraphist at Winton Queensland and obtained his AOCP about the same time, in June 1937. His early years in AR were the most active. Winton had its own 240v DC supply, so no power source problems existed. Roy's first homebrewed rig used CL4s in PP-Par in the PA. Post-war he followed the fashion of most others and switched to 'disposals equipment'.

VK4DK had a very well-known brother, Vern VK4LK - one of the first opr/techs with the Royal Flying Doctor Service, who became known as 'the Voice of the West'. Roy used to QSY his rig out of the 'ham' bands to net with Vern at Station VJI at Cloncurry. In this way their umbrella of communications was extended and much helpful traffic for the residents of both towns was exchanged. The RI took a dim view of it; all but VK4DK saw it as just another example of 'bureaucratic myopia'.

Roy Kerr eventually rose to the status of 'gun' telegraphist. After years spent in places 'too far west', he was transferred to the VK4 'big smoke', where he served out the last twenty years prior to retirement 'pounding brass' in the main telegraphists' room, Brisbane. His superior code was often used on OTC links until micro-wave was introduced.

No nicer chap than Roy ever held a VK call. A great raconteur, he had the rare gift of vivid description, with a few well-chosen words and a chuckle in every phrase. His stories about the early telegraph and wireless out west were endless. I take the liberty to pass on just one.

'A busy 'singing wire' out of Winton continually snapped at the same place. An inspection by Roy and a couple of linesmen showed that the culprits were pink galahs - thousands of them perched on one particular span. The reason was a waterhole, one hundred yards away and not a tree in sight.

"OK", said Roy "Let's divert 'em".

"How?" asked a linesman.

"Erect three poles and two spans of the strongest, thickest wire available - that comes from and goes nowhere - closer to the water."

So the decoy was erected and it worked perfectly. There was no more trouble. Where in VK or anywhere else has a flock of birds had an imitation telegraph line erected for their special use??

VK4DK had a 'fast fist' but also a 'green thumb'. A hobby farmer, his speciality was growing prize dahlias: many championship ribbons and awards from State Exhibitions decorated his shack.

Roy faced his last long distressing illness with outstanding fortitude and cheerfulness - typical of his personality. All who knew him are the poorer for his passing. He was a member of the WIA pre-war but relinquished his call in 1951. The Institute extends its sincere condolences to his surviving widow, Isabel.

Alan Shawsmith, VK4SS
Historian WIAO.

Alex Smith VK8MQ/ VM5MQ

Alex passed away suddenly at Alice Springs NT on November 2 1988 at the age of 53. He was born in 1935 at Aberdeen, Scotland. During his early career in the RAF he served in Iran at Habbaniya Air Base, where he operated the Club station YI2AM and worked many VKs. Alex, wife Pauline and two sons Ian and Andrew migrated to Australia in February 1963.

For 3 years Alex was attached to Long Range Weapons Research at Salisbury, SA. In 1967 he moved with his family to the Woomera Rocket Range SA, where he spent the next 18 years. He was a member of the Woomera Amateur Radio Club and served the Club in various administrative positions. Alex was a keen Dxer both on Phone and CW, working many different countries from here; but he always had time for a friendly chat.

He ran the P29JS 14220 net on a number of occasions in the late 70s. His wife Pauline died of cancer in 1983.

In 1985 Alex moved to Alice Springs NT to work for Australian Landsat. He became a member of the Alice Springs Radio Club and represented the Club at a WIA conference a few years ago, as a delegate. Alex was buried at Woomera SA on November 11, 1988.

Many of his friends attended the funeral. All who knew him extend their condolences to his family.

Austin Condon VK5WO
ar

HAMADS

TRADE ADS

MORSE: Receiving practice program includes 100 sample tests selectable speed training for AOCP send $20 for IBM-PC compatible disk: W Klompenhouwer, PO Box 95, Naime, SA, 5252.

RADFAX2: Hi-Res radio facsimile morse & rtty program for IBM PC/XT on 360K 5.25" floppy + full doc. Need CGA, input port, SSBhl FSK/ Tone decoder. Has re-align auto-start view save print. Also "RF2HERC" same as above but suitable for hercules card, and "RF2EGA" for EGA card (640X350 mode). Programs are $30 each + $3 postage only from M Delahunty, 42 Villiers Street, New Farm, Qld, 4005. Ph: (07) 3582785

AMIDON FERROMAGNETIC CORES: Large range for all receiver and Transmitting Applications. For data and price list send 105 x 220 millimetre SASE to: RJ & US IMPORTS, Box 157, Mortdale, NSW, 2223. (No inquiries at office please ... 11 Macken Street, Oatley). Agencies at: Geoff Wood Electronics, Lane Cove, NSW. Webb Electronics, Albury, NSW. Trusoott Electronics, Croydon, Vic. Willis Trading Co, Perth, WA. Electronic Components, Fishwick, Plaza. ACT.

WANTED - ACT

AUSTRALIAN OFFICIAL RECEIVER SERVICE MANUALS: Any year(s) or technical information sheets. valve radios, price and condition. Jock VK1LF QTHR Ph: (062) 866920 anytime. TNX.

FOR SALE - NSW

KENWOOD TS930S BUILT-IN TUNER: As new condition in original packing. Owner living overseas. $2000 ONO. Arthur VK2FFH (046) 461476 licensed amateurs only.

EX VK2WR FT107 $700, FT101B $350, FL2100B $1200, KW107 $100, Swan SWR Meter WM1500 $65, TS700A $1200, Multi 7 $125, TR2400 Hand Held $200, HF Vert Ant. POA. Please contact VK2BTL QTHR (02) 487 3383 for details. All equipt mint cond.

ICOM IC-471 COMMUNICATIONS RECEIVER: 100 kHZ to 30 MHz coverage. Mint condition. $1175 ONO. Kirt Ph: (02) 4362618.

YAESU 29ORA ALL MODE TRANSCEIVER: Nicads, charger, carry-case, mic. mint condition $650 ONO Webster band-spanner mobile 80-10M antenna $250 Peter, VK2DBI. QTHR. 063 675095.

KENWOOD TR.2400 HAND HELD 2 METRE TRANSCEIVER: Good condition with new Ni-CDS 10 programmable memories memory scan $240. John VK2ALJ. Ph (02) 816 5625. QTHR.

WANTED - NSW

VK2 STATE CO-ORDINATOR: For intruder watch. Duties to receive, collate, edit reports. Send summary to FIWC. Ph: (071) 825272, Bill Homer, VK4MWZ, QTHR, FIWC.

MANUAL (OR PHOTOCOPY) FOR A HEATHKIT 'SCANALYZER': Model SB-620. All costs refunded. Trevor VK2FHF. QTHR.

ZX-SPECTRUM ADDRESSES: For user groups, retail outlets. Hardware and software info required. Will reimburse costs. Stephen VK2BLQ. QTHR. Ph: (02) 4196788.

CIRCUIT AND CONSTRUCTIONS DETAILS MORSE KEYBOARD: With variable speed and buffer will pay costs. VK2ED ED DYRING QTHR. (043) 284106.

HAMADS

CRYSTALS FOR CW SECTIONS OF 20, 40, 80 METRES: Also Coax 50 OHM 80 ft. Leo VK2QB QTHR. (049) 433392, 20 Cathrine Street, Kotara South, NSW, 2289.

WANTED - VIC

FT101Z/ZD OR TS530S: Will consider other HF transceivers with tube finals and in-built 240V AC. Alan VK3AMT Ph: (03) 7899106.

YAESU TRANSCEIVER FTDX401 OR 560: Price according to condition. Ron Cannon VK3BRC QTHR. Ph (03) 8193568 all hours.

KENWOOD TU35B REPEATER TONE UNIT: To suit TR2600A, good condition, working. 10-50W linear RF amp for in car use, to suit above TR2600A. Keith Vriens, VK3AFI, QTHR. (052) 213658 AH.

VINTEN MTR20 MOBILE VHF VALVE UNITS: In good condition. Ph: (059) 861486.

FOR SALE - VIC

FISK-PORT SUPERHET MODEL 62 PRE-WAR AC-DC: Not working. Good order. Old copies WIA magazine. Lot $20, SWL L31160, Lowes 45 2802.

ICOM HAND HELD IC 2A: $200, 25 watt mobile IC 25A $300. QTHR VK3OO George (03) 3374903 licensed amateurs only.

SIEMENS MODEL 100 TELEPRINTER: Good order, all manuals $45, pickup only at QTHR. Andy VK3UJ (03) 7353335.

SHACK CLEAROUT: Assorted transmitter, receiver, power supply parts. Test gear, audio and rf racks, panels, patch bays. AM modulation monitors, 1000 watt broadcast transmitter mostly complete. All offers seriously considered. Chris VK3JU. QTHR (03) 861 7204.

FT 230 R 2MX FM TCVR: 10/25 watts, little use, (second rig) as new, and mint cond. Complete incl manual in orig carton. $480. Licensed amateurs only. (059) 41 1248.

REALISTIC TRC 210 5WATT 40 CHANNEL HANDHELD TRANSCEIVER: Including Nicads $200. GIL VK3CQ (057) 551158 B.H.

SAGEM TELEPRINTER: Including punch and reader $400. Phone (057) 551158. Bus hours. GIL VK3CQ.

FT200 TRANSCEIVER: (Unmodified), power supply, microphone. All in very good condition with new 6JS6 finals and spare 6JS6s and most other valves. $325. DAIWA RF550 speech processor $80. Micronta SWR meter $15. Sell all items $375. Ron VK3QP Ph (03) 5783393.

FREQUENCY METER BC-221-AH: Incl. orig. calibration book recently overhauled with external regulated P. Supp. $25 plus freight can supply info re conversion to FET's. Ken VK3ZFI. QTHR Phone (03) 580 5347.

KENWOOD TS-430S: In good condition. Original packing. With hand microphone, plugs, etc. $1250.00 Bill VK3WK QTHR Ph (055) 671048.

CICADA 300 DATA PHONE MODEM: $150 VGC also Radio Shack DMP 100 Printer plus Instruction Manual VGC $200 ONO. A Pantazis 62 Honey Suckle St Bendigo 3550, Vict.

WANTED - OLD

FT200: In or out of repair. Must have all xtals. Please phone (071) 487409 after 5pm.

FOR SALE - OLD

AEA MICRO PATCH MAP64/2/RTTY/CW: Adaptor for Commodore 64. $325. VK4DN. Phone (07) 3935247.

300VA INVERTER TRANSFORMER FOUR WINDINGS: 9.8VAC, 30 amps peak, plus one tickler winding 12V 0.5A, to 240V. RMS at 300WRMS. Price $45. Phone (071) 487409 after 5pm.

FOR SALE - SA

YAESU FT757GX: $1350, FC757AT automatic ATU - $650, FP700 PSU - $275 all in perfect condition SWL use only accept offer complete station.
BEARCAT 201 SCANNER: $350
DSE COMMANDER: 2 meter complete and working - $165
TR2400: synthesised hand held accessories - $285
OSCILLOSCOPE KIKUSUI 20 MHz COS5020: $650
EMTEK LC DIGITAL METER: $125
HEATHKIT RF OSCILLATOR: $190
RADIO CONTROLLED 4WD HOTSHOT TAMIYA CAR: $275
Lots of other test equipment counters etc. For further details or offers call Martin VK5GN QTHR (08) 2654188

COMMODORE VIC20 COMPUTER: $125.00, CW RTTY (ASCII-BAUDOT) cartridge. $80.00 modem. (H.B.) Micro amptor patch circuit. $150.00 Siemens 100 with puncher and reader. $40.00 All ONO. Clarrie VK5NA QTHR. Phone (085) 656238.

WANTED - WA

SERVICE MANUAL FOR FT101: Will purchase or pay for all photocopy costs and postage. Reply to VK6ZR QTHR. Phone (09) 2761357 AH. Reverse charge.

XTAL FILTER: Approx 50KHZ bandwidth. Prefer centre freq. 10.7MHz Ph Peter VK6AQ (09) 307 4960.

TRANSCEIVER: 6 meters, any type working or not. Wayne VK6AMS (09) 341 3034.

FOR SALE - W A

ANTENNAE ATN 4 ELEMENT MONOBANDER: 20 Metre in excellent condx. Will ship $295. Phone 09 293 2347 anytime QTHR.

QTH WITH APPROVED MASTS, ROTATOR CO-AX CABLES, 4BR 2BTH DB/T MODERN HOME location Mandurah W.A. Details ph 09 535 2490. VK6AMG Dunk QTHR VK6HE

WANTED - TAS

VK7 STATE CO-ORDINATOR: For Intruder Watch. Duties to receive, collate, edit reports. Send summary to FIWC. Ph (071) 825272. Bill Horner, VK4MWZ, QTHR, FIWC.

FOR SALE - NT

4CX250B/7203 EIMAC VALVES: (2) plus SK-600A sockets and 1 x chimney. Brand new. Swap for VHF handheld or mobile rig. Eddie VK8XX (089) 527691 AH. (089) 529366 BH.

Stolen equipment

FT7 transceiver, serial no 8K 110846 stolen from car of VK2IV on 4 Nov 1988 and reported to Pymble police station. Any information to O R Pearce VK2IV, 12 Helen Street, Forster, 2428.

Trio Kenwood TS130S transceiver S/N 1090168

Trio Kenwood MC50 desk microphone S/N N/A

IcomIC-2A hand-held transceiver S/N 12213837

Yaesu FP707 12V 20A power supply S/N 1H120548

Stolen during house-breaking on 22 December 1988 from VK5ABY and reported to Port Adelaide CIB. Any information to BJ Brice VK5ABY, 21 Riverway, Fulham Gardens, 5024 or police (08) 496111.

ADVERTISER'S INDEX

Australian Electronics Monthly ..... IBC
Blamac Pty Ltd 31
Captain Communications 33
Dick Smith Electronics ..... IFC
Electronics Today international 41
Emtronics 43
HY-Q International 34
Ian Truscott's Electronic World 17
ICOM ..... BC
Kenwood Electronics Australia P/L ... 58
QD Electronics 20
Stewart Electronic Components 57
West-AM Radio 20
WIA - NSW Division Novice Licence . 35
Wilkie Trading Co 18

HAMADS

Please Note: If you are advertising items For Sale and Wanted please use a separate form for each. Include all details; eg Name, Address, Telephone Number (and STD code), on both forms. Please print copy for your Hamad as clearly as possible.

*Eight lines free to all WIA members, ninth line for name and address Commercial rates apply for non—members. Please enclosed a mailing label from this magazine with your Hamad.

*Deceased Estates: The full Hamad will appear in AR, even if the ad is not fully radio equipment.

*Copy typed or in block letters to PO Box 300, Caulfield South, Vic 3162, by the deadline as indicated on page 1 of each issue.

*QTHR means address is correct as set out in the WIA current Call Book.

*A courtesy note will be forwarded to acknowledge that the ad has been received.

Ordinary Hamads submitted from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re—sold for merchandising purposes.

Conditions for commercial advertising are as follows: $22.50 for four lines, plus $2.00 per line (or part thereof) Minimum charge — $22.50 pre—payable.

State: .....

☐ Miscellaneous
☐ For Sale
☐ Wanted

Name: .....

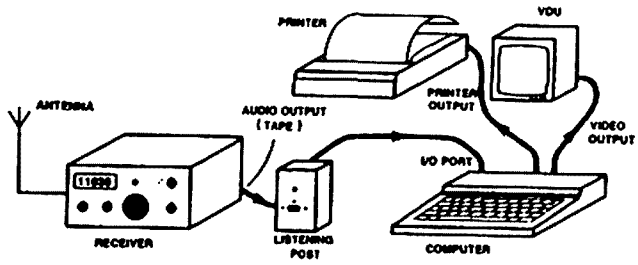
Call Sign: .....

Address: .....

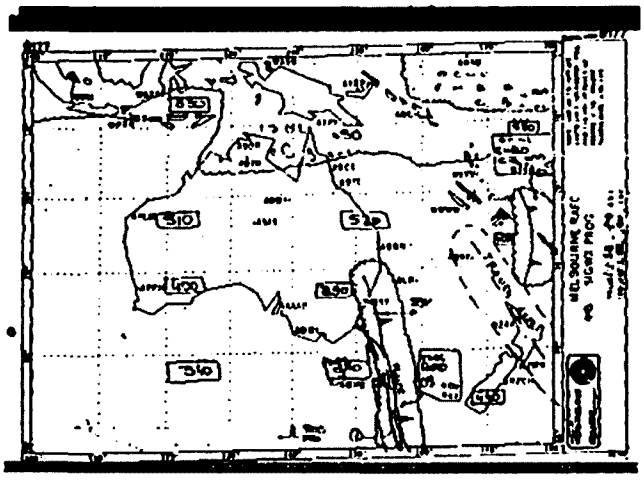
.....

'RECEIVE FAX, 'RTTY & 'MORSE 'ON YOUR 'COMPUTER

Using the Australian Electronics Monthly "Listening Post" (AEM3500) project, you can tune-in to the myriad of non-voice transmissions on shortwave and decode them! All you need is a shortwave receiver with SSB reception, the AEM3500 Listening Post, computer and software. Be the first on your block to receive weather pictures and foreign news bulletins – USEFUL and FASCINATING.



Get the Most Out of Your Receiver!



MONSIEUR LE SECRETAIRE GENERAL, DES VOTRE NOMINATION A LA HAUTE FONCTION QUE VOUS OCCUPEZ VOUS AVEZ MARQUE AVEC FORCE L'IMPORTANCE QUE VOUS ATTACHIEZ A CE QUE L'ORGANISATION RETROUVE LES PRINCIPES QUI L'AVAIENT FONDEE : ''NOUS NOUS SOMMES, DISIEZ-VOUS, SANS CONTESTE, BEAUCOUP ECARTES DE LA CHARTE CES DERNIERES ANNEES. NOUS SOMMES PERILLEUSEMENT PROCHES D'UN NOUVEL ETAT D'ANARCHIE INTERNATIONALE''. ET UN PEU PLUS LOIN VO

Available in two packages:

- **SOFTWARE ONLY**
  Apple, Commodore 64, Microbee – **$25.00**

- **FULL PACKAGE – software & pc board.**
  Apple, Commodore 64, Microbee – **$35.00**

Both packages include full instructions for building the Listening Post project and application notes for your computer.

Send to: "AEM Listening Post Software", 1st Floor, 347 Darling St, BALMAIN 2041 NSW.

*You must include a blank C10 cassette or **formatted** disk.*
Please Tick.

☐ *Software Only*
☐ *Full Package*

☐ Microbee – Epson FX80/100 printer
☐ Microbee – C.Itoh 8510 printer
Microbee: ☐ 5¼" and ☐ 3½" disk

☐ Commodore C64/128 (most printers)
Commodore: ☐ 5¼" disk or ☐ cassette

☐ Apple (most printers)
☐ 5¼" disk ONLY

☐ Cheque ☐ Money Order
☐ B/Card ☐ M/Card ☐ Visa
(make cheques or money orders payable to "Australian Electronics Monthly")

Card No ..... Expiry .....
Signed .....
Name .....
Address .....
.....
..... P/Code .....

Regd Address:
1st Floor, 347 Darling Street, Balmain, NSW 2041

THE NEW ICOM IC32AT, OVER. WITH ITS DUPLEX FACILITY, OVER. MEANS YOU WON'T HAVE TO TALK LIKE THIS, OVER AND OUT.

The IC32AT is the newest dual band handheld transceiver by Icom.

It has been designed with the most advanced VHF technology the electronics industry can offer.

And this little 2 metres and 70cm compact handheld offers full duplex facility.

Which means instead of a broken conversation, you can now simultaneously transmit on one band and receive on the other. Just like a telephone conversation.

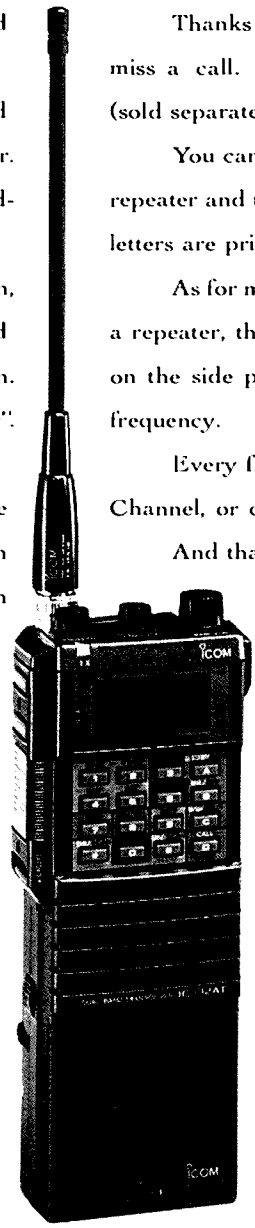
No longer do you have to wait for a long "Over". It's full "Break in".

And with its high output power, you can be sure your words are heard. The IC32AT uses a custom designed power module as the final amplifier. Which means this transceiver puts out 5.5W on 2 metres and 5W on 70cm.

So you will never be at a loss to make that repeater.

What's even more incredible, each of the twenty memory channels can store two frequencies: operating frequency and offset frequency are just a couple of examples.

The Programmed Scan function scans all the frequencies between two programmable scan edge frequencies, while the Memory Scan function scans all memory channels in succession, except, of course, those you lock out. In short, you can scan 2 metres, 70cm or all channels.



Thanks to the handy little pocket beep, you'll never miss a call. By installing the UT-40 Tone Squelch Unit (sold separately) the transceiver functions as a pager.

You can use the built-in DTMF keyboard to access a repeater and to make a phone patch. The key numbers and letters are printed large for quick and easy reading.

As for monitoring the input frequency when you work a repeater, that's as simple as pushing the Monitor switch on the side panel to open the squelch and check the frequency.

Every five seconds, Priority Watch monitors the Call Channel, or one or all the memory channels in succession.

And that's while you operate!

When you want to change the frequency or the memory channel fast, the Dial Select changes the 1MHz, 100kHz digit or the memory channel directly. One push of the button does it.

All these functions not only make the Icom IC32AT the most advanced dual band handheld transceiver available, but also very easy to use.

Call (008) 338 915 for your nearest Icom stockist today.

The telephone conversation in itself will be a very good demonstration of the IC32AT's duplex facility.

Over and out.

ICOM

The Ball Partnership ICO 0024

Amateur Radio

JOURNAL OF THE WIRELESS INSTITUTE
OF AUSTRALIA
VOL 57, NO 4, APRIL1989

Federal Convention:

Reports and Agenda Items

Ten-Metre Preamplifier

DICK SMITH COMMUNICATIONS

Yaesu's Amazing FT-4700RH

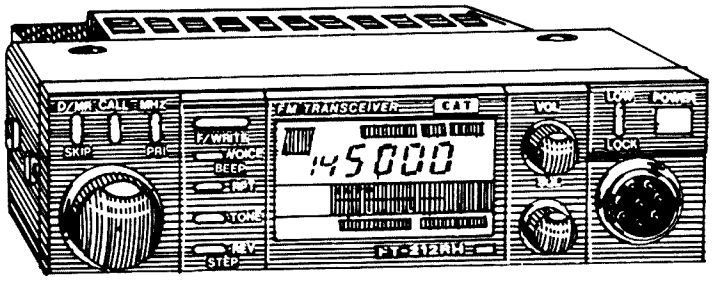
This is the 2m/70cm transceiver you've been waiting for! it boasts high power operation (50 watts on 2m, 40 watts on 70cm). With inbuilt cooling fan, detachable front panel for optional remote mounting of the transceiver body, true full-duplex operation (you can even listen to both bands sumultaneously!), 20 memories, 6 user selected tuning steps, the list goes on and on. Cat D-3300

2 YEAR WARRANTY

SUPER VALUE $1395

BONUS This month only, receive a YSK-4700 Remote Mounting Kit at NO CHARGE! Cat 0-3301

Valued at $59.95



FT-212RH

A rugged yet compact 2 metre FM transceiver featuring 45 watts output for extended range, 20 memory channels coupled with a flexible "band" and "memory" scanning system, hand-held mic, optional DVS-1 digital voice recording module, and a 2 year extended warranty. Isn't this the reliable 2 metre mobile you've been looking for? Cat D-3494

$669

SAVE $30

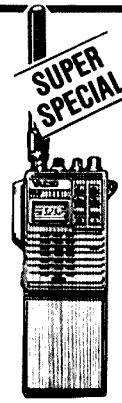
35W 70cm also available. Cat D-3330 $649

FT-411

This ultra compact 2 metre hand-held offers an incredible array of features without the size and weight of previous sets. Compare! CPU control offers 49 freely tunable memories that store repeater offsets, 2 VFO's; huge 1000mAH capacity NiCad battery as standard (yes! 1 AH!) programmable power saver, fast keyboard frequency entry, heavy duty die-cast casing with rubber gasket seals, carry case, carry strap and charger. Cat D-3350

Complete Package

(Limited stocks) $549



FT-23R

Don't need the sophistication of the FT-411, but still want a reliable hand-held? The FT-23R offers 2.5 watts output, 10 memories, scanning, 600 mAH NiCad battery, diecast transceiver casing, carry case, charger and rubber gasket seals to keep out the dust and humidity that's hard to avoid while hand-held! Cat D-3490

Our best price ever! $439

DICK SMITH ELECTRONICS

• **NSW** • **Albury** *21 8399* • **Bankstown Square** *707 4888* • **Blacktown** *671 7722* • **Bondi Junction** *387 1444* • **Campbelltown** *(046)27 2199* • **Chatswood Chase** *411 1955* • **Chullora** *642 8922* • **Gore Hill** *439 5311* • **Gosford** *25 0235* • **Hornsby** *477 6633* • **Hurstville** *580 8622* • **Liverpool** *600 9888* • **Maitland** *33 7866* • **Miranda** *525 2722* • **Newcastle** *61 1896* • **North Ryde** *88 3855* • **Parramatta** *689 2188* • **Penrith** *(047)32 3400* • **Railway Square** *211 3777* • **Sydney City** *267 9111* • **Tamworth** *66 1711* • **Warringah Mall** *905 0441* • **Wollongong** *28 3800* • **ACT** • **Fyshwick** *80 4944* • **VIC** • **Ballarat** *31 5433* • **Bendigo** *43 0388* • **Box Hill** *890 0699* • **Dandenong** *794 9377* • **East Brighton** *592 2366* • **Essendon** *379 7444* • **Footscray** *689 2055* • **Frankston** *783 9144* • **Geelong** *43 8804* • **Melbourne City** *326 6088* • **Richmond** *428 1614* • **Ringwood** *879 5338* • **Springvale** *547 0522* • **QLD** • **Brisbane City** *229 9377* • **Cairns** *311 515* • **Chermside** *359 6255* • **Redbank** *288 5599* • **Rockhampton** *27 9644* • **Southport** *32 9863* • **Toowoomba** *38 4300* • **Townsville** *72 5722* • **Underwood** *341 0844* • **SA** • **Adelaide City** *223 4122* • **Beverley** *347 1900* • **St. Marys** *277 8977* • **Elizabeth** *255 6099* • **Enfield** *260 6088* • **WA** • **Cannington** *451 8666* • **Fremantle** *335 9733* • **North Perth** *328 6944* • **Perth City** *481 3261* • **TAS** • **Hobart** *31 0800* • **NT** • **Stuart Park** *81 1977*

ORDER BY PHONE TOLL FREE (008) 22 6610 FOR 24 HOUR DESPATCH

Amateur Radio

Cover

An updated crystal set which at one time had its performance enhanced by use of a tunnel diode. See story, page 14.

Deadlines for May

Editorial 12 April 1989

Hamads 18 April 1989

TYPESETTING : Redfords Media
Suite 1, 5 Walworth Ave,
Caulfield Nth, 3162
Tel: (03) 523 0035

Printed by: Industrial Printing and Publicity Co. Ltd., Richmond.

MAIL DISTRIBUTION: Polk Mailing Co. PO Box 140, Collingwood, Vic 3066
Tel:(03) 417 5161

Special Features

Convention Information
- **Annual Reports** 12
- **Agenda Items** 22

Third Party Traffic for New Zealand – Jim Linton VK3PC 30
AUSSAT Supports JOTA 30
Ron Wilkinson Achievement Award 34
TV Broadcast Diamond Jubilee – Jim Linton VK3PC 35
Pitcairn Island—A Ham's Paradise – David Miller NZ9E 36
A Short History of Communications – Ted Roberts VK4QI 65

Technical Articles

RF Impedance Measurements - J. Hodkinson VK2BH0 8
Story of Cover Picture 14
28 MHz Broadband Preamplifier – Lloyd Butler VK5BR 38
Portable or Back-up Battery Use – Peter O'Keefe VK3YF 10

Regular Features

Advertisers' Index 72
ALARA 55
AMSAT Australia 60
AR Showcase 32
Awards
- **Russian R6K** 53
- **City of Wagga Wagga** 54
- **Kittyhawk** 54

Club Corner 70
Contests
- **Results 1988 Remembrance Day** 46
- **Sangster Shield** 49

Data & Digital Communications 45
Divisional Notes
- **Forward Bias (VK1 Div)** 44
- **Minibulletin (VK2 Div)** 62
- **VK3 Notes** 64
- **VK4 Annual Report** 62
- **5/8th Wave (VK5 Div)** 44

QRM from VK7 50
Editor's Comment 2
Education Notes 4
Hamads 70
How's DX? 57
Morseword No. 25 65
Over to You – Members' Opinions 68
Pounding Brass 54
QSLs of the WIA Collection 50
Showcase 32
Silent Keys 67
Spotlight on SWLing 55
Topical Technicalities 40
VHF-UHF – An Expanding World 41
WIA Directory 3
WIA News 4

Amateur Radio

Published monthly as the Official Journal by the Wireless Institute of Australia, founded 1910. ISSN 0002-6859. Registered Office: 3/105 Hawthorn Road, Caulfield North, Vic 3161. Telephone: (03) 528 5962.

Inquiries and material to the Editor: PO Box 300, Caulfield South, VIC 3162

Advertising: Ann McCurdy (03) 528 5962

Material should be sent direct to PO Box 300, Caulfield South, Vic. 3162, by the second Wednesday of the month preceding publication. Check page 1 for deadline dates. HAMADS should be sent direct to the same address, by the following Tuesday.

Acknowledgement may not be made unless specifically requested. All important items should be sent by Certified Mail. The editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying a reason.

EDITOR'S COMMENT

To carry on from where we left off last month (ie at the helm of my trailer-sailer!) you will all be re-assured to know that our three-man radio amateur crew survived the 1989 Marlay Point race. In fact we had covered only about one-fifth of the course, tacking all night into the teeth of a Gippsland easterly, when we heard that the leaders were almost at the finish line, so persisting seemed pointless. We could not have finished before time ran out anyway. Whoever won the wooden spoon was miles in front of us, so we declared our boat, finally and irrevocably, to be far too slow for racing, and retired for the fifth time out of seven starts!

Judging by the rainfall reports as I write this (15th March) we may yet be able to repeat the performance of 1975-77, for which the boat is far more suitable, namely DXpedition cruising on Lake Eyre. Providing, of course, that someone else can take over the Editorial chair and let me get away to the flooded outback! So far, three people have expressed interest in the position, although for various reasons it may be that none is entirely suitable. Are there any further budding managing editors out there? It would seem to be virtually impossible, even with all the communication wizardry of 1989, to carry out the job by remote control, so it would seem to be essential that the Managing Editor should live in Melbourne.

At the last Federal Convention, it was decided that from 1989 on, before each Convention, all agenda items and co-ordinators' reports should be published in April AR, so that you, the members, would be better informed about WIA proceedings. Elsewhere in this issue you will find all such material received at the Executive Office to date. Because of the extra information we have expanded this issue to 72 pages; and this has enabled us to include the 64 page catalogue from Emtronics which could not be fitted into earlier issues (see WIA News in Feb, p.4 for the full story). So that is the reason for this April 1989 issue being such a heavyweight monster!

With this issue we welcome two new regular contributors. At long last we have found a DX editor, willing and able to put together each month, from many sources, an up-to-date account of where the rare DX stations are and how to catch them. He is Pat Kelly, VK2RZ, and we introduce him on page 57.

Also, on page 45, we introduce a new column, primarily for the packeteers, but somewhat wider in its scope, as indicated by the title of "Data and Digital Modes". This is being provided by Brian Beamish, VK4AHD.

Over the next few months we have plans for several other new columns, and work has already commenced on a column devoted to the very widely popular theme of "Antennas". It should be a winner with most amateurs.

Finally, as many of you will have realised, our last issue (March) suffered from a number of problems. Most of the photos were too dark, while most of the diagrams were too small or not dark enough! Space was used somewhat unevenly, and several "typos" found their way through, even after the third proof-reading! Please bear with us; under our new production procedures we are still "feeling our way"! Hopefully, this issue will be better.

73
Bill Rice VK3ABP
Editor

Magazine Review

Roy Hartkopf VK3AOH
34 Toolangi Road
Alphington 3087

(G) General (C) Constructional. (P) Practical without detailed constructional information. (T) Theoretical. (N) Of particular interest to the Novice. (X) Computer program.

CO	Sept 1988	Worldwide DX contest results (G).
CO	Oct 1988	DX Contest, All time records (G).
CQ	Nov 1988	Packet Radio Special. Review of commercial products (G).
CQ	Dec 1988	Unusual call signs (G).
QST	Sept 1988	Parasitic suppression for modem tubes (P). Three channel emergency QRP transceiver (C). Simple 12 metre beam (C).
QST	Nov 1988	Log periodic HF dipoles (P).
Break In	Sept 1988	Wellington VHF group issue (G).
Radio Communication	Oct 1988	Modular multi-band transceiver.

WIA DIRECTORY

Federal Council

Kevin Olds	VK1OK	ACT Councillor
Peter Jeremy	VK2PJ	NSW Councillor
Peter Mill	VK3ZPP	Victorian Councillor
David Jerome	VK4YAN	Queensland Councillor
Rowland Bruce	VK5OU	SA Councillor
Neil Penfold	VK6NE	WA Councillor
Joe Gelston	VK7JG	Tasmanian Councillor

Federal Co—ordinators

Amsat	Graham Ratcliff	VK5AGR
Awards Manager	Ken Gott	VK3AJU
Contest Manager	Frank Beech	VK7BC
Education	Brenda Edmonds	VK3KT
EMC	Hans Ruckert	VK2AOU
Historian	John Edmonds	VK3AFU
IARU Liaison	David Wardlaw	VK3ADW
Intruder Watch	Bill Horner	VK4MWZ
Int'l Travel Host Exch	Ash Nallawalla	VK3CIT
QSL Manager	Neil Penfold	VK6NE
Standards	Peter Page	VK2APP
Tapes (Federal News)	Bill Roper	VK3ARZ
	Ron Fisher	VK3OM
Videotape	John Ingham	VK5KG
WICEN	Ron Henderson	VK1RH

Executive

Peter Gamble	VK3YRP	Federal President
Ron Henderson	VK1RH	Vice Chairman
David Wardlaw	VK3ADW	Immediate Past Federal President
Brenda Edmonds	VK3KT	Federal Education Officer
Bill Rice	VK3ABP	Editor Amateur Radio
George Brzostowski	VK1GB	Federal Executive
Peter Page	VK2APP	Federal Executive
Bill Wardrop	VK5AWM	Federal Executive
Kathy Gluyas	VK3XBA	Federal Executive

Executive Office

Bill Roper	VK3ARZ	General Manager & Secretary
Ross Burstal	VK3CRB	Assistant General Manager
Ann McCurdy		Advertising & Admin. Manager
Helen Wageningen		Membership & Circulation Mgr
June Fox		Accounts & EDP Manager
Earl Russell	VK3BER	EDP Consultant
Ron Fisher	VK3OM	Librarian

DIVISIONS

VK1 — ACT Division

GPO Box 600, Canberra ACT 2601

Officers		
President	Alan Hawes	VK1WX
Secretary	Alex Johnson	VK1ZDX
Treasurer	Ken Ray	VK1KEN

Broadcasts: 3.570 MHz, 2m ch 6950, 70cm ch 8525, 2000 hrs Sun

Fees	
Full (metrop) (F)	$44.00
Associate (metrop) (A)	$44.00
Full (country) (C)	$44.00
Associate (country) (T)	$44.00
Pensioner (G)	$33.00
Student (S)	$31.00
Family (X)	$25.00

VK2 — NSW Division

109 Wigram St, Parramatta NSW 2124 (PO Box 1066 Parramatta), Phone (02) 689 2417

Officers		
President	Roger Henley	VK2ZIG
Secretary	Andrew Keir	VK2AAK
Treasurer	David Horsfall	VK2KFU

(R Denotes repeater) Times 1100 and 1930 on Sun
1.845 MHz AM, 3.595 SSB, 7.146 AM (1100 only)
28.320 SSB, 52 120 SSB 52.525 FM
144.120 SSB 147.000 FM(R) 438.525 FM(R)
585.500 (ATV Sound) Relays also conducted via many repeaters throughout NSW.

F	$41.50
A	$39.50
C	$41.50
T	$39.50
G	$34.50
S	$22.50
X	$24.50

VK3 — Victorian Division

38 Taylor St, Ashburton Vic 3147, Phone (03) 259 9261

Officers		
President	Jim Linton	VK3PC
Secretary	Peter Mill	VK3ZPP
Treasurer	Rob Halley	VK3XLZ

1.840 MHZ AM, 3.615 SSB,
7.085 SSB, 147.250 FM(R) Mt Macedon
147.225 FM(R) Mt Baw Baw
146.800 FM(R) Mildura
438.075 FM(R) Mt St Leonard 1030 hrs on Sun

F	$50.00
A	$45.00
C	$50.00
T	$45.00
G	$38.00
S	$27.00
X	$27.00

VK4 — Queensland Division

GPO Box 638, Brisbane Qld 4001, Phone (07) 284 9075

Officers		
President	David Jones	VK4NLV
Secretary	John Aarsse	VK4QA
Treasurer	Eric Fittock	VK4NEF

3.650 MHz, 7.118, 14.342,
18.132, 21.175, 28.400,
52.525 regional 2m repeaters and
1296.100 0900 hrs Sunday
Repeated on 3.605 & 147.150 MHz, 1930 Mon

F	$45.00
A	$45.00
C	$45.00
T	$45.00
G	$36.00
S	$27.00
X	$27.00

VK5 — South Australian Division

Thebarton Rd, Thebarton West SA 5031 (GPO Box 1234) Adelaide SA 5001), Phone (08) 352 3428

Officers		
President	Don McDonald	VK5ADD
Secretary	Hans van der Zaim	VK5KHZ
Treasurer	Bill Wardrop	VK5AWM

1.820MHz AM, 3.550 MHz, 7.095, 14.175, 28.470, 53.100AM,
145.000 FM 147.000 FM(R) Adelaide
146.650 FM(R) Naracoorte
146.700 FM(R) Mid North
146.900 FM(R) Mt. Gambier
438.425 FM(R) Barossa
ATV Ch 34 579.00 Adelaide
ATV 444.250 Mid North
(NT)3.555, 146.500, 0900 hrs Sun

F	$44.00
A	$44.00
C	$44.00
T	$44.00
G	$35.00
S	$26.00
X	$26.00

VK6 — West Australian Division

PO Box 10, West Perth WA 6005

Officers		
President	Christine Bastin	VK6ZLZ
Secretary	Fred Parsonage	VK6PF
Treasurer	Cliff Bastin	VK6LZ

146.700 FM(R) Perth, at 0930 hrs Sun,
relayed on 3.560 MHz, 7.075, 14.110, 14.175,
21.185, 28.485, 52.080, 438.525(R)
Country relays 3.582, 147.350(R) Busselton
146.900(R) Mt William (Bunbury)
Broadcast repeated on 3.560 at 1900 hrs.

F	$42.00
A	$42.00
C	$42.00
T	$42.00
G	$35.00
S	$22.00
X	$23.00

VK7 — Tasmanian Division

PO Box 1010, Launceston TAS 7250

Officers		
President	Mike Wilson	VK7ZWW
Secretary	Peter Frith	VK7PF
Treasurer	Peter King	VK7ZPK

146.700 MHZ FM (VK7RHT) at 0930 hrs Sun
relayed on 147.000 (VK7RAA), 146.750 (VK7RNW),
3.570, 7.090, 14.170, 52.100, 144.100 (Hobart)
Repeated Tues 3.590 at 1930 hrs

F	$42.00
A	$42.00
C	$42.00
T	$42.00
G	$38.00
S	$24.00
X	$22.00

VK8 (Northern Territory) is part of the VK5 Division and relays broadcasts from VK5 as shown (received on 14 or 28 MHz).
Note: all times are local. All frequencies MHz.

WIA NEWS

Bill Roper VK3ARZ, General Manager & Secretary

1989 FEDERAL CONVENTION

The 1989 Federal Convention of the WIA will be held at the Brighton Savoy Hotel/Motel in Melbourne from Sunday 23rd April until Tuesday 25th April 1989.

Elsewhere in this issue of Amateur Radio we have published those annual reports and agenda items which were received on or before 15th March 1989. All parties involved were advised of this closing date for publication, even though the legal closing date for these items to be included in the 1989 Federal Convention is 22nd March 1989.

What is a "Federal Convention"? A rose by any other name....?

"Federal Convention" is just a flash name (or, in today's jargon, should I say up-market name?) for the Annual General Meeting of the Federal Body of the WIA.

A high profile public figure recently said words to the effect that "....Australia is a country where 7 separate colonies are pretending to be a nation".

The WIA is a bit like that. Each Division of the WIA is a separate body, with its own constitution. The Federal Body of the WIA only has 7 members, the 7 Divisions. The nearly 8000 members of the WIA are not members of the Federal WIA, but are members of one or other of the various state Divisions.

The Federal Body consists of the Federal Council (a representative appointed from each of the seven Divisions, who are known as Federal Councillors), the general management group known as the Executive (often incorrectly called the Federal Executive) who are appointed by the seven Divisional representatives on Federal Council, and the Executive Office (previously often called the Federal Office) which carries out the day to day work of the Federal Body under the control of the Executive.

It could be accurately said that the Federal Body of the WIA solely exists as a vehicle created by the Divisions to bring about some unification of the seven Divisions of the WIA, by determining policy in those areas that affect the whole of Australia and not just one state, by liaising on behalf of the Divisions as one voice with Government, and by providing those member services, such as Amateur Radio and membership fee processing, which can be most cost efficiently carried out on behalf of the Divisions by a central body.

Under the present rather clumsy structure of the WIA, the Divisional appointees to the Federal Body only meet once a year at the Federal Convention/Annual General Meeting. Therefore, except under extraordinary circumstances, the major policies that determine the future of the WIA are only determined once a year!

From this rather simplistic explanation of the cumbersome hierarchy of the WIA I trust you now realise, amongst a number of other things, that, as a member of the WIA, you and your views are to be represented at this Federal Convention. And that the person acting on your behalf is your Divisional Federal Councillor.

Do you know who is your Federal Councillor?

If not, have a look at the WIA Directory on page 3 of this magazine.

Do you feel strongly about the WIA and the future of amateur radio as a hobby? Do you want your views represented at the 1989 Federal Convention?

Then make sure that you contact your Federal Councillor, before he departs for the Federal Convention, and let him know your point of view. That probably gives you about two weeks.

Make the most of it.

WIA NOT A SECRET SOCIETY

I have heard several comments recently that the WIA is like a secret society. "It does not tell its members what it is doing" I am told.

On the one hand I have some trouble understanding that sort of comment, particularly in view of the interesting and informative weekly news broadcasts transmitted by each of the seven Divisions, and the information contained within the pages of Amateur Radio.

On the other hand, however, I can accept the fact some members believe that, for an organisation that represents a group of people involved in communication, we do not communicate very effectively in some areas. Most particularly in relation to the proceedings of the meetings of the many and various groups that are part of the WIA.

Let's face it. Minutes of meetings are boring to most people, particularly to those who were not at that meeting. Who wants Divisional broadcasts and Amateur Radio filled with minutes of meetings?

At the Federal level, minutes of all meetings of the Executive are forwarded to Divisions within a week of the meeting. Minutes of the joint meetings conducted by the WIA with DOTC are forwarded to Divisions immediately the minutes have been jointly approved by the WIA and DOTC. And the minutes of the Federal Convention, a mammoth document, are forwarded to Divisions within two months of the Convention.

These minutes are not secret documents. If you are a member of the WIA and you want the opportunity to peruse them, then all you have to *do is* contact the Federal Councillor for your Division. He, or she, will only be too pleased at your interest and arrange for you to see them. Perhaps even supply a copy to you.

But please realise that the minutes of the Federal Convention are a limited edition because of the cost, and a separate copy may not be available for you to take away.

AMATEUR POPULATION

A recent news item from the equivalent of the WIA in the United States of America, the American Radio Relay League, more commonly known as the ARRL, advises that the number of licensed radio amateurs in the USA has surpassed 440,000 for the first time in history.

The Federal Communications Commission figures as at 27th December 1988 showed a total of 440,311 licensed amateurs. This is particularly pleasing to the ARRL considering the recent concern about the possible slowing down of growth in the number of radio amateurs in the USA.

By way of comparison, the latest figures for radio amateurs in Australia licensed by the Department of Transport and Communications as at 30th September 1988, was 18,026, which included 239 repeaters and 38 beacons.

Some other interesting amateur population figures show the United Kingdom with approximately 66,750 licensed radio amateurs; Indonesia with 61,350; West Germany with 60,900; Canada with 24,400; the Soviet Union with 18,600; and New Zealand with 6,600. The figures that I have for Japan show only about 34,000 licensed radio amateurs, but this figure obviously excludes the hundreds of thousands of Japanese with low power internal licenses only.

NO-CODE LICENCE

Way back in 1954, due to the efforts of your society, the WIA, which represents the Amateur Service at Govern-

ment level, Australia became one of the first countries in the world, if not the first, to issue amateur radio licences without a Morse Code requirement. The latest figures available from the Australian licensing authority, the Department of Transport and Communications, show that 18% of current amateur radio licences are held by Limited Licencees, the name given to holders of the Australian code-less licence.

The ARRL has recently approached the WIA seeking comments on our experiences with this code-less licence.

The possible introduction of a code-less licence has become a big issue in the USA.

50 MHz BAND AND CHANNEL 0

As previously advised in Amateur Radio, the WIA is currently negotiating with DOTC with a view to achieving a set of operating conditions for the 50 MHz band which will be acceptable to all Australian radio amateurs, and will permit radio amateurs located in the mainland east coast states of Australia to operate below 52 MHz in co-existence with channel 0 television.

The latest reports from DOTC about the progress of the WIA submission, which was lodged on 20th January 1989, are favourable, indicating that it is still being processed in a steady manner. However, as was expected, it will apparently be some time yet before we receive a result.

The WIA received assistance, support and advice from a number of active 6 metre band amateurs from each call area in Australia when putting together the submission to DOTC. One amateur in particular put a tremendous amount of time, knowledge and ability into the submission, and that was Peter Stackpole, VK1RX.

Peter is an active 6 metre enthusiast and has been employed as a propagation engineer with DOTC since 1979. During that time he has been involved in the planning of many VHF radio, FM radio, and television services throughout Australia. In recent times Peter has been heavily involved in the planning of the new commercial UHF television services to be introduced into regional Australia.

Those of you aware of the unique set of problems that we have in Australia in regard to 6 metres would realise that it was not easy to decide the approach for the WIA submission.

It was obvious to the WIA that any form of extreme ambit claim, no matter how seemingly justified to us, would receive little serious attention from the authorities. Likewise, any submission that was unnecessarily complex would most likely be put aside in the "too hard" basket, and take for ever to be considered.

The seven major recommendations of the WIA submission were published on page 5 of March 1989 issue of Amateur Radio. When a decision is received from the authorities, the full technical details of the WIA submission will be made public.

LICENSING OF VNG, THE STANDARD TIME AND FREQUENCY SERVICE

Dr. Marion Leiba, Honorary Secretary of the VNG Users Consortium, advises that DOTC is reissuing the licence for VNG on 5 MHz, enabling continuous transmissions through until 7th June 1989. Marion is confident that VNG will be allowed to continue transmitting on 5 MHz beyond that date.

The VNG Users Consortium have applied for licences for 10 and 15 MHz, but these require approval from the International Frequency Registration Board, and from neighbouring countries to Australia, even though they are temporary licences.

Marion advises that DOTC are now giving top priority to the "permanent" licensing of VNG on 5, 10 and 15 MHz.

VK9 CALLSIGNS

Radio amateurs have been used to the first letter in the suffix of VK9 callsigns indicating in which territory or dependancy of Australia the station was located. This was as a result of an agreement made by the WIA with DOTC many years ago. Examples of this convenient system were VK9Z_ for Willis Island, and VK9M_ for Mellish Reef.

Unfortunately, as with the callsign listings for non-WIA members in the recent Australian Radio Amateur Call Book, we now have another situation where the new DOTC computer seems to be the tail wagging the dog.

A DOTC spokesman recently explained that, "due to the limitations of the DOTC computer system", VK9 callsigns are now issued on a random basis.

It seems to the WIA that, given the small number of VK9 callsigns issued, and the importance of a descriptive suffix in the international DX scene, surely DOTC could find a way to circumvent this limitation of their computer system.

This matter will be discussed with DOTC representatives at the next WIA/DOTC Joint Meeting.

AMATEUR LICENCE EXAMINATION DEVOLVEMENT

Early in 1988, the Department of Transport and Communications (DOTC), conducted a number of public forums on the devolution of Amateur operator certificate examinations. At that time DOTC announced it planned to commence the new procedure in the latter half of 1988 and called for submissions from clubs and educational bodies interested in participating.

In response to that request, a large number of submissions were received by DOTC, but months passed and nothing further was heard from this Government Department.

At the WIA/DOTC Joint Meeting held towards the end of 1988, the WIA expressed concern about the lack of response from DOTC to applicants for examiner positions.

I am now pleased to advise that action on devolvement of examinations has recommenced in DOTC. After long delays, apparently due to considerable reorganisation in the Department, Mr. Keith Carr-Glynn has been appointed to the new position of Examinations Officer. On 24th February 1989, Mr. Carr-Glynn forwarded out a two page explanatory letter to all parties who had expressed an interest in conducting amateur licence examinations, and enclosed a form to be completed and returned.

In this letter it was explained that, as well as being responsible for the management of devolution of the examinations, the Examinations Officer will also be responsible for the setting, marking and overall conduct of all Amateur Examinations up to, and including, the final examinations before full devolution.

The letter also explained the situation regarding question banks which are currently held in 2 forms. One is hard copy and, including diagrams attached to the questions, consists of quite substantial documents. The second form of question bank is on a 5 1/4 inch, IBM formated floppy disk using a dBase III Plus database file. This disk question bank will be used in conjuction with a book of diagrams and formulae.

Eventually, DOTC hope to distribute a compiled program, using a dBase III Plus file to generate and print examination papers for use in Amateur examinations.

DOTC advise it is expected that, in due course, not only will the computer programs become freely available, but hard copies of the question banks

will also be distributed.

They expect the Morse Code generation program, which is compiled Turbo Pascal, will also be available on 5 1/4 inch disks.

In this letter of 24th February 1989, DOTC make the point that it is important to understand the Department can only approve examinations set by external bodies. The current legislation does not allow DOTC to approve or accredit individuals or organisations. "Accreditation", in DOTC's current interpretation, means that an individual or organisation has presented an examination to the Department for approval. To be accredited, the examination itself will have to be approved as to the form, balance, degree of difficulty and all the other things to be spelt out in the "Accreditation Package".

The WIA is certainly pleased that the matter of devolvement of amateur licence examinations is starting to move again after some considerable time stopped dead. However, it seems that it may be some time yet before Australian amateurs will experience the benefits of full devolvement of their examinations.

NON-IONISING RADIATION

The subject of non-ionising radiation has been given a lot of publicity in recent times. Ross Adey, K6UI, who was originally a VK5, then a VK3 before moving to the USA quite a few years ago, is a world ranking researcher on this subject currently employed by the Veterans Administration at Loma Linda in California.

Apart from his medical qualifications, Ross is a Fellow of the Institute of Electrical and Electronic Engineers, and still subscribes to Amateur Radio.

When contacted recently, Ross regretted that he did not have the time to write an article for Amateur Radio on non-ionising radiation, but has sent us a one inch thick package of 21 papers on the subject for our use.

What we need now is a radio amateur with a very good medical background to read these papers and precis them for an article in Amateur Radio. If you can assist, please contact the Executive Office of the WIA as soon as practicable.

ADVERTISERS

Without HAMADS, Amateur Radio would be a much less interesting magazine. I know that you, just like the vast majority of readers, turn to the HAMADS section first before looking at any other part of the publication. And, of course, everybody realises that HAMADS has become a much more time-effective way of selling and buying equipment now that the lead times have been reduced from around 6 weeks to just 2 weeks.

But the real life blood of our magazine is the commercial advertisers. Without their advertisements, Amateur Radio would only be a shadow of its present self. You, the reader, would not be aware of the new and exciting products and services available to radio amateurs; and we, the publishers, would not have the income to continue to produce the magazine in its present form.

Advertisers only advertise in a publication if that expenditure of their advertising money produces sales enquiries. But how do they know whether their advertisement in Amateur Radio is working or not? Quite often the only way for an advertiser to measure the effectiveness of advertising in Amateur Radio, particularly when he has placed a similar advertisement in other publications, is for the enquirer to tell him where he read the advertisement.

Do you do that each time you visit or telephone one of the advertisers in Amateur Radio? I'll bet you don't!

So here is one very important way in which you can do your bit to help your WIA, and your magazine. Each time you contact one of the firms that advertise in Amateur Radio, tell them that you are contacting them because of their advertisement in Amateur Radio.

And make sure they realise it is the Amateur Radio that is the publication of the WIA, and not the other magazine which, surprise, surprise, has a very similar name!

FEBRUARY AND MARCH 1989 ISSUES OF AMATEUR RADIO

Favourable comments, and a number of very constructive suggestions, have been pouring into the Executive Office regarding the appearance of the last two issues of your magazine, Amateur Radio.

However, as was obvious with March 1989 issue, we still have a few teething problems to iron out with the new production method.

One omission was in relation to the excellent photograph of Bob Arnold, VK3ZBB which appeared on page 11. This photograph was reproduced with the kind permission of the Australian Newspaper. Somehow or other the credit did not make it to the printers.

In the February "Special Reference Issue" there were a number of errors and omissions. One of the problems of producing such an issue is obtaining up-to-date, correct information. We have heard several comments about the accuracy and completeness of some of the information, but very little in the way of detailed corrections have been received at the Executive Office.

Peter Sumner, VK8ZLX has advised that the Alice Springs 2 metre repeater has been on 146.950 MHz for 4 years, and not 147.000 MHz as we published.

Jenny Warrington, VK5ANW from ALARA has advised that the official ALARA Nets are held every Monday evening, and it is the monthly general meetings of ALARA that are held on the 4th Monday of each month, except December.

Robert Colsell, VK2AWA from the Coffs Harbour and District Amateur Radio Club, advises that his Club's HF net is held on Monday evenings at 2000 hours local time on 3609 kHz; and an informal net is held on the 6650 repeater on Friday evenings at the same time.

Can you help with updates of the reference data published in Amateur Radio?

INTERFERENCE TO RADIO AND TV RECEPTION

In the past the Australian Government has provided a free service, through the agency of the Department of Transport and Communications, whereby skilled technical officers investigated the causes of interference to television and radio reception. Virtually all of these cases of interference were resolved on a technical basis.

The WIA has been advised that the Government has decided to cut costs by requiring an up-front fee before any investigation of interference complaints is undertaken.

Recently, the Professional Radio & Electronics Institute has been conducting a campaign opposing this concept of charging a fee, mainly based on the argument that control of the radio spectrum is the responsibility of Government, and that interference free reception should be a right of every citizen in this country.

In discussions on this matter at the WIA/DOTC Joint Meeting held near the end of 1988, a DOTC spokesman advised that a DOTC Task Force was being set up to study the feasibility of introducing a fee structure for investigating interference complaints, but it was expected to be some months before the Task Force makes its findings

This DOTC spokesman gave an assurance to the WIA

that, if one of the options to be considered was to be that the person causing the interference is to be charged a fee, the WIA will be consulted.

ar

AMATEURS AND INTERFERENCE TO TV & RADIO RECEPTION

Also at that WIA/DOTC Meeting, the DOTC representatives told the WIA that "there is some concern in political circles that the rights of TV viewers and Broadcast listeners are being subordinated to the rights of a relatively small number of Amateur Stations".

The implied possibility of interference complaints involving amateur radio stations being resolved in the future by political expediency rather than on a technical basis, is a subject of grave concern to all radio amateurs, and is a matter which will be pursued strongly by the WIA.

ar

XIV COMMONWEALTH GAMES

The XIV Commonwealth Games are to be held in Auckland, New Zealand during January and February 1990. The NZART, the WIA equivalent in New Zealand, will establish a Commonwealth Games Station in the Games Village, and hopes to be using the callsign of either ZMXIVCG or ZM6CG.

In addition, the special prefix of ZM will be able to be used by all ZL amateur radio stations from the 1st June 1989 until the 10th February 1990, and a special XIV Commonwealth Games Award will be available to certificate and award hunters.

ar

CLUB CORNER

Old Timer's Luncheon

The 9th Biannual Luncheon meeting of the Radio Amateurs Old Timers Club (Old), will be held at the Coorparoo RSL Club, 45 Holdsworth St., Coorparoo, Brisbane, 1100 hours, 30 April 1989.

The meeting would welcome all Old Timers having been licensed over 25 years or nearing 25 years. Entrance fee of $6.50 at the door, will cover lunch. For further information and to register, phone Bill Bentson, VK4QF, 07-870-8785 or Cress Everdell, VK4ZAO 07-208-5435. Apologies would be appreciated.

RF Impedance Measurements

J. Hodkinson VK2BHO
PO Box 1511,
Wollongong
2500

Following is a method of RF impedance measurement that is suited to the radio amateur, is simple, needs little in the way of hardware, and the mathematics are done on a computer.

In July 1968, an article appeared in Amateur Radio titled "SWR indicators - Fact or Fiction" by the late Joe Reed VK2JR. A bold and outspoken article which was meant to stir the reader into the actual practice of experimenting for one's self. (See AR July 1968, pps 9, 10, 11)

The original method of calculation of the component values of the complex impedances was by graphing the relative measured values and measuring the resultants produced. While this was accurate, it was considered a slow and tedious method. The second article, which was to explain the mathematical solution, never appeared.

Over the years, a few attempts were made on the project but I never seemed to solve the problem. Then, after acquiring a computer, the project reappeared and a totally new approach was attempted.

First a series of simple programs were written to solve the examples as were shown in the original article. This, in itself, produced a new range of skills to write a program that would run and at the same time solve the tasks that were required. Finally, a complete program was produced which would produce the vector values of the complex load by simply inputing the three voltage readings produced at the test head.

Description - Operation

The principle of operation is based on the fact - that in a series circuit the current flowing in each element of the circuit is the same - a reference resistance is placed in series with the RF load to be measured, and a source of RF energy is applied to the test conditions, voltage sample readings are taken from across the supply, reference resistance and load. These values are then used to calculate the vectorial components of the circuit elements.

Construction - Comments

To allow operation at the higher frequencies, good VHF construction practices should be used; ie short leads and

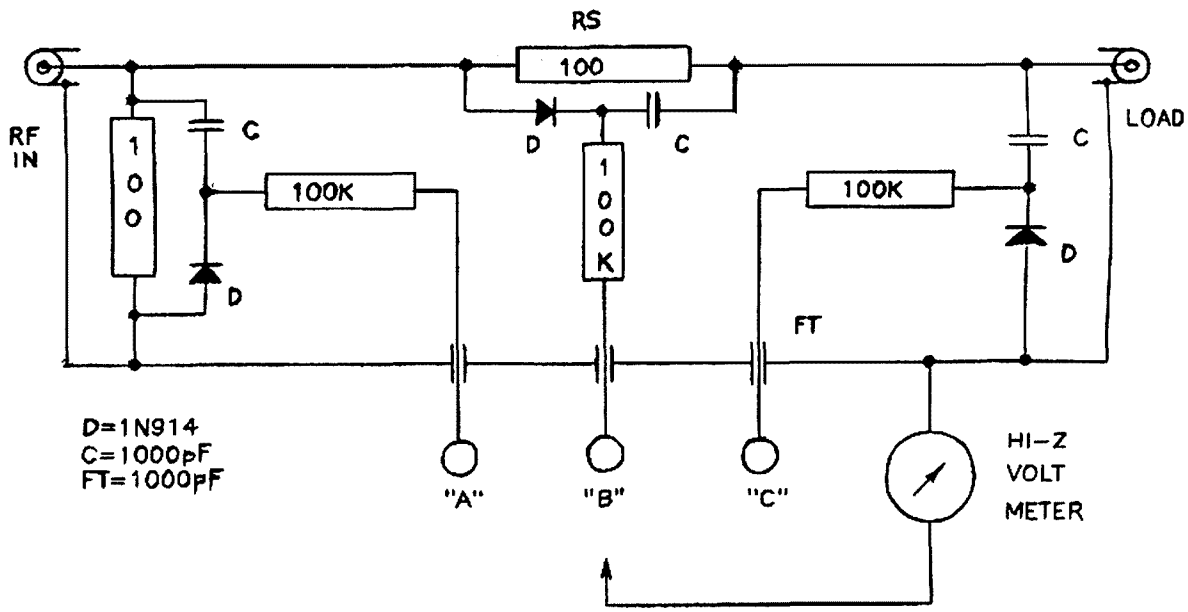


Figure 1: Circuit of the RF Impedance Measuring Head.
RS Reference resistor must be non-inductive. In the model it was 100 ohms. Best results were obtained when RS approximated the load, where the load is expected to be greatly removed from normal values (50 ohms) appropriate value would be used.
D = 1N914 C = 1000 pF FT = 1000 pF

sensible component layout and placement of input and output connections. Copper clad PC board is ideal, feed-through capacitors are recommended to bypass the metering outputs.

Measurements - Comments

The method of measurement requires the test head to be inserted in the feedline such that normal load conditions are maintained as closely as possible. Metering is then observed in position "A" and the RF energy is applied to the input, and the level of RF energy applied is adjusted so that approximately full scale is obtained using a high impedance meter on a low voltage range; eg 2.5 volt range. The actual value is not important. Once the circuit has settled, take careful note of the values for the three positions, ie "A", "B", "C", using the same range on the meter. The values are then used in the BASIC program to produce the vector values of the complex RF impedance load.

Limitations - Accuracy

Simple as you like, but because of its utter simplicity, the reactance component is of unknown sign, so to determine if the reactance is inductive or capacitive, the frequency must be changed or a known reactance connected across the load and a further test conducted. If the ratio of readings is such that reading "C" increases in relation to reading "B" then the reactance is positive "+J".

Trials - Comments

Using 28 MHz, test readings were taken with a series of test loads and the results were surprisingly accurate. The original article indicated that, by using a balun, balanced loads could also be measured though this has not been attempted. Both analog and digital voltmeters were used to take readings. On a few occasions, several fudge points were needed as the ability to read the analog meter and/or its accuracy would not compute. On checking, it was found that results were still more than accurate enough for normal amateur usage.

In conclusion, here is a different approach to RF impedance measurements. Simple, with minimum hardware and none of those hard-to-get bits, and it is now possible to see what the actual load components are when your SWR meter says your VSWR is 1:1.

Happy and successful experimenting.

ar

RF Impedance Measurements

Figure 2 (a) Vector Diagram - Explanation of voltage moments.
Meter Units:
A = 280
B = 198
C = 147
Calculated:
Z = 74.2
R = 23.5
+- J = 70.7

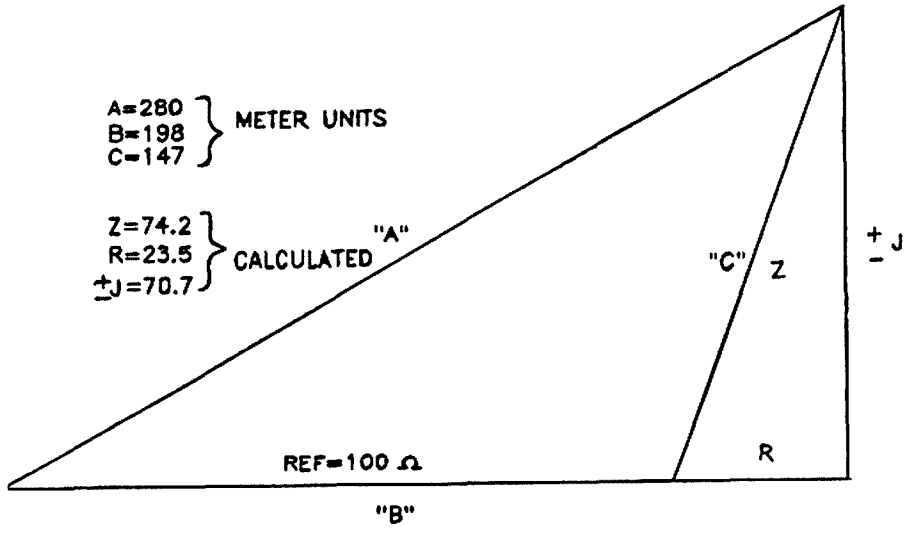
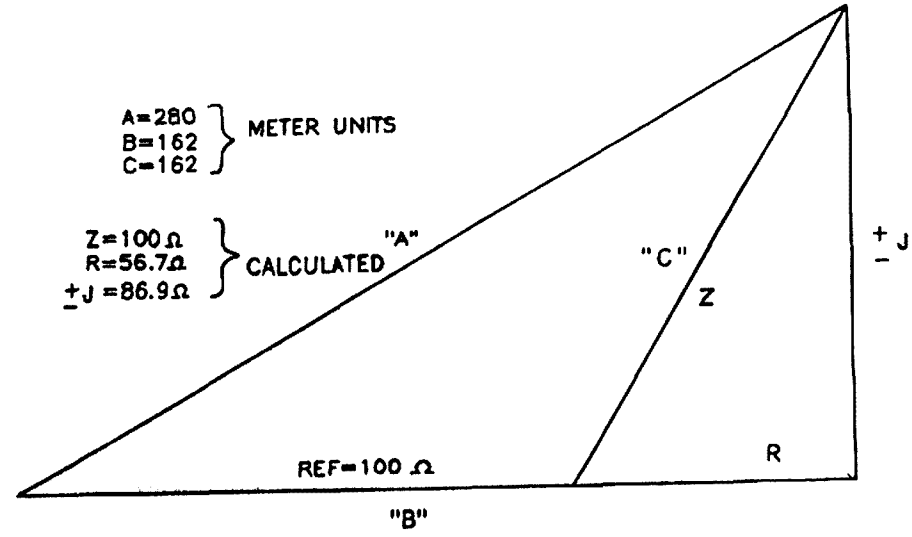


Figure 2 (b) Vector Diagram - Explanation of voltage moments.
Meter Units:
A = 280
B = 162
C = 162
Calculated:
Z = 100
R = 56.7
+- J = 86.9



```
100 REM RF IMPEDANCE
120 REM SS = SERIES SENSE RESISTOR VALUE CHANGED IF OTHER THAN 100 OHMS USED
140 SS=100 : PI=3.14159265F : RA=(360/(2*PI)) : X=90/RA
160 I=0 : IN=X/2 :
180 CLS : PRINT :PRINT "RF IMPEDANCE VECTOR CALCULATOR   VK3YF 1988 " :PRINT
190 PRINT : PRINT "  INPUT ----- METER READINGS AS MEASURED AT TEST HEAD "
200 PRINT : INPUT " A READING ";A : IF A=0 THEN 200
220 PRINT : INPUT " B READING ";B : IF B=0 THEN 220
240 PRINT : INPUT " C READING ";C : IF C=0 THEN 240
260 IF (B+C) A THEN GOTO 1800
280 REM
320 REM
340 REM
360 REM
380 Z=(SS*C)/B :F=Z/C :P=A*F : Q=B*F : R=C*F :
400 CO= ((( B 2+C 2 ) -A 2) /( 2*B*C))
420 CO=CO: GOSUB 1900
1000 REM CALC ANGLE FROM COS VALUE   -- IN = CO
1020  WH=CO   : X=1.5707963267 9F
1040 RE=COS(X)
1060 REM
1080 REM
1100 IF RE=WH GOTO 1200     :REM PRINT ANGLE
1120 IF RE WH THEN GOSUB 1500
1140 IF RE<WH THEN GOSUB 1600
1160 I=I+1 : PRINT "*";
1180 IF I 30 THEN GOTO 1040
1200 AR=X :REM IN RAD
1220 REM ANGLE CALCULATED IN RADIANS ----OUT AR RADIANS
1240 GOSUB 1700 : REM CONVERT TO DEGREES
1460 GOTO 2000
1499 END
1500 IF UP=0 AND LO=0 THEN UP=1 : X=X+IN : RETURN
1520 IF LO=1 THEN IN=IN/2 : X=X+IN : LO=0 : UP=1 : RETURN
1540 X=X+IN : RETURN
1600 IF UP=0 AND LO=0 THEN LO=1 : X=X-IN : RETURN
1620 IF UP=1 THEN IN=IN/2 : X=X-IN : LO=1 : UP=0 : RETURN
1640 X=X-IN : RETURN
1700 REM CONVERT RADIANS TO DEGREES
1710 RC=AR:IF RC RA THEN GOTO 1800:IF RC 0 THEN GOTO 1800 :REM ERROR TRAP
1720 DE=AR :    DE=((DE*180)/PI)
1740 DE=0 : RC=0
1780 RETURN
1800 REM ERROR IN READINGS
1820 PRINT " CALCULATIONS CANNOT BE DONE WITH THE READINGS PROVIDED"
1840 PRINT " CHECK READINGS AND REMEASURE IF NECESSARY "
1860 PRINT  " RULES ****    B + C MUST   A  ,  B OR C MUST NOT > A  "
1870 PRINT "                    IF  B = ZERO  THEN  O/C   IF C = ZERO THEN S/C "
1880 GOTO 200
1900 PRINT  :REM TEST VALUE OF COS
1920 IF CO   1.5708 GOTO 1800
1940 IF CO   0 GOTO 1960 ELSE 1800
1960 RETURN
2000 REM CALC IMP VALUES
2010 PRINT
2020 OA=DE/RA :OB=SIN (OA)*Z :OC=Z/ TAN(OA)
2030  IF OC 5*Z THEN OC=Z
2031  IF OC  .002 THEN OC= 0
2035 REM IF OB  = 0 THEN OB= 0
2036 REM IF OB  Z THEN OB=Z
2040 PRINT :PRINT :PRINT  "LOAD --- COMPLEX IMPEDANCE =  ";Z; " OHMS"
2060 PRINT :PRINT  " RESISTIVE ELEMENT = " ;OC; " OHMS"
2080 PRINT :PRINT  " REACTIVE  ELEMENT = " ;OB; " + OR - J  OHMS "
2090 IF A=B+C THEN  PRINT :PRINT   " NON REACTIVE LOAD  AT THIS FREQUENCY "
2100 PRINT : PRINT :INPUT "ENTER NEW VALUES  ( N )   EXIT  ( X ) ";OS$
2120 IF OS$="N" OR   OS$="n" GOTO 100 :IF OS$="X" THEM PRINT "END"
2130 IF OS$="X" OR OS$="x" THEN PRINT "PROGRAM TERMINATED BY OPERATOR":ELSE GOTO
     2100
2140 END
```

Computer Program - written in GW BASIC for an IBM(C) or compatible. (A simplified version also ran on a VZ-200).

Portable or back-up battery use

Peter O'Keefe VK3YF
PO Box 654
Shepparton 3630

Firstly, let me say that what follows is one man's journey down the path of the wet-cell. I do not claim that what is stated is totally correct but from a number of telephone calls to battery manufacturers, a general picture emerges which seems to be at odds with many of my views and those of others. So read it, think about it and feel free to comment. If you are in possession of data on the subject I would be pleased to read it.

The story starts with a couple of "Deep Cycle" batteries used at my place of employment. They are the type described below in point 1. They supply back-up power for smoke detectors, alarm circuits, some control equipment and emergency lighting.

It was noticed that the battery charger seemed to be delivering excessive amounts of current to the batteries. The system is comprised of two 12 volt batteries in series to give around 28 volts. A charger is floated across the batteries at all times and is voltage but not current regulated. The charger is limited to 10 amps of current and up to this limit will supply the load as well as float the batteries.

The load was typically around two amps and under emergency conditions could rise to over 10 amps. It was deduced from the current meter that the batteries were receiving around three amps of constant charge over and above the current being drawn by the load. This started a quest to find out just what the charge rate for these batteries should be and what their working life was. The information discovered was relevant to both the work application and my amateur radio activities.

Inquiries revealed some interesting details:

1. Today what is commonly sold as a DEEP CYCLE battery has replaced the traditional battery of this type which is described in Point 2. It looks like a conventional automotive battery and can be used

in an automotive application with some precautions. The battery can only deliver about a quarter of the normal starting or cranking current of a automotive battery: 100-200 amps for 30 seconds as compared to 450 amps. This is adequate for a typical six cylinder petrol engine in a good state of tune. The cell will give a longer use on load for radio work, such as a 20 amp peak current SSB application. However, if you let the battery get very flat it can not be recharged by conventional means. It will require special treatment to return to a serviceable state. The battery is only guaranteed for six months instead of the usual 12 months and costs almost twice as much as an equivalent automotive type. The other disturbing news is that manufacturers quote a typical life of only a couple of years.

2. Traditional deep-cycle batteries are designed to allow moderate currents to be drawn for extended periods but have little heavy current capacity for starting applications. For example, the Dunlop 6M120 battery used by the State Electricity Commission of Victoria, and which finds its way onto the tender market and then into many amateur shacks, will give some hours of SSB use with peak currents of around 20 amps. The problem comes when you need to recharge the battery. It seems that the correct charging rate for one of these batteries is the order of 120 milli-amps. So, as you can see, recharging will take a long time. This comes about as these batteries are specifically designed to be used for line switching and emergency lighting applications. Today their on-load time is minimal. These batteries do have a long useful life and have some use in radio work. However, the very long recharging time reduces their practical use in emergency or extended portable operating. I might point out that the Mount Wombat repeater site uses a couple of these batteries to back-up VK3RGV repeater, VK3RPW packet repeater, 3/33 UHF CB repeater and several commercial units.

3. If money is not a problem you could purchase a set of Telecom two volt/500 amp or six volt/150 amp batteries for around $200 a cell. That is $1200 for six of the two volt units or $600 for a couple of the six volt units. These batteries typically have a very long service life. A set recently removed at my place of work had been in use for almost 20 years before failing. These cells are not built to endure vibration and can be destroyed in a mobile environment. A point which makes these batteries unattractive to the average person is that if one of the cells fail after a couple of years, it is often necessary to replace the entire lot. This is because big differences in cell condition make it impossible to correctly charge all cells in use.

4. This brings us back to today's standard wet cell automotive battery. The heavy duty 11 plate battery I recently purchased is marked as 450 cranking amp. This means that the battery will supply 450 amps for 30 seconds to comply with the Australian Standard or 220 amps for three minutes. The information I was given was that this battery would give in the order of two hours of SSB operation drawing 20 amps peak and still have enough in reserve to start the car. This would be at normal temperatures and assuming a day time operation, and so not using courtesy lights or other creature comforts. This type of battery will cost between $65 and $80. In fact, it would seem to me that the best system would be to use two automotive batteries, perhaps one of lower capacity and isolate one of them when the engine is stopped. This would leave one available to start the vehicle at the end of the exercise.

NOTE: The sealed gel type batteries sold today for automotive use are, in the words of the industry, strictly for starting and have very limited stationary capacity.

To keep batteries in good condition, the following suggestions were made:

(a) Keep electrolyte up to the required level.

(b) Check the SG of the cells from time to time using a Hydrometer. Cells should have a SG of at least 1230 when the battery has been left overnight.

(c) Keep leads and connections in a clean condition.

(d) Should the battery be allowed to discharge to the point that it will not start the car it will require a charge on a battery charger to restore full capacity.

This charge should be at approximately 14.4 volts and four amps for a nine plate battery or five amps for an 11 plate battery for about 12 hours. Four hours after gassing begins you can assums that the battery is fully charged. This "fully charged" state checked with a Hydrometer will depend on the condition of the battery.

Continued Page 64

CONVENTION INFORMATION

A decision was made at the 1988 Federal Convention that the annual reports by the various Federal Co-ordinators together with the agenda items for the next convention should be published in April AR. This was to permit members to find out in advance of the convention what subjects were to be discussed.

We present here all such material received by the Executive Office up to 15th March 1989

Annual Report of the Federal President for Year Ending 31st December, 1988

This past year has been a period of considerable change within the Federal sphere of the WIA. These changes have ranged from a change in the composition of the Executive, new appointments and procedures in the Executive Office, to new operating conditions on the amateur bands.

Executive Matters.

Executive office.

The position of Office Manager/General Manager has been filled by three people during the year. Ann McCurdy was the initial occupant but had to retire at the end of February pending major surgery. Earl Russell then filled in temporarily until the end of May. Bill Roper was subsequently appointed to this position. Ross Burstal joined the Executive Office in early November as the Assistant General Manager.

After a period of hospitalisation and recuperation, Ann McCurdy is now back in the office on a part time basis. Further details of the staffing of the Executive Office are provided in the General Manager's Report.

It should be noted that Bill Roper and Ross Burstal are still providing a considerable voluntary contribution to the work of the Executive Office. This practice, which includes considerable work on weekends and public holidays cannot continue.

Since commencing as General Manager, Bill has been able to review many of the aspects of operation of the office. This review has been based on the philosophy that the WIA is a "Service Organisation" and should appear this way to the members. This means not only being responsive to members by answering their correspondence promptly, but also by providing detailed management reports to the Executive on topics ranging from budget performance to correspondence and action item progress. This approach by Bill has streamlined the workings of the Executive and the Executive office.

Federal Executive.

For the first time, the Federal Council in April, 1988 appointed a number of interstate members to the Federal Executive. The members of the Executive elected or re-elected at that time were George Brzostowski, VK1GB, Brenda Edmonds, VK3KT, Ron Henderson, VK1RH, (Vice Chairman), Peter Page, VK2APP, Ray Roche, VK1ZJR, Bill Rice, VK3ABP, David Wardlaw, VK3ADW, and Bill Wardrop, VK5AWM. Kathy Gluyas, VK3XBA, was co-opted in December, 1988 by the Executive to fill a remaining vacancy. Ray Roche tendered his resignation in February, 1989.

During the year the Executive has met on 15 occasions, with three of these meetings being all-day Saturday meetings and one being a two-day weekend meeting.

It was disappointing that sufficient money was not set aside for travel purposes as this has resulted in considerable difficulties for some of the interstate members of the Executive. However, the initiative has been worthwhile and should be continued.

Corporate Planning.

As part of the action on Federal Convention Resolutions 87.08.01/1 and 88.08.01/1, the Executive held a one day review meeting on Corporate Planning in August. This resulted in the development of a mission statement for the WIA and the listing and prioritisation of around thirty key issues. There has been some follow-up work from this session, however, there still remains work to be completed. A number of motions presented to the 1989 Convention are based on the issues raised.

Bicentennial Year.

During the year extensive use was made of the special Bicentennial "VI88" call signs. The use of these call signs, together with the operation of an amateur radio station in conjunction with EXPO '88, certainly gave a lot of international publicity to Australia's 200th birthday celebrations.

International Matters.

Australia was represented at the International Amateur Radio Union Region 3 Conference, held in Seoul during October, 1988, by David Wardlaw and Ron Henderson. Some of the reports from that conference have already been printed in AMATEUR RADIO magazine. Two of the key issues at this conference, Band Planning and Packet Radio, have given rise to motions to be presented to the 1989 Convention.

It is anticipated that there will be a World Administrative Radio Conference in 1992. Preparation for that Conference has already started, but activity will need to substantially increase. The preparation will not only include the important topics of Band Plans and Spectrum Planning, but also the mundane issue of raising funds to support a delegation to the conference, which will be held in Geneva.

DOTC Matters

On the 1st June, 1988, Novice Licencees gained restricted access to the 2 metre band. I happened to be in Perth at the time, and welcomed a number of operators to the band using the VI88WIA call sign.

The Development of Examinations issue has proceeded at a very slow pace due to difficulties within the Department. However, with a recent new appointment to the position of Examinations Officer, it is expected that considerable progress will be made in the coming months.

Notification of the loss of Amateur Transmitting Privileges in the 50 cm band with effect from 1st March, 1989, was received from the Department. However, existing ATV repeaters will continue to be re-licensed until that particular UHF channel is required in that area. The WIA has tried (and is continuing to try) to provide an alternative mechanism for the continued use of this part of the spectrum by ATV activities. It is noted that a prime aim of many of these transmissions is educational. It is obvious from the way this issue has progressed here in Australia, and the way similar issues are being handled in overseas countries, that pressure on the spectrum is increasing. This means that an increasing amount of resources of Amateur Radio Societies around the world will have to be devoted to defending our allocated bands.

The negotiations and debate on the

issue of Third Party Traffic is continuing. From the information coming from other parts of the world, it would appear that Australia currently has the most restrictive TPT conditions in the world.

A review of the method of handling interference complaints is currently being conducted by the Department. The outcome of this could be serious for all radio spectrum users. The WIA is continuing to monitor this matter.

Divisional Visits.

During the year I have been able to meet with the Divisional Councils of VK1, 2, 4, 5 6 and 7, and with the President and Secretary of the VK3 Division. I would like to thank the Divisional Councillors for their hospitality on these occasions. Other members of the Executive have also visited a number of Divisions and a number of field days and club activities have also featured on the travel itinerary.

Thanks.

There are many volunteer Co-ordinators who contribute to the activities of the WIA on behalf of the Executive. On behalf of all members of the WIA, I would like to thank the following people for their efforts:

Graham Ratcliff	Amsat
Ken Hall and Ken Gott	Awards Managers
Frank Beech	Contest Manager
Brenda Edmonds	Education
Hans Ruckert	EMC
John Edmonds	Historian
Bill Martin and Bill Horner	Intruder Watch
Ash Nallawalla	International Travel Host Exchange
Neil Penfold	QSL Manager
Peter Page and Ron Henderson	Standards
Bill Roper and Ron Fisher	Tapes (Federal News)
John Ingham	Tapes (Video)

I would also like to thank the members of the Executive, particularly Ron Henderson, and the Office Staff, especially Bill Roper, for their support and encouragement during what has been a very busy year for me.

Peter Gamble, VK3YRP
Federal President.

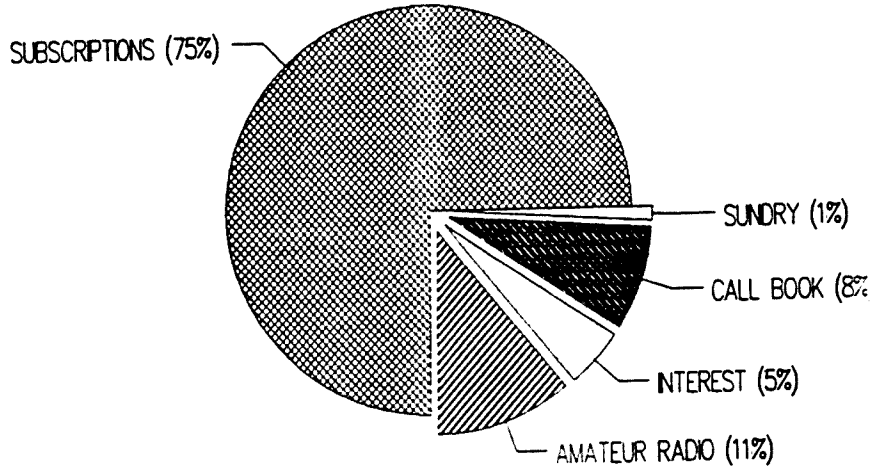
Financial Report For 1988

The full financial statements of the Federal Body of the WIA for 1988, audited by Touche Ross and Company, will be submitted to the 1989 Federal Convention.

Complete publication of those statements in Amateur Radio would not only take up a lot of space, but would also be boring to most members.

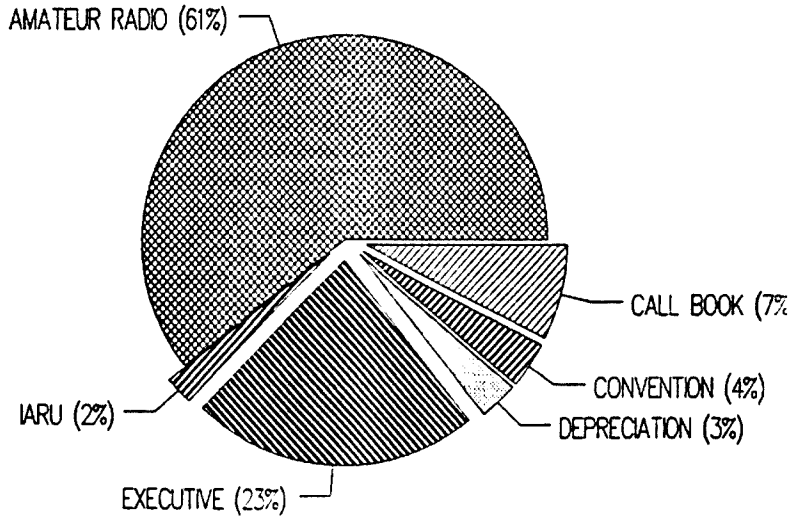
Therefore, the following is a precis of the Financial Report being submitted to the 1989 Federal Convention, together with some pie charts. If you would like to see a copy of the complete financial statements, then contact your Divisional Federal Councillor who will only be too pleased to arrange for you to see a copy. If this is not practicable, then copies may be available

1988 INCOME



Total Income $352,020

1988 EXPENDITURE



Total Expenditure $358,001

by contacting the Executive Office.

The appointment of an interstate member of Executive as the Federal Treasurer of the WIA was an interesting experiment. It is now apparent that the Federal Treasurer must not only be based within easy access distance to the Executive Office, but should have financial qualifications.

Because distance has precluded the Federal Treasurer from performing his duties, I have been acting in the dual role of accountant/bookkeeper and Treasurer.

The budget for 1988 was determined at the 1987 Federal Convention, 8 months prior to the commencement of the 1988 financial year, and budgeted for a loss of $10,000.

A non-profit organisation such as the WIA should NEVER budget for a loss! A non-profit body can only make capital expenditure for fixed assets, such as equipment and furniture, from Accumulated Profits!

Based on this budget, which set the membership fee income for the year, the Federal Body incurred a net loss on operations for the year of $5981

The main reasons for this better-than-expected result were:-

Improved financial management procedures;

The use of extensive volunteer labour from the employees of the Executive Office in an attempt to keep the salaries expenses down despite the much increased work load; and

Publication of the 1988 Australian Radio Amateur Call Book.

Some of the more significant aspects of the audited 1988 financial statements include the following:

AR Advertising, a major source of income, was $11,400 under budget after allowing for the $9,730 book entry relating to the contra advertising arrangements with AEM and ETI magazines. The Executive Office received no help from any of the Divisions during the year in obtaining advertising for Amateur Radio!

MagPubs, despite being transferred in July 1988 to a volunteer sub-committee in the VK2 Division, was still a $8,800 loss to the Federal finances when the relevant proportion of the Executive Office overheads were taken into consideration.

It is disappointing to note the virtual cessation of Federal MagPubs operations since that transfer.

Interest Received was $5,000 under budget because interest rates during 1988 were substantially lower than they were at the time the budget was set.

Direct Subscriptions received from overseas subscribers was $3,000 over budget and is a positive reflection of the increasing popularity of Amateur Radio magazine internationally.

The various expenses involved in the publication of Amateur Radio were held very close to budget, except for Wrapping & Addressing, which was $1,400 over budget, and Bulk Posts which was $4,800 under budget because the expected dramatic increases in Category B postal rates did not eventuate.

Promotion/Advertising/Recruitment was $8,800 over budget because, for the first time, proper accounting entries were made in relation to the contra advertising arrangements the WIA has with commercial electronics magazines.

Executive Travel was $2,250 under budget only because the Federal President and Vice President were able to visit Divisions as part of their employment travels around Australia.

The 1988 Australian Radio Amateur Call Book produced a profit of less than $2,000 after deducting the commission payable to

COVER

THE COVER PICTURE is of one of the oldest devices used in radio, a crystal receiver. It was built by Don Law VK2AIL of Tumblong NSW In order to experiment with various detectors beside the traditional cat's whisker and galena.

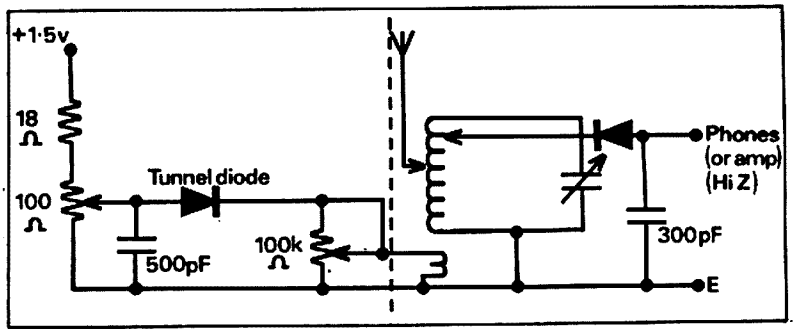
Don writes: "A modern version of an old design. The cat's whisker assembly was machined to original specifications and the crystal is a piece of galena kindly donated by Sydney Science Museum in 1984. A wide variety of semiconductor material was experimented with, but a (now, but not in the 1920's) common germanium diode proved superior to all".

As an interesting twist to the investigation Don added a more modern component, a tunnel diode, to the circuit. This permitted, in effect, the injection of negative resistance into the tuned circuit, thus improving gain and selectivity. The adjustment procedure (see circuit) is:

1. Set 100K pot to maximum (top).
2. Adjust 100 ohm pot for oscillation (ie in negative resistance region).
3. Re-set 100K pot for oscillation just to stop (for AM reception) or just continue (for CW).
4. Optimise antenna and crystal coil taps (and then repeat step 3!)

Unfortunately, Don's soldering iron slipped and caused the tunnel diode to go open-circuit.

He then found that, these days, tunnel diodes are nearly as rare as cat's whiskers detectors! Consequently, we do not suggest this as a project for everyone's amusement, but it does make a pretty picture, doesn't it?



the Australian Government Publishing Service for the "privilege" of publishing the Call Book, and the Executive Office overheads. The poor quality of the amateur radio station callsign information supplied from DOTC, resulting in hundreds of hours of unnecessary work by the WIA, is beyond normal comprehension.

Salaries & Secretarial costs were $16,700 over budget for the year. Considering the increased operations of the Executive Office during the year, this was a small increase.

A financial anomaly that became apparent during the year was the proportion of the Federal component of membership fees which is determined as the "AR component". In determining this amount, the Executive Office costs portion has been calculated in the past at 25% of the total Executive Office costs. Informed analysis now shows that figure should be 45%.

Therefore, instead of the AR component of $16.25 for 1988, as set at the 1987 Federal Convention, the actual figure was $21.39. This means that each issue of Amateur Radio, posted to the member, cost $1.78.

It also means that, instead of the sum of $13.00 determined at the 1987 Federal Convention, the Executive and the Executive Office performed all the other activities on behalf of the Divisions on the basis of only $7.86 income per member.

When considering the cost to the members for the operations performed by the Executive and the Executive Office on behalf of Divisions, it should be realised that, although inflation in Australia over the 10 years to 1988 was 131%, the Federal component of members fees only increased during that time by 100%.

In order to continue to function at a proper level of efficiency, the Federal operation of the WIA needs more fee income. The major sources of this income can only be derived, under normal circumstances by:

Increased advertising income for Amateur Radio.

Increased membership of the WIA.

Increased membership fees.

The Divisions of the WIA, who appoint the Executive, and hence the Executive Office, to work on their behalf, need to either:

Quickly find additional, competent volunteer labour; or

Pay for professionals to perform the necessary work if the WIA is to continue as an effective, viable service organisation representing the radio amateurs of Australia.

Bill Roper, VK3ARZ
General Manager & Secretary
ar

Annual Report of the Publications Committee for the Year Ended 31st December, 1988

In the Publications Committee Report last year, I used the adjective "turbulent" to describe the fortunes of the magazine "Amateur Radio" during 1987. The situation is now different in most areas, yet "turbulent" still seems the best description to apply to 1988!

We began 1988 with the January issue which might well not have been printed, had things gone a little differently. As discussed in last year's report there was a proposition to save some money by skipping January, since the expenses versus budget figures looked so gloomy. Nevertheless, January was published, and in May we reverted to full colour covers, which had been eliminated as from August 1987, again to save some expense. There were two reasons for these actions, one being that an unattractive magazine would not encourage new members to join; but the other, perhaps even more important, was the need to expand advertising, which depended vitally on being able to display an attractive publication to the potential advertiser.

It was also realised early in the year that advertising sales would be improved if advertisers could be given reliable data on the audience they would reach through AR. Statistics as to how many WIA members were gardeners or photographers or personal computer users would obviously help to assess the magazine's value in selling fertiliser, film or floppy disks. A survey form was designed, suitable for computer analysis, and refined over a period of some months, with the aim of gaining this type of statistical data on our readership. It was combined with another batch of questions to evaluate the areas of WIA activity and services in which members felt our performance could be improved or our aims needed alteration. Development of this survey was largely the responsibility of Bruce Kendall, VK3WL, Brenda Edmonds, VK3KT, and the Executive Office, and the computer programs to facilitate input of raw data and extraction of statistics were also developed in the Executive Office. The survey form was circulated as a centrefold to the October issue of Amateur Radio, with a number of "lucky dip" prizes being offered to encourage early return of completed forms. The number returned was rather less than 2000, but this is more than sufficient to provide a good statistical picture. Analysis of the results has been slow, as only volunteer effort was available for the tedious task of "punching in" the raw data. Most of the volunteers were from the Publications Committee. Full results should be available to the 1989 Federal Convention.

There have been two topics of discussion during the year, on which it has not been possible to reach any conclusions, due to the rapidity with which circumstances are changing. These are the possibility, or viability, of some kind of joint publishing activity with NZART by means of which, hopefully, both AR and "Break In" might achieve improved economy. The other area is the establishment of more precisely detailed terms of reference regarding the responsibilities and operation of the Publications Committee. In both cases the situation as it involves the magazine has been so fluid during 1988 as to make firm decisions difficult and the best policy one of permitting fast and flexible reaction to changes.

Financially, "Amateur Radio" has finished 1988 ahead of budget, even though it looked earlier in the year as if a deficit was inevitable. This has been partly due to improving advertising sales, because of the reversion to the more attractive style and colour and mainly to an aggressive campaign by the General Manager to recruit more advertisers. But the main reason for the surplus has been the improved financial management in the Executive Office which resulted in substantial economies being achieved by Betken Productions through the year.

Unfortunately, notice was given by Betken in November that, due to health problems, they could not continue production of AR beyond the January 1989 issue. The words "turbulence" and "flexibility" once more became relevant as the General Manager sought alternative means of keeping the magazine alive. But that is another story, to be told in next year's report!

During the year the long standing lack of decision, regarding the Call Book contract with DOTC, was resolved in favour of the WIA, so that a 1988 Bi-Centennial Call Book became possible. There were many problems, involving such items as data transfer from DOTC records, space limitations for reference information, and the late stage of the year at which work could begin. Nevertheless, the Call Book came out in November, and sold out within a couple of months, in spite of criticism by many, much of it justifiable. But many of the shortcomings which inspired criticism sprang directly from the problems mentioned and could not realistically be anticipated.

There have been numerous changes in the composition of the Publications Com-

mittee. In April we welcomed Jim Linton, VK3PC to the newly created position of News Editor; and since then Jim has amply demonstrated his journalistic ability to find news stories and put them into print many times over. Since his elevation to Federal President at last year's Convention, Peter Gamble, VK3YRP could obviously not be expected to have time to continue with the Committee as a Technical Editor, so his resignation was reluctantly accepted in May. In August, Doug McArthur, VK3UM also resigned due to work commitments, and with him went the "Technical Mailbox" column which he had run virtually single handed since its inception.

For a few months, around mid-year, we had some assistance from a group of VK2's as Technical Editors. Unfortunately, it seemed that all were also deeply involved with VK2 Council and simply had insufficient spare time for editorial work as well. The Queensland Division came to the rescue, and technical editing is now being done by David Brownsey, VK4AFA, Peter O'Connor, VK4KIP and Phillip Steen, VK4APA. Don Graham, VK6HK is also helping in this area.

Finally, after several possible contributors were approached, but declined for various reasons, it now seems that we have found a DX Editor. This information, more correctly though, should be part of the 1989 report, as Pat Kelly, VK2RZ did not take up the position until February 1989.

In conclusion, as usual, I do wish to thank all those who have helped with AR in 1988. All Committee members, past and present. The General Manager and his staff. Betken and their sub-contractors. My gratitude to you all!

Bill Rice, VK3ABP
Editor

IARU Liaison Report

The major IARU event of 1988 was the Region 3 Conference held in Seoul during October.

The WIA was represented by David Wardlaw VK3ADW and Ron Henderson VK1RH.

The main topics covered at the Conference were:

1.Band Planning.
2.Packet Radio.
3. Future ITU Conferences. (Planning for and current action required)
4. Use of Amateur Bands in Region 3. (Concern was expressed as to the low usage of the WARC Bands)
5.Improvements in the IARU Constitution.
6.EMC
7.Amateur Satellites.
8.Finances.

A comprehensive report of the Seoul Conference is contained in "Amateur Radio" December 1988 and January 1989.

At last year's Federal Convention it was suggested by Executive that a three man team should represent the WIA at the Region 3 Association Conference in Seoul. However, the council felt that 2 would be adequate. On arrival in Seoul the WIA Delegates found that the other major Societies were represented by at least 3; in fact there were 5 from NZART.

As it happened there were 3 major working groups dealing with matters of vital importance to Australian Amateurs. Two of these groups were chaired by the WIA delegates. The fact that the working groups met simultaneously made it difficult to input Australian opinion into the third working group.

David Wardlaw VK3ADW has been appointed a Director of the IARU Region 3 Association for the next 3 years. He replaces Michael Owen VK3KI who is now living in England. Michael has been nominated as Vice-President of the IARU and will take office this year for a five year term. This is a great honor for the WIA, as Michael is a past Federal President of the WIA, whose association with the IARU goes back many years having been a Director of the IARU Region 3 Association since 1971.

While on a trip to Europe, David Wardlaw VK3ADW was able to represent the WIA at the RSGB. 75th Anniversary celebrations and also participate in several international discussion groups.

With the approach of a possible WARC in 1992, the coordination of proposals and effort by member societies, by the IARU will become of utmost importance.

David Wardlaw VK3ADW
IARU Liaison Officer

Report of Federal Technical Advisory Committee for Year Ending 31st December, 1988

Strong Points.

FTAC has continued to be active in matters technical. Two newsletters have been issued, one in 1988 and one recently. FTAC was also involved in preparation of papers for the WIA delegation to the IARU Region 3 Conference in Seoul in October 1988.

Band planning activities have included seeking agreement to a 14 MHz packet proposal for IARU Region 3 and revision of the Australian band plans post Seoul. A motion to adopt the revised plans, as published in January 1989 AR, has been prepared for this Convention.

A beacon listing, incorporating revisions from VK1, VK2 and VK4, was published in the February 1989 AR and placed on the WIA bulletin board. A motion has been prepared for this Convention concerning a change of frequencies and operating modes for the 28 MHz beacons following Seoul 1988.

FTAC has been busy with site compatibility problems for amateur repeaters which share busy communications sites with many other services. FTAC predicts this work will increase in volume in years to come. The repeater listing, which also incorporated revisions from VK1, VK2 and VK4, was published in February 1989 AR and placed on the WIA bulletin board. FTAC notes and supports a motion before this Convention on repeater technical standards and siting considerations.

In addition to the 14 MHz packet frequency matter noted above, FTAC has completed another packet radio paper and submitted it to this Convention. This second paper does not set out to be prescriptive but rather aims to establish guidelines whereby data mode operators can develop their modes and peacefully co-exist with fellow amateurs. FTAC prefers to let the experts get on with their experimenting and development, offering its services only should co-ordination be required or problems need resolution.

During the year some 5 VHF/UHF record claims were processed and the current Australian records published in February 1989 AR. Two record claims remain outstanding awaiting further information. A new method of calculating record distances, adopted by Region 3 at Seoul 1988, is being evaluated for possible adoption by the WIA.

Problems.

The biggest problem that has faced FTAC for two years now, is apparent inactivity on the part of those who have undertaken, at Federal Conventions, to resolve or finalise matters associated with the 1296 MHz band plan and with pager interference. The first matter is proving embarrassing for we are not yet able to advise DOTC of confirmation of the bandplan adopted, subject to compatibility tests, a year ago. On the second issue tests, with repeater inputs/outputs reversed above 147 MHz, have not yet been reported to

FTAC. Indeed, it appears as though FTAC will be associated with those tests as a result of site compatibility problems at Goulburn.

Few replies have been received to FTAC correspondence and little information has been volunteered, making it difficult for FTAC to operate in a vacuum.

FTAC has been in existence for several years now and it is opportune to revise its structure and modus operandi. This action has been accelerated by the recent resignation of Ray Roche, VK1ZJR, as FTAC Chairman. Experience has shown more effective communications can be achieved through Divisional Federal Councillors rather than direct to Divisional TAC reps. FTAC also believes its panel of technical experts needs to be more dynamic, changing to complement the changing demands upon it as the needs arise.

Summary of the Year

The year just gone by has been one in which FTAC has brought a number of matters to finality and hopefully several remaining long drawn out actions can also be completed soon.

Recommendations

It is recommended:

FTAC adopt the method of record distance calculations adopted by Region 3 at Seoul 1988 if it proves to have adequate accuracy.

FTAC be restructured to be a corresponding committee of invited technical experts, let by a co-ordinator. All dealings with Divisions being through their Federal Councillors in the first instance, rather than directed to designated persons.

FTAC commend to the Federal Council three FTAC initiated motions appearing elsewhere upon the agenda. They are concerned with revised Australian band plans, 28MHz beacon planning and packet radio guidelines. FTAC also endorses the VK1 motion concerned with repeater technical standards and site engineering.

Federal Technical
Advisory Committee.

ar

Report of Federal WICEN Coordinator for Year Ending 31st December 1988

Achievements

The high point of WICEN activities during 1988 was the increased involvement in Bicentenary Celebration Activities. There was one national exercise involving most States and a number of State exercises of greater scale than is normally conducted by Divisional WICEN organisations.

Liaison has been effected between NDO and WICEN, and also with the Australian Traffic Network following a visit to the Federal Office by an ATN officer, who saw a need for WICEN and ATN to become closer related. The matter was pursued at a second meeting. However, the objectives or reasons for existence of each organisation are so different I am unable to recommend any formal linking. This does not preclude operators belonging to both organisations. In the course of discussion I made the point that the trained WICEN operator generally does not wish to be committed each evening to traffic handling, and his involvement was more in a surge capacity during the early phases of a natural disaster.

I do not believe the differing procedures are a handicap should someone wish to be involved in both groups.

I assisted the ATN to seek the loan of a portable 2 metre repeater for potential deployment to Armenia. The matter of WICEN operators going overseas to assist with disaster communications is one for agreement between the requesting authority, the Divisional WICEN group, and the individual. I have strong personal reservations on chasing after disasters, particularly overseas, firmly believing that the amateur involvement occurs during the onset phase and is soon eclipsed by the regular communicators. I welcome WIA guidance in this matter.

I have regularly commented that to volunteer a capability that is patently not achievable does little for the credibility of the Amateur Service. Sadly, this point is frequently not realised.

Problems

Two problems are worth raising. Neither is new and both regularly recur. The first relates to obtaining clear WICEN frequencies, and the second is concerned with the relationships between WICEN groups and their Divisions.

At least one other nation's amateur emergency communications organisation has nominated calling frequencies just inside the top edge of each band. Should we adopt this approach we would exclude many of our novice operators. I do not think DOTC would be amenable, in the current climate, to granting a concession to novices for training exercises. Disaster situations are, of course, a different matter. However, we must be able to train as we operate.

Perhaps a solution available to us is to make greater use of distinctive callsigns in the WIA - WIZ series, although DOTC's recent callsign issuing policy changes have not helped this approach.

On the second problem, I have been recommending for some years that WICEN groups seek clear and unambiguous terms of reference, and the current situation merely reinforces that advice.

Summary of Year

The year gone by has been, for WICEN, a busy and satisfying one. Let us keep up the service but at a stable and achievable rate.

I have been Federal WICEN Co-ordinator for a number of years and believe, with my other WIA commitments, I should now stand down.

Recommendations

It is recommended WICEN groups adopt a policy of not normally loaning their equipment for use outside Australia.

R.G. Henderson, VK1RH
Federal WICEN Coordinator

ar

Provisional Microwave Bandplans Revision.

The January 1989 issue of AR contained an article "Proposed Revised Australian Band Plans" prepared by FTAC. Two beacon matters in that article require clarification:

1. Firstly, the 28MHz beacon segment is 28.2 to 28.3 MHz for existing beacons, to be cleared by 1 January 1990 when a new segment 28.19 to 28.20 MHz takes its place. This new beacon segment will accommodate a world wide time shared frequency (28.19 MHz) plus a number of regional time shared frequencies. It is reasonable to expect that Australasia will be allocated one of those frequencies.

2. Australian microwave experimenters have recommended the narrow band modes beacon segment be shifted marginally to become 10368.00 to 10368.40 MHz. Both these points will be included in the Proposed Revised Australian Band Plans. Federal Convention Agenda item 89.09.01, to be considered by the Federal Council in April, 1989.

Report of Federal Contest Manager for Year Ending 31st December, 1988

Both of the wide spectrum contests, the John Moyle Memorial Contest and the Remembrance Day Contest, enjoy wide support. However, problems exist with the Ross Hull Memorial Contest and, despite attempts over many years to attract those who do participate to send in a log, the actual response is very disappointing.

During 1988 a determined effort was made to eliminate some bottlenecks that had, in the past, caused delays in the issue of contest certificates to those who had earned them. With the system that is now in place, and with the typesetting facility available at the Executive Office, all certificates should be delivered shortly after the contest results are known.

The standard of logs continues to improve and this makes the adjudication much easier. A small number of amateurs, however, still submit logs that are written with soft black lead pencils which, when handled many times in the checking process, become very difficult to read.

I am concerned about the provision in the Disqualification Criteria that precludes an amateur who has had a contest entry disqualified for any reason from participating in the contest the following year. This, I think, is a rather draconian measure that, in my opinion, could deter many amateurs from joining in any contest. The disqualification of an amateur from any contest is in itself sufficient punishment and I do not think that any bar should be placed on future contest activity.

During late January, 1989, I ran a trial VHF/UHF Field Day Contest in order to gauge the response from the VHF fraternity for such a contest. The rules were similar to those used in successful ARRL and RSGB contests. As results are still coming in, it is too early yet to report with details of the activity generated etc. This action was taken to see if a VHF only National Field Day Contest could become popular. If so, the Ross Hull Memorial Contest could then become a UHF only contest held over a much longer period.

Contest Reports:

Ross Hull Memorial Contest

This contest, with the annual reduction in entries that appear on the contest manager's desk, remains a disappointment. The number of valid entries will be reduced again due to the action of some amateurs who operated stations in a portion of the six metre band prohibited during television transmitting hours. Over many years, almost every conceivable rule has been tried in endeavours to raise the participation level, and yet this contest, which generates quite a lot of activity, still does not produce logs on the contest manager's desk. Like my predecessor, I strongly recommend that this contest be dropped in its present form and, in order to perpetuate the aims of Ross Hull, the contest be changed to a UHF only contest held over a whole summer season with scoring on a mileage/band system.

John Moyle Memorial Contest

This contest remains very popular and, with the running of the NZART Field Day Contest over the same weekend, has generated more activity. Some small points, not obvious when the rules were changed for the first of the contests, are being ironed out. The repeat contact has caused concern in the western parts of Australia with many amateurs expressing disappointment at not enjoying the almost continuous propagation paths to ZL by the eastern VK states.

Novice Contest

The Novice Contest does not generate the activity that it deserves and the number of novice licence holders that participate is disappointing, they being in the minority of logs received. To attract more entries from Novice stations, certificates are to be awarded to the leading Novice stations on a state by state basis in addition to the overall section winners.

I do not recommend that any changes be made to the rules of this contest in order to acknowledge the use of a portion of the 2 metre band by novice stations.

Remembrance Day Contest

This contest is very successful and continues to be the most popular Australian contest with entrants in all sections showing wide acceptance. The return of the "open" section has received support and favourable comments from those who entered this section. It is interesting to note that some 160 entries resulted from the VHF section of this contest and yet in the Ross Hull Contest the number of valid entries could be counted on two hands. The VHF section in the John Moyle Field Day Contest also generates a healthy number of VHF logs. One could be forgiven for thinking that the VHF only amateurs are just not interested in contest activities.

Recommendations

1.That the Ross Hull Memorial Contest be discontinued and replaced by a new UHF only contest, this new Ross Hull Contest to be run over a longer period during the summer season.

2.That the WIA approve the running of a VHF/UHF Field Day Contest to be held during the summer season.

3.Contest Disqualification Criteria: That the paragraph .."if a participant is disqualified under these aforementioned provisions that operator will be barred from entering the contest for that particular mode in the ensuing year".. be removed.

C.F. Beech, VK7BC
Federal Contest Manager.

Report of Federal Tape Co-ordinators for Year Ended 31st December 1988

During 1988 both Ron and I attempted to meet the aim of the Federal Tapes in providing news and comments from the Executive Office of the WIA for dissemination on weekly Divisional News broadcasts.

During the year we were able to change from 4 news segments on each tape, to 2 segments per tape, thereby giving some more immediacy to the news.

Constructive criticisms were received from several sources during the year, and I believe the improvement in the content of the tapes reflects these comments.

Also during 1988 the recording and duplication of the tapes changed from the home and equipment of Ron, to the location of the Executive Office using WIA equipment.

Different Divisions obviously have differing time requirements in their broadcasts. Some Divisions state they would like longer news segments, and others maintain that they have to edit the tapes because they are too long. On occasions the Federal Tape segment was not included in Divisional broadcasts without any explanation being given to the listeners.

Random monitoring of the Divisional news broadcasts by both Ron and I clearly showed a marked difference in quality of replay of the Federal Tape from Division to Division. The tapes are checked for consistent quality before being despatched from the Executive Office.

Preparation of the material for a 2 news segment tape averages 5 man-hours; the recording a total of another man-hour; and duplication of the tapes and despatch about another 2 man-hours.

Both Ron and I would like to thank those volunteer Divisional broadcast announc-

ers and engineers who helped us so ably in presenting news from the Executive Office of the WIA to the amateurs of Australia. The comprehensiveness of the Divisional news broadcasts gives Australian amateurs a news service which is unequalled in coverage anywhere else in the world.

If invited, both Ron and I are prepared to continue as the Federal Tape Co-ordinators for the next 12 months.

Bill Roper VK3ARZ, on behalf of the Federal Tape Co-ordinators Ron Fisher, VK3OM, and Bill Roper, VK3ARZ

Report by Education Co-ordinator for 1988

This has been a busy but frustrating year. In addition to the routine activities, some extra work has been generated by the extension of 2 metre FM privileges to Novices, and the Study Guide for AOCP/AOLCP is well in hand.

The main problem has been the continuing uncertainty about examination devolvement and the difficulty in getting information and projected dates from DOTC.

Recommendations

1. That standard examination procedures and protocol be established.
2. That all bodies intending to seek accreditation become part of a nationwide network to share the anticipated workload.
3. That the Federal body, with assistance, arrange to inspect the question banks before their release.
4. That the Executive prepare a bank of approved examination materials.
5. That a register be established of all bodies that gain accreditation and their proposed examination schedules.

My thanks go to all who have helped with education matters this year.

Brenda M. Edmonds VK3KT
Federal Education Co-ordinator.

FARWP II Report - 1988

As Chairman of FARWP II, I have to report that while little has been done in the name of this Working Party, a lot of effort has been put into presenting the first proposal for a future structure of the WIA, a copy of which has by now been circulated for discussion.

The year started very slowly with only three nominations for members to serve. Loads of information from Divisions have not been forthcoming, but I wish to thank John Aarsse and VK4 Division, and Neil Penfold for forwarding material from Peter Parker, VK6BWI.

Revision of the licensing structure has to await the outcome of an ITU review of the requirement for CW on HF. In August 1988 I forewarned of a meeting of the World Administrative Telephony & Telegraphy Conference (WATTC) held in Melbourne in November and December 1988. We appear to have received no public information as to whether CW on HF was an agenda item, and if so, what had happened.

Examination of the effect of the Australia/Japan agreement was delayed until receipt of a copy of the agreement in December 1988. This matter is pending.

I received no response or information from outside the ACT for examples of fee structures for licences being renewed for more than a year at a time. I finally made my own enquiries and found that while there is a readiness to accept a multiple of an annual drivers licence fee, there is no discount offered in the ACT or NSW. Accordingly, there is little to be gained in pressing for renewals in excess of one year unless DOTC is itself willing to accept such multiple fees.

However the major task facing all of us will be the introduction of a new structure. That will not be just a matter for FARWP II, but for the whole membership.

George Brzostowski,
VK1GB/VK4UZ
Chairman FARWP II

Report of Federal Awards Manager

October to December 1988

I took over from Ken VK5AKH in October 1988, so this report will be brief. Federal Executive has paid tribute to Ken's work and I thoroughly concur in those sentiments.

The WAVKCA Award continues to be the most popular WIA award, particularly with overseas amateurs. Some distance behind is the WIA DXCC Award, with most claimants being VKs.

My recent appointment to certify claims for the ARRL Worked All States Award for VK applicants is a new service to WIA members, some of whom have already made use of it. I expect Federal Council to approve the new WIA Antarctic Award and to announce details of it in the June issue of AR. Subject to Federal Council approval, I plan to introduce a new VK HF award based on grid square numbers during 1989.

Also underway is a survey of existing awards issued by VK clubs, zones and divisions. The last tally of these published was in the 1985-86 Call Book and I suspect that some may be defunct, while other awards have since come into being. Award managers around Australia may expect to hear from me soon.

I am recommending increases in award charges to Federal Council - the first for many years at a time when postal charges continually rise. At present overseas amateurs can obtain the WAVKCA for US$2, making it one of the lowest-priced amateur awards in the world.

Ken Gott VK3AJU
Federal Awards Manager

ANNUAL REPORT OF THE GENERAL MANAGER & SECRETARY FOR YEAR ENDING 31ST DECEMBER 1988

When I commenced as General Manager & Secretary early in May 1988 the Executive Office was in a mess with, amongst other things, inadequate equipment and resources, a deficient filing system, and correspondence and other items (dating back for up to 4 years) requiring attention.

The Executive Office now has the back log of work up-to-date (with some notable exceptions, due to lack of resources, such as the 4 year backlog of Contest Trophies, and a total absence of promotional material), a minimum level of office equipment installed, computerised accounting and database systems in place, and a filing system that works.

Some of the major achievements of the Executive Office during the year include:-

Development of the accounting and financial management systems on computer.

Setting up procedures and systems to enable professional handling of correspondence, meeting minutes, telephone calls and management reporting.

Sorting out and transferring of the Federal MagPubs operation to the VK2 Division.

Negotiation of an arrangement for overseas publications to be supplied at a substantial discount from an Australian book importer direct to Divisional Bookshops.

Development, implementation and processing of the Members Survey.

Publishing of the 1988 Call Book (the hundreds of hours of unnecessary work caused, and still being caused, by the inaccuracies and inadequacies of the DOTC callsign database must be beyond the comprehension of anybody not working in the Executive Office!).

Establishment of new production procedures to publish Amateur Radio magazine.

Substantial improvement in the processing of Customs Bylaw Certification with equipment importers.

Some indication of the workload of the Executive Office may be gleaned from the following calculated annual statistics:

Incoming mail items (including members subscriptions)	17,500
Outgoing mail items (including members subscriptions)	15,000
Incoming telephone calls	5,540
Outward telephone calls	3,020
Photocopies	56,300

Staffing of the Executive Office has varried during the year, and currently consists of:

Paid Employees

General Manager	Bill Roper 40 hrs pw
Assistant General Manager	Ross Burstal 40 hrs pw
Membership Secretary	Helen Wageningen 28 hrs pw
Accounts/Mail Clerk	June Fox 25 hrs pw
Secretary/Advertising	Ann McCurdy 20 hrs pw
Cromemco computer maintenance	Earl Russell 6 hrs pw

Volunteer Workers

General Manager	Bill Roper 40 hrs pw
Assistant General Manager	Ross Burstal 15 hrs pw
Librarian	Ron Fisher 6 hrs pw

Major problems in the Executive Office at present include:–

Insufficient human resources to handle the present work load on behalf of Divisions.

Inconsistency between Divisions in the way they expect the Executive Office to perform work on their behalf.

Inadequacy of the office itself (eg. poor lighting, inefficient airconditioning, lack of space).

Limitations of the Cromemco membership database computer and our dependence on one person for systems maintenance.

Unreliability of dealings with some of the volunteer WIA office bearers.

As from the conclusion of the 1989 Federal Convention, the Assistant General Manager and I will be reducing our volunteer labour from the present comined 55 hours per week to a maximum of 15 hours per week. This means that the Executive Office will cease to function at its present level of efficiency unless appropriate steps are taken by the Federal Council.

This Office exists mainly as a vehicle created by the Divisions to provide those member services, such as Amateur Radio magazine, the Call Book, and membership fee processing, which can be most cost efficiently carried out on behalf of the Divisions by a central body.

The Divisions must either:–

1. Provide funding to employ sufficient staff in the Executive Officer to hand the workload on their behalf; or

2. Resume at Divisional level many of the tasks presently being handled on their behalf by the Executive Office.

I have enjoyed the impossible challenges of this position over the past 11 months. I passionately believe in the hobby of amateur radio, and am irrevocably committed to the belief that a viable, professional WIA is essential to the future of our hobby in Australia.

I would like to thank the Executive Office staff, those Divisional office bearers with whom I am in regular contact, the many members from all Divisions who have given me encouragement, and particularly the Federal President, Peter Gamble, for the support given to me during my time in this position.

Bill Roper, VK3ARZ,
General Manager & Secretary

ar

Report of Federal QSL Manager for Year Ending 31st December 1988

The Bureau operated during 1988, clearing the usual load of incoming VK9/VK0 cards. This report can only repeat previous year's reports, such as no help from DOTC, or the operators. Neither will tell me their home callsigns.

Nevertheless, we struggle on.

Incoming cards from world-wide sources indicate a pirate operator using VKOE. He has been worked by amateurs world-wide, except VK. DOTC have been informed, but I don't expect success in his apprehension. VK6CE was a pirate operator for over 15 years, and DOTC simply placed a "do not issue" flag in the Callsign Register. He eventually gave up his pirate operations and just disappeared. Might have obtained his callsign legally.

DOTC have advised that the figure and first following letter of callsign will no longer have any significance in relation to geographic areas. This could lead to some confusion in the future and make the Bureaux operations somewhat difficult.

Neil Penfold VK6NE
Federal QSL Bureau Manager

ar

Report of Federal Coordinator International Travel Host Exchange for the Year Ending 31st December 1988

The ITHE is a voluntary scheme administered by the ARRL wherein interested radio amateurs are able to meet or host fellow operators from other countries. This is a free service. Several participants reported successful encounters "of the ITHE kind".

After a promising start in 1987, there has only been a slight increase in local membership (five participants) in the ITHE programme. The total Australian membership is about 25. Countries with larger amateur populations have fewer ITHE participants, but that is no cause for complacency. Continued publicity at suitable intervals should improve the situation. It may be worthwhile mentioning the scheme and perhaps a list of participants in the next Call Book.

Ash Nallawalla ZL4LM/VK3CIT
Federal ITHE Co-ordinator

ar

Report of Intruder Watch Co-ordinator for 1988

1988 saw, after many years of complaints, the removal of Radio Beijing, Peoples' Republic of China, from the 40 metre Amateur band. Congratulations to all Intruder Watches around the world for this achievement.

Hopefully, 1989 may see a reduction in the number of Asian non-Amateur signals on the 28 MHz band, with the help of the listening amateur.

10,752 intrusions were reported for 1988, an increase of 5,267 on 1987, but these were mainly reports of the 28 MHz problem.

611 logs of complaints of intrusions were received for the year. VK4 continues to be the best supporter of the IW.

The Intruder Watch "Certificate of Merit" was awarded to:

Don Cross,	VK2EYI	Certificate No. 019
Jack Barnett,	VK4BXC	Certificate No. 020
Ken Hanby,	VK4IS	Certificate No. 021
Graham Rogers,	VK6RO	Certificate No. 022

Congratulations for a job well done.

The IW looks forward to more people registering complaints of intrusions into the Amateur bands in 1989, and we welcome the new Federal Co-ordinator, Bill Horner, VK4MWZ. Good luck, Bill. Please support the Intruder Watch and help to keep the incidence of intrusions into our bands to a minimum.

Bill Martin VK2COP
(Retiring) Intruder Watch
Co-Ordinator.

ar

Annual Report on Electro Magnetic Compatibility for Year Ending 31st December 1988

11 monthly EMC Reports were published in Amateur Radio magazine during 1988, covering aabout 22.6 printed pages.

Considerable translating work was involved, dealing with West German publications. This work was considered to be necessary, because no other country seems to have a "Special Law" on "Amateur Radio" - pre-empting common law - spelling out clearly the duties and rights of the radio amateur. The DARC also has excellent, technically competent, support from professionally equipped members like DL1BU, the honorary technical officer. The importance is understood, if one reads the VE3BBM report on the Jack Ravenscroft case (copy submitted to VK3ABP on 10th January, 1989). The EMC problems and solutions are the same the world over, if treated logically.

Material for further EMC Reports has been submitted to the Editor of Amateur Radio for 1989.

Hans F. Ruckert VK2AOU
Federal EMC Co-ordinator

Long Time Between QSOs for Two Old Timers

Norman Hart VK4KO and Tadashi Okyuama JA1KFN made their first contact in 1934. But they had to wait 55 years for their next QSO.

It appeared to be a routine CW contact on 14 MHz on November 25, 1988, when Norman, aged 80, chatted with 85-year old Tadashi.

After the contact Tadashi checked his records and found Norman's old QSL card confirming their first QSO on November 10, 1934, using phone (AM) on the 7MHz band.

He sent Norman a photocopy of the QSL along with a Christmas Card. "I thought it was remarkable and he must have a very good record of his QSOs. I have written off to thank him," Norman said.

The log of VK4KO has some 68,000 contacts since Norman obtained his licence in 1931.

Norman and Tadashi were young men setting out on a life-time involvement in the hobby of amateur radio when they first met on air.

Now both old timers they're able to renew that friendship which is only possible through the world's best hobby.

Norman Hart HK4KO reminisces over a 1934 contact he had with Tadashi Okyuama JA1KFN. (Picture courtesy Queensland Times).

AGENDA ITEMS FOR 1989 FEDERAL CONVENTION

AGENDA No. 89.09.01

Proposed by FTAC

MOTION THAT .....

The Federal Council adopt the revised Australian Band Plans as published in January 1989 issue of Amateur Radio magazine on pages 22,23, and 24.

PROPOSER'S COMMENTS.....

Following the IARU Region 3 conference in Seoul during October 1988, where the Region's band plans were revised and adopted, FTAC revised all Australian band plans.

The Region 3 band plans, together with the revised proposed Australian band plans, were published in January 1989 issue of Amateur Radio magazine. The current Australian band plans (arising from the IARU Region 3 Conference in Auckland during 1985) were published in the data section of February 1989 issue of Amateur Radio Magazine.

The diagram on page 22 of January, 1989 Amateur Radio Magazine does not clearly delineate the proposed and current 28MHz beacon bands.

The current beacon band 28.20 to 28.30 MHz changes on 1st January, 1990 to 28.19 to 28.20 MHz and becomes a time multiplexed frequency shared service. One frequency will be allocated for a world wide service like the existing 14.100 MHz North California DX Foundation (NCDXF) beacons. Australia should anticipate one time slot on this frequency. The remaining frequencies will be allocated on a continental basis. Again, Australia should anticipate one Australasian (including New Zealand?) frequency to be time shared by up to ten beacons around our area. The NCDXF beacon controllers sequence beacons for one minute transmitting time intervals throughout a ten minute cycle. A further sophistication steps the radiated power in 10dB steps during each radiating minute.

AGENDA No. 89.09.02

Proposed by Executive

MOTION THAT.....

The Federal Council:–

ENDORSE the spectrum allocation proposals adopted by IARU Region 3 at Seoul 1988, to which the WIA contributed significantly through its detailed guidance arising from the 1988 Federal Convention.

ENDORSE the proposal that the WIA follow IARU Region 3 guidance in its approach to the national authorities for less onerous third party traffic operating conditions.

ENDORSE WIA involvement in the Australian Preparatory Group considerations for ITU Conferences and Meetings through the accreditation of one or more competent amateurs to that body, noting the associated internal travel expenses resulting during the period up to WARC 92.

DIRECT/ENCOURAGE amateur members of the APG to influence that body's support of amateur proposals advanced by other administrations.

ENDORSE the WIA proposal to seek inclusion of one or more competent amateur members on the Australian delegation to ITU Conferences or Meetings at which amateur matters are included on their agendas, NOTING this will be confined to WARC 92 in the first instance and that initial negotiations will aim to seek government funding of all or part of the delegates travel expenses.

ENDORSE the creation of an amateur radio movement WARC 92 fund, managed by the WIA, and tasked to generate $15,000 by the end of 1992.

ENDORSE the concept of cultivating the awareness of key persons involved in ITU affairs and NOTE that briefings must be co-ordinated and given in a professional manner.

DIRECT those WIA members involved in APG representation to keep the Secretary of Region 3 fully informed of national preparations,

NOTING any requirements to maintain such confidentialities as APG involvement incurs.

ENDORSE the continued involvement of WIA members in national CCIR preparations, NOTING this may place a significant workload upon a few volunteers.

PROPOSER'S COMMENTS.....

The Federal Council, at the 1988 Federal Convention, adopted guidelines on planning for WARC 92. These were represented as the WIA position at the IARU Region 3 Conference in Seoul during October 1988. Following that conference the WIA's IARU Liaison Officers produced the paper "Planning for WARC 1992". That paper was published in March 1989 issue of Amateur Radio magazine, to which reference should be made for the complete text.

AGENDA No. 89.09.03

Proposed by FTAC

MOTION THAT.....

The Federal Council:-

ENDORSE the changes made to the Australian band plans to update them and to accommodate the increasing demands for data mode spectrum.

ENDORSE the proposal that the WIA follow IARU Region 3 guidance in its approach to the national authorities for less onerous third party traffic operating conditions.

NOTE the areas of technology identified by IARU Region 3 for consideration in the development of packet and ENCOURAGE their pursuit by Australian enthusiasts.

ENDORSE the concept of one general purpose VHF/UHF bulletin board together with one or more special purpose limited topic boards in major cities.

ENDORSE the concept of limiting the number of HF bulletin boards to the minimum number necessary, taking as guidance one in each geographically smaller state and two in larger states.

ENDORSE the concept of a SYSOPS Code of Ethics and ENCOURAGE the active HF SYSOPS to complete that Code.

NOTE the desirability of retaining simple access to packet networks using unsophisticated stations with interfacing as necessary to permit use of most network facilities, and OBSERVE that parallel development can proceed and access to more facilities and faster systems operations will be an inducement for newcomers to upgrade their stations.

PROPOSER'S COMMENTS.....

In responding to directions from the 1987 and 1988 Federal Conventions, and taking note of the IARU Region 3 Conference in Seoul during October 1988, FTAC has produced a "WIA 1989 Packet Radio Position Paper". That paper was published in March 1989 issue of Amateur Radio magazine, to which reference should be made for the complete text.

AGENDA No. 89.09.03

Proposed by FTAC

MOTION THAT.....

The Federal Council:-

ENDORSE the changes made to the Australian band plans to update them and to accommodate the increasing demands for data mode spectrum.

ENDORSE the proposal that the WIA follow IARU Region 3 guidance in its approach to the national authorities for less onerous third party traffic operating conditions.

NOTE the areas of technology identified by IARU Region 3 for consideration in the development of packet and ENCOURAGE their pursuit by Australian enthusiasts.

ENDORSE the concept of one general purpose VHF/UHF bulletin board together with one or more special purpose limited topic boards in major cities.

ENDORSE the concept of limiting the number of HF bulletin boards to the minimum number necessary, taking as guidance one in each geographically smaller state and two in larger states.

ENDORSE the concept of a SYSOPS Code of Ethics and ENCOURAGE the active HF SYSOPS to complete that Code.

NOTE the desirability of retaining simple access to packet networks using unsophisticated stations with interfacing as necessary to permit use of most network facilities, and OBSERVE that parallel development can proceed and access to more facilities and faster systems operations will be an inducement for newcomers to upgrade their stations.

PROPOSER'S COMMENTS.....

In responding to directions from the 1987 and 1988 Federal Conventions, and taking note of the IARU Region 3 Conference in Seoul during October 1988, FTAC has produced a "WIA 1989 Packet Radio Position Paper". That paper was published in March 1989 issue of Amateur Radio magazine, to which reference should be made for the complete text.

AGENDA No. 89.09.04

Proposed by Executive

MOTION THAT.....

The Federal Council:–

CONFIRMS ITU Day, 17th May, as the annual special activity day for Australian radio amateurs;

ENCOURAGES Australian radio amateurs to make a particular effort to be active on that day; and

ENCOURAGES official Divisional stations to make use of the special ITU suffix which is available for their use annually on that day.

PROPOSER'S COMMENTS.....

The WIA, at the IARU Region 3 Conference in Seoul during October, 1988, proposed the following:

"ITU Day, 17th May each year, also be re-designated World Radio Amateurs Day – ITU Day, with all IARU member societies making an effort to increase amateur radio activity through use of special event stations, callsigns, QSL's and awards as appropriate."

Conference considerations showed some nations used World Radio Amateurs Day (18th April) whilst others were not aware of either! The motion was withdrawn as it appeared to be a decision of free national choice. Consequently, this proposal is made for the WIA. In support of the proposal, we have continuing use of the ITU suffix annually by official Divisional stations, and the alternative date (18th April) clashes with a world wide magazine sponsored contest.

AGENDA No. 89.09.05

Proposed by FTAC

MOTION THAT.....

1. The Australian 28 MHz beacons change frequency to comply with the recently adopted IARU Region 3 band plan and their mode of operation change to single frequency time sharing with stepped power output levels.

2. FTAC is directed to negotiate frequency allocations with the International Beacon Co-ordinator and publicise details of control circuits.

3. The changeover is to commence from 1st January, 1990, and be completed within twelve months.

PROPOSER'S COMMENTS.....

The WIA Beacons paper, adopted by the 1987 Federal Convention, proposes a 28 MHz beacon scheme based upon the IARU proposals adopted by Region 3 at Auckland, 1985, and by the other regions in following years. The IARU Region 3 band plan, revised and adopted at Seoul 1988, makes provision for a series of time sharing common frequency beacons between 28.19 and 28.20 MHz replacing the existing segment 28.2 to 28.3 MHz from 1st January, 1990. A worldwide frequency and several separate continental frequencies are proposed. Australia will need to co-ordinate frequencies with the International Beacon Co-ordinator and advise DOTC of his recommendations. As each beacon will require an accurate clock controller to control the times of its transmission and stepped emitted power levels, the need arises to publicise the design of such a unit. These actions are obviously ones for FTAC.

AGENDA No. 89.09.06

Proposed by VK2

MOTION THAT .....

The 2M beacon sub-band be moved from 144.4 – 144.6 MHz to 147.8 — 148.0 MHz.

PROPOSER'S COMMENTS.....

Repeaters operating with inputs at the top of the 2M band are suffering heavy interference from paging transmitters. This interference is likely to worsen as further paging transmitters are installed.

As beacons are "transmit only" devices, they will not suffer from interference from pagers and their re-location to the top of the 2M band would provide a guard band between repeater inputs and the pagers.

The band segment 144.4 to 144.6 MHz could form part of a new repeater sub-band.

AGENDA No. 89.09.07

Proposed by VK2

MOTION THAT.....

A new repeater sub-band be created below 145.7 MHz.

PROPOSER'S COMMENTS.....

The existing 2M bandplan provides 31 channels between 146 MHz and 147.975 MHz. This is insufficient for high-density areas. In addition, the widespread introduction of paging transmitters in the 148–150 MHz band is resulting in 147 MHz frequencies not being useable in some areas.

As paging transmitters become more widespread, channels 7025 through 7375 will become less useable. This will increase the pressure on channels 6625 through 7000.

The band segment below 145.7 MHz appears to be less used than the 146–148 MHz segment and it is possible that a new repeater sub-band could be created, without significantly affecting existing simplex usage.

AGENDA No. 89.09.08

Proposed by Executive

The Wireless Institute of Australia, as part of a process to modernise its image, use the acronym "WIA" in lieu of "Wireless Institute of Australia" and "Institute" in normal, everyday reference to the organisation.

PROPOSER'S COMMENTS

Currently a number of forms of abbreviation have gained common usage when referring to the Wireless Institute of Australia. As part of a modernisation process it is proposed that, when new material is prepared (eg. letterheads, publications, etc.), the preferred term of reference be given prominence.

AGENDA No. 89.09.09

Proposed by Executive

MOTION THAT.....

The Federal Council agrees that the 80th Anniversary of the WIA be celebrated in a like manner to, but on a lesser scale than the 75th Anniversary, and directs that a committee be formed to prepare recommendations and a budget for approval by the Executive, and to implement them as appropriate.

PROPOSER'S COMMENTS.....

As part of the WIA's activities in striving for a higher profile, seeking cohesion and recruiting members, and in accordance with a proposal received from Jim Linton, VK3PC, it is proposed that the WIA should celebrate its 80th anniversary. This would not be on the scale of the 75th birthday celebrations, but would draw on some of the events and experiences of that activity.

The 75th birthday celebrations achieved a number of the above objectives at that time and it is suggested that a similar event, especially during a time of increasing sunspot activity and the lead up to the next WARC, would also achieve these objectives.

The following events are suggested as possibilities:–

1. Logo competition: members submit their ideas on a log for WIA 80.
2. Award: an award similar to the WIA 75 award with members exchanging their WIA membership numbers during contacts. The details would be handled by the WIA Awards Manager.
3. Membership certificates: special membership certificates with the WIA 80 logo be prepared for issue to members joining during the celebrations.
4. Call Book: a special feature to be made of the 1990 Call Book.
5. Membership drive: a recruiting drive be introduced with appropriate recognition of those members and clubs who introduce new members. Further, every 80th new member during the year receive their second year's membership free.
6. Special event: an event based on working 80 countries on HF. Various categories such as – Novices licensed less than three years; Novices open class; Full Call licencee who has not already attained DXCC; and a Full Call open class – would be a feature of this event.
7. Postcode competition: a national postcode competition with the requirement to work 80 postcodes.
8. WARC bands: a special competition to contact 80 stations on the 10 MHz and 24 MHz bands.

All of the above would need to be accompanied by appropriate media publicity about the WIA and amateur radio.

AGENDA No. 89.09.10

Proposed by VK1

MOTION THAT.....

The WIA resolve to:

Apply commercial principles and engineering practices in the planning, siting

and construction of its real time frequency shift repeaters;

Determine recommended specifications/ criteria for the planning and siting of repeaters providing coverage of local and regional service areas, (see attached draft); and

Obtain an assurance from the Department of Transport and Communications that:

The checks and tests applied to all amateur assignments be the same as those applied to a commercial assignment including the notification of potential intermodulation interference to or from other services;

Any amateur repeater given a "clean" assignment and configured in accord with the prevailing standards for the land mobile radio service be accorded the same level of protection from interference as would any other primary commercial service; and

Where necessary, for the purpose of commercial site management and planning, an amateur repeater may be requested to change its frequency subject to there being a suitable alternative frequency available and the cost of the change being equitably shared by the parties involved.

PROPOSER'S COMMENTS.....

Many amateur repeaters are for ease of site service engineering being co-sited with commercial services, some of which occupy adjacent frequencies. In these situations the amateur repeaters are to all intents and purposes just one more service, subject to the same constraints and problems as any other co-sited service.

With the widespread introduction of paging and land mobile services, many amateur repeaters have the potential to, or already, suffer interference in the form of adjacent channel and image interference, and/or unwanted, spurious and intermodulation products on the receive frequency. These sources of interference can be resolved, but the source mechanism determines the solution and could involve reassignment.

Amateur Repeaters have to date tended to be planned in accord with the amateur band plan without reference to adjacent services planned for and operating in adjoining bandspace. This absence of coordinated planning is starting to impact on amateur repeater services by limiting the number of "clean" assignments that can be made, creating problems of interference to existing amateur repeaters, and will culminate in the amateur service not being protected against interference from other services.

The Amateur Repeater Service is no different from the commercial land mobile service in terms of the technical constraints affecting its operation. The spectrum is a finite resource and as the demand for services increases, planning co-sited services becomes increasingly difficult. The Amateur Repeater Service must recognise the rightful presence of other commercial services and plan accordingly if it wishes to continue to receive the same levels of protection accorded to those services.

These comments have specifically addressed the problems associated with co-siting services. The benefits of minimising interference to and from other services cannot be stressed too strongly and all repeaters, regardless of their siting, should be designed and site engineered to "commercial" standards. The Amateur Repeater Service will receive the recognition and respect its performance commands: "professional" respect will accrue from a "professional" approach, amateur results are not competitive in the fierce realism of the commercial environment.

The impact of this on the repeater service would be:

Defining the service area of the repeater in terms of regional or local coverage and determining its technical operating conditions (including the site) accordingly; Accepting that repeaters co-sited with other frequency adjacent commercial services be treated as a "commercial" installation and configured as "local" service;

Accepting that repeaters which do not conform with their technical operating conditions and/or are not constructed to a commercial standard may have to be upgraded to the satisfaction of the investigating officer before action is taken to resolve an interference problem;

Accepting that some existing repeaters will have to be reassigned to avoid interference (either to or from other services) and enable more spectrum efficient use of the site;

Increasing application of Convention Resolution 87.12.01 which recognised the possibility of the Amateur Service in certain circumstances having to use low side receive for 2 metre repeaters above 147 MHz; and

Establishing the quality and integrity of the planning and operation of the Amateur Repeater Service and assuring the equity of interference resolution.

RECOMMENDED SPECIFICATIONS

1. Local Service:
   Receive Sensitivity: -116 dBm (.35 uV)
   Transmit Power: +40 dBm (10 W)
   Measured at the antenna port of the diplexer.

2. Regional Service:
   Receive Sensitivity: -120 dBm (.22 uV)
   Transmit Power: +43 dBm (20 W)
   Measured at the antenna port of the diplexer.

3. Recognised Service Area:
   Determined initially by the geographical area to be served but not to exceed the -110 dBm contour.

4. Frequency Re-use Radius:
   160 Km for local frequencies;
   200 Km for regional frequencies; and
   350 Km or 175 dB path loss for inverted repeater frequency.

5. Interference Sources:
   Intermod Products: +/- 20 MHz of Rx @ 30 kHz bandwidth;
   Harmonic Products: All Tx frequencies to Rx frequency; and
   Adjacent Services: >150 kHz (depending on adjacent Tx specs).

6. Technical Standards:
   Receiver Performance: Co-channel rejection ratio > 12 dB, all other spurious response rejection ratio > 70 dB, and intermodulation response > -35 dBm, as measured at the input to the receiver;

   Transmitter Performance: All spurious emissions > - 36 dBm measured at the output of the transmitter, and the intermodulation attenuation to be > 40 dB for any intermodulation component;
   (Refer MPT 1326 for standards and measurement methods)
   Antenna: Vertical Polarisation; Radiation Pattern and gain to suit defined service area.

AGENDA No. 89.10.01

Proposed by VK4

MOTION THAT.....

A grade of WIA membership, allowing for non-receipt of AMATEUR RADIO magazine, be investigated and that before any possible institution thereof, the issue is put before the membership of the WIA for their approval.

PROPOSER'S COMMENTS.....

It has become important that all facets of this situation be examined thoroughly. A significant number of enquiries for this option have been received in the past.

AGENDA No. 89.10.02

Proposed by Executive

MOTION THAT.....

The WIA investigate the feasibility of introducing a low cost grade of full privilege membership to those members who have supported the WIA with their membership for 25 years or more, and who are now in receipt of a full Social Security pension.

PROPOSER'S COMMENTS:

Almost without exception, the inquiries received at the Executive Office regarding a grade of membership without Amateur Radio magazine are made by pensioners who have supported the WIA for a long period of time, are now experiencing some financial difficulties, but want to continue to support the WIA in its fight for the future of the hobby of amateur radio.

The WIA should support these members, who have themselves supported the WIA for so many years, by offering continued full membership, including Amateur Radio magazine, at a substantially reduced fee.

AGENDA No. 89.10.03

Proposed by Executive

MOTION THAT.....

The Divisions reach agreement on uniform membership details and procedures, specifically in relation to the following items:-

1. Grades of membership.
2. Divisional component of annual membership fees.
3. Qualification for pension grade membership.
4. Qualification for student grade embership.
5. Qualification for Affiliated Club membership.
6. Response to membership enquiries received at the Executive Office.
7. Provision of new members details and fees to Executive Office.
8. Receipt of incorrect fees at Executive Office.
9. Response to new members by way of welcoming letter, membership certificate, advice of Divisional information, first copy of Amateur Radio magazine.
10. Member transfer to another Division.
11. Maximum delay allowable in renewing membership before member must reapply for a new membership.
12. Universal membership application form.

PROPOSER'S COMMENTS.....

Presently there is considerable lack of uniformity between Divisions in the grades of membership, the amount of the fees, and the procedures used. Not only does the credibility of the WIA suffer from such disparity between the seven Divisions, but there is considerable confusion throughout the WIA as to the proper procedures.

The efficiency of the Executive Officer is severely disadvantaged when forced to handle matters on behalf of the Divisions differently for each Division. This enforced inefficiency tends to nullify the advantages of a central processing operation for the Divisions.

AGENDA No. 89.10.04

Proposed by Executive

MOTION THAT.....

The WIA pay a commission equal to 10% of the advertising rate to financial members of the WIA who obtain new advertising, other than through advertising agencies, for Amateur Radio magazine; and that this commission also be payable if the new advertising is from the member of his business.

PROPOSER'S COMMENTS.....

Advertising in Amateur Radio is obtained almost entirely through the efforts of the Executive Office, with no help from the Divisions.

This incentive may motivate members, or even Divisions, to help in obtaining much needed additional advertising for Amateur Radio magazine.

AGENDA No. 89.10.05

Proposed by Executive

MOTION THAT.....

The WIA immediately introduce a financial incentive scheme whereby all radio clubs, affiliated with the WIA or not, will receive a commission from the WIA for each club member who joins the WIA as a new member.

PROPOSER'S COMMENTS.....

The majority of the much discussed recruiting schemes at the 1988 Federal Convention have never been put into effect, yet another consequence of the dearth of competent volunteers.

Radio clubs are the grass roots of amateur radio in Australia. Like all clubs, they need funds. This incentive scheme will mutually benefit the clubs and the WIA.

AGENDA No. 89.10.06

Proposed by Executive

MOTION THAT.....

The WIA immediately introduce a financial incentive scheme whereby all existing members of the WIA will receive a commission from the WIA for each new member they sign up.

PROPOSER'S COMMENTS.....

The majority of the much discussed recruiting schemes at the 1988 Federal Convention have never been put into effect, yet another consequence of the dearth of competent volunteers.

In our present materialistic society, cash incentives could be the only way to motivate members into successful recruitment activity.

AGENDA No. 89.10.07

Proposed by Executive

MOTION THAT.....

The Federal Council review the operation of MagPubs.

PROPOSER'S COMMENTS.....

The aim of MagPubs is to provide a service to members by ensuring:

That overseas books are readily available to members at a discount price.

That suitable WIA log books are available; and

That "specials" that might otherwise not get printed are available.

Additionally, it has been the practice to stock other items including car stickers, badges, windcheaters, ties etc.

A detailed "Report and Recommendations for the Revised Operation of MagPubs" was prepared by the then Acting Treasurer and presented to the 1988 Federal Convention. In an effort to devolve some of the workload of the Executive Office, the operation of MagPubs was devolved to the VK2 Division on 1st August 1988.

The Executive believes that it is appropriate to again review the operation of MagPubs.

89.10.08

Moved by Executive

Motion on WIA Management Changes

This Council;

NOTING the need to embrace modern service industry management practices in the WIA; and

NOTING the need to raise Divisional awareness and involvement in national matters; and

NOTING Council appointed for the first time a number of non-Melbourne based Executive members in 1988; and

NOTING Council did not provide adequate resources to permit those non-Melbourne Executive members to participate fully in WIA management; and

NOTING the employment of paid Officers has relieved Executive of much routine administrative action; and

NOTING the assigning of portfolios has achieved a fair degree of devolution of non or less immediate activities; and

NOTING the several levels of WIA management and their response times, viz;

.routine matters and members services, by the Executive Office and paid Officers on a daily basis;

- urgent reactions, decisions and negotiations by Melbourne based Executive on a daily to weekly basis;
- broader and more slow moving issues by full Executive on a quarterly basis;
- projects, special tasks and delegated routine operations by volunteer officers of the Executive on an annual basis;
- development and review of policy by the Federal Council annually at Federal Conventions; but,

NOTING the arrangements above only go part way towards achieving the dynamic form of management needed in these present times.

This Council:

RESOLVES to continue the appointment of a number of non-Melbourne based Executive members; and

RESOLVES to continue the management style achieved through use of portfolios for Executive members; and

RESOLVES to modify the management style to permit the WIA to respond more rapidly and to be pro-active; and,

RESOLVES to appoint a management oriented Councillor from each division to Executive in order to extend awareness of national issues into the Divisions and facilitate feedback of members opinions; and,

RESOLVES to hold quarterly full Executive meetings, designated Conventions under the Articles of Association; and,

RESOLVES to arrange activities into four management response groupings as follows;

- routine services by Executive Office staff on a daily basis;
- management responses and directions by the President's Advisory Group of Executive on a daily to weekly basis;
- policy development and review, together with review of major issues, on a quarterly basis by the full Executive meeting in Convention;
- projects, special tasks and routine operations devolved to volunteer Officers of Executive and reviewed annually or as required; and,

SETS UP the President's Advisory Group comprising President, Editor and Treasurer from Melbourne based members of Executive who are not Federal Councillors; augmented as necessary by co-opting Officers of Executive, both paid and volunteer, whose skills contribute to the matters at hand.

DIRECTS the President's Advisory Group to devise a program of work and Convention agenda which establishes this management style and eliminates unnecessary involvement in matters of detail by all concerned.

Proposers Comments:

For the pest two conventions the Council has wrestled with the future structure of the WIA. Because of the significant implications of any abrupt change in structure, the matter has been approached in a coordinated but incremental way.

Indications from the 1988 Convention led the Executive to conduct a Corporate Management Planning session. This intensive one day meeting has the guiding support from two marketing business planners. The outcome of this activity was the development of a mission statement for the WIA and the identification of some thirty key issues. These were assessed for their "Urgency" and their "Impact". This led to each issue being ascribed a priority.

A number of these key issues related to communication right across the WIA and the complicated existing management procedures, which lead to delays in the decision making process.

An examination of the issues identified will show that a number have been ana-

CONVENTION BUSINESS

lysed and solutions proposed in this motion. Further supporting detail can be found in the article "Why Corporate Plan" in the April issue of "Amateur Radio".

AGENDA No. 89.13.01

Proposed by Executive

MOTION THAT.....

The WIA introduce an Antarctic Award and that the Federal Awards Manager be requested to prepare a detailed set of rules and make arrangements for the preparation of a suitable certificate.

PROPOSER'S COMMENTS.....

This award would be established to encourage amateurs worldwide to contact the increasing number of amateurs located in the Antarctic continent. It would also commemorate the 75th anniversary of the first two-way radio contact between Antarctica and the rest of the world.

The first contact was on 21st February, 1913, when an exploration team lead by Australian geologist Douglas Mawson exchanged messages with a station set up on Macquarie Island some two years earlier. Two days later, on 23rd February, messages were sent from Mawson's base at Commonwealth Bay to the Governor-General of Australia via the Macquarie Island relay station.

Consequently, it is proposed that only QSO's, made after 0001 UTC, 23rd February, 1988, count towards this award. Further, Antarctica would be defined as the land mass (including islands) and permanent ice-shelf below latitude 60 degrees south. To claim the award, it is proposed that amateurs must have confirmed contacts with the ten amateur stations conducting valid operations in Antarctica and that this should include stations with prefixes from at least six different authorities. The general rules for WIA awards would apply.

It is appropriate that Australia sponsor this award because of the long association that Australia has had with the Antarctic area.

Richard Butler to Retire

A key figure in the International Telecommunications Union, Richard Butler, has announced his decision to step down as ITU Secretary-General.

Mr Butler has held that position since 1982, and was the Deputy Secretary-General 1968-82.

Personal reasons, and particularly the fact of turning 63, had led to the conclusion that I would not seek re-election, he said in a statement issued in Geneva.

His distinguished career began with Australia's PMG (now Telecom) in the 1950s, and he held various executive positions before moving to the ITU.

Why Corporate Plan?

by Ron Henderson, VK1RH
with encouragement from
Peter Gamble VK3YRP

Why corporate plan you might well ask; after all the WIA is not a corporation and we know where we are going. Or do we?

Do we really want more of the same or are there changes you would like to see take place in the WIA? Can we even achieve more of the same? We would suggest no; for example only four Melbourne area amateurs were available to serve on the Executive this year, four out of ten and not one of them was a new face. Volunteer effort is becoming harder to find, employing staff places increased demands upon subscription rates and all the while we struggle along trying to do the same as we have done for years gone by.

Are we doing the right things? We are not sure, so we have to find out, hence the questionaire in Amateur Radio magazine last October. But printing a questionnaire is not enough, someone (a volunteer or the paid officers?) has to analyse the results, taking up more valuable time which some say might have been more gainfully used tackling today's problems. Remind you of scrambling up a slippery incline in a plastic bag? Or just keeping up with the daily cost of existing? What is the solution? Well your Executive believed it was necessary to take a couple of steps back from the coal face and indulge in a little critical introspection. We did just that last mid-winter, in a venue remote from the Federal Office where the phone, photocopier and files could not disturb us. We did it whilst you were enjoying a close fought football match on TV, for you would not have been at the ground as the weather was foul.

We were aided and abetted by a couple of bright young marketing gentlemen from a service industry which is going through a similar exercise to what we were aiming to achieve. (Incidentally they gave their time for the price of a good dinner!) We gave the matter one full day, just half of what it deserved; why you ask? Well the second day we had to get back to the Office to hold an all day Executive meeting and cast a little water on the bush fires burning there. So what did we achieve? And was it really worth it? We think yes, but as the exercise is only part way through we do not have a lot we can show you at this stage.

We did develop a WIA Mission Statement, as the President wrote in a recent editorial. It's short and succinct and does not take a couple of pages to set out as our Objectives do in the Articles of Association.

Here's our Mission Statement:

"To promote and advance amateur radio locally, nationally and internationally in a way which:

Meets member and community needs:

Encourages the maintenance of standards; and

Positions this organisation as the representative voice of amateur radio enthusiasts in Australia."

Before we go any further let's look at that Statement and make a few points. A recent letter to the editor of AR went to some length to define the amateur service. We ask, are we representing all amateurs or only members? We sincerely think the former and would, in an ideal world like to believe that every amateur, licensed or just a radio enthusiast, belongs to our organisation. Of course some would want more from us than just the services we provide for the greater body, and no doubt they would be willing to pay for those extra services, perhaps on a graded scale according to what they require and what it costs us to provide it. Shades of "user pays" again you might comment, but that's life according to the government!

The Executive "think tank" on that wet winter Saturday went on to identify key issues which impinge upon the functioning of the WIA. These were posted on a blackboard, debated, grouped up, rephrased as Objectives and agreed as a fair description of our problems, as perceived by the gathering. They numbered 27 in all. Next came the hard part, to determine the relative importance of these Objectives. A three by three matrix was constructed on the board (shades of noughts and crosses) with "Impact" along one axis and "Urgency" down the other. The "think tank" then fitted every Objective into its appropriate square, that is:

"high", "medium" or "low" Impact, and

"high", "medium" or "low" priority.

At this stage it is obvious we have to do something fairly quickly about the "High, High" issues whilst the "Low, Low" ones (if any?) can roll off the board!

In an article like this which aims to explain our corporate planning in simple, easily comprehended terms, it would be folly to give you all the entries in the matrix. However it is important you see the five "High, High" Objectives. They are:

1 .Retaining members,
2. Prepare a recruitment policy,
3. Financial viability of WIA (members are conditioned to cheaper approach to prices),
4. Publicise WIA services to members and prospective members,
5. Process of communication within the WIA (lateral communication nonexistent - vertical communication largely restricted to "top down").

Our next actions were to analyse these Objectives further, break them down into component Activities, decide who is responsible for actioning them, what time scales apply and what resources are needed.

Objective 4 above is a good illustrative example and in brief note form appears as follows:

Objective No. 4

Key Area. Publicity (of services)

Objective. Publicise WIA services to members and prospective members.

Priority. High (High impact)

Objective Responsibility. FE and Divisional Councils.

Objective Date: (Desirably 1 Nov) in reality for 1989 renewal notice postings.

Activity 1. Define WIA services and split into Federal and Divisional components.

Responsibility. FE and Divisions

Date. 1 Nov 88

Resources Required. Divisional and FE think tanks (much exists already).

Activity 2. Present services listings in convincing formats - brochures

Responsibility. FE/PR helpers.

Date. 1 Dec 88

Resources Required. FE fund printing and recoup from divisions as supplied to them.

Comments. Ties in with Objectives 2 and 3. Could be distributed with renewals, casual enquiries and in PR ads in magazines (ARA, ETI, EA).

So how is progress on this objective? Well the AR questionnaire contained a full listing of WIA services as we saw them and you were asked to comment on them. That list came from an earlier one discussed informally and refined over the last two Federal Conventions. Who said Conventions achieved nothing?

The need for PR brochures was agreed earlier in the year, for our stockpile was dwindling and there was an urgent need to update our brochures with several differing versions targeted at differing groups of potential members. We have received considerable assistance from VK4 in preparing those brochures, a desk top publishing system certainly is an advantage and they will be in use early in 1989. One matter allied to the PR brochures has

perplexed us, for it was our intention to produce "universal" brochures that could be used Australia wide. Some divisions saw no need to advise their potential needs, and this makes us wonder do they have a source of better brochures and are not letting on, or do they consider it too costly to use these professionally designed items, preferring cheaper (?) photocopies or don't they respond to how to join enquiries?

Incidentally, although not yet analysed in depth, our survey has suggested new fields in which to provide an awareness of amateur radio and you will see our advertisements appearing in a wider range of electronics hobbies magazines in the future.

We trust this brief insight into the WIA's Corporate Planning has aroused your interest and you will respond by becoming an ambassador and recruiter for your interest. One thing we must emphasise, like another organisation, "Unity is Strength", for we cannot approach our future in a fragmented fashion. What is good for your radio club is also good for your division and the WIA as a whole. Will you be an active ambassador?

Third Party Traffic for New Zealand

Jim Linton VK3PC
4 Ansett Crescent
Forest Hill 3131

New Zealand's 6,500 radio amateurs will in the future be able to handle third party traffic (TPT).

This will come about because of a general deregulation of telecommunications in New Zealand.

The Ministry of Commerce, Radio Frequency Service, General Manager, Communications Division, Dave Jenner said with deregulation there would be no regulation to stop TPT.

Mr. Jenner said when New Zealand Telecom loses its monopoly on communications there will be no basis for prohibiting radio amateurs from passing messages for others.

Of course the international regulations covering the Amateur Radio Service will still ban the handling of traffic for commercial gain.

With the absence of any bilateral arrangements ZL radio amateurs can't pass TPT to any other country.

The Wireless Institute of Australia in 1985 asked the Australian Department of Transport and Communications to seek what is known as an International Telecommunications Union 2734 Radio Regulation Arrangement.

There was no response from the NZ administration but the matter is likely to be pursued again.

Mr Jenner told Amateur Radio magazine that radio amateurs in New Zealand had not seemed concerned about being unable to pass third party traffic.

There had been a report in a New Zealand newspaper that radio amateurs would be allowed to handle non-commercial messages.

The New Zealand Amateur Radio Transmitters (NZART) Administration Liaison Officer, Fred Johnson ZL2AMJ told AR magazine: "Don't believe anything you have read, nothing has happened yet, there are still negotiations continuing".

A group calling itself the New Zealand Traffic Net issued a statement to AR magazine which said: "The New Zealand Radio Frequency Service has advised the NZART and, separately, Rob ZL3TJP, Bob ZL2AMI, and a number of others that they now intend to fully deregulate third party traffic in New Zealand".

Fred Johnson denied that anything had been finalised and could not agree that there would definitely be TPT generally available to all radio amateurs in the near future.

However the NZ Traffic Net said the new privileges are expected to be available after April 28, 1989.

Mr. Jenner said he had no knowledge of TPT being available on that date, or any specific date being mentioned.

He said the issue of deregulation of telecommunications had been delayed in Parliament and might not be finalised until June or July.

But the NZ Traffic Net maintains it has been assured the Radio Frequency Service will make TPT available through regulation in the NZ Government Gazette.

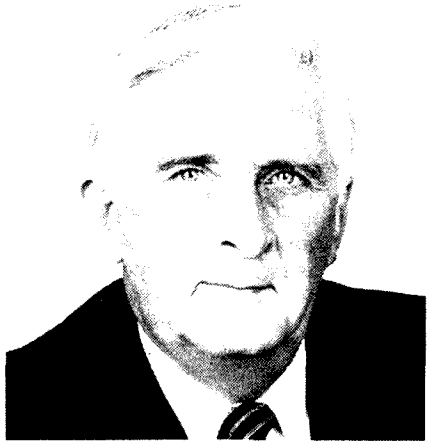
The net has announced it will be handling voice TPT via 3.570 MHz most nights of the week after TPT is available.

The net is affiliated with the International Amateur Radio Network based in Maine, USA, which has played a key role in providing emergency communications after international disasters.

In anticipation of a TPT go ahead, a group of radio amateurs has approached NZ Telecom to see if the WIA line interface unit (LIU) can be adapted for approved use in New Zealand.

AUSSAT

Australia's National Satellite System



Mr Graham Gosewinckel, Managing Director of Aussat

Aussat supports JOTA

Australia's national satellite system owner and operator Aussat, provided satellite links for the 31st Jamboree Of the Air and is likely to be a permanent part of this annual event.

The network set up by Aussat over the weekend of October 15 & 16, 1988, was between Sydney, Perth, Melbourne, Brisbane, Canberra and Darwin.

It was the second consecutive year Aussat had supplied use of its system, with the 1987 Link being only between Sydney and Perth.

Aussat's managing director, Graham Gosewinckel said the company was delighted to be able to support the event again.

"We view this type of sponsorship as an important community service which enables us to participate in an area of activity that is closely related with our own business," Mr Gosewinckel said.

"It provides an ideal opportunity to demonstrate the flexibility of satellite communications to a wide ranging group of enthusiasts involved from many walks of life in amateur radio in Australia.

"On the two occasions Aussat has been involved with JOTA the service provided has been enthusiastically received and we have received very positive feedback from the participants.

"From our point of view, it is a very worthwhile exercise, and I am hopeful, should capacity and equipment be available this year that we can again be a key player in JOTA," he said.

The Links and locations were decided by the availability of ground equipment and satellite capacity.

They were carried on satellite A1 transponder 10 which has an uplink centre frequency of 14.121GHz and a downlink centre frequency of 12.373GHZ.

At each capital city local radio amateurs provided transceivers to interface into the satellite system.

These were installed at the Major City Earth Stations and accessed either directly on simplex frequencies or through local two metre repeaters. These transceivers were then interfaced to the various satellite circuits.

Equipment

Interface

The interface between the amateur transceivers and the satellite ground equipment consisted of the following:

- Audio into the ground equipment
- audio out of the ground equipment,
- transceiver carrier detect indicator which was signalled across the satellite circuit to provide the transceiver PTT at the other end,
- transceiver PTT which was controlled from the satellite circuit signalling provided from the transceiver carrier detect indicator at the other end.

Amateur Transceivers

Transceivers on the 2 metre band were installed at all earth stations except Canberra, where a UHF Link was installed between the earth station and a radio amateur's home.

This technique was used to enable the choice of 2 metre outlets through local repeaters in Canberra. There were three transceivers installed in Sydney.

Amateur Frequencies and Repeaters

City	Frequency MHz	Site	Repeater
Brisbane	147.300	Mt Glorious	VK4RQT
Canberra	146.900	Black Hill	VK1RAC
	146.950	Mt Ginini	VK1RGI
	(only one at any one time)		
Darwin	147.000	Palmerston	VK8RTE
Melbourne	146.500	Aussat - Simplex East Burwood	
Perth	146.800	Herne Hill	VK6RTH
Sydney	146.875	Terry Hills	VK2RMB
	146.625	Razorback	VK2RLD
	145.525	Aussat - Belrose Simplex	

Operational Considerations

When two repeaters are linked together over the satellite an undesirable effect is created. The link and the repeaters get themselves into a cyclic lockup. I hope everyone can follow this explanation.

We'll start with the local earth station transceiver transmitting to the local repeater. At the completion of its transmission it will go into receive mode and therefore will see the local repeater tail. This tail will be transmitted across the satellite to the remote earth station transceiver. This transceiver will go into transmit mode for the length of the local repeater tail. The remote transceiver will then see the remote repeater tail, transmit that back across the satellite causing the local repeater to transmit again, and round and round we continue forever.

There are two solutions:

1. Remove the tail from at least one of the repeaters, or
2. Introduce a delay on the earth station transceiver carrier detect so that the tail does not cause the transceiver at the other end to transmit

Solution 1 was adopted at all sites except Canberra as it would have been very difficult to remove the tails of the two repeaters used.

Solution 1 also has a side advantage and a disadvantage.

When a geostationary satellite is placed in the transmission path an extra delay is added. When repeaters are used at both ends of the path the delay between overs increases. Allowing 2 second repeater tails and the satellite propagation time of .25 second gives a total delay of 4.25 seconds. Removing the repeater tails reduces this delay.

However, with removal of the repeater tail any marginal signals into the repeaters were accentuated, because the repeaters now tend to chop in and out, where previously the tail would keep the repeater transmitting.

Also, many radio amateurs realised there was no tail and thought they were not accessing the repeater or that it was out of service.

In Canberra solution 2 was adopted as the local radio amateurs wanted to be able to select different repeaters. The earth stations are unmanned at weekends and it was impossible to retune the earth station two metre transceivers.

The solution in Canberra was to use a UHF link which allowed the choice of more than one repeater.

The opening broadcast on Saturday afternoon by the Governor General, Sir Ninian Stephen, was relayed from Government House, Canberra, via the UHF link on to the satellite to Sydney. From there it was distributed to all other sites.

The carrier was interrupted at regular intervals by those in Canberra to ensure that the remote repeaters did not time out.

After the broadcast , the links were reconfigured with Brisbane connected to Darwin and Canberra to Sydney, Perth and Melbourne were connected via Sydney thus introducing a double satellite hop. This appeared to cause no problem.

There were two further reconfigurations during the weekend as follows:

(1 Canberra - Darwin. Brisbane - Sydney.
(2) Perth - Sydney. Melbourne - Sydney.
Brisbane - Canberra. Darwin - Sydney.

Packet Radio

Enthusiasts in Perth and Melbourne tried to hook-up using packet radio via the satellite but their attempts appeared to be unsuccessful.

The WIA Federal Technical Advisory Committee Packet Radio Co-ordinator, Peter Hallgarten VK3AVE said; "We tried to exchange packets with people in Perth but to my knowledge there were no successful connections."

The packet attempts were carried out mainly around midnight Friday and early Saturday. Packet radio users on both sides of the continent were eager to make contact.

Peter Hallgarten said he could see data coming through from two VK6's talking to each other, but a transcontinental hook-up did not take place.

The next time the Aussat system is available further attempts would be made to exchange packets across the nation.

It could be a simple matter of sending "sync characters" first to help overcome the transmission path time delay factor, he said.

Conclusions

We gratefully acknowledge the co-operation of the Department of Transport and Communications in each state. We also wish to thank all AUSSAT staff at all the earth stations for their assistance with the installation of equipment.

The radio amateurs who provided equipment at each of the capital citites were :

Brisbane	Mark - VK1ZDX
Canberra	Alex Johnson - VK8ZWM
Darwin	Spud Murphy - VK3ZPP
Perth	Will McGhie - VK6UU
Melbourne	Peter Mill - VK3ZPP

Many on air comments of appreciation were made, with the hope that something similar will happen again

The co-ordination of the links and the

installation at the Aussat Sydney earth station were carried out by Aussat staff, Neil Fallshaw VK2XNF and Laurence Adney VK2ZLA.

The Wireless Institute of Australia expresses its appreciation to AUSSAT for its support. Plans were underway to more widely publicise Aussat's role to the general public during this year's JOTA in October.

SHOWCASE

200 Channel Scanner

Captain Communications at Parramatta has just released the latest in scanning technology from Uniden. The model UBC200XLT has no less than 200 channels and covers a wide range of frequencies, from 66 MHz up to 956 MHz, a first for a handheld scanner.

The scanner offers highly sophisticated functions, including 10 priority channels, channel lockout, delay and search. The 200 memory channels are split into 10 20 channel banks. All channels are programmed through the numeric keypad.

The UBC200XLT is supplied complete with a rechargeable ni-cad battery pack and charger. It provides up to 5 hours of dependable use. The scanner can also be run via the AC adaptor/charger, or from external 12 volt power where available. The frequencies stored in memory are thoughtfully protected from loss by a built-in capacitor which protects the memory for up to 30 minutes when replacing batteries.

Features:

200 Channel memory. The UBC200XLT has 20 channel scanning capacity split into 10 20 channel banks. All channels are programmed through the numeric keypad.

12 band coverage:

10 Priority channels. The first channel of each bank can be selected as priority channels to be monitored every 2 seconds for important transmissions.

Detachable, rechargeable battery pack.

Allows for a second set of batteries so that the receiver is never without portable power.

Channel lockout.

Select any number of channels to be skipped during the scan mode.

Scan delay.

Add a two second delay to any channel to avoid missed transmissions or call backs from dispatches.

Automatic search.

Search for new active transmissions to add to your scan memory in any of the bands.

Illuminated display.

A large LCD shows the current frequency and channel as well as other operating features and modes.

Specifications

Frequency range
66-88MHz
118-136MHz
136-144MHz
144-148MHz
148-174MHz
406-420MHz
420-450MHz
450-470MHz
470-512MHz
806-956MHz
Scan speed: 15 channels per second (scan)
25 channels per second (search)
Display: Illuminated Liquid Crystal
Power requirements: 12V DC (battery, adaptor or vehicle adaptor)
Sensitivity: 0.3 uV
Selectivity: -55db @ -25kHz

For further information contact:

Captain Communications,
28 Parkes Street, Parramatta 2150
Phone (02) 633 4333,
Fax: (02) 891 2271

Captain Communications Releases Miniature Digital Frequency Monitor for Transceivers and Receivers

Capital Communications of Parramatta has just released a miniature frequency monitor designed for displaying the frequency of both transmission and the frequency the receiver is tuned to. It is ideal for users of both transceivers and receivers who need accurate digital readout of frequency. Many older sets can be brought up to full "digital" standard with this five digit frequency monitor. It is suitable for both HF and VHF operation, with coverage from 1kHz to 250 MHz in two bands.

Unlike conventional frequency meters, the FC-200 can read both the frequency going out to the antenna and the frequency of the received signal. The latter is managed by a down system based on the receiver's local oscillator and by subtracting 455 kHz.

The monitor comes complete with PL259 connectors for transceiver and antenna and with inputs for pickup of signal from the receiver's local oscillator.

Specifications:

Frequency range: HF: 1kHz-54MHz
VHF: 50MHz-250MHz
Standard Oscillating Frequency: 10MHz +/- 0.0005%.
Input Impedance: 1M ohm, 20pF
Power Supply: DC 13.5V
Environment: 0-40 degrees C

For further information call:

Captain Communications,
28 Parkes Street, Parramatta 2150
Phone (02) 633 4333,
Fax: (02) 891 2271

Optical Fibre

We read so much in the press about the applications of fibre optics for telecommunication purposes and very little about its uses in other industrial areas. Long before fibre optic cable was found capable of transmitting long distance communication signals, it was used for lighting in medical and industrial applications. Its great advantage is that it provides a "cold" light and the light source is remote from the light head.

Typical application has included road signs where the light source is at ground level and lamps can be easily accessed should failure occur. Medical applications, other than providing light for internal examination and microscopes, have included culture growing. The arts use fibre optic cable for stage effects and even the museums found fibre optic cable ideal for illuminating ants nests and places where heat was undesirable. Industry uses it for accurate machine positioning (including robotics) and it is ideal for security looping in place of wires that can be tapped or broken. Even the hobbyist has found uses for lighting model railways (Star ships look fabulous when lit using fibre). FORT is offering a range of plastic fibre that is ideally suited for industry, lighting and the hobbyist. A leaflet describing the fibre, together with a sample, can be obtained by sending a stamped addressed envelope to

Fibre Optic Research
& Technology Pty. Ltd.,
P.O. Box 231, Frenchs Forest,
NSW 2086.

ACME Connector Catalogue Released

National cables and components distributor, ACME Electronics, has just released a new connector and accessories

catalogue which details more than 300 products stocked and distributed by the company.

ACME Electronics, a division of Hardie Technologies, this year celebrates 40 years of service in the electronics industry.

"The catalogue details all our mainstream connector and accessory products in a simple and easy-to-follow manner", said ACME Product Marketing Manager, Ted Harnett.

"It is free and available from any of our branches in Victoria, New South Wales, Queensland and South Australia, as well as our agents' offices in Western Australia, the Northern Territory and Tasmania", he said.

The catalogue includes sections on BNC, BNC High Voltage, TNC, N, Twin, UHF, SMA, Between Series Adapters, Resistor Loads, C27 Push-on, RF Patching System, 19" Patch Panels and Faceplates, D Subminiature, plus Tool and Die Sets.

"The catalogue is structured so that it includes an excellent cross-reference to the extensive range of Belden Coaxial cables stocked by ACME", Mr. Harnett said.

ACME Electronics distributes and supports a wide range of products from Kings Electronics, Belden Wire and Cable, Greenpar Connectors and Grayhill. The company also manufactures a wide range of connectors and components.

Free Electronics Guide

ACEL Information Pty. Ltd., supplier of specifically targeted technical information, is giving away introductory copies of its new Electronics Yearbook, completely free of all charges including postage.

The idea behind this generosity, unusual in these days of careful cost accounting, is ACEL's confidence that once users try the Yearbook, they will be keen to buy next year's issue. Of course, the free offer is without obligation on the 1990 issue.

The ACEL Electronics Yearbook has over 260 pages of data, and provides a comprehensive guide to suppliers in the electronics industry. It contains details information on Australian suppliers of local and imported products, brand names and overseas agencies. Two special features unique to ACEL's Yearbook are a logo identification section, and an index of catalogues available from suppliers.

To obtain your copy of this valuable source guide, write to

ACEL Information Pty. Ltd.,
P.O. Box 1040, North Sydney 2059,
or phone Sydney (02) 922 6088,
Melbourne (03) 529 5200 or
Brisbane (07) 206 8031.

Report of Federal Videotape Co-ordinator for year ended 31st December 1989

In 1988–89 there was an overall drop in the number of titles requested, due in part I suspect to the fact that during the year we started to charge individuals and libraries for the copying service. If the fees have encouraged groups of Amateurs rather than isolated individuals to order dubs, then the number of people actually benefiting from the service may well have increased, but there is no practical way to determine this.

I am presently experiencing some problems with both my VHS Recorder and with my master playback Umatic VCR.

The VHS VCR recently required a new set of video heads which, when fitted by the local service agents, failed to come up to specification with the result that it has been out of commission for over two months. (As I write this the recorder is in fact in Sydney with JVC who are trying to determine the source of the problem!)

However, it is the master Umatic player which gives me the greatest cause for concern; it is getting near to the end of its service life and at current prices would cost about $2,000 to replace! However, surely it must be possible to locate a used Umatic VCR of more modern vintage at a reasonable price.

The existing Umatic VCR is a JVC 6000 which was built in the days of "dual fixed–speed motor, slipping belt" technology. Because of the inevitability of regular belt replacement due to wear, this type of unit has been superseded in more recent years by use of "multiple servo–controlled or quartz–locked direct drive motors" wherever rotation is required.

Ideally I'd like to locate a "Sony" front–loading Umatic VCR to replace the JVC 6000. If anyone reading this knows where one might be available at a reasonable price please let me know. If a suitable VCR can be located, it will materially extend the life of the WIA Video Library which of course would be of benefit to all Amateurs.

To date, the WIA Video Library has only been promoted within our fraternity in "Amateur Radio" magazine so that non–amateurs have had little opportunity to know of the Library's existence. My intention is to promote Amateur Radio as a hobby by circularising all schools, firstly (as a trial) in my own State and then nation–wide, to advise them that good promotional and educational videos about Amateur Radio are available at very little cost through the WIA Video Library.

If a suitable Umatic VCR is not otherwise forthcoming, perhaps a one might surface as a spin–off of the above promotion from a shool in which Umatic VCRs have been superseded by VHS VCRs.

John F. Ingham, VK5KG
Federal Video Co–ordinator

AEM Stops Publication

Australian Electronics Monthly (AEM) has ceased publication after nearly four years.

And its competitors Electronics Australia (EA) and Electronics Technology and Innovation (ETI) have slightly changed editorial direction.

AEM editor Roger Harrison VK2ZTB said it was very disappointing having nurtured the publication and worked up to 100 hours a week with his wife Val, eldest son Jamye, and youngest son Corey, still at school.

The publication had been aimed at what he saw as an unfilled niche in the competitive magazine market.

Roger said the January edition was on the presses, February had been completed and work begun on the March edition, but publication had to cease due to a breakdown in financial negotiations.

AEM sales and subscriptions were picking up in 1988 with the magazine having overcome the critical early stage of such ventures.

"We could not reach a final agreement with a financial investor after six months of very positive negotiation", Roger said.

Kedhorn Holdings, the publishing company of AEM, went into voluntary receivership.

Roger said outstanding mail orders for software and books are currently being processed, anyone with such an outstanding order can write to the AEM listed mail address.

It is understood a special offer will be made to readers who have subscribed to AEM.

Roger Harrison now works for a company called the Apogee Group, which is packaging editorial material for ETI. Roger will be listed as Electronics Editor for ETI from the May issue.

From the June issue some three-quarters of ETI will be provided by Roger and the team from the Apogee Group.

This will see a greater emphasis on electronics and communications in ETI, and at the same time EA has announced it will move in the same direction.

Roger said the situation regarding outstanding contributors to AEM is being considered in view of procedures related to the liquidation and they will be written to in due course.

The Ron Wilkinson Achievement Award

Back in 1977, Mrs. Mary Wilkinson widow of the late Ron Wilkinson, VK3AKC, gave to the WIA a sum of money to be invested so that the interest would pay for an annual award in memory of her husband.

The Award was to be made in the month of March, and was to be for special achievement in any aspect of amateur radio. Ron, whose birthday was 3 March, had been a notable pioneer in "moonbounce" experiments, among many other interests.

The Award is in the form of an attractive certificate, plus a sum of money, initially $50 but now $200, which includes a free WIA subscription for one year.

Winners of the Award so far have been:

1977 Wally Green VK6WG and Reg Galle VK5QR for Adelaide - Albany communication on 1296 MHz.

1978 Winston Nichols VK7EM for achievements in amateur TV, and Alf Chandler VK3LC for service to Intruder Watch.

1979 David Wardlaw VK3ADW and Michael Owen VK3KI for their amateur representation at WARC79.

1980 Ces Bardwell VK2IR for 20 years service to Amateur education.

1981 Ray Jones VK3RJ for service as Federal QSL Manager. Hon mention jointly to Gill VK6YL (WA repeater group) and Peter Smith VK1DS, for repeater design and installation.

1982 Dick Norman VK2BDN for notable work in VHF, UHF and microwaves.

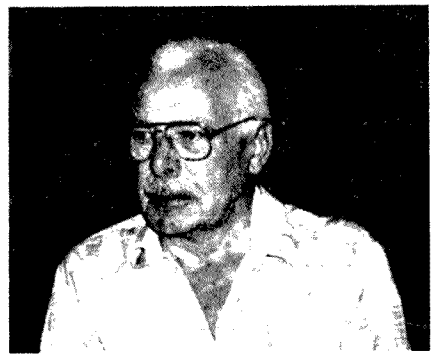
1983 Peter Smith VK1DS and Ken Palliser VK3GJ for innovative work on repeaters.

1984 Lyle Patison VK2ALU for many years of "moonbounce" work.

1985 Doug McArthur VK3UM for pioneering work in aircraft enhancement of propagation.

1986 No nominations received.

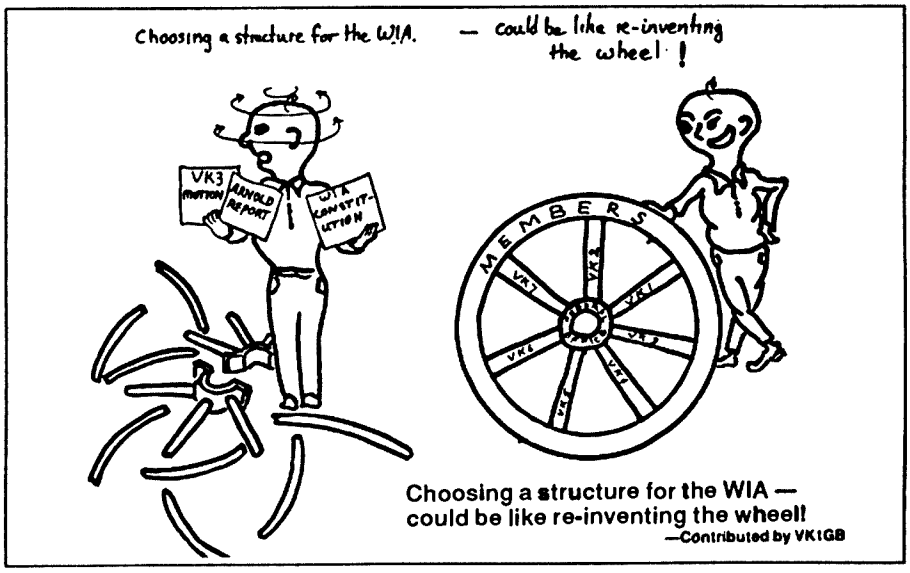
1987 Eric Jamieson VK5LP for many years service in contributing the "VHF/UHF - An Expanding World" column to



Arthur Oliver VK6ART. Photo courtesy Neil Penfold VK6NE

Which brings us to the recipient of the Award for 1988. He is Arthur Oliver VK6ART, who was nominated by the VK6 Division for his service to the travelling Amateur population for at least six years of daily dedication to the Travellers' Net. This 20 metre net was established in 1978 by Keith Williams, VK6KC, then of Kuri Bay. Arthur Oliver became the regular control station around 1982, and maintained a daily service until recently. Only a person with a special kind of devotion to their fellows can make their services available at the same time each day, every day, possibly for an hour or more, year after year, with of course no possibility of payment.

Executive were unanimous in their agreement with the WA Division Council that Arthur Oliver VK6ART should receive the Ron Wilkinson Achievement Award for 1988.



Australian TV Broadcast Diamond Jubilee

Jim Linton VK3PC
4 Ansett Crescent
Forest Hill. 3131

This milestone in Australian television would have passed virtually unnoticed - but for the efforts of media historian Chris Long and the National Fiim Archive.

He had researched the beginning of TV broadcasts in Australia which began on January 10, 1929.

Chris said in that primitive test transmission movie cartoons were broadcast through the transmitter of Melbourne radio station 3UZ. The movies were televised in a workshop in South Melbourne and sent to 3UZ's transmitter in Bourke Street, Melbourne by a landline. They were received by radio in the bayside suburb of Sandringham at the home of engineer Donald MacDonald.

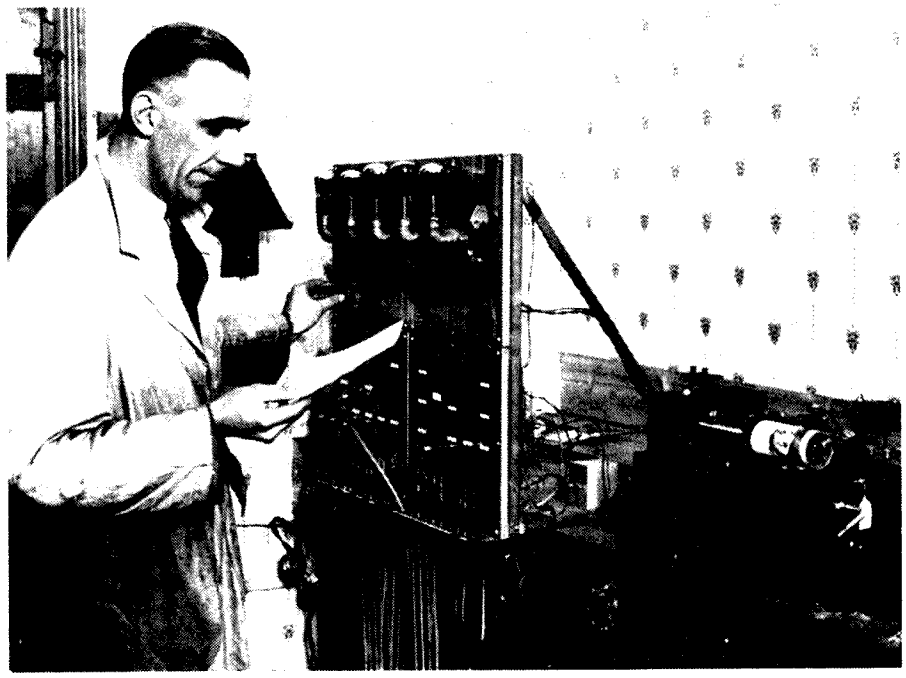
The screen of the receiver was only 4cm square and it showed pictures of simple silhouettes, like a rotating windmill, children on a see-saw, or printed titles, Chris said.

Mr MacDonald set up a firm called Television and Radio Laboratories in September, 1927, with the aim of making Australia's first practical demonstrations of broadcast television. In 1925 MacDonald had seen the experimental television tests of the American pioneer C F Jenkins, and while in the United States acquired the key components to build a working copy in Australia.

He was joined by radio enthusiast Gilbert Miles, who built the necessary cameras and receivers. These employed a mechanical scanning system instead of the electronic picture tubes used today.

Chris said: "By modern standards their results were very primitive - pictures of 24 lines instead of the present 625, and with no accompanying sound. But their results represented the state of the art at that time and encouraged them to broadcast television programs on a regular basis until the great depression set in at the end of 1929."

Years later Gilbert Miles constructed a replica of his early television system which can be seen on display at the Museum of Victoria. After the war, he moved to NSW and acquired the callsign of VK2KI. He died in 1981, long after our modern TV systems were established.



Gil Miles and the early TV transmitter, circa 1929.

MacDonald published Australia's first television magazine, Radiovisions, in monthly issues between September 1928 and October 1929. Copies are held by the State Library of Victoria.

Late in 1929 the British Baird Television Company set up a closed circuit television system for demonstrations at Menzies Hotel, Melbourne.

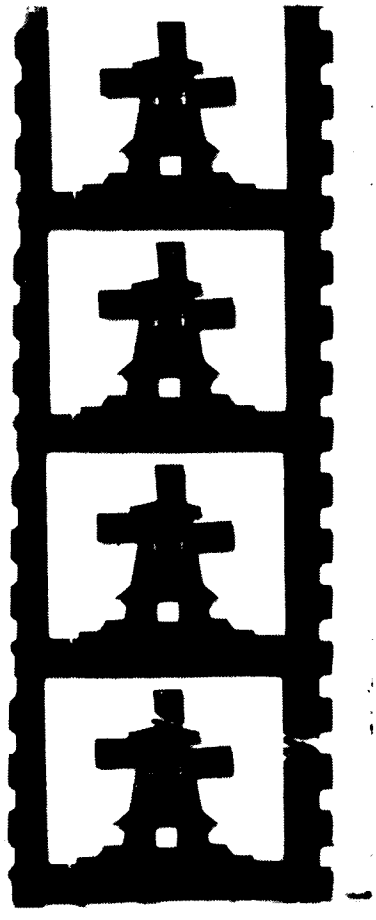
Sydney's first transmissions were made by experimenter Ron Chilton in 1930, then Brisbane followed in 1934 with transmissions from the Observatory Tower in Wickham Terrace.

Australia's first commercial TV station licences were granted in 1955 following a Royal Commission on the introduction of television.

TV had been resisted by authorities in the immediate post-war era because of higher priority matters including housing, immigration and industry reconstruction.

There was also considerable argument over whether Australia should adopt a British BBC-type TV service, or open the medium up to commercial interests.

Two commercial TV stations in Sydney and two in Melbourne began transmissions in 1956 which included coverage of the Melbourne Olympics.



(Windmill) First test film transmitted over 3UZ 10 January 1929. Australia's first TV program material.

Pitcairn Island - A Ham's Paradise

David F. Miller NZ9E
(In collaboration with Meralda Warren VR6MW)
7462 W. Lawler Avenue
Niles, IL 60648 USA

Lying remotely in the mid-Pacific, Pitcairn Island is probably as close to being "a ham's paradise' as any spot on this earth could be! No off-the-air TV, so no TVI! No multi-storied structures to block one's signal, just the vast, blue Pacific in all directions! No antenna restrictions, no tower height limitations, no zoning laws! Very little man-made interference and almost no ignition noise! Toss in being a rare DX catch, and you've come pretty close to the above title!

200 years ago, on January 23, 1790, Fletcher Christian and 8 other fellow "Bounty" mutineers landed on Pitcairn Island, and they, along with 12 Polynesian women, 6 men and one infant girl, set the framework for this modern day "dream QTH". The start of the dream, however, would not be realized until the 1920's, when Andrew Young (later VR6AY), carrying the surname of mutineer Edward Young, would set up shop as Pitcairn's first radio amateur. Andrew was an "amateur" in the purest sense of the word, being unpaid, making do with less than "ideal" conditions, and following his pursuits for the love of the activity. Andrew began operating from Pitcairn with a spark transmitter and a crystal detector receiver provided by an unknown New Zealand radio buff. This set-up served the island until 1938, when he was provided with a "modern" telephony & CW rig donated by a group of American hams after a visit to Pitcairn by the ship "Yankee" in 1937. Since then, Pitcairn has been a part of the amateur radio scene pretty much continuously up to the present. They have evolved more or less in parallel with the rest of us from AM & CW to SSB, and from tubes to solid-state. Today, Pitcairn hams are able to acquire state-of-the-art equipment although at perhaps a greater sacrifice than many of us. Despite the distances and difficulties involved, there are more licensed hams on Pitcairn today (as a percentage of their population) than there are in any other country in the world, 6 licensed hams out of 50 people! In alphabetical order, they are: VR6ID, Irma Christian; VR6KB, Kay Brown; VR6KY, Kari Young; VR6MW, Meralda Warren; VR6TC, Tom Christian and VR6YL, Betty Christian, all permanent islanders. VR6CL, Carl Lipscombe is also residing on Pitcairn at the time of this writing, and would be number 7 if he makes the island his permanent home. Amateur radio on an island as remote as Pitcairn differs a little from the way it is for the rest of us. Public power is available, but only for a relatively short while twice each day depending on available fuel supplies. The island has two British-made diesel generators that output 240VAC, and most homes have lines running into them from the "public power". Many of the islanders (the hams most particularly) have private diesel generators that can be run whenever the need for electricity arises, but they must also stock private fuel supplies and pay the premium price for it. The newer all-solid-state transceivers are thus becoming more popular among Pitcairn hams because of their ability to operate efficiently directly from a 12 volt battery, which can then be re-charged when the public power is functioning. Wind generators have also been tried in the past but without a great deal of success, due mainly to mechanical breakdowns and high maintenance requirements. Solar is still quite expensive and not capable of supplying large quantities of electricity at present. Pitcairners must be very practical, their time is too demanding to be otherwise, so they've chosen to stick with what works well and suits their requirements, ie diesel generators. Hopefully in the future, renewable energy schemes may prove themselves more useful.

Antennas.

Even though the island is only 1 mile by 2 miles, antenna space doesn't seem to be a big problem! There are plenty of taller trees from which to string a dipole, but the Pitcairn hams have found, as have most of us, that a beam on a mast can offer a premium of gain for both receiving as well as transmitting, more so than any other addition to the station, even if it has to be rotated by the "arm-strong" method! Tribanders for 10, 15, & 20 metres are most popular with a wire dipole for filling in the rest of the bands. Unpredictable, and often high, winds keep them busy at times re-stringing the tree-supported dipoles, just like the rest of us!

For the Pitcairners, however, amateur radio has proven to be more than simply a

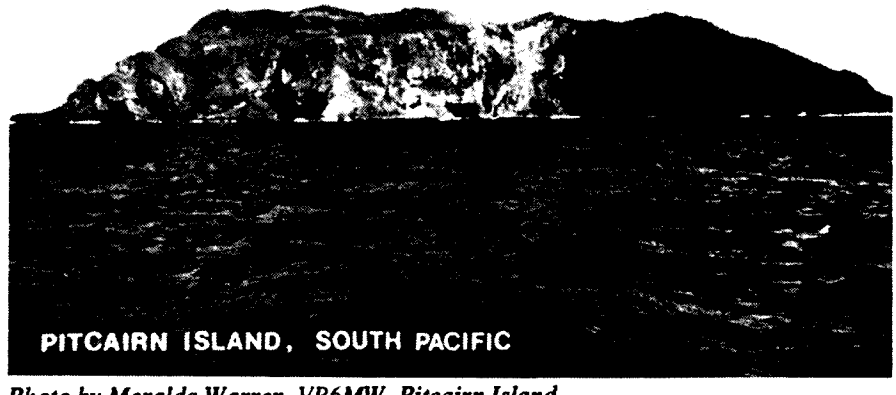


Photo by Meralda Warren, VR6MW, Pitcairn Island

hobby, it has been, and will continue to be, a life-line to the outside world in times of emergency. A number of medical emergencies have been handled over the past years via ham radio, making dependable amateur communications a source of some comfort for the island residents. A Government sponsored "commercial" short-wave station (ZBP) is also located on Pitcairn, with twice daily communications to New Zealand some 3,000 miles (5,000 km) distant. Like the amateur bands, the frequencies used by the Government station are subject to the whims of propagation, so a satellite transceiver has been available on Pitcairn for 2 years now, utilising a "retired" NOAA weather satellite which was transferred back to NASA for experimental and humanitarian needs in the South Pacific. The system operates on frequencies assigned to the early satellite service and is available from its geostationary orbit 24,500 miles out in space, 24 hours-a-day for medical or other emergency needs. A series of DTMF tones will bring up an autopatch in the United States allowing the Pitcairn control station to make a state-side phone call to seek emergency medical advice. A hospital in the Chicago area has volunteered its facilities and expertise at any time of the day or night and has been briefed on the special needs of Pitcairn, bringing the island one step closer to modern technology. This has been accomplished at no cost to the island or its Government in New Zealand. Amateur radio, however, still plays a very important role in the non-emergency, day-to-day needs of the island residents, and many state-side hams have volunteered their time and stations for this cause, for which the Pitcairners are deeply appreciative. Ham radio will continue to play an important role in Pitcairn's well-being as far as it is possible to see into the future.

News.

Amateur radio has also proven to be an important source of news and world events for the residents on Pitcairn Island. Many on the island do have short-wave receivers for listening to International Broadcasts, but again, depending upon propagation conditions and time available to the people, news of the rest of the world can be somewhat difficult to obtain at times. The next time you talk to Pitcairn, you might be able to help in this regard by relating to them some of the current news stories that you feel might be of special interest to them.

Supplies are brought to the island (including mail) only 2 or 3 times each year on average! You have to do your Christmas shopping early to live on Pitcairn! The supply ships come from New Zealand and are organized by the Pitcairn Islands administration in Auckland and Wellington. A couple of commercial container vessels have also been stopping each year, flying the Norwegian and British flags, simply as a courtesy to the island. These ships often depart from US ports, so that it has been possible to place a limited number of parcels on-board for Pitcairn, from state-side friends. Under a special agreement with the British Government, ham radio can be and is used to organize personal items for Pitcairners, because of their extreme isolation and lengthy time between ships. Amateur radio is thus much more than simply a "hobby" for the people of Pitcairn, although the hams on the island do enjoy that aspect of radio as well, but appreciation by all of us of the island's special needs and the limited time available to many of the residents will help to explain why DXing isn't always possible for the VR6's.

Pitcairn is a British protectorate and as such, is administered by the British Consulate General in New Zealand. To become a licensed radio amateur in the past, a Pitcairner would have to travel to New Zealand to sit (take) the exam. Recently, however, it has been possible to sit the exam on the island itself under the watchful eye of the Island Government Officer who also serves as the school teacher. This accommodation is similar to the VE (volunteer examiner) program in place in the US Most of the Pitcairners already have some knowledge of Morse code, as that is the form of signalling used on the island's single-party-line telephone system! Each resident has his or her own separate CW designator to alert them of a phone call incoming. To win an amateur radio licence, however, the candidate must still pass a CW test of 6 WPM for the novice licence, or 12 WPM for the general licence, plus successfully complete a written examination much like the American. With only 2 or 3 mail deliveries per year, however, it may be some time before the licence actually arrives from New Zealand!

Many of the amateur operators are also employed at the Government station which communicates (as previously mentioned) with New Zealand as well as with ships at sea using both voice and CW modes. HF is used for maintaining contact with ships "over the horizon", and VHF for distances out to 50 miles or so. The commercial (Government) station is located on the largest flat spot on the island also known as "Taro Ground", and sports a large wire array along with a variety of meteorological monitoring equipment. Traffic handling can become quite hectic at times up at ZBP when large amounts of Govemmental or island related messages must be passed. The complexities of the "outside world" are understood and often strongly felt on Pitcairn today, as they are throughout the rest of our planet.

The years 1989 & 1990 are of special importance to the Pitcairn people, for it was on April 28, 1789, 200 years ago, that Fletcher Christian took command of HMS. Bounty and set Lt Wm Bligh and the others who chose to stay with Bligh, adrift in an open longboat, to begin what has since become history's most celebrated mutiny. Bligh himself made history by the mutiny since it precipitated the longest open-boat voyage on record, with no loss of life, some 3,600 miles and encompassing 41 days at sea. Fletcher Christian, on the other hand, vanished from the eyes of Western civilization by setting fire to the Bounty off the shore of Pitcairn some 9 months after the mutiny (January 23, 1790). Christian, the other mutineers, and their small contingent of Tahitian followers "re-discovered" Pitcaim which had been first sighted 23 years before, but due to a miscalculation, has been incorrectly charted on the Royal Navy's maps of that time. By erasing all traces of the Bounty and by concealing their homes within the lush vegetation of Pitcaim, the mutineers managed to avoid discovery by His Majesty's Navy which would have meant almost certain death to the members of their colony. But as history would have it, the Pitcairners flourished and still do to this dayf

Postscript:

Be sure to watch the various amateur radio publications for notices of Special Event stations from Pitcairn commemorating the Bicentennial of The Mutiny on the Bounty and of the landing at Pitcairn. Bounty Day (January 23) is Pitcairn Island's Independence Day, and Bounty Day 1990 is of great historical significance to the island.

Special Event Operation

In commemoration of the highly celebrated "Mutiny on the Bounty" to the radio amateurs on Pitcairn Island in the South Pacific, who are also direct descendants of the Mutiny, will be operating special event stations on the 200th anniversary of the Mutiny on April 28, 1989. Intended hours of operation will be from 0000Z to 2359Z on the 28th as individual time and band conditions permit. Look for VR6ID, VR6KB, VR6KY, VR6MW, VR6TC and VR6YL on 10M, 15M, and 20M (exact frequencies not available) and obtain your report and contact number. For a special QSL card, send your card, contact number and a SASE to: Bounty Mutiny Day, 7462 W. Lawler Ave., Niles, IL 60648 USA.

A 28 MHz Broadband Preamplifier

Lloyd Butler VK5BR
18 Ottawa Avenue, Panorama, SA 5041

Here is a simple amplifier to improve your reception performance on 10 metres.

Some of the older transceivers with a valve receiver front end, such as the FT-200, work quite well on most bands but are a little in-sensitive on 10 metres. If you own such a transceiver, as does the writer, its performance on 10 metres can be dramatically improved with the addition of a suitable preamplifier. The article describes such a preamplifier, which was built by the writer and operated in conjunction with an FT-200.

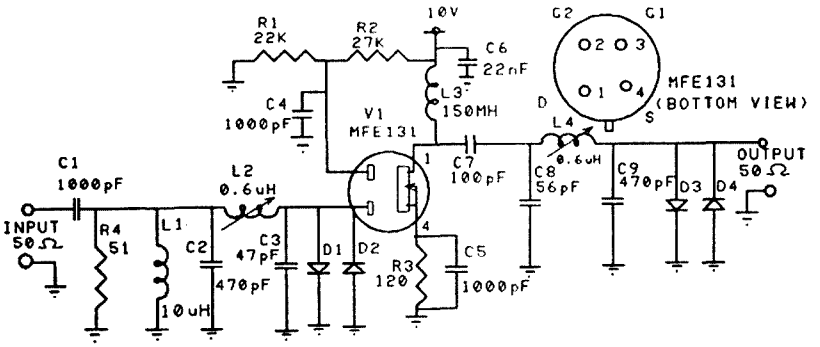


Figure 1 - 28 MHz Preamplifier Circuit Diagram
L1, L3 - Miniature ferrite cored inductors (value not critical).
L2, L4 - 10 turns on 5 mm Neosid former, 24 SWG spaced to about 6 mm plus tuning slug and shielding can.
D1, D4 - IN914 or similar.

Amplifier Design

The circuit of the preamplifier is shown in Figure 1. The transistor (V1) is a MosFET type MFE131 which operates with a drain current of 6.5 mA. (This could vary with individual MFE131 samples). A high drain current is important because the noise from a field effect transistor (FET) is essentially equivalent voltage noise which is inversely proportional to the square of transistor current.

The input and output circuits are simple Pi networks designed with a loaded Q factor to give a bandwidth of approximately 1 MHz. The intention is to centre tune at the active section of 10 metres on 28.500 MHz with good performance spread between 28 MHz and 29 MHz. Coils L2 and L4 are wound on Neosid five millimetre formers and fitted in Neosid can assemblies. Trimming of tuning is set by adjustable tuning slugs in the formers.

Diodes D1 and D4 provide protection against RF from the transmitter being coupled via the capacitance of the relay contacts which are used to switch out the amplifier on transmit.

The amplifier is designed for an input and output impedance of 50 ohms.

Performance

The measured gain versus frequency response of the amplifier is recorded in Figure 2. At the centre frequence of 28.500 MHz, the gain is 21.5 dB. At 28 MHz and 29 MHz, the gain falls to 17 dB.

Using a home built thermionic noise generator, a noise figure of 4 dB was measured for the preamplifier. This was a considerable improvement on the noise figure for the FT-200 into which the preamplifier was coupled. The highest level the noise generator can deliver corresponds to a noise figure of 12dB and the FT-200, on its own, measured worse than that. The 28 MHz band performs much like a VHF band in which the noise floor is often set by the noise in the receiver rather than from the noise which comes in from the antenna. Because of this, noise figure on 28 MHz is an important consideration.

From an operational point of view, the effect of the amplifier on the performance of the FT-200 was quite dramatic. Signals which barely moved the S-meter without the preamplifier were raised to S9 with the amplifier switched in. The amplifier also pulled out of the noise weak signals which were barely apparent and not readable without the amplifier.

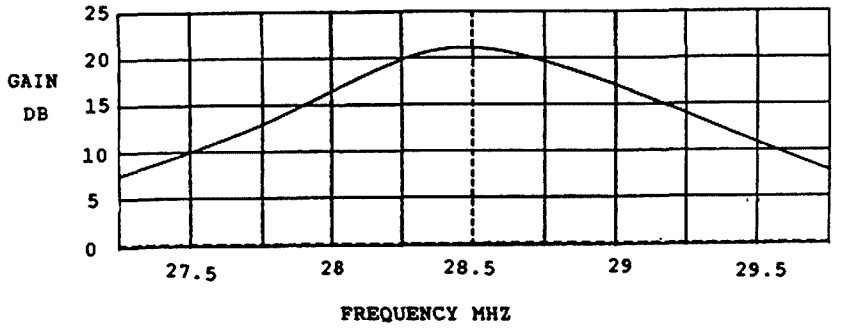


Figure 2 - 28 MHz Preamplifier - Gain vs Frequency

Amplifier Assembly

The amplifier was wired up on a 70 millimetre by 35 millimetre piece of Veroboard of the type with individual printed pads at each hole. The layout of components and the tinned copper wire strapping at the rear of the board, is shown in Figure 3. The strapping as shown could easily be made into printed circuit form.

Tuning up is easy. Simply set the transceiver to 28.500 MHz and adjust the slugs of L2 and L4 for maximum noise.

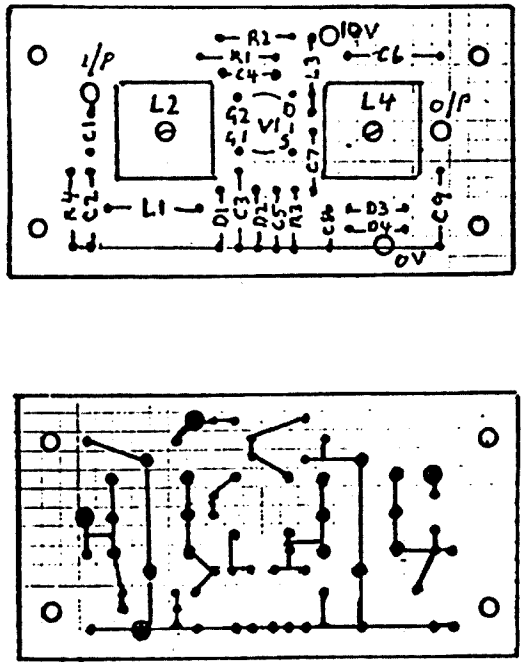


Figure 3. Pre-amp Card Layout

Powering and Switching

Having built the preamplifier, there were two other matters to resolve. One was the provision of a relay to switch out the amplifier on transmit or when the transceiver is used on bands other than 10 metres. The other was the provision of DC power for the preamplifier and the relay. The relay used by the writer was one obtained at sale price from Dick Smith Electronics. It has a 430 ohm coil, two change-over contacts and would operate on voltages as low as 10 volts.

Just how DC power is provided and how the relay is operated depends on what facilities are available within the transceiver. In the case of the FT-200, the writer decided to rectify the 12.6 volts AC valve heater supply as shown in Figure 4. Diode D1 provides rectification and this is followed by ripple filter C1, R1, C2. The relay operates from 15 volts and the amplifier, with extra filtering, operates from 10 volts.

There is a set of auxiliary transmit/receive relay change-over contacts in the FT-200. The make contact of the change-over set was already in use to operate a linear amplifier, so the normal contact was utilised to control the preamplifier relay A. The logic is such that relay A is operated when the preamplifier is active in circuit. Relay A is released on transmit or when the preamplifier is turned off by switch SW1 for other bands to be used. Diode D1 prevents backfeed from another relay circuit which the writer had connected to the transmit/receive normal contact, for a different purpose, not relevant to preamplifier function. Contacts A1 and A2 switch the preamplifier into the 50 ohm RF transmission line connected to the FT-200.

As an extra precaution against stray RF signal over-driving and possibly damaging the MosFET, the power to the MosFET is turned off by transistor V1 during transmit. The transistor was used because there were no spare relay contacts on relay A. Diode D1 limits damaging reverse voltage across the base to emitter of V1. Diode D3 limits the back EMF voltage across relay A.

The power and relay circuits were fitted on a separate card and together with the preamplifier card, fixed into a small aluminium box. The 50 ohm coaxial line between the FT-200 and the linear amplifier was intercepted and connected into the box through BNC connectors. A control cable was wired between a connector on the box and the FT-200 auxiliary plug for power and relay control.

Of course, you do not have to power and control the preamplifier the way described. You might choose to use a small battery or have 12 volts DC already in the transceiver.

Summary

With sunspot activity on the rise, 10 metres is starting to open up causing increased interest in this band. For many of us, with those less exotic transceivers which do not perform as well as they might on 10 metres, a preamplifier, such as the one described is a way of improving that performance.

Reference

1. Amplifier Noise - Lloyd Butler VK5BR, Amateur Radio November 1985.

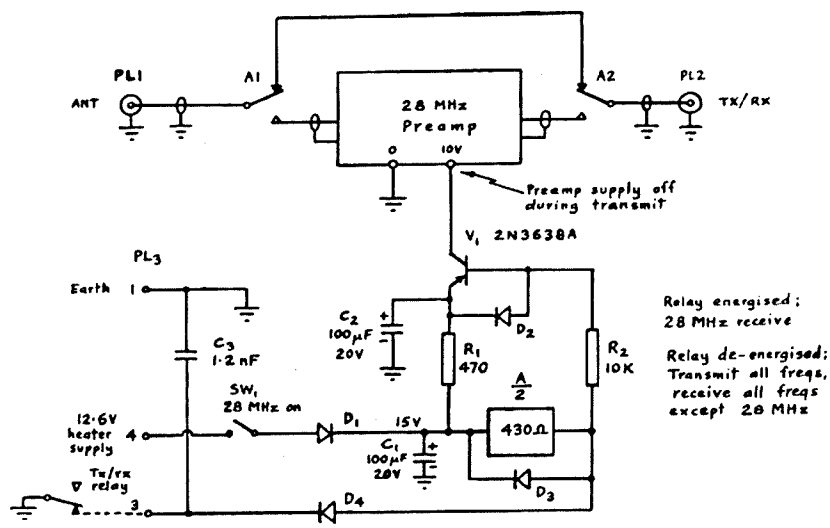


Figure 4. 28 MHz pre-amp. Transmit/receiving switching used with FT200

Topical Technicalities

Lindsay Lawless VK3ANJ
PO Box 112
Lakes Entrance 3909

Power Problems

The purpose of a power amplifier is to convert dc power to ac power controlled by a lower power input signal.

The dc power is usually in the form of a constant (regulated) emf and a widely varying unidirectional current.

Basic information about the likely performance of the combination of amplifier and power supply can be obtained by analysis of the current waveshape resulting from a sine wave input signal.

Ideally the current should contain a component which is an amplified replica of the input signal. The amplifier output circuits must select that component for delivery to a load eg an aerial system. The total current is not a replica of the input signal, it is a dc with superimposed ac. The ac may be a true replica of the input or it may be complex with only one component duplicating the signal input. An output circuit filter selects the signal component.

The efficiency of the conversion process has an ideal maximum which is degraded by the imperfect characteristics of the amplifying devices (at present solid state or electron tubes). The device imperfections also cause the output to be a distorted version of the input.

Solid state devices and electron tubes will surely be replaced with something better in future and it is worthwhile ignoring present limitations to examine what could be achieved. The three classes of amplification, that is, class A, B and C will probably survive independently of device development and that is assumed in the following discussion.

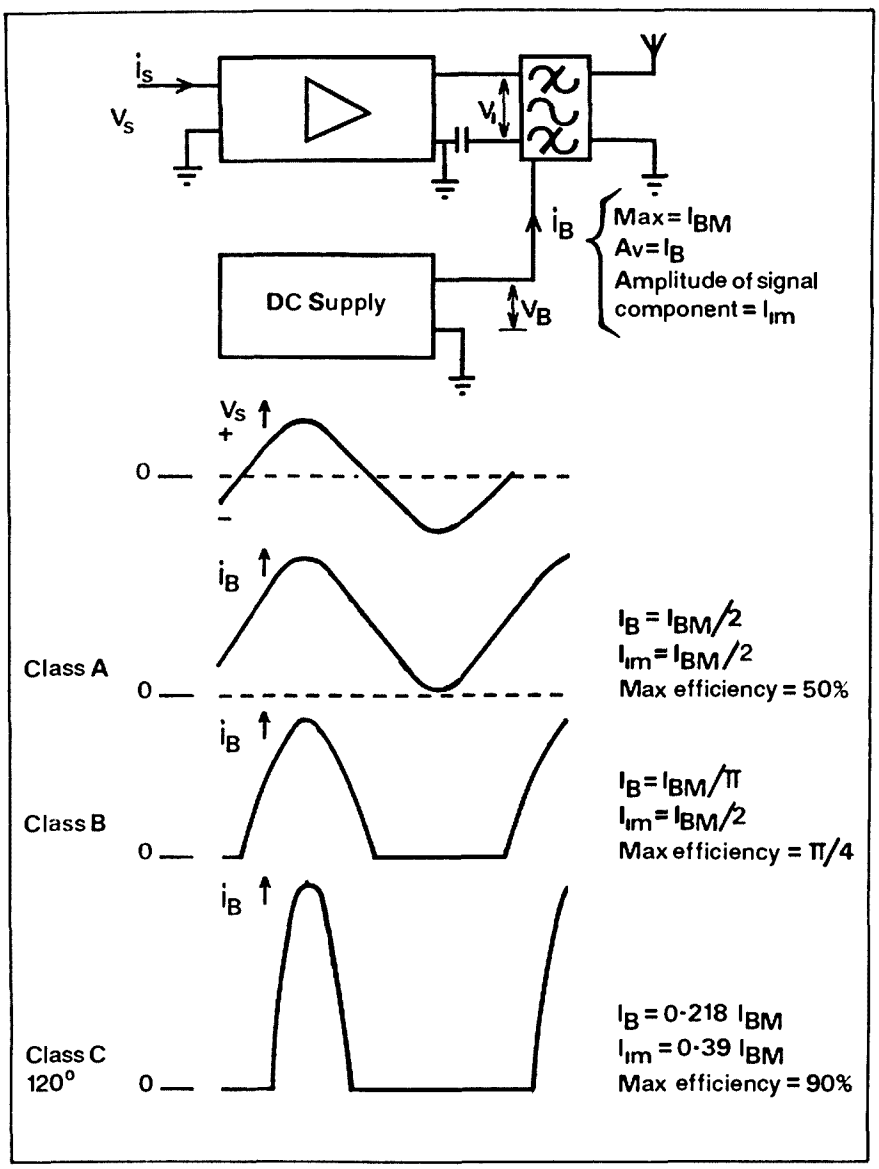


Fig 1 illustrates the current waveform to be expected from each of the three classes assuming a signal input of sine waveform driving the amplifier to maximum capability.

Table 1 lists the supply current average (I_B) the supply current peak (I_{BM}), input and overall efficiency for a 100 watt output system using a 12 volt dc supply. Two conditions are listed for each class, the ideal and that caused by device limited output emf of 10 volts.

Table 1 reveals that a 12 volt supply to a 100 watt linear or transceiver is a really hard worked component. The high currents involved pose special problems for designers and the user. The user must ensure that the designer's efforts to produce a regulated source are not negated by interwiring between supply and amplifier which results in significant volts drop. The example class B amplifier with a peak current of 40 amps would drop one volt over an external conductor of resistance 0.025 ohm.

Filters for such supplies cannot use chokes because of the amount of iron core and the conductor size required to cope with the high current. The only solution is condenser filtering, and, to achieve acceptable regulation and ripple content the condenser must be large. The condenser size is given approximately by :-

$C = I_B/200V$ Farad

V is the no load to full load volts drop and also the ripple amplitude. Thus for one volt drop in my 12 volt 20 amp supply C needs to be one tenth Farad which is a lot of microfarads. The actual filter preceding the regulator is 0.099F (3 x 33,000uF) and I have no complaints of hum on my transmission. (Note 1)

The above analysis of amplifier performance avoids the complication of device characteristics and that is often a useful preliminary to more detailed analy-

sis. The ratios quoted in Fig 1 are derived from Fourier analysis of the simple waveforms. The idea could be extended to graphical analysis of the more complex current waveform of an actual amplifier.

By the way if a push-push doubler is contemplated the current waveform is like that of a full wave rectifier and -

$I_p = 2I_{BM}/\pi$

$I_{2m} = 4I_{BM}/3\pi$

Maximum efficiency is 30%

Table 1

Class	IB	IBM	Power In	Efficiency
A (a)	16.6 amp	33 1/3 amp	200 watts	50%
(b)	20	40	240	42%
B (a)	10.6	33 1/3	127.3	78%
(b)	12.7	40	152.4	66
C(120°)(a)	9.3	42.6	11.4	90%
(b)	11	51	134	75%

(a) Vim = 12 volts

(b) Vim = 10 volts

(Note 1)

(The use of such large capacitors results in high peak charging currents and a significant increase in the required Volt-Amp rating for the power transformer. Watch for rectifier diode peak current ratings and particularly for increased transformer heating during extended operation! Tech. Ed.)

VHF/UHF AN EXPANDING WORLD

Activity 6 and Higher

Eric Jamieson VK5LP
9 West Terrace
Meningie 5264

Amateur Bands Beacons

Freq.	Call sign	Location	Grid square
50.066	VK6RPH	Perth	OF78
50.073	KH6HI	Hawaii	BL11 (1)
52.200	VK8VF	Darwin	PH57
52.320	VK6RIT	Wickham	OG89
52.325	VK2RHV	Newcastle	QF57
52.330	VK3RGG	Geelong	QF21
52.345	VK4ABP	Longreach	QG26
52.370	VK7RST	Hobart	QE37
52.420	VK2RSY	Sydney	QF56
52.425	VK2RGB	Gunnedah	QF59
52.435	VK3RMV	Hamilton	QF12
52.440	VK4RTL	Townsville	QH30
52.445	VK4RIK	Cairns	QH23
52.450	VK5VF	Mount Lofty	PF95
52.460	VK6RPH	Perth	QF78
52.465	VK6RTW	Albany	QF84
52.470	VK7RNT	Launceston	QE38
52.485	VK8RAS	Alice Springs	PG66
144.022	VK6RBS	Busselton	QF76
144.400	VK4RTT	Mount Mowbullan	QG62
144.410	VK1RCC	Canberra	QF44
144.420	VK2RSY	Sydney	QF56
144.430	VK3RTG	Glen Waverley	QF22
144.445	VK4RIK	Cairns	QH23
144.445	VK4RTL	Townsville	QH30
144.465	VK6RTW	Albany	QF84
144.470	VK7RMC	Launceston	QE38
144.480	VK8VF	Darwin	PH57
144.485	VK8RAS	Alice Springs	PG66
144.550	VK5RSE	Mount Gambier	QF02
144.600	VK6RTT	Wickham	QG89
144.800	VK5VF	Mount Lofty	PF95
432.066	VK6RBS	Busselton	QF76
432.160	VK6RPR	Nedlands	QF78
432.410	VK1RBC	Canberra	QF44
432.420	VK2RSY	Sydney	QF56
432.440	VK4RSD	Brisbane	QG62
432.445	VK4RIK	Cairns	QH23
432.445	VK4RTL	Townsville	QH30
432.450	VK3RAI	MacLeod	QF22
432.535	VK3RMB	Mount Buninyong	QF12 (2)
432.540	VK4RAR	Rockhampton	QG56
1296.198	VK6RBS	Busselton	QF76
1296.410	VK1RBC	Canberra	QF44
1296.420	VK2RSY	Sydney	QF56
1296.440	VK4RSD	Brisbane	QG62
1296.445	VK4RIK	Cairns	QH23
1296.480	VK6RPR	Nedlands	QF78
2304.445	VK4RIK	Cairns	QH23
2306.440	VK4RSD	Brisbane	QG62
10368.000	VK3RGZ	Pretty Sally Hill	QF22 (3)
10445.000	VK4RIK	Cairns	QH23

(1) Col VK5RO advises this beacon should now be operational.

(2) John VK3ZJC advises this beacon has been off the air for a month. It is included this time so that it will be on my computer data base but will be omitted next time around if no advice of reinstatement has been received.

(3) John VK3ZJC advises this beacon is still with Les VK3ZBJ but it may be installed in its final location by the time this is read.

Future Beacon Lists: In view of reductions in available space, I have given thought as to how the beacon list may best be handled and propose to follow this pattern:

1. As a result of Cycle 22 having the greatest impact on six metres, a full list of six metre beacons from around the world will appear in June, September, December and March. This takes advantage of the peak periods tor contacts via TEP, F2 and Es, depending on the time of the year and will continue until Cycle 22 is no longer important.

2. April, July, October and January will feature a full list of Australian beacons only, on all bands.

3. May, August, November and February will feature Australian beacons on 52, 144 and 432 MHz. This will allow some space in August and February for the Six Metres Standings List to be upgraded and published.

4. Any change to the status of a beacon, irrespective of bands, will be published as received so beacon officers are requested to promptly advise me of any changes please.

For the time being, an overall total list was published in February 1989. Keep this for your main reference. I would like to include a total list every month but realise that this will not be possible.

Six Metres.

As expected, the six metre band refuses to sleep. Almost every day, somewhere, contacts are being made via Es, TEP or F2. With the solar flux having peaks up to 300, is it any wonder Cycle 22 is producing interesting contacts.

Western Australia to Europe.

The outstanding contacts for the month must be the two-way six metre contacts to Europe on

25 February 1989. Alerted by Tony Mann, a West Australian television station DXer, that tv signals from Europe were appearing on 48.246 and 48.260, Wayne VK6WD became the first station in Australia to complete a two-way contact to Europe, by working LA3EQ, followed by LA8WF, both in Norway and OH1YP in Finland. This was on 50.110 MHz between 0830 and 0840 with signals between 5/3 and 5/5. Others to work the LA stations were VK6KXW, VK6ZKO and VK6HK. VK6KXW and VK6HK also worked OH1YP. The Norwegian stations said they were running 5 watts!

At the same time, a report came in that Graham VK6RO had been heard in Sweden by SM6 and by an LA3 station. An unconfirmed report said VK signals were audible in PE (Holland).

Congratulations to the WA boys for their achievement and many thanks to Tony Mann for alerting them to the possibilities of contacts. My thanks to Col VK5RO and Graham VK6RO for information on these contacts.

New Zealand Hears South Africa.

VK5RO sent news that on 25/2 Kerry ZL2TPY heard ZS2DM working European stations at 1945 on 50.110 MHz. He tried to get the stations to come up on 28 MHz but the signals were fading. Also heard the beacons ZS2E on 50.100 and ZS3VHF on 50.018. Signals were 5x6 on the long path at 30 degrees. African stations were working to the west coast of USA and as far inland as Washington.

Col VK5RO also said he and Bill VK5ACY had worked AH610 at 1745 on 12/2 and was advised the Hawaiian station would be running a beacon continuously on 50.073 as KH6HI. Col also reported that JAs had already Worked All Continents this season. Gil, VK3AUI, reported working VK9YQS/0 on Macquarie Island at 0746 on 3/2. Also JE2DWZ, JA2BXY and JR2HJS. VK3s worked into W on 5/2. The same day JA1VOK worked VK3BDL and reported having worked AH9AO on Wake Island. The Wake Island station uses a TR9300 to a 3 e. quad.

On 29/1 at 0255 VK8ZMA worked KX6DS at 4x3. (QSL to Dave Sublette, P.O. Box 4563, Huntsville, Alabama, USA 35815).

On 31/1 at 0920 ZL3TIC was heard calling VK6. At 0952 VK5LP worked ZL2CD at 5x8. Bill said so far that day he had worked VK2, 3, 5, 6 and 7. Short skip to VK3 produced VK3JBC 5x9 at 1012. This was in conjunction with excellent tropo conditions to VK3 on 144 and 432 MHz.

On 2/2 VK6AOM reported several days of weak six metre signals, finally working VK3AUU in the morning. ZLs were through again. On 3/2 worked VK6YAU in Albany on 52.050 at S2. 4/2: 0340 to VK8ZMA and VK8ZLX at 5x9. 7/2: 0930 to H44GR at S4. 9/2: From 0030 USA paging systems were S5 on 40.6 and 40.75 MHz through to 41 MHz. Sundry video carriers around 46 and 46 MHz peaking north east. 12/1: 0322 VK8ZMA 5x9; 0327 VK4DO 5x9. Wally reported working FK1 earlier. At 0735 KH6IAA to VK5ACY/5NY but the KH6 barely audible at Meningie. VK4RO also to KH6.

16/2: 0000 heard VK5NY and VK5BC working VK2 and VK4. Hugh VK5BC is one of the most consistent signals on 50.110. He can be heard at Meningie throughout the day, every day, calling CQ DX on CW, no matter where he places his antenna. For most of 16/2 the MUF was permitting 42 MHz signals to be heard from the USA. 23/2: JAs through at 0430, also on 25/2 and 26/2. On 27/2 JA7 and JA8 were available from 0200 and were still there at 0600. They were working VK4s and signals in VK5 were around S2 to 5.

Brunei

Andrew Davis, V85DA from Brunei has written another letter and says that on 4/1 at 0919 he worked KB6FIQ/DU3. Then on 15/1 from 0005 to JA1,5; 21/1: 0055 JA5,6 and 8; 29/1: 0925 JA2, 4 5; 4/2: 0030 JG2BRI, 0222 JA7WSZ, 0549 XX9CT, XX9KA. At 0650 Andrew said the VS6SIX beacon on 50.075 was S6 but signals from VS6UP were weak.

That contact was arranged via XX9CT who has a scatter path to Hong Kong. Andrew says the XX9 operation may not be permanent, although XX9KA is a resident he doubts if he has six metre gear to use. 1206: JG2BRI and heard beacon JA2IGY weakly. On 5/2 at 0705 he had another contact with XX9KA.

Andrew says he has not as yet heard any VK signals nor any VK TV signals. An antenna rotator soon to be installed may assist the situation. Gerald V85GA has a partly constructed six metre transverter and hopes to be operational later this year.

News from Noumea

Phill, FK1TS, sent a copy of his log from 19/12 to 29/1. He started on 19/12 by working ten ZL1 and 2 stations on 51.110 at 0539; 20/12 and 21/12 two each day in VK2; 22/12: from 1000 VK5OH 5x5, VK6WD 5x3, VK6RO 5x2, VK6KXW 5x2, VK6WD 5x2, VK6KZ 4x1 and VK5AYD 519 CW to SSB. 27/12: JA1,2,3,4,5,7,9,0 for 34 contacts starting at 0938. 30/12: VK5NY 5x9, VK5ZDR 5x9, VK2, VK4, from 0522. 31/12: 0146 VK3XRX, VK5NC, VK3BRZ, VK7ML. At 0213 Phill worked his first W station while his beam was on VK5 - K6STI at 5x2; 0217 W5FF 5x9, 0223 K5FF 5x9, 0236 WA7STM 5x4, 0238 WA7CJO 5x9, 0240 WA7KSF also another five WA7s and four K6s. At 0336 he worked VK2 and ZL2 for quite a good day!

1/1/89: 0726 VK4BRG. 2/1: from 0132 until 0312 worked 16 W6s, and WB7OHF, with signals from 5x1 to 5x9. 3/1: 0720 ZL1TZA. 4/1: from 0206 to 0300, VK1RX, 24 VK3s, VK5NC, VK5ZTS, VK5NY, VK7FB and VK7ML. Each day until 10/1 worked stations in VK1,2,3 and 4 plus VK8ZCU. From 11/1 to 24/1 Phill was in KH6. 24/1 to 28/1 VK1,2,3,4,7, ZL3, JA1,2,4,7 and 9 for 37 JAs.

With Noumea about 1500 km from Brisbane, Phill seems to be well placed for contacts in all directions. If extra hops with Es are accepted, then it is a double hop to VK5 and VK8 and a triple hop to VK6. Sounds like a good place to live during the better part of a solar cycle!

Brisbane

My good friend from Brisbane, John VK4KK/VK4ZJB, who regularly keeps me informed of band happenings, has written to say that on 9/2 stations worked from the Brisbane area were: 0015 W6UXN 5x7, 0130 to 0210 N6CA 5x6, WB6VYH 5x5, N6AMG 5x7, K6HCP 5x5 and KG6JDX/6 5x5. John advises that Joe KG6JDX is back in California and that Joe KG6DX is now the only six metre operator left on Guam.

Thanks John.

Japan.

As usual, the Japanese stations had a ball during October 1988, according to the Japanese "ham radio" magazine, per Graham VK6RO. Although somewhat dated, it may interest readers to know the spread of contacts during that part of the equinox: FK1TK, T20AA, 3D2ER, P29HS, YCOUVO, 5H1HK, PY2BBL, 5W1GP, HL9CB, KX6BA, C21RK, KH2CY, HL88BAS, KG6DX, YB0QC, 3D2AG, P29ZEF, KH6HI, P29FL, YB0ARA, YB0QC, VS6BT, VS6FL, PY2ZS, 9H1BT, SZ2DH, ZK1XT, VS6DO, LU9AEA, DU1GF, PY3BAM, KH6IAA, CX1DDO, KI6CG, KH2CY, HC5K, VS6XRC, LU3EX, PP7??, FK8EM, KH6SB, WY5L, H44GR, V85DA, VK9NS, CX8BE, CE3BFZ, plus a string of VK1,2,3,4,5,6,7,8 but no ZLs! That list represents 48 call areas in 34 countries.

SMIRK (Six Metre International Radio Klub

A letter from Ray Clark, K5ZMS of SMIRK, indicates moves are afoot in the USA via a 50 MHz FM Repeater Expansion Proposal to allow FM repeater operation in the DX window of VK stations, 52.000 to 52.100 and the ZL DX window from 51.000 to 51.100 MHz. Such a move will effectively put paid to the hopes and aspirations of a number of stations in VK and ZL to work stations in the USA.

Whether or not VK stations finally receive permission to operate Australia wide on 50 MHz has no bearing on this matter. There will be those stations within the service areas of Channel O transmitters whose only opportunity of working across the Pacific will be on 52 MHz and the moves in the USA will effectively preclude such operation. Our 52.050 MHz calling frequency is well known in the USA.

In the case of the ZL operators, at present there is no intention to allow them to operate on 50 MHz, so they require 51 to 51.1 MHz for their across the Pacific contacts. Such contacts have already been made this solar Cycle 22 and will continue to be made.

SMIRK strongly objects to the movement of the repeater sub-bands to 51 MHz if the 100 kHz segments for the New Zealand DX window at 51 to 51.1 MHz and the Australian 52 to 52.1 MHz DX window are eliminated. SMIRK says there is every reason to believe these two windows are going to be required by New Zealand and Australia for many years. With that I concur.

VK5LP is very much against any such appropriation of the six metre band. I will be stating

my opposition in a letter addressed to the American Radio Relay League, 225 Main Street, Newington, CT, 06111, USA. I will ask for my views to be distributed to Larry Price, W4RA, and the Board of Directors so they will know my position. Our geographical position on the globe does not assist trans-Pacific contacts and any wide-band operation at the US end will be a catastrophe.

Those amateurs who have sufficient interest in the six metre band and realise that some mates in Channel O service areas may be deprived of overseas contacts, should also write a letter in opposition to the proposal. May I suggest you do it now as the matter is urgent.

A few snippets of information from the last SMIRK newsletter, per favour K5ZMS and VK3AUI.

During Cycle 21, a count showed there were 114 countries with six metre operating privileges. The present count is 122. Donald Murden PY5ZBU claims to have worked 100 countries on six metres but is short of some QSLs to prove it. In Norway, 25 operating permits have been granted; in France there have been 417 applications and so far 80 granted, some denied.

VP2MO reports his beacon is on weekdays from 2000 and most of the time at weekends. Dutch authorities are issuing one year renewable licences for operation between 50.0 and 50.45 on a temporary basis ending 31 December 1993. Fred Simpson, VP8PTG in the Falkland Islands has equipment loaned by SMIRK. Finland will have 60 licences in the first issue, operating 50.0 and 50.50 and up to 200 watts SSB.

OX6OX has six metre authorisation and Saba (PJ6) should be on soon. Rigs have been sent to 9Q5NW and J52US. VP2EZ and J73PD are active. There are more than 50 ZS operators on six metres plus 3 in ZS3.

The SMIRK world wide list of six metre beacons totals 105, not all of which are in continuous operation. In addition there are numerous television video and audio channels.

Two Metres and Above

John McRae, VK5NJF has written from Nuriootpa in the Barossa Valley to pass on the news of his foray in the realm of two metres DX. Although restricted to FM he observed that the Albany repeater on 146.825 is the same frequency as their Barossa repeater and was alerted to the enhanced conditions at the end of January.

Observing VK6ZBH and VK6DM on the local repeater and anxious to work his first DX direct, John went to Menglers Hill with his FT230R with 3 watts to a 5/8 whip and spent some time before latching on to VK6ZBH. Trying again on 1/2, he worked VK5KCX via the Busselton repeater VK6RBN. Then worked VK6ZRT, but with little joy on the direct path.

Returning home, John built a 2 element quad and was able to work direct to VK6AOM, ZBH, DM, KLJ and PHL, the latter pinning the S meter while using a handheld with 1 watt to a 5/8 whip antenna. He also worked Carl VK6XW from Albany. Some strong SSB signals were heard but were not resolved on the FM rig.

It is good to see someone more or less tied to repeater operation, making the effort to work stations direct. With this indoctrination, perhaps John will now take the next step in the licence structure which will allow him to use SSB.

John VK3ZJC said two metres was open all day to Adelaide on 30/1. VK6WG worked VK3AUU, VK3UM and VK3APW on CW. VK5NY worked VK3 for several hours and included a contact to VK6WG with the beam on Melbourne. On 31/1 VK6WG worked VK2DVU at Condobolin, central NSW, a distance of 2693 km. A ZL station worked through the VK3RWZ repeater. On 1/2 VK6WG again worked VK2DVU and on 2/2 VK6WG worked VK3XRX at Bairnsdale, a distance of 2675 km.

John said 432 MHz contacts had been made to VK1BG, VK1VP, VK5NC, VK5NY, VK7ZBT and VK7DC. VK6WG and VK6YAU worked several Melbourne stations on 1/2 and 2/2. On 26/1, Geoff VK3ZGJ claimed what he feels could be a QRP record on 432. He worked Roger VK3XRS - a distance of 230 km - with 1 watt output, but signals were still so strong that Geoff put attenuators in his feedline until he was down to 1 milliwatt output. This meant of course that he had 30 dB attenuation on receive as well, but he was still able to work Roger. So he is claiming a record of 230,000 km per watt on 432 MHz!

On 1296, Danny VK3KKW has a 600 mW transverter operational and on 25/1 John VK3ZJC worked him when he had his new transverter in the car with a clover-leaf antenna a few cm above the roof. Danny noted that so far, there appear to be no claims for a 1296 mobile record.

Roger, VK3XRS has built a 50 element DL6YU beam for 1296 MHz and used it very successfully during the recent VHF/UHF Field Day. Sam, VK3ZAT has appeared on 1296 with an IC1271 and an antenna strapped to a vehicle outside his house!

John VK3ZJC, operated as a 4 band station from Mount Baw Baw during the recent Field Day Contest. Others out portable were VK3ATL on Mt. Cowley, VK3BBB Mt. Tassie, VK3XEC Mt. Toole-be-wong, VK3KKW Arthur's Seat and VK3YSP Mt. Hotham. As an indicator of the extremely poor conditions which existed between VK5 and VK3, there were six stations out portable in Victoria. Not one of them was heard at Meningie and it wasn't for the want of trying! It seems unbelievable.

On 432 contacts were made to VK7DC and VK7ZBT plus Melbourne stations. Geoff VK3ZGJ operated portable on Mt. Baw Baw but not in the field day. He had 144, 432 and 1296 and also ran an ATV transmitter on 426.25 for several hours on the Saturday afternoon. His pictures were received and videotaped by VK3ZBJ and VK3YTV. On 1296 there were ten active stations including VK7DC.

Ross VK2DVU has written about the excellent tropospheric opening he experienced on the UTC mornings of 30/1 and 3/2. On the first occasion at 2235 he worked VK6ZBH 5x4, 2240 VK6WG 5x8, 2246 VK6YAU 5x8 and at 2248 VK5ZDR 5x9. On 3/2 at 2151 he worked VK5NY 5x9, 2158 VK5ZDR 5x9, 2201 VK5RO 5x4, 2205 VK6WG 5x6, 2208 VK6YAU 5x4, 2211 VK5LP 5x9, 2215 VK6XY 5x7, 2229 VK5ACY 5x8 and 2342 VK2ZAB 5x9.

Ross said he checked the TV channels at 2100 on 30/1 and found the local Ch. 7 and 9 from Griffith rock solid, Ch. 10 from Melbourne and Ch. 5 Ballarat were full colour. After determining the direction the signals were coming from, he checked the repeaters to the south but these were indecisive due to cross-polarisation of antennas. He called regularly on 144.100 for nearly an hour with no response, so gave up and went to work. At about 2230 he was mobile between jobs when the local repeater VK2RRT opened up and VK6ZBH, almost noise free, announced he was listening. Returning home Ross knew from the excitement in Brian's voice that the contact was authentic. From home he worked Brian on 144.100 at 5x4 for a distance of 2693 km which is just short of the NSW record of 2697.9 km made on Es between VK2ZRU and VK6AOM. After working the other stations listed above, Ross thought that would be the end, possibly for many months.

For the next three days there were no signals, however, on the morning of 4/2 (3/2 UTC) Ch. 10 from Adelaide appeared. Calling to the west, Ross was answered by Roger VK5NY who was working to VK6. He then proceeded to work the other stations listed and after about 40 minutes the band closed.

Ross said his location favours the south and the west, being on the western side of a small rise with no visible hills on the horizon. Ross runs 35 watts to a 16 element phased array at 15 metres. Having now observed the full potential of his location, it seems the next step must be 432 MHz. He asked one question which I am unable to answer: Would this have been the first time a VK2 repeater was worked from VK6? Someone may be able to supply the answer.

It is notable that on the morning VK2DVU was having such fun, the VK5LP log book shows a number of good contacts apart from VK2DVU. At 2215 Mark VK3KZZ from Horsham was worked at 5x9, 2300 VK6XY Albany 5x5, 2310 VK3AOS near the Grampians 5x9, 2328 VK5AXV/3 at Kaniva 5x9 (and 5x6 on 432), 2356 VK3JBC 5x9 on 52.060. One wonders if this contact was by enhanced tropo or short skips Es - probably the former in view of the strength of the two metre signals.

The Low End of Six Metres

Apropos my letter to "Amateur Radio" and "Amateur Radio Action" regarding the use by amateurs, when not entitled to do so, of the segment 50.000 to 50.150 MHz, I wish to thank those people who have telephoned and written in support of my stand on the matter. I also wish to thank those people who have contacted me with views not entirely in line with mine, but all of whom adopted a fair and reasonable attitude towards my stand. From the reports of both camps, I gather there are many amateurs with a commonsense approach to their operating and who are generally responsible people, although some wander away from the straight line occasionally! As your Sub-Editor of "VHF/UHF An Expanding World" it was necessary for me to state my position and you all know which

side I must take. I do not propose going into a long discourse on the matter in these columns but there are a couple of points on which I wish to speak. Whilst I have no option but to support the regulations in their current form - because they are the regulations - the restrictions in VK1,2,3 and 4 which allow no operating during any Ch. O television hours, means that from Friday to Monday, no amateurs in those States can legally operate for 24 hours a day. For the great majority of amateurs, well away from the service area of these stations, this appears to be an unreasonable restriction.

It has pleased me to see the reasonable attitude taken by many of the European administrations towards amateur useage of the low end of 50 MHz, particularly as there are so many countries crammed together in a small area when compared with our vast distances.

The Federal Executive of the WIA has given me a copy of the Technical Report for the proposed shared use of 50 MHz between the Broadcasting Service and the Amateur Service, which has been submitted to DoTC in Canberra. The report consists of 20 pages and has been well researched and documented and I congratulate those involved in its preparation.

For those amateurs wanting to know what is the current position, at the moment we are bound by the present regulations, but if this submitted report is accepted then a set of reasonable operating conditions for the whole of Australia will prevail. I can only hope that approval will come while the prevailing conditions for world-wide contacts remain with us.

I wish to thank those amateurs who, since the letters, have refrained from using the segment involved. Nevertheless, it is interesting to record that with all the alleged operating on 50 MHz, I have not heard any complaints of interference, but then of course, I don't live in the eastern States. Perhaps this indicates that it is possible to operate widely on 50 MHz without too many problems!

Stop Press: On 1/3 at 0730 on 50.110 Mike VK8ZMA worked OH2TI in Finland at 5x9 both ways! Peter VK8ZLX almost missed out but did work OH2TI at 0827, he sent 4x1 and received 5x5, a few moments later the band closed. Peter said there was television on 48.250 at the time. Here at VK5LP 50.110 was open to Japan for most of the day. Congratulations. Who will be next?

Closure

As I conclude these notes at 0130, I can hear on the transceiver behind me, that JAs are on 50.110 MHz again, for the fifth day in a row. As usual, they are beirg worked by Hughie VK5BC.

I hope the next two months will provide some outstanding six metre contacts from around the world as we go into another equinox peak for F2 propagation.

Closing with two thoughts for the month: "An expert is a man who doesn't know all the answers, but is sure that if he is given enough money he can find them" and "Just because a rumour is idle doesn't mean it is isn't working".

73. The voice by the lake.

5/8 WAVE

April 1989

Many New Members

Jennifer Warrington VK5ANW

I am pleased to welcome the following new members all of whom joined between July and December 1988.

Mr G L Read	VK5PA	(G)
Mr R J Allen	VK5NAV	(F)
Mr AG Allwright	VK5IA	(F)
Mr AW Stringer	VK5ZCJ	(F)
Mr AT Harris		(A)
Mr IL Smith		(A)
Mr JE Brown		(A)
Mr CE Hobbs	VK5BCE/VK0CEF)	
Mr WG Richardson-Johnson	VK5ZG	(F)
Mr J Berka		(A)
Mr JS. Orlando		(A)
Mr KD Roper		(F)
Mr J G Wilhelm	VK5ZKW	(F)
Mr EWRH De Young	VK8XX	(F)
Mr K J Lancaster		(A)
Mr J E Sawes		(A)
Mr W Vogel	VK5NVW	(F)
Mr Y Slovachevsky	VK5ZYS	(F)
Mr I R Finch		(A)
Mr G R Dawe		(A)
Mr.P C T Cawthorne		(A)
Mr P W Parker		(A)
Mr W N Thomas	VK5VE	(F)
Mr W J Kilpatrick	VK5KWK	(F)
Mrs C C Haworth	VK8NCH	(F)
Mr E Vantijn	VK5AAG	(F)
Mr K J Glasson	VK8KG	(F)
Mr J H Moore	VK5AME	(F)
Mr.K WH. Perry	VK5AAF	(F)
Mr T Itagaki	VK5AFG	(F)
Mr C Richards	VK5ZPF	(F)
Mr P J Spaninks	VK5APJ	(F)
Mr I H Ritson	VK5NIR	(F)
Mr J B Hollet	VK5JK	(F)
Mr R M Baker	VK8KGV	(F)
Mr F R Roddam		(A)
Mr W Klompenhouwer	VK5ZDL	(F)
Mr I N Cousins	VK5IK	(F)
Mr G R Tootell		(A)
Mr N G Govan	VK5CMJ	(F)
Mr C F Johns	VK5ACJ	(G)
Mr K C Young	VK5AKY	(G)
Mr S Jovanovic	VK5KSJ	(F)

We hope that you will have a long and happy association with the WIA.

Diary Dates.

Friday 7th - Sunday 9th April - Clubs' Convention at Aldinga Beach

Tuesday 25th April - No WIA meeting (Anzac Day holiday)

Tuesday 2nd May - The Annual General Meeting (held over from the 25th April)

12th - 21st May - Display Station at the International Expo at Wayville. (have you put your name on the roster?

ar

FORWARD BIAS

Committee Changes

Norman Gomm VK1GN
19 Krichauff St
Page ACT 2614

New Committee

At the February meeting the members of the ACT Division elected the following office bearers.

President	Ted VK1AOP
Senior Vice President	Kevin VK1OK
Vice President	Alex VK1ZDX
Secretary	Jan VK1BR
Treasurer	Ken VK1KEN
Federal Councillor	Kevin VK1OK
Members	Neal VK1KNP
	Paul VK2CJ
	Norm VK1GN
	Carl VK1KCM

Our New President

Ted, VK1AOP, is no stranger to office within the Division, having previously held the offices of President and Vice President back in the seventies. He currently operates our Outwards QSL Bureau, and has done so since its inception.

Our new President has been interested in radio since he was a boy of nine. He sat for his first licence in 1952 and obtained one of the original issue Z calls - VK2ZAP.

Girding his loins, Ted then tackled the dreaded morse code exam and to his surprise passed the test. DOC equally surprised issued his full call VK2AOP which he later traded in for VK1AOP.

Ted was involved with the formation of the Canberra Radio Club, to be followed by the Canberra Radio Society where he served as Treasurer, Secretary and President.

When the ACT Division was formed Ted played an active role in its development. He has also served as Convention Secretary for the 1958 South Western Zone Conference in Canberra.

Ted's main Ham radio interests are DX, RTTY, VHF mobile, Field Days and awards. Other interests include golf, photography and genealogy.

He has degree level qualifications in electronics and computing.

Formerly a public servant, Ted retired in 1983 (lucky sod). On behalf of the Division congratulations to Ted on his appointment.

Classes.

Classes for both Novice and Full Call licences will be underway shortly. Bob May VK1BM has volunteered to run the classes and if you are interested please contact Bob.

ar

DATA AND DIGITAL COMMUNICATIONS

New Column

Brian Beamish VK4AHD
AsiaNet Coordinator
SysOp VK4BBS PBBS
35 Chester Road,
Eight Mile Plains, Qld. 4113

Welcome to YOUR new bi-monthly column, one that I am sure given your support will prosper, improve and be here for a long time.

The intent of this column is to endeavour to cover all modes and aspects of digital and data communications including computer software and terminal hardware etc.

Modes covered will include: RTTY, AMTOR, ASCII, FAX, Digital Signal Processing, Packet, TCPIP and digital voice and picture transmissions, Satellite digital communications & PSK etc.

Whilst this bi-monthly column will generally be around a page in length, there will be technical and specialist items from time to time that will go into several pages.

As my expertise these days is largely in Packet and as a BBS Sysop my own articles will be largely biased towards Packet.

I am aware of many amateurs who are far more experienced in data and digital communications and in the other modes than I am.

Most of these operators would be capable of writing articles on one or more of the modes mentioned above, I appeal to these operators to please support this column with either short or long articles, hints and tips etc etc.

Whilst appealing to operators to write articles etc I would also really appreciate hearing from you the reader as to what you would like to see here; maybe you have problems with your particular mode, have problems with a Packet or Amtor BBS etc. getting that software to run, getting that terminal unit running with a Model 15 Teleprinter or a TNC with your particular computer and would you like to know all about TCPIP or what the difference is between AFSK, FSK, PSK and MSK etc. etc.

Well this colum is for you, let me know what you want and I will do my best to get it for you.

It is intended that where suitable and possible that about two weeks after the column and articles appear in Amateur Radio some will also appear on the Packet Radio BBS Network, less of course any photos or diagrams etc.

Consequently it is highly recommended that you join the WIA to get your monthly copy of "AR" to obtain these.

As this is only a rushed initial introduction to this new column (I leave on holidays in a couple of days) I thought I might give you a list of some of the clubs and individuals that I personally know would only be too pleased to assist you. Unless otherwise indicated all addresses are as per the current call book.

RTTY & AMTOR

Australian Amateur Radio Teleprinter Group Inc (AARTG)
12 Selway Rd, Brentwood, WA, 6153
Australia National Amateur Radio and Teleprinter Society (ANARTS)
PO Box 860, Crows Nest, NSW, 2065
Queensland Amateur Radio Data & Teletype Association Inc. (QARDATA)
PO Box 184, Fortitude Valley, Old, 4006
Packet and TCPIP etc.
Melbourne Amateur Radio Packet Group (MARPG)
P.O. Box 299, St. Albans, Vic., 3021
Australian Amateur Packet Radio Association (AAPRA)
59 Westbrook Avenue, Wahroonga, NSW, 2076
Queensland Digital Group Inc (QDG)
PO Box 2224, Chermside Centre, Brisband, Old, 4032
Amateurs I am sure would help include:
VK2OP, VK2SG, VK2AGE, VK2EHQ, VK3AVE, VK3BSR, VK4WZ, VK4AFA, VK4FEA, VK4KJB, VK5AEI, VK6AGC, VK7AE (VK7BBS), VK8BBS, ZL2AMD.
Satellite Digital Communications:
AMSAT-VK .... Graham VK5AGR Coordinator
C/o P.O. Box 2141, Adelaide, SA, 5001
AMTOR to VHF Packet Mail Boxes in VK include:
VK2AGE VAGE Gordon
VK2EHQ VEHQ Peter both on 20m
RTTY BBS in VK:
Whilst I am aware that they are around I have no information on them.
Open User accessible PACKET HF BBS in VK include:
On 14.107 VK2EHQ, VK7BBS, VK4AGF, VK6BBS
On 10.147 VK2EHQ, VK2OP, VK3AVE, VK3BSR, VK7BBS, VK5AEI, VK4FEA
On VHF Packet BBS in your area will be found around either 144.900 or 147.575.
VKnet Coordinator is Peter Boskos, VK2EHQ, RMB 3120, George Downs Drive, Kuinura, NSW, 2251
AsiaNet information can be obtained from the coordinator, Brian Beamish, VK4AHD, 35 Chester Road, Eight Mile Plains, Qld., 4123
If you wish to write to me personally with your articles, suggestions or questions please do so at the above address. Your cooperation and assistance is sought to make this column the success that it should be .....

EDUCATION NOTES

Volunteer Effort

Brenda Edmonds, VK3KT.
PO Box 883
Frankston, 3199

A comment was received recently implying that some of the volunteer work carried out by members is not given due recognition. I wonder if this feeling is general.

In a time when society is putting increasing pressure on our limited leisure time, are we alienating some of our dedicated workers by appearing to ignore their contributions?

Are we giving due credit to those who are running classes, CW practice nets or coaching sessions to help newcomers enter the hobby. It may not be only the 'educators' who need more credit.

Most volunteer organisations are perpetually short of bodies to do the constant, day-to-day jobs. Office bearers will be found, either those who seek office for personal reasons or those who take on a position in order to keep the organisation running, but too often the work is then left to this group.

The WIA is no exception. Most Divisions, Zones and Clubs are run by the dedicated few, and the rest are happy to leave it to them, even though that few have no more time to spare than the rest. But some of the rest are quick to complain when the decisions of the management group do not suit.

Channels are available for all members to make their views known to the decision makers, but these channels are rarely used as much as they should be.

An interesting 'side effect' of the survey last year was the number of members who added comments on various aspects of amateur radio. They used a new channel. Without it, would they have made the effort to correct or improve some situation about which they felt strongly? Without it, we may have been still unaware of many views and ideas which we have been happy to receive. Perhaps there is a need to provide regular formal opportunity for this type of feedback.

The WIA relies very heavily on volunteer assistance at all levels - Executive office, Divisions, Zones, Clubs and individuals. Volunteers run Divisional Offices, classes, club nets, Conventions, bookstalls, fox hunts and White Elephant nights. They look after QSL Bureaux, Intruder Watch, repeaters and beacons, awards, contests and distance records. They provide service to members having trouble with town planning regulations or interference, and information about satellites and equipment. They comprise advisory committees and working parties, and provide liaison with a range of other bodies.

In many cases, their work is unrecognised because members are genuinely unaware of the amount of work involved in, say, preparing discussion papers for a WARC or an IARU Conference, or negotiating with DOTC for changes in privileges. In other cases members may not know of the services being provided. Dedicated groups are running regular on-air Morse practice sessions at times to suit those who cannot use the evening sessions. Others are coaching students on an individual or small group basis. Still others are taking amateur radio out to community groups, schools or local Festivals.

We owe a great debt to these people who have seen a need or an opportunity to further the cause of amateur radio, and have quietly gone out and done something about it without looking for personal reward.

It is not possible to keep track of all these people to acknowledge these debts individually, but two courses are open. Those on the receiving end can show their appreciation at the time, and we who benefit from the service or from the recruiting of new members can in turn contribute to encouraging newcomers.

Amateur radio has a long tradition of the senior operator helping the new. It is sad if assistance given is not acknowledged until the time comes to produce an obituary notice.

To all those 'invisible' workers, we are appreciative of your efforts, and do realise how important your contributions are. How about letting us know more about them? Perhaps some of those being helped could write a few lines for AR on the services being provided, and a short profile of the amateurs behind them.

A further acknowledgement could be some sort of 'service' award to those who are shown to have given so generously of their time and talents.

We certainly cannot afford to appear to neglect their contributions. We would be very happy to see more members following their example.

Three cheers for the Volunteers.

Brenda M. Edmonds, VK3KT
Federal Education Co-ordinator.

CONTESTS

Contest Calendar

Federal Contest Manager
Frank Beech VK7BC
37 Nobelius Drive
Legana 7277

April

12-14	YLRLDX/YL to N Am YL CW contest	
19-21	YLRLDX/YL to N Am YL SSB contest.	
29-30	Swiss	Helvetia contest.

The column for this month is devoted to the 1988 Remembrance Day contest. Next month will include the results of the 1988 Ross Hull contest and the VHF/UHF field day contest that was held in January 1989. When placed "side to side" these results will prove to be most enlightening and will, I hope, indicate what path should be taken to lift the participation in VHF/UHF contests.

Remembrance Day Contest 1988 Results

Congratulations to the VK4 Division. Winners once again.

The entries received for this contest are all listed in the results, and any amateur who cannot find his/her entry in the following lists can be assured that the log did not arrive at this address. I was very pleased that no entry was disqualified and only a small number of logs contained undetected duplicates, none of which caused me to apply the disqualification rules.

A total number of 544 entries have been checked, and of these almost 160 for the VHF section makes one wonder why our VHF only contests can at best only attract a handful of entries. Thanks must go to Bill ZL4QY for a useful check log of CW operations, and to VK2KZ for sending in a nice log. 2KZ has been licensed since 1929, "thanks old timer".

Comments from Competitors

Comments; Why no transmitting "all bands category"? Please consider the modern amateur station complete with logging computer .....whether full, combined or novice calls! The VHF bands are empty of stations that can be re-worked" so the RD contest entrant runs up the HF rig ..... but the computer says you have already used up serial number 001 on VHF ..... and won't let you re-allocate it on HF!

Run a separate log program under another name? OK, do that! there is a brief lull on HF and a few callsigns appear on VHF that you can work again quickly ..... what do you do?? Computers and mass storage devices might be quick but it is hard enough to type in the data without the worry of which log you are in, or reloading the other log system to grab a few quick calls! Be realistic - an "all bands" category is the only reasonable answer.....VK4ADC.

Enjoyed the Friendly spirit, numbers down? .....AX prefix didn't seem to be much favoured, at least within VK. Glad of the chance to contact so many gentlemen and to remember the good old days from September 39 to August 45 .....Lest we forget .....VK4IS. Best remembrance contest to date, with good fellowship and total lack of unpleasantness...VK4AGL.

I enjoyed this year's contest once again. I found the operators very friendly and good operating. Was good to see the contest mentioned in our "Break in" on the calendar plus a set of rules. It would be good if the results were also sent to "Break in" for publication. I entered last year's contest but there has been no word out here of the results .....ZL2ADN.

There will be this year ...FCM.

I guess contesting is not everybody's cup of tea, and indeed this is my one and only contest for the year,. and only my third RD. I think it is trite to say, however, that everyone comes out of the woodwork to participate in our "Day of remembrance", our "Anzac day of the air", so to speak. I even had a contact from FK8GA, George, wanting to know about the significance of the day and Dick FH5EF ventured to give me 59003. I wonder who got 001 and 002 .....VK4BAY.

At the start of the contest I found the going rather slow compared to previous years, however, this was to change during the remainder of the contest with a new high score of 654 defeating my previous best of 651 in 1986. I attribute this to the minor openings on 10 and 15 metres on Sunday ..... In all I enjoyed the contest and hope to do better again next year .....VK2KL. Don't we all.....FCM.

I must thank Philip VK1PJ for the very constructive letter and comments regarding multiple callsigns and signal reports. These have been noted and will receive much thought before we print the rules for the 1989 contest. FCM.

Divisional Scores

VK1

HF Phone	2720
VHF Phone	391
Total score	3111

VK2

HF Open	878
HF Phone	5668
HF CW	2002
VHF Phone	29
Total score	8577

VK3

HF Open	694
HF Phone	3657
HF CW	1724
VHF Phone	1666
Total score	7741

VK4

HF Open	719
HF Phone	6610
HF CW	1618
VHF Phone	3279
Total score	12226

VK5

HF Open	1612
HF Phone	7559
HF CW	1067
VHF Phone	2487
Total score	12725

VK6

HF Open	970
HF Phone	6129
(includes Xmas Isd	307)
HF CW	1228
VHF Phone	4460
Total score	12787

VK7

HF Open	652
HF Phone	1856
HF CW	954
VHF Phone	911
Total score	4373

VK8

HF Open	200
HF Phone	627
HF CW	134
Total score	961

Overseas Scores

VK9QR Christmas Is HF Phone	307
ZL1AAS HF Phone	503
ZL1BVK HF Phone	406
ZL3KR YL HF Phone	212
ZL1IM HF Phone	189
ZL2ADN HF Phone	180
ZL3ABC HF Phone	104
ZL4GB HF Phone	59

Receiving Section Results

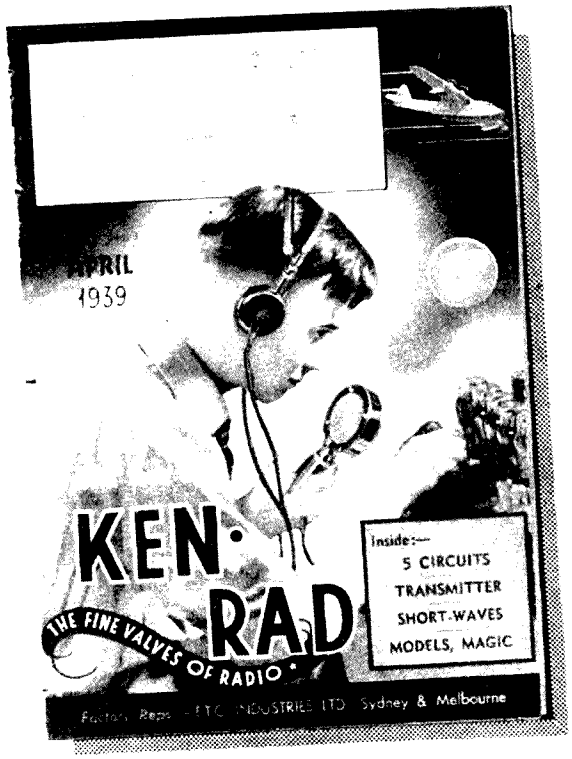
L50189 C. Edwards SA	415
L60036 P. Dean WA	285

Individual Scores by Division

VK1	HF Phone	VK1	VHF Phone
VK1PJ	718	VK1DI	78
1RJ	406	1RG	50
1TD	319	1DW	48
1ZL257		1ZAR	46
1BEB	252	1TD	29
1RG	201	1MX	29
1DW	127	1ZL	28
1RH	120	1RH	25
1MX	92	1BAT	22
20E/1	60	1ST	15

Fifty years of electronics publishing:

Electronics Australia: 50 years old this month



Fifty years ago this month, a new monthly radio magazine appeared on the Australian news stands – *Radio and Hobbies*. It went on to become an established part of Australian radio and electronics publishing, with many famous amateur radio projects described in its pages over the following years.

Nowadays, of course, the magazine is called *Electronics Australia*. And this month's issue is a very special one, to celebrate our 50th Anniversary. Apart from anything else, it's the largest issue we've ever produced – with no less than 260 pages.

Inside there are all sorts of special articles, reviewing what has happened to both radio/electronics and the magazine itself over the last 50 years. Articles on Australia's radio pioneers; on the way the radio, hifi and consumer electronics industry has grown, from the first battery radios and gramophones; a review of the classic amateur radio and hobby projects we've published over the years; articles looking at the development of transistors, integrated circuits and computers; a special article on Australia's role in the development of radio astronomy; and an attempt to predict what might happen in the NEXT fifty years...

And if that's not all, there's also a special souvenir reproduction of our original April 1939 issue, attached as a bonus to the front of the issue – just to show what things were like when we began!

All of this is in addition to our normal articles, construction projects and features. There's a special article on current developments in satellite TV reception, for example, plus the first of two articles describing how to make a replica of the Ruhmkorff induction coil used in early spark transmitters.

Don't miss out on this special 50th Anniversary issue, which is undoubtedly a milestone in Australian electronics publishing history. We expect it to be a sell-out, so a delay in picking up YOUR copy at the local newsagent might lead to disappointment!

Australia's top selling electronics magazine!

1DI	42	1LF	11
1ADQ	26	VI88ACT	10
VI88ACT	11		

VK2	HF Open	VK2	HF Phone
VK2BO	553	VK2ZZX	29
2HQ	139		
2MUZ	80		
2BLK	60		
2AIC	46		

HF Phone				HF CW	
2KL	654	2NV	54	VK2BHO	276
2ZL	429	2BMX	52	2AQF	264
2BTP/P	413	2OH	50	2DQP	248
2BAM	357	2VR	48	2FCO	232
2PD	354	2SP	40	2AZR	160
2AOA	297	2KA	40	2EL	134
2XT	284	2PY	40	2BRA	132
2PS	267	2KGX	38	2II	124
2DWT	225	2DDW	33	2CWS	80
2RF	222	2PJT	30	2GT	76
2AGF	206	2JCL	29	2QL	76
2ARG	187	2AJO	25	2ED	74
2WI	180	2ETF	24	2JM	58
2DQP	151	2RX	23	2ARZ	54
2CJH	151	2AYF	20	2RJ	14
2DFL	150	2DOJ	19		
2PN	130	2AMM	15		
2AYK	126	2CH	14		
2DJJ	83	2HJ	12		
2KZ	62#	2CF	10		

VK3 Open				HF CW	
VK3ER	225			VK3CQ	330
3AUQ	218			3KS	228
3DNC	164			3CX	201
3XF	87			3BOH	130
				3CIM	122

VK3	HF Phone	VK3DKT	104	3DG	122
VK3AJU	498			3CAX	94
3BSH	454	3ATJ	100	3FC	81
3APC	260	3KT	85	3OIO/grp	70
3ALZ	247	3GV	73	3JI	54
3EWD	210	3PTR	61	3KF	40
3SM	153	3DVT	53	3AMP	34
3CAY	152	3AMW	52	3FA	24
3PJB	148	3CAP	52		
3CEE	147	3DBK	49		
3ABP	137	3AOS	40		
3BRZ	116	3KTO	31		
3CDH	110	3DYF	14		
3AJG	106				
3AJG	106				
3ADW	105				

VHF Phone			
VK3TAY	246	VK3XMW	58
3APC	182	VI88WIA	50
3AVV	173	3XH	44
3ZJC	166	3BH	43
3CAP	128	3BMV	40
3GV	106	3KTO	37
3XBA	100	3KT	32
3CLS	93		
3SM	89	3ER	28
3DNM	80	3AOM	13
3DKT	58		

VK4 HF Open		HF Phone			
VK4YG	388	VK4BTB	479	VK4BNL	80
4QI	202	4JQ	380	4AVR	75
4LT	69	4DO	350	4CA	75
4VAT	60	4BAY	335	4BG	72
		4AEV	328	4KB	68
HF CW		4AQD	282	4CEM	65
VK4XA	406	4AGL	270	4BIF	66
4CAG	300	4AEM	225	4OD	64
4JH	246	4YZ	224	4NMA	60
4BRZ	118	4AOE	185	4RE	50
4CEU	98	4BTW	180	4RL	50
4BIL	90	4KEL	163	4PS	49
4SF/grp	48	4IS	155	4BRG	49
4XJ	44	4ASF	147	4BSH	41
4XX/mm	42	4NEF	137	4ES	41
4QY	30	4CPL	135	4EV	37
4TT	24	4ANJ	129	4YZ	36
		4VR	125	4WY	35
		4QF	123	4LP	34
		4ACW	122	4AGP	33
		4WIZ	111	4CZ	30
		4CMA	112	4BKW	30
		4PT	106	4ADC	23
		4YN	90	4JCS	22
		4NUI	90	4BAV	22
		4RM	85	4MEH	18
				4BPD	15
				4NNN	12

VK4 VHF Phone			
VK4ALE	306	4PJ	54
4WIZ	226	4ANN	51
4ZBV	222	4AIZ	47
4KAP	170	4YAF	38
4ZSS	166	4EV	38
44AVR	156	4BAW	32
4NLV	142	4AOK	36
4VR	137	4KE	33
4NEF	136	4BAW	32
4YAN	132	4KJR	32
4ZML	109	4XPO	26
4AHO	107	4KAC	26
4ZXZ	106	4KLC	24
4IY	100	4GT	23

VK6 HF	Open	HF CW	
VK6ED	389	VK6HQ	352
ANC	290	6AFW	294
6HT	225	6AJ	240
6JK	66	6SM	126
		6RF	124
		6RU	64
		6GA	28

HF Phone			
VK6AYO	515	VK6NAZ	46
6BSE	431	6HK	46
6DE	401	6UT	40
6AO	261	6KH	40
6AEA	257	6SH	37
6ATZ	245	6GL	37
6NTJ	230	6GGN	23
6AMB	229	6BMW	23
6JP	200	6BRK	35
6XQ	197	6UW	35
6APK/p	172	6BO	31
6WC	162	6AAL	31
6ALO	161	6OE	30
6BRN	160	6BMV	27
6PHL	150	6ANT/p	21
6TO	150	6HM	20
6JP	146	6DA	20
4APG	90	4ADB	21
4ZDV	67	4SL	20
4AG	62	4RX	17
4BNL	61	4LG	10
4KLA	61		
4KJE	60		
4KCA	54		
4KZA	54		

VK5 HF Open		HF CW	
VK5AYD	685	VK5ATU	403
5GZ	368	5UY	200
5LZ	320	5MN	126
5BMT	142	5AO	118
5TL	62	5AF	92
5EA	35	5HO	74
		5JG	54

HF Phone						VHF Phone	
VK5QX	698	51J	108	5LL	29	VK5KCX	319
5ADD	577	5TP	104	5ANW	29	5AKK	310
5EN	554	5UE	96	5BF	29	5ZBK	259
5ATN	450	5NF	91	5KTY/p	26	5PC	148
5ARN	401	5ZE	90	5AAS	25	5OR	139
5XY	377	5ZE	90	5YK	25	5YME	121
5BAR	305	5ST	85	5ZJ	22	5RV	110
5ATC	260	5KV	80	5XC	17	5OZ	110
5KGS	213	5BVJ	80	5LC	14	5AKK	104
5BI	202	5BFB	71	5KJT	13	5XY	100
5OV	183	5QW	70	5OU	12	5KTY	91
5AJK	168	5GN/m	67	5NEI/p	10	5NVW	82
5ARC	167	5BWF	61	5YJ	10	5ANW	80
5AX	165	5QP/m	60			5AVQ	66
5RV	158	5ACW	50			5ZTJ	63
5OR	152	5AQ	50			5ZKK	50
5APJ	147	5RK	46			5AOV/p	39
5PC	145	5AOV/p	44			5RR	33
5WO	132	5ZD	45			5OU	19
5GV	123	5EJ	35			5GN/m	18
5NVW	122	5TW	34			5GN/m	18
5APD	120	5AGB	30			5QP/m	16

VHF Phone			
VK6ZLZ	275	6AMB	53
6WH	248	6AN	45
6ZPP	215	6WC	
6ABR	195	6WIA	43
6YF	188	6AR	40
6AD	178	6QN	40
6XQ	178	6YJ	30
6AO	163	6WT	28
6CX	163	6RU	26
6TO	160	6YL	26
6TX	154	6DC	24
6KWN	148	6APK/m	17
6HM	140	6EB	16
6SH	135	6HT	16
6NE	100	6RZ	16
6UT	100	6VH	15
6AP	99	6ZGA	14

6FC	125	6LI	19	6HU	95	6NWA	12
6FP	105	6VF	16	6FC	95	6RRG	13
6AP	101	6MM/p	16	6ANC	93	6PHL	10
6RU	86	6EF	14	6AEA	93		
6VS	78	6JMP	14	6RO	90		
6IG	72	6OV	12	6TX	88		
6PAY	74	6EB	12	6MP	87		
6YF	71	6ABR	12	6SAA	84		
6CR	72	6RO	12	6GGN	78		
6ON	67	6IV	10	6SGS	76		
6SAA	64			6NRN	62		
6SCS	56			6BO	59		
66MK	54			6ANI	55		
6KWN	51			6ZLT	54		

VK7 HF Open

VK7KR	355
7BC	297

HF CW

VK7CH	236
7RO	226
7RY	182
7KA	128
7FN/qrp	64
7VV/qrp	64
7GB	54

VHF Phone

VK7ZTA	240
VK7GL	130
7ZRR	106
7NWR	97
7RM	87
7ZBW	75
7ZJG	40
7LS	27
7BA	28
7JK	14
7PV	10

HF Phone

CK7KZ	569	7AL	60
NCP	313	7SFB	40
7CK	259	7HW	20
7NXA	156	7BJ	36
7JK	98	7RM	30
7NWR	91	7JP	25
7NIM	71	7BM	15
VI88TAS	63	7LS	10

VK8 HF Open

VK8PK	200

VK8 HF Phone

VK8DA	592
8NW	35

VK8 HF CW

VK8HA	134

The formula for determination of results for each division is:

Number of logs/Number of licencees (participation) x Total points x Weighting factor (average of last four weighting factors).

Weighting factors to be applied for 1988 contest.
VK1 1.03, VK2 6.73, VK3 5.46, VK4 5.67, VK5 1.45, VK6 1.68, VK7 2.47, VK8 11.46

VK1. 26/401 x 3111 x 1.03 = 207.762
VK2 62/5409 x 8577 x 6.73 = 661.640
VK3. 64/4923 x 7741 x 5.46 = 549.464
VK4. 112/3008 x 12226 x 5.67 = 2581.113
VK5. 93/1822 x 12725 x 1.45 = 941.803
VK6. 120/1627 x 12787 x 1.68 = 1584.423
VK7. 37/584 x 4373 x 2.47 = 684.328
VK8. 4/205 x 961 x 11.46 = 214.887

Results in Numerical Order

1st	VK4 div.	2581.113
2nd	VK6 div.	1584.423
3rd	VK5 div.	941.803
4th	VK7 div.	684.328
5th	VK2 div	661.640
6th	VK3 div.	549.464
7th	VK8 div.	214.887
8th	VK1 div.	207.762

Licences per Division at September 1988

VK1.	401
VK2	5409
VK3	4923
VK4	3008
VK5	1822
VK6	1627
VK7	584
VK8	205

HAVE YOU SIGNED UP A NEW MEMBER THIS MONTH?

Sangster Shield Cantest

Presented to the amateurs of New Zealand by Mr R Sangster in 1927, the Sangster Shield is for annual competition to be won by the most efficient station. In this respect it should be pointed out that in addition to the efficiency of the transmitter itself, the efficiency of the operator is of the utmost importance. To win this contest marks an operator as one who not only knows how to obtain the most output from low power but also as one who is most proficient in the art of telegraphic communication.

Rules

1. When? May 6-7 between the hours of 8pm and midnight on each day. The maximum period of operation will be eight hours.

2. Power: To compete for the Sangster Shield the output of the transmitter must not exceed 5W.

3. CW to CW contracts only are permitted.

4. All operation must be in the 80m band.

5. (a)Contacts with any one station permitted each hour, based on "even hour" basis –eg. 2000 to 2100 etc, etc.
(b)It is not permissible to QSO the same station "twice running", eg, at the end of one hourly period and at the beginning of the next. A different station must be contacted before the "same" station is contacted again.
(c)Except that this is permissible when one of the two stations concerned has contacted a different station between QSOs or when there is a time delay of at least five minutes between the contacts.

6. All ZL entrants must be financial members of NZART.

7 All Radio Regulations must be ovserved.

8. In the event of any dispute, the ruling of the Executive Council will be final.

9. Logs:
(a) QUARTO or A4 size paper – preferably NZART log sheets.
(b)Data in this order; date, time, call of station contacted, serial sent, serial received, points claimed.
(c) ON SEPARATE SHEET a summary to show:

(i) Call sign, name and address in BLOCK LETTERS;
(ii) Number of contacts with stations using 5W or less;

(iii) Number of contacts with stations using 6W or more;
(iv) Number of contacts with overseas stations using 5W or less;
(v) Number of contacts with overseas stations using 6W or more;
(vi) List of different Branches worked with number and name of the Branch in order as given in the Call Book, together with the callsign of the station claimed as a multiplier for that branch;
(vii) Total Score – (total points and different branches);
(viii) Description of equipment used and POWER used;
(ix) Declaration that all contest rules have been observed.
(d) UNDERLINE each new Branch claimed as a multiplier. (Underline all entries for that QSO.)

10. CYPHER SYSTEM:
(a) RST followed by Branch number followed by power output –eg, 569/11/04. This would indicate a 569 report; Branch 11; and Power of 4W. Power will always be given as TWO figures – over 100W will be given as 99 while below 10W will be preceded by 0.
(b) Overseas stations give RST plus power but must receive the full cypher from the ZL station.
11. SCORING:
(a) ZL to overseas with power given as 5W or less – 20 points.
(b) ZL to overseas with power given as 6W or more – 10 points.
(c) ZL to ZL with power given as 5W or less –5 points.
(d) ZL to ZL with power given as 6W or more – 1 point.
(e) Overseas using 5W or less to ZL with power given as 5W or less – 10 points.
(f) Overseas using 5W or less to ZL with power given as 6W or more – 5 points.
(g) Overseas using 6w or more to ZL with power given as 5W or less – 3 points.

FINAL SCORE is total of points multiplied by number of different NZART Branches contacted.

NOTE: Contacts with a contestant's OWN Branch are OK for QSO points but NOT as a multiplier.

12. Mobile or Mobile/Portable operation is not permitted. The station must be operated from a fixed location for the duration of the contest.

13. AWARDS;
(a) Sangster Shield: to the highest scorer using 5W output or less;
(b) Transistor Trophy: to the highest scorer observing the rules as enumerated, but in addition who has been licensed for 12 months or less. Entrants must give Operator's Certificate number together with date of issue;
(c) Certificates to the first three contestants using 5W or less, similarly to "newly licensed" entrants;
(d) Certificate to contestant using over 5W with the highest score made from QSOs with stations using 5W or less;
(e) Certificates to Overseas stations to the highest scorer in any call area.

14. Logs must be posted to reach the Contest Manager, ZL3KR, 4 Exton Street, Christchurch 5, on or before June 2 1989.

15. To give QRP Contestants a fair chance (particularly with DX station) higher power stations are requested to operate ABOVE 3530kHz.

NOTE: Your comments would be welcome on a suggestion that the contest be from 8pm to 11pm each day.

ar

QRM from VK7

The following is a list of Office Bearers who were elected to serve for 1989, by the members of The North-West Branch W.I.A. at their AGM held on 14th Feb, 1989.

President	Greg Stammers	VK7ZBT
Vice President	Arthur Trevaskis	VK7SE
Secretary	Andrew Hay	VK7ZHA
Treasurer	Bruce Marshall	VK7MB
Repeaters	Andrew Perkins	VK7ZAP
QSL Bureau	Steve Bush	VK7EQ
WICEN	John Duncombe	VK7ZPT
Mag. Pubs.	Terry Mc Mullen	VK7BV
Stores	Robert Gore	VK7KAB
Publicity	Ron Churcher	VK7RN
Repeater 3 Officer	Arthur Trevaskis	VK7RN
Broadcast Officer	not filled	
Activities Officer	not filled	

QSL

QSLs of the WIA Collection

Ken Matchett VK3TL,
PO Box 1,
Seville Vic.3139

K5AM

Although at first glance this QSL may seem to have a Stateside call-sign, it is in fact, an early Panama Canal Zone QSL. After the historic 1927 Washington Conference which really gave international recognition to the amateur fraternity, the system of official prefixes enabled the nationality of calls to be easily identified. The prefix K5 was allocated to the Panama Canal Zone, an American possession. There were other K prefixes too, such as K6 for Hawaii and K7 for Alaska. These prefixes were not used on the American continent, the only prefix used there being W. The QSL shown here, K5AM is dated October 1933 and was sent from a United States signal unit stationed at Fort de Lesseps. The Frenchman Ferdinand de Lesseps will be remembered for his successful Suez Canal enterprise but he was also the designer of the Panama Canal. His early attempt at building the Panama Canal proved to be a failure, due partly to disease which struck down his workers but also because the rock of Panama proved considerably more difficult a problem than the sandy soils of Egypt. His company went into liquidation, he himself ending up in prison.

The canal, which joins the Caribbean and the Pacific Ocean, was opened to commercial vessels of all nations on 15 August 1914. It was a miracle of engineering. Excavation started in 1904 and continued ten years until nearly 200 million cubic metres of rock were dug-out, the work force being 35,000 men. The strategic importance of the Canal was well recognized especially by the United States; it cut the journey around Cape Horn by over 11,000 km.

It was the treaty of 1903 with the Republic of Panama which established the Canal Zone, later to become generally known as the Panama Canal Zone. This treaty gave the US the right to build and operate the canal and all the rights in the canal zone (an area of land approximately eight km on both sides of the waterway) that it would exercise if it were sovereign territory of the US In later years this led to dissatisfaction by Panamanians who judged that the treaty had been an injustice. In 1977 a new treaty legally abolished the Canal Zone and created an entirely new relationship between Panama and the US, Panama exercising its right of sovereignty within the former territory.

NY2AE

Although the K5 prefix had been officially assigned to the Canal Zone, the NY prefix continued to be used for some time. It was not an officially allocated prefix but was derived from the prefix N which certain amateur stations operated by members of the US Naval Communications Reserve were authorised to use. Even after the war NY4 prefix was assigned to US Naval Reserve personnel at Guantanamo Bay. The prefix had nothing to do with the N prefix allocation to U.S. novice licensees. The NY2AE QSL was from the US submarine base at Coco Solo (at the entrance to the Caribbean) and is dated March 1936. This was a station call operated by at least six USN operators using a 700 watt transmitter. The Canal proved of great strategic value especially during WW2. After the war the US made the decision to maintain sizeable fleets in both the Atlantic and Pacific Oceans, a decision influenced by the fact that the three locks of the canal and other constructions were regarded as very susceptible to enemy attack and sabotage.

KZ5LAND

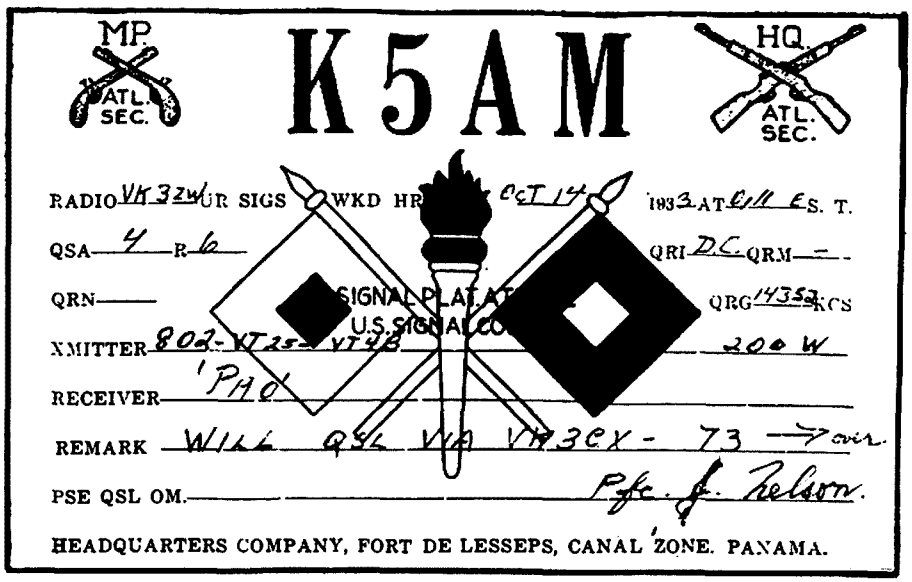
The K5 and NY prefixes were replaced by KZ5 after WW2 in the post-war DXCC list of countries which saw extensive prefix changes to US possessions. The suffix of this QSL is

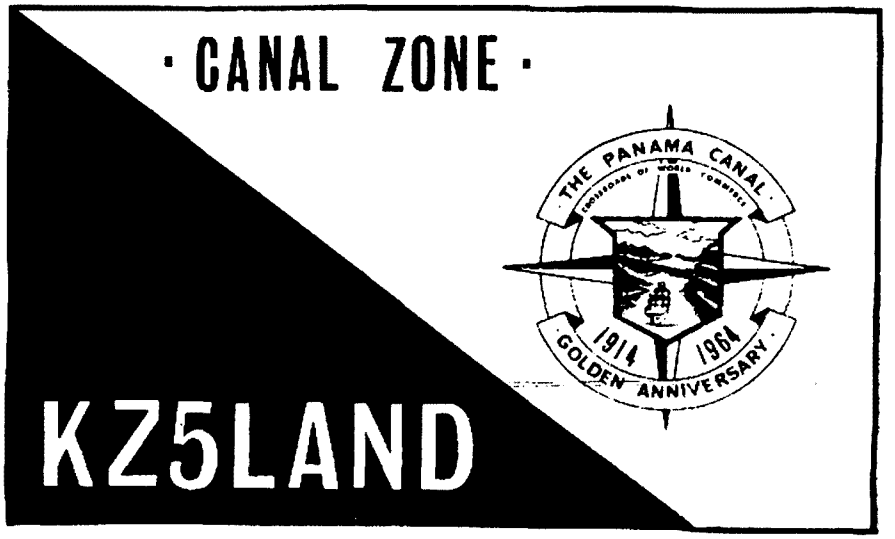
interesting; there was a time when the suffix for amateur station calls had to be confined to two or three letters but recent years have seen a change. The QSL KZ5LAND is a special commemorative QSL celebrating the 50th anniversary of the "Panama Canal - Crossroads of World Commerce" and is dated October 1964. Thirteen years later saw the end of the Canal Zone, it being deleted from the ARRL Countries list on 1st October 1979. On and after that date, ex KZ5 licencees had to apply for a HP licence to operate. The Canal itself however, continues to facilitate international trade under the terms of a joint commission of the two countries, but the year 200 will see Panama assuming full control of this remarkable engineering masterpiece.

If you would like to play a part in building up the WIA. QSL collection and to save something for the future, would you please send a half-dozen (more if you can spare them) QSLs which you feel would really help the collection along.

All cards are appreciated but we especially need commemorative QSL's, special event stations QSLs, especially assigned call QSLs (eg VK4RAN), pre-war QSLs, unusual prefixes, rare dx and pictorial QSLs of not so common countries. Could you help? Send to PO Box 1, Seville 3139 or phone (059) 643 721 for card pick-up or consignment arrangements for larger quantities of cards.

ar





AWARDS

Package from Moscow

Federal Awards Manager
Ken Gott VK3AJU
38A Lansdowne Rd
St Kilda 3183

Are the glastnost and perestroika policies of Soviet leader Mikhail Gorbachov having an impact on amateur radio? I think perhaps they are.

Recently I've noticed USSR amateurs giving PO Box numbers in their localities for QSL purposes, instead of "Box 88 Moscow", which for time immemorial has been the only QSL route to them.

Mind you, I've kept no notes or tallies, but this is a definite impression from listening on the DX bands.

As most of us know, the International Call Book is a dead loss to anybody wanting to contact a USSR amateur directly by mail, since it provides neither streets nor street numbers in the addresses. Sending a letter to "Georgi Ivanov, Saratov, would be as futile as sending one to "John Smith, Melbourne". In fact, I've often wondered why the Call Book publishers devote so many pages to useless QSL data. Still, I expect it is useful in checking whether the station you QSO'd is genuine or a pirate, and whether a club or individual station.

So much for glastnost (which broadly means more openness, less secrecy). However, perestroika (meaning reform in economic, commercial and related matters) may also be showing up too.

A couple of weeks ago I received a package containing the R6K Award of the USSR amateur society (see picture).

Is that remarkable? Yes, because the package was sent direct to my QTH.

For many years, Moscow has not posted awards directly to VKs. Instead, all awards due to them were stockpiled and at annual intervals, they were posted in bulk to the WIA Federal Office.

The WIA Federal Office was left with the job of tracking down the addresses of the recipients and meeting the costs of repackaging the certificates individually and posting them on.

We know that USSR amateurs and the USSR generally suffer a shortage of foreign currency, but this practice of throwing a gratuitous financial burden on a fellow amateur radio society always seemed a bit rough to me. After all, the USSR awards are priced at 14 IRCs each.

Anyway, the arrival of my R6K Award by direct mail (well-packaged, and registered to boot) may indicate a change. Let's hope so.

For those of you interested, the R6K is the easiest and most popular USSR award. You need cards from each of the six continents, plus three from European USSR and three from Asian USSR. The QSO's must have been made since May 7, 1962 by CW or phone, and any HF band will do. There's no need to send cards — just a list in the usual form, certified by an official of the WIA or your club. As mentioned above, include 14 IRCs. I need hardly tell that the address is Box 88, Moscow.

While the award certificates might not win prizes for design or typography, it is not without charm. It is produced in red, blue and magenta-grey on a white background, and being lettered in the Cyrillic alphabet gives it a nice exotic touch.

Snafu in DXCC List

The gremlins had some fun with the DXCC update in our March issue. Put it down to teething troubles with our new publishing arrangements. The victims were VK2AKP, VK3OT, VK3QI and VK3DYL. Their correct tallies are included in this month's update.

Return Postage

With minimum publicity, Australia Post raised overseas airmail rates and a variety of internal mail charges (but not the basic 39¢ letter rate) on February 13.

That serves as a pretext to ask all amateurs and SWLs who send me packets of cards to please include return postage. There should be no mystery in deciding what to send. If it costs $x to send me the cards, it will cost the same for me to send them back. If they come in one of those AP padded envelopes, I can usually recycle it for return of the cards.

Awards Issued Recently

WAVKCA
1632 Yoshio Tada JS1QHO
1633 Leo YB0HZL
1634 Bengt Eurenius SM3BNV
1635 F.K. Holtz W8CHV
1637 Satoshi Nagayama JR2PAU
1638 Masato Shimizu JG1TSF

DXCC (Phone)
366 Robin Pullet VK4KRP
367 George Mavros AX5AGM
368 Noel Wex VK4FQW

DXCC Updates (Corrected)

	CW	Phone	Open
VK2AKP		230/292	290/292
VK30T		303/307	306/310
VK3QI	263/269	309/316	311/318
VK3DYL		279	

The City of Wagga Wagga Award

Wagga Wagga is situated approximately half way between Sydney and Melbourne by the banks of the Murrumbidgee River, on the Sturt Highway in the Riverina Region of NSW. Wagga Wagga was discovered in December 1829 by Capt Charles Sturt. Wagga is an Aboriginal term for crow, thus Wagga Wagga is the plural for many crows. The city is 185m above sea level and is rural in its setting.

This award certificate and its upgrades of silver and gold is presented by the Wagga Amateur Radio Club (WARC). The award is open to all amateurs and shortwave listeners throughout the world on 80 metres. To become eligible for the award each participating station will have made contact with Net Controller (2 points) and eight other club member stations (1 point), making a total of 10 points. A station previously contacted can be worked again after 7 days for an extra point. Shortwave listeners and Amateur stations need simply prepare a log extract of the contacts made showing date, time, station and a signal report. Applications go to :

Awards Manager WARC

VK2MUZ Barry Gilmour
PO Box 294, Wagga Wagga, NSW 2650

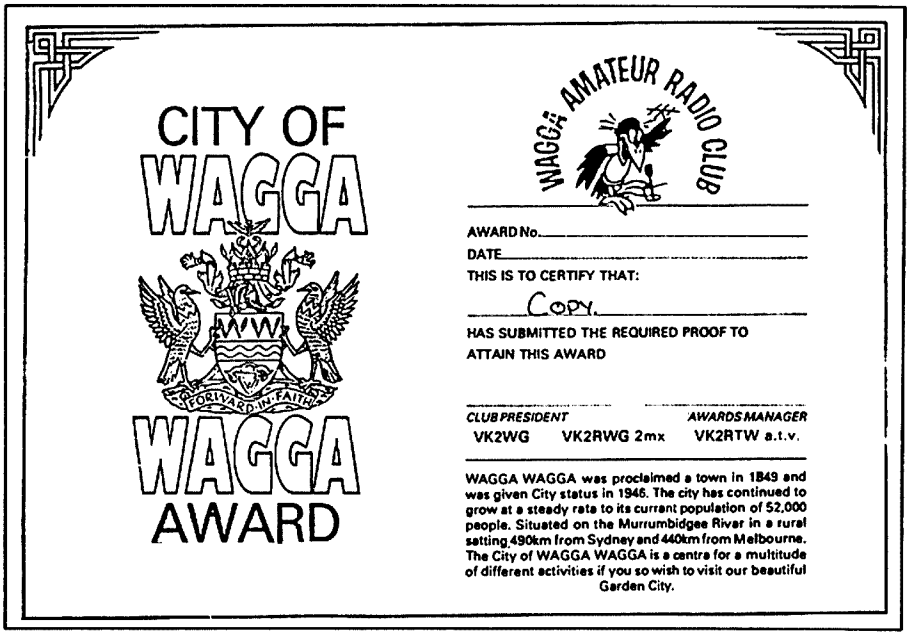
The award meeting night will be Tuesday evenings at 1030 UTC on 80 m. 3.60 + - QRM. Right after VK4 net.

Conditions for Basic Award

2 points for Net Controller
1 point for contact with club member
10 points for award - log extract and $3 cost of award.

Silver Upgrade for City of Wagga Wagga Award

An additional 40 points for silver upgrade to the City of Wagga Wagga Award is required. The basic award must have been worked, applied for and received. For the silver upgrade threre should be 24 hours between contacts with any WARC Station of silver, gold certificate holders who on request, will give signal report and time of contact. No cost.



Gold Upgrade for City of Wagga Wagga Award

The City of Wagga Wagga basic award and silver upgrade must have been applied for and received. An additional 100 points are required for the gold upgrade. A holder of the silver upgrade is now worth one point towards the basic, silver and gold awards and like club member stations, can be worked every 24 hours. In the case of a station who has been worked as a silver or gold certificate holder and is not a WARC member, the certificate number must accompany the application for that point or points. Cost of the gold upgrade is $1. This is an honorary system for these upgrades.

City of Wagga Wagga 360 Upgrade

You are welcome to work towards our final award. Besides the Award Certificate a lapel badge depicting the city coat of arms will accompany this award. A total of 360 points is needed for the upgrade, comprising:-

40 points for club member at 1 point each
20 points for silver at 1 point each
300 points for gold at 2 points each

360 Total for Upgrade

Cost of the certificate and the lapel badge will be $7.00

Award Hunters

Here is an easy one. One contact only and it's a freebie.

The Air Force Amateur Radio Net is introducing their new Kittyhawk Award. All you have to do is send your QSL and SAE to the station on duty.

Hint: Try 80m any Tuesday evening.

Bob Neville VK4NFE
124 Roscommon Rd
Boondall 4034

POUNDING BRASS

Injured Scribe

Gilbert Griffith VK3CQ
7 Church St
Bright
3741

I am sorry, dear Morsiacs, that here I am on the second-last day before the deadline, with nothing to show in the way of a funny for the month of April. My only excuse is a couple of cracked ribs (from water skiing) and the hot weather which have prevented me from lifting things at work, and from doing practically anything else at all. So, I thought I would take the opportunity to re-submit an old favourite for publication, as it has been years since its last run. This version was handed to me by Denny, VK2CDM who was passing through Bright a couple of weeks ago.

The One Legged Typewriter

Written about a typewriter in Sydney office which bore the pathetic notice - "This typewriter has three broken legs."

You wear a sad, dejected air,
Poor old cripple, tott'ring there;
But still you bravely "carry on"
Though three of your four legs have gone.
Telegraphists with thatches grey,
In youth upon your keys did play;
You've surely earned distinguished mention
How is it that you've missed a pension?
Some men have gained an OBE
Whose merits can't compare with thee;
They have less wisdon, far, than you -
You only speak when spoken to.

You bear the marks of many wars;
Your broken legs are honoured scars,
And even the ribbon you have worn,
Is sadly faded and forlorn.
Throughout your many weary years,
You have recorded joy and tears,
Hopes, doubts and loves - you've known them all,
Births and deaths - gay festival.
I feel for you my old companion;
For though you've but one leg to stand on,
I'm forced to prop you up anew
And pound the dying breath from you.
-Frank Spruhan (Telegraphist)

SPOTLIGHT ON SWLING

Unwanted Outputs

Robin L. Harwood VK7RH
52 Connaught Crescent
W Launceston. 7250

Well, the first quarter of 1989 slipped rapidly away and already I have noticed that the number of parasitics and/or harmonics from broadcasters on HF are becoming audible with the higher solar flux. These spurious signals wouldn't be noticeable ordinarily yet with the improved propagation, particularly on the higher frequencies, I am sometimes finding the fifth or sixth harmonic of a station down in the tropical allocations.

And talking of spurious transmissions, Radio Ulan Bator in Mongolia is normally on 12015 kHz in English at either 0900 till 0930 UTC and again around 1200 kHz, yet there is a Chinese outlet co-channel. It overrides the Mongolian, yet because of a fault within the sender, Ulan Bator is better heard on 11991.5 kHz or 12.061.5 kHz at the same times. Somehow, I don't think the engineering staff would be too pleased, although the programme makers would presumably not mind. When the English programming concludes, there is programming in Chinese and Mongolian. Incidentally, they don't broadcast in English on Saturdays.

This month sees the commencement of another transmitter exchange agreement. This time it is between Radio Austria International and Radio Canada International. On the 4th, RCI will broadcast from the Moosbrun site to the Middle East between 0300 and 0500 in English and French. The channels chosen haven't been announced yet but it would be, presumably, in the 16 or 19 metre allocations. Radio Austria International will broadcast to North America on 6015 kHz from Sackville. Also on the same date, Radio Beijing is to broadcast from Sackville on 11845 to South America and on 5960 kHz to North America. The time for the first broadcast is from 0300 till 0400 and the second is from 0400 to 0500. Incidentally, Radio Japan uses the same frequency from Sackville from 0300 to 0400.

The new sender for Radio New Zealand International is due to come on before the 1990 Commonwealth Games in Auckland. The site is 40 km from Taupo and it is going to be a single 100 kW sender. The primary thrust will be the South Pacific with English and various indigenous languages of the region. They reportedly have scrapped broadcasts in Chinese and Japanese because of budgetary limitations.

Well, that is all for April. Until next time, the very best of 73.

ALARA

Results of Eighth Alara Contest, November 1988.

Joy Collis VK2EBX
P.O. Box 22
Yeoval 2868

No.	Callsign.	Name.	Points.	Certificate.
1.	VK3CYL	Kim	955	Top overall & VK3 Alara member (Bicent.)
2.	FK8FA	Joanne	592	VK4 Alara member (Bicent.)
3.	FK8FA	Aimee	557	Pacific area Alara member (Bicent.)
4.	ZL4IO	Mefva	517	ZL non-member (Bicent.)
5.	VK6DE	Bev	501	VK6 Alara member (Bicent.)
6.	AX3XB	Ivor	411	Top VK om. (Bicent.)
7.	VK4YB	Roger	384	Bicent.
8.	ZL1ALK	Celia	363	ZL Alara member (Bicent.)
9.	VK2EBX	Joy	361	VK2 Alara member (Bicent.)
10.	VK4PT	Pat	346	Bicent.
11.	VK3DYL	Gwen	321	Bicent.
12.	VK3DMS	Marilyn	273	Bicent.
13.	AX6YF	Poppy	270	Bicent.
14.	VK3DVT	Valda	251	Bicent.
15.	VK7HD	Helene	250	VK7 Alara member (Bicent.)
16.	VK3KF	Eric	224	Bicent.
17.	VE7YL	Elizabeth	221	VE Alara member (Bicent.)
18.	ZL2AGX	Dawn	183	Bicent.
19.	VK5AOV	Meg	164	VK5 Alara member
20.	VK4AOE	Margaret	160	
21.	WA3HUP	Mary Ann	150	U.S.A. Alara member (Bicent.)
22.	IK5HMQ	Graziana	126	European non-member (Bicent.)
23.	VK3DYF	Bron	107	
24.	OK2BBI	Zdena	92	European Alara member (Bicent.)
25.	ZL2QY	Pearl	90	Bicent.
26.	L40018	Charles	84	VK SWL OM
27.	DF2SL	Anny	81	
28.	VK3XF	Les	78	
29.	ZL2UKG	Gwen	71	
30.	VK5BS	Barry	69	
31.	VK5KTH	Christine	65	
32.	VK3ALD	Len	44	
33.	CT1CIR	Antonio	20	European OM
34.	VK3AEQ	Vic	05	
35.	VI88WIA	Mavis	Check log. Bicent.	
36.	VK5BMT	Maria	Check log.	

**"Bicent." indicates a Bicentennial Certificate.*

Mavis was issued with a special Bicentennial Certificate for her operation of the VI88WIA callsign during the Contest.

Logs received: ALARA members 23, YL non-members 2, OMs 9, Check logs 2.
Bicentennial Certificates issued: 23
Contest Manager: Marlene VK3JAW

Marlene Comments:

"A better year on the bands for the Contest, with more logs received from overseas amateurs, and with OMs contributing a quarter of the logs received. We thank the chaps for their participation.

I believe the ladies achieved smaller scores this year, but many people had more to try and fit in on the same weekend.

I did enjoy reading the notes enclosed with the logs, and apologise for not being able to respond in kind."

That wraps up the ALARA Contest for another year. Hopefully in the next Contest the Mrs.McKenzie Trophy will be awarded once again. Unfortunately no novice YL qualified for it on this occasion.

Mavis Stafford Bicentennial Trophy.

The winner of the Mavis Stafford Bicentennial Trophy is Bev Hebiton VK6DE, with a score of 90 ALARA members contacted during 1988. She will receive the silver-plated oval dish, suitably inscribed, donated by Mavis VK3KS.

The winner of the Consolation Prize, a crochet table centre donated by Margaret VK4AOE to the YL who scored the middle position in the points ladder of YLs applying, was won by Melva Malkin ZL4IO, with a total of 56 ALARA members contacted during the Bicentennial Year.

Congratulations to Bev and Melva, and sincere thanks to Mavis for the Trophy, and Margaret for the Consolation Prize.

Talking to School Children.

"The local radio club SPARC was involved in demonstrating amateur radio one afternoon a week to, mostly, grade 6 children (about 12 years old) as part of their media studies projects in the Bicentennial Year 1988.

I volunteered, with other members, to listen on 80 metres in case required, if someone further afield could not be contacted. In a period of 10 weeks I spoke to approximately 100 children, from Eastbourne, Dromana, Rosebud and Rye Primary Schools, all quite local.

Answers to questions are mostly very brief, but a few are talkative, and the results have been very worthwhile. In October the Ballarat Radio Group set up a station at the Dana Street Primary School and I found myself responding to them. In that instance the ages ranged from 6 to 12 years."

(Bron VK3DYF)

NZ WARO Mountain Buttercup Award.

1. For contacts with licensed NZ WARO. members, resident, visiting mobile etc. in the sixty towns named in the official list. A WARO member working mobile, portable etc. may claim the relevant town for her own credit.

2. Contacts may be any mode, any band or mixed and made from any QTH, but each YL worked must be a financial member of NZ WARO at the time of the contact and must be within a 25 kilometre radius of the centre of the town claimed.

3. Contacts made via repeaters, in nets and in contests will qualify and the same WARO member may be contacted in any number of towns.

4. Award dates from 1st January 1989. Send applications containing full log details with name of YL and town where worked, signed by one other radio amateur, together with $2.00 to Custodian: Vicki Shaw ZL1OC, PO Box 2088, Whakatane, New Zealand.

5. Endorsement seals for each further 10 contacts using the same list of towns. The same WARO members may be worked but each must be in a different town to where previously claimed. Please send SAE with endorsement applications.

North Island Towns.

1.	Auckland	21.	Palmerston North
2.	Dannevirke	22.	Papakura
3.	Dargaville	23.	Putaruru
4.	Eketahuna	24.	Rotorua
5.	Featherston	25.	Taihape
6.	Gisborne	26.	Taumarunui
7.	Hamilton	27.	Taupo
8.	Hawera	28.	Tauranga
9.	Helensville	29.	Thames
10.	Kaikohe	30.	Te Awamutu
11.	Kaitaia	31.	Te Kuiti
12.	Masterton	32.	Turangi
13.	Matamata	33.	Upper Hutt
14.	Morrinsville	34.	Waihi
15.	Napier	35.	Wairoa
16.	New Plymouth	36.	Wanganui
17.	Opotiki	37.	Wellington
18.	Orewa	38.	Wellsford
19.	Otaki	39.	Whakatane
20.	Paihia	40.	Whangarei

South Island Towns.

41.	Alexandra	51.	Invercargill
42.	Ashburton	52.	Kaikoura
43.	Balclutha	53.	Motueka
44.	Blenheim	54.	Nelson
45.	Christchurch	55.	Oamaru
46.	Cromwell	56.	Queenstown
47.	Dunedin	57.	Reefton
48.	Gore	58.	Timaru
49.	Greymouth	59.	Wanaka
50.	Hokitika	60.	Westport

Bits and Pieces.

It was a great pleasure, some weeks ago, to meet Heather VK2HD for the first time. Thanks from OM Dan and myself, Heather, for your hospitality.

Bev VK6DE must be on a "winning streak". Besides winning the Mavis Strafford Bicentennial Trophy she won an Amateur Radio Survey Gift - a 1989 ARRL Handbook. Congratulations once again, Bev.

Please take note of the date for the next ALARAMEET, 29/30th September, 1990 at Dubb, NSW.

The ALARA Net is held on 3.580 MHz every Monday evening at 1030 UTC (1000 UTC during daylight saving time). Monthly general meetings are held on air as above on the fourth Monday in the month, except December. We are always pleased to welcome "new voices", and would be happy to hear from other YLs.

The Thelma Souper Memorial (W.A.R.O.) Contest this year will be held on Saturday April 15th and Sunday April 16th from 0700 to 1000 UTC on 80 metres.

New Members.

Welcome to new DX members - Merilyn WA4NRX and Raija SM0HNV.

73/33

Joy Collis VK2EBX

ALARA Award Update

Cert. No.	Date	Recipient	Callsign	Sticker	Bicent.
8.	24/12/88	Poppy Bradshaw	VK6YF	4	1
146	28/12/88	John Hampel	VK5SJ	5	1
13	25/01/89	Jenny Warrington	VK5ANW	1	1
70	25/01/89	Alma Wills	ZL2AWP	5	1
103	26/01/89	Margaret Schwerin	VK4AOE	3	1
88	31/01/89	Valda Trenberth	VK3DVT	2	1

HOW'S DX

New Columnist

We introduce here our new DX columnist and editor, Pat Kelly VK2RZ of Ourimbah on the NSW central coast. Pat's involvement with radio began on the Citizens' Band and he heard his first DX on 27 MHz. He graduated to a Novice licence in May 1987 and worked 148 countries before gaining his full call one year later.

Anyone who has DX information to contribute to this column should write direct to:

Patrick Kelly VK2RZ PO Box 41, Ourimbah 2258 (phone (043) 621 235)

However, for this issue only we are also publishing, after Pat's round-up, some other DX information (from VK2PS, VK2OD and VK3PC) which was sent direct to us and is of immediate interest.

Ed.

With band conditions improving every day, DXing activity is becoming somewhat hectic. Here on the east coast the 10,15 and 20 metre bands have good daytime openings to just about anywhere. Around mid-morning 20 metres fades out for a few hours, but with the higher frequencies being so good the tuning knob still gets a solid workout.

For those who missed Hans 4WQPA in North Yemen he should be back on air by now. After twenty years of no amateur radio operation from this country anyone who needs it will have plenty of time as Hans will be there for two years. His QSL Manager is PA3CXC.

Laos XW did seem certain to come up in mid-February. Despite some problems with operating conditions (?) the Hungarians say they now have the necessary paperwork in order. They certainly did a great job in 3W so good luck to them. (But see later information from 3PC. Ed)

Spratly Is has been on and off a few times since January. Lack of transportation was said to have stopped them on two occasions.

A new DXCC country from East Kiribati is in the planning stages. Either Maiden or Starbuck islands in the southern line island group are being considered by a prominent VK DX-peditioner.

Laccadives

For the first few days VU7NRO was concentrating on CW around 14.010 MHz. I managed to work VU7APR/BL on 21.202 MHz at 2200Z under very difficult conditions. On other bands they were using 28.530 MHz, 14.140 MHz and 14.230 MHz. There were no early reports for 40 and 80 metres.

The five operators were to be there until March 15. There was a possibility that permission to extend their stay might be given. QSL to VU2APR.

St. Lucia

An interesting special callsign for this small Caribbean island celebrating ten years of independence was J61QA.

I worked Lionel long path on 21.293 MHz at 2019Z. QSL to PO Box 171, Castries.

Tot, J6LMV is also active. QSL to PO Box 1617, Castries.

Vietnam

Operation from 3WQA was, to say the least, sporadic. Several VK & ZL stations reported hearing them calling CQ, so it may be the HA boys moved this one a long way down the wanted countries list.

QSL to W4FRU

Islamic Republic of Iran

Hassan, EP2HZ has been very active on 20 metres, and operates at a fairly leisurely pace compared to the five and nine crowd.

QSL to PO Box 3133 Tehran, Iran 16765

Montserrat

Dave, VP2MDB was on 10, 15 and 20 metres until April 5th. QSL to W2WSE

Liberia

I worked Wadji EL2CI on Snookie's Net - 14.183 MHz, using a special call EL2LMP/4Q.

The occasion was to celebrate forty years of the Liberian Maritime Service.

QSL for both calls to K5HUT.

Islamic Republic of Iraq

YI1BGD is a club station in Bagdad. If you work this one make sure you get the QSL information at the time, as each operator gives a different PO Box number.

Should you only have the name of the operator then put it clearly on your QSL card and try: Faris K Kubba, PO Box 7147, Bagdad.

Another operator is Diya YI1BGD/A. QSL to PO Box 7361, Bagdad.

Diya advised that a special event station YIQVP was operating on most bands to celebrate "Victory and Peace". No QSL route was available.

Zone 40 - Franz Josef Land, Jan Mayen, Svalbard and Greenland.

At present there are two active operators from Franz Josef Land - Roman UA1OT - QSL to UB5KW and UA1OIL - QSL to UA9MA. IRC's are OK for SASE.

If you need Ivor, JX1UG on 40 or 15 metres have a look on Sundays at 0800Z on 7.163 or 7.159 MHz with John KD0JL.

Then at 0900Z on 21.335 MHz with Den GW3CDP.

He checks in quite often with Jim VK9NS on 14.222 MHz. QSL to LA5NM.

I have only found Ivan JW6WDA on 20 metres so far. QSL to LA5NM.

Helge, OX3SG is very active on most bands. I am not aware of any VK's that may have worked him on 10 metres.

QSL to LA5NM.

Central African Republic

Dieter, TL8WD has been making the rounds on several DX nets. He will be in Africa for two years. His home call is ZL2QB. QSL to DL8CM.

Mali

So far I have only worked Dennis TZ6MG on 15 and 20 metres. Signals from Southern Africa on 15 metres are usually good at 0500Z. Check out the ANZA net at that time every day on 21.205 MHz. Dennis' QSL route is: Eddy Eliveld, PO Box 2095, 8203 AB Lelystad, Netherlands.

Qatar

This not so active Persian Gulf state was a new country for me. Mohammed, A71BK had a good signal on 14.188 MHz at 0616Z one Friday afternoon.

QSL to KI4GV.

Eastern and Western Caroline Islands

Husband and wife team Bob and Judith spent four weeks scuba diving and DXing from both KC6 call areas. From Belau Island they were signing KC6MH and KC6MB. While on Truk Island their calls were KC6NW and KC6JW. QSL to DF6FK.

American Samoa

Another DL holidaying away from Europe's winter chill was Hilda, DL5UF/KH8. There seemed to be a lot of stations needing this one if the pile ups were an indication. QSL to Hilda's home call.

More Vietnam

Another call used by UL7PAE, and RL7GK for their last three days was 3W4KZ. QSL for this call only is to UL7PAE.

Next month I hope to be able to report on Marion Island ZS2. A South African operator has a two year posting to this remote island. I know there are many who need this one.

Pile-ups on 10 metres are there every day now. Most attention is directed toward the Caribbean due to the large flocks of North Americans who fly south during their winter.

In the two months prior to last Christmas I worked all of Central America, most of the Caribbean, and all of South America with the exception of Guyana on this band - it certainly is my favourite. So if you have been missing out on the fun it is definitely not too late!

Good DX!

Stop Press

On Saturday, 18th March, it was reported in a bulletin from the ARRL on W1AW that 4W0PA was QRT and had returned to the Netherlands.

Hans had been detained at the border returning from South Yemen and accused of contacting the enemy.

Earlier that week it was also reported that the ARRL DXCC chiefs had refused to accept 4W0PA as a legitimate operation.

DX Worked or Heard on the East Coast

Stephen Pall VK2PS

From 11 Jan, 1989 to 8 Feb, 1989

14MHZ

UH9AWE	Vitaly in Ashkhabad Turkoman Republic
CO2HQ	Reinaldo in Havana, QSL via Bureau
AH9AC	Tom on Wake Island, QSL to I8YCP
VP2E/KB0AQB	QSL via Home call
EL2E	Rudi in Monrovia - QSL to HB9STZ
YN3CC	Jose in Managua (CW) QSL to W3HNK
JT2AB	Ban in Chob (CW) QSL via Bureau
PZ1DY	Imroh in Paramaribo QSL to PO Box 9131 Paramaribo, Surinam, South America
KH0/JA1QGG	Yoshi in Saipan QSL via JA Bureau
HC3AV/5	Al in Cuenca (CW) QSL to Box 1300 - Cuenca, Ecuador, South America
YV5JDP	John/Caracas QSL via Bureau
TN4NW	Brazzaville/Congo QSL via AL7EL
CX1DDT	Pepe in Orono near Montevideo QSL to PO Box 571, Montevideo, Uruguay
3W0A	Vietnam DX Expedition QSL to W4FRU
ZK1XI	Mats visiting South Cook Islands QSL to SM7PKK
ZF1RC	Roger Cayman Island Caribbean QSL to Box 1549, George Town, Grand Cayman Island
XX9CT	Phil in Macau QSL via KA6V

21MHz

KA6RB	Roy in Okinawa QSL to P.O. Box 5163 Camp Courtney FPO SW ZIP 98773
KZ5Z/DU1	Jon in Manila QSL to NA5U

28MHz

VK9ZM	QSL to NM2L
VP5/G0AZT	Ed on Providenciales Island Caicos Island Group, Bahamas QSL to PO Box 5194, Richmond, CA 94805, USA
EI8AR	John in Cork County QSL via Bureau

7MHz

VK9ZM

3.5MHz

VK9ZM, VE1ZZ

VE1ZZ

Heard but not worked

VP8BGQ	QSL to Box 97, Pt Stanley Falkland Islands
TL8WD	Dieter in Central African Republic QSL to DL8CM
W2KW/KV	4QSL to P.O. Box 7055 St Thomas, US Virgin Islands

North Yemen

The hottest DX activity for many many years. It popped up on 14 MHz on the 28th January, 1989. The operator is Hans and he is using the callsign 4W0PA. He is using 80 watts into a dipole only on 14 MHz he had a lot of difficulty bringing his equipment into Yemen. He has no linear or beam, and unless the Yemeni authorities change their mind, he will be using the present equipment for the next two years.

Hans due to his profession is under contract to the North Yemeni authorities. As a result of this he will be temporarily QRT for 6 weeks as from the 18th February to attend a course in the Arabic language.

At this stage Hans is operating through nets only. He comes up almost daily on Jim's net (VK9NS 14.222 MHz) at 0430 UTC for 30 minutes.

He can also be found on the European net around 2000 UTC on 14.180 MHz - quite often in CW mode on 14.020. Net controller is: PA3DZN Alex.

He can also be found on "Snooky's" net (14.183 MHz) around 1900 UTC. QSL Manager PA3DZN

Ten Metre Beacons

(Ref. Feb issue A.R. pages 21,27 and 36)

Tom O'Donnell VK2OD reports another 28

MHz beacon copied January 4th, 1969. Call sign, OH2TEN. Frequency 28.2525 approx. ID, signing just the callsign. Time copied approximately 1045 UTC. A weak signal but readable in the QRM and QRN at 3/5x1x9. (The KIEL beacon DF0AAB copied at 1100 UTC on 28.2775. Signs were 3/4x1x9 and affected by QRM and QRN(local).

The ZL beacon ZL2MHF on Mt Climie comes in well here, at times up to 5x8x9. It signs EIRP 1 watt. However, I note that its power according to your list is 50w (p. 36). Frequency 28.230 0

The Florida beacon on 28.297 MHz now signs 30w to 5/8 wave ground plane. Call sign WA4DTS. Copied here at 5.1.9 on 11.2.89, 2200 UTC (P. 36).

Other beacons logged recently are:

1. WC8E/BCN 28.2950 @ 2005 UTC
2. W3VD/BCN 28.2960 @ 2013 UTC 28.2960
3. WJ7X/BCN Seattle 5 watts 28.252

Beacons 1 and 3 do not appear in the world beacon listing. P. 36 A.R.

Late DX news from Jim Linton VK3PC

The South African remote territory Marian Island is due to be activated for the first time in a decade this month when a meteorological team which includes a radio amateur arrives. Marian Island is south-east of South Africa and near Prince Edward Island. It was last on air in 1979.

The South African Government has banned DXpeditions from visiting the Island because a United Nations territory only permits inhabitation related to scientific research.

Peter ZS6PT will be a technician with a meteorological team due to stay on Marian Island for 14 months. Using the callsign ZS8MT he plans to work HF, six metres, through satellites and operating on both phone and CW. He will be using rhombic antennas which are part of the meteorological service communications.

The planned expedition to Laos XW has been cancelled. The Hungarian operators who activated 3W Vietnam returned home and then travelled to Laos, but reported the local situation was unsafe. They could try again for XW in May or June.

Rotuma 3D2 is expected to be on air around April 6 activated by 5W1GP from nearby Western Samoa.

A multi-national group of operators plans to put XF4L on air from Revilla Gigedo Island off the Mexican Coast between April 11-19. The island ranks among the top 20 on the European most wanted lists although it was activated two years ago signing XF4DX.

"Stop Press" DX-News from VK2PS

D2-Angola

Unconfirmed news in various DX bulletins indicate that 2-OH operators, 1-JA and 3-XE operators will operate from Angola between the 11th and 19th April. The tentative call sign will be D2ONU.

Middle East DX Expedition

It is probable that on the 26th March we might hear the following call signs: SU89ACC, JY89ACC, YI89ACC, YI0ACC, and 4W89ACC. At this stage we do not have any further details of this proposed operation.

Zoli, HA5PP at the operating desk of 3W8DX

AMSAT AUSTRALIA

Satellite Information

Maurie Hooper VK5EA
11 Richland Road
Newton 5074

National Coordinator
Graham Ratcliff VK5AGR
Information Nets

Amsat Australia
Control: VK5AGR
Amateur check in: 0945 UTC Sunday
Bulletin commences: 1000 UTC
Primary frequency: 3.685 MHz
Secondary frequency: 7.064 MHz

Amsat SW Pacific
2200 UTC Saturday, 14.282 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT Australia net. This information is also included on some WIA Divisional Broadcasts.

AMSAT Australia Newsletter and computer software.

The excellent Amsat Australia Newsletter is published monthly by Graham VK5AGR on behalf of Amsat Australia and now has over 300 subscribers. Should you also wish to subscribe, send a cheque for $20 payable to Amsat Australia addressed as follows:

Amsat Australia, GPO Box 2141, Adelaide. 5001

The newsletter provides the latest items on all satellite activities and is a "must" for all those seriously interested in amateur satellites.

Graham also provides a Software Service in respect to general satellite programs made available to him from various sources. To make use of this service, send Graham a blank formatted disk and a nominal donation of $10 per item to Amsat Australia together with sufficient funds to cover return postage. To obtain details of the programs available and other Amsat Australia services send a SASE to Graham.

oops.....

The February issue encountered some typesetting problems with the James Miller program listings, making them a bit hard to understand in places. If you would like a copy of the listings, send a SASE directly to me - not Amsat Australia.

Oscar-9 re-entry imminent

Oscar-9 (UoSat-1) was launched on October 6, 1981 from Vandenberg Air Force Base aboard a Delta rocket and placed into a 554 km 95 minute orbit. The orbit is now decaying rapidly, and in January the Royal Greenwich Observatory (UK) predicted re-entry of the satellite in early October. It appears touch and go whether Oscar-9 will "live" to reach its 8th birthday. The following items are extracts from UoSat-Oscar-11 Bulletins 170 to 173.

Monitoring the decay process.

Because of the residual Earth's atmosphere at this altitude, the orbit is slowly decaying, and as the orbit lowers, the atmospheric drag increases, causing the satellite to decay faster. The effect is exacerbated by the increasing solar activity, as this causes the Earth's atmosphere to rise, thus increasing the drag. The current altitude of the satellite is 430 km and it is decaying at a rate of approximately 300m per day.

It is possible to follow the decay of the satellite by monitoring how the orbital period (and hence the altitude) changes with time. This can be done by monitoring the Doppler shift of the satellite's signals over the course of two orbits to note the time between two consecutive 'Time-of-Closest-Approach' (TCA)s. If you have a receiver with a Doppler shift output, plot the Doppler S-curve for two consecutive passes. The TCA can be found by reading off the time for which the curve's slope is steepest. The time between the two TCAs is the orbital period, from which the altitude can be derived using Newtonian mechanics. If you have a 2m receiver with a centre-frequency indicator, you can identify the TCA by noting the time at which the received frequency is exactly the frequency transmitted by the satellite (ie 145.825 MHz). If your receiver has none of these facilities, then you may assume that the TCA is approximately half-way between the 'Acquisition-of-Signal' (AOS) time, and the 'Loss-of-Signal' (LOS) time, providing that your radio-horizon is fairly uniform.

If you keep a record of your results over a period of time, you will be able to plot the decay curve of the satellite. This will also enable you to modify the Mean Motion (1440/Period) of the satellite in the Keplerian Element set, so that your orbital prediction programs can keep up with the rapid decay.

Here are some values of mean motion from Keplerian elements since about the middle of last year. The equations to calculate the Semi Major Axis and Altitude are:

SMAX = 42220 * (mean motion) ^ (-2/3)
Altitude = SMAX - 6370

Mean Motion	day	Km Altitude	Mean Motion	day	Km Altitude
15.33214	163	470.9473	15.36110	285	462.3464
15.33418	177	470.3458	15.36428	291	461.4041
15.33564	186	469.9082	15.36517	293	461.1397
15.33692	194	469.5277	15.36928	302	459.9237
15.33752	198	469.3489	15.37339	310	458.7040
15.33866	207	469.0083	15.37481	313	458.2841
15.33998	214	468.6155	15.38421	333	455.5016
15.34159	222	468.1383	15.39169	348	453.2920
15.34218	225	467.9643	15.39431	352	452.5170
15.34535	242	467.0198	15.40615	4	449.0213
15.34765	249	466.3383	15.41017	9	447.8361
15.34926	255	465.8598	15.42808	28	442.5587
15.35291	267	464.7759	15.42914	30	442.2469
15.35643	276	463.7335			

The competition is as follows: Using any method you choose, predict the precise day on which UoSat-1 will decay completely (ie burn up in the atmosphere).

Send the following information at least One Month before your prediction:

Name:
Occupation:
Address:
Receiving Equipment:
Predicted Decay Date:
Method Used:
Sweatshirt Size (Large/Medium/Small):

A prize of a UoSat sweatshirt will go to the winning entry.

Send in your answers to Craig Underwood, G1WTW, at the following address:

UoSAT Mission Control Centre, University of Surrey, Guildford, Surrey, GU2 5XH, England.

Keplerian Elements.

Satellite: UO-9
Catalog number: 12888
Epoch time: 89048.55577078
Element set: 457
Inclination: 97.5813 deg
RA of node: 95.8038 deg
Eccentricity: 0.0003250
Arg of perigee: 156.6309 deg
Mean anomaly: 203.5093 deg
Mean motion: 15.44699395 rev/day
Decay rate: 5.8464e-04 rev/day^2
Epoch rev: 41043

Beacons On

All four HF beacons are now switched on (ie January-Ed.) and transmitting telemetry in 12 wpm morse code. The frequencies are 7.002, 14.002, 21.002 and 29.510 MHz. Reception reports thus far have described interesting propagation phenomena such as auroral flutter, absorption, and sub-horizon propagation up to 20 minutes before AOS on VHF! The 7.002 MHz beacon was activated only this week, so please listen carefully and please send any reception reports to UoS. Any reports of trans-equatorial propagation from these beacons would also be of great interest.

U4MIR Comes to Life!

Stations around the world have been reporting hearing and working U4MIR. According to Hans, ZS6AKV, stations in southern Africa worked the new MIR station as early as Thursday, Feb 9. Pat, G3IOR, worked U4MIR on Friday the 10th. By Saturday Feb 11, many stations in eastern Canada and in Europe were reporting contacts, including Bill, VE3EFX, and his XYL, VE3HIR. W2RS had one at 19:38 UTC on Sunday Feb 12 and another the same day at 21:13 UTC.

VE3EFX reports that the new operator's name is Alexander. His English is quite poor and he does seem to be having some trouble with callsigns. But he is trying, so please speak slowly and distinctly, sticking to standard ICAO phonetics. Most of these contacts, including those of W2RS, were made on 145.550 MHz simplex. Alexander also seems to be using 145.650 MHz as a secondary frequency; several simplex contacts were made there as well. So far at least, Alexander seems to be keeping the same general hours as did Musa, U2MIR, in

that most contacts are being made at about 19:00 UTC or later, in the period between the cosmonaut's dinner hour and lights-out. Mir's operations schedule is on Moscow time, which is three hours ahead of UTC.

New Crew in April.

Pat, G3IOR, reports that a new crew will be going up in April, and is receiving Amateur Radio instruction on the ground. We look forward to more Amateur operation from the spacecraft as time goes on. No new QSL information has been received, so until further notice cards should probably still go via Boris Stepanov, UW3AX, PO Box 679, Moscow 107207, USSR. Please continue to report any information concerning MIR to AMSAT Net Control Stations so that it may be passed on to others.

N8IWJ Is Recognised by ARRL and Fellow Teachers for SKITREK Efforts

Rich Ensign, N8IWJ, AMSAT-NA Science Education Advisor, was recently recognised by the ARRL Board of Directors for the outstanding job he did in bringing the world of amateur radio into school classrooms last year. Rich produced the AMSAT Teachers Guide: "Exploring the High Arctic From Your Classroom"; teachers from all around the world used it as a guide in teaching lessons about the North Pole. With the help of amateur radio operators, thousands of school children heard the DIGITALKER aboard UoSAT-OSCAR-11 as it "spoke the position" of the ski-trekkers as they made their way across the North Pole. In addition to the Teachers Guide, Rich also generated a weekly progress report on the status of the trekkers and he made sure that the reports arrived in a timely manner to teachers who were involved in this program. The ARRL Board of Directors recently recognised Rich for his efforts in this endeavour. Also, Rich's colleagues have likewise recognised him - he was voted "Teacher of the Year" at Crestwood High School in Dearborn Heights, MI

73 Maurie VK5EA
ar

Satellite Activity for November 1988 - January 1989

1. Launches

The following launching announcements have been received:-

Int'l Number	Satellite	Date	Nation	Period min	Apg km	Prg km	Inc deg
1988-							
103A	Cosmos 1981	Nov 24	USSR	90.4	374	245	62.8
104A	Soyuz TM-78	Nov 26	USSR				
105A	Cosmos 1982	Nov 30	USSR	90.4	403	215	70.0
106A	STS-27	Dec 02	USA				
106B	USA 34	Dec 02	USA				
107A	Cosmos 1983	Dec 08	USSR	89	251	197	62.8
108A	Ekran 19	Dec 10	USSR	23h39m	35455		1.5
109A	Skynet 4B	Dec 11	UK	1403.3	35860	34424	3.1
109B	Astra 1	Dec 11	Lux'bg	1428.8	35573	35518	0.2
110A	Cosmos 1984	Dec 16	USSR	89.6	345	195	62.8
111A	PRC 25	Dec 22	China	Geo sync at 110.5 deg E			
112A	Molniya 3-34	Dec 22	USSR				
113A	Cosmos 1985	Dec 23	USSR	95.2	549	529	73.6
114A	Progress 39	Dec 25	USSR	88.7	255	193	51.6
115A	Molniya 1-74	Dec 28	USSR	700.5	38874	623	62.8
116A	Cosmos 1986	Dec 29	USSR	89.4	316	204	64.8
1989 -							
001A	Cosmos 1987	Jan 10	USSR	11h15m	19140		65
001B	Cosmos 1988	Jan 10	USSR	11h15m	19140		65
001C	Cosmos 1989	Jan 10	USSR	11h15m	19140		65
002A	Cosmos 1990	Jan 12	USSR	88.7	259	192	82.6
003A	Cosmos 1991	Jan 18	USSR	90.4	401	216	70

2. Returns

During the period two hundred and eighteen objects decayed including the following satellites:-

1975-029A	Molniya 3-2	Nov 29
1983-011A	Astro B	Dec 17
1987-086A	Cosmos 1890	Dec 26
1987-103A	Cosmos 1902	Dec 30
1988-026A	San Marco-D	Dec 06
1988-075A	Soyuz TM-6	Dec 21
1988-083A	Progress 38	Nov 23
1988-087A	Horizon 1	Jan 14
1988-103A	Cosmos 1981	Dec 08
1988-105A	Cosmos 1982	Dec 14
1988-106A	STS-27	Dec 06
1988-107A	Cosmos 1983	Dec 22

(Information submitted by Bob Arnold VK3ZBB)

DIVISIONAL NOTES

NSW Bulletin

Tim Mills VK2ZTM
Minibulletin Editor
PO Box 1066
Parramatta NSW 2124

The Annual General Meeting of the NSW Division of the WIA will be held at Amateur Radio House, 109 Wigram Street, Parramatta, NSW on Saturday afternoon 29 April 1989 at 2 p.m.

A separate posting of the annual report and balance sheet is made to members.

Change to Postcode

Australia Post has changed the post code for post boxes at Parramatta. When addressing mail to the Division would you use the postcode 2124 after the post box address.

Activities for April

The next Trash and Treasure will be held at VK2WI Dural on Sunday afternoon 2nd April. VK2WI is at 63 Quarry Road, Dural. Broadcast will advise of venue change should the weather be adverse. This Sunday is also the first Sunday of the month which is the normal barbecue day. Why not bring and have a barbecue before the event? Sale to start at 2 p.m.....The St. George Amateur Radio Society will be hosting the next Conference of Clubs on Saturday 15 April. Venue, the St. Georges Leagues Club, Princes Highway, Kogarah. 10 a.m. start. Agenda will include any items received from clubs for discussion together with the Federal Convention agenda items to hand at that time....The post code contest for April will be 70 cm, all modes on Friday 28th between 9 and 11 p.m. Log to be returned to the office by May 10th.

VK2WI

A transmitter fault developed with the 2 metre SSB system on 144.120 MHz. It will be out of service for a while. It has also been suggested that the frequency, which has been in use for more than 10 years, is too close to the calling frequency of 144.100 MHz. Council would like to hear the views of Members as to whether they have suffered any interference and whether a change is required. If so, where to? Please write to Divisional Council if you have a view on this matter.

Equipment has been donated by Dick Smith Electronics to the Division so that a 23 cm repeater can be established at VK2WI. The assembly of the system is being undertaken at the moment.

It will not be long until the annual fireworks display will be held at VK2WI. The most likely date will be Saturday evening, June 3rd.

Spectrum Analyzer Course

There was an average attendance of 25 to the course held during February. The next course will be announced on the Divisional broadcast. A reminder that the broadcasts start at 1045 am and 1915 pm. If you miss these sessions then catch up on the major points by telephone on 02 651 1489. If you have packet then most of the text may be found on VK2RWI on 4850 in Sydney or on other Bulletin boards around VK2.

Office Administration

Margaret Morris has settled into the office routine for the Division and the Office is again open during the usual hours of 11 a.m. to 2 p.m. Monday to Friday, together with the Wednesday evening opening from 7 to 9 p.m. The phone number during these times is 02 689 2417. If you can assist with phone answering in the office one or more days per month contact Tom VK2JTD to be included on the roster, either QTHR or via the office.

Publications

A few 1988 Australian callbooks remain at the office. There is a reprint of the log book available in two sizes. Select the size to suit your operating.

New Membership Applications for March, 1989

W.E. Dunn VK2BDW Kings Langley
K.N. Greenhalgh VK2KG Adamstown Heights
J.A. Johnston VK2PWB Hazelbrook
NAME
NAME
NAME
NAME
NAME
NAME

ar

WA Bulletin

John Sparkes VK6JX
83 Anemone Way
Mullaloo 6025

Australian Amateur Radio Teleprinter Group (AARTG)

The AARTG is THE group for anyone interested in narrow band data transmission modes such as RTTY or PACKET radio.

Meetings are held on the first Wednesday of every month at Wireless Hill starting at 8 pm. The meeting format alternates - a formal AARTG meeting one month, then an informal meeting on Packet Radio - topics the next.

This method is very popular due to the ever increasing percentage of the 85 current members who are getting into Packet Radio.

The group operates a RTTY repeater on 147.050 MHz (+ ve offset) which is located at Tic Hill, in the Darling Ranges, north-east of Perth. This assures excellent coverage.

A RTTY Bulletin board system is available through this repeater by sending a special series of commands to activate the service. The group is now working on a Packet Radio digipeater - VK6RDT, which should be fully operational very soon. The allocated frequency will be 147.575 MHz initially.

After this, the group will be seriously considering linking the RTTY and Packet Radio Bulletin Boards so that all news and data stored in either BBS will be available on either mode.

The group conducts its own News Broadcast every Sunday evening at 1830 hours local time through the RTTY repeater and on 3.535 MHz in the 80 metre band.

Callbacks on 2 metres are on 146.600 MHz.

The group also publishes its own very informative newsletter which really is a must for anyone interested in keeping up with the latest news and technical information available both locally and overseas.

If you have a need to know, contact any of the following office bearers -

Pres.	Phil Maley	VK6AD
V. Pres.	Frank Taylor	VK6JK
Sec.	Joe Nevin	VK6ZTN
Treas.	Bruce Robson	VK6ABR

Correspondence can also be sent to the group via Packet to the Secretary, VK6ZTN at VK6BBS, or to PO Box 97, Cannington, 6107.

And don't forget - if you need a TNC to get going on Packet, contact Joe, VK6ZTN for a circuit board. All components are available off the shelf for these latest technology units, so don't procrastinate any longer - get into DATA mode in '89!

ar

Queensland Division

Precis of the Annual Report, 1988/89

Prepared by the President, David Jones, VK4NLV

1988 was a year of considerable activity in the WIAQ, and parallelled the great excitement engendered in our Community by our Nation's Bi-centennial Celebrations. These celebrations helped focus our attentions on our past history, and the inevitable errors made, and firmed your Council's resolve to make the future better for us all.

Expo 88

The undoubted highlight of our year was the

staging of World Expo 88 on the south bank of the Brisbane River. It is now past history that Amateur Radio was not officially represented at the World Fair, and that in itself is a sorry, but already documented tale, especially when the theme of Expo was "Leisure in the Age of Technology". It is to the credit of the many amateurs who involved themselves in our Expo effort, particularly John VK4QA, Theo VK4MU and Murray VK4AOK in the early days, and Eric VK4NEF and Roy VK4BAY in the operational stages, that VI88XPO was the unqualified success that it undoubtedly was. For Eric's marvellous effort in keeping VI88XPO on the air, he was awarded the "Distinguished Service Award".

Bi-Centennial Celebrations

There were several events, organized on a local basis, involving clubs and the public at large. Two good examples were to be found with the Oakey High School and the amateurs in Innisfail under the guidance of Felix VK4FUQ. All of these made for good public relations, and many new prospective amateurs came to light.

Co-incidental with these activities was the operation of the special callsign VI88QLD, which was well co-ordinated by Theo VK4MU. Most clubs in Queensland availed themselves of the use of this callsign, and promoted both the Bi-centennial celebrations and Amateur Radio. VK4AWI was replaced with VI88QLD as our News and Information Station.

Examinations/Devolvement

In the past year, DOTC has moved further towards devolving itself of the responsibility for Amateur Examinations, and much was done by clubs and individuals to prepare themselves for accreditation. Ron VK4AGS and Aaron VK4AHO have established the data base and are now ready. DOTC has recently appointed an Examination Officer, so action in this area should now be only six months or so away.

Awards

It was felt that the two tier structure of only Life Membership and Merit Badge did not allow much scope for officially recognising our many volunteers. Anne VK4ANN was asked to prepare a Distinguished Service Award, one which could be given approximately four times per year to deserving amateurs. Awards last year, were made to the following:

Merit Badge #29	Gordon LovedayVK4KAL	10 yrs of IARUMS
DSA #1	Anne Minter VK4ANN	Bookshop, RCC
DSA #2	Ken Ayers VK4KD	WICEN
DSA #3	Eric FittockVK4NEF	VI88XPO Service

Congratulations to all recipients - you've continued the very selfless essence of the Amateur spirit.

Treasury

Over basically the last six or so years, Ross VK4IY has done a magnificent job as our Treasurer, and his efforts have seen a near 50% rise in our assets, from the low $40,000 to our current status of around $60,000. However, the members should note that this doesn't mean we have funds to burn. We have various amounts invested in a variety of interest bearing funds, which mature at a variety of times, but it would only take a bad tower case or other such calamity to see our reserves sorely tested.

Ross has now officially resigned as Treasurer after his many years of dedication, and Eric Fittock VK4NEF has volunteered to take over the reigns. Eric will settle in to his new job as soon as the books are returned from our Auditor, and so we all wish to thank Ross most sincerely for the marvellous contribution he has made, and thank Eric for that which he is about to do.

Future Planning

It was becoming obvious that with the vast increase in workload by Council, more meeting time was needed as we would frequently arrive at 2230K, with General Business not yet started. So a planning meeting was held at my QTH on 21/1/89, to look into our administrative procedures, and to further refine our longer-term goals. This meeting went for some eight hours, and was a low-key affair, with a BBQ during the evening session. These meetings will be held on a more regular basis, probably three per year.

Radio Club Conference.

Always one of the highlights of the year, and this one was no exception. Hosted by the CO Branch and well chaired by Rob VK4TKA, some twenty-six clubs made their way to the Queensland Recreation Council Camp at Cooee Bay, near Yeppoon. A hired bus took most of the delegates up from Brisbane, and our special guest, Terry Carrell ZL3QL, President of NZART, joined us in Rockhampton.

This was a "boots-n-all" conference, conducted in an atmosphere of conciliation, and everyone involved is to be congratulated for their very positive input. Teny summed up the situation in his report in "Break In", June 1988, by writing - "One could not attend this two-day event without being impressed with the desire of everyone to co-operate and compromise..... It was the way in which all ages of amateur radio were represented, with a will to see the growth of the WIA and the amateur service.....their very willingness to discuss the nuts and bolts issues will stand out in my mind for years to come....."

CO Branch, take a bow.

Divisional Liaison

As the WIA is now going through a period of conciliation - in other words, listening more to what others have to say - I have opened a line of communication with Roger Henley VK2ZIG, President in NSW. This has maintained an important link with the largest division and confirmed that we all basically have the same problems. We have also started swapping news tapes with VK3 in an effort to keep abreast of their situation.

This type of liaison should be fostered in the near future, with a view to further increasing the feeling of national unity which we see as being so important to our future.

A considerable amount of liaison with the Federal office was also undertaken, mainly in an effort to ensure good service to members. Those of you who have contacted me needing service would, I hope, have been as impressed as the Federal office is, with the standard which we are trying to establish.

Public Relations

There are various areas involving PR, and we are indeed fortunate that we have access to a professional PR firm, at the "parentally" right price. Murray, VK4AOK, has put in considerable effort to produce a range of brochures and leaflets. When these are rationalized for national use, they will be produced.

ASIANET Sys Ops Conference: 2nd - 4th September

This Packet Conference was held at the Gazebo Motel in Brisbane, and was well organised by Brian VK4AHD. It was attended by a "who's who" of HF BBS operators, from Japan to New Zealand.

The Conference aim was to bring together all those involved in HF BBS Sys-ops, with an aim of discussing and agreeing on HF Packet forwarding Policies, Rules, Techniques and agreeing on an HF Packet Band Plan Proposal, with a view to the forthcoming Region III Conference in Seoul.

To say that it was an unqualified success would be an understatement.

Well done, Brian!

Membership

Whilst we have a reasonable percentage of amateurs as members, your Council's aim is to achieve a 10% real growth. As a start, we have created a competition among clubs in an effort to boost membership prior to our 1988 AGM.

The WIA is the only body recognised as being representative of the ARS., yet it currently has less than 50% membership. We believe that lower fees are not the answer, as that will also mean lesser services, and poorer levels of representation with DOTC and IARU - highly undesirable. Members, it's up to you. Fee rises can be forestalled by acquiring more members. Won't you help?

Future Direction

There is currently much discussion regarding the future of Amateur Radio. We do not hold high hopes that WARC 1992 will treat the ARS. as well as we were treated in 1979, and so it behoves us to ensure that we are properly prepared, and that all levels of volunteer staff properly understand the needs and thoughts of grass roots amateurs. And this is where you come in.

Please tell us what you want! This Division spends more than half of expenditure in acquiring member opinion (eg. QTC/RCC) yet we desparately need more.

A member survey may yet be needed, but would enough members respond to give us an accurate picture of member needs? It's up to you.

The Federal Office, under the great leadership of Bill Roper and, now, also Ross Burstal, is genuinely having a marvellously positive effect on the membership at large.

It is time that we started to act as a co-ordinated, national body, with common goals and with a feeling of national unity, instead of the divisive, secular manner in which we have operated in the past.

It's up to us, collectively, to take control of our

future - it cannot be left to the regular few volunteers. To the silent majority, I ask - How about it? Won't you join us?

VK3 Notes

Bill Trigg VK3PTW
Vic Div, 38 Taylor Street
Ashburton 3147
Phone (03) 259 9261
Fax (03) 259 9298

Sunday News Broadcast (VK3BWI) 1030 hrs on 160, 80 and 40 metre bands, FM repeaters 6 and 2m and 70cm.

VK3 Education Officer Steps Down

For the past ten years Fred Swainston VK3DAC has been a theory instructor and was Education Officer for the WIA Victorian Division.

Fred has decided to step down from both these positions to have a rest.

During his decade of theory instruction for both the novice and AOCP, Fred innovatively pioneered revision weekends. He also authored Australia's first and only theory textbook written for the Department of Transport and Communications syllabus.

I am sure you will all join with the WIA Victorian Division Council in expressing appreciation to Fred for the job he did so well, and wish him all the best in the future.

WIA Membership Application Forms.

New application forms to be used by those seeking membership of the WIA are now available from the Victorian Division Headquarters.

Any club, individual or retailer of amateur radio equipment who would like a membership application form or forms can obtain them on request to the Divisional Secretary.

Book Officer resigns

One of the people working behind the scenes for the past fourteen months has been Jan Swainston who ran the Divisional Bookshop.

The sale of books at discount prices is a WIA membership service. But while members can buy books at prices much lower than available elsewhere the Bookshop must also show an operating profit.

In the 12 months to December 31, 1988, the Divisional Bookshop under Jan Swainston made a profit of $2528. Jan has resigned from the position after doing an excellent job; thank you Jan for your contribution to the members of the WIA.

Portable or back-up battery use

From Page 11

Charging on the Move

You may think that the charging system on the car will give the battery a good charge but this is not the case. The charging system on the car can and does deliver very high currents for a short period of time. Thjis has the effect of quickly surface charging the battery to 13.8 volts or more. At this point the vehicle's voltage regulator reduces the charging current to almost nothing. The following example quoted to me concerned a four-wheel drive vehicle. The battery was flattened in Mildura and the vehicle was jump-started. It was then driven back to Melbourne during the day. The next morning the battery was checked and found to be only half charged. A spell on a good battery charger restored the battery to full charge. The vehicle charging circuit was checked and found to be in perfect working order and the battery was also in good condition. The way out ot this would be to have a second regulator which could supply four or five amps over the load being drawn by the vehicle which could be reduced when the battery had recovered.

Like so many other fields today, the wet cell has changed at the hands of technology. Every application has a set of special operating conditions and the battery manufacturers are trying to satisfy them all and still make a profit. The primary use of the automotive battery is to start the car and then the alternator takes over the work load. The electric vehicle uses physically large cells which charge over night and work all day. The solar power application is engineered to be able to supply a great deal more than the expected demand of the installation. The Deep Cycle amergency battery takes a long time to charge and give moderate current supplies.

The wheel is turning full circle as the current demands in our electronic gadget equipped vehicles make more and more demands on the electrics. In days gone by, the battery would take you safely home should the alternator fail at an inopportune time. You could look to covering a 100 miles or more, however the car of today, with its fuel injection, electronic ignition, electric fuel pump and other essential management systems would be lucky to cover 30 kilometres before the discharging battery gave up. So the designers are working hard to try to devise an inexpensive but efficient version of the heavy plate battery of yesterday.

So there it is, some broad views on batteries in amateur use and some of the pitfalls. As I stated at the start, I had great difficulty getting any printed information while researching the above. The foregoing is based on information gained by speaking to people in various areas of the battery industry from sales staff to technical researchers.

$50 FOR FRONT COVER PUBLISHED PHOTOGRAPHS

A short history of communications

Ted Roberts VK4QI
38 Bernard Street, Rockhampton North, 4701

A lighthearted review of messages and their handling from the caveman era to WICEN, SES and ATN. The strong influence of military need on the evolution of technology is a major theme.

Communications may be defined for our purposes as the medium and techniques of passing information from one person or organisation (the originator) to another person or persons known as the addressee/s. In order to ensure the correct operation of a communication network it may be necessary for messages to be originated and passed within the network, but normally the job of communicators is to pass the messages between originator and addressee speedily and accurately. The god of messengers is Mercury, usually depicted with little clothing and winged feet. I often wonder if the wings on his feet are to cool them after a number of lifetimes as a runner.

Back in the caveman days no need existed for third party traffic between A and B as they were living as a tight-knit group and were able to maintain an 'eye-ball' contact when necessary. An irate caveman brandishing a massive club and pulling nasty faces carried the message to the addressee very accurately unless he was a fool. Come to think of it, there are still plenty of fools acting as addressees but the punitive measures our caveman used either deleted the addressee from the call book permanently, or he eventually came back on the air having learned to read the message accurately.

The first person reportedly using space communication techniques was Noah when he received instructions to build the Ark, and his use of a dove to signal when the Flood has ended was about the first recorded use of pigeons or birds as message carrying media.

As time passed, and the size of our caveman groups expanded, the need arose for a third party to be used to carry messages from one to others of the group. As no new-fangled means of communication existed then, it was necessary for person C to carry the message between A and B. Down through the centuries this person became known as a runner and still exists in the army as Battalion or Company runner, etc. One of these runners, Pheidippides, carried the news of the Battle of Marathon from there to Athens or wherever, then collapsed and died from the exertion. His exploit is forever remembered in the name of the Marathon event in the Olympic Games. The Incas of South America developed a very efficient method of message carrying by runners. This was necessary in their case because of their lack of beasts of burden and their introduction to the horse only came when the Spanish Conquistadores used them to destroy their remarkable civilisation.

As the population explosion continued and our group left the tribal state behind and became regional groups and then countries and nations, the need for speedy communications became correspondingly greater. Fortunately, by this time man had domesticated the horse and was able to mount his messengers with an increase in speed and, by staging from point to point by changing horses frequently, messages were able to be passed over long distances quite speedily.

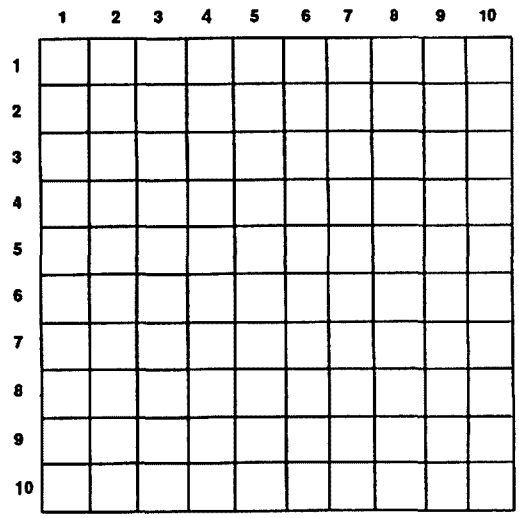
This practice of changing horses at posting houses (usually inns also) was in use until late in the 19th century and served the population very well. The ordinary traveller was able to change horses at these establishments as were the mail coaches and, from this beginning, we derived the name of the Post Office. One of the famous names of DX performance using this mode was the American Pony Express. Who has not heard of Paul Revere's ride warning that the Redcoats were coming!

The need for accuracy in the transmission of the message is of major importance and will be mentioned frequently. It is very obvious that the whole energy expended in getting a message from A to B is wasted if it arrives corrupted or inaccurately transmitted. While these early systems were as speedy as the existing techniques allowed, the accuracy was often debatable. For a start, accuracy was dependent on how well the messenger understood and remembered the message first passed to him by A and, how well it was understood by B when it was finally told to him. Further complications set in when the message had to be relayed through other messengers necessary in 'DX' or long distance messages. In addition, there was the possibility of deliberately falsifying the message for monetary or political gain and the damage could well be done before the originator was aware of the messengers' action. Both of these problems are still with us to the present time, as witness the deliberate 'leaks' of confidential matters from the Public Service and

Clues to Morseword 25

ACROSS
1 Take flight
2 Letters
3 Marsh
4 Donation
5 Very dry
6 Some time ago
7 Moves
8 Worn by a baby
9 Faucets
10 Eat the evening meal

DOWN
1 Ewer
2 Steal
3 Unable to hear
4 Leases
5 Mink, for instance
6 Salver
7 Flame
8 (4x5) - (3x2)
9 That is (Latin)
10 Urn

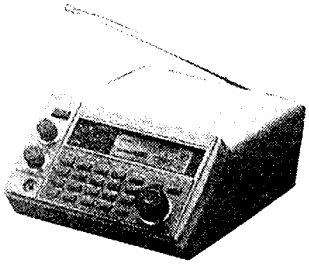


Solution next page 67.

NEW!! MAGNIFICENT from AOR

the 21st Century communications receiver

AR3000



Featuring:
Coverage
100 KHz - 2.036 GHz
Modes
NFM, WFM, AM, SSB CW
Memory
400 Memory channels
Scanning Rate
20 channels/second
Tuning Rate
50hz - 100hz selectable

NEW from the ICOM stable

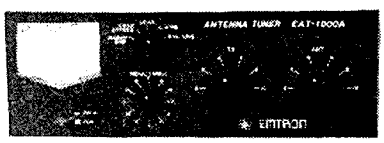
The fantastic budget priced **IC725**

TERRIFIC TRANSCEIVER
TERRIFIC PRICE: ONLY $1550

KENWOOD

Full range of all kenwood products available at competitive prices from our 3 stores

NEW 1KW EMTRON TUNER EAT-1000A Only $549



This new EAT-1000A is EMTRON S latest antenna tuner built on special request by many amateurs. Built with finest components available. 5 position internal antenna switch. cross needle SWR/power meter. built in 3:1 balun for open feedline and antenna terminals for coax line. open feedline as well as longwire. EAT 1000A will tune almost everything from 1.8 to 30 MHz. At lowest price professional design and quality that EMTRON provides. MADE IN AUST.

NEW 300W EMTRON TUNER EAT-300A Only $349

The finest 300 watt antenna tuner on the market with quality that only EMTRON can provide! Unique features such as:
• Cross needle SW 12/forward & reverse power meter • Built-in 100 watt dummy load • Antenna switch including bypass • Built-in 1:4 balun for open feedline • Lowest price & professional design • Matches everything from 1.8-30 MHz • Made in Australia by Emtron

OVER 1000 FAMOUS EAT-300 SOLD

EMTRON'S fastest selling 300 watt antenna tuner with SWR meter, built-in 1:4 balun, heavy duty ceramic switch and top grade components. Works with all rigs and is found in Amateur, Commercial and Marine services

Only $239

THPLinear Amplifiers

Two Metres	was	now
• HL 180 V Auto 170W	$599	$489
• HL1103/10w-120w	$479	$429
• HL 110V/25 25-120w	$449	$399
Seventy Centimetres		
• HL 130U Auto 120 w	$799	$749

KENPRO ROTATORS

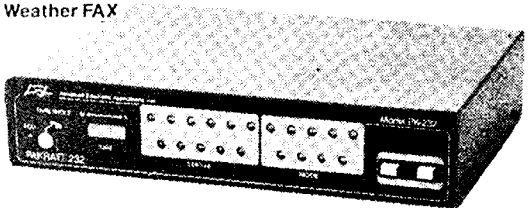
MODEL	BRAKING	ROTATING	PRICE
KR400	1530kg	400kg/cm	$369
KR400RC	1500kg/cm	400kg/cm	$429
KR800	4000kg/cm	800kg/cm	$659
KR2000	10,000 kg/cm	2000 kg/cm	$1299

All units include both top and bottom clamps, 8 core rotator cable available

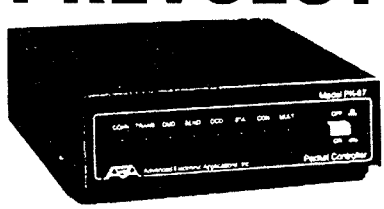
JOIN THE PACKET REVOLUTION!

New PK-232 Breakthrough

A new software enhancement makes the AEA PK-232 the only amateur data controller to offer six transmit/receive modes in a single unit.
★ Morse Code ★ BAUDOT (RTTY) ★ ASCII ★ AMTOR ★ Packet ★ Weather FAX



PRICE $649 WITH FAX



NEW

PK-88 ™ PACKET CONTROLLER NOW $299

The PK-88 is not just another copy, it is much more. With all the packet program features of the Multi mode PK-232, the PK-88 is an economical new TNC designed to bring you enhanced completely compatible packet software plus new hardware features for improved packet operation.

BANKCARD
MASTERCARD & VISA
WELCOME

EMTRONICS

MAIL ORDERS
WELCOME

NSW & HEAD OFFICE:
92-94 Wentworth Ave, Sydney
NSW. 2000. TLX:AA73990
P.O. Box K21 Haymarket, NSW. 2000
Ph: (02) 211 0988
FAX: (02) 281 1508

VICTORIA:
288-294 Queen St, Melbourne
Vic. 3000
Entrance from Lt. Lonsdale St.
Ph: (03) 670 8551 or 670 0330
FAX: (03) 670 0671

QUEENSLAND:
416 Logan Road, Stones Corner
Qld. 4120
Ph: (07) 394 2555
FAX: (07) 394 4316

political party decisions; quite often intended to gauge public reaction. I hasten to point out that these people are very rarely in the message handling category but are 'trustworthy' people in confidential positions.

The need for speedy transmission for the spoken word is well demonstrated by the use of Staff Officers in the Army to convey the orders of the Commanding General to his subordinate commanders during the progress of a battle. These gentlemen or 'Despatch Riders' galloped blithely through shot and shell to advise Regimental Commanders that the General required such and such action to be taken immediately. If the Staff Officer, through 'thickness' or misunderstanding in the heat of action passed on the wrong message, then bungles of various degrees of magnitude occurred. The classic combination of thickness and misunderstanding gave rise to that gallant but unnecessary action known as 'The Charge of the Light Brigade' during the Crimean War.

With the advance of education eventually Senior Officers learned to read and write, the written word took the place of oral messages and some improvement was noted in the orderly conduct of that most disorderly military function known as the battle. Eventually, this carriage of written commands reduced the need for Staff Officers to carry messages and interpret (hopefully correctly) the obscure thoughts of the General Commanding.

The introduction of more modern aids to warfare such as the motor cycle and motor vehicle took the message carrying out of the hands of the Staff Officer in general and this duty became part of the Signals Corps or Regimental despatch rider service. The fact that the invention of the machine gun and the much heavier use of artillery were contemporary with this development may have had some influence in this decision as it was now necessary to ride through much heavier and more lethal showers of shot and shell to deliver the messages. The sum result, however, was that the large number of Staff Officers were left with nothing better to do than plague the life out of the rest of the Army; which role they exercise to the present day?

The role of the messenger has not always been an easy one, particularly on the diplomatic front. Due to the long delays caused by distance and slow systems used, it was not unknown for the message to arrive after the action requested by it was no longer required. Imagine the frustrations of a Governor of a Colony suddenly finding he was at war by an attack from another country who had quicker advice than he did. It was only to be matched by his frustration when his forces fought and won a decisive victory after the original war had been finished and he found himself incarcerated in the Tower because of poor communications!

On the diplomatic scene, and, in fact, the ordinary message delivery scene, it was not uncommon for some addressees to indulge in a little idle amusement when they received unwelcome news or ultimatums. As this amusement usually was centred on the poor messenger and his demise, sometimes agonisingly slow under torture, or the forcible removal of his tongue so he could never pass such a message again, it is a constant source of amazement to me that there was an ever present supply of messengers available. Maybe the Chief 'volunteered' them for the service when he had one eye on their wives or their estates after their failure to return.

Throughout the ages, numerous attempts were made to improve the speed of message handling and to bypass the inherent dangers of the messenger service, including waylaying and killing, to abduction and forcing the betrayal of the message under torture, down to the mundane problems such as being shot by highwaymen, eaten by packs of wolves, and death by fire or flood as well as intolerable delays. As no sophisticated devices then existed, these early methods were almost invariably based on some form of visual signalling. An early device was the use of bonfires to signal raids on the coast by Norsemen or similar groups. This probably is one of the earliest uses of digital communication as there were only two states of the signalling medium – lit or not lit! Not to be compared to present day binary systems however. This method was used to signal the sighting of the Spanish Armada in the English Channel in the days of Elizabeth 1.

Shapes (cones, balls, etc) were used at times but the cumbersome nature of the devices and difficulty of designing enough distinctive shapes to form an alphabet ruled this method out for general use.

The Australian Aborigines are credited with some form of very primitive smoke signalling. This form of communication was brought to its highest standard by the American Indians if my favourite Indian stories as a schoolboy are to be believed! The system depended on the Indian operator 'keying' the carrier – a column of smoke – by interrupting it with complicated movements of a blanket through the smoke column. Note that the operator never had to pass a Morse test to get his licence! One major spinoff of this technique was the destruction of numerous vermin which inhabited the blanket, which brings up the question, 'Was the signalling a by-product of attempts to kill the lice?'. One of the inherent problems with this mode was the loss of propagation during the night time and the problems that arose in rainy or foggy weather.

While our cavemen were becoming more civilised they spread their attention to the waterways of the world, from rivers and lakes initially, to the seas, and then to the mighty oceans. Boats and ships were used to carry messages almost from their interception but they remained out of communication from the time they were out of sight of land until they made their next landfall. If they were operating as a fleet it became necessary to heave to, launch ships' boats and assemble all captains for changes in plans or operational orders to be passed. Obviously something better was needed for intercommunication whilst at sea and if it could be done while the ships were underway so much the better.

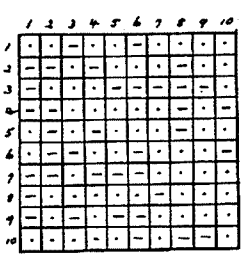
Communication with coast stations was tried using shapes but these soon gave way to a much more versatile system of flag hoists which was also well suited for use between ships whilst at sea. During the Napoleonic wars the French were experimenting with a form of mechanical semaphore with some success. This system was also usable with two flags and is still used today. One of the main reasons for the ability of the Royal Navy to remain such a decisive maritime force for so long was the very highly developed and efficient signalling system in use. They were able to pass commands and information right up to the time of engagement in action, and probably during the action itself.

To be continued next issue

MORSEWORD 25 SOLUTION

Across: 1 flee 2 mail 3 bog 4 gift 5 arid 6 past 7 goes 8 bib 9 taps 10 sup

Down: 1 jug 2 rob 3 deaf 4 rents 5 fur 6 tray 7 fire 8 '14' 9 id est 10 vase



Silent Keys

We regret to announce the recent passing of:

Mr Henry Pearce	VK3EN
Mr Ronald Guttormsen	VK4RL
Mr C.P. Pfrunder	VK4KBR
Mr WJ Hornidge	VK6KBP
Mr Jim Kirk	G6ZO

Jim Kirk G6ZO

To his many friends around Australia, I have to announce with deep sorrow the passing of Jim Kirk G6ZO. He died on February 8th, 1989 after an illness of several months. His outstanding CW signal will be missed by many of us. On behalf of all of us, I have sent sincere condolences to his wife Denise and family.

Frank W Bird VK6ZE

OVER TO YOU

Bangladesh Appeal

Dear Sir,

Greetings to you from Bangladesh. I am General Secretary of a DX Club here. You will know that S2 (Bangladesh) is a rare DX country. But now our club is trying to get an operating licence.

Some months ago I talked with our Communication Minister about licensing while he visited our club during the last devastating flood. This emphasised the necessity of amateur licensing in Bangladesh. Our area was cut off from any kind of communication during the flood for 7 days. He assured me he would do what he could in our favour. Perhaps we would be able to set up a S2 station this year.

Amateur Radio publications are very very short in our country. What we had we lost in the flooding of our club office and library. So now we seek your kind co-operation to publish an appeal in your esteemed journal on behalf of IRLC. This would be very much appreciated.

International Radio Listeners Club in Bangladesh is trying to get a licence from the Authority. That is why it seeks your help in this regard and also would greatly appreciate your used radio publications for use in the Library. This Club has lost everything in the flood last year including all library books. Any help would be very much appreciated.

Letters should be addressed to:
International Radio Listeners Club
Konabari, PO Nillnagor-1346
Dhaka, Bangladesh.

Taimur Rahman
General Secretary
International Radio Listeners' Club

Still on Amateur Scene

No doubt many of your readers are aware of Electronics Australia, and its former incarnations Radio, TV and Hobbies, Radio and Hobbies and perhaps even Wireless Weekly. Under one or other of these names, it's the oldest commercial radio/electronics magazine in Australia, and one of the oldest in the world. In the past we have also had close links with the amateur radio movement, due of course to the efforts of my illustrious predecessors Ross Hull, John Moyle and Neville Williams.

I suspect, however, that events of the last few years have led at least some of your readers to conclude (not unreasonably) that Electronics Australia is no longer interested in amateur radio, or in publishing amateur radio news or projects. I should like the opportunity to correct this impression, which nowadays at least is anything but true.

It's true that the magazine went through a rather difficult period a couple of years back, culminating in the departure of the editorial people who had been responsible for the magazine following my own departure in late 1979, and the retirement of Neville Williams in 1983. And during that time, there may not have been a great deal in the magazine to interest radio amateurs. But since I returned to the editorial chair in mid-1987, the new staff and I have been spending an enormous amount of effort in returning it to its former pre-eminent position. I'm happy to say that we've been fairly successful, too, with circulation and readership both climbing again.

However it pains me to admit that there still isn't any significant amateur radio content in the magazine. But this is NOT by choice, or because of some kind of deliberate anti-amateur radio policy. Far from it. It's simply because (a) I have so far been unsuccessful in finding anyone willing to commit themselves to writing a regular amateur radio news column; (b) there have been virtually no amateur radio projects submitted to me, for publication; and (c) we haven't as yet been able to develop any amateur radio projects ourselves - some things take a little longer!

Points (a) and (b) seem particularly ironic, because I suspect many amateurs have been sending details of their projects and achievements to our smaller competitors, because they think I wouldn't publish them.

So can I please stress that I'm very keen to receive articles on amateur radio projects or achievements, and to help promote the interests of amateur radio - particularly the experimental side. Even though I don't for one moment put myself in the same league as Ross Hull or John Moyle, I am a limited call myself (albeit not very active nowadays, alas), and I do want to restore the traditional links between the magazine and radio amateurs.

Of course as Australia's largest-circulation electronics magazine by far, with more readers than most of the others put together, Electronics Australia is surely an excellent medium through which to reach not only amateurs, but also potential amateurs as well. We also pay an appropriate publication fee for material we use, and are prepared to 'knock it into shape' if the contributor isn't in a position to supply a fully developed story.

I hope the foregoing helps to correct any misunderstandings, and I look forward to being inundated with material.

Jim Rowe, VK2ZLO
Managing Editor, 'Electronics Australia'

Contests Continued

I guess I left myself open with my previous letter on contests. I was not prepared for the personal attack on my character, however and one thing I detest is the usage of "letters" columns in magazines for personal disputes.

In this case, I must reply to Mr. Luther's letter in the March edition of "AR" lest your readers be led into believing that I am a young, just-licensed operator, with a "grudge".

Nothing could be further from the truth.

I have been an SWL and Ham operator for over twenty years and my opinions on contests were formed when I happened to strike one on forty three years ago. The band (from 7030 kHz and up) was "wall-to-wall" contestors. There was not even ONE HERTZ for "normal" QSO's.

It was then that I started to consider writing a letter to "AR".

Nothing happened until a "big" contest on twenty. When I could not find any room on the band, that's when I compiled my letter.

My opinions on contests have not changed since my last letter (nor will they ever change) no matter how many of my fellow amateurs "attack" me.

As a parting thought, may I pass on this remark heard on forty recently: "I never go on 20 any more. The band is always full of people exchanging numbers".

I rest my case.

Terry Robinson VK3DWZ
21 Russell Avenue
Woodend. 3442

Channelization of Amateur Bands on MF & HF

1. I wonder what would happen if Australia were to try for these two changes in International Amateur Radio viz.

(a) on SSB on M/F and H/F to use USB as the sole mode?

(b) to use on M/F and H/F both CW and SSB on discrete channels?

2. I would envisage allocations on the 80 metre Amateur Band between 3500 kHz and 3625 kHz to follow a pattern similar to this

CW: Channel width: 2 kHz. Centre frequencies (carrier frequencies) to follow this pattern.

Ch1 3502 kHz
Ch2 3504 kHz
Ch3 3506 kHz
" " 17 Channels
Ch 17 3534 kHz

SSB Channel width 5 kHz. USB mode. "Carrier frequencies" to follow this pattern.

Ch1 3535 kHz
Ch2 3540 kHz
Ch3 3545 kHz 19 Channels
" "
Ch19 3625 kHz

3. Reasons for the Proposal

I Use of USB on 160m, 80m and 40m would have amateurs conform with professional practice on M/F and H/F eg Maritime radio and Aeronautical Services.

II A 2 kHz channel bandwidth on 80m CW would give a better opportunity to novice

operators using CW, few of whom possess a 500 Hz or 600 Hz CW xtal filter and must use, for CW reception, the 2.7 kHz SSB filters in their transceivers.

III Channel operation on 80 metres would give:

(a) A better chance to monitor a definite channel for weak signals and/or possible skeds.

(b) the opportunity to enter one to ten frequencies in the memory bank of a modern transceiver which has memory scanning facilities and thus make it possible to guard up to ten channels at once.

(c) this memory scan facility could be used for monitoring up to ten channels in any mixture of CW and SSB.

(d) apart from this, memory scan on 80 metres would appear to the writer to have very little use - if any - for Amateur Radio Operation, nice as it may be for monitoring non-amateur stations transmitting on fixed frequencies.

4. The Amateur Radio Service use of discrete channels works most satisfactorily in the Amateur 2 metre FM band. Admittedly the 2 metre Amateur band is 4,000 kHz wide and the 80 metre Amateur band is 200 kHz wide. Yet the 27 MHz CB band works most satisfactorily with 40 channels (both AM and SSB) each 10 kHz for a total bandwidth of 400 kHz.

John Robinson VK2AEW
203 Tryon Road
Lindfield 2070

Reminder Notices

AR is now following the irresponsible methods used by Government and big business in not sending out a renewal reminder for overdue subs.

Can the WIA guarantee delivery of the "First and Final Notice" in the post? Without fail?

Stopping the magazine earlier as you have done, should be sufficient deterrent to those persistent 'late payers'.

Please remember when you are hell bent on saving 'our' money, there's a point when 'efficiency' reaches the ridiculous and becomes unproductive. So what if a few reminder notices cost a few bob? This is a 'service' to us readers you know, so just leave it as part of the overheads. We pay for it - not the WIA! If I don't get a subscription notice next year, I will not be renewing! The name change from FIRST/FINAL NOTICE to FIRST/ONLY NOTICE (AR Feb) changes nothing.

Also I wonder at the new system of 3 year subs. With inflation, the cost of subs will rise in years 2 and 3 but actual subs received will be static based on Year 1, possibly depleting funds in years 2 and 3.

If you need to bribe people to retain their membership, then you should take a look at yourself to see what you are doing wrong (Ancient proverb).

Arthur J Trevaskis VK7SE
RSD 1745
Penguin 7316

Loss of 50cm Band

It is with sadness that I note the announcement in "AR" of February 1989 of the withdrawal of the 576-585 MHz Amateur Band (apart from existing ATV Repeaters which "can continue to operate until the frequency band is required for the respective area").

Although, as an amateur RADIO operator I suspect that the average RADIO ham will scarcely miss the loss. This is because there hasn't been any commercially built radio equipment available for the band and, not withstanding the published band plans for 50cm (see page 25 of AR February 1989), to my knowledge there has been no RADIO activity on 50cm since the days of Modulated oscillators and Super-regens!

But to amateur TELEVISION operators the loss of 50cm is little short of tragic because it is the ONLY band that can be tuned on a normal domestic TV set. In the same way that many present radio hams got their start by tuning across the short wave band on the family radiogram, many present ATVers first saw ATV while tuning the family TV receiver or video recorder into SBS, etc.

The classic argument for nation-wide (or even world-wide) amateur radio bands has always been that these provide the opportunity for experimentation in long distance two-way communication. But this has never been a feature of ATV operation on 50cm due partly to its use for the output channel of ATV repeaters (at least in the State Capitals).

Instead, the value of 50cm to ATVers has always been in its accessibility. In losing 50cm, ATVers lose accessibility.

I can well appreciate the difficulties facing the spectrum planners in accommodating requests by amateurs for a nation-wide UHF allocation. I can also understand the difficulty in pre-assigning a channel for ATV operation in every single locality in Australia.

But is it too much to ask of the Regulatory Authority that wherever an ATV Group applies to install a UHF ATV repeater that their request for allocation of a UHF broadcasting Channel for that locality be given serious consideration alongside other legitimate users?

In many ways ATVers would find such an arrangement preferable to a single nation-wide allocation in that it would enable cross-linking of nearby ATV repeaters without the use of spectrum-hungry users?

Of course, if we were accepted alongside broadcasters, our ATV repeater transmitters would have to meet the same spectral purity requirements as they do. But I don't see this as an insurmountable problem as it applies only to the repeater transmitters themselves, not to the individual users' transmitters.

Indeed, because of the much lower power of ATV transmitters, the reduced requirement for protection of the ATV service against interference from other services, and the fact that ATV repeaters are generally sited away from other TV transmitters, a case could be made for relaxation of the normal 21 MHz spacing between adjacent channels in the case of channels allocated to the amateur television service.

In my opinion, there is another reason to keep one foot in the UHF door!

The next 20 years could well find a move away from terrestrial TV broadcasting and towards direct satellite broadcasting (DSB); developments in spectrum-hungry high definition TV and 3D television would demand DSB; and the TV broadcasting industry with its recent moves towards agglomeration and networking, while requiring more channels now, could well be better served in the long term by DSB.

If we can retain our rights of access to the UHF broadcasting band now, it could well strengthen our hand in negotiating with the authorities against the ever spectrum-hungry radio-telephone services if and when UHF channels again become free as a result of the move to Direct Satellite Broadcasting.

But notwithstanding all of the foregoing arguments, I cannot finish without asking why is it that New Zealand can allocate 614-620 MHz to ATV repeater operation but Australia cannot? The Australian Table of Frequency Allocations shows this section as Broadcasting - Primary and Fixed and Mobile - Secondary. To my knowledge no broadcasting allocations have been made below 620 MHz. Is the band actually in use anywhere in Australia? Why shouldn't it be allocated to ATV repeater output operation where possible?

And what about the new 902-928 MHz amateur allocation recently made available in the USA? While it doesn't quite satisfy the requirement of being readily receivable on a domestic TV set, there is a steadily increasing range of ATV down-convertors and transmitters available at reasonable prices from the States. This must be a WIA item for bargaining at the next WARC!

John F Ingham VK5KG
37 Second Ave
Sefton Park 5083

(We agree with every word, John; and all the aspects you mention are essential to our ongoing negotiation with DOTC on this subject, which is on the agenda for every WIA/DOTC meeting. Ed)

Restraining Smokers

I am loathe to raise yet another divisive issue, but I feel that you (plural) have a right to know why I feel sufficiently disgusted and repressed to begrudge the W.I.A., and the local radio club my membership subscriptions.

My wife is a chronic asthmatic of long standing and is therefore used to being denied access to facilities where smoking is permitted. I am not, but with advancing years and declining health I, too, am finding a decline in my tolerance to passive smoking with the result that attendance at radio club meetings has gradually become at best an uncomfortable evening or, at worst, a night and following morning of severe discomfort and sometimes illness.

In order to continue with my club activities I therefore requested/proposed/moved that club meetings should be held in a strictly non-smoking environment.

HAMADS

TRADE ADS

AMIDON FERROMAGNETIC CORES: Large range for all receiver and Transmitting Applications. For data and price list send 105 x 220 millimetre SASE to: RJ & US IMPORTS, Box 157, Mortdale, NSW, 2223. (No inquiries at office please ... 11 Macken Street, Oatley). Agencies at: Geoff Wood Electronics, Lane Cove, NSW. Webb Electronics, Albury, NSW. Truscott Electronics, Croydon, Vic. Willis Trading Co, Perth, WA. Electronic Components, Fishwick, Plaza. ACT.

RADFAX2: Hi-Res radio facsimile morse 7 rtty program for wIBM PC/XT/AT on 360K 5.25" floppy & full Doc. Need CGA, input port, SSBhf FSK/Tone decoder. Has re-align auto-start view save print. Also "RF2HERC" same as above but suitable for hercules card, and "RF2EGA" for EGA card (640X350 mode). Programs are $30 ea. plus $3 postage only fromwM. Delahunty 42 Villiers St. New Farm 4005 QLD. Ph: (07) 3582785.

FOR SALE – NT

ICOM IC271A 2 mtr all mode TRCVR mint cond. $1000. ICOM IC471H 70cm all mode 90 watts mint cond. $1500. Jeff VK8GF QTHR Ph: (089) 522388 WK (089) 521016 AH

FOR SALE – STH AUST

YAESU MOBILE ANTENNAS for15m, 10m, & 2m including gutter mount. All in mint condition,used only a few times. $75 ono VK5KBE Ph: (08) 2507259

FT757GX & MIC/HBK $1300.AM/FM clock radio/alarm 120x25x55mm new, $45. Sony WA55 2 Band Stereo cassette – corder, good $50 & manual. 2, Dick Smith 1W, 3CH, 27 MHz W/T's, $30 ea. Assorted components also.Mark Loveridge VK0ML/5ABBC/- 18 Yorktown Crs. HenleySth 5022 Ph: (08) 3561120

ANTENNA TH3 HI-GAIN (SENIOR) Good order needs seals & some bolts. $225 ono nine years old Ph (08) 2987761VK5WB after 5PM.

SWAP SALADMASTER COOKWARE SET: 21 piece, 5 ply stainless steel, brand new, never used – for a late model HF or VHF Transceiver. Will pay cash difference. VK5KBE Ph: (08) 2507259

WANTED SA

MANUALS or copies, plus ham and general software for Sorcerer computer. Any info. appreciated VK5AW QTHR. Ph: (085) 835469.

FOR SALE – QLD

KENWOOD TS180S HF Transceiver WARC fitted $650 VFO180 $100. Power supply PS30 $300 Hidaka 5 Band vertical $120 PK64 modem packet RTTY amtor etc HF VHF $595 VK4AI QTHR Ph: (07) 2845688

YAESU FT290R All-mode 2M TXVR carry case NICADS mobile bracket plus Tokyo HL35V amp with gasfet pre-amp $790 Frank VK4KFB Ph: (07) 2883662

KENWOOD TR2400 2MTR H. Held NI-Cads fast charger s/c case belt clip two antennas remote mic G.C. $300 ono VK4AIF (07) 2849230 Clontarf

FT224 2MTR FM MOBILE TRANSCEIVER Solid state XTAL control 4CH supplied manual included good order $200 VK4KAL QTHR.

DSE UHF WATT METER Surplus to requirements V.G. order $45 VK4KAL QTHR

SIGNAL GENERATORS: Marconi TF144H/4 10K72MHz Mint $250 Metrix 931H 50K/50MHz $100, Ratcliff 205 45/180 MHz $100 wanted Drake equipment and tubes Bob VK4OY QTHR (07) 3960886

YAESU FT1 including YAESU external speaker & YAESU desk mike. Recently prof. service checked. $2200. Will consider near offer. John VK4SZ QTHR Ph: (070) 613286

KENWOOD TS-520 TRANSCEIVER. Good condition. Recently overhauled. Cover panels re-sprayed. Complete with mike, narrowband SSB filter RCA 6146As finals. Spare 12BY7 driver voltage equalising transformer. Operators Manual $500. VK4YG QTHR Ph: (070) 976387

572B/T 160L TUBE/S for FL2100B or equivalent 1 or pair, new or in GC. Also 1 KW-lowpass-filter, 3-30 MHz. Bernhard VK4EBV Ph: (07) 3543779

VARIAC (TV signal strength meter) TV circuits (colour) (Osram valve Z759) Taylor Scope Model 32A-valve tester - old – valves radios – signal generator-Windsor Model 75 Multimeter. VK4DY 29 Leslie St. Woodford 4514

KENWOOD TS430S HF Transceiver handbook, AM and FM options. EC $1100 VK4ASB QTHR (07) 2633872 AH

WANTED – QLD

70cm Allmode transceiver VK4ASB QTHR (07) 2633872 AH

BOOKS 'SAGA OF ACHIEVEMENT' (RAAF Story) (Hall), "Aust. Tech. Story' (STC) (MUS-

---

After much debate and consideration the motion was defeated by a considerable majority.

I think I made my position and reasons known but in spite of this my "fellow" amateurs could not see their way clear to refrain their indulgence for a couple of hours for the sake of a fellow club member.

I am a relative newcomer to amateur radio but if that is an example of the amateur "fraternity" then maybe amateur radio isn't worth fighting for after all!

Sony, ladies and gentlemen and good luck,

Dimitri Perno VK4BDP
110 Panorama Drive
Nambour 4560

LETTERS CONTINUED

Contests

I refer to Terry Robinson's article.

Yes you may be permitted to air your opinion, but don't you think that you're asking a bit much. Granted not all amateurs enjoy contests however some of us do. I notice you only mentioned 20 metres. Don't tell me that is the only band that you have access to. Let us not split hairs here, I fully realise that contests can be a bore and that some contesters' petty antics do the amateur service an injustice. May I suggest that instead of being selfish you QSY to other bands, eg WARC have no contests, or maybe listen for some intruders. I know that you will achieve nothing by being selfish. You would be better served by filing official complaints to the DOTC about those cranky amateurs who do us wrong.

Enjoy your DXing Terry,
73's Bill Horner, VK4MWZ,
26 Iron St,
Gympie, 4570

CIO), 'History of Radio in SA' (Ross), 'This is the ABC' 1932–1983 (Inglis), 'The Magic Spark' (Walker), 'The Fabulous Phograph' (Gelatt) VK4EF 97 Jubilee Tce Bardon 4065 Ph: (07)3661803 can someone help please

---

YAESU FRG–7 Receiver fitted with fine tuning. Will pay top price for unit in EC. John Lauten VK4VK, QTHR Ph: (075) 381759 After 6pm.

FOR SALE – VICTORIA

ICOM IC–3200 DUAL BANDER 25 wattsVHF/UHF. Replaced with IC–900 $845/ono. ICOM R-71 communications receiver with remote control 100KHz to 30MHz $1290. Both in EC. Peter O'Keefe VK3YF Ph: (058) 216070 PO Box 654 Shepparton 3630

KENWOOD TS660 all mode Quad-bander. inc. 50-54 MHz. very clean unit. $650. ICOM 1271E all mode 1240-1300 MHz inc. mic, manual, DC cable mint condition. $1500. Roger (VK3XRS) Ph: (051) 568291.

KENWOOD TW4100A Dual bander 45 watts 2M 35 watts 70cm 6mths old $700.00. Russell VK3HA (03) 454577

KENWOOD TS-1205 $1500 YAESU FRG 9600 $900 FIF232C Cat interface as new $120 EAT 300 watt antenna tuner $300 2x6V 46Ahr lead acid batteries $60 computer Vic20 $20 all prices negotiable ring Phil VK3PGP Ph: (03) 2323428

WILSON SYSTEM Two 4 element tri–band YAGI, 11 meter tilt – over steel tower, DAIWA antenna rotor and controller $500.00 Ph: (03) 8489550 VK3CLB QTHR.

BEAMS CHIRNSIDE DUO-BAND with Balun $100.00, mono-band 3el 10m $40.00, 2el 15m $40.00, 6 m Swiss Quad $80.00. Mike VK3KTO QTHR Ph: (03) 5575475

FT707 TRANSCEIVER with FP707 power supply FV707DM VFO FC707 ant. turner and FTV 707 transverter with 2m & 70cm modules $1500 ono as new no mods. FM321 70cm FM mobile $250, TS520 $350, FT290R 2m amp. 5W/80W $500, Bearcat 20/20 scanner $250. RRTY 1 computer interface $150. All in EC. (052) 513783.

CICADIA 300 Data phone modem $150.00, Radio Shack, DMP 100 Dot Matrix printer plus manual $200 ono. Arthur VK3CUA QTHR Ph: (054) 437425

HY GAIN 18AVT TRAP VERT 80/100M $100. Kenwood TS5205 with mic & H'book EC $525. YAESU FT757 GX MKII as new with h'book & service manual $1500. VK30M Not QTHR. Ph: (059) 443019.

UPDATED ROBOT 800B dedicated computer keyboard unit for sending and receiving morse code at 3 to 99 wpm, RTTY at 850wand 170 cycle shifts, ASCII at 100 BWDS and SSTV. This unit fitted with factory supplied split screen modifications, all tech. manuals, literature and QST review write ups supplied. EC. at $350 ono. W. Babb (03) 337902 VK3AQB.

WANTED VICTORIA

BOOK "SERVICING BY SIGNAL TRACER" By John Ryder and any books etc. on related subjects. Also wanted valve type test equip. Ralph VK3CQK, QTHR. Ph: (058) 521372.

FM1675 4 CHANNEL Xtal Switching kit FV101 outboard VFO suit FT101 Maurie VK3AZB Ph: (03) 8908038 QTHR.

Transverter DSE 10/11m to 80M. Warren VK3BYD Ph: (059) 623973 After 6pm.

BACK ISSUES SILICON CHIP MAGAZINE to December 1988 Ken VK3ZFI QTHR. Ph: (03) 580 5357.

ICOM IC4AT to buy or swap for Kenwood TR2500 2M hand held. Contact Les VK3SL (03) 4282340 all hrs.

HANDBOOK FOR HEATHKIT HW100 Transceiver original or photocopy will travel or pay postage please help! Details and price to P. Cosway VK3DU QTHR Ph: (03) 4891385

KENWOOD TS-120V GC with microphone power lead $420. Rodney VK2CN QTHR. Ph: (049) 498393

TS530S WITH SSB/CW narrow filters, mic, handbook, GC $600 firm. Ph: (066) 527160 Peter VK2EVB.

FOR SALE - NSW

IBM PC/XT 640K memory, 30MB hard disk, Hercules plus graphics card, Taxan amber screen. Turbo board, 8087 math–coprocessor.

Some software included. Complete system in EC. Genuine IBM system at a clone price $2,600. VK2HL (02) 9814762.

TH3 'THUNDERBIRD' triband beam hilly restored with s/steel hardware and recond. traps $200 Eric VK2EED Ph: (02) 3592678 (BH) (02) 6341462 (AH).

MOST ISSUES AR FROM 1964 TO 1988 except 1977. $60. The lot plus freight or negotiate certain years. VK2GZ QTHR Ph: (069) 62-3576 43 Bringagee St Griffith .

KYOKUTO 2M Transceiver FM 144-10SXII with mic. and manual. Works fine now but history of dry joints. $150 Keith VK2AXN (02) 4890304 QTHR.Licensed amateurs only.

AR88 RECEIVER REPLACEMENT COILS 23 in number plus S meter all new $45 ono. QTHR ART VK2AS (02) 4671784.

WANTED NSW

PROBES for AWA volt-ohmist also copy of single side band by Collins David Kidd 8 Gosse Ave Dubbo 2830 (068) 818906.

FT7 or older type transceiver good order also morse key ATU SWR. Ph: 6252602 George VK2YT.

RF POWER TRANSISTORS 2 of type CTC CD7012 contact Carl VK2EEC QTHR. Ph: (02) 6716595 AH.

FC902, YO901, FTV901R, in GC. Ph: Peter VK2EVB (066) 527160

KENWOOD DFC230 digital frequency controller Frank VK2CWL (068) 890535.

SIGNAL GENERATOR to 500 MEG or more also any test equipment of any age by collector David Kidd Dubbo. Ph: (068) 818906.

CIRCUITS etc for simple repeater ident and timer control. To be used in UHF CB repeater (NEE01). Reasonable price paid for completed unit. VK2JH (068) 878241 QTHR.

MONOBAND 80m transceiver for mobile work. SSB or SSB/CW. Solid State prefer. Peter VK2EMU Ph: (02) 571426 (ans. machine).

YAESU FT-480R 2m multi. Philips SSB/AM 201 HFCB. Kenwood MB-100 bracket. DSE VZ-200 + RTTY. C-64 packet modem. Isopole Jnr 2m vert. Stationmaster 10/11 vert. Chimside 80,15,10m whips. Ph: (062) 883589

FOR SALE ACT

ICOM 720A with microphone and CW filter. Unused.Nally tower. VZ200 Computer plus 300 Baud terminal and RTTY de-mod kit Ph: Richard (VK1UE) (062) 581228.

ADVERTISER'S INDEX

ATN Antennas 64

Blamac Pty Ltd. 59

Captain Communications 7

Dick Smith Electronics ..... IFC

Electronics Australia 47

Electronics Today International 52

Emtronics 65

Ian J Truscott's Electronic World 61

Icom ..... OBC

Kenwood Electronics Australia P/L .... IBC

Stewart Electronic Components 64

West - AM Radio 33

WIA NSW Division Novice Licence 41

Wilkie Trading Co. 11

HAMADS

Please Note: If you are advertising items For Sale and Wanted please use a separate form for each. Include all details; eg Name, Address, Telephone Number (and STD code), on both forms. Please print copy for your Hamad as clearly as possible.

*Eight lines free to all WIA members, ninth line for name and address Commercial rates apply for non—members. Please enclosed a mailing label from this magazine with your Hamad.

*Deceased Estates: The full Hamad will appear in AR, even if the ad is not fully radio equipment.

*Copy typed or in block letters to PO Box 300, Caulfield South, Vic 3162, by the deadline as indicated on page 1 of each issue.

*QTHR means address is correct as set out in the WIA current Call Book.

*A courtesy note will be forwarded to acknowledge that the ad has been received.

Ordinary Hamads submitted from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re—sold for merchandising purposes.

Conditions for commercial advertising are as follows: $22.50 for four lines, plus $2.00 per line (or part thereof) Minimum charge — $22.50 pre—payable.

State: .....

❑ Miscellaneous
❑ For Sale
❑ Wanted

Name: .....

Call Sign: .....

Address: .....

.....

KENWOOD

NEW!

TS-790A

ALL-MODE TRIBAND TRANSCEIVER

Work all the upper bands and gain access to the latest communications techniques with the all-new Kenwood TS-790A. This transceiver gives you access to the exotic world of VHF and UHF communications, including Satellite, Moonbounce, Grid-square DX and VUCC. All with legendary Kenwood ease and reliability.

Features include: All-mode Triband coverage: 144-148MHz, 430-450MHz, 1240-1300MHz, USB, LSB, CW, CW(N) and FM • 45 watts output (VHF) • Very high performance GaAs FET RF amplifier for high sensitivity and wide dynamic range • Dual watch function across bands • Band selection/ exchange function • Satellite communication frequency correction for uplink/downlink operation • Auto-mode and auto repeater offset • 59 multi-function memories • Call channel function • Repeater Reverse • Memory scroll and shift • Multi-scan functions and much more!!

TM-231A

2M FM MOBILE TRANSCEIVER

This compact mobile transceiver delivers 50 watts of power with the controls at your fingertips.

Features include: • Multi-function microphone with Call, VFO, Memory Recall, and a Programmable key • Large amber display plus illuminated keys • 50/10/5 watts switchable power output • Sensitivity 12dB SINAD/less than 0.16uV • 20 multi-function memories • Programmable call channel • Selectable CTCSS encoder builit in • Tone Alert system • Multi-mode scanning (band, programmable band, memory plus programmable band) • Options include remote control and digital recording.

KENWOOD ELECTRONICS AUSTRALIA PTY. LTD.
4E WOODCOCK PLACE, LANE COVE, SYDNEY, N.S.W., 2066.
Ph..(02) 428 1455 Fax: (02) 427 6869.
Call now for further information and the name of your nearest authorised Kenwood dealer.

Please phone, or mail/fax for information

Name

Address

Postcode

Publication Issue

WITH ALL THE FEATURES IN ICOM'S NEW MOBILE TRANSCEIVERS, IT'S A WONDER THEY'RE STILL MOBILE.

Icom have packed so many functions into the IC228A and IC3210A mobile transceivers, you'd think there was no way you could still make them so compact. (It might explain why nobody else has made a transceiver with so many features.)

Some of the features both transceivers share is the multi-colour LCD display for easy viewing. Orange, red and green highlight the numbers and letters displayed in black.

There are various power outputs across the range, from 25W to 45W.

For novices, the 228A can be reduced to 10W.

The Programmed Scan function scans all frequencies between two programmable scan edge frequencies, while the Memory Scan function scans all memory channels in succession, except, of course, those you lock out.

Thanks to the pocket beep, you'll never miss a call. By installing a UT-40 Tone Squelch Unit (this is sold separately) the transceiver functions as a pager. When the frequency of a received tone equals the tone frequency you set, a thirty second alarm is emitted over the speaker.

As for monitoring the input frequency when you work a repeater, that's as simple as pushing the Monitor Switch on the front panel to open the squelch and check the frequency.

Every five seconds, Priority Watch monitors the Call Channel, one or all memory channels in succession. And that's while you operate! No longer do you have to flip back and forth between frequencies.

While the IC228A has 20 memory channels, the more advanced IC3210A has 40. Each channel stores all the information required to work a repeater.

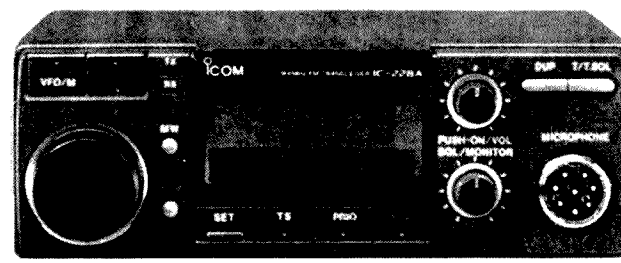
With the IC3210A, there are 20 double-spaced memory channels for 2 metres and 70 cm.

What's more, the IC3210A offers full duplex facility. Which means you can now simultaneously transmit on one band and receive on the other. You never have to wait for a long "over". You have full "break in". In fact, you can talk as easily as talking over the phone.

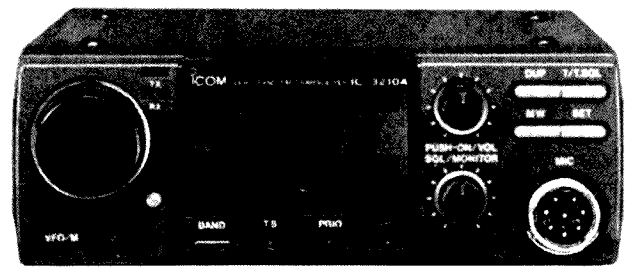
Call (008) 338 915 for your nearest Icom stockist today. (The telephone conversation in itself is a very good example of IC3210A's duplex facility.)

With all these functions in one small compact mobile, it really is a wonder they're still so compact and mobile.

ICOM



IC-228A



IC3210A

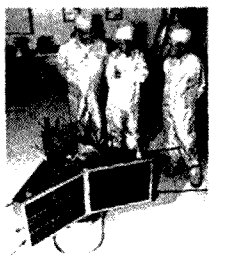
Amateur Radio

JOURNAL OF THE WIRELESS INSTITUTE
OF AUSTRALIA
VOL 57, NO 5, MAY 1989

1989 Convention Report • All about Z-Matches • Scandinavia on six

Amateur Radio

Amateur Radio



Cover

Last month it was a crystal set, but this month our cover picture represents much higher technology (quite literally). It shows the satellite AMSAT-OSCAR 13 prior to its launch last year from Kourou in French Guyana. Pictured with the satellite are (from left to right):

Werner Haas DJ5KQ (AMSAT-DL)
B Lacoste (European Space Agency)
Dr Karl Meinzer DJ4ZC (AMSAT-DL)
Photo: W. Gladisch, April 1988

Deadlines

	Editorial	Hamads
June	8/5/89	10/5/89
July	12/6/89	14/6/89
August	10/7/89	12/7/89

TYPESETTING : Redfords Media, 25 Glenferrie Rd, Malvern 3144, Tel: (03) 500 0377

PRINTING: Industiral Printing, Richmond

MAIL DISTRIBUTION: Polk Mailing Co., PO Box 140, Collingwood, Vic. 3066, Tel:(03) 417 5161

Special Features

53rd Federal Convention Report 31
Scandinavia on Six - Harry Atkinson VK6WZ 7
Mrs. Joan the Lighthouse - Jim Linton VK3PC 9
A Perspective on Amateur Radio in VU-land - Jim Linton VK3PC 23

Reviews

SAPS - Gil Sones VK3AUI 8
FT4700RH - Gil Sones VK3AUI 24
HTX-100 - Ron Fisher VK3OM 25
ARRL Antenna Handbook - Harold Hepburn VK3AFQ 26

Technical Articles

Signals reflected via Aircraft - Gordon Mc Donald VK2ZAB ... 10
Z-match Antenna Tuner - Construction Dean Probert VK5LB . 18
Z-match ATU analysis - Lloyd Butler VK5BR 12
How to Record the Weekly Broadcast - Peter O'Connell VK2EMU 17

Regular Features

Advertiser's Index 64
ALARA 54
AMSAT Australia 47
AR Showcase 56
Awards
- Questionnaire 40
- Council of Europe 41
- Auckland Commonwealth Games 41
- Westlakes, World Telecomms Day 42
- VK6 Achievers 43

Club Comer 54
Contests CQ-M 1989 Rules, 1988 results 39
- VK Novice 1989 Rules 35
- Australasian Sprints 36
- Trial VHF/UHF National Field Day results 37
- Ross Hull 1988 results 38

Divisional Notes
- Forward Bias (VK1 Div) 27
- VK2 Bulletin 29
- 5/8th Wave (VK5 Div) 27
- VK6 Bulletin 28

Editor's Comment 2
Education Notes 40
Hamads 62
How's DX? 45
Morseword No 26 47
Murphy's Comer (errata) 57
Novice Notes - Simple Impedance Bridge 30
Over to You - Members' Opinions 57
Pounding Brass 46
QSLs of the WIA Collection 51
Silent Keys 60
Spotlight on SWLing 43
VHF-UHF - An Expanding World 49
WIA Directory 3
WIA News 4

Amateur Radio

Published monthly as the Official Journal by the Wireless Institute of Australia, founded 1910. ISSN 0002 - 6859. Registered Office: 3/105 Hawthorn Road, Caulfield North, Vic 3161. Telephone: (03) 528 5962.

Inquiries and material to the Editor: PO Box 300, Caulfield South, VIC 3162.

Advertising: Ann McCurdy (03) 528 5962

Material should be sent direct to PO Box 300, Caulfield South, Vic. 3162, in accordance with the deadline dates shown on page 1 of this issue.

EDITOR'S COMMENT

By the News Editor

Amateur Radio magazine, the hournal of the Wireless Institute of Australia brings you timely news and information.

Want to be informed about your hobby? Then you can't affort to miss a monthly copy of the publication you're now holding.

In recent months AR magazine has been the only publication consistently bringing you news about happenings affecting your hobby.

Among the topics covered have been Third Party Traffic, Examination Devolvement, Six Metre band operator restrictions, withdrawal of the 576 MHz band, DOTC interference investigation charge, changes to callsign suffixes, special event callsigns, and the IARU region 3 conference.

The WIA has the inside running on many developments and when it's news you will read it reported authoritively in the WIA membership magazine.

We have published the latest DXCC countries list, band plans, the WIA position paper on packet radio, and an update on Australia's revived time and frequency service VNG.

Through the Institute's support of AMSAT this magazine is the only one providing news on the expanding world of amateur satellites.

Award hunters and those wanting to sharpen up their skills by entering contests can find the information they want.

As we near the peak of the sunspot cycle the HF bands are teeming wth DX to be hooked. Each month our DX column will keep you informed.

Events overseas have been included in AR magazine as a deliberate policy to keep the Australian radio amateur informed about what is happening in the wide world of amateur radio.

The prospect of New Zealand radio amateurs being allowed to pass Third Party Traffic and use phone patch has been published first in this magazine.

Emergency communications during Hurricane Gilbert and the legal go ahead for our hobby in Thailand have also been reported first.

Feature articles have included Australian's working the Soviet space station MIR, the 60th anniversary of Australian television, the Australian Bicentennial Bike Ride, QRP in the 1920s, a perspective on India, and a VK XYL the JA maritime mobiles call their lighthouse.

We will continue to bring you equipment reviews — both on the very latest gear and the equipment on the second hand market.

Those interested in the technical and constructional aspects of our hobby are also well served.

Amateur Radio magazine is a membership service provided by the WIA.

Just think about it — in commercial terms you could expect to pay around $40 to subscribe to similar magazines — yet this is included in your annual WIA membership fee.

The combination of Amateur Radio magazine and WIA membership service is true value for money.

73
Jim Linton VK3PC
News Editor

Chips to track strays

The Marin County Humane Society in California plans to implant microchips into pet dogs and cats to serve as electronic nameplates for instant identification.

Every lost, stolen or strayed pet which arrives at its animal shelter will have injected in the shoulder a rice grain-sized chip before being handed back to a claiming owner or sold to a new one.

The chip has a 10-digit identification number which can be determined by the use of a hand held electronic wand.

The Society wants all pet owners to make sure their dog or cat has a chip on its shoulder so they can be quickly identified.

ar

WIA DIRECTORY

Federal Council

Kevin Olds	VK1OK	ACT Councillor
Peter Jeremy	VK2PJ	NSW Councillor
Peter Mill	VK3ZPP	Victorian Councillor
David Jerome	VK4YAN	Queensland Councillor
Rowland Bruce	VK5OU	SA Councillor
Neil Penfold	VK6NE	WA Councillor
Joe Gelston	VK7JG	Tasmanian Councillor

Federal Co—ordinators

Amsat	Graham Ratcliff	VK5AGR
Awards Mgr	Ken Gott	VK3AJU
Contest Mgr	Frank Beech	VK7BC
Education	Brenda Edmonds	VK3KT
EMC	Hans Ruckert	VK2AOU
Historian	John Edmonds	VK3AFU
Intruder Watch	Bill Horner	VK4MWZ
Int'l Travel Host Exch	Ash Naliawalla	VK3CIT
QSL Mgr	Neil Penfold	VK6NE
Standards	Peter Page	VK2APP
Tapes (Federal News)	Bill Roper	VK3ARZ
	Ron Fisher	VK3OM
Videotape	John Ingham	VK5KG
WICEN	Ron Henderson	VK1RH

Executive

Peter Gamble	VK3YRP	Federal President
Ron Henderson	VK1RH	Vice Chairman
David Wardlaw	VK3ADW	Immediate Past Federal President
Brenda Edmonds	VK3KT	Federal Education Officer
Bill Rice	VK3ABP	Editor Amateur Radio
George Brzostowski	VK1GB	Federal Executive
Peter Page	VK2APP	Federal Executive
Bill Wardrop	VK5AWM	Federal Executive
Kathy Gluyas	VK3XBA	Federal Executive

Executive Office

Bill Roper	VK3ARZ	General Manager & Secretary
Ross Burstal	VK3CRB	Assistant General Manager
Ann McCurdy		Advertising & Admin. Manager
Helen Wageningen		Membership & Circulation Mgr
June Fox		Accounts & EDP Manager
Earl Russell	VK3BER	EDP Consultant
Ron Fisher	VK3OM	Librarian

DIVISIONS

VK1 — ACT Division
GPO Box 600
Canberra ACT 2601

Officers		
President	Ted Pearce	VK1AOP
Secretary	Ian Burrell	VK1BR
Treasurer	Ken Ray	VK1KEN

Broadcasts: 3.570 MHz, 2m ch 6950, 70cm ch 8525, 2000 hrs Sun

Fees	
Full (F)	$44.00
Assoc (A)	$44.00
Full (C)	$44.00
Assoc (T)	$44.00
Pens. (G)	$33.00
Stud. (S)	$31.00
Family (X)	$25.00

VK2 — NSW Division
109 Wigram St
Parramatta NSW 2124
(PO Box 1066 Parramatta)
Phone (02) 689 2417

Officers		
President	Roger Henley	VK2ZIG
Secretary	Tim Mills	VK2ZTM
Treasurer	David Horsfall	VK2KFU

Broadcasts: (R Denotes repeater) Times 1100 and 1930 on Sun
1.845 MHz AM, 3.595 AM/SSB, 7.146 AM (1100 only)
28.320 SSB, 52 120 SSB 52.525 FM
147.000 FM(R) 438.525 FM(R)
584.750 (ATV Sound) Relays also conducted via many repeaters throughout NSW.

Fees	
F	$41.50
A	$39.50
C	$41.50
T	$39.50
G	$34.50
S	$22.50
X	$24.50

VK3 — Victorian Division
38 Taylor St
Ashburton Vic 3147
Phone (03) 259 9162

Officers		
President	Jim Linton	VK3PC
Secretary	Peter Mill	VK3ZPP
Treasurer	Rob Halley	VK3XLZ

Broadcasts: 1.840 MHZ AM, 3.615 SSB,
7.085 SSB, 147.250 FM(R) Mt Macedon
147.225 FM(R) Mt Baw Baw
146.800 FM(R) Mildura
438.075 FM(R) Mt St Leonard 1030 hrs on Sun

Fees	
F	$50.00
A	$45.00
C	$50.00
T	$45.00
G	$38.00
S	$27.00
X	$27.00

VK4 — Queensland Division
GPO Box 638
Brisbane Qld 4001
Phone (07) 349 7768

Officers		
President	David Jones	VK4NLV
Secretary	John Aarsse	VK4QA
Treasurer	Eric Flttock	VK4NEF

Broadcasts: 3.650 MHz, 7.118, 14.342,
18.132, 21.175, 28.400,
52.525 regional 2m repeaters and
1296.100 0900 hrs Sunday
Repeated on 3.605 & 147.150 MHz, 1930 Mon

Fees	
F	$45.00
A	$45.00
C	$45.00
T	$45.00
G	$36.00
S	$27.00
X	$27.00

VK5 — South Australian Division
Thebarton Rd
West Thebarton SA 5031
(GPO Box 1234)
Adelaide SA 5001)
Phone (06) 352 3428

Officers		
President	Don McDonald	VK5ADD
Secretary	Hans van der Zalm	VK5KHZ
Treasurer	Bill Wardrop	VK5AWM

Broadcasts: 3.550 MHz, 14.175, 28.470, 53.100,
147.000 FM(R) Adelaide
146.700 FM(R) Mid North
146.900 FM(R) South East
ATV Ch 34 579.00 Adelaide
ATV 444.250 Mid North
(NT)3.555, 146.500, 0900 hrs Sun

Fees	
F	$44.00
A	$44.00
C	$44.00
T	$44.00
G	$35.00
S	$26.00
X	$26.00

VK6 — West Australian Division
GPO Box 10
West Perth WA 6005

Officers		
President	Alyn Maschette	VK6KWN
Secretary	Pending	
Treasurer	Pending	

Broadcasts: 146.700 FM(R) Perth, at 0930 hrs Sun,
relayed on 3.560 MHz, 7.075, 14.110, 14.175,
21.185, 28.485, 52.080, 438.525(R)
Country relays 3.582, 147.350(R) Bussalton
146.900(R) Mt William (Bunbury)
Broadcast repeated on 3.560 at 1900 hrs.

Fees	
F	$42.00
A	$42.00
C	$42.00
T	$42.00
G	$35.00
S	$22.00
X	$23.00

VK7 — Tasmanian Division
PO Box 1010
Launceston TAS 7250

Officers		
President	Mike Wilson	VK7ZWW
Secretary	Peter Frith	VK7PF
Treasurer	Peter King	VK7ZPK

Broadcasts: 146.700 MHZ FM (VK7RHT) at 0930 hrs Sun
relayed on 147.000 (VK7RAA), 146.750 (VK7RNW),
3.570, 7.090, 14.170, 52.100, 144.100 (Hobart)
Repeated Tues 3.590 at 1930 hrs

Fees	
F	$42.00
A	$42.00
C	$42.00
T	$42.00
G	$38.00
S	$24.00
X	$22.00

VK8 (Northern Territory) is part of the VK5 Division and relays broadcasts from VK5 as shown (received on 14 or 28 MHz).
Note: all times are local. All frequencies MHz.

WIA NEWS

Bill Roper VK3ARZ, General Manager & Secretary

CUSTOMS BYLAW EXEMPTION FOR AMATEUR TRANSCEIVERS

During 1984 problems arose with transceivers imported for amateur usage being modified and used on non-amateur radio allocations, particularly by some members of the yachting fraternity. Some Australian manufacturers of commercial HF transceivers expressed their concern and the full tariff, at that time 30%, was then applied to all transceivers imported into Australia.

Naturally enough, Australian radio amateurs were perturbed over the increase in cost of new transceivers and the WIA asked that the matter be reviewed. As a result of discussions, the Department of Customs then agreed to a reversion to the 2% duty rate for amateur radio transmitting equipment provided some assurance could be given that the equipment would not be modified and placed on commercial frequencies. The then Department of Communications provided considerable support for the proposal.

The WIA accepted responsibility for inspecting and certifying transmitters and transceivers on the basis of whether or not they could be easily modified to operate on non-amateur allocations. The Technical Equipment Advisory Committee, more commonly known as TEAC, was formed, consisting of technically qualified people, the identity of whom remained anonymous for obvious reasons. The certificates issued by the WIA, on the recommendation of TEAC, allow an importer to bring into Australia specified brands and model numbers under the lower tariff.

This certification scheme has worked well, and 154 certificates have been issued to-date. In a number of cases the WIA has been actively involved with the importers in designing acceptable modifications to transceivers to enable by-law exemption certificates to be issued.

However, the rising complexity and cost of modern amateur radio transceivers has meant that a greater cost is involved in the examination process which preceeds certification or rejection of the unit. There have been unavoidable delays while this process is prosecuted which has resulted in financial penalties to the importers. Further, some controversy has arisen over the comparative effort required to modify some transceivers.

It must be accepted that any transceiver or transmitter can be modified to transmit on frequencies other than those for which it was intended, given a competent technician and sufficient time, and perhaps a few additional components. The WIA has considered that no equipment should be approved if the cost of having the equipment modified commercially was less than the duty otherwise payable. Of course a low cost can be achieved if no, or negligible, cost is attributed to the hours of effort involved. Also, changes may be made to equipment by the manufacturer subsequent to certification without informing either the importer or the WIA, and these changes may make conversion quite easy. To police this aspect is extremely difficult, even for the WIA.

There is some evidence that the certification of a piece of equipment as "difficult to modify" has created a challenge to some individuals to devise a modification that allows "general coverage" transmission.

For most transceivers the modifications devised are quite involved but for one or two models the conversion can apparently be implemented by the average amateur. This gives rise to suggestions that the WIA has been inconsistent in its rulings. The WIA has made every effort to be even-handed but concedes that, with one or two models, it is possible there may be relatively straightforward methods of defeating the "general coverage" transmission inhibiting circuits which were not foreseen by the examining consultants.

On the 14th June 1988 the WIA lodged a submission with the Australian Customs Service for an easing of the requirements relating to the by-law tariff concession. This submission was supported by DOTC and was based on the premise there is no evidence that significant numbers of new amateur radio transceivers are now being used on commercial frequencies. This is attributed to the modest cost of commercial equipment, a growing awareness of their advantages over amateur radio equipment (higher power, waterproof, etc.), the complexity of modern amateur transceivers, and the provisions of the new Radicommunications Act.

The Australian Customs Service advertised the amended tariff concession order in the Commonwealth of Australia Gazette on 7th December 1988. Subsequently, an Australian manufacturer of transceivers lodged an appeal against the amendment. However, after discussions with the WIA, this firm withdrew their objection and the new tariff concession finally came into effect a week or two ago.

Unfortunately, even though th the requirements existing under the previous tariff concession order, the Australian Customs Service did not connect the new order with the previous order. The upshot of this is that any of the certificates issued by the WIA showing the old order, TC 8530566, will not now be accepted by Customs.

However, anyone wishing to use an old certificate can have it replaced with a new certificate, free of charge, by approaching the Executive Office of the WIA.

GUIDELINES FOR CUSTOMS BYLAW CONCESSION FOR AMATEUR TRANSCEIVERS

The tariff item which relates to the importing of amateur radio transceivers is numbered 8525.20 and is for "Transmission apparatus incorporating reception apparatus". The present duty rate is 23%, which will be reduced to 21% as from 1st July 1989, and further reduced by 2% each year until it reaches 15% as from 1st July 1992. The previously mentioned concession rate of 2% was removed some time ago.

In its proposal for change, the WIA asked that they be allowed to certify for exemption from duty specific brands and models of transmitters and transceivers as " being manufactured solely for operation in amateur radio frequency allocations and not intended for commercial service." It was argued that this would streamline the procedures and would not result in any decrease of sales of commercial equipment nor increase illegal operation of equipment.

Here now are the guidelines for assessing equipment suitable for approval for Customs bylaw concession:-

1. Equipment which can transmit on frequencies substantially removed from authorized amateur radio frequency allocations by setting a switch or following instructions in the operators manual for insertion or removal of a link or diode or crystal or other small component shall not be approved.

2. Where the instructions for a modification referred to in section 1 are not specific, but are nevertheless obvious, then the equipment shall not be approved.

3. If equipment is intended for operation on frequencies other than those approved for

the Australian Amateur Radio Service then it shall not be approved.

4. Equipment which operates below 30 MHz and which has a transmitter coverage in segments of up to 600 kHz including an approved amateur frequency allocation will generally continue to be acceptable even when the amateur frequency allocation occupies only a small part of that segment.

5. Equipment which operates above 30 MHz may have a transmit capability beyond the allocated amateur frequencies and still be approved. Such extension, while not to be encouraged, may be up to about 2% of the nominal frequency of the adjacent amateur allocation. No equipment shall be approved if it does not comply with section 1 of these guidelines.

6. It shall not be necessary for all equipments to be inspected, but in cases where there is concern, the WIA may call for a particular piece of equipment to be presented for detailed inspection and testing.

7. Equipment which does not meet the technical requirements specified by the licencing authority for the Australian Amateur Radio Service shall not be approved.

8. A *minimum requirement* for approval is the lodgement of the following with the Executive Office of the WIA at the time of application for a certificate.

(i) A copy of the owners *manual and any* other documentation normally supplied with the equipment to the purchaser.

(ii) A signed original statement from the manufacturer or his local agent certifying that the equipment is intended for use in the Australian Amateur Radio Service only and is not intended to be operated on any other frequency allocation.

(iii) Supporting evidence which should include one or more of the following:

(a) a copy of the manufacturer's advertising literature, giving model number, some specifications and stating the class of service the equipment is intended for; and

(b) a recent advertisement giving model number and some specifications and stating the class of service the equipment is intended for.

9. The WIA may call for additional information in cases when it is necessary to resolve any doubts about the equipment.

10. No restrictions will be placed on receiver coverage.

11. The onus for ensuring that equipment complies with the relevant regulations of the licencing authority lies with the owner and or the operator of the equipment and is not the responsibility of the WIA.

12. Where one importer has been issued with a certificate in respect of a particular piece of equipment a separate certificate shall be required for another importer who wishes to import the same equipment and applies for a certificate. It will be necessary for the WIA to ascertain that it is the same model number and does not differ from the other equipment or, if it is different, that it meets the guidelines necessary for the issue of a certificate. Thus it will be necessary to treat such an application as a new application.

13. When a transmitter or transceiver is found to require modifications to meet the preceding requirements for approval the importer shall provide to the WIA a written undertaking that unmodified equipment shall not be sold unless the full duty has been paid.

14. When a transmitter or transceiver is found to require modifications to meet the preceeding requirements for approval the importer will usually be required to submit a sample unit with modifications to the WIA for examination before a certificate will be issued.

15. Whenever a transmitter or transceiver is found to be unsuitable for certification the WIA will endeavour to suggest detailed modifications that will make the unit acceptable. However this will not always be possible. In all cases it is the joint responsibility of the manufacturer and importer to determine whether or not any modification will be made and the detailed nature of the modification. It would be prudent to discuss any proposed modification with the WIA to establish whether it would be accepted as sufficiently effective to allow approval for a certificate.

CUSTOMS BYLAW EXEMPTION AND THE INDIVIDUAL AMATEUR

If you have read this far about Customs bylaw exemption, you are probably wondering what it all means as far as you are concerned. And what is the situation if you intend travelling overseas and want to bring back a transceiver for your own use?

Basically, this Customs bylaw exemption means that, if you are going to buy your new rig from one of the many importers of amateur radio equipment into Australia, you will pay much less money for it if the transceiver complies with the Customs bylaw exemption guidelines.

The standard fee for inspection of documents, and/or the transceiver itself, is $155.00. If you are an importer who intends to bring in a bulk supply of the particular transceiver, then that is an insignificant fee to pay. Also, for a commercial importer, the procedures in bringing in the first unit for examination and certification are worth the trouble because of the eventual gains.

However, it is a different story, for instance, when the individual amateur is travelling overseas and wants to bring back a transceiver for his own use.

As detailed in Customs bylaw exemption Guideline No. 12, certification of a particular transceiver for one importer does not mean that a certificate is automatically issued for the same transceiver to be imported by someone else.

The normal procedure for the individual amateur importing a transceiver is for him to pay the duty on bringing the unit into Australia, submit it to the WIA for certification and, if the certificate is issued, then apply to the Australian Customs Service for a refund of the import duty paid.

The difficulties for the individual amateur do not end there. For example, I am told, an application for a refund of duty can take several months to be processed. Then there is the question of whether the $155.00 TEAC certification fee, plus the loss of return on funds of the duty paid before it is refunded, plus the costs of shipping the necessary documents and/or transceiver to the Executive Office in Melbourne for consdieration for certification, etc., etc., is a viable option compared to the amount of import duty payable.

When one considers the possible warranty problems in Australia for a transceiver purchased overseas, and the fact that the prices of transceivers in Australia from one of the many commercial importers and retail outlets are very competitive with overseas prices, then it seems that, unless he is buying one of the very pricey, up-market transceivers, the average Australian amateur is far better off buying his new transceiver from one of the many reputable Australian firms.

WORLD TELE-COMMUNICATIONS DAY

The International Telecommunications Union, normally known simply as the ITU, was founded in 1865 under the name of the International Telegraph Union, and is the oldest intergovernmental organisation in the world. The ITU became a specialised agency of the United Nations in 1947, and currently has a membership of 166 countries.

Each year, on the 17th May, the ITU celebrates World Telecommunication Day. The 1989 21st ITU World Telecommunication Day theme is "International Co-operation". It is aimed at underlining the necessity for

the world telecommunications community to enlarge the scope of international co-operation to meet the challenges of tomorrow. It seems to me that theme is very applicable to that most democratic of all leisure time activities, amateur radio.

As is usual each year, the WIA has applied to DOTC for permission for each Division of the WIA to put a station to air on 17th May using the suffix "ITU".

MAGAZINE DELIVERY

In the WIA NEWS column of February 1989 issue of Amateur Radio, I explained the changes in delivery times for our magazine. However, it seems that either a number of members did not read that column, or that old habits die hard. Each month the Executive Office still receives telephone calls from members, many in the first 2 or 3 days of the month, complaining that they have not received their copy of Amateur Radio.

So bear with me while I explain the current situation again.

In recent years members became used to Amateur Radio being delivered to their letter box on, or very close to, the 1st day of each month. However, one of the by-products of the new production methods which, among other things, have resulted in the substantially reduced lead times for copy (and isn't that great for HAMADS), is that typesetting and printing are now tied to days of the week, and not days of the month.

Amateur Radio is delivered to the mailing house, Polk Mailing Company Pty. Ltd., on the last Friday of each month. This means that, depending on the vagaries of Australia Post, members should receive their magazine sometime during the following week.

Of course, that assumes that Australia Post delivers on time!

As I explained in WIA NEWS in the March issue of Amateur Radio, your magazine is sent through the postal system as a "Category B" item, which effectively means second class mail.

In recent months, there have been many instances reported, from all over Australia, of Amateur Radio taking up to 3 and 4 weeks to be delivered.

If you know that your membership of the WIA is current, and you have not received your current copy of Amateur Radio within a reasonable time, then it may well pay you to check with your local post office before putting yourself to the expense of contacting the Executive Office.

MEMBERS SURVEY

In the WIA NEWS column in March 1989 issue of Amateur Radio I reported on the interim results collated from the members survey that was included in the October 1988 issue of Amateur Radio. All of the surveys have finally been processed, and the last of the letters have now been sent off to those members who went to the trouble to attach additional comments to their returned survey forms.

Detailed results of the survey will be submitted to the Federal Council (who commissioned the survey in the first place) at the 1989 Federal Convention.

As is not surprising, the final results of the survey are virtually identical to the interim results. However, one result that I did not mention in March WIA NEWS was the number of additional people who read this magazine, apart from members.

Extrapolation of the survey results show that another 3200 people read members copies of Amateur Radio each month. If you add in the people who read the magazines that are sent to radio clubs and libraries, then it seems reasonable to assume that in excess of 12,000 people read Amateur Radio each month.

1989 FEDERAL CONVENTION

The annual Federal Conventions of the WIA are a very important event on the Australian amateur radio calendar. Many of the reports and agenda items for the 1989 Convention were published in the April issue of Amateur Radio for the information of WIA members. Those few agenda items that were received too late to be included in April Amateur Radio were included in the Federal News tapes played on Divisional news broadcasts on 16th April 1989.

During the next few weeks, many of the results of this important Convention will be reported in the weekly Divisional news broadcasts.

A tremendous amount of rushed work was carried out to bring to members the stop press report of the Convention, published elsewhere in this issue of Amateur Radio, without delaying the normal production schedule of Amateur Radio.

One of the key figures was the new Amateur Radio photographer, John Friend, VK3ZAB. John, who has just completed a very successful exhibition of some of his excellent work at the Waverley City Gallery, will be continuing to assist the Publications Committee in the future.

Incidentally, an interesting innovation at this Federal Convention, was the video taping of the highlights of the Convention by Doug White, VK3BOW. ATVers in Melbourne need no introduction to Doug, and his superb camera skills. A brief, edited version of the videotape will be made available in due course through the Federal Videotape Co-ordinator, John Ingham, VK5KG.

IPS PREDICTION REPORTS

As members will have noted, Amateur Radio has not regularly published IPS predictions for some time.

Frank Hine, VK2QL, assisted Amateur Radio for a long time with his predictions reporting but, unfortunately, because of health reasons, Frank is unable to continue.

Perhaps, in the past it could be argued that the lack of IPS predictions did not really matter so much because of the general lack of interest in DX during the years of sunspot minima.

However, the DX bands are now alive, and Amateur Radio does need to publish IPS predictions for the benefit of members.

But who can do it for us?

If you have the interest, and the skills, and would like to be a part of the team that makes Amateur Radio such a successful magazine, I would very much like to hear from you.

EXECUTIVE OFFICE STAFF

Are you recently retired?

Live in Melbourne?

Have administrative/financial/keyboarding skills?

Looking for something worthwhile to do?

Interested in being part of a dynamic team working for the future of amateur radio in Australia?

If so, the WIA needs you. And needs you now!

The Executive Office is looking for volunteers, part-time employees, or full time staff.

We can guarantee you a challenging, exciting time, working in an exhilarating atmosphere.

If you are interested, you can find out full details by contacting me, Bill Roper, VK3ARZ, on 528 5962 during office hours, or on 584 9512 after hours.

EXECUTIVE OFFICE OFFICE

And while I am appealing for more assistance in the Executive Office, I might as well mention that the Executive of the WIA are looking around for new office premises.

Our requirements are quite modest, as is the rent that we are able to pay. We do not need a high profile, store front office, because we are strictly an administrative operation, but we do need the premises to be located in the mid-eastern or mid-southeastern suburbs of Melbourne, and to have reasonable car parking facilities.

If you are able to assist in any way, please contact me, Bill Roper, VK3ARZ, on 528 5962 during office hours, or on 584 9512 after hours.

ar

Scandinavia On Six

by Harry Atkinson VK6WZ
5/97 Railway Parade
Mount Lawley 6050

The unheard of — but long sought after opening between VK6 and Scandinavia happened on Saturday, February 25.

Wayne Dowie, VK6WD, almost doubted his own ears when he heard his callsign from Norway late on that memorable afternoon.

The search for Europe on six metres began, for Wayne, when a friend, Tony Mann, an avid TV DX-er gave 6WD a listing of overseas TV sound and vision channels. Armed with this and his twenty years or so of keen devotion to VHF DX Wayne has spent many hours in this and earlier sunspot cycles checking on 50 MHz propagation.

Wayne said. "Tony, just back from the USA, rang me at about ten to four local time to say he was copying sound from Norway television here in Perth."

According to Tony's list it has a particularly odd offset ... 48.252 to 48.565 ... it's in Melhuf ... and runs 100 kW. That was audible along with a number of others from the Norway area but, making it a little difficult, there was also sound on 48.250 pouring in from Malaysia. I alerted a few people on our 2 metre chit–chat channel for VHF DX.

"I also put out a call on 28.885 to let anyone hearing it in Europe know that there was propagation between there and VK6. I didn't get a reply but that wasn't surprising; a lot of people act rather than chat. So then I called on one, one, oh (50.110 MHz) and while I was talking to a couple of the locals I heard LA3EQ come back. It was absolutely staggering. He was about 5 and 3. Then the melee started – everyone wanted to get into the act! The result however was that I was the first one to actually get a report from him and get him to understand my callsign ... and we exchanged 5 and 3 reports both ways. Others were waiting so I didn't stay to exchange pleasantries and I left the frequency. Others involved included VK6 HK.

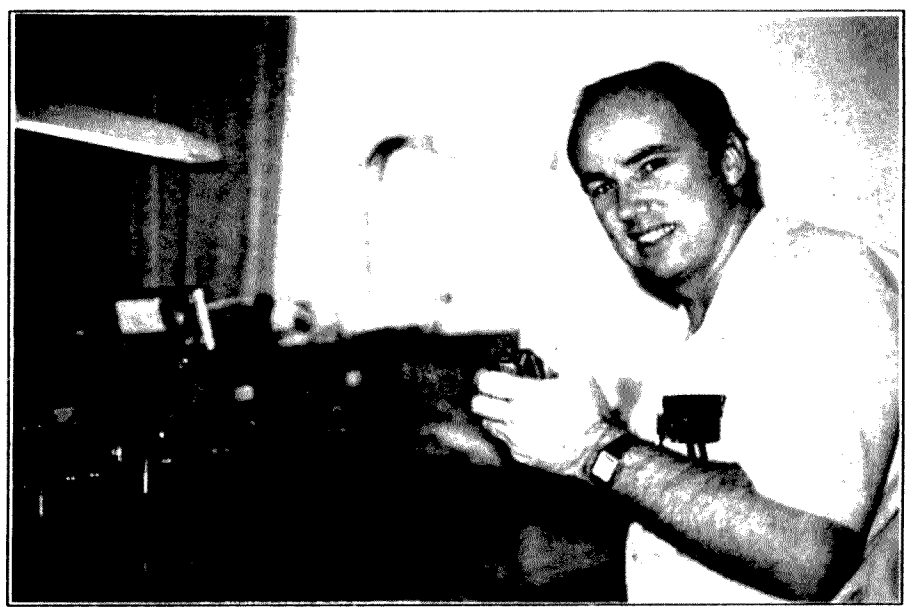
—I think he was second in line ... then VK6YU tried but just at the crucial moment he had antenna trouble... also there was VK6RO. I did notice, though, that the fellows in the southern suburbs of Perth – 6RO, 6KZ and 6YU – seemed to lose the LA signals pretty quickly so, within a couple of minutes, I'd say, ceased to hear them".

Reading from his log, 6WD listed the following stations:

LA3EQ (0811Z), on 50.110; LA8WF (0842Z) again 50.110; LA9UX (0846Z) also 50.110. The latter was also worked on cw at 0852. At 0920 Wayne worked SM 6PU although this was not 6 metres two–way as the Swedes do not have transmitting privileges on 50 MHz and the QSO was conducted with VK6WD on six metres and SM6PU on ten metres. Also working the above stations were Don, VK6HK, Peter VK6KXW, Phil VK6ZKO and – hearing the DX but not quite making it – VK6ZSY, VK6KZ, VK6YU and VK6RO. Also according to Wayne's log, Peter, 6KXW worked a couple of Scandinavians he (Wayne) missed. These were LA6LCX and OH1TP. In addition, Peter worked all the stations Wayne worked and in the case of SM6PU, again the contact was cross-band 6m – 10m.

Wayne told me the opening was via short parth to Europe with his beam heading approximately 330° and the probable cause of the propagation extended F–2 reflection. It's interesting to note that the 1987 ARRL Handbook section on propagation says the MUF may reach as high as 70 MHz but only "during the peak years of the sunspot cycle, making 6 metres the only useful VHF band for this type of communications." The Handbook continues: "The MUF may exceed 50 MHz during a three year period around the peak of the 11 year sunspot maximum. The last solar peak was in 1980 and the next maximum is predicted for 1991."

Well, judging by the February–March happenings over here on the west coast, it certainly seems we're in that three year period! Wayne doesn't claim his Scandinavian QSO's represent a new distance record for 50 MHz but thinks they are a first for VK6 operators into Europe. "The trouble with six metres is that it's very hard to work significantly east or west of north; that same day (February 25) the JA's were coming into Perth 60 dB over S–9 ... with powers in some instances of only ten watts!" To extend DX beyond VK2AGZ's record 16,653 km (April 1981) when he worked into Canada, would require VK6 operators to aim their beams long path to areas somewhat east or west of a path directly over the south or north pole, Wayne believes.



The smile of success! VK6WD at his operating position. Photo: Ann Dowie.

He says when conditions are good on six metres it's relatively easy for operators in all parts of the world to work north and south. Backing up this opinion is Peter VK6KXW who said that after the Scandinavian signals petered out in Perth, it was learnt that VS6 and JA stations were having a ball with G and PA0. Peter also reported that VK6 stations were unable to raise any Europeans on March 1 but two Alice Springs operators (VK8's ZMA and ZLX) worked into OH. No six–metre DX was worked on March 2 but TV signals on 48.250 and 48.260, thought to be Europeans, were logged by Tony Mann.

Both Wayne and Peter are confident that some day soon, 6 metre contacts between VK6 and G land will be made and if by long path, over New Zealand they'll certainly give that distance record a hefty nudge! Already, Wayne says, UK operators have heard Australian TV on long path between 2000 and 2300Z and some have reported hearing our 10–metre beacons. There's a feeling abroad that Cycle 22 hasn't yet exhausted its store of VHF surprises.

Footnote

Since this article was written further details have come in via 28 MHz. Wayne learnt that his first contact (LA3EQ was made with the Norwegian using something less than 20 watts power.

Even more surprising was the later contact with LA8WF who said his power was around 5 watts! At the time VK6WD was using an IC551 driving a home–brew solid state linear at 100 watts to a 6 element yagi up 13 metres.

ar

Review of SAPS

Gil Sones VK3AUI
Technical Editor

SAPS stands for Stand Alone Prediction System and it is a computer program which will provide Ionospheric Predictions for anywhere in the world. It also assists professional users with selection of frequencies and antennae.

The GRAFEX presentation which we are all familiar with is but one of the predictions which can be made. It caters for terminals anywhere in the world. A large number of terminals and paths are inbuilt but you can enter the coordinates for anywhere you choose.

Beam headings are provided for both ends of the circuit. Distance is also computed. These are in themselves very useful pieces of information.

The program comes on seven 360 KB 5.25 inch floppy diskettes for an IBM PC XT/AT or compatible computer. You can run the program on a dual floppy disk system but a hard disk makes life so much easier. To run on a twin floppy system using 360KB drives the seven distribution disks swell to fourteen working disks. If you have 1.2MB floppies then only three working disks are needed. On a hard disk the program and data will use up around 2.4 MB.

Memory requirement is aimed at an EGA or VGA colour display but is compatible with CGA and Hercules Graphics. There was a bug with CGA but is is being sorted out. So ask if this is a problem when you order your copy. I would recommend EGA for the display it provides.

Finally in view of the amount of calculation involved in producing predictions a faster system than the bog standard XT is desirable. Turbo is very well worthwhile as is one of the speedup cards with an 80286 or similar. The system is not too tardy even on the basic XT. Just be a little patient.

This review was conducted on an XT type of machine with 640K of RAM, 360K floppy disk drive, Turbo, Hard disk, and EGA. A fairly standard sort of setup if there is any such thing in the world of personal computers.

Skill level for the operator is fairly minimal with relatively frequent reference to the manual for any thing other than the normal DOS operations. The machine does not bite and the reset solves the more sophisticated SNAFUs.

Installation is pretty simple. A readme file provides installation instructions. Just place the first disk in the "A" drive and type "Install" and then press enter (return) and follow the instructions on the screen. The install program sets up the directories on the hard disk and copies the files into them. You are prompted to insert the disks in turn in the "A" drive as required. A very simple procedure for anyone even a rank beginner.

Once installed you must get into the directory containing "SAPS" and then you type "SAPS" press return and you are on the way to producing your own Ionospheric Predictions. To do this is where you minimal knowledge of DOS is required. You have to know how to change directories. Pretty simple if you have any other packages running already

Now you only have to follow the instructions which are mostly onscreen. The manual helps out too and it is wise to read it first. The reviewer followed the old path of only reading the manual when all else fails. A set or predictions was produced with only a relatively small number of backtracks and blind alleys being traversed.

Following the onscreen menu you can enter additional terminals such as all the rare DX countries. You will need to know their latitude and longitude to do this. Then you can enter as circuits the paths from your home to them. This will make generating your own set of predictions much easier. The list included with the program does have some interesting paths but they might not be your favourite DX.

One interesting thing is the ability to enter details of your antenna. Very interesting to see what effect various takeoff angles have.

Amateur bands can be entered as a frequency set and the program will predict which bands to use for a particular DX spot at a given time on a given day. Here there may be some hidden surprises which may be of interest in a contest or if there is a DXpedition to a rare country.

Predictions can be saved on disk and can be printed out when required. For amateur work though the on screen display should be adequate for most occasions.

The data covers the time period from 1938 to 1990. This is made up of a combination of historical data and predicted data. Updates are available and are published in the monthly "Solar Geophysical Summary" which is published by the IPS.

The reviewer is rather interested in six meter propagation and it was interesting to do predictions for some past DX openings. The program only extends to 40 MHz in predictions but there was a strong indication of a high MUF when six metre DX had been worked. The aim of this program is to make predictions for normal propagation and for much amateur operation it is openings which are well below the probability of this which provide the exciting DX. The predictions do provide a pointer to such conditions which may well be in existence on less than 10% of days.

A very interesting program which provides a lot of information for the user.

The price is very reasonable at $250 for the set of disks especially when you compare it to the price of some public domain and shareware disks or to some of the very popular databases, spreadsheets, and word processors.

The SAPS program is available from:-
IPS Radio and Space Services
Department of Administrative Services
PO Box 702
Darlinghurst NSW 2010
The cost of the package is $250.

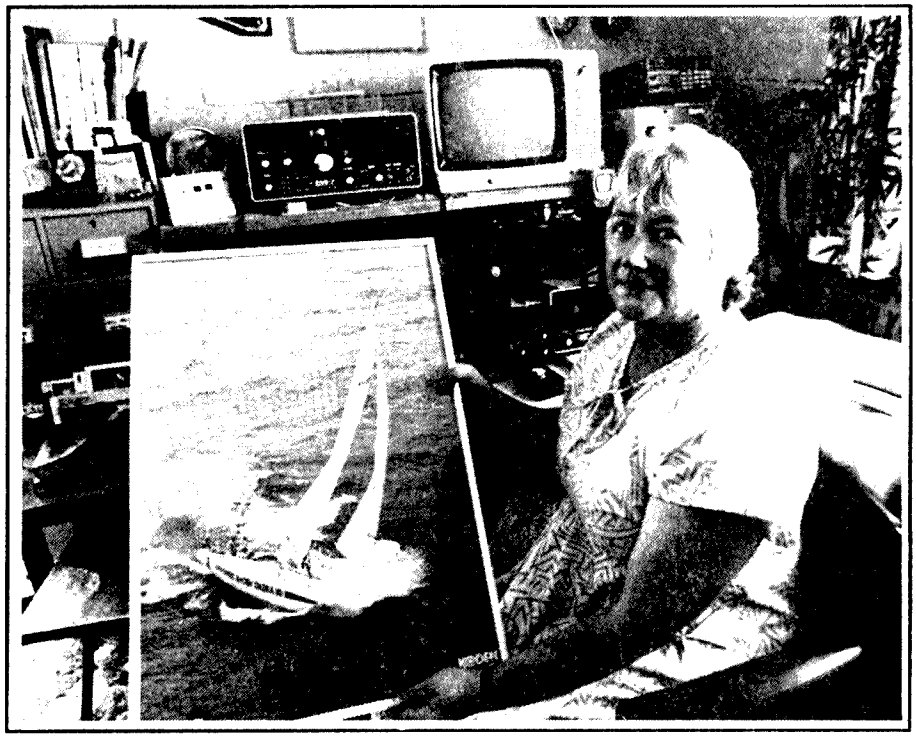
ar

MIR Goes QRT

The Soviet space station MIR which had seen the amateur radio activation by cosmonauts has become an unmanned craft for the first time In more than two years, according to a report from Moscow.

The official news agency Tass said the three member crew were to return to earth on April 27, and the craft would be unmanned.

The report made no mention of two replacement crew members for the space station who had previously been scheduled for launch on April 19.



Joan Beevers VK3BJB shows a picture of one of the Japanese yachts she has worked on the All Japanese Maritime Mobile Net. (Photo by Don Turvey, Mildura).

Mrs Joan the Lighthouse

Contributed by
Jim Linton
VK3PC

Taking up the challenge to learn the Japanese language has changed the life of housewife Joan Beevers VK3BJB of Mildura in north-western Victoria.

Having learnt the language on the amateur bands Joan now describes herself as being fairly fluent in conversational Japanese.

Her original intention was to learn just enough Japanese for what she calls a "rubber stamp" QSO with JA stations. But Joan found so many willing teachers on air her vocabulary soon grew.

Some five years later she has become so good that the wineries in Victoria'a Sunraysia district call on her to help when visiting Japanese wine buyers have difficulty in making themselves understood.

On the amateur bands she gives so many JA stations who can't speak English at all their very first QSO with a DX station.

She can also read and write simple elementary school Japanese enabling her to exchange letters and QSL cards direct with those who can't write English.

The next challenge for the mother of two and XYL of Ray VK3BRB is to learn the 1,850 standard Kanji characters so she can read Japanese newspapers and magazines.

During the afternoons Joan monitors the All Japanese Maritime Mobile Net on the 21 MHz band. Japanese sailors taking part in competition races or on pleasure trips in the Pacific and Indian Oceans check-in reporting their positions.

The net with the Japanese name of Okera has being going for more than 15 years. On occasions VK3BJB is net controller or "key station".

To many of those on the net she is affectionately known as "Mrs Joan". She became a temporary net controller in June 1988, gaining the dual distinction to being the first ever foreign radio amateur to check into the net and the first YL net controller.

"They call me their lighthouse because I can relay their position to friends and generally help them out," Joan said.

The net keeps track of craft and provides weather reports, and on occasions takes part in sea rescue and search operations.

ar

Signals Reflected Via Aircraft

by Gordon McDonald VK2ZAB
59 Wideview Road
Berowra Heights 2082

A Wideview View

In his article "Aircraft Enhancement Another View" (AR March 89) Ian Cowan VK1BG clearly explains that although he accepts the fact that VHF and UHF signals propagate beyond the horizon via reflections from aircraft he thinks that there is another propagation medium operating at the same time. His erudite theory contends that the heat generated by large jet aircraft in flight gives rise to a mini-inversion which in turn enables beyond the horizon propagation also.

Let's keep this idea in mind whilst we consider another aspect of reflections from aircraft which has received little attention up until now:

Slant Range

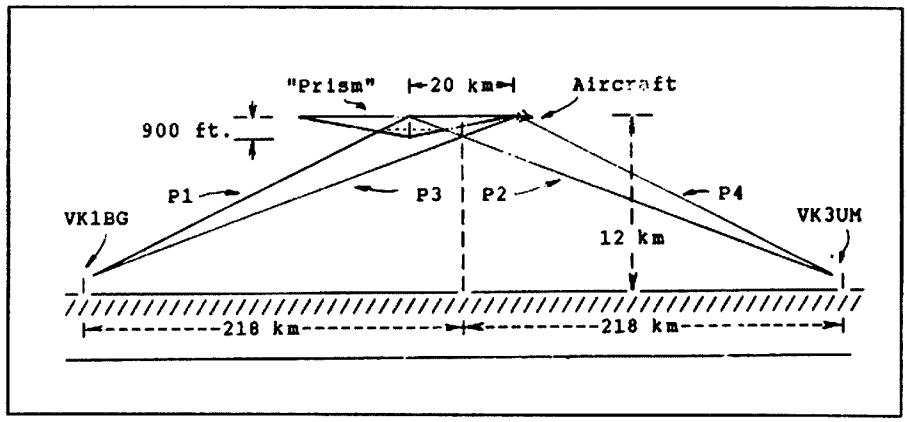
It is thought that the path length does not change during forward scatter contacts via aircraft reflections and that this is evidenced by the lack of Doppler shift, but this isn't quite true. It would be true only if the aircraft track exactly coincided with the line of sight path all the way from transmitter to receiver which is impossible in practice. The lack of noticeable Doppler is simply due to the fact that the range doesn't change by much.

To understand the significance of this we will examine the accompanying diagram. It represents a simplified profile of the VK1BG to VK3UM path complete with a Boeing 747 flying at about 39,000 feet trailing a VK1BG "prism" which is dutifully refracting the signal towards VK3UM at the same time as the aircraft is doing its bit by reflecting it. We take the distance between the two stations to be 436 km.

We note that the length of the signal path from VK1BG to VK3UM is equal to P1 + P2 via the refracting centre trailing the aircraft by 20 km and also P3 + P4 via reflection from the aircraft proper. Let's work out what these distances are. We will start with the aircraft and the prism centre equally spaced about the middle of the path as in the diagram and round the height off to an even 12km.

$P1 + P2 = \sqrt{(208^2 + 12^2)} + \sqrt{(228^2 + 12^2)}$
$= 436.66144$ km

$P3 + P4 = \sqrt{(228^2 + 12^2)} + \sqrt{(208^2 + 12^2)}$
$= 436.66144$ km



We observe that the two paths are equal in length. However the aircraft is travelling at 870 km per hour so what is the situation when it has moved say 2 km closer to Melbourne and VK3UM? Let's see:

$P1 + P2 = \sqrt{(210^2 + 12^2)} + \sqrt{(226^2 + 12^2)}$
$= 436.66094$ km

$P3 + P4 = \sqrt{(230^2 + 12^2)} + \sqrt{(206^2 + 12^2)}$
$= 436.66205$ km

We see that the paths now differ in length by 0.00111 km or 1.11 metres. Using the same method let's calculate the path differences for 2km increments in aircraft position for say 22km. The results are given in the accompanying table:

Aircraft position.	Path difference.
Start position	0.00 m
+ 2 km	1.11 m
+ 4 km	2.22 m
+ 6 km	3.34 m
+ 8 km	4.45 m
+ 10 km	5.58 m
+ 12 km	6.71 m
+ 14 km	7.85 m
+ 16 km	8.99 m
+ 18 km	10.14 m
+ 20 km	11.30 m
+ 22 km	12.48 m

We observe that the paths differ by increasing amounts as the aircraft heads towards VK3UM. If we wished we could work out that close to the point of descent into Melbourne the path difference would be several kilometres. We would also find that on Canberra side of our centre point start the paths differ in length in the same way as on the Melbourne side.

What bearing has all this got on the VK1BG theory? Let's see:

Interference And Phase

When a signal from a single transmitter is received via two (or more) paths the resultant signal is determined by the amplitudes and phase relationships of its component signals. We observe from the table that over 22 km the path length difference changed by 12.48 metres. This happens in about 91 seconds at 870 km/h.

Therefore a 432 MHz signal from VK3UM to VK1BG or vice versa will reinforce and cancel 36 times (every half wave length) or about every 2.5 seconds during this 22 km stretch of the aircraft's flight. It will get faster and faster as the aircraft gets nearer Melbourne!.

In other words the two path system will result in continuous "flutter" on the received signal. It should also be noted that changing the simplified dimensions that I used from the diagram won't change this simple fact. Furthermore any instability in that 20 km distance from the aircraft to the refraction centre in the "prism" will make things worse.

However if you use aircraft reflections you know that there is really no problem with continuous flutter throughout your contacts simply because it DOES NOT HAPPEN IN PRACTICE!

Now let's have another look at that VK1BG theory:

Another View?

VK1BG suggests that there are two (at least) means by which an aircraft enables beyond the horizon propagation at VHF and UHF but as we have demonstrated above this will result in continuous flutter throughout the entire contact and as we all know this does not happen in practice. The fact that the signals lack aircraft flutter clearly means that there is only one propagation path! Something's wrong here!

There is no doubt that signals are reflected off the aircraft proper, not even VK1BG disputes that, so where does this leave us?

Obviously there is only one answer: THE PROPAGATION PATH ENVISAGED BY VK1BG DOES NOT EXIST!

Instead of showing, as he says, that such a system does exist VK1BG has shown us that it is possible to put together a seemingly plausible sounding story to suggest that it MIGHT. He does not provide us with any reason for embarking on this line of speculation in the first place other than that he thinks my calculations (relating to signal strength) don't fit his observations and no evidence that he is cognisant with any of the considerable amount of published data relating to reflection of radio signals by aircraft extending back to early 1930s.

In short, he is asking us to believe in the existence of a propagation mechanism which countless experts have failed to detect, predict or even speculate upon during nearly 60 years (30 since the start of the big jet era) of observations in this specific area. I don't think his argument is that good. Do you?

Reflections From Aircraft

Reflection of radio signals by objects on the path between the transmitter and receiver is not new. It was noted in the early 1920s and was demonstrated as a method of detecting ships in 1922. Equipment specifically set up for this purpose was known as "wave interference" gear.

In the late 1930s radar systems were invented which used receivers and transmitters located at the same site so it became necessary to differentiate between them and the old wave interference gear which had the transmitters and receivers at different sites. Thus the terms "monostatic" for one site radars and "bistatic" for two (or more) site radars were born.

The system we use to communicate beyond the horizon by reflecting signals off aircraft is simple bistatic radar.

Bistatic Radar

Bistatic radar has characteristics which are quite different from those of monostatic radar and they are covered in detail in several text books and papers on the subject. These characteristics have a considerable bearing on our debate about aircraft reflections.

Therefore it should be mandatory for anyone thinking about punishing our credibility with their theories to make themselves familiar with the available information about bistatic radar before doing so.

One excellent source of information on the subject is "Introduction to Radar Systems" by Merril I Skolnik. It is available in a paperback edition for students.

Anyone who wishes to argue with me that the signals we see are not due to reflections from the aircraft proper had better have read Skolnik or some similar text first otherwise he will find me "forthright" in my views. I have better things to do.

Conclusion

VK1BG's theory has some parts which sound good but as every radioman worthy of the name knows you can't have two signal paths without interference and as there is no evidence of this the theory breaks down. ie: It's Wrong.

VK1BG is right about about one thing when he says that we will still be able to have "Aircraft Enhancement" contacts when aircraft are non metallic because to quote Skolnik:

"Another interesting property of forward scatter is that an absorbing body and a reflecting body of identical shape have the same forward scatter cross sections, but the backscattered energy from an absorbing body will be much less than that from a reflecting body. This follows from the application of Babinet's principle." (Babinet's principle is a law of optics).

Appendix

(1) Multipath is sometimes seen near the beginning and end of contacts via aircraft reflections due to one of two possible mechanisms. The first is that some stations can hear the other weakly before the aircraft is in mutual view so that when it first appears (or is about to disappear) there is interference between the direct (tropo scatter) signal and the aircraft reflected one. This appears when the reflected signal assumes massive predominance due to the aircraft being in clear view of both stations.

The second is due to the interferometer effect known to satellite users and moon bouncers and is due to reflections from the earth when the signal source is near the horizon. This is only evident over the sea or flat ten ain so is not likely to obtain on the Canberra-Melbourne path.

(2) Incidentally the advent of military aircraft with small radar cross sections may result in a resurgence of interest in bistatic radar since it may provide a more efficient means of detecting them than that afforded by monostatic radar.

(3) There is still a lot to be learnt about contacts via aircraft reflections. How can we estimate an aircraft's effective (Bistatic) reflecting area which seems to be greater than we first thought for example. This information would enable us to estimate in turn just how much power and aerial gain we would require in order to make the first contact between say Sydney and Melbourne on 1296 MHz using this mode. However we are not likely to find out about such things as soon as we might if we hadn't gone off on flights of fancy like that provided by the VK1BG theory.

Amateur radio lore already has its fair share of myths, furphys, half truths and plain nonsense without adding more.

ar

Analysis of the Z match antenna tuner

Lloyd Butler VK5BR
18 Ottawa Avenue,
Panorama, 5041

Because of its simplicity, the Z match antenna tuner is popular with many radio amateurs; but why does such a simple circuit work? Here are some ideas on how it can match a range of load conditions.

This article all started because Dean Probert VK5LB, built a Z match tuner and decided to submit an article on its construction for publication. He invited me to support his submission with some background theory on the Z match and, following some degree of investigation, this article is the result. The tuner is briefly described in the RSGB Handbook but its principle of operation is left much to the imagination.

Other references on the Z match are also not too helpful in this regard. Whilst the circuit is simple in terms of the components used, understanding how it works is certainly not in the simple category. In the following paragraphs I will describe how I believe it functions assuming the circuit specification given in the RSGB Handbook.

Circuit Analysis

Details of the original circuit is shown in Figure 1. The addition of a switch across C2a, not in the original circuit, will be explained later. A separate output coupling transformer (L1, L2) is used on the high frequency bands (14,21 and 28 MHz) from that (L3, L4) used on the low frequency bands (3.5 and 7 MHz). From the coil dimensions given, the winding inductances were initially calculated to be as follows :

L1 = 1.84 uH
L2 = 2.4uH
L3 = 4.4 uH
L4 = 3.1 uH

The minimum values of the tuning capacitors are not given but minimum values have been assumed to be one tenth of the maximum values so that the capacitance ranges are as follows :

C1 = 50 to 500 pF
C2 = 2 x 25 to 250 pF

From the inductance and capacitance constants given above, the reactance of the relevant circuit elements have been calculated for each of the frequency bands. The equivalent circuits for 3.5 and 7 MHz, showing these reactive components, are given in Figure 2. The same for 14, 21 and 28 MHz are given in Figure 3.

The circuits make use of a matching principle shown in Figure 4 in which a specific combination of series capacitive reactance (Xc) and shunt inductive reactance (X1) can be made to match a resistive load (Ra) to a lower resistance source (Rs). In this type of circuit, the values of X1 and Xc are calculated as follows :

$$X1 = \sqrt{\left(\frac{Rs.Ra^2}{Ra-Rs}\right)}$$

$$Xc = \frac{X1.Ra^2}{Ra^2 + X1^2}$$

The values for Rs equals 50 ohms are plotted in Figure 4. In the Z match circuit, Xc is provided by variable capacitor C1. For 3.5 and 7 MHz, X1 is provided by partial tuning of the shunt inductance at L3 and for 14, 21 and 28 MHz, X1 is provided by partial tuning of the shunt inductance at L1.

One feature of the Z match circuit is that there are no variable inductors. One might now question how we get the variable inductors in the network shown in Figure 4. To explain this, refer to Figure 5. In 5a, we have our inductor paralleled by tuning capacitor C2a. Depending on the applied voltage and the reactance of L, a current will flow through L. A current will also flow through C2a, depending on the applied voltage and the reactance of C2a, but in antiphase to that through L. Current through C2a cancels current through L so that as we increase capacitance, we increase the combined inductive reactance of the circuit. Providing the capacitance is less than that which gives resonance with L, it provides a means of adjusting inductance of the circuit.

The series circuit of Figure 5b, can also be used to adjust inductance. The voltage developed across C is in anti-phase to that across L and an increase in the reactance of C2b causes a reduction in the inductance of the combined series circuit. Providing the capacitance is greater than that required for series resonance, it provides a means of adjusting the inductance of the circuit.

In the various frequency band circuits shown in Figure 2 and 3, variable capacitor C2a-C2b can be seen to perform the function of varying the value of shunt inductance by both of the methods discussed above.

The type of matching circuit of Figure 4, is limited to a load resistance (Ra), no less than the reflected to source resistance (Rs) and hence, for Rs = 50 ohms, minimum Ra is 50 ohms. If L1 and L2 were tightly coupled, the unbalanced to balanced circuit formed by split stator capacitor C2 would produce an impedance ratio of 1:4 and the minimum load resistance would be defined as 200 ohms. However, the coils are not tightly coupled and herein lies a reason why the Z match circuit can match a range of load resistances lower than 200 ohms. This characteristic will be discussed later in the article.

If L3 and L4 were tightly coupled, their turns ratio of 1.33:1 would produce an impedance ratio of 1.78:1 and a minimum load impedance of 28 ohms. They also are not tightly coupled.

Load Resistance Range

The first approach to determine the load resistance range of the circuit was made on the assumption that the coils were tightly coupled. Based on a resistive load Ra, the circuit constants appeared to provide matching to an Rs of 50 ohms over the following ranges of output resistance Ra:

3.5 MHz 110 ohms to 9 kohms
7 MHz 1.2 kohms to 2 kohms
13 MHz 200 ohms to 4 kohms
21 MHz 200 ohms to 2 kohms
26 MHz 200 ohms to 1.2 kohms

On 7 MHz the inductance of L3 appeared to be too high making matching difficult for load resistances below 1.2 kohms. However, by shorting out C2b on this band, inductor L1 became prominent and the low resistance end of the range of Ra could be lowered to 30 ohms.

The output resistance range was based on a resistive load and variable capacitor C2 would also have to be adjusted to correct for any reactive component in the antenna load.

To test out the theory, the VK5LB Z match unit was borrowed and tests were carried out with variable resistive loads within the range of 30 to 2000 ohms. To do this, a noise bridge, connected at the Z match unit input, was set for a balance at 50 ohms. To do this, a noise bridge connected at the Z match unit input, was set for a balance at 50 ohms resistance and a match was attempted over the load resistance range on each of the bands.

The tests confirmed that, as predicted, complete coverage on 7 MHz could only be achieved with C2b shorted out, although there was wider coverage than predicted. On the other hand, the tests showed, not as predicted, that near continuous coverage could be achieved on all other bands over the tested resistance range. The answer to these discrepancies was found in the characteristics of the coupled coils L1, L2 and L3, L4 which will be discussed in the following paragraphs.

The Coupled Coils

To check out the characteristics of the coupled coils, test models of similar dimensions to those specified were assembled. The inductances of these measured fairly close to the previously calculated values and were recorded as follows :

L1 = 1.72 uH
L2 = 2.54 uH
L3 = 3.77 uH
L4 = 3.35 uH

The inductances of L1 and L3 with secondaries short circuited were measured as 1.02 uH and 2.1 uH respectively. From these measurements, the coefficient of coupling for both circuits was calculated to be around 0.65. A few further calculations (refer to appendix) showed that, because of leakage inductance, there was a considerable series inductive component which modified the effective values of shunt resistance and shunt inductive reactance. The effect of this is to reflect a lower value of shunt inductance than that of the open circuit primary winding and much higher value of shunt resistance than that of load resistance Ra. The equivalent circuits of L1, L2 and L3, L4, with inductance values derived from the measurements, are shown in Figure 6.

The measured variation in shunt inductance and shunt resistance at L3 primary, as a function of load resistance across L4 secondary, is shown in Figures 7 and 8, for frequences of 3.5 and 7 MHz respectively. The same for L1 and L2 at 14 MHz is shown in Figure 9. Equipment was not available to record the two highest frequency bands.

The increase in reflected shunt resistance, at the coupled circuit primary windings, has a significant effect on the load resistance range which can be matched, particularly at low values of load resistance. This can easily be seen by referring the reflected parallel resistance values on Figure 7, 8 and 9, back to the X axis of the matching circuit curves of Figure 4. Not only values below 50 ohms are tunable but the reactance values of input tuning capacitor C1 are higher resulting in less capacitance required for the low resistance loads. Because of this load resistances as low as 30 ohms can be achieved at 3.5 MHz with the 500 pF value of C1.

Overall, there is less capacitance range required in C1 and the capacitance versus load resistance curve for C1 is humped near the centre with low capacitance at both very high and very low values of load resistance. This is demonstrated in the results of some of the tests carried out on the VK5LB unit (refer Figure 10).

One problem experienced in the VK5LB unit concerned the minimum achievable capacitance of C1. Dean paralleled all sections of a three-gang receiver tuning capacitor for C1 (around 3 x 400 pF). On 21 and 28 MHz, two of the sections had to be disconnected to achieve tuning range on these bands. Even with only one section connected, maximum load resistance tunable on 28 MHz was 300 ohms and a lower capacity would have been needed to match higher values of load resistance.

Balanced Outputs

The two coupling transformers L1, L2 and L3, L4 provide winding isolation so that either balanced or unbalanced transmission lines can be used. However, for the balanced case, transformer L3, L4 is not constructed for good capacitive balance at its output. The unbalance this causes on the transmission line must increase with frequency and the circuit designer probably had this in mind in providing L1 with a pseudo balancing circuit of split stator capacitor C2 for the higher frequency bands. On the lower frequency bands, where transformer L3, L4 is used, the reactance of the unbalanced capacitive component would be greater and of less effect on transmission line balance.

Harmonics

Matching circuits which have series inductance and shunt capacitance are well recognised as low pass filters which attenuate harmonics generated in the transmission. The matching circuit, of the type shown in Figure 4, is not of this type and is of the form of a high pass filter. Notwithstanding this, the parallel combination of C2 and the coupling circuit would appear as a shunt capacitance at the harmonic frequencies and in conjunction with the series inductive components in the output coupling circuits (shown in Figure 6), would provide some degree of attenuation to harmonic frequencies.

Summary

Owing to the careful selection of values of inductance and the degree of coupling in its output circuits, the Z match tuner can match a wide range of load conditions over a range of frequency bands. It has an advantage in using fixed inductors so that tapped and switched inductors, or roller inductors, are not required. Only two tuning capacitors are used but output switching is necessary to switch between high and low band output circuits or to disconnect the unused output when the other is in use.

Using the original circuit, there are difficulties in matching to some load resistance values on 7 MHz. This problem is corrected by shorting out capacitor C2b on 7 MHz and an additional switch has been added to the circuit of Figure 1 for this purpose. This connection would also be more suitable to operate L3, L4 output circuit on 10 MHz although this band was not specifically checked out in the tests.

The Z match unit appears as a simple tuning device which can be used for a wide range of matching applications without the complication of adjustable or multi-switched inductors. In constructing such a unit, it would seem important to closely follow the coil specifications to achieve suitable values of inductance and coupling coefficients. The interesting thing about the design is that if tightly coupled output coils had been used, such as those bifilar wound on toroidal cores, the range of output load conditions over which matching could be achieved would have been more restricted. This point certainly does not come out in the references examined, and in fact the RSGB Handbook defines the coils as tightly coupled.

In conclusion, it must be again pointed out that analysis was carried out using resistive loads. Whilst we would all like our transmission lines to look purely resistive, they are seldom wthout reactive component which must also be taken into account in adjusting the tuner. Such reactances might well result in quite a different range of tuning conditions to those described for resistive loads.

Appendix

Coupled Circuits - Derivation of Equivalent Circuit (Refer Figure 1a)

Measure primary inductance (Lpri), with secondary open circuit.

Measure secondary inductance (Lsec), with primary open circuit.

Measure primary inductance (Lpsc), with secondary short circuit.

Coefficient of coupling

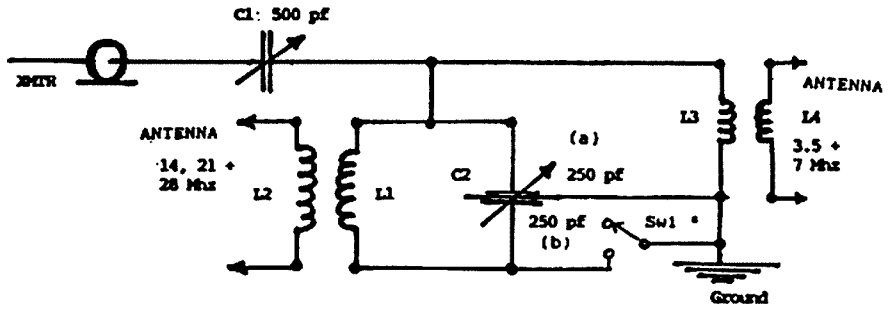
$$(K) = \sqrt{(1 - \frac{Lsec}{Lpri})}$$

Mutual Inductance (Lm) =
K. $\sqrt{(Lpri.Lsec)}$
Lp1 = Lpri - Lm
Ls1 = Lsec - Lm

ar

References

1. RSGB Radio Communication Handbook, Chapter on HFAerial (Multi-band Couplers
2. KING, Allen W, W1CJL. The Z match Antenna Coupler, QST May 1955.
3. VARNEY, Louis, G5RV. An Improved Match ASTU, Radio Communication, October 1985.
4. GURR, Rob, VK5RG. Z Match Antenna Coupling Unit - App 2 Wire Antenna, Amateur Radio, September 1984, p.17.



L1 and L2 are 5 turns
L3 and L4 are 8 and 6 turns respectively.
L1 and L3 are 2½" diameter.
L2 and L4 are 3" diameter.
All coils have .25" spacing between turns.

* Sw1 - Connect on 7 MHz

Figure 1 Z MATCH CIRCUIT DIAGRAM

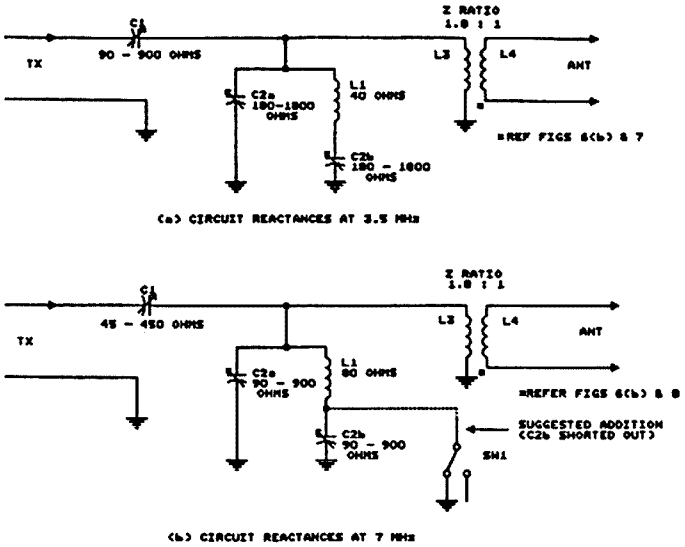


FIGURE 2 LOW BANDS CIRCUIT REACTANCES

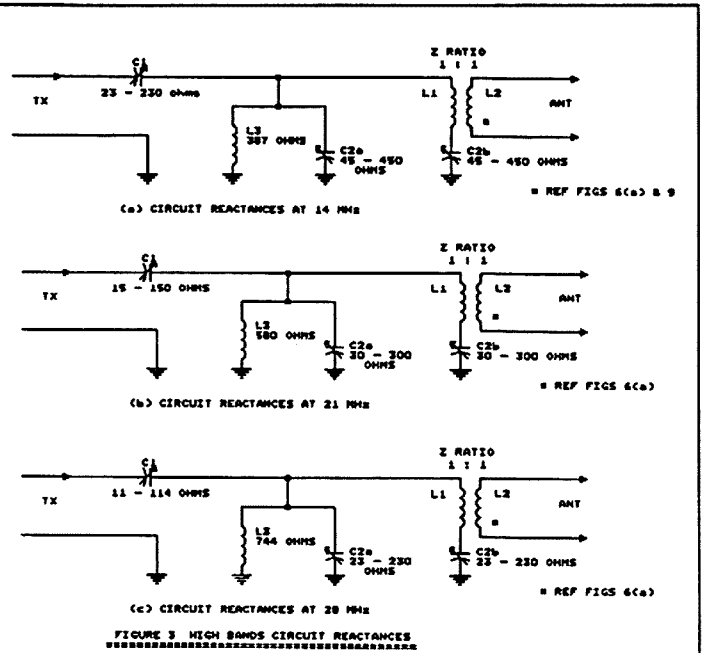


FIGURE 3 HIGH BANDS CIRCUIT REACTANCES

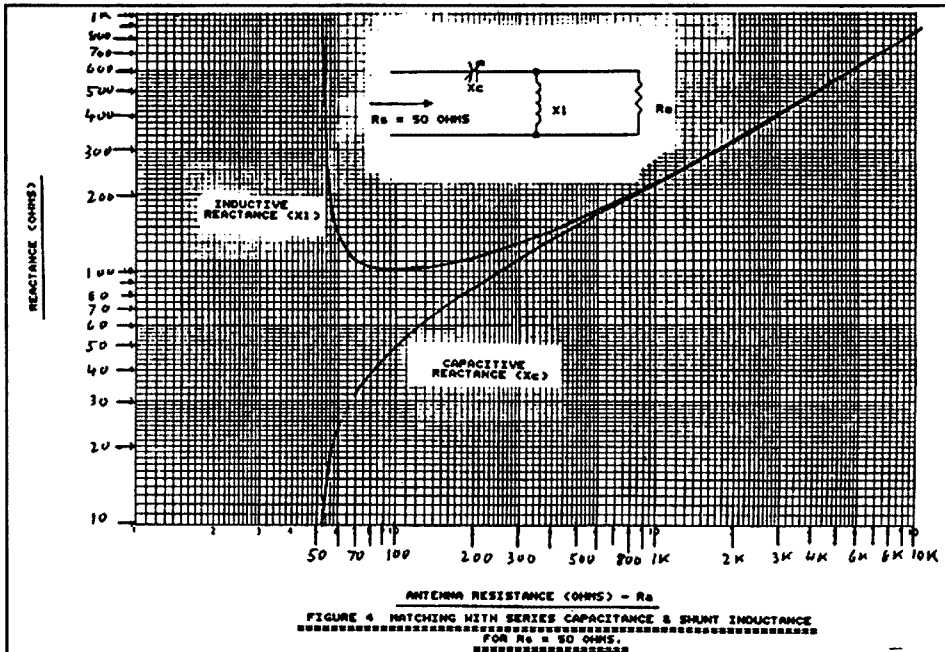


FIGURE 4 MATCHING WITH SERIES CAPACITANCE & SHUNT INDUCTANCE FOR Ra = 50 OHMS.

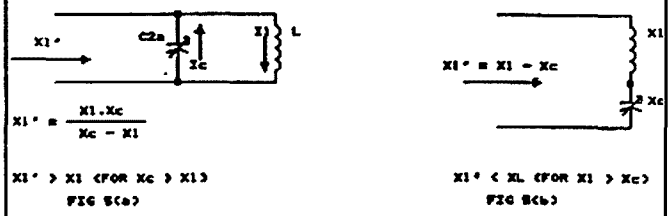


FIGURE 5 VARIATION OF INDUCTANCE BY VARYING CAPACITANCE

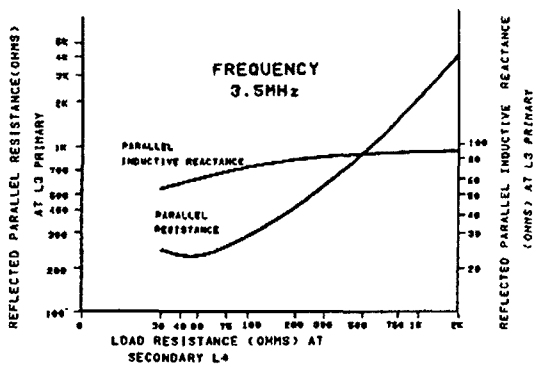


FIG 7

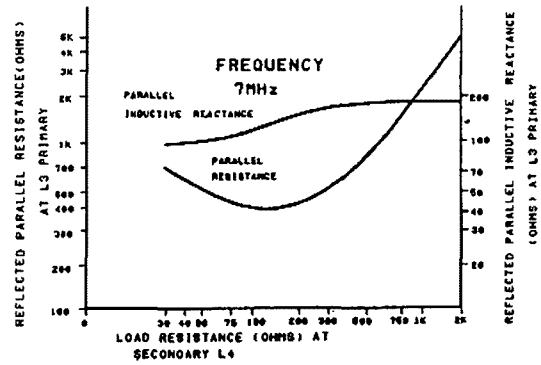


Fig 8

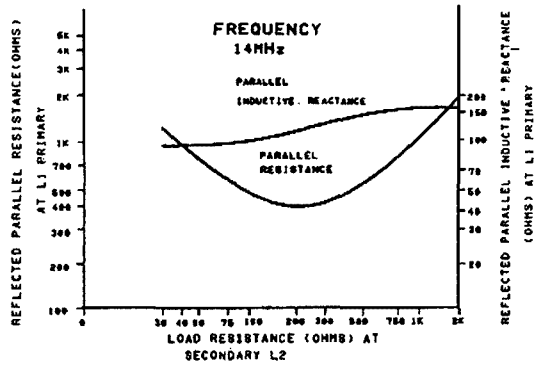
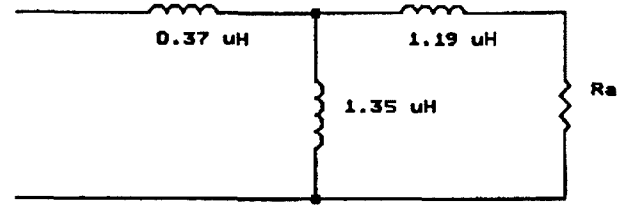
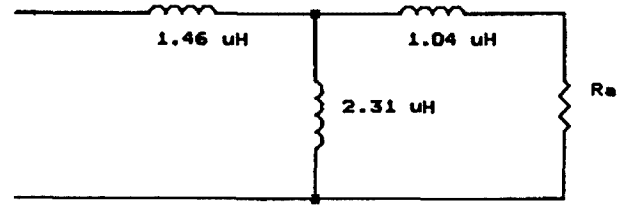


Fig 9



(a) EQUIVALENT LOADED CIRCUIT L1 - L2



(b) EQUIVALENT LOADED CIRCUIT L3 - L4

FIGURE 6 OUTPUT COUPLING - EQUIVALENT CIRCUITS
(DERIVED FROM INDUCTANCE MEASUREMENTS)

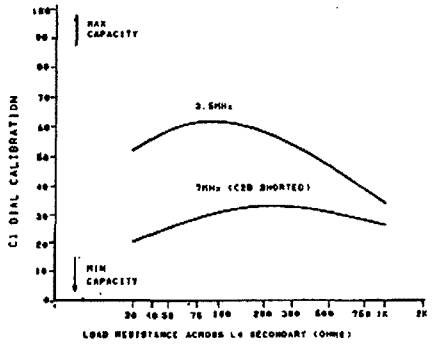


Fig 10

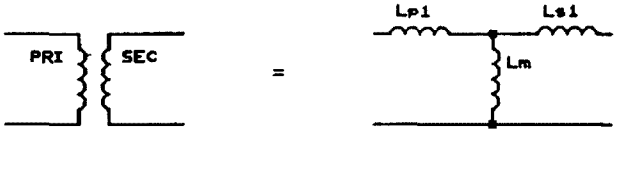


FIGURE A1 COUPLING TRANSFORMER EQUIVALENT CIRCUIT

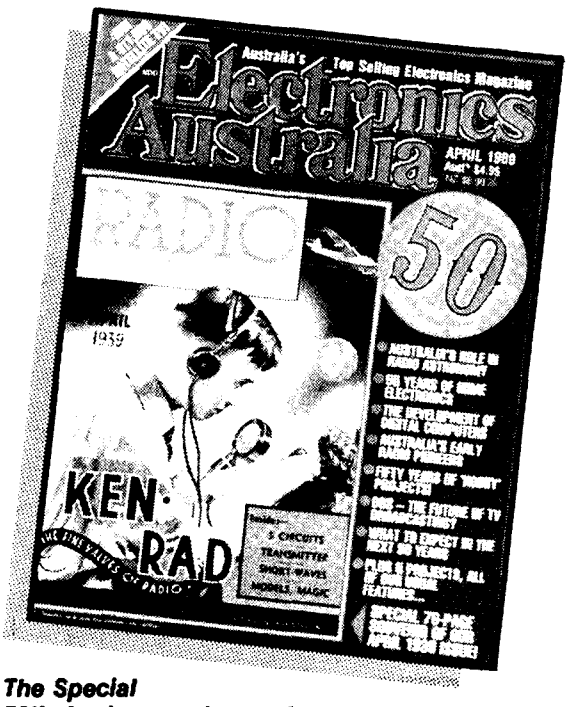
Radio Amateurs: Have you checked out EA lately?

No doubt most radio amateurs are aware that *Electronics Australia* is by far this country's largest-selling electronics magazine, as well as being its oldest (we began way back in 1922, as *Wireless Weekly*). But have you looked inside the magazine lately?

It's true that a few years back, the magazine went through a troubled time, and may not have been quite as interesting and exciting for a while. But in case you haven't heard, things are a lot different now.

Remember Jim Rowe, VK2ZLO? Jim used to be Technical Editor, and then Editor – back in the late 1960's and 1970's. You may recall some of the amateur radio and test equipment projects he developed, which proved to be extremely popular. Well, Jim is back at the helm of the magazine, and has been busy giving it a new lease of life.

You'll now find lots of new 'departments' in the magazine, including Solid State Update (with news of new semiconductor devices), Silicon Valley Update (news from the USA) and What's New in Entertainment Electronics. Plus all of your old favourites like Forum, The Serviceman, Circuit and Design Ideas and so on. And of course plenty of 'meaty' technical articles and contruction projects.



The Special 50th Anniversary issue of Electronics Australia, 260 jam-packed pages plus a souvenir reproduction of our first issue in 1939. Copies are available at your newsagent now, but hurry or you'll miss out.

What about *amateur radio* projects? Well, there still aren't too many, at present – Jim Rowe's been a bit too busy! But he's *very* interested in boosting the amateur radio content, so if YOU have developed an exciting amateur radio project, please contact Jim by writing to him at EA, 180 Bourke Road, Alexandria 2015 or phoning him on (02) 693 6620 – to discuss the possibility of publishing it as a contributed article.

Take a look at the new, rejuvenated *Electronics Australia* – on sale at your newsagent at the beginning of every month. Or subscribe now, by phoning (02) 693 9517 or 693 9515.

Electronics Australia

Australia's Top Selling Electronics Magazine

How to Record the Weekly Broadcast

Peter O'Connell VK2EMU
3A Algernon St
Oatley 2223

It is possible to use a video recorder as an audio recorder to tape the weekly WIA broadcast. There are two advantages of video recorders over a normal cassette recorder. They can be programmed to start and stop - often up to 14 days in advance. They can also record up to 4 hours of audio (or 8 hours if you have a half speed machine). Once you have recorded the broadcast, then you can easily replay it on your television - just listen to the audio and forget the picture! You could also replay the audio through the household stereo system or a purpose built audio amplifier.

The following circuit was built up to convert the high level audio from the speaker terminal of a 2 metre hand held to the low level required by the audio input of a video recorder. The circuit was encapsulated inside a piece of PVC electrical conduit.

If possible, you should use a power supply for the 2 metre handheld, as the batteries may run down halfway through the broadcast. You will also need to check the audio level through the television. The exact location of the handheld will also need to be checked as some video recorders give out low level RF signals in the 2 metre band (and possibly many others as well!) An external aerial could be of some use.

ar

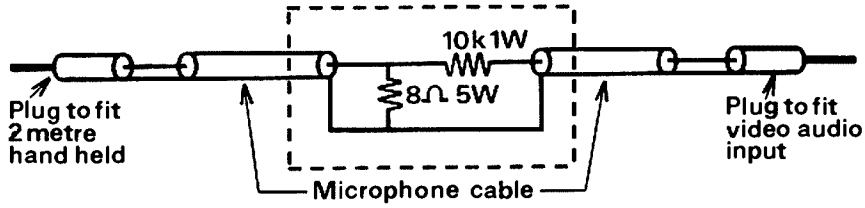


Figure 1.

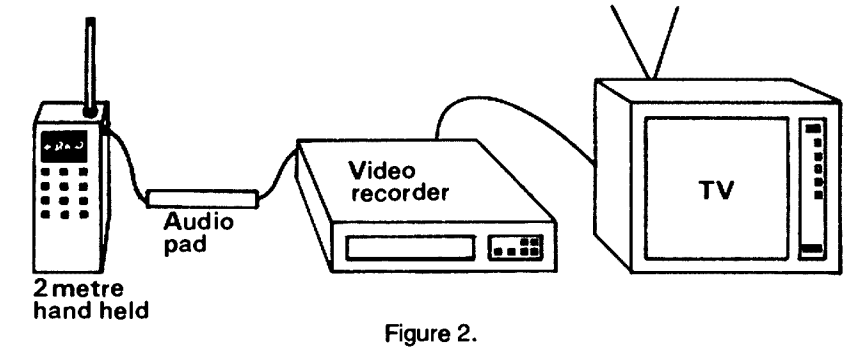


Figure 2.

A Z Match Antenna Tuning Unit

Dean Probert VK5LB
RMD Verrall Road, Hope Forest, SA.
5172

This tuning unit is capable of matching balanced feedlines and requires only two tuning capacitors to set the matching.

Balanced feedlines, used in conjunction with an antenna matching system, require some form of balancing circuit. A transmatch usually has an unbalanced output and if this output is to be coupled to a balanced feedline, it must be coupled via a balancing transformer or balun. There are problems in the design of a suitable transformer if a wide range of load impedances and frequency bands are to be encountered. The Z match circuit addresses the problem by tuning the coupling transformer primary so that it forms part of the matching circuit.

A Z match tuning unit has been constructed by the writer based on limited information published in the RSGB Handbook. The circuit diagram for this, including coil winding information, is shown in Figure 1. A feature of the circuit is that it requires only two tuning capacitors for matching adjustment. Matching inductors, come coupling transformers, are fixed in value of inductance with no switching or other means of adjustment required. The output circuit (L1, L2) or 14, 21 and 28 MHz is separated from the output circuit (L3, L4) for 3.5 and 7 MHz.

In the following paragraphs, the writer discusses how the Z match unit has been constructed and how it has performed using different antennas. More detail on the theoretical aspects of this unit was given in a supporting article written by Lloyd Butler VK5BR.

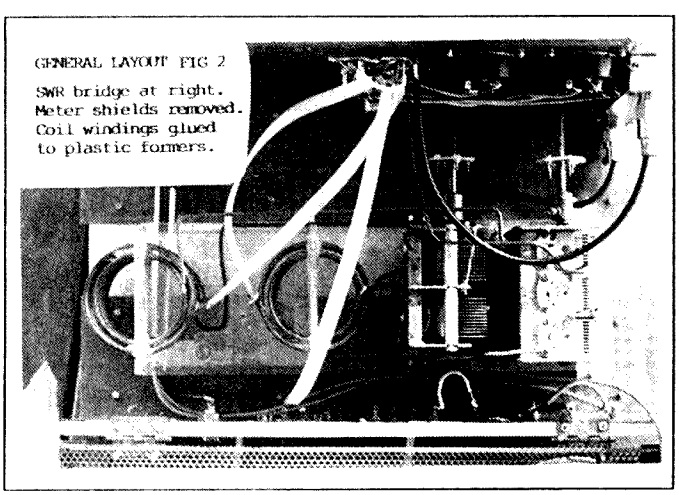
Construction

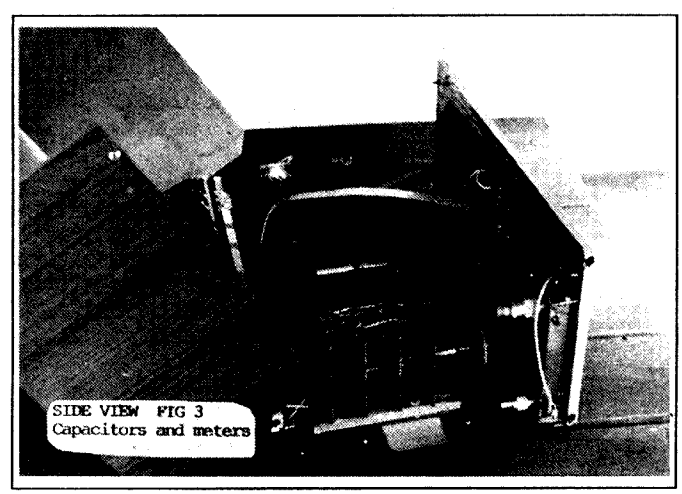
The specified capacitance for C1 is 500 pF and for this component, a three gang receiver tuning capacitor, with stators paralleled, was used. Capacitance achieved is more than 500 pF and this is discussed further in the article by VK5BR. C1 rotor must be insulated from ground and its shaft must be connected via an insulated coupling to the dial shaft. To achieve this, tabs were soldered to both shafts and bolted to a disc cut from an ice cream bucket. The coupling not only insulated the capacitor shaft from the dial shaft, but also provided a flexible coupling between them.

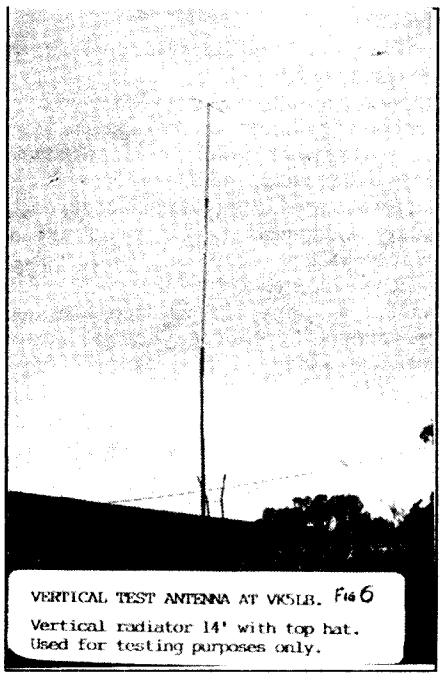
For C2, a split stator unit with 250 pF per section was used. In this case, the rotor is grounded although the same type of insulated shaft connection was used to provide a flexible coupling. Plate spacing in the two capacitors is only 0.015 inch but no arcing problems have been experienced by the writer in driving the Z match unit from a 300 watt sideband transmitter.

The coils were wound to the details given in Figure 1. They were supported by plexiglass sheet which was drilled to suit the dimensions given in Figure 1 and the wire was then threaded through the holes and cemented in place. In operation, there has been no evidence of the coils becoming hot and hence there is no danger of the plexiglass melting. The coil assemblies and the capacitors were mounted on a plastic sheet which was then bolted into the tuner cabinet. The coil assemblies and the mounting of coils and capacitors in the cabinet, can be seen in Figures 2,3 and 4.

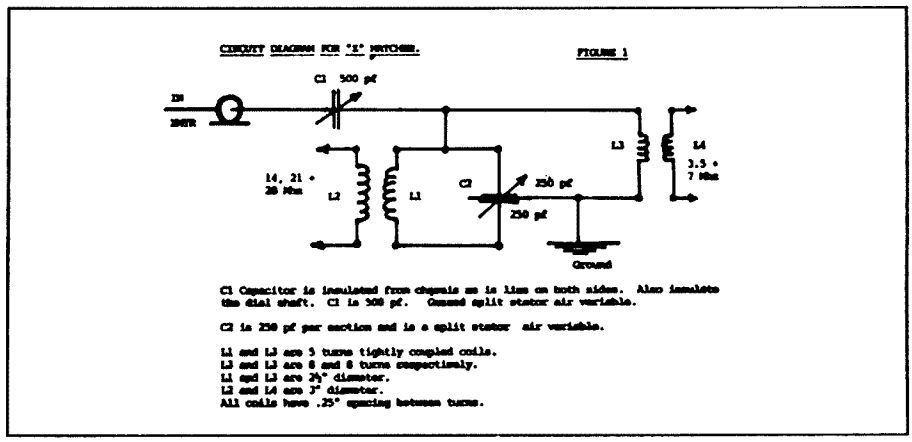
The coil assembly outputs can be connected directly to the two output connectors on the cabinet, one for the 3.5 and 7 MHz circuit and one from the 14,21 and 28 MHz circuit. At the time the unit was







VERTICAL TEST ANTENNA AT VK5LB. Fig 6
Vertical radiator 14' with top hat.
Used for testing purposes only.



photographed, a switch mounted in the cabinet was being used to connect either of the two outputs to the one G5RV antenna. Some other system might be suitable for others who might contemplate using this tuner.

An SWR/Power meter was included in the tuner cabinet. Meter wiring was shielded to prevent the high RF field from affecting the meter circuits and as an extra precaution, a metal shield was fitted around the meters. This shield has been omitted in the photographs so that this section can be seen.

The front panel layout is shown in Figure 5. Vernier dials have been used to improve tuning resolution. This is desirable as settings are quite critical on some loading conditions. Sometimes the settings are difficult to locate at first, but once found, they can be recorded on the logging scale and used as a reference when returning to that particular band and antenna combination.

The writer has adopted the practice of first loading the transmitter into a 50 ohm dummy load and correctly setting the PA tuning and output coupling for that load. (A switch is provided on the cabinet to select either the dummy or the antenna load). The Z match unit, connected to the antenna, is then set for low SWR reading, together with the same loaded PA condition as that set for the dummy load. If the PA tuning dip occurs at the same point and the loaded current is the same, it can be assumed that the matching unit is reflecting 50 ohms resistive load to the transmitter. This procedure is particularly applicable to valve type PA stages which normally have adjustable tank tuning and antenna loading controls. In transistor PA stages, the output circuit is more likely to be fixed and set for correct loading on 50 ohms resistance.

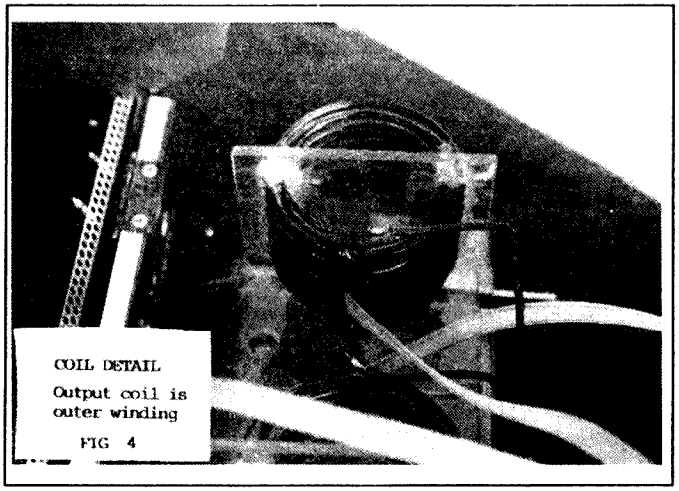
Performance

The writer constructed the Z match unit, generally accepting the specifications given in the RSGB handbook (refer Figure 1). An exception to this was the use of a larger than specified capacity three gang tuning capacitor obtained from the junk box. At the onset, the writer was unsure of what effect this would have on the Z match tuning range and this is addressed in the VK5BR article. As it turned out, C1 as fitted was certainly larger than necessary and, in fact, its higher minimum capacity made matching more difficult on the highest frequency bands.

In practical operation, the unit matches a G5RV dipole, via a 300 ohm ladder line, on all bands between 3.5 and 28 MHz. It was pointed out in the VK5BR article that the inductance on 7 MHz seemed too large and better matching would likely be achieved with the floating section of capacitor C2 shorted out. This appeared to be supported in operation with the G5RV, as without the shorting connection, C2 had to be set to minimum capacity. With the shorting link connected, C2 was set to about two thirds of the dial calibration range.

A temporary 14 foot vertical antenna was also set up for further experiments with the Z match unit.

The antenna, shown in Figure 6, was operated against a ground



COIL DETAIL
Output coil is outer winding
FIG 4

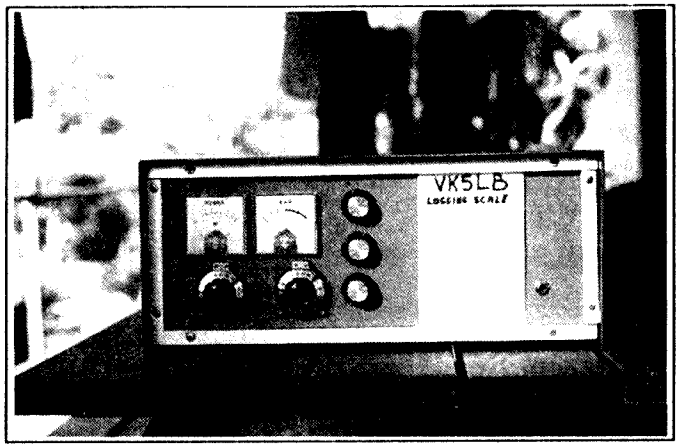


Fig 5: Front Panel View

Newspaper

If you see any articles concerning the hobby of amateur radio or a subject which could be of interest to radio amateurs published in a newspaper or elsewhere please send a copy to Amateur Radio magazine.

Mark your clipping or photocopy clearly with the name of the newspaper or other publication and the date the item was published.

Contributions should be send to the News Editor, Amateur Radio magazine, PO Box 300, Caulfield South Vic 3162.

Errata Remembrance Day Contest, April Issue

Some errors and omissions have been noted in the above contest. Please note:

VK2 - HF Phone	
VK2ALZ	124
VK3 - VHF Phone	
VK3XBA	100
VK3 - HF CW	
VK3XB	194
VK4 - HF Open	
VK4AT	60
VK4 - HF Phone	
VK4OL	200
VK4 - VHF Phone	
VK4APG	90
VK5 - HF Phone	
VK5TY	85
VK5 - VHF Phone	
VK5SE	120
VK5TY	90
VK6 - VHF Phone	
VK6WC	43
VK7 - VHF Phone	
VK7ZJH	53

plane consisting of the aluminium roof of the writer's house. Open wire balanced feedline was used as a temporary means to feed the antenna from the Z match unit. Matching was achieved on all bands despite the wide variation in load impedance which this system presented.

Adjustment of matching is a simple procedure. C1 is first set to mid-range and then C2 is tuned through its range until a dip in reflected power is observed on the SWR meter. C1 and C2 are further adjusted, alternatively, until a low SWR ratio is achieved. Some matching conditions are easy to obtain and others require some patience.

Summary

The Z match unit is easy to construct and easy to tune. It matches widely varying load impedances and couples to balanced lines and other balanced antenna circuits.

There are no switchable or adjustable coils in the circuit and all components are easily obtained, or, in the case of the coils, easily assembled. Layout is not critical providing the two pairs of output coupling coils are separated sufficiently to minimise mutual coupling, The unit has much to recommend it for those who wish to use balanced lines.

ar

Golden Antenna Award

For the eighth year the West German Town of Bad Bentheim will again symbolically award a radio amateur a "Golden Antenna for an outstanding humanitarian achievement in the field of amateur telecommunication.

This year, the winner will receive the award during the "German Dutch Radio Amateur Week (DNAT)" from 24th – 27th August. Organisations of radio amateurs are asked to submit proposals for this award to "Stadt Bad Bentheim, Schlosstrasse 2, D–4444 Bad Bentheim" by 15th May 1989.

Applicants will only be considered who have achieved an outstanding humanitarian feat in the field of amateur telecommunication:

The decision on this award will be made by a committee representing the Town of Bad Bentheim and the presidents or chairmen of the "International Amateur-Radio-Union", the "Vereniging van Experimentee–Radio Onderzoek/Netherlands', the "Vereniging Radio Zend Amateurs/Netherlands" and the "Deutsche Amateur–Radio–Club".

The Town of Bad Bentheim will defray all expenses incurred in connection with the journey and accommodation of the winner. The decision on the award is not subject to the jurisdiction of courts.

ar

Morse Practice Net

Are you looking for a reliable noise free means of learning Morse Code or increasing your speed and live within simplex radio range of Melbourne?

The 28.340 Net has been running for nine years and to its credit has helped 250 radio amateurs gain their Novice and/or Full licences.

The net caters for intending Novice and full call candidates sitting the quarterly Department of Transport and Communications examinations.

Each practice session commences approximately ten weeks prior to the DOTC exams and can be heard on air week nights.

The Novice practice session starts at 8.30 pm local and the full call practice runs from 9pm to 9.30 pm.

Speeds climb progressively to a level just above examination requirements.

The text sent during the sessions is read back.

The frequency is 28.340 MHz CW with a service now also available on 147.425 MHz modulated CW on FM.

Both transmissions are vertically polarised and provide a coverage over Melbourne and surrounding areas.

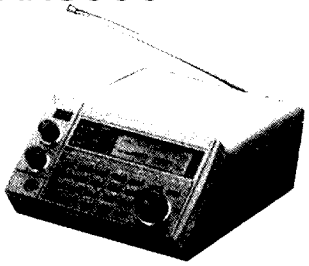
For further information please contact Len VK3COD on phone (03) 288 5350 or care of 44 Jenner Street, Blackburn South Vic 3130.

ar

NEW!! MAGNIFICENT from AOR

the 21st Century communications receiver

AR3000



Featuring:
Coverage
100 KHz - 2.036 GHz
Modes
NFM, WFM, AM, SSB CW
Memory
400 Memory channels
Scanning Rate
20 channels/second
Tuning Rate
50hz - 100hz selectable

NEW from the ICOM stable

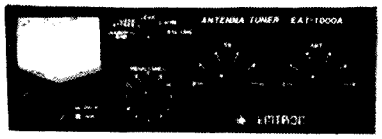
The fantastic budget priced **IC725**

TERRIFIC TRANSCEIVER
TERRIFIC PRICE: ONLY $1550

KENWOOD

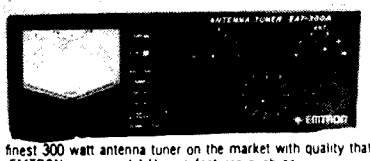
Full range of all kenwood products available at competitive prices from our 3 stores

NEW 1KW EMTRON TUNER EAT-1000A Only $549



This new EAT-1000/A is EMTRON S latest antenna tuner built on special request by many amateurs. Built with finest components available. 5 position internal antenna switch, cross needle SWR/power meter, built in 3:1 balun for open feedline and antenna terminals for coax line, open feedline as well as longwire. EAT-1000A will tune almost everything from 1.8 to 30 MHz. At lowest price professional design and quality that EMTRON provides. MADE IN AUST

NEW 300W EMTRON TUNER EAT-300A Only $349



The finest 300 watt antenna tuner on the market with quality that only EMTRON can provide! Unique features such as
• Cross needle SW 12/forward & reverse power meter • Built-in 100 watt dummy load • Antenna switch including bypass • Built-in 1:4 balun for open feedline • Lowest price & professional design • Matches everything from 1.8-30 MHz • Made in Australia by Emtron

OVER 1000 FAMOUS EAT-300 SOLD

EMTRON S fastest selling 300 watt antenna tuner with SWR meter, built-in 1:4 balun, heavy duty ceramic switch and top grade components. Works with all rigs and is found in Amateur, Commercial and Marine services

Only $239

THPLinear Amplifiers

Two Metres	was	now
• HL 180 V Auto 170W	$599	$489
• HL1103/10w-120w	$479	$429
• HL 110V/25 25-120w	$449	$399
Seventy Centimetres		
• HL 130U Auto 120 w	$799	$749

KENPRO ROTATORS

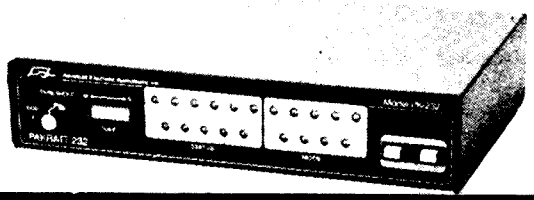
MODEL	BRAKING	ROTATING	PRICE
KR400	1530kg	400kg/cm	$369
KR400RC	1500kg/cm	400kg/cm	$429
KR800	4000kg/cm	800kg/cm	$659
KR2000	10,000 kg/cm	2000 kg/cm	$1299

All units include both top and bottom clamps, 8 core rotator cable available

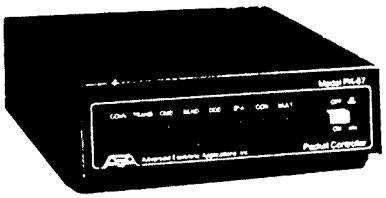
JOIN THE PACKET REVOLUTION!

New PK-232 Breakthrough

A new software enhancement makes the AEA PK-232 the only amateur data controller to offer six transmit/receive modes in a single unit.
★ Morse Code ★ BAUDOT (RTTY) ★ ASCII ★ AMTOR ★ Packet ★ Weather FAX



PRICE $649 WITH FAX



NEW PK-88 ™ PACKET CONTROLLER NOW $299

The PK-88 is not just another copy, it is much more. With all the packet program features of the Multi mode PK-232, the PK-88 is an economical new TNC designed to bring you enhanced completely compatible packet software plus new hardware features for improved packet operation.

BANKCARD MASTERCARD & VISA WELCOME

EMTRONICS

MAIL ORDERS WELCOME

NSW & HEAD OFFICE:
92-94 Wentworth Ave, Sydney
NSW. 2000. TLX:AA73990
P.O. Box K21 Haymarket, NSW. 2000
Ph: (02) 211 0988
FAX: (02) 281 1508

VICTORIA:
288-294 Queen St, Melbourne
Vic. 3000
Entrance from Lt. Lonsdale St.
Ph: (03) 670 8551 or 670 0330
FAX: (03) 670 0671

QUEENSLAND:
416 Logan Road, Stones Corner
Qld. 4120
Ph: (07) 394 2555
FAX: (07) 394 4316

KENWOOD

TS-440S

COMPACT ALL-MODE HF TRANSCEIVER/GENERAL COVERAGE RECEIVER

TS-440S provides complete all-mode HF coverage, with SSB, CW, AM, FM and AFSK modes of operation. All in a compact package, with Kenwood quality built-in.

Features include:

- 160-10 metre operations. All mode, complete amateur band coverage.
- Complete general coverage receiver (100kHz-30MHz continuous) with superb dynamic range.
- Automatic antenna tuning.
- Compact and light weight 270 x 96 x 313mm. Weight 7.3kg.
- CW break-in and VOX system.
- Digital VFO tuning system.
- 100% duty cycle transmitter, 110W AM/ 200W PEP (SSB) input

TL-922 HF Linear

The TL-922 provides maximum legal power. Suits TS-440S and other transceivers providing 80W or more input power for full output.

- 160-10 metre operation.
- SSB input up to 2kW PEP.
- Class AB_2 grounded grid amplifier with a pair of 3-500Z tubes for low IMD and long life

KENWOOD ELECTRONICS AUSTRALIA PTY. LTD.
4E WOODCOCK PLACE, LANE COVE, SYDNEY, N.S.W., 2066.
Ph. (02) 428 1455 Fax: (02) 427 6869.
Call now for further information and the name of your nearest authorised Kenwood dealer.

Please phone, or mail/fax for information
Name .....
Address .....
Postcode
Publication ..... Issue .....

A Perspective On Amateur Radio In VU-Land

by Jim Linton VK3PC

The warm community-style friendship among radio amateurs in India and the hospitality they afford to overseas visitors has left lasting impressions with John Hill VK3WZ and his wife Cynthia.

Last year they toured Bombay, Goa, Cochin and Bangalore. They recently returned from a similar trip and next time in India John hopes to have his own VU callsign.

John says in the pleasant city of Bangalore each day there's a 7.15am net on two metres where radio amateurs in a true spirit of cooperation help each other.

Not everybody has personal transport, and public transport is somewhat difficult, so on the morning net they arrange among themselves to pick up personal messages for each other during the day. This regular daily contact has created a community within a community.

The two metre band, mainly simplex although there is a repeater at Bangalore, provides a better means of communication than the telephone system which John Hill describes as poor compared with Australia. Often phone calls drop out in the middle of a conversation.

There was practically no mobile operation because this requires a special mobile licence only available for short periods. But there are plenty of hand-held radios used in cars and while pedestrian mobile.

John described the Bangalore Amateur Radio Club as being the most advanced and active, and having a widespread representation in its membership of the various age groups.

John and his wife were the guest of VU2JX who is known by the abbreviated name of "JS" and his wife Gita Srinivasan, who had just qualified for an amateur licence and was waiting for her own callsign.

They also spent some time with Les King VU2AK and Audrey King VU2YL. John and Cynthia described the hospitality of these people as absolute overwhelming.

The radio amateurs in India are mainly those who have professional employment. From his observations John believes at least 60 per cent of OM operators have XYL's who also have taken out an amateur licence. Spouses can be frequently heard chatting on the two metre band.

Residents of India taking out an amateur licence are required to make 50 contacts during the first year as a prerequisite for the licence to be renewed.

The main equipment used was Yaesu and Icom. To import equipment an Indian radio amateur needs to apply for a special importer's licence on which he or she is allowed to import gear to the value of about $A400 once a year.

With the emerging local technological manufacturing industries personal computers are becoming affordable for use by radio amateurs, which should in the years to come see greater numbers on packet radio.

Technology development in India is supported by the Government, headed by Rajiv Gandhi VU2RG. Radio clubs can apply for government grants to help them with projects.

The Indian Ministry of Communications issues licences to visiting radio amateurs which will take three months from application to licence issue.

An information sheet from the Ministry says a separate import licence is required for the importation of radio equipment even as personal luggage.

John says he would not travel overseas without his 2 metre hand-held, and always declares it on departing Australia to ensure no difficulties with customs on his return.

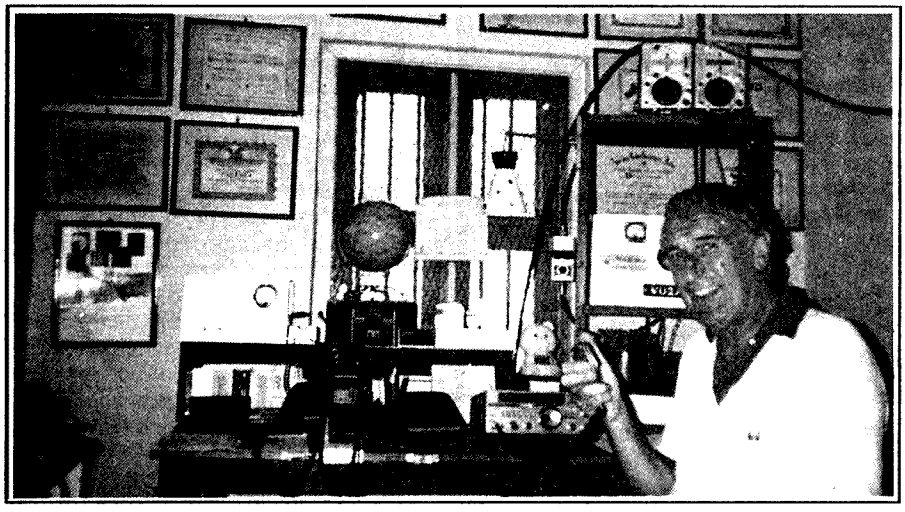
The frequencies used in India are: 3.500–3.540 (shared with other services), 3.890–3.900, 7.000–7.100, 14.000–14.350, 21.000–21.450, 28.000–29.700 and 144–146MHz.

India is ideally placed for DX activity being geographically between Europe and North America, and South-east Asia.

However, a recent internal dispute within the amateur radio fraternity has seen the handling of QSL cards grind to a halt.

Waiting for a card from VU? John Hill says QSling at present to the VU bureau is virtually a futile effort and he advises QSL's be sent direct.

ar



Working some of the locals in Bangalore is John Hill VK3WZ pictured in the shack of husband and wife Les King VU2AK and Audrey VU2YL.

by Gil Sones VK3AUI

Review of Yaesu FT4700RH Dual Band FM Transceiver

Review Rig Supplied by Dick Smith Electronics

Yaesu have managed to pack into a standard FM Transceiver size two complete transceivers. Even more impressive are the power outputs of 50 Watts on two metres and 40 watts on 70 centimetres. Both have all the usual features that you have come to expect.

Initial recourse to the manual is recommended as the transceiver is extremely versatile . You will probably want to use your own brew of features such as frequency step sizes and scan limits. The memories store the offset for repeaters which is very useful.

One feature which can be fitted is tone squelch. This could be the shape of things to come as it would enable greater sharing of channels. Groups within range of the very sensitive receiver could operate independently enabling a greater number of users. You would only have your receiver unmuted by stations within your group.

The transceiver is really two completely separate radios housed in the one box. The control circuitry and the front panel are the common elements. It is possible to talk on one band whilst listening on the other. In this way full duplex operation is possible.

A novel and useful feature is the ability to remove the front panel module and operate the RF side of the radio from three metres away. To do this all you need is an accessory cable kit . This should be a relatively cheap option. The radio could be mounted in the boot and the front panel controller beside you on the dashboard or console. The controller is easily detachable so that you can take it with you when leaving the vehicle or place it out of sight in a safe spot. Quite a feature these days.

Memory cloning is another useful possibility. This only requires a cable link between the microphone jacks of two transceivers and the memory contents can be transfered from one to the other.

On test the radio easily met the power output of 40 watts on 70 centimetres and 50 watts on 2 metres. Very impressive considering the small size of the radio. Of course this much power output in such a small package results in the generation of a lot of heat. The heat sink is fitted with a small fan which operates on a thermostat. Thus the heat is removed before it can become an embarassment.

Another consequence of this much power output is that you will need some really solid DC supply arrangements. In your car thick wires right to the battery terminals would be desirable. At home a power supply such as you would use for your HF rig is called for. The power output is only half the peak power of your SSB transceiver and the duty cycle is much greater.

A pat on the back to Yaesu for using a Type N connector for the 70 centimetre antenna lead. The two metre one is still one of those horrid UHF types. With the sort of receiver sensitivity built into this radio surely it deserves a type N on two metres as well.

Operation is a breeze and the transceiver comes out of the box with everything needed to get on the air. The packing is first class and is very much the usual Yaesu Standard. The instruction book comes with circuits but unless you have better than the usual workshop the case is best left in place. The circuit is there only to help you understand the radio and give you a warm feeling.

Construction and quality are such that you should never need to touch the internals. With the widespread use of surface mounting and very small components service is best left to the agents.

The only hard thing about this rig is giving it back or alternatively paying for it. The reviewer opted for giving it back but if you want to operate two bands with a very neat rig then a careful review of your finances is in order. The price is after all quite modest . Just a few years ago you would have needed two complete rigs and two bulky amplifiers to do the same. The cost of all that would likely have been more than the price of this rig in our current devalued dollars.

Summing up the Yaesu FT4700RH is a very impressive dual band radio at a relatively modest price.

ar

Equipment Review

Ron Fisher VK30M
'Gaalanungah'
24 Sugarloaf Rd
Beaconsfield Upper

The Realistic HTX-100 10 metre SSB/CW Transceiver

I am sure that the REALISTIC brand is well-known to all of our readers and of course REALISTIC is distributed by your local Tandy shop. After many years, Tandy is releasing a genuine amateur transceiver. It is certainly not just a worked-over CB transceiver, but a full featured ten metre band mobile or fixed station rig. I hope Tandy might see fit to extend their amateur range in the future. The transceiver is actually made for Tandy by UNIDEN in Taiwan and of course these days UNIDEN is well known for their range of VHF/UFH scanning receivers and also CB equipment. I note from American magazines that UNIDEN produce alternative versions of the HTX-100 for sale in that country. Well, just what is the HTX-100 like and what does it do? It is an SSB/CW transceiver rated at 25 watts output and has a coverage of 28 to 29.7 MHz. It tunes this range in selectable steps of 100 Hz, 1kHz and 10kHz. It also has a 500 kHz stepping button for really fast frequency excursions. It has ten memories which when selected can still be over-ridden by the normal tuning control. Other controls include RIT, RF gain, audio gain, squelch, a frequency lock switch, a noise blanker and a MOX switch. A large clear LCD provides the operator with information on frequency, mode and memory selection. A five LED display acts as an 'S' meter and RF power indicator. 3.5mm connectors allow a key to be plugged in for CW and a headphone connection on the front panel.

The overall size of the HTX-100 is similar to the two metre FM transceivers of the 1970s. The actual dimensions are 185mm wide, 63mm high and 245mm deep including knobs and heat sink. The rear panel carries an SO-239 antenna connector, a 13.8 volt DC connector and two 3.5mm sockets for external speaker and the CW kay. A mobile mounting bracket is a standard feature.

Front panel view of the HTX-100 Transceiver

The HTX-100 on the air

The transceiver requires a 13.8 volt DC source either from suitable AC power supply or a car battery in the case of mobile operation. If using an AC supply, it would need to be rated at about 5 amps. For my tests, I used a 20 amp supply. The first impression is the very clear green illuminated LCD display. Receive current drain is about 450 mA, transmit standby drain is about 750mA and transmit with full power output on CW is 4.8 amps. Peak current drain with SSB would be about the same but any ammeter showed an average drain of around 2.5 amps.

The only antenna I have available for 10 metres at the moment is an 80 metre half-wave fed with tuned feeders through an ATU. Not the best DX antenna in the world, but the first call using the HTX-100 produced an S6 report from a ZS in South Africa. I was to say the least rather surprised. After this I settled down to try out the various controls. The tuning steps are selected sequentially by pushing the step button. As each step is produced the step digit on the display is underlined. Memory programming is very simple, just tune to the required frequency and push the 'store' button and it's there. Your preferred mode can also be programmed with the frequency. ALL of the ten memories are fully tunable which is ever so much more useful than the fixed memories that many HF transceivers have these days. The RIT control has a range of +/- 1.3 kHz but there is no provision to switch it out. The control has a central detent but with no in/out switch and no status indicator you would need to be careful that it is not inadvertently left on. Unfortunately the frequency display does not show the offset either.

Receiver sensitivity appeared excellent and in general signals sounded clean with excellent AGC action. The speaker is mounted in the bottom cover of the rig and produces quite acceptable quality as long as it's facing you. Audio power output also appeared to be reasonably adequate. The receiver 'S' meter is calibrated at S3,5,7,9 and 'over'. I guess you could say that for mobile operation it is adequate enough. The 3.5mm headphone socket on the front panel is wired for single circuit plugs only so if you want to use your 'Walkman' headphones there will be sound on one side only. However, Tandy can sell you a stereo to mono adaptor.

Transmitted audio quality was rated as slightly thin and restricted but there appeared to plenty of talk power. The transmit audio gain is fixed with no front panel control but speaking about 5 or 6cm from

the microphone seemed about right. CW operation is semi break-in with side tone through the speaker which is level adjusted with the normal receiver audio gain control. After transmitting, the rig goes back to receive after about one second. I felt that this delay was a bit too long and you could miss the first couple of characters from the station you are working. There does not appear to be any adjustment on the delay.

The tuning control deserves mention. It is a click step type with about 22 steps per revolution. This is certainly rather unusual for an HF transceiver, but I found it very pleasant to use. It gives a tuning rate of about 2.2kHz per knob revolution when the 100Hz stepping rate is selected.

The noise blanker was most effective in eliminating low level electrical hash and car ignition noise. There was no sign of receiver cross modulation with the blanker switched in.

Up/down buttons are provided on the top of the microphone and these allow stepping through the memory channels when in memory mode and give transceiver tuning when in normal mode. With 100Hz steps selected, the scanning rate is about 1kHz per second which is just a bit too fast. Again no adjustment is provided. All in all, I found the HTX-100 a very pleasant and easy rig to use. All the controls did exactly what you would expect of them and the overall performance was very good.

The Instruction Manual

The instruction manual is just that. It tells how to set up and operate the rig in a clear and concise manner. The only technical information supplied is a circuit diagram which requires a magnifying glass or better eyes than mine to read. I don't know if a service manual is available from Tandy.

The HTX-100 Conclusions

The rig should sell for just on $500. However, it does offer a lot. Let's look at a few suggestions. First of course with the ten metre band on the up and up it offers wonderful possibilities for mobile DX. For the home station you would be able to run it continuously on the band waiting for openings. It also has possibilities as a driver for a VHF transverter for say, two metres SSB.

There is, though, one big disappointment with it and that is, there is no FM. This does seem strange as the UNIDEN clone available in the States does have FM. I can only assume that Tandy have done their research on the market and know what they are doing. But for what it is, it does an excellent job. Our thanks to Tandy Australia for the *loan* of the review transceiver.

ar

Book Review

Harold Hepburn VK3AFQ
4 Elizabeth St,
East Brighton 3187

ARRL Antenna Handbook

The 15th edition of the ARRL "Antenna Handbook" is probably the best value for money on the amateur market today.

The new "Handbook" brings together in one place most of the antenna information published by the ARRL in the past many decades. All of the older, seminal, designs are covered as well as the more modern concepts and modifications stemming from them.

Antennas come in all shapes and sizes - from a simple random wire to very complex arrays - but all perform to the same basic principles. The new "Handbook" clearly explains these principles and then goes on to help one choose an antenna suitable for a particular purpose or a particular environment - be it broad acre or cramped suburbia.

Hundreds of different antennas are described and each has information on how to build, install and adjust it. Included are wires, loops, quads, quagis, helicals, verticals, discones, beams, log aperiodics, DDRR's, slopers, broadband "receive only" antennas and a host of others including those for restricted spaces and/or portable operation.

Always looked upon as the most desirable repository of antenna lore, this latest ARRL edition is nearly twice the size of its predecessor, has thirty chapters, a comprehensive index and is about two-thirds the thickness of the current edition of the ARRL "Radio Amateurs Handbook".

Both HF and VHF enthusiasts are well catered for with "ready to go" systems for those not wishing to do the design work themselves. For those wishing to put in the extra work, or delve more deeply into the whys and wherefores of a particular antenna, there is plenty of design information and a comprehensive bibliography. Of particular interest is the expanded section on loop antennas (both receiving and transmitting), the section dealing with travelling wave antennas and the chapter covering space communications.

The individual chapters deal with safety (perhaps properly the very first chapter!) antenna fundamentals, transmission lines, matching and measuring techniques, the effect of the earth beneath the antenna and, indeed everything needed to put up the best possible radiator that the surrounding environment allows.

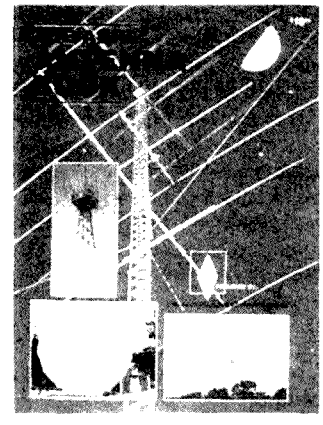
The writing style is clear and unambiguous, making even the most complex concepts easy to follow and understand - a virtue not necessarily shared by the original writings on which this compendium is based.

It matters not whether the reader is an old, old timer or a very recent licensee - the book has something of interest and/or novelty and can be considered a "must" for all amateurs.

Understandably most of the information is of American origin - more specifically material published in QST at some time or another - although there are a few references to material appearing in other American amateur publications. There is little or nothing accredited to European or Australian sources, in spite of a lot of excellent work done in these areas. This is a pity but by no means a drawback.

The review copy of the "Antenna Handbook" came from Stewart Electronic Components P/L, 44 Stafford Street, Huntingdale, 3166.

ar



FORWARD BIAS

John Moyle Field Day

Norman Gomm VK1GN
19 Krichauff St
Page ACT 2614

For this year's John Moyle, the Division operated VK1WI from 80 metres through to 23cm at Bull's Head in the Brindabella mountain range. The team consisted of Ted VK1AOP, John VK1ZAR, Phil VK1PJ, Ian VK1DI, Roy VK1KAJ, Peter (a non-ham), an XYL and yours truly.

The group arrived at the proposed site on the Saturday, to be greeted by a fine Brindabella mist which later developed into a steady drizzle which persisted for most of the weekend. Most of the morning and early afternoon were taken up with trying to throw little lead weights over tree branches. Amazingly, two dipoles and a G5RV eventually appeared above the ground without being too tangled up.

Phil's efforts to erect the 40 M dipole were a sight to be remembered. His words when it fell down were words to be forgotten.

A fifty foot mast for the VHF beams was erected with some difficulty and lots of advice. The low frequency people were quite impressed with the ability of the VHFers to get the beams all pointing in the same direction, but forgetting to allow enough loop for rotating the mast.

Power was provided from two petrol generators and batteries. Ted VK1AOP was kept busy working on the generators which seemed to have minds of their own and a frequent desire to be refuelled.

After skilfully monitoring the bands for activity, the team swung into action late Saturday afternoon. 40 and 80 metres were the most active of the HF bands, with 2 metres providing the most interest for those who are short on wavelength.

Over 500 contacts were made over the station's operating period and we won a bottle of port from an unnamed VK2 station. An enjoyable weekend.

Repeaters

In March the Ginni repeater went down. The fault was traced to the drive to the final stage and as a temporary measure the finals from the packet repeater have been temporarily transferred until repairs can be made.

ITU Day 1989

ITU Day is on 17 May 1989. At this stage venue and other details have not been finalised, but if you have any interest in the activity please contact Norm VK1GN on 548512.

Yass Social Day

Unfortunately the get-together between the Goulburn, Young, Wagga and Canberra amateurs planned for Sunday 2 April was washed out. There are plans to try again on another date. George VK1GB who was masterminding this one, has been asked for a legal opinion on the usefulness of weather forecasters.

WAWC

On Sunday May 21 the Division will be running a social event to replace the washed out Yass picnic. It will include a BBQ at 12 noon.

The feature event will be the WAWC Award (no prizes for guessing the title). It will be on 2 metre simplex and last for 1 hour, and is open to all comers.

Classes

Classes have commenced under the tutelage of Bob May VK1BM at the Ainslie Scout Hall. If you are interested please contact Bob on 57 2929 at home.

ar

5/8 WAVE

New Faces....

Jennifer Warrington VK5ANW
59 Albert St
Clarence Gardens 5039

It's nice to welcome new people into WIA Offices, although inevitably it means saying good-bye to others. In the past few months we have had three and by next month I shall hopefully be able to tell you of a few more.

Our new Disposals Officer is Barry Chammen VK5KXC and we wish Barry a long and happy association in the job. We would also like to thank Rob Gurr VK5RG for volunteering his services when we were in desperate need of help before we received Barry's offer. To Steve VK5AIM, who became disillusioned by what he considered Council's lack of action, we would still like to say thanks for the many hours that he did put in, over a period of several years, and at times went out of his way to help widows dispose of Deceased Estates, even to taking down towers for them.

Graham lies VK5AT has had to relinquish the job of WICEN Director, due to other commitments and had handed over the reins to Ian Watson VK5KIA. We're sorry to lose you Graham (not only for your 'dry' wit, and Joan's cups of coffee at Council meetings!) but I'm sure Ian is going to prove an excellent replacement. Even in non-WICEN activities his ability to help wherever needed has already been noticed.

Our third new face is Wayne Kingscott

VK5AC. Wayne has just taken over from Ron VK5AAC as Morse Practice Roster Co-ordinator. Ron has been doing this job as well as being one of the operators, for many years and we thank you for all the hours you have given, Ron.

And not so new faces

So many people give so many years of service to the Division that it is always hard to choose the recipient for the March ICS Award donated every quarter by John Moffat VK5MG of International Communications Systems. This year it was decided to present it to Emlyn Jones VK5AEJ for the 11 1/2 years that he has been the Saturday night operator on the Slow Morse Practice Panel. During his highly amusing acceptance speech, Emlyn informed us that he had only taken on the job for 3 weeks, and here he was 11 1/2 years later! (sounds like a familiar story). Thank you for staying on for all those years, Emlyn, and I know I speak for many others who have appreciated your sessions.

Diary Dates

Tues 2nd MayAnnual General Meeting 7.45 pm

Tues 23rd MayGeneral Meeting - "Ask the Council" (mainly to feed back to the General meeting information on the recent Clubs' and Federal Conventions) 7.45 pm

Tues 30th MayBuy and Sell night (no ESC, Publications, etc.) 7.30 pm.

ar

VK6 BULLETIN

New Council Elected

by John Sparkes VK6JX
83 Anemone Way
Mullaloo 6025

Well, VK6 has done it again – 9 nominations for 9 positions on Council! This saves a lot of time with elections, and minimises the heartbreak of missing out on the chance to put something back into the hobby we all love.

We have had 5 very longstanding, hard-working stalwarts stand down this year for various important reasons, and may I now thank them very sincerely, on behalf of all members of the VK6 Division, and Amateur Radio generally, for their much needed gifts of time and dedication over many years. This hobby really is better because of you, and we won't forget your contributions. They are:

Christine VK6ZLZ, immediate past president and Bookshop manager.

Cliff VK6LZ, immediate past treasurer and salvage sales officer.

Fred VK6PF, immediate past secretary – and a special vote of thanks to Fred for his tremendous efforts and dedication in the Wanneroo Radio Mast Case.

Gil VK6YL, representative of the WA Repeater Group.

Malcolm VK6LC, immediate past vice president and Slow Morse/Morse Workshop co-ordinator.

The depth of knowledge and experience represented by the above 5 people will be sorely missed by the council – but they'll only be a CQ away – as now they will all have a bit of time left for Amateur Radio!!

I would now like to introduce you briefly to your 1989/90 council with the aid of a quick "thumbnail sketch" on each officer. The "tar" used in these sketches had been provided by various "friendly" sources – so don't blame me if it ain't 100% accurate!

Alan VK6KWN (President) Alan was in radio in the Air Force over east for many years. He changed from VK6ZGA to KWN a fair while ago and he hasn't been president before, but has appeared on council for quite a few years previously. Affectionately known as "The Voice", Alan enjoys a good pepper steak, and designing 2 metre collinear antennas!

Harry VK6WZ (Vice President) Harry has been providing the excellent VK6 News service for some time now, receiving accolades not only locally, but from interstate for his racy style. He has been an amateur for longer than most can remember, and has a long history in media journalism. He lived in Albany for many years, and thus helps provide the most necessary "country members" viewpoint. Harry tells it the way he sees it – despite being legally blind, and he is tied up with various organisations assiting the disabled.

Neil VK6NE (Federal Councillor) Neil joined Telecom in NSW as a trainee technician in 1951 and his interest in Radio grew with the help of local amateurs. He got a Z call in 1956 when he moved to VK6, then a full call shortly after. Alan 6KWN helped to get Neil onto the VK6 council and he was secretary of this division for 13 years. Neil enjoys the diversity and challenge of the administrative side of our hobby and has been our Federal Councillor for the last 21 years. He believes we must now preserve the privileges we enjoy, and be prepared for new modes and techniques. Neil is also the Federal QSL Manager.

Bruce VK600 (Alternate Federal Councillor) Bruce was born in WA a long time ago and became an electrician. He then went to England and trained as a medical physicist. He obtained a G call, then VK600 when he returned to VK6 around 10 years ago. The only time Bruce's fine mind failed him was when he volunteered for Council, hence to be Divisional President for a number of years! He is a great asset as AFC due to his depth of knowledge, and articulate style. He loves electronics and refurbishing old equipment.

Peter VK6PK (immediate past Membership Secretary) Peter rocketed to fame 3 years ago as the Wanneroo Mast Case scapegoat. Peter is an ex–pom and held a G call before coming to Oz. His love is AMTOR, and he uses it to communicate with his amateur father and family back in England. Living was no longer "great" in Wanneroo, so Peter and family now reside in semi–rural Woorooloo where an antenna farm is rapidly growing!

John VK6JX (VK6 Bulletin) John has been a ham since age 14, (14 1/2 years) but the (then) DOC wouldn't let him on the air until he turned 15! (Novices weren't heard of in those days!) John is now active again and is currently secretary of the Northern Corridor Radio Group, the premier radio club in VK6. He sees participation by all amateurs in their local radio clubs as the best way of keeping AR alive into the future

– that, and a strong WIA assisted by 100% membership!

John VK6GU John was a Sergeant in the Police Radio Section for many years. He then entered the Flying Doctor Service based at Wyndham then Derby for a fair while. He has been an amateur for a long time, but he is new blood in the council. John's experiences will also assist with understanding country members' problems, and a warm welcome is extended to you, John.

Tom VK6TR Tom is another old timer with a country background who is fresh on council this year. He was in the Telecom Broadcasting area, before taking station at the Mt Barker TV Transmitter site for quite a few years. He is now living in Albany, but will time his trips to the "Smoke" to coincide with Council meetings. Welcome, Tom.

Glen 6ZGT Glen represents the "young" blood needed on council.

He has held his call for only a few months, and his main interests are computers and electronics. We welcome you Glen and hope that study commitments don't encroach too much on your enjoyment of this great hobby.

That's about it for this month. Once again, good luck to the new VK6 council.

ar

VK2 BULLETIN

Council Elections Soon

Tim Mills VK2ZTM
PO Box 1066
Parramatta 2124

Last month (April) ended up the month of cancellations. By the closing date for Council nominations, only four had been received. Council extended the closing date a month - to 12th April and it now appears there will be more than the required number so an election is needed. Because of the later closing, the Annual General Meeting will now be held on Saturday afternoon, the 27th May 1989 at Amateur Radio House, 109 Wigram Street, Parramatta at 2 pm. Formal notification of the AGM is given in a separate report.

Sydney's wet at the start of April forced the cancellation of the proposed Trash & Treasure at Dural. This event will be held now on May 28th at VK2WI, Dural at 2 pm. Details via the broadcasts.

The annual fireworks display is set down for Saturday evening the 3rd June at VK2WI, Dural. The Oxley Region annual field day will be held at Port Macquarie 10/11 June. The site has been changed this year to a surf club at Lighthouse Beach. Details from the Club at PO Box 712 Port Macquarie 2444.

It looks like a typo found its way into the new member list in April AR, with most being left out. (The list is updated on page 57. Ed.)

A reminder that the Division has a few copies of the last Australian Call Book. $8.50 to members plus $1.50 pack and post. If sent interstate make the post $2.00.

The State Government recently announced new pending law changes on the use of 'car phones' by the driver of a vehicle. From the first of July, only a hands free system is likely to be allowed for a driver using a mobile telephone. The announcement did not make the same reference to the use of a two way microphone, but the same conditions could apply. There is a $120 fine being considered. A few days later the Government made another announcement that computer 'hacking' would be outlawed with fines up to $50,000 and/or 10 years.

As part of the VK2 Historical records collection, Max Bowey VK2AFE has been appointed as the co-ordinator of Historical QSL cards, a similar appointment to that in the VK3 Division. Max may be contacted via the NSW office, preferably Friday when he is in the office.

The office hours are 11 am to 2pm Monday to Friday and 7 to 9pm Wednesday nights. (02) 689 2417.

WICEN exercises. Some coming events include 9th July - Amaroo; 13th August - City to Sirf; 2nd September - Batemans Bay rally; 14/15th October - Hawkesbury - Canoe Classic. Check with your local group for regional/local exercises.

New Members

A warm welcome is extended to the following who were in the April intake.

E E Alfred	Assoc	Bayview
D E Braidwood	Assoc	Kareela
J I Brewster	VK2KOJ	Glendale
B F Carroll	VK2DEQ	Orange
J N Cassidy	VK2BCV	Nambucca Heads
G J Cogar	VK2XNK	Wollombi
W Connelly	Assoc	Mortdale
P A Frost	Assoc	Kalgoorlie
P H Hodges	VK2JR	Guildford
G Harrison	Assoc	Haymarket
B E Hutchinson	VK2YBE	Tamworth
S J Lange	Assoc	Springwood
T I Manley	VK2XAS	Chipping Norton
M Peterson	VK2KGM	Lakemba
D J Pola	VK2JDP	Bidwell
P G Tevah	Assoc	Auburn

ar

NOVICE NOTES

A simple impedance bridge

Drew Diamond, VK3XU
"Nar Meian" Gatters Rd
WONGA PARK, 3115

The experimental amateur will often need to know the value of an impedance, such as that of an antenna, RF amplifier or other low power device. An SWR meter, in addition to poor sensitivity, can only show departure from match in terms of SWR, and gives no idea as to the value of the unknown impedance.

Here is a simple and cheap bridge which is useful for measuring resistive unknown impedances from about 10 ohms to 600 ohms over the 1.8 to 30MHz frequency range. The drive source for the bridge may be a very low power transmitter (about 10mW- more about this later), dip oscillator or signal generator if available.

Theory

This bridge is based upon the classic Wheatstone arrangement. See Fig. 1.

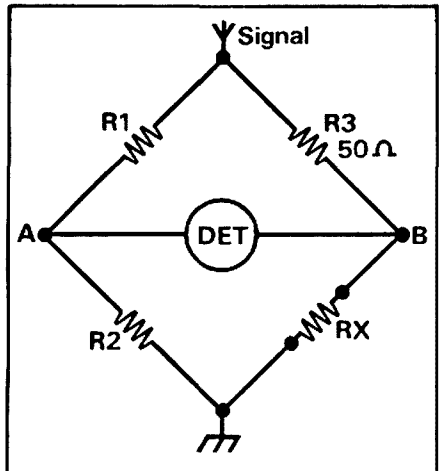


Fig 1

If R3 is made 50 ohms (the nominal input/output impedance of most radio equipment), and R1 and R2 are made equal in value, say 500 ohms each, then RX must be 50 ohms resistive for the bridge to be "balanced". i.e. there is no difference in potential between points A and B. Should RX depart from 50 ohms, then A and B will have different potentials, and the degree of departure will be indicated on the detector.

If R1 and R2 are combined in one potentiometer, our bridge will now look like this. See Fig. 2.

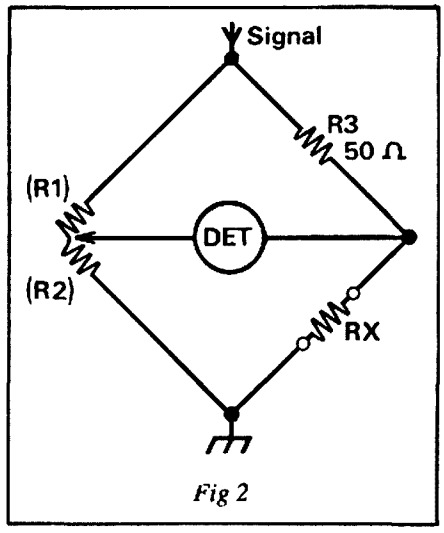


Fig 2

If RX is other than 50 ohms, it should be possible to balance the bridge with adjustment of the potentiometer. For example; if RX is 150 ohms, then (R1) would be 250 ohms, and (R2) would be 750 ohms. If the potentiometer has been previously calibrated in terms of resistance values, then the value of the unknown can be read or interpolated from the scale. A 1000 ohm potentiometer was chosen for this project, as these are not hard to buy, and the effects of stray capacitance within the potentiometer should not be significant - at least to 30MHz anyway.

The final practical circuit is shown in Fig. 3. R1 is a 51 ohm metal film 1/4W resistor; the nearest preferred value to 50 ohms. For clarity, a resistor is shown connected to the RX connector. Components C1, R3, C2 and M form the detector circuit. For sensitivity, D1 must be a germanium OA91 or similar. C1 and C2 are 0.01uF disc ceramic.

Construction

The bridge should be housed in a metal box. There are a number of ready made boxes available off the shelf. However, there is no need to go to great trouble or expense. The photos show my own bridge built into a tobacco tin measuring 9 x 5 x 2cm. Layout is not very critical, but signal carrying connections must be kept as short as practicable. The meter should have a sensitivity of 250uA or less, preferably 100uA if available. There are small cheap meters around marked 'signal' or 'tuning'. These are generally 200 or 250uA fsd, which is adequate for this application.

Calibration

The bridge may be driven from a dip oscillator by coupling the signal via a two-turn link at the signal connector, or from a signal generator which can deliver about 10mW.

The output of a transmitter must not be directly applied to the bridge unless the power has been attenuated to an appropriate level. A 20dB attenuator would permit 1W from a transmitter to deliver 10mW to the bridge input. A 20dB attenuator is shown in Fig. 4.

Obtain a range of metal film or cracked carbon resistors, from about 10 to 560 or 620 ohms, including a 51 ohm (nearest preferred value to 50 ohms). With about 10mW applied to the signal input, and 51 ohms at RX; adjust R2 for best null. Mark this point upon a card fitted under the pot nut. Repeat for as many resistance values as desired. Points at 10, 27, 50, 100, 270

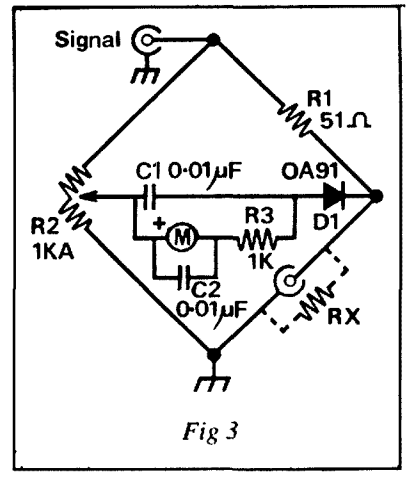


Fig 3

and 560 ohms are suggested.

Uses

The main application would be for antenna impedance measurements. With an appropriate frequency applied, the antenna

To Page 35

Report of the Fifty Third Annual Convention of the WIA

Bill Rice VK3ABP
Brenda Edmonds VK3KT

The convention, held at the Brighton Savoy Hotel Motel from 23rd to 25th April 1989, was opened at 9 am by the Federal President Peter Gamble, VK3YRP. For the first time the convention was recorded by video cameras and accompanying sound equipment.

In Peter's opening remarks he referred to an article by Jamieson Rowe, VK2ZLO, in a recent issue of "Electronics Australia", querying whether there is really much difference between amateurs and CBers! It was suggested that the activities of this Convention will clarify any differences.

The formal business of receiving and adopting last year's minutes, profit and loss account and auditors'report was rapidly completed. Twenty eight reports from office bearers, co-ordinators and Divisions were then received, discussed and adopted.

Highlights of Reports

In the President's Report, Peter Gamble, VK3YRP, referred to the administrative changes in the Executive office since the 1988 Convention. This has resulted in the WIA being more rapidly responsive to members' needs, but at the cost of many hours of hard work by the General Manager and his staff. Last year's election of several more interstate members to Executive had resulted in benefits but not without cost, particularly for transport. He also foreshadowed discussions on corporate planning, and liaison with IARU and DOTC.

David Wardlaw, VK3ADW, IARU Liaison Officer, summarised the year's activities on the International scene. One highlight was the election of Michael Owen, VK3KI, (now also G3ZML), to the position of Vice-President of the IARU. The Convention moved that a congratulatory letter be sent to Michael. Bill Roper, VK3ARZ, briefly introduced the Treasurer's report, the full implications of which would be discussed later in the Convention.

The Editor's Publications Committee report initiated brief debate on possible WIA/NZART publishing liaison, and also the absence of detailed Publications Committee terms of reference. The need for either has been overshadowed by rapidly changing events in both countries.

Ron Henderson, VK1RH, in the FTAC report referred to the resignation of Ray Roche, VK1ZJR, as FTAC chairman in February, and announced that Rob Milliken, VK1KRM, had accepted the position for the time being.

Standards, WICEN and Intruder Watch reports raised few comments, but Ron Henderson stated his intention to resign as WICEN Co-ordinator in the near future, thus there is need for a replacement.

Other reports presented were from the Contest, Awards and QSL Managers, the Historian, Videotape, Broadcast tape, International Travel Host Exchange and EMC Co-ordinators.

Brenda Edmonds, VK3KT, received a number of questions about examination devolvemen, in particular after presenting her Education co-ordinator's report.

Commenting on the ALARA report, David Jerome, VK4YAN, mentioned that 65 % of ALARA members are also WIA members, which is a gratifyingly high proportion.

VK3ADW presented the AMSAT report on behalf of Graham Ratcliff, VK5AGR, as both of them had represented the WIA at the AMSAT Colloquium in England last year.

More and more it is apparent that even the amateur satellite programs call for large sums of money, which must come from those who use the service.

Bill Roper, presenting the General Manager and Secretary's report, summarised the year in four words 'exciting, challenging, exhausting and frustrating'. George Brzostowski, VK1GB, moved an impromptu vote of thanks to Bill and the Assistant General Manager, Ross Burstal, VK3CRB, at the conclusion of Bill's report. This was carried with acclamation.

George, a little later, presented the report by the Future of Amateur Radio Working Party (FARWP). He noted that this group has progressed rather less rapidly this year than in its first year. There was considerable discussion on such things as the possibility of a "no-code" Novice licence, and the commercial phasing out of morse code.

Reports were then received from all Divisions. The only one which provoked much discussion was from VK6, which raised the sensitive topic of Local Government permission for antenna masts or towers.

Agenda Items

Before going on to discuss the agenda items the President, Peter Gamble, presented the Remembrance Day Contest Trophy to David Jerome on behalf of VK4, the winning Division in 1988.

The remainder of Sunday afternoon was devoted to discussion of many of the agenda items. More or less in the order of presentation, these were on the subjects of packet radio planning, method of recognising 17th May as World ITU day, changeover of 28 MHz beacons to fewer channels and time sharing mode, and a proposal to employ only the initials "WIA" rather than the full name of the Wireless Institute of Australia in all correspondence and promotional materials.

A lengthy motion from VK1 recommended the application of commercial principles and engineering practices to allmatters associated with repeater planning, siting and construction. This was carried unanimously.

Also there was unanimous support for seeking a frequency allocation for amateur TV purposes to replace the 50 cm band which is about to be resumed progressively for use by the Broadcast Service.

There was extensive discussion of the procedures for WIA provision of books and related services to members. The innovation last year of devolving the Magpubs operation to the VK2 Division was not entirely successful. Some alternative arrangements have been established, and are showing promise.

An interesting proposal by VK5 was that JOTA activities, which have successfully used AUSSAT for the last two years, should be extended even further to the use of the RFDS outback radio network, thus enabling many more isolated young people to participate. This motion was also carried. A suitable foundation co-ordinator was nominated by VK5 Division.

After discussion, it was agreed to integrate and rationalise the various Divisional and Federal methods of recognising service to the WIA, to allow for acknowledgement of volunteer efforts.

Agenda items which were referred to working parties included those on the 2m beacon sub-band and extended repeater

1989 WIA CONVENTION

1989 WIA CONVENTION

All photographs courtesy of John Friend, VK3ZAB.

1. VK1 delegates. (L to R) : Alex Johnston, VK1ZDX; Rob Milliken, VK1KRM, Kevin Olds, VK1OK.
2. VK2 delegates. (L to R) : Roger Henley, VK2ZIG; Terry Ryeland, VK2UX; Tim Mills, VK2ZTM.
3. VK3 delegates. (L to R) : Peter Mill, VK3ZPP, Barry Wilton, VK3XV.
4. VK4 delegates. (L to R) : Ross Mutzelberg, VK4IY; David Jerome, VK4YAN; Murray Kelly, VK4AOK.
5. VK5 delegates. (L to R) : Alan Mallabone, VK5NNM, Rowland Bruce, VK5OU; Bill Wardrop, VK5AWM.
6. VK6 delegates, (L to R) : Bruce Hedland-Thomas, VK6OO; Neil Penfold, VK6NE.
7. VK7 delegates, (L to R) : Bill Bower, VK7AV; Joe Gelston, VK7JG.
8. (L to R) : General Manager, Bill Roper, VK3ARZ; Assistant G.M., Ross Burstal, VK3CRB.
9. (L to R) . Federal President, Peter Gamble, VK3YRP; Vice-Chairman, Ron Henderson, VK1RH.
10. (L to R) : Editor AR, Bill Rice, VK3ABP; IARU Liaison Officer, Daivd Wardlaw, VK3ADW.
11. (L to R) : Executive Members, Kathy Gluyas, VK3XBA; Bill Wardrop, VK5AWM.
12. (L to R) : Executive Members, Brenda Edmonds, VK3KT; George Brzostowski, VK1GB.
13. DOTC visitors, John Higginbottom, Alan Jordan, Colin Langtry
14. Delegates at work. VK1 to VK4.
15. Delegates at work. VK4 to VK7.
16. General view, including President's table.
17. Peter Gamble presents the Remembrance Day Trophy to Daivd Jerome (VK4 Federal Councillor).
18. A smile of Divisional pride! by VK4.

sub-band, also band plans in general, celebration of the WIA 80th birthday, "Family Membership", three motions on membership grades, advertising commissions, recruitment incentives and contest guidelines.

A very important item debated at length, on Sunday and Monday, by the Working Party responsible for financial matters was the proposal that uniform membership conditions, including subscriptions, should apply to all Divisions. Agreement was eventually reached (see box).

Corporate Plan

Several hours on Sunday night were occupied by a presentation on modern management procedures and their relevance to the future of the WIA, given jointly by Peter Gamble and Ron Henderson. This began with the article "Why Corporate Plan?" on p 29 of April AR, and extended the theme to a consideration of organisational shortcomings, possible remedies, membership statistics and financial constraints, thereby providing a foundation for Working Party discussion.

Agenda Items Continued

The earlier part of Monday morning involved discussion of issues to be raised with the DOTC representatives scheduled to visit the Convention before lunch. The remaining time before their arrival was occupied, among other things, by the Federal Awards Manager, Ken Gott, VK3AJU with his proposal for an Antarctic Award. One of the other items was a motion to seek creation of a VHF Novice licence grade involving no Morse exam. Another was towards preparation for and funding of amateur representation at the next WARC and similar planning conferences.

DOTC Visitors

The three representatives from DOTC, two of whom spoke to the Convention, were Alan Jordan, (Manager, Regulatory), John Higginbottom, (Director, Interference Task Force) and Colin Langtry, (Senior Engineer, Spectrum Planning).

Colin discussed the evolution of Departmental organisation to satisfy the spectrum plan, band plan and frequency assignment sections of the Radiocommunications Act. Currently this includes planning for Preparatory Group, ITU Plenipotentiary, and ultimately WARC meetings. The emphasis at WARC is expected to be on frequencies between 1 and 3 GHz, and he specifically indicated that where amateur bands are involved, the WIA will be invited to participate. Colin also referred to new modes and systems being introduced by commercial users in the VHF/UHF spectrum, such as amplitude-compandored SSB, paging systems, spread-spectrum, multipoint distribution, pay television and electronic news gathering.

John Higginbottom then covered the new basis of interference investigation procedure by the Department and the intention to introduce a fee of $60 for diagnostic service or advice. This will be introduced later in 1989 after the publication of a descriptive booklet aimed at helping householders diagnose their own interference problems and take appropriate action, such as calling the TV serviceman or the power supply authority. DOTC will provide diagnostic advice to these groups if required. The importance of appliance immunity would be emphasised by the Department when applicable.

Although Alan Jordan did not speak formally, he was available for informal discussion both during and after the lunch break.

Executive Restructure

Resulting from the Corporate Plan discussions on management and organisational shortcomings it was proposed that Executive should be restructured to make it more fairly representative of all Divisions and also able to invoke more rapid guidance by Council. The proposal was that Executive should be expanded from a President plus nine members to a President plus twelve members, including all seven Federal Councillors. This expanded Executive was to meet quarterly, thus eliminating the need for an annual Federal Convention. After a short debate the motion was carried unanimously.

Final Day

Minor items which were considered on Tuesday morning (Anzac Day) were updated terms of reference for the Publications Committee, authorisation to establish a fund to support WIA participation in international conferences, recommendations regarding modifications where necessary to existing band plans and changes to the Federal Contest Manager's terms of reference. Working party recommendations were accepted on the 80th anniversary celebrations and the future of Mag Pubs.

By far the greatest amount of time and discussion throughout the Convention was on the topic of uniformity of subscription fees, their level, and the pros and cons of providing concessional rates to any group of members. This was further debated on Tuesday, in spite of prior agreement, as several details needed clarification.

Election of Office Bearers

Provisional appointments to the newly structured Executive, including Divisional Councillors, were as follows:

*	Federal Pres.	Peter Gamble VK3YRP
*	Vice Chairman	Ron Henderson VK1RH
*	Federal Treas.	Kathy Gluyas VK3XBA
*	Editor	Bill Rice VK3ABP
*	ACT Division	Kevin Olds VK1OK
*	NSW Division	to be advised
*	Vic Division	Peter Mill VK3ZPP
*	Old Division	David Jerome VK4YAN
*	SA Division	Bill Wardrop VK5AWM
*	WA Division	Neil Penfold VK6NE
*	Tas Division	Joe Gelston VK7JG
*	George Brzostowski	VK1GB
*	Brenda Edmonds	VK3KT

Some of these nominations are subject to amendment of the Articles of Association to increase the number of directors of the company from 9 to 12.

The last items of formal business were the re-appointment of the auditors, Touche Ross and Co., and the fixing of meeting dates.

The closing of the Convention, which was video-recorded, included a very brief address by each of the Federal Councillors or delegates, and a statement of achievement by the President. It was made clear that this convention was almost certainly the last one of its type to be held.

CHANGES TO MEMBERSHIP ARRANGEMENTS.

In order to compensate for previous subscription increases not having kept pace with CPI changes in recent years, a complete review of membership subscription structure was seen to be necessary.

Conclusions finally reached and accepted were:-

* that subscriptions should be the same In all Divisions;

* that Council at its discretion may grant a concession of around 20 % to financially disadvantaged members; * that the recommended subscription rate from 1st July 1989 be set at a Divisional component of $23 (subject to Divisional ratification) and a Federal component of $47; * that subscription rates be adjusted annually in accordance with the CPI, such adjustment to be made on the 1st July each year using the statistics for the March quarter.

From Page 30

is connected to RX and R2 adjusted for best null. An antenna which presents 50 ohms resistive at the equipment end of the feedline will naturally read 50 ohms. If a deep null is not obtained, or other than 50 ohms read, the frequency can be experimentally changed up or down to determine what adjustment must be made to the antenna to obtain the correct impedance.

To check the characteristic impedance (Zo) of a length of coax line (3m or more); connect one end to RX, and terminate the far end of the line with a non-inductive resistor of what is supposed to be the line impedance, e.g. 51 ohms. Set the signal frequency to say 3.5MHz. The bridge should balance at 50 ohms. Now change the frequency to 7MHz, then 14MHz. The bridge should balance perfectly at all frequencies if the line is terminated in its Zo.

The great advantage with this bridge is that only a small signal power is delivered to the load at RX, so when antenna measurements are being made, only a very small signal is put to air. In addition, when measuring the input impedance of a low power device, such as an amplifier, it is unlikely that any damage will be caused to the device under test.

References and Further Reading

1. Solid State Design - ARRL.
2. Radio Handbook - Wm. Orr.

ar

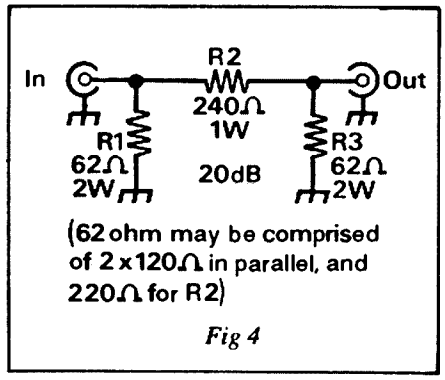
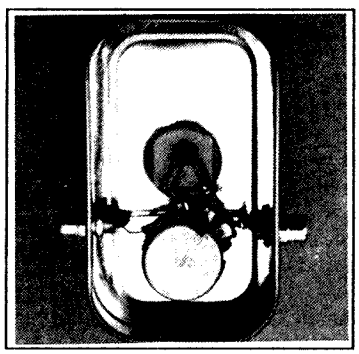
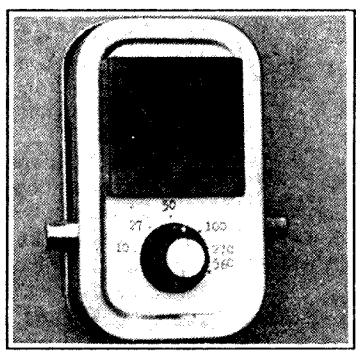


Fig 4



Internal construction



Front Panel

CONTESTS

Novice and Sprints Rules – Field Day and Ross Hull results

Federal Contest Manager
Frank Beech VK7BC
37 Nobelius Drive
Legana, 7277

Contest Calendar

MAY

13 — 14 USSR CQ M Contest
27 — 28 LABRE World Telecom Day Contest (unconfirmed).

JUNE

17 — 18 WIA, Australian Novice Contes (Rules this issue).

JULY

1 — 2 Venezuelan Independance Day Contest (phone section)
29 — 30 Venezuelan Independance Day Contest (CW section)
1 Adelaide Hills ARS Inc. Australasian Sprint (CW) rules this issue.
8 Adelaide Hills ARS Inc. Australasian sprint (phone) rules this issue.

REMEMBRANCE DAY CONTEST 1988

Mr. Murphy called at my QTH during the typing of the 1988 results and of course it was only after the results had been published that his handiwork became apparent. My apologies must go to Barry Mitchell VK6AVO, the top scoring HF phone station in the Western Australian division, who I listed as VK6AYO. Your certificate is on its way.

In next month's VK Novice Contest you will notice two small changes to the rules that should encourage more activity from Novice stations, I have made these changes to try and stem the steady fall in participation that has occurred over the past few years.

The first is to allow REPEAT contacts after a 12 hour period, on each band, and the second is to reintroduce certificates to the top scoring Novice station in each call area. Please check your entries with care, and enjoy the contest.

Next month I will detail the rules for the Venezuelan contest. In addition to the usual certificates for top scorers, certificates will be forwarded to those participants who, make more than 10% of the score reached by the winner in the same class. This will encourage more of use to send the entry off to YV land.

VK NOVICE CONTEST 1989 RULES

CONTEST PERIOD: From 0800 UTC June 17th 1989 until 0800 UTC June 18th 1989.

OBJECTS OF THE CONTEST: To encourage contest operation of amateur radio stations in Australia, New Zealand and Papua New Guinea, with special emphasis on contacts with Novice and radio club

stations.

STATIONS ELIGIBLE: Only stations in VK, ZL and P2 call areas may enter. No stations outside these call areas are permitted to be worked or entered in a log for the purpose of this contest. Except for club stations, no multi operator working is allowed. Stations in the same call area may contact each other as well as stations in other call areas.

CONTEST BANDS: All operations must be confined to within the Novice frequency sub band allocations in the 10, 15, and 80 metre bands. No cross band operation is permitted. Novice allocations VK HF; 3.525-3.625 MHz, 21.125-21.200 MHz, and 28.100-28.600 MHz.

MODES OF OPERATION: Only phone or CW may be used. In the CW mode, operation must not exceed 15 words per minute.

CONTEST SECTIONS: Section (a) Phone - Novice/Full call.

Section (b) CW - Novice/Full call.

Section (c) SWL.

SCORING: For contacts with a novice station - Five points.

For contacts with a club station - Ten points.

For contacts with a Full call station - Two points.

Listener section;

For Novice to Novice contacts - Five points.

For Novice to Full call stations - Two points.

For Full call to Full Call stations - Two points

For any contact with a radio club - Ten points.

CALL PROCEDURE: For phone stations, call CQ NOVICE CONTEST.

For CW stations, call CQ N.

CONTACTS: Any station may be contacted TWICE per band, provided a period of at least 12 hours has passed after the first contact.

NUMBER EXCHANGE: Section (a), On phone, stations must exchange a serial number comprising an RS report followed by three figures. The figures must commence at 001 for the first contact and increase by "one" for each further contact.

Section (b), For CW stations, as for phone but the report is an RST followed by the serial number.

LOG ENTRIES: Each log should be laid out such as to provide columns in the order given as follows;

Date/time UTC. Band. Mode. Station contacted. Report and serial number sent. Report and serial number received. Claimed score. Each log sheet must be endorsed at the top "VK Novice contest 1989".

Total claimed score for each page must be shown at the bottom of the page.

FRONT SHEET: A front sheet must be attached to the contest log and must carry the following information:

Name and address of operator. Call sign. Station location. Section entered. Score.

DECLARATION: The front sheet must also carry a declaration which states:

I hereby certify that I have operated within the terms of my licence, and the rules and spirit of the contest... This declaration must be followed by the signature of the operator.. with date.

In the case of a club station, the entry must be signed by a responsible officer of the club committee or a licensed operator delegated by the committee to do so. In the case of multi operator stations, the call signs of participating operators must also be shown on the front sheet.

REGULATIONS: All stations participating in the contest must be operated within the terms of the station licence and applicable regulation.

ENTRIES TO: Logs are to be forwarded to "The Federal contests manager". Entries must be posted so as to reach the contest manager no later than July 20th 1989. The address for entries is: Federal contests manager, Frank Beech VK7BC, 37 Nobelius Drive, Legana, Tasmania 7277. Envelopes are to be endorsed "Novice contest".

CERTIFICATES: Certificates will be awarded to the top scoring stations in each section at the discretion of the Federal contest manager.

Certificates will also be awarded to the top scoring Novice station in each call area.

And to any other entrant where meritorious operation has been carried out in the opinion of the contest manager.

TROPHY: The KEITH HOWARD TROPHY VK2AKX will be awarded to the Novice entry with the highest aggregate score from both the Phone and CW sections of the contest. This trophy is a perpetual trophy and will be held by the winner until such time as it is awarded to a winner of a subsequent Novice contest. Should two or more aggregate scores be equal, a decision will be based on a count back as to the greater number of novice stations listed in each log entry. Should such a count also be equal, the log containing the greatest number of CW contacts will be preferred. In the event of a further tie, under these rules the logs will be placed before a committee which will exercise a vote as to the neatest and most meritorious entry.

OPERATOR: A person may only submit one contest log per mode.

Logs for entries where an operator uses more than one call sign whilst operating in this contest will not be accepted.

DISQUALIFICATION: The contest disqualification criteria as published annually in "Amateur Radio" will apply. Any station observed during the contest as constantly departing from the generally accepted code of operating ethics, may also be disqualified.

Note. See August issue of "Amateur Radio" for the disqualification criteria. Note also, "Contacts" now twice per band.

AUSTRALASIAN SPRINTS CW AND PHONE JULY 1989

The Adelaide Hills Amateur Radio Society Inc is again pleased to announce the Fourth Annual Australasian Sprints, to be held during July 1989.

These one hour duration contests for CW and PHONE Operators on 80 metres were previously known as the National Sprints and under the new name of the Australasian Sprints invite the participation of all Operators in VK, ZL and P2 call areas. As in the 1988 Contest, a section is open to SWLs. The Australasian Sprints are endorsed and co-sponsored by the South Australian/Northern Territory Division of the Wireless Institute of Australia and the Adelaide Hills Amateur Radio Society, and Certificates and Trophies will be awarded to area winners and overall winners.

A simple reason is behind the concept of the Australasian Sprints. Most contests are long, rules are complex, and participation, except for serious contesters, diminishes yearly thus discouraging many operators from participating.

The Australasian Sprints, being only one hour duration, are short, sharp and simple, providing a busy hour of often frantic operation thereby providing a significant operating contest challenge to the general amateur.

OBJECT OF THE SPRINTS:

The Operator's basic goal in the Sprints is to make (and SWLs to hear and log) as many contacts as possible without duplication during an hour of operation on a single band. Any contact with a VK, ZL or P2 station on 80 metres during the contest period can be counted, but a station may be claimed only once.

ELIGIBILITY: The Australasian Sprints are open to all licensed amateurs, or group of amateurs, using a single call sign, e.g. club stations, or, anywhere in the VK, ZL and P2 call areas.

CONTEST PERIOD: 1200 to 1300 UTC, July 1, 1989 (CW only)

1200 to 1300 UTC, July 8, 1989 (Phone only any, any legal mode)

FREQUENCIES: For the CW Sprint, frequencies between 3.500 and 3.700 MHz may be used.

For the Phone Sprint, frequencies between 3.535 and 3.700 MHz may be used.

CONTEST CALL: CQ Sprint or CQ test or CQ Contest.
EXCHANGES: Minimum exchange for a valid contact will consist of a signal report and a three digit serial number. The serial number may start at any number between 001 and 999 but will revert to 001 if 999 has been reached.
LOGS: Contest logs must show for each contact the time (UTC), callsign of station worked, (both callsigns for SWLs), report/serial number given and report/serial number received. Each log must be accompanied by a cover sheet showing the name and date of the Sprint (CW or Phone), the total number of contacts claimed, and a statement that the Operator(s) has abided by the rules and spirit of the contest. This cover sheet is to be signed by the operator(s) and personal callsigns added where multi-operators enter using a club callsign. Any special conditions such as QRP or mobile operation should be mentioned in the statement. Any comments you wish to make will be welcomed by the Sponsors.

Logs are to be in the hands of the AHARS no later than Friday August 11th, P.O. Box 401 Blackwood SA 5051, Attention Contest Manager, and the envelope is to be endorsed CW, Phone, or SWL Sprint.
AWARDS: Certificates will be awarded to the highest scorer in each VK, ZL and P2 call area for both the CW and Phone Sprints. Trophies will be awarded to the outright winner of each section CW and Phone Sprint. Certificates may be awarded to other operators whose performance was, in the opinion of the Sponsors, exemplary.
SWLs: Certificates will be awarded to the highest scorer listener log in the VK, ZL and P2 call areas for both the CW and Phone Sprints.

Any entry which is clearly in violation of the rules or spirit of this Contest or which contains an excessive number of claimed duplicate contacts (this does not refer to duplicates which have been indicated as such and are not claimed), may be disqualified. The decision of the Adelaide Hills Amateur Radio Society Inc. in respect the interpretation of these rules, granting of awards, and disqualification will be final.

This Contest is recommended as a good Saturday evening entertainment, and has a growing response each year. If you have never entered a Contest before, here is a good place to start. Be in it and enjoy the fun. ar

Trial national VHF/UHF field day contest January 1989. Results

Section (A) 12 hour period
Category (a) Single operator Single band.

VK4NEF	QG61	936 points	2m
VK2EMU	QF55	32 points	2m

Category (d) Home station.

VK5NC	QF02	702 points	6/3. 144/8. 432/5
VK5NY	PF94	570 points	6/12. 144/14. 432/6.
VK4KZK	QG62	256 points	144/16. 432/8.

Section (B) 24 hours
Category (a) Single operator single band.

VK3BBB	QF31	1260 points.	144/51
VK3YSY	QF33	1080 points	144/
VK2EZF	QF56	44 points	144/
VK3ANP	QF33	10 points	144/

Category (b) Single operator all band.

VK3XEX	QF12	5904 points	6/43. 144/26. 432/6
VK3ZJC	QF32	4880 points	6/8. 144/26. 432/13. 1296/9.
VK3XRS	QF31	3336 points	432/23. 1296/15
VK4AIZ	QF53	310 points	144/17. 432/6.

Category (c) Multi operator.

VK3ATL	QF11	25, 632 points	6/66. 144/68. 432/41.
VK5BW	PF94	13, 884 points	6/44. 144/53. 432/27.
VK4IZ	QG63	5824 points	6/39. 144/96. 432/21.

Category (d) Home station all band.

VK5LP	PF94	450 points	6/10. 144/11. 432/12
VK4IS	QG63	260 points	144/26. 432/13.

Please note, the Maidenhead locator indicators following the callsigns are those used during the period of the contest and may differ from the indicators normally used by the station concerned.

The response to the contest has been satisfactory when the lack of advanced publicity is taken into account, I must take the blame for this, if the contest is to continue the necessary advanced publicity will be arranged and with a little bit of luck should appear in at least three magazines. Now for some comments from those amateurs who participated.

..I operated from Mt Baw Baw (north of Moe) on all four bands. Unfortunately, I wasn't feeling very well and made a late start and an early finish, and I didn't work very hard at it when I was on! Ah well, that's the way it goes. But still a most enjoyable field day, although I did learn that I need to upgrade the sleeping comfort in my 7 seater van. To the best of my knowledge, I was the only VK3 station to use all four bands. Six metres was very quiet — hardly worth the effort, with only one other portable station heard. The higher bands were quite active, especially 1296, with a total of about 10 stations active, of which 3 were portable. This was very encouraging, and hopefully will pave the way for 1296 to be reinstated in the Ross Hull contest. The scoring system was good, even though it still used the locator squares. Having to work each square on each band created more activity and the band multipliers helped too. It was a definite improvement on the Ross Hull rules. So all in all I feel it was most successful, and there should be at least one more of them. A good time would be Easter, although it would clash with the John Moyle field day. I just wonder though whether it would be better to convert the John Moyle field day to HF only (it's pretty close to that now), and run a VHF/UHF field day as well at the same time. It would also be good to keep it synchronised with the NZART field day as you've done this year. Speaking of NZART, if they decide to run a field day again in December as they did last year, I'd very much like to see one of ours occurring at the same time. Thanks again for an enjoyable field day, and I hope you get a mountain of logs...VK3ZJC.

It was suggested that the starting point might be within a period in which the best

24 hours score could be entered. This would save the VK6's starting at 10am AESST. Because of the extreme temperature last weekend (42 in the tent) consideration might be given to holding the event in mid-December, which might also result in improved Es propagation. We felt the system of calculating the multiplying factor might be improved if the multipliers were kept to the band in which they are worked, and not the overall score. Under the present rules if a grid square is worked on each band ie 6m, 2m, 70cm, 21cm, then it effectictively counts as 4 multipliers. We included satellite operation during the weekend and secured a few contacts. We believe this is within the rules because they are not terrestrial repeaters, and not really cross band, as all operators use the same up link band. We were unanimous in our belief that the contest was well worth participating in, and not only promoted the use of VHF/UHF bands but also fellowship between members of our club ...VK3YXK for Geelong ARC.

Many thanks for organising the VHF/UHF National Field Day. It was a real pleasure to operate at long last in a National VHF/UHF Field Day. Although temperatures around Adelaide were over 40°C on Saturday it did not deter us from the contest, although we believe it did deter others from the field. Also, I was asked frequently "what field day?", or "is this the John Moyle?" or "is the contest sponsored by the WIA?" This illustrates to me my thoughts over the past 10 years or so, noting the very low priority given to national WIA contests in both "Amateur Radio Magazine" as well as the WIA News Broadcasts. There is absolutely no differentiation between these and other "insignificant contests" eg Bulgarian Contest. It seems the days are long gone where a WIA contest, eg the John Moyle Field Day is proudly announced on a page devoted ENTIRELY to that contest, rather than being hidden amongst all sorts of odds and sods. Sorry, but there will not be a log from me in this year's John Moyle, two field days within 6 weeks is simply beyond my capacity, and certainly that of the XYL...VK5BW.

It was unfortunate conditions were so poor due to the very hot weather. This particularly affected the 144 and 432 contacts. I did not hear any stations from VK3 although I tried. The following weekend there were good tropo conditions, so you can't win! I hope you received the support you were looking for in the contest. There did not seem a great deal of enthusiasm in VK5 but then it was so hot one could not expect people to swelter in a caravan or tent. However, the heat did produce some Es contacts on six metres which was a help...VK5LP.

I expect my total claimed score will be one of the smallest submitted. However, I'm still submitting my entry because I believe that a VHF/UHF portable contest like this one is a great idea and will be better supported in future, when through publkicity and growth of activity, more amateurs will find it interesting and challenging. At least that's what I hope! The publicity shortage is added to a generally and disappointingly slack local VHF scene. VHF/UHF DXing can be so much more than keying up distant repeaters, yet only a few seem to be interested in more than that. The net channel mentality and commonly accepted emetic operating practice are quite deterrent to the serious type of operator. To me, it's all evidence of the slow ageing and deterioration of our hobby as a whole, and our society at the same time. Thanks for initiating this new contest. You've got my future support, and I will be doing what I can to encourage other local amateurs to try this beaut experience of VHF/UHF portable hill top operating for themselves...VK4AIZ.

Frank, just a few points that we thought might improve the contest.

1. Repeat contacts each hour as the contest tended to be very slow and to become boring.

2. Some clarification as to what modes are to be used and whether separate logs for each band and mode are wanted.

3. Multiplying for greater distance as per rules of John Moyle contest (FCM). Apart from that, it would have been good to see more field portable stations working the contest. We would like to thank VK4NEF and VK4AIZ who were about the only three stations, apart from ourselves, working the contest....VK4YZ for Redcliff RC.

I enjoyed the contest very much, I had to work on Sunday so only operated in the 12 hour section, spent a couple of weeks manufacturing a hinged base plate for the mast and using a 3 to 1 pulley system to pivot the mast to vertical. My beam was at 10 metres and 2m vertical at 12 metres. Beam was 12 element on a 6 metre boom. A few of us in SE Queensland reckon that FCM's and WICEN exercise planners organise activities on weekends that it rains, it's half the fun of setting up whilst it rains and also dropping the antennas and packing up whilst it rains. Shhh! FCM. I did not hear any activity during the Ross Hull contest up here in Brisbane, it might be run over too many days. This national VHF/UHF field day contest over 12/24 hours portable is a very good idea, but maybe not on a long weekend though. I hope to compete again next year....VK4NEF.

Where was everyone? I hope the response from the rest of the country was better. Despite this I am looking forward to next year's VHF field day already...VK2EZF.

The top club station is the GEELONG ARC VK3ATL/P with 25,632 points.

Certificates will be forwarded to the remainder indicating score and Field position.

I must thank all those who participated in the trial contest, your support and comments will be sufficient encouragement for me to endeavour to place this before federal council with the hope that it can become an annual event...FCM.

ar

Ross Hull Memorial Contest 1988 Results

Station	Contacts	Squares Worked	Total Score	Locator Square
VK5NC	267	52x50	2867	QF02
VK3XRS	290	50x50	2790	QF32
FK1TS	60	32x50	1660	RG37
VK3AOS	67	24x50	1267	QF12
VK4KHQ	38	21x50	1088	PG99
VK3AUG	102	15x50	852	QF21
JH1WHS	43	14x50	743	PF94
VK3DLM	108	11x50	658	QF21
VK3VF	26	9x50	476	QF21
ZL1TZA	13	9x50	463	RF72
VK4IY	8	5x50	258	OG62
VK3ANP	3	3x50	153	QF33

The entries for this contest came from 7 locator fields, 3 of these fields are overseas, namely RF, RG and PM. Japan, New Caledonia and New Zealand. The winners in each locator field are as follows:

Locator Field	Station	Score
PF	VK5LP	743
PG	VK4KHQ	1088
PM	JH1WHS	676
QF	VK5NC	2867
QG	VK4IY	258
RF	ZL1TZA	463
RG	FK1TS	1660

In addition to the seven certificates issued to the Field winners, a perpetual trophy is awarded annually for competition between members of the Wireless Institute of Australia. The winner's name is engraved on the trophy and the winner also receives a suitable certificate. The entrant with the highest overall score for the contest will be the winner and their division will hold the trophy for one year.

Once more this trophy has been won by Trevor VK5NC who must be congratulated for his excellent performance and Roger, VK3XRS deserves our thanks for providing Trevor with some stiff competition.

Looking at the results it becomes apparent that the stations that spent time looking around the bands for the extra Maidenhead locator square in addition to working the stations in the more populated areas have reaped the reward. Both VK5NC and VK3XRS logs contained a good mix of 52, 144 and 432 contacts.

A number of stations have queried the rules, namely rule 3 (Bands) 52, 144 and 432 MHz. The 52 MHz, as inserted in the rules meant 52 and not as some thought 50-52, this was to remind contestants that in vast areas of VK it is illegal to operate on 50 MHz within television transmitting hours.

Radio Sport Federation of the USSR

Peace to the World International HF DX Contest

(CQ M DX Contest)

Each May the Radio Sport Federation of the USSR promotes the International Short Wave Radio Communication Contest "Peace to the World".

This year the contest will be held over the 24 hour period from 2100 UTC 13 May 1989 to 2100 UTC 14 May 1989. Amateurs and SWLs all over the world are invited to participate. A booklet recently received by the WIA Executive Office not only extends this invitation and includes the relevant rules, but also lists all participants and their scores in the 1988 contest. Those of most interest in our area, ie the VK-ZL-Oceania participants and their scores, together with the top world scores in each category are listed here after the rules.

Rules for 1989 CQ M DX Contest

1.Contest Period: 24 hours from 2100 UTC.
Saturday 13 May to 2100 UTC Sunday 14 May 1989.
2. Modes: CW, SSB and mixed.
3. Bands:1.8, 3.5, 7, 14, 21, 28 MHz and via amateur satellites.
4. Categories:
A - single-operator, single-band (mixed only)
B - Single-operator, multi-band (CW, SSB, mixed)
C - multi-operator, multi-band, single-transmitter (mixed only)
D - SWLs (mixed only)
- Club stations are automatically in category C.
- Only one signal is allowed at any time from the same station on any one band.
- A station must operate at least 10 minutes on any band before changing to another band.
- A station may be worked only once on each band, CW, SSB and mixed.

5. Exchange: RS(T) plus QSO number, eg 59901 or 599001.
6. Scoring: A QSO in the same "R-150-S" country counts one point, between different countries two points, between different continents three points. Listeners score one point for logging one exchange, three points for logging both.
7. Multipliers: The multiplier is the number of countries worked on the "R-150-S" list. One's own country does not count for multiplier credit. Listeners cannot claim multipliers.
8. Final Score: is total QSO points from all bands times total multiplier.
9. Logs: Send logs by 1 July 1989 to:
CQ M DX Contest
PO Box 88 Moscow
USSR.

1988 Results (VK-ZL-Oceania)

Callsign	Category	Total	No QSOs	No Pts	Mult
Australia					
(1) VK4TT	14 CW	4617	82	243	19
(1) VK2ENU	14 SSB	378	14	42	9
VK8BE	21 CW	195	13	39	5
(1) VK4KWO	21 SSB	4680	78	234	20
(1) VK3PJB	28 SSB	96	8	24	4
(1) AX4XA	B CW	18642	162	478	39
(3) VK5BS	B CW	938	24	67	14
(1) VK2AYK	B SSB	4844	58	173	28
VK2PT Check log					
New Zealand					
ZL3AGI	14 CW	3270	75	218	15
(2) ZL2AGY	B CW	4450	60	178	25
ZL2AAI and ZL3NS check logs					
Christmas Island					
(1) VK9XT	B Mix	107680	458	1346	80
Papua New Guinea					
P29HS	B CW	105	7	21	5
Tonga					
(2) A35AS	B Mix	48972	394	1166	42
Hawaii					
(1) WH6BUV	21 CW	2184	52	156	14

(1), (2), (3) Continental winner (or place-getter in relevant category)
The trophy winners (ie world top scores in relevant category) were:

Cat B CW	RL7AB	803512 points
Cat B SSB	UC2OR	846216 points
Cat B Mix	HAØMM	828240 points
Cat C Mix	Y34K	1532832 points

In category A, on the bands used by VK-ZL entrants, the world top scores were:

Band	CW	SSB	Mixed
14	RB5GW 187810	RB5LL 156480	I2UIY 254265
21	UWØLT 174155	UA9YP 116316	UAØTO 179208
28	UJ8JCM 17248	ZY5EG 129948	RI8BQ 46112

ar

EDUCATION NOTES

On-Air Training

Brenda Edmonds VK3KT
PO Box 883
Frankston 3199

Code Practice

About this time last year I wrote about the various on-air training sessions,and requested information about any others of which I was not aware.

I was pleased to receive some further information to pass on to readers.

The VK6 Division using the callsign VK6WIA runs two sessions; one on 3.555 MHz from 1200 to 1300 hrs GMT every evening except Saturdays and one on 146.700 FM via Channel 2 repeater VK5RAP, Monday to Friday 1130 to 1200 hrs GMT. Neither session operates on Public Holidays. The HF session is in two segments, 5-12 wpm and 14-20 wpm. The VHF runs at 5-12 wpm.

For some years now VK3COD has been running sessions every week night on 28.340 MHz and 147.425MHz. The code is sent in 5 minute segments with readback after each segment. Speed is 5wpm from 8.30 to 9.00 pm (VK3 time) and 10 wpm from 9 to 9.30 pm.

Both nets are happy to have further participants.

As I said last year, I would be pleased to hear of any other practice sessions, as I feel that this information should be made available in the interest of attracting new licensees. I would like to be able to include a comprehensive list in the next Callbook or in the Reference section in next February's AR.

Schools

Another set of records I would like to update is my list of schools which are operating their own stations. I know these change frequently as licensed staff members move and that the Callbook information does not indicate which calls are active. But if there are amateurs devoting time and energy to providing radio experience and instruction to school students, we should be supporting them to the best of our ability. I would be very pleased to hear of these groups and to receive their ideas on the type of support they need.

Some of these groups may be interested in participating in the Solar Terrestrial Energy Project, which will run from 1990 to 1995 as an international research program in a time of intense solar activity. The La Trobe University Ionospheric research unit is hoping to involve schools in a number of activities during the project. I hope to have more information about the project and possible activities int he near future.

Devolvement

Examination devolvement is still moving slowly. At the recent Joint Meeting with DOTC we were told that the expectation now is that next February's examinations will be the last to be run by the Department. An Examinations Officer has been appointed, with whom the WIA has been in communication, but there is still considerable amount of work to be done.

There is no intention to release any of the question bank material until the whole system is complete.

Neither is there any provision for assistance with production of papers other than from the question bank. If a paper is rejected, a short comment sheet will be attached, but no move will be made to rectify its weaknesses.

Those who originally submitted requests for accreditation should by now have received a letter from DOTC requesting confirmation of their continuing interest.

Strictly speaking, it will be the question paper that is accredited, not the body setting or marking it.

I hope that the long delay has not meant that intending examiners have lost interest.

My best wishes to those sitting the May exams. Remember, READ THE QUESTION, and ALL the answers.

73
Brenda VK3KT
ar

AWARDS

CQ Award Managers:

Ken Gott VK3AJU
38A Lansdowne Rd
St Kilda 3183

Clubs, Zones, and Groups

Soon, if not already, I hope that all managers of awards issued by VK divisions, zones, clubs and other groups will have received a questionnaire and SASE from me seeking data on their awards.

The mailing is to all managers of awards listed in the 1985-86 WIA Callbook (the last such listing available), plus managers of new awards noted in AR since then.

The returns should enable me to compile an up-to-date list of VK awards, with current addresses of managers, rules, costs and so forth.

I hope that the WIA will then be able to publish a list of VK awards, either in the next Callbook or in its next information supplement (see January 1989 AR).

The returns will also enable me to answer enquiries from overseas amateurs and SWLs who write to me for information on VK awards.

Some have turned to me after receiving no responses from award managers to whom they have written. I must confess that I have had the same experience of returned or unanswered letters.

Naturally the WIA federal awards are being administered efficiently (hi! hi!), and I'm confident that the same is true of ones run by the VK divisions. However, without wanting to prejudge the results of the sur-

vey1 have launched, I suspect that some of awards listed in the 1985-86 Callbook are as dead as the dodo.

They say it is easy to become a publisher, but very hard to remain one. The same may apply to awards. It's fairly easy for a club to start one in a spirit of enthusiasm. Over the years, the original enthusiasts may have departed or dispersed, or maybe the supply of certificates has run out and there are no funds for a new print run.

Even if everything is in order, the award can hardly be a useful operation if amateurs and SWLs are getting no response to enquiries about it because the address is out of date.

Award managers, including those running club awards, should not underestimate the overseas interest in VK awards. This may suggest to some clubs and groups that they should look at the DX bands for their nets if they have been confining activities to 80 m.

Recently I've received or noted three overseas books listing amateur awards (G1TZU's book in February, G4FAM's in March, and YB0WR's below).

Since then I've been approached by another entrepreneurial amateur, this time in the USA, who is planning a bigger and better compendium than any of the above.

I've supplied him only with information which I'm convinced is accurate and up-to-date, and have promised him more when my questionnaires are returned to me.

If you are managing an award and have not received a questionnaire about it, please let me know.

Council of Europe Award Change

You have until June 1 to win the Council of Europe Award with a certified log extract of QSOs with stations in the present 21 member countries of the Council, plus TP4OCE, operated by the Council of Europe ARC.

After that you will need to contact 23 countries, because Finland and San Marino become Council members in May.

To mark the Council's 40th anniversary, TP4OCE will operate on SSB 3.785, 7.090, 14.200, 21.310, and 28.450 MHz from 1600 on May 5 to 0400 on May 6, 1000-1600 May 6 to 0400 May 7, and 1000 to 1600 May 7.

CW frequencies are 3.515, 7.015, 14.015, 21.015, and 28.015. Times are 0400-1000 May 6, 1600 May 6 to 0400 May 7, and 1000 to 1600 May 7.

If AR hasn't reached you by those dates, TP40CE will have other regular skeds on October 22 and I asked its manager to give me longer notice of these .

The normal award costs US$9 or 16 IRCs and its manager is Francis Kremer F6FQK, 31 rue Louis Pasteur F-67490 Dettwiller, France.

Member states of the Council, as of June 1, are:

CT, DL, EA, EI, F, G, HBO, HB9, I, LA, LX, OE, OH, ON, OZ, PA, SV, SM, TA, TF, T7, 5B and 9H.

Novice Status No Barrier to DXCC

Recently I had the pleasure of issuing WIA DXCC certificate No. 366 to Robin VK4KRP who made application with an initial tally of 153 on phone. It was a very high score for a first application and I noticed that all QSOs had been made on 21 and 28 MHz since March 4, 1987, meaning that Robin had earned his DXCC plus 53 in less than two years.

I thought it a notable achievement for an operator with only Novice privileges and power on the HF bands.

I am now grateful to Robin for supplying more details about himself. He is a 19-year-old student at James Cook University, now in his third year of a Bachelor of Electronic Engineering course, specialising in communications and satellite systems.

He was first licenced as VK4TVR and upgraded in February 1987. He operates an Icom. 751 with a Werner Wulf 6-element duo-bander.

Recently Robin bought an ICOM 551D for six metres which he uses with a home-brew four-element Yagi. As of mid-February he had worked four countries on it. I have a feeling that his name and callsign will turn up in the AR VHF-UHF column one day.

Finally a word from Robin which may interest others working DX: "....it is never impossible to work any country as long as it is active, you are on at the right time, and you have a good antenna."

He finished his letter to me by quoting a W operator who said to him: "If you put an antenna up and it doesn't fall down, it's either not big enough or high enough."

Auckland C'wealth Games Award

New Zealand amateurs can use the special prefix ZM from June 1, 1989, to February 19, 1990.

The latter date is the closing day of the XIV Commonwealth Games in Auckland, and the NZART is offering an award to mark the event.

Eleven QSOs are needed - five with ZM1 stations, plus one each of ZM2, ZM3 and ZM4, and one Commonwealth country in each of Regions I, II, and III.

A log extract certified by two other amateurs is sufficient and application should be sent to the Awards Manager, Aola Johnston, ZL1ALE, 63 Red Hill Road, Papakura, NZ 1703.

Auckland amateurs will set up a station in the Games Village which will operate while the Games are going on in Jan-Feb 1990, and which will also be available to visiting amateurs. The station will issue a special QSL card which will complement the award.

No charge is mentioned for the award in the publicity material received from ZL.

New DX Guide from Germany

DX-World-Guide (Amateur Radio Countries of the World) by Franz Langner DJ9ZB is not a book about awards, but about DX. However, since DX QSOs and cards are the building blocks for most awards, it merits a review here.

It is a professionally produced book of 358 pages, with one for each DXCC country. Area, capital city (with coordinates), ITU callsign allocations, amateur prefixes, CQ and ITU zones, and addresses of na-

tional amateur societies and licensing authorities are given. There a map of each country and where there are regional prefixes, the pattern of these is shown. Changes in country names (e.g. Ceylon to Sri Lanka) and in amateur prefixes (e.g. Tonga VR8 to A3) are also indicated.

All country data is in English and German.

The ease or otherwise of hearing or working a country is shown on a scale of 0-5, and there is a small log space for a couple of entries per country.

The pages are not only brightened by the useful maps, but also by photos of operators or DXpeditioneers and QSL cards from each country.

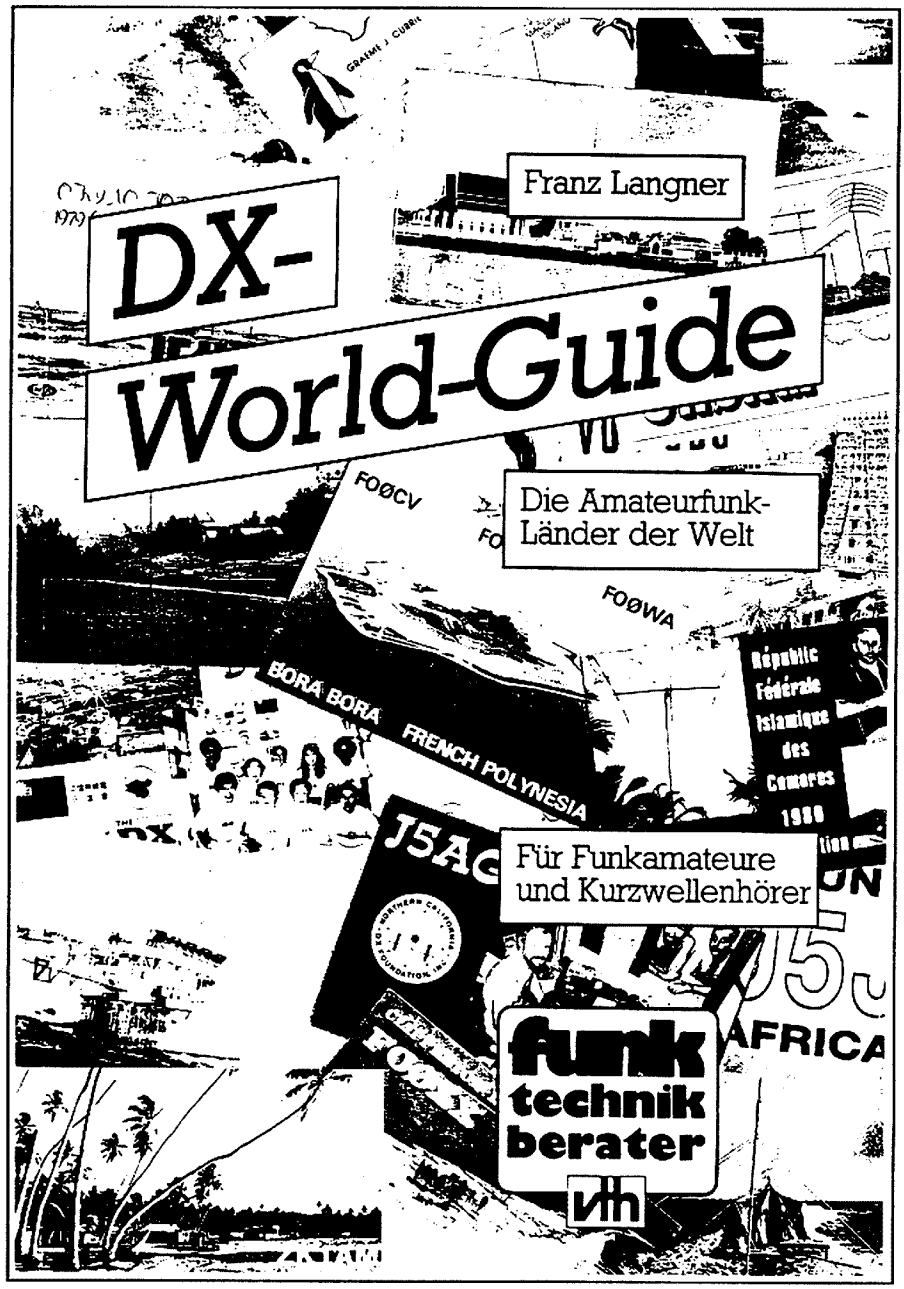
VK3COP is pictured for Australia and the sample card happens to be mine.

True, it was designed by a leading graphics artist, but I suspect it was picked because of the mixture of wonder and amusement which my English surname arouses in Germany.

I have only one mild criticism of DJ9ZB's book. As mentioned, all the DXCC country data is presented bi-lingually, there are a few pages at the start which are German only.

Upon examination most of these prove to be German translations of the ARRL's outline of its DXCC rules and its DXCC criteria. Most readers will have access to English versions of these documents, but Franz may perhaps have made it clearer what these pages represent.

The book is recommended to DXers, SWLs and award chasers. It is available from Verlag fur Technik und Handwerk (but VTH will do), Postfach 1128, 7570 Baden-Baden, Federal Republic of Germany. Cost is A$32 surface mail, A$40 airmail, inc. of packing and postage in each case.



Another Awards Guide

Editorial ethics make it impossible to review the International Awards Guide published by M.S. Lumban Gaol YBØWR. I have no review copy of his book, and nobody can honestly evaluate a book he or she has never seen.

However the advertising material for YB0WR's book says it covers more than 750 wards from 70 DXCC countries, and includes full colour reproductions of 634 certificates. Sample pages suggest it is a sumptuous production.

It costs US$37 by surface mail and VK/ZL buyers can get it by registered airmail for an extra US$15. Payment must be in US$ notes, bank transfer or international money order to YBØWR, J1 Garuda No. 62, Jakarta 10620, Indonesia.

Novel Award from Westlakes ARC

Westlakes ARC is offering a special award to VKs only to mark its 25th anniversary and World Telecommunications Day on May 17, 1989.

Claimants must work at least 26 stations anywhere in the world on any band and in any mode during 0001-2359 UCT on May 17.

The stations must inlcude 26 with final suffix letters which spell out the words "World Telecommunications Day". Stations may be worked in any order, but only once for each claimed letter. E.G., VK2WI counts as "I", VK2LEE as "E" etc..

The Westlakes Club station VK2ATZ will be active on several bands during the day, and may be claimed as any letter. That is, if you cannot find a station with a suffix ending in "Y", VK2ATZ can substitute for it.

All mixtures of bands, modes, simplex or cross band, and all call areas, Australia or DX, are in order.

The calling procedure is "CQ Westlakes Telecommunications Day Contest" and for CW "CQ WTD."

Callsigns and RS(T) must be exchanged.

SWLs must log callsigns of both stations and signal reports exchanged.

A certified log extract, with contacts arranged in the letter order outlined above, must be received by last post on June 2, 1989. The address is: WTD 25th Anniversary Award, Westlakes ARC, PO Box 1, Teralba, NSW 2284.

An attractive certificate will be issued to all stations and SWLs qualifying. A silver endorsement will be given if all QSOs are made on one band, or for making the 26 contacts within an hour, regardless of band.

A gold endorsement will be given if the 26 contacts are made in an hour on one band, or if they are made using QRP only, regardless of band.

The fee is 5 x 39 cents stamps or equivalent.

Each application must have a cover sheet, as follows:

"This is to certify that the log submitted herewith is a true extract of the log of ..... (callsign) for the GMT day 0001-2359 17 May, 1989. I have operated in accordance with the rules and spirit of the contest.

..... operator signature

..... witness signature and callsign.

"Certificate to be sent to: ..... (name and address)."

Be sure that the log extract is set out so that the final suffix letters of the callsigns spell out "World Telecommunications Day".

From VK6: New Award? or is it a contest?

Wise investment of a bequest from the late Hugh Spence VK6FS has enabled the WIA VK6 Division to establish three annual VK-DX Achievers Awards.

All VK amateurs are eligible and may apply for one of the awards based on confirmation of 100, 175, or 200 countries on the VK DXCC list.

The date and time of the last QSO to achieve the figure will be the deciding factor.

Further details from the VK6 Division Secretary, PO Box 10, West Perth, WA 6005.

Awards Issued Recently

WAS (VHF)
176 Gil Sones VK3AUI (2 m)
WAVKCA (VHF)
31 Yoshiteru Mori JA2BZY (6 m)
32 Hideo Kirii JA2DDN (6 m)
WAVKCA
1639 Raymond Lee VS6UW
1640 Haruki Kawagishi JH3KEA
1641 Kazuhiko Naito JL1ELQ
1642 Atsu Murakami JA8UBH ar

SPOTLIGHT ON SWLING

Postal problems

Robin L. Harwood VK7RH
52 Connaught Cres.,
W. Launceston
7250.

I am hoping this reaches Melbourne in time for the deadline, because the local Australia Post staff have taken industrial action. As it is now, it takes me sometimes a fortnight to get letters from the mainland to here. 20 years ago, I am positive that we had a superb mail service, with two deliveries a day. Not today! I also am grizzling at the hike in international air mail rates early in February. This, has no doubt, dampened any desire I did have as a New Year's resolution to send out more reports to international broadcasters.

And while I am mentioning reports, I am concerned that more stations are dispensing with QSL cards or verification letters, and issue no details response cards. I understand that budgetary restraints have forced most to adopt this course. Many of the larger organizations have their own monitoring panels throughout the world, so do not rely on individual reports as in the past. They are more interested in listeners' feedback on program content. Some have even commissioned audience research from outside polling bodies. Apparently, only a fraction of the audience bother to write or comment directly to the broadcaster, so the program makers often are in the dark.

The other interesting comment that I would make is that international commercial broadcasting seems to have failed dismally. When the American shortwave broadcasting scene was deregulated early in the eighties, several commercial organizations announced their interest in establishing a commercial H F service. WRNO in New Orleans appeared on the air, but never caught on and has reportedly suffered losses.

The "Christian Science Publishing Society" introduced their "World Service of the Christian Science Monitor" in March 1987 weekdays. Revenue was supposed to come from commercials, but now the station mainly now carries promos for their newspaper. They also bought out KYOI in Saipan from commercial interests, who went close to bankruptcy, operating a music format aimed at Japan. The only other American station with a commercial format is "Super KUSW" in Salt Lake City, which does carry programming for the Mormon church.

Sadly, these stations were often carrying religious programming, to keep afloat. There are existing religious broadcasters worldwide, so the program content is often from fringe groups, who cannot afford to get on existing stations. With the demise of AFRTS late last year, we now do not get domestic broadcasting output from the States.

Conditions in March were seriously disturbed and disrupted by severe geomagnetic storms. The solar flux climbed to 234, before dropping back to 170-180. There were several recurring solar flares which caused dropouts on daylight HF circuits. One evening, I was privileged to see an aurora, whilst coming back from Devonport late one evening. The 19 metre allocation has been interesting with some European broadcasters coming through around 0100 UTC in English, beaming to North America. Deutsche Welle from their Malta relay is heard on 15105 kHz. The Foreign Service of the Spanish National Radio gives excellent signals from midnight UTC till 0600 on 15110 in both Spanish and English. 15125 comes on from 0300 in parallel. Deutsche Welle is heard also at 0300 UTC on 15205 kHz in English.

Those who have found the reliable BBC signal on 18080 in our local evening hours, were disappointed to see this frequency close down on the 25th of March. The reason is, of course, that it was in the 17 metre amateur allocation and they had to vacate it by the first of July. They have relocated to 17640 kHz, but the signal level isn't as strong at this QTH. Incidentally, the 17 metre allocation came alive when American amateurs arrived en masse early in February. Many commercial services have also vacated this 100 kHz portion, leaving it to the amateurs.

Well, that is all for this month. Until June, the very best of 73 and good listening!

HOW'S DX

North Yemen and elsewhere

by Patrick Kelly
VK2RZ
PO Box 41
OURIMBAH NSW 2258

My 4W0PA QSL card arrived a couple of days after I heard that Hans was back in the Netherlands, and that the ARRL had not accepted his operation as being eligible for DXCC.

Even from day one rumours discounting the legitimacy of this operation had been rife. The uncertainty this created only served to add more spice to this tasty DX treat. It is a shame that these rumours turned out to be correct, at least initially, because there is no doubt that Hans did remarkably well.

There is still a glimmer of hope, however and if everything does turn out for the best, then I for one will not be surprised.

Now for some good news.

Marion Is

As I mentioned last issue this rare DX country was about to happen. Well, Peter ZS6PT is now safely ashore, and most importantly on air as ZS8MI.

Peter will operate on all bands up to six metres. I don't know what he will be using on VHF, but for HF he has two Yaesu FT757GX MKII's, a FL2100Z amplifier, and two rhombic antennas—one facing Europe and the other North America.

Already Peter has appeared on some DX nets, and there have been reports of him on most bands working solo.

You will have fourteen months to log Marion Is, so when you do the QSL is to PO Box 1387, Vanderbijl Park 1900, South Africa.

Banaba (Ocean Is)

The intrepid Jim Smith VK9NS has made very quick arrangements to activate Ocean Is as T33JS. He has applied to the ARRL to make this a further addition to the rapidly growing DXCC countries list.

Jim's plans at present are for a short stay commencing in early May. Whether there will be other operators going is uncertain, but if all goes well this trip then a larger expedition should follow to satisfy the demand. QSL to VK9NS. Please note that Australian stamps are not used on Norfolk Island.

Marquesas and Austral Islands

These two island groups lie to the north and south of Tahiti respectively and together with three other groups make up the territory of French Polynesia.

Paul F6EXV and Jackie F2CW spent a week at both locations after the WPX contest. From the Marquesas they operated as FO0EXV/M and FO0CW/M, and from the Austral Islands as FO0EXV/A and FO0CW/A.

Both these operations aroused a lot of interest because there has been a great deal of speculation as to whether they would qualify as new DXCC countries. From what I have heard this is not certain to happen so we will just have to wait and see.

QSL to the French DX Foundation, PO Box 88, F–35170 Bruz, France.

Desecheo

Located north west of Puerto Rico this island rises abruptly from the Caribbean Sea. One of the big gun DX contesters John Ackley KP2A, and his multiband/multi-operator team were on Desecheo from the 5th to the 19th of March. Signing KP2A/KP5 they were there for the ARRL DX Contest as well as the usual DXpedition pile ups.

Unfortunately three operators became ill and had to return Stateside after the contest. To add to this, continuous bad weather played havoc with their antennas. Despite these problems they still made 35000 CW/SSB QSO's on ten bands. QSL to N6CW.

Saudi Arabia

I found Sean operating the oilfields club station HZ1AB on 15 metres at 0442Z. The long path signal was excellent, but there were not many takers. QSL to K8PYD.

Somalia

While working a fair size pile up of Europeans on fifteen metres late on afternoon, I had the good fortune to come across George I2JSB. He is the QSL manager for TS3RC which may be a club station in the capital Mogadishu.

George informed me that he would be in Mogadishu on the 15th of April and would be on air as TS0DX. From the north of Somalia his call would be T53SG. In addition to the usual HF bands George has permission to use 12 and 17 metres, this will be the first time WARC bands have been used from this country. Six metre enthusiasts might have some joy too as George will be looking for VK's on this band. QSL to his homecall.

Nigeria

A good operator who often obliges with skeds on all bands is Giogio 5N9GM.

QSL via the callbook.

Keith N6QLQ/5NØ has been on 15 metres around 0500Z lately, and is in the capital city of Lagos. QSL is to his homecall.

The Colvins, Lloyd W6KG and Iris W6QL, have recently returned home after four months operating as 5B4KG, ZC4ZR, 9H1JN and W6QL/5NØ. From Nigeria they made 3000 QSOs on 10,15, 20 and 40 metres using SSB and CW. QSL to Yasme, PO Box 2025 Castro Valley, CA, 94546, USA.

Vatican

HV3SJ is a station operated by the Jesuits. A new one for me on any band, it is just a sample of the good DX to be found on 20 metres around 2030Z. QSL to IØDUD.

Laccadives

A new operation commenced here on March 15th with four operators – VU7JX, VU7WAP, VU2NTA and VU2NRM. QSL to W2XP.

VU7APR continued to be active from Kavaratti Is. QSL to VU2APR.

Tanzania

Roel 5H3RB is due to QRT from here in July. At this time he is not sure of his next posting, but he has requested VK2 or VK6 QSL is via NM2R or to PO Box 9534, Dar Es Salaam, Tanzania.

French Guiana

Aimee FY4FC is quite often on 28.495 around 0200Z. QSL to PO Box 6005, Cayenne 97306. Two stations who have also been active—Frank FY5EW QSL to F6BFH and FY5YE QSL to W5JLU.

Guyana

Atze 8R1AH will be here for another month or two, and hopefully spend a lot of time on air. There are only a few amateurs

active here and from my experience certainly the most difficult country in South America to work. QSL to C/- The Airport Manager, Timehri International Airport, Timehri Guyana.

Pacific Islands

Here is some QSL information for some of the many stations that have been on air recently. Most of these have been visitors, and I expect that with summer approaching in the northern Hemisphere things will be considerably quieter.

A35HK	QSL to JL3UIX
A35IC	QSL to JL3UIX
5W1UY	QSL to DK7UY
5W1YL	QSL to HB9CUY
5W1HX	QSL to DJ9ZB
5W1HV	QSL to JL3UIX
KH8/NH6RT	QSL to JH4IFF
KH8/K35KE	QSL to Homecall
KH8/DL5UF	QSL to Homecall
H44/DL2GAC	QSL to Homecall
P29VMS	QSL to DL2GAC

FO5DB – Serge, PO Box 813, Papeete

Tahiti

ZK1CT–Archie, C/- Mauke Is. South Cook Islands Via New Zealand

VR6CL-CARL, C/– Post Office, Pitcairn Is Via Auckland, New Zealand

VR6KY–Carrie as above.

Well not a bad month really. Although I did miss a few countries that I needed. On the plus side I did manage a couple of new ones as well as increasing my band totals. One of the good things I like about chasing DX is that you can't go backwards!

Japanese Special Event Stations

The Japan Amateur Radio League has great pleasure in announcing two very special commemorative stations shortly to be in operation, namely:

1)8J6APX – at the Asia–Pacific Exposition to be held at Fukuoka, and

2)8J1YES – at the Yokohama Exotic Showcase (YES).

The following details have been provided about these special stations:

1. Special Event Station "8J6APX" for Asian-Pacific Exposition: Fukuoka '89.

Call Sign:	8J6APX
Period:	March 17 - Sept 3, 1989
Operation Hours:	00.30 - 08:30 UTC (during July 1 to Sept 2, 00:30 - 11:30 UTC)
Frequency:	3.5/7/14/21/28/50 MHz
Mode:	CW, SSB, Packet
Output Power:	10W - 500W

2. Special Event Station "8J1YES" for Minato Mirai 21.

Call Sign:	8J1YES
Period:	March 25-Oct 1, 1989
Operation Hours:	01:00 - 09:00 UTC (During April 28 to Oct 1, 01:00 - 11:30 UTC)
Frequency:	1.9/3.5/7/10/14/21/28/ 50/144/430/1200 MHz
Mode:	All modes
Output Power:	10 W - 500W

POUNDING BRASS

Morse forever?

by Gilbert Griffith VK3CQ
7 Church St
Bright 3741

A snippet from March 'Break–In' attributed to 'Branch 51 Newsletter', author unknown.

CW Dead Outmoded?

"I often hear the comments that the use of CW is long past the end of the road, and how many of you on completion of your full licence put the key on the shelf never to be used again? Having been brought up in the era when morse was the only way of transmitting information in written form (yes handwritten) between two points, I personally feel that there is a lot of enjoyment to be had in the use of this mode. Given equal power, antennas and propagation conditions, CW will always get the message through where phone may (or may not).

Our ancestral folks the British fought a short war with the Argentinians and hit a communication problem. Argentina had been sold a great selection of jamming gear by the French. Lovely computerised equipment to analyse the frequency hopping modes of the armed forces. The initial call is enough for the equipment to collect sufficient data to lock on and jam the transmission. It had been planned to use several satellites to link ship to shore, ship to ship and back to base in Britain. It is very easy to block the input to a satellite, with a wobbulator and interruptor running at the current baud rate and amplitude tone modulation as well. To counter the ships' radar they used transponders with in–built time delays and these countermeasures nearly proved disastrous for the British. What did they do? They used CW. Amplitude modulated CW and in most cases it was the only way to make contact with the other sectors of the forces. All communications personnel in the forces are now required to be CW operators at 20 wpm.

The wheel has gone right round, and we are back to where I started fifty years ago."

(A possible future market for some of my homebrew junk! Gil.)

An interesting sideline occurred to me just now. What is the fastest way the above 500 or so words could be transmitted, ignoring the fact that someone may be trying to interfere with the actual transmission? A good telegraphist would be able to send the message in about 12 minutes (at 30 wpm) and a packet operator in a second or two, but involving rather more investment in equipment. The commercial world is currently flogging fax as a convenient transmission device. But if I were to send the message on that I would have to run down to the chemist shop first. The sad fact of the matter is that the speed of transmission is limited by the speed the recipient can read! I am convinced that most of the new technology, especially the exotic modes, is not as whizz–bang as the inventors, salesmen, marketers etc, (they have to make a living too) would have us believe. In any case, how reliable is the report in the first place? The glut of information reflected in current times is not without its hazards. I believe that this 'information' should be taken with a certain amount of scepticism, as experience shows that 'reliable sources' are not what they always seem, especially if they're in it for the money. I guess I have been watching too much of "The Investigators" and the like, for my own good. And perhaps you should take me with a grain of salt also!

A letter came just now from Tony Smith G4FAI, who heard from Moe Linn VE6BLY, who heard the new "Q" signal–"QKS" this, he says, means 'how many knobs does your radio have?' Using his new IC761 with its built–in ATU and electronic keyer, he replies, '70/6'. This means that it has 70 or more, but he only knows how to use six of them ... In fairness to Icom, he goes on to say that it is not difficult to use them all and to understand them, but not all in one day perhaps.

A New Law

Interference to your neighbours' electronic installations is directly proportional to the size of your aerial system.

AMSAT AUSTRALIA

AMSAT Australia Information Nets

Maurie Hooper VK5EA
11 Richland Road,
NEWTON 5074

Control: VK5AGR
Amateur check in: 045 UTC Sunday
Bulletin commences: 1000 UTC
Primary frequency: 3.685 MHz
Secondary frequency: 7.064 MHz
AMSAT SW PACIFIC
2200 UTC Saturday, 14.282 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT Australia net. This information is also included on some WIA Divisional Broadcasts.

AMSAT Aust Newsletter &Computer Software

The AMSAT Australia Newsletter is published monthly by Graham VK5AGR on behalf of AMSAT Australia and now has about 300 subscribers. The Newsletter provides the latest news items on all satellite activities and is a "must" for all those seriously interested in amateur satellites. Should you also wish to subscribe, send a cheque for $20 payable to AMSAT Australia addressed as follows: AMSAT Australia, GPO Box 2141, Adelaide 5001.

Graham also provides a Software Service in respect to general satellite programs made available to him from various sources. To make use of this service, send Graham a blank formatted disk and a nominal donation of $10 per item to AMSAT Australia together with sufficient funds to cover return postage. To obtain details of the programs available and other AMSAT Australia services send a SASE to Graham.

We continue with "The First Flock of Microsats" which was introduced in the March issue.

General Mission Description

All four payloads will be implemented using the new AMSAT-NA satellite bus concept known as "MICROSAT". The satellites are cubical, measuring only 23 cm (9 inches) on each side, not counting antennas. They are designed for use in a variety of low earth orbits but will be most effective if placed into a sun synchronous orbit similar to the earlier Phase-2, AMSAT-OSCAR satellites. The projected satellite mass is 8.5kg. The launch adapter and separation hardware added an additional 2.5kg. The power produced by the satellite solar panels will exceed 6.0 watts averaged over one orbit for the worst case sun synchronous orbit.

LUSAT, PACSAT, and WEBERSAT will transmit in the 70cm amateur satellite band (435 - 438 MHz) and will receive uplink signals in the 2m band. The DOVE will transmit in the 2 m amateur satellite band (145.8 - 146.0 MHz). Planned frequencies are:

Mission	Downlink	Uplinks
DOVE	145.970 MHz	
LUSAT	437.150 MHz	145.900, 145.800, 145.860, 145.840 MHZ
PACSAT	437.050 MHz	145.900, 145.920, 145.940, 145.960 MHz
WEBERSAT	437.100 MHz	TBA

These frequencies have been carefully coordinated in order to minimize the probabilities of mutual interference.

The digital downlink transmitters on LUSAT, PACSAT, and WEBERSAT will use binary phase shift keying (BPSK) modulation and will occupy a bandwidth of less than 200 KHz. DOVE will transmit a narrow band FM signal modulated by a voice synthesizer or by digitized sound. Its bandwidth will also be less than 20 MHz. Each satellite will have two transmitters each with a maximum downlink capability of 4.0 watts power output and will be capable of transmitting at various lower power levels under automatic control of the satellite computer or ground command control as dictated by power budget considerations.

The telemetry system for each mission will make at least 32 analog telemetry parameters available to the on board computer. The number of channels may be expanded easily. They provide information related to the health of the satellite. Analog telemetry information will be converted to digital data that will, in turn, be available for transmission in unconnected beacon packets or to connected user stations. DOVE telemetry information will be available via either the voice synthesizer or digitally. The number of telemetry channels may be altered in the final designs.

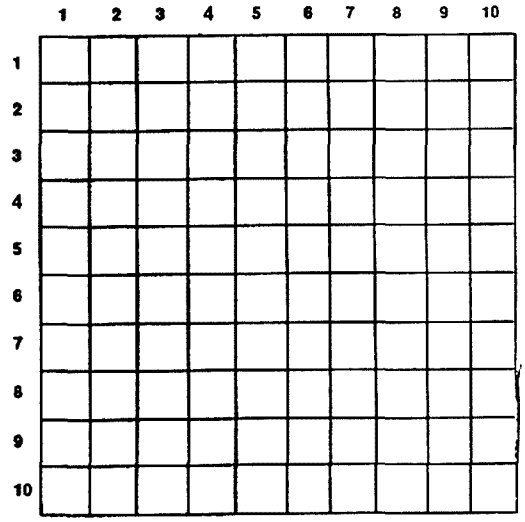
AMSAT has made arrangements for the launch of all four MICROSATS as secondary payloads on the SPOT-2 mission. The launch vehicle is an ARIANE-1. The launch date currently shown by Arianespace is mid 1989. The orbit for SPOT-2 is sun synchronous at a nominal altitude of 822 km. The planned apogee is 835 km, the perigee 817 km and the inclination 98.7 degrees. The satellites will have an ascending node time of approximately 22:30 hours local time.

Although the four satellites will be in approximately the same orbit, there will be slight differ-

Clues to Morseword 26

ACROSS
1 Gaming pieces
2 Clenched hand
3 Emperor
4 Sell
5 Takes to court
6 Clotted blood
7 Kittens
8 Sonnet
9 Ogle
10 Annoy

DOWN
1 Taxi
2 Male deer
3 Clean with a cloth
4 Boast
5 Positioned
6 Midday
7 Track
8 Catcher
9 Loosened
10 Prevalent



Answer Page 62

ences in the orbital parameters due to differences in the deployment speed and direction from the launcher upper stage.

A similar phenomenon was seen with the deployment of RS-3, RS-4, RS-5, RS-6, RS-7, and RS-8 from the same launcher early in 1981. Although all six satellites were in the same polar orbit and thus were available at about the same times of day, their relative positions throughout the orbit at any particular time appeared to be random, changed from day to day and produced a good spread of operating opportunities.

Microsat Hardware
Bus description

The MICROSAT spacecraft bus structure is composed of five aluminium frames (or modules) formed into a composite stack held together with stainless steel tie bolts. This stack, an approximately cubical structure, is referred to as the "frame stack assembly". Dimensions of the stack are 230 x 230 x 213 mm (9 x 9 x 8-3/8 inches). High efficiency solar cells are assembled onto four solar panels, which are installed onto the four sides of the frame stack assembly. Additional solar cell assemblies are mounted on the top of the spacecraft.

The side panels are manufactured from aluminium bonded honeycomb material 4.8 mm (3/16 inch) thick. The thickness of these panels will ensure that no buckling of the side panels can occur to damage individual solar cells.

Each of the five frames of the MICROSAT assembly stack contain electronic sub-assemblies suitable to the spacecraft mission, such as receiver, transmitter, computer, power supply and any special application modules such as the DOVE voice synthesizer and digital sound circuitry or the WEBERSAT camera controller and picture storage RAM.

The top and bottom panels of the MICROSAT spacecraft mount the VHF and UHF antenna assemblies and additional solar cell assemblies.

Electrical System Configuration

The frames or modules are used in a functional manner. Each fulfils an important aspect of the overall operation of the satellite. The modules are numbered 01 through 05 starting from the base plate of the spacecraft. The modules function as follows, listed from top to bottom:

LUSAT and PACSAT;

Module 05: FSK Packet Receiver, all channels (+Z)
Module 04: Unused (This Space for Rent!)
Module 03: Power Module
Module 02: Flight Computer
Module 01: BPSK Packet Transmitter (-Z)

DOVE:

Module 05: Command Receiver (+Z)
Module 04: Flight Computer
Module 03: Power Module
Module 02: D/A Buffer/Converter - Voice

Synthesizer

Module 01: FM Voice Transmitter (-Z)

The modules are interconnected using a standardized bus arrangement which minimizes the number of wires necessary for all functions within the satellite. This standardized bus is implemented as an Addressable Asynchronous Receiver Transmitter (AART) board mounted to each module except the flight computer which serves as its own interface. Each AART makes use of one 25 pin D subminiature connector for interconnection with each of the others.

Transmitter Modules

BPSK Packet Transmitter Module

LUSAT, PACSAT, and WEBERSAT all use BPSK (binary phase shift keying) packet transmitters which are the means by which they communicate to the ground. All transmissions are digital, NRZ-I, PBSK, HDLC, and will be compatible with the AX.25 Level Two protocol now in widespread use in the amateur radio service.

Under flight computer control, unconnected information packets containing telemetry information (and picture frames for WEBERSAT), and connected transmissions supporting user functions will be available.

The transmitters will use a state-of-the-art high efficiency power amplifier with a maximum power output of 4 watts. Since even at an overall transmitter efficiency of 60%, the orbital average array power of approximately six watts might be exceeded, a means of power control has been

devised that will allow the transmitter to operate at reduced power levels, in all 16 steps between 0 and 4 watts. The transmit power level may be set either by direct ground command or by the computer under software control. The power setting may be changed rapidly if desired. At the highest power setting (4 watts) it is anticipated that the DC-to-RF efficiency of the transmitters can be maintained at approximately 84% on 2 m (145 MHz) and 74% on 70 cm (437 MHz).

Two transmitters are flown in each transmitter module for reasons of redundancy, but they also have experimental value. In each satellite, one transmitter will operate with straight PSK modulation while the other will use raised-cosine modulation which exhibits lower information harmonic content.

It is expected that ground stations using gain antennas will be able to false lock on side lobe energy from the straight PSK transmitter.

The second side lobes in this case are only 14 dB below the main lobe. It is expected that use of the raised-cosine transmitter, whose second side lobes are 38 dB below the main lobe, will greatly reduce the incidence of false lock among users.

The use of two transmitters also raises possibilities of advanced protocol experimentation. It is expected, as the number of users increases, that the uplink capability per user will degrade. Experiments with specialized network schemes and protocols may alleviate some of this difficulty.

At this writing, frequencies for the second transmitter on each satellite had not yet been selected. Data rates supported are 1200 and 4800 bits per second, selectable. Corresponding transmitted bandwidths are approximately 4 kHz and 15 kHz.

The frequencies chosen, 437.150 for LUSAT, 437.050 for PACSAT, and 437.100 for WEBERSAT are selected to minimize functional interference and particularly to inaugurate occupation of the upper 1 MHz of the 70 cm satellite band of 435 - 438 MHz. The transmitters will directly drive 70 cm turnstile antennas which will allow users to employer linearly polarized antennas.

DOVE employs a narrow band FM voice transmitter driven by a voice synthesizer. This transmitter is to operate on 145.970 MHz in the amateur 2 m band and will drive a turnstile on DOVE similar to the 70 cm band turnstiles on the other MICROSATS.

This frequency is just below the AMSAT-OSCAR 13 beacon and above the high end of the AO-13 mode B downlink passband. Power levels, controls, efficiency, and technology are similar to those for the 437 MHz transmitters.

The transmitter will employ FM modulation with a deviation of 5 kHz, consistent with narrow band equipment used in the amateur service. Normally, the transmitter will be used to transmit voice synthesizer data. However, if the satellite is being accessed by a command station, the downlink may revert to 1200 bps AFSK compatible with the Bell 202 tone standards. Once the flight computer is returned to "run" mode, voice synthesizer or digitized sound information will resume on the downlink.

ar

VHF/UHF

An expanding world

Eric Jamieson VK5LP
9 West Terrace
Meningie 5264

All times are Universal Time Co-ordinated indicated as UTC.

Beacons

In another reconsideration of the beacon list there seems little point in listing 52, 144 and 432 MHz beacons in May, August, November and February when in each case they will be listed in the previous month in the total Australian list. The latest proposal is to include only changes or new beacons.

New beacons are TG4BFK in Guatemala on 50.048, KH6HI on 50.063 MHz and GB3BUX on 50.000 MHz.

Six Metres

Six metres continues to hold pride of place for the length of openings and the number of countries which can be worked. The fact that most of the world's six metre operators are now found on 50 MHz means there is little necessity to consider split frequency working although it has been noted that some overseas stations with equipment adequately able to work on a higher frequency have been working ZL stations on 51.110 split to 50.110 and recently I heard a VS6 station on 52 MHz. Overseas stations with antennas cut to 50 MHz may not find much difficulty in working on 51 MHz but often a shift to 52 MHz may cause a reduction in signal strength both ways thus placing Australian stations at a disadvantage.

The monitoring of out-of-band signals particularly from TV stations can alert one to potential band openings on 50 MHz. The USA paging stations between 40 and 44 MHz can be heard most mornings but need to be strong before 50MHz propagation is possible. The Russian R1 station on 49747.7 is a useful pointer to northern openings although the wall-to-wall Japanese stations do not allow you to forget the band is open in that direction! At Meningie JAs have been heard/worked every day during March and up to 7 April when these notes were concluded. It was not until recently that I realised the TV sound on 53.750 MHz could be from Europe, the last occasion being on 2 April. I have noted this and other sundry signals between 53 and 60 MHz since removing the mothballs from the trusty old S27A Hallicrafters communications receiver which tunes from 28 to 140 MHz with a reasonably accurate frequency read-out. Using a CH O/all band TV antenna connected to a rotator it is surprising what can be heard!

The use by viligant 50 MHz operators of sophisticated equipment which include scanning facilities has done much to ensure the success of Cycle 22 and many more DX stations will be heard and worked before this Cycle fades away.

What have we worked?

At times like these in Cycle 22 and during prolonged Es periods, I find it very difficult to prepare these columns! Not necessarily because there is a need to be within hearing range of the transceiver (I am three paces from it) but from the need to sift through a mountain of information gathered and received from a variety of sources.

In VK5 near Berri on the Riverland, Hugh VK5BC has been one of the most consistent operators calling frequently on CW and SSB; in fact he has been dubbed the SA 50 MHz beacon! Hugh regularly works the JAs and they must be thankful he is on the air to provide needed contacts. He responded to my request for a copy of his log as a basis for what has occurred during the past month.

28/2: From 0132 to 0428 UTC JA1,2,3,7 and 8 for 12 contacts 9/3: 0335-0419 JA7 and 8 for 5 contacts.

15/3: 2318 WA7YWF, W7RV, WA7YWM, K7LDT, WA6BYA, WB70HF, WA7CJO, NI6E/KH6, K6STI, KH6JJI, KH6IAA, KH6IJ, JA1,2,3,6,7,8,9,Ø for 48 contacts. 16/3: 2248 JA2,3,8 for 7 contacts. 17/3: 0453 JK1BJX, JF6MLV, JA7WSZ and JRØPFP. 18/3 2320 JA1,2,3,4,5,6,7,8 for 17 contacts.

19/3: 2238 WA6BYA, N6XQ, WD5K, AA5AM, W6XJ. 22/3: 0145 JA8RC. 23/3: 0351 13 JAs. 24/3: 0345 JH4TPO. 25/3: 0415 KX6DS on CW and SSB, JA8DMB. 28/3: 0115 KH6JJI, KH61JE and 3 JAs. 29/3: 2242 T30DJ, FOØAQ, FO5DR, 3D2ER, YCØUVO, KG6DX and 18 JAs. 30/3: 0134 KH6JJI, KH6IJ, T30DJ and 10JAs. 31/3: 2318 K6STI, AA7A, WA6JRA, N6XQ, KD6R and 12 JAs.

1/4: 2253 T30DJ, H44GR, KG6DX, V85DA and 8 JAs. 2/4: 2232 FO5DR and ZK1WL both on CW and SSB, 3D2ER, 5W1GP, V85DA, KG6DX and 19JAs. 3/4: at 0000 the H44IR beacon on 50.005 was S9+ 20 dB around the time 3D2ER was heard in OSO with 8R1AGH (Guyana), 0030 VP5D beacon on 50.099 at S3. Hugh tried to arouse some interest on 28.885 but failed; 0200 heard DU3KE and at 0325 heard T30DJ and a JA in contact with an OA (Peru) station.

Hugh comments that he cannot recall conditions equal to the present in any previous Cycle in the past 30 years and indicated how far off the beam some of the pundits were with their predictions a few years ago that Cycle 22 would be poor! The history books will need to be rewritten.

For all the time that Hugh has operated, in

common with others, there are always stations you do not work (you need to wash and eat at times) as the following from the VK5LP notebook indicates.

14/2: John VK4KK reported he, VK4ZNC and VK4ZAL had a ball from 2200 when they worked K6MEF, W6BJI, K6MYC, WB4OSN, N4EJW, WA4OWC, W8HXT, K4HQXX, KB4CRT, WB4OOJ, WD5K, W5ZBI, K6PXT and WA7LYI. They also heard a W1 and KH6. The band was open for about an hour. Later in the day KX6DS was worked. VK2BA worked HL5BAS and HL4MC. (This item was missed from last month).

1/3: VK3BQS said VK3 were working Ws during the afternoon. 2/3: Strange FM station observed on 103.3 MHz at 0630 and 5ABC at Loxton on 105.1 was very strong.

12/3: worked VS6UP and VS6MQ at 0322. VK5LP decided that as it was some time since he had worked many JAs the time was now right. Over the next two days I worked more than 100 - conditions were so good that at no time did I use more than 10 watts.

13/3: strong aurora noise, VK5RO and others working VKs, Wally VK6KZ said aurora heard as early as 2045 but no decipherable signals. 14/3: from 2320 WA7YWM, WA7CJO, W7RV, W7LYI, KN5S, WA6BYH and NI6E/KH6. I was rather pleased with this performance as I had never worked a US station before despite trying for 28 years! At 2353 VK4ALM was heard working a W5.

15/3: 0650 JAs heard working FO8DR and FK1TK. At 2330 JA8RC said he had that morning worked VK1 to 8, ZL and FO8. 17/3: 0400 JA4MBM said he had worked VK3, 4 and 9. 18/3: 2241 VK5NY and others worked WA6BYA, K6QXY and heard N6XQ and K6LTY.

20/3: Peter VK6KXW worked Tim G4FJK at 0836 with signals 4x3 sent and 5x7 received. Peter also had a cross-band contact 50/28 MHz with a 4S7 in Sri Lanka but details are sketchy. Congratulations. 23/3: XX9KA in Macao was worked by Peter VK8ZLX and also VK4s.

24/3: Phil YBØARA working VK4. VK8RH, AH, LM and ZWM worked 9H1HK and four other Maltese Stations from 0722. Signals were 5x9 and the opening lasted for two and a half hours! They are contacts to be remembered. Later the Darwin stations worked V85DA also 5x9.

25/3: VK4VV and VK4RO reported working ZD8MB at 0130. VK8GF and VK8ZLX worked P43AS, TI2KD, V85DA, DU3 and for a very good contact HP3XUH in Panama - QSL via KA4MVK.

26/3: 2100 VP5D worked by VK4KJL and VK4ZJB, 2130 P43AS to VK4KJL, VK4DDG and VK4DMI, 2200 TI2KT 5x9 to VK4KJL, DDG, ZAA, ZAZ, SJB, DMI, ZNC, ZAL and Pu. 2150 VK5LP to 3D2ER, XE1MD, P43AS, W5UWB and XE1GE for a fair mornings work. P43AS was on the island of Aruba north of central Venezuela - he peaked to S9 with his 10 watts! From 2213 VK5NY worked 3D2ER, VP5D, XE1GE, P43AS, XE1MD, KP2A, KP4A and KP4EIH. VK5KK about the same time worked P43AS, XE1MD, PF5JM (Brazil), KG4SM (Cuba) XE1GE and KP2A. VK5ZK got XE1GE, P43AS, KP2A and KP4A from his temporary station at Goolwa. Good work gents. VK5LP was having breakfast at that time! VK5NY to KX6DS at 0234 and KH6DS at 0245.

28/3: 0015 T30DJ S1 on CW at VK5LP, 0122 KH6JJI 5x9, 0323 VK6KXW worked WB6VYH, Ken VK6AKT worked KB6FIQ/DU3 and V85DA. VK30T heard on CW working Ws, 2238 fast CW on 43.5 MHz at S4, 2240 heard VK4 working 5W1.

29/3: 0416 V85DA 5x9 Andrew at Brunei, 0523 YCØUVO 5x1 to VK6HK and VK6WD. 0528 VK5NY to YCØUVO on backscatter, then KG6DX at 0546, also at 0546 VK6AKT worked V85DA and KB6FIQ/DU3 and VK5ZK worked KG6DX on CW via backscatter, 2250 VK5BC heard working T30DJ and FO5DR on CW both very weak at Meningie.

30/3: 0412 KH61J and KH6JJI both 5x9, 2313 VK5NY heard WA6BYA on CW, VK3OT to K6WD. 31/3: VK5ZK reported AM signal on 52.995 is the third harmonic of a Russian shortwave station, 2300 T20DJ weak on CW, 2306 H55GR 5x9, KG6DX 5x6.

1/4: 0031 KG6DX, 2302 3D2ER, KG6DX, 2345 VK3OT calling P29ZEF and P29PL, 0303 VK6AKT worked V85DA, 2359 VK1RX S2 on backscatter.

2/4: 0150 KX6DS 5x6 Marshall Islands. 0226 YCØUVO 5x9 Indonesia. (Via backscatter VK8GF was heard working YCØUVO who had his antenna on Hawaii. On turning his antenna his signals rose to S6 and within ten minutes were S9+20dB. At Meningie he was that strength for more than an hour - I worked his three times - and I noted he worked into VK2,3,4,5 and 8. His QSL address is PO Box 77, JKSL, Jakarta Indonesia 12240.) At 2235 backscatter signals to S5 were heard from VK2MZ, VK5DK, VK3LK, VK3AUU, VK4KJL, VK6 and VK8ZLX. At 2245 the H44IR beacon was S9+20dB and remained so for more than four hours.

3/4: 0010 VK4 worked Steve TG9AWS in Guatemala. Signals were barely above S1 in VK5. At 0555 Andrew VK8AH in Darwin worked 5H1HK in Tanzania for what must be rated as a very good contact. Andrew was alerted to the possibilities through hearing the ZD8VHF beacon on Ascension Island the day before. Peter VK8ZLX worked T30DJ. 2258 YS1ECB in San Salvador was worked by VK5BC, VK5NY and VK5ZDR. Col VK5RO tried but could not catch him due to VK2 and VK3 QRM. Absolutely no sign of YS1ECB at either VK5ZK or VK5LP. Also reported that VK2MZ had worked ZF1RC on Cayman Island - good contact that! Roger VK5NY heard ZF1RC weakly at 0005.

5/4: From 0800 VK5LP hearing strong video peaking north-west on 55.0, 56.0, 57.0, 58.2, 60.1 and 62 MHz. No sign of amateur signals. 2205 N6AMG on 28885 he was hearing weak CW from VK6, also ZL TV strong. Jim T30DJ for his last day as T30 worked many stations in W on backscatter also VK5BC but very weak at VK5LP. Ken JA3EGE said he worked VK9YQZ on Macquarie Island at 2200. At 2300 YS1ECB into Adelaide again and worked by VK5RO, VK5NY, VK5ZDR and others. Signals were peaking to S8 but Garry VK5ZK at Goolwa and VK5LP at Meningie never heard so much as a whisper from Edgar - very strange. At 2313 ZF1RC on Cayman Island worked by VK5ZK, VK5LP, VK5BC and VK5ZDR and there could have been others. Signals were 5x5. QSL to Box 1549 Cayman Islands. Also heard that VK4BRG worked 5H1HK. Graham VK6RO worked T30DJ for a rate contact.

6/4: A morning with mixed conditions. Although VK5ZK and VK5LP are about 57 km apart over level lake/river water VK5ZK from about 2150 was able to work XE1MD and W5OZI on SSB and W5OZI, WA5IYX and K5LZO on CW and heard the VP5D beacon on 50.099, VK5LP had to be content with a solitary contact with XE1GEI Conditions at VK5NY were also poor. VK5BC at Berri worked K5LZO, XE1MD and XE1GE and was hearing VP5D. Steve VK3OT heard on backscatter. The H44HIR beacon was S9 for most of the morning. At 2225 very strong video on 57.3 MHz peaking north-east.

With the AR deadline fast approaching I must finish the six metre notes at this point with a comment. Quite frankly, I am amazed how often the six metre band opens to F2 contacts - every morning for at least the past two weeks and probably longer there have been stations to work to our north east, sometimes only the Pacific as far out as Hawaii, at other times to Mexico, USA, South America or the Caribbbean. VK5 is out on a limb when compared with the eastern States for such contacts so what is recorded here are only a few of the many scores of similar contacts made from Australia. Unfortunately, VK6 shares even less than VK5.

Following a 10 metre contact with Bob WA6BYA, Garry VK5ZK said a new disease had become apparent on the west coast of USA, that of "F2 flu!" I had to work that one out and so too should readers. Also Bob said that "around the world at present the productive time lost to amateurs listening to noise on six metres must be measured daily in thousands of hours!" How true. On average, for every one minute contact completed we probably listen to noise for an hour.

Notable contacts

(details above)

14/3: VK5LPto WA7YWM (28 years wait!)
20/3: VK6KXW to G4FJK
23/3: VK8ZLX to XX9KA
24/3: VK8RH, AH, LM & ZWM to 9H1HK etc
25/3: VK4VV & VK4RO to ZD8MB
VK8ZLX & VK8GF to TI2KD & HP3XUH
26/3: VK5KK to PF5JM, P43AS, KG4SM, KP2A, VK5NY & VK5ZK to VP5D, KP4A, KP4EIH
28/3: VK6KXW to WB6VYH
29/3: VK5BC to T30DJ and FO5DR
VK5NY to YCØUVO
2/4: VK5BC to ZK1WL
3/4: VK4 to TG9AWS
VK8AH to 5H1HK
VK5ZDR, VK5BC, VK5NY to YS1ECB
5/4: VK9YQZ to JA3EGE
VK5ZK, VK5ZDR, VK5LP to ZF1RC

Outstanding contacts for the month: VK6KXW to G4FJK and WB6VYH, VK5KK to PF5JM and KP2A, VK8s to 9H1HK and VK8AH to 5H1HK.

Macquarie Island and Antarctic Callsigns

Neil Penfold, VK6NE writes to say that in

relation to the confusion whether VK9YQS/Ø and VK9YQZ/Ø must sign/0, the answer is that they do not as DoTC have advised that the figure and first letter of the suffix no longer belong to any geographical area. Apparently something to do with their computer being unable to handle the task of sorting out the callsigns!

The same situation exists with VK9 - formerly VK9M was Mellish and VK9Z was Willis Island which was useful for identification. Therefore, in future don't take the location for granted but ask the operator! However, for the present there are no amateurs amongst the meteorological crew on Willis and the next changeover is July.

Western Australia to Europe

Last month I reported contacts on 26 February between VK6 and Norway/Finland but some call signs were missing. The March 1989 issue of "The West Australian VHF Group Bulletin" states that Norweigian signals were heard by VK6WD, HK, KXW, RO, ZKO, ZFY, KZ and YU but not all established contact. From 0811 VK6WD worked LA3EQ, LA8WF and LA9UX. VK6KXW worked the same three plus LA6LCX and OH1TP. VK6WD and VK6KZW worked SM6PU cross-band 50 to 28 MHz at 0920.

Bits and pieces

Just as I was about to print this epistle the mail brought a "6m Activity/Information" sheet from Ted Collins G5UPS which includes some excellent tidbits on world-wide six metre activity. Thanks Ted.

The QSL route for 5H1HK is via JH4RHF.

5Z4RT in Kenya is preparing to operate cross-band to 28MHz and will book into 28.885 on Sundays.

Sweden is to allow 25 amateurs to operate on six metres - the first are SM6PU and SM7BAE and operation is permitted after TV hours around 2235 UTC.

Faroes Islands had a six metre club station OY6FRA.

ZS6PW beacon is now on 50.026.5 MHz having shifted from 50.010.

TR8BL (QSL via W3HNK) and TR8RLA in Gabon have been issued with six metre permits.

G4UPS achieved two firsts on the same day in 1989 - on 25 February QSO with JH4IUO was first G/JA and QSO with VS6UP was the first G/VS6. A good effort and hard to better.

Icom 551D and two four element six metre yagis sent to Peter ZS8MI Marion Island on 29 March.

9X5AA in Rwanda has a six metre rig but only a wire antenna.

9J2KF in Zambia was recently worked in 9H1 (Malta). QSL via PO Box 30027, Lusaka, Zambia.

Gerry LU8MBL in Argentina - QSL to arado Salvador, Ruiz, Colon 1981, 5501 Godoy Cruz, Mendoza, Argentina.

G4FJK had what is believed to be the first G/VK two-way QSO on six metres at 0833 on 20 March when Tim worked Peter VK6KXW. G4FJK runs 10 watts to a 5 element Tonna. His former call sign was VP2VGR.

VK8VF the Darwin beacon reported as moving to 50.056 MHz. Strange that VK5LP should find out via the UK - after all, there is a VK beacon list in AR.

KH6HSS/5NØ QSL to Calvin Higa, PO Box 554, Victoria Island, Lagos, Nigeria.

Stations worked in G land include CX4HS, CE30K, CE6ABK, LU8MBL, LU9AEA.

From Bill Tynan W3XO of QST and "World Above 50 MHz" are a number of call signs and locations which should be noted as possibilities from VK. They include J25US, CT3BX, HC2FG, PZ1AP, OA8ABT, HH7PV, KL7NO, J73PD, LU4EJ, VP8PTG,FM5WD.

I note also that Bill W3XO has shifted from Maryland to Texas which brings him within a more likely range for VK QSOs. VK5LP recently worked a couple of stations in Texas. Time will indicate if Bill changes his call-sign or adds /5.

The April 1989 issue of "The Propagator" carries an excellent article on a full coverage six metre beam from Roger Harrison, VK2ZTB. It has five elements on a two metre length wood boom and is of log-periodic design from 45 to 55 MHz with a gain of 6-7dB which would be very useful for those with receivers tuning the 40 MHz region when checking the state of the MUF.

Radar

I wonder if moves by the Civil Aviation Authority to erect a navigational radar on a high point near Marble Hill the the Mount Lofty Ranges, which is one of 19 similar radar towers to be erected between Perth and Cairns is connected with the report I received of a Meteorological Bureau Wind Shear Radar which is to be erected at Darwin.

The Wind Shear Radar would operate with a peak power of 80 kW and 1 or 2 mS pulses on 49.945 MHz! How much will you give for amateur radio on 50 MHz with that thing virtually in your backyard and right in the pass-band of the television Channel Ø! Goodness me, why should anyone want to be worried about the few watts (by comparison) that amateurs are using on 50 MHz?

If true, I can imagine the devastation it will cause to amateurs in the Adelaide city and metropolitan area when operating from such a prime site as Marble Hill. Similar prime positions could no doubt be utilised in other capital and provincial cities around Australia with equally devastating results.

Closure

Perhaps I had better close now before I say much more!

No reports have come in from operating on higher bands - I suppose almost everyone is on six metres.

Two thoughts for the month: "There's one thing to be said for inviting trouble - it generally accepts" and "You never know what makes some people tick until they begin to unwind." 73 from the voice by the lake.

Stop Press:

On Monday, 19 April at 1148 Peter VK8ZLX worked JA6GSW at 5x5 on 144.110 MHz for a possible Australian record contact. Jeff VK8GF first heard JA and alerted Peter but Jeff may not himself have made contact.

ar

QSLs

From the WIA collection

Ken Matchett VK3TL
PO Box 1, Seville, Vic. 3139

VKØKT

This QSL from Macquarie Island shows the location of the island. It lies approximately 1,400 km to the SSE of Hobart, a little over half-way to the edge of the Antarctic continent. The island, of volcanic origin, is about 32 km in length and varies 3 and 6 km in width. It is by no means a flat island; its central plateau rises 300 metres above sea-level.

Macquarie Island was discovered on 11 July 1810 by an Australian, Frederick Hasselburg, master of the brig "Perseverence" which had set sail from Sydney on a voyage to the islands south of NZ to procure seal-skins and sea elephant oil. At the time these commodities were almost the only ones available for export from the new colony. The captain named the island after Lachlan Macquarie, Governor of the Colony of New South Wales who had taken office on the 1st January of the same year. The island proved to be a bonanza for a succession of commercial organizations which maintained gangs of men on the island to kill sea-elephants and in later years, penguins for their oil. By the middle 1830s the fur seals had been exterminated and the elephant seals greatly reduced in numbers. The island came under the jurisdic-

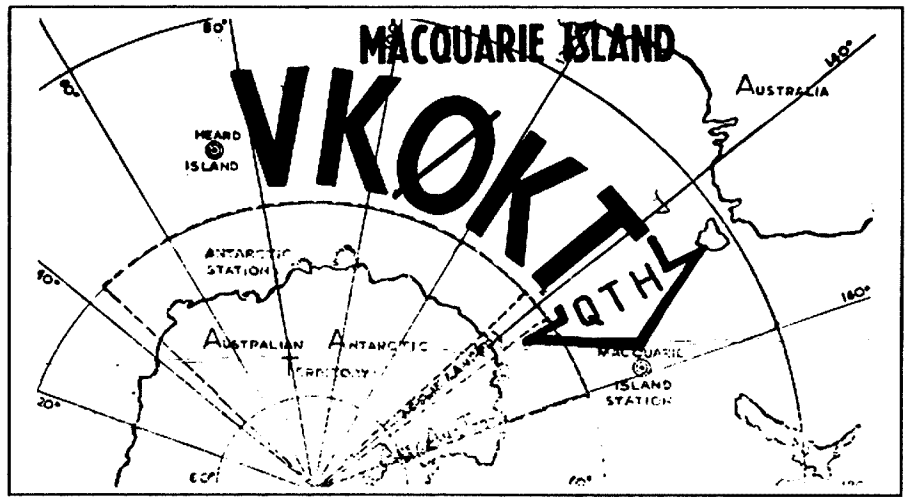
tion of the Governor of Tasmania in 1889.

There have been several visits by scientists over the years, the first really significant one being that of the Australasian Antarctic Expedition under the leadership of Sir Douglas Mawson in 1911. Later in 1930, the British Australian New Zealand Antarctic Expedition (BANZARE) visited the island for scientific study. After threat of extinction of much of its wildlife, the island was declared a sanctuary for birds and mammals in 1933, although Mawson's reports on the fate of its wildlife did lead to the non-renewal of sealing permits before this date.

After preliminary reconnaissance by long range aircraft of the RAAF in March 1947, a scientific and meteorological station was set up by the Australian National Antarctic Research Expedition (ANARE) one year later. In 1956 it was recorded that fur seals had returned and begun to breed on the island after an absence of 100 years. Macquarie Island was proclaimed a Tasmanian State Reserve in June 1972. It is interesting to note that Macquarie Island is the only island to the south of New Zealand not under the jurisdiction of that country.

Notification of the addition to the ARRL Countries List of Macquarie Island as VK1 was made in the July 1949 edition of QST. Ths was one of the early post-war "new country" additions. In 1957 the prefix VKO was being used for both Macquarie and Heard Islands in place of VK1.

The WIA collection holds a considerable number of different station QSLs from Macquarie Island. Many of these QSLs will become, it is felt, of significant historic value when the story of amateur radio on Macquarie Island is written.



VK1BA

This QSL is one of several using the older VK1 prefix. It is not surprising that several Macquarie Island QSLs show the penguins for which the island is famous. Although at one stage seals and other wildlife were threatened with extinction, it is pleasing to note that today the island boasts the world's largest penguin colony estimated to exceed two million birds, the Royal Penguin being endemic to the island.

The ANARE station originally set up in 1948 has been operated continuously since that date, the normal term of duty of its officers lasting twelve months. ANARE carries out research into biological and other sciences including meteorology and upper-atmosphere physics.

If you would like to play a part in building up the WIA QSL collection and to save something for the future would you please send a half-dozen (more if you can spare them) QSLs which you feel would really help the collection along.

All cards are appreciated but we especially need commemorative QSLs, special event station QSLs, especially assigned call QSLs (e.g. VK3SIG), pre-war QSLs, unusual prefixes, rare dx and pictorial QSLs of not so common countries. Could you help? Send to PO Box 1, Seville 3139 or phone (059) 643721 for card pick-up or consignment arrangements for larger quantities of cards.

The Wireless Institute of Australia would like to thank the following for the contribution of QSL cards towards the WIAs own QSL collection:-

Jack VK5LN
Steve VK3OT
Ray VK4ARS (ex VK3RS)
Shep VK5DC
Fred VK3CFK
Ray VK5RK
Less VK5LC
Ron VK3QP
Rupert VK3BC
Ernie VK4GE
Phyf VK4CPL
Roy VK3XY
Tom VK5TL
Ken VK3NW
Len VK3LN
Howard VK5XA
"Wick" VK5WM
Rex VK3VG
Alf VK3VJ
Moira VK8NN
Eddy G4GIZ
Ron VK3OM
Rod VK3TJ
Sam VK2AKP
Neil VK2CNS

Also thanks to the friends and families of the following 'silent keys' who have contributed QSL cards:-
Cliff Pickering VK3ATP
Lin Brown VK3ARL
Allen Jacobs VK4BAJ
Frank McClymont VK3AYR
Ralph Williamson VK3BRF
Eric Wheeler VK3EW
Arthur Forecast VK3AM
Jack Christenson VK3DOJ/ZCL
Graeme Clements VK3TK
Phil Levenspiel VK2TX
Max Hull VK3ZS
Ron Jardine VK3PR
Jim Blackwood VK3ABL
Len Johnson VK3YF
Ces Waring VK3YW
Eric Martin VK3ZF
Stewart Smith VK4LA
Len Simmons VK3LV
John Heine VK3JF
John Winton VK3XR
Geoff Campbell VK2ZQC
Frank Sullivan VK3ZJ
Tom Manks VK3TZ
Vin Leonard VK3PJ
Harry Cliff VK3HC
Doug Iliffe VK3OY
Albert Durose VK3DUR
Pete Bowman VK5FM
Doug Norman VK3UC
Eddie Jinks VK2ADJ

If it is your sad duty to assist in the disposal of equipment for a family of a "silent key" would you kindly approach the family to see if they would like to donate QSLs to the WIA collection. Most are assigned to the tip but maybe we can save a few for the future.

DX QSL Contributors' ladder

As mentioned in the March issue of "AR" on page 55, we have commenced making up a ladder of points given to those generous DX-ers who have contributed rare DX and prefixes to the WIA QSL collection.

To date the three best scores are:-

Henry VK3AHQ with a remarkable 91 points, gained for the following contribution:- ZA2RPS (new country to our list), Prefixes DT6, DTO, CV2, DU5, EQ2, FR0, GD5, OF9, PT2, PW1, SQ3, SQ4, SK9, TY3, VA6, VB1, XE5, 3Z0, 4M0, 9H3, Special call 3C5US (Uni. of Saskatchewan),

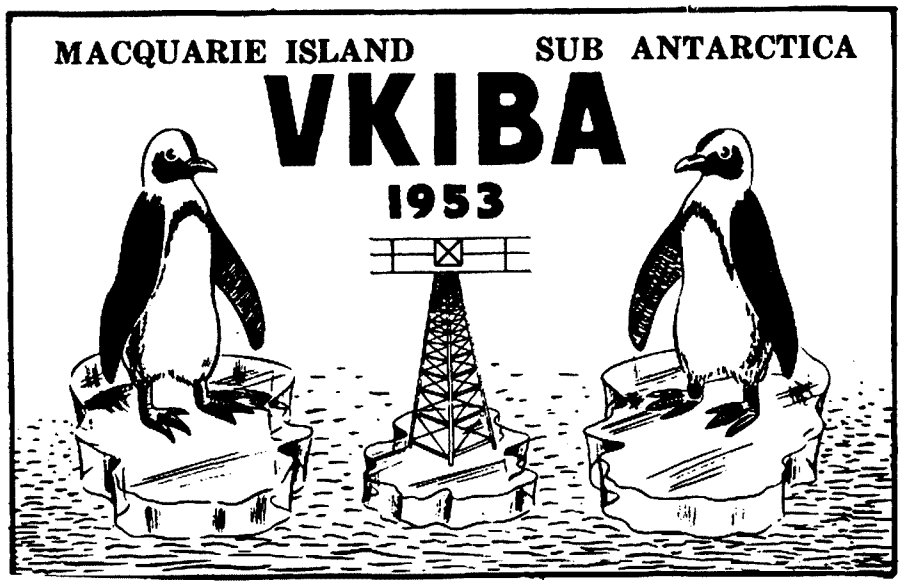
Steve VK3QT (10 points), Prefixes OY9, TD4, 5V7, TZ4, Special calls DUØWPX, HD1DX,

Ron VK3QP (9 points), Prefixes 4D9, YS3, EW4, CP8, Special call GB2WCY.

Of course as more and more different prefixes and special call QSLs come into the WIA collection, the task for DX-ers to add to the list will become harder and harder.

Our thanks to all contributors - keep up the good work.

Ken Matchett VK3TL
Hon Curator, WIA QSL Collection
PO Box 1
Seville, Vic 3139
(059) 643721.
ar



Due to space limitations the continuing article "A Short History of Communications" by Ted Roberts VK4QI has had to be held over until next month.

ALARA

The 222 YL DX Net

by Joy Collis VK2EBX
PO Box 22
Yeoval 2868

Barry VK7GE has controlled the YL–DX net (held every Monday on 14.222MHz at 0600 UTC) since December, 1981.

His patience, courtesy and good humour are well known, and we were all disappointed recently when he announced that, because of work commitments, he will not be able to come on the net on a regular basis. We all hope this situation will change, but in the interim the net will continue as usual.

We would all like to express a sincere vote of thanks to Barry for the work he has put into the YL net, and for being there nearly every week. He has coaxed many a shy YL "out of the woodwork." Here's to you, Barry – and THANK YOU!

YL Activity In Finland

Kirsti VK9NL sent the following extracts translated from a letter received from Marja OH6CD:

"We (the YLs) have been very active during the YL year 1988 – conducted various contests and issued the Leap Year Award and Leapyear Day Award. The latest contest was the YL contest on 8.8.88. This autumn we had a meeting at my place where we decided to conduct a YL – contest on 8th March 1989 which is the International World Women's Day. (In Australia this is usually remembered as Women's World Day of Prayer.)

Tuija OH5MX has designed a QSL Certificate which will be mailed via the bureau to everyone who sends in logs, free of charge. YLs all over Europe have been informed – also in Japan and the USA. So many OMs complain that the YLs are not active, and we therefore decided to have this contest in the hope that YLs will be inspired to come on the air more often.

There are not that many active YLs in Finland, but we do meet four times a year, have our own column in the national magazine, take part in contests and have our YL net every Sunday on 80 metres."

Kirsti comments "It sounds like the YLs in Finland are kept fairly busy." They certainly don't let any grass grow under their feet in the chilly North!

Information was also received by Kirsti about a YL meeting to be held in Finland on 17/18th June 1989. Any Australian YL contemplating a European holiday at that time, and who may be interested in attending, can obtain more details from:

Marja Valnio OH6CD
Hilloskaari 3,
60220 Seinaejoki
Finland.

Here and There

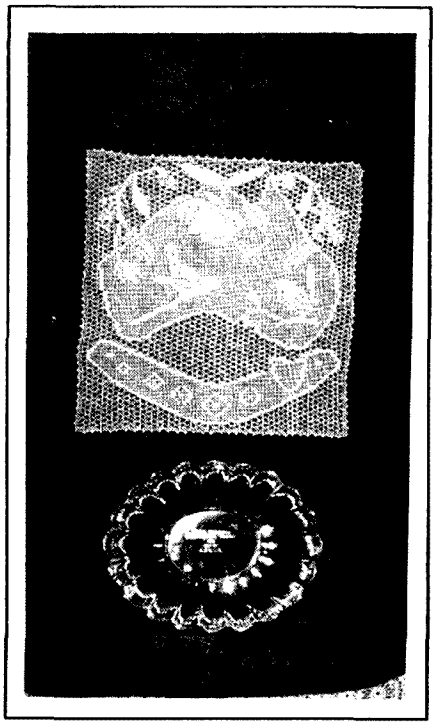
Kirsti VK9NL hopes to be going to Svalbard (JW) in June, and will be active from there for two weeks with Laila WA4ZEL if all goes well. A rare YL country, if we can manage to work either of them.

With improving propagation, YLs have been getting together for a chat on 21.200 MHz at 0400 UTC Mondays, and hope to make this a permanent net. All YLs welcome.

Our warmest wishes to Jessie VK3VAN. Our thoughts and sympathy are with you, Jessie.

Dan and I are packing in preparation for a trip to cooler climes; one week in Canada and three in England. We hope during that time to meet Elizabeth VE7YL, Bobbie VE7CBK, Margaret VE7DKC, and also visit the Yeovil (Somerset) Amateur Radio Club, (if we can survive the cold weather!)

Don't forget:
The Alara Annual General Meeting
Monday 22nd May. 3.580 MHz +/- 1030 UTC.



"The Mavis Stafford Bicentennial Trophy – suitably inscribed silver plated oval dish.
Consolation prize donated by Margaret VK4AOE: embroidered table-centre

CLUB CORNER

Meetings, conventions, P29 DXpedition

The Third Annual General Meeting of the Land Forces Amateur Radio Group was held on 15 March 1989 at 0930 UTC on 3.590 MHz.

Nine (9) members were on parade.

The elected office bearers for the ensuing year (89-90) are:

President VK1NDJ Joe.
Vice-President VK3AXM Joe.
Secretary VK2ELE Allan.
Treasurer VK7NBF Bob.
Awards VK3CQP Vic.
Discussions Wkly VK2ELE Allan.

The group meets each Wednesday evening at 1000 UTC on 3.590MHz plus or minus QRM.

Membership is open to any Amateur or SWL, Male or Female serving or ex service member of any Armed Land Service world wide.

Membership details are available on weekly nets or from the Secretary VK2ELE QTHR.

South East Radio Group Inc

ANNUAL CONVENTION 1989
10TH AND 11TH JUNE 1989

The South East Radio Group Inc is again holding its popular convention over the Queen's Birthday long weekend in June this year.

As usual there will be many interesting trade displays and used equipment tables plus the opportunity to catch up with many old friends. For those who do not wish to compete in the many exciting events, there is ample space to sit and talk or to browse around if this is your desire. This coupled with excellent food makes for a very pleasant weekend in any equally pleasant city.

For the first time this year the South East Radio Group Inc is hosting the Australian Fox Hunting Championships with the permission of the Wireless Institute of Australia. As we are renowned for offering plenty of excitement in this area, we feel sure that the competition will be additional ones for the winner of the Australian Fox Hunting Championship.

You are urged to come and spend an enjoyable weekend with us on the 10th and 11th June 1989. Anyone who has been before will tell you how worthwhile it will be.

Should you decide to attend, accommodation will need to be organised as quickly as possible as Mount Gambier plays host to many functions at this time. Further information and registration forms can be obtained by writing to the Convention Co-ordinator, PO Box 1103, Mt Gambier, 5290.

See you there.

From the top

The Eastern Highlands amateur radio club will be undertaking the first ever, amateur radio transmission from the top of Mt Wilhelm (at 14793 feet, it is the highest mountain in Papua New Guinea. Location 145E 06S). This unique event which will be taking place on the 2nd and 3rd June will be the highest amateur radio station in Papua New Guinea to broadcast and possibly in the South Pacific region. So all you amateur radio operators and short wave listeners tune up your receivers and get involved in a very unique event. A special QSL card will be available. Any short wave listeners who are able to receive the station should send a detailed reception report to the address listed below.

Technical details:
DATE: 2nd and 3rd June 1989
TRANSMISSION TIMES: 2300 UTC 2nd June - 2300 3rd June (24 hour operation)
FREQUENCIES: 14.195 MHz, 14.305 MHz, 144.01 MHz, 144.10 MHz
STATION CALL SIGN: P29 CEH
ADDRESS: PO Box 789, GOROKA, E H P, Papua, New Guinea.

Down at Moorabbin

The prizes at the Moorabbin and District Radio Club's Paper-Chasers' Fiesta (see March AR, p 36) went to Kevin VK3IR for the biggest collection of awards, and to Steve VK3CIM for the best.

Kevin's attractively presented display of more than 50 awards seemed to include every ZL certificate and trophy in the book.

However the club committee was disappointed at the participation and attendance, and has agreed that the contest will be "the first and last". Briefly, it was an unsuccessful experiment.

Meanwhile, the club will hold its annual trade day on May 6, and its White Elephant Night on Friday, June 16.

Club Secretary Doug VK3CCY will report on his visit to the Dayton, Ohio, Hamvention at a meeting on May 19, while on May 10 the club rooms will be the venue of the VK3 Division Annual General Meeting. The rooms will open at 7 pm to enable visiting WIA members to inspect the club's station and other facilities, including its museum of vintage and veteran radio gear. The latter includes the receiver used by Max Howden (then A3BQ) when he made the first amateur contacts by a VK with the USA and UK in 1924. This historic receiver is on loan from the Science Museum of Victoria.

Summerland Amateur Radio Club (Lismore)

President's Report (precis form)

Summerland Amateur Radio Club activities for 1988 centered around providing more facilities and services for members.

The ongoing project of refurbishing the club room continued. Toilet, lighting and parking facilities have been improved by the efforts of members willing to work for the benefit of all. Our thanks to all of them.

The club's tool kit now includes a digital multimeter and a temperature controlled soldering iron. These were suggested by members.

Repeaters: The Club continues to provide two 2 M and one 70 cm voice repeaters, also a 2 M packet repeater.

We are also planning another packet repeater and a six metre beacon.

We are most grateful to those members who work hard to install and maintain them.

Particularly, we thank Dave VK2YDN and Gordon VK2AGE for their individual efforts in providing us with a Packet Bulletin Board and an APLINK mailbox.

Nets: Our on air activity includes :

Two 80 m nets (Sunday Night and The Dawn Patrol) and the 2 m Friday night net.

The Club's "La Balsa" award is still being sought although the flood of applicants has diminished.

Social Activity: Apart from our usual series of dinners and field days, the year saw our first 'Hamfest'. The attendance was about as much as we could handle and succeeded in three ways:

We had a lot of happy customers;

We got rid of a lot of surplus equipment (ie. junk!);

We made some money for the club, enough to pay for the work on the Clubroom and parking area.

Public services: club members both as individuals and as a group assisted SES during the floods earlier this year. Our expertise was greatly appreciated by SES who presented us with a certificate of appreciation.

JOTA: Once again the club supported JOTA by establishing several stations and allowing many of the Scout and Guide groups in the area to participate.

Education: While the tutoring of newcomers and members upgrading their qualifications was left to individual members, the Club is aware of the slow progress of the DOTC devolvement of Amateur Examinations.

The club membership last year was 120. Strength flows from greater numbers. I'm sure that at some time throughout the year each of us has helped and been helped by other members. Sadly I must report the passing of four members; Harold VK2AWH, Sid VK2CSM, Joe VK2FSB and Bernie VK4FOS. We remember these past members who helped build the foundations from which the rest of us will move into the future.

Finally I wish to thank not only those members who have served officially but also all of the members who have helped the club by joining in any activity be it a net, social function, or working bee. Participation is the important thing. Thanks for being there.

Duncan
VK2DLR
President 1988
(submitted by the Secretary Jim VK2ESI, PO Box 524, Lismore 2480)
ar

NZ plans Pacific shortwave service

A 100 kilowall transmitter could be beaming a shortwave service from New Zealand into the Pacific by the middle of next year.

The Ministry of External Relations and Trade said it plans to introduce such a service covering an area extending from Papua New Guinea to French Polynesia.

Technical details concerning the service had been decided and attention was now focussed on funding.

New Zealand first set up a Pacific shortwave service in the late 1940s using two 7.5kW transmitters in Wellington.

The service was discontinued following budget cuts in 1982 but the New Zealand Government decided last year that broadcasting to the Pacific should be resumed.

ar

SHOWCASE

Acme Releases RF Connector Adaptor Kit

National electronics components and cable distributor, ACME Electronics, has released the Greenpar 50 ohm Between Series Adaptor kit.

The kit comes complete with spanners, couplers and a selection of connector faces.

These adaptor faces include BNC, SMA, N, UHF and TNC.

Using a coupler, these faces can be screwed together to provide the desired combination required by the user.

The kits are housed in an attractive plastic case and are available from all ACME branch offices and agents, throughout Australia.

To order a kit, quote ACME Part Number C47–50.

Couplers in straight, Flange–mount and Tee styles are also stocked by ACME Electronics. Complete Between–Series Adaptors of many different combinations are available and can be ordered separately.

ACME has branches in Victoria, New South Wales, Queensland and South Australia, as well as agents in Western Australia, the Northern Territory and Tasmania.

The company, a division of Hardie Technologies, distributes and supports a wide range of products from Kings Electronics, Belden Wire and Cable, Greenpar connectors and Grayhill.

For additional media information, contact:

Ted Harnett
Product Marketing Manager
ACME Electronics
205 Middleborough Road
Box Hill Vic 3128
PHONE: (03) 890 0900

Breadboarding System

Harwin Engineers have recently introduced their unique breadboarding system using track sockets.

The track sockets are designed to fit into a 1mm diameter hole and each has a small tail that can be used as a shorting link to the adjacent hole. The tail can also be used as a test point and is suitable for the hook type testing leads. The track sockets have a multitude of applications such as prototype working and class-room teaching of small electronic assemblies.

Components such as resistors and capacitors can be easily inserted and withdrawn according to circuit needs.

The system is provided in a kit form comprising a pre-drilled board 160 x 110mm, 245 Track Sockets on a bandolier and an insertion tool. For users that already have boards, the Track Sockets are available loose in packs of 500.

For details of the Breadboarding system (Code T1510-00) contact Clarke & Severn Electronics, PO Box 129 St Leonards NSW 2065

Surface Mount polyester and polyphenylene sulphide (PPS) Capacitors from Evox.

EVOX have recently developed two new capacitors for surface mount applications.

The MMC family is a further development from the leaded MMK polyester capacitor that has already achieved wide acceptance in Australia.

They offer improved performance over X7R ceramics or tantalum chip capacitors making them ideal for general purpose applications.

Their high insulation resistance (typically 10,000M) and low loss (typically 0.5%) makes them the optimum choice for bypass and coupling work.

The MMC is available with capacitances ranging from 1nF to 1uf and dimensions (L x W x H) from 4.9 X 2.5 x 4.5mm to 9.8 x 5.5 X 7.7mm.

The SMC is based on new dielectric material, polyphenylene sulphide (PPS), which has electrical properties suitable for precision applications combined with a wide temperature range extending from -55°C up to 125°C. They can therefore replace NPO (COG, COH) ceramics in many applications and are suitable for operation in high ambient temperatures.

The SMC comes in capacitance values from 1nF to 0.47uF and sizes (L x W x H) from 7.3 X 3.0 X 5.0mm.

Both types are available in bulk packs or tape and reel.

Further information is available from:

Ericsson Components Pty Ltd
PO Box 95,
PRESTON VIC 3072
TEL 03 480 1211
FAX 03 484 3645

Belden MAP Network Coaxial Cable

National cable and components distributor, ACME Electronics, has released two new Belden 75–ohm coaxial cables for MAP (Manufacturing Automation Protocol) networks.

Both cables meet IEEE 802.4 standards for broadband and carrier band signal transmission.

These RG–6/U–type and RG–11/U–type cables feature a unique shield design to provide the most effective protection against EMI that is currently available in a flexible coaxial cable configuration.

The Duobond Plus shield consists of a double–layer foil shield bonded to the dielectric core, followed by an aluminium braid shield and an overall foil that is 50% thicker than conventional foil.

The outer foil has a shorting fold which provides metal–to–metal contact for maximum shield effectiveness.

Both cables also feature a specially blended foam polyethylene core that provides higher velocity of propagation and lower attenuation.

Typical applications would be in a manufacturing environment where effective shielding is necessary to ensure signal integrity.

The RG–6/U–type cable is designed for broadband and carrierband drop applications from the cable trunk to individual workstations.

The RG–11/U–type can be used as either trunk cable for carrierband transmission, or drop cable for broadband and carrierband signal transmission.

ACME Electronics, the national distributor for the range of Belden Wire and Cable, range of Kings Electronics, Greenpar connectors and Grayhill products, as well as manufacturing their own range of connectors.

The company has branches in Melbourne, Sydney, Brisbane and Adelaide, as well as agents in Western Australia, Tasmania and the Northern Territory.

For additional media information, contact:

Reg Rowson
ACME Electronics
205 Middleborough Road
BOX HILL VIC 3128
TEL 03 890 0900

Type 3 Media Cable

Australian cable and components specialist, ACME Electronics, has released a Type 3 Media Cable from Belden Wire & Cable, that meets IBM specifications for 'ROLM' cabling.

The cable is a 4–pair, 24 AWG solid conductor type and each pair has a unique twist–length which differs from the other pairs.

Applications for the cable include local area networks or multi–user personal computer installations which are attached to a host system.

ACME Product Marketing Manager for the Belden range of cable, Reg Rowson, said the Type 3 Media Cable is currently available in 305 and 500–metre reels.

"Because each pair has a unique twist–length which differs from other pairs, a better performance is provided for network users," he said.

The type 3 Belden Media Cable is ACME Part Number 1154A and is currently stocked by ACME branches and agents throughout Australia.

ACME Electronics, the authorised distributor of Belden cable, has branches in Melbourne, Sydney, Brisbane and Adelaide. The company has agents in Western Australia, Tasmania and the Northern Territory.

As well as Belden Wire and Cable products, ACME, who manufacture their own range of connectors, is also the distributor for products from Kings Electronics, Greenpar Connectors and Grayhill.

For additional media information, contact:

Reg Rowson
ACME Electronics
205 Middleborough Road
BOX HILL VIC 3128
TEL 03 890 0900

OVER TO YOU

(Aboard "Mobil Flinders" at Gibraltar 8 March 1989)

North Atlantic Odyssey

The Officers on the "MOBIL FLINDERS" have written an article we thought may be of interest to readers.

We are an Australian tanker - largest flying the Australian flag - currently stationed in the Northern Hemisphere, remote and at times feeling forgotten. The trip has some significance, it's been the first to Newfoundland, Canada - little place called Come-by-Chance, (not to be confused with the Oz town in Northern NSW) and the way things are shaping up probably the last as pressure is on to replace us with FOC (Flags of Convenience) labour !

Departed Mongstad, Norway (just near Bergen) 20 February 1989, light snow falling, gales forecast, 2c temp - get weather routing from Bracknell in UK (incidentally excellent service) and routed North of the Shetland Isles to miss the first Storm centre.

22 February - Mayday calls, Portugese ship with salt bound for Iceland with Koreans onboard in trouble, aircraft overhead watches it sink, seems lifeboat launched, drops liferafts, 40 ft waves, violent storm 11 winds, all hands perish. Later in day 200 miles to North - Spanish ship is sinking; reports Hurricane 12 winds. Routed further North, now at 61 degrees, 65 degrees is the Arctic circle, cargo temp is down to 8 deg C, no heating coils fitted, sea temp 8 deg C during the afternoon, Spaniard has sunk - poor sods.

23 February - more SOS calls, 3 ships in trouble, another gale blowing, huge seas (mountainous in fact), sea temp 5 C; have implemented cold weather precautions. Incidentally, 7 ships lost, damaged, grounded off Cape Finisterre in this storm. Weather classification "Fresh to Frightening" by all onboard.

24 February - ship turned around to check cargo temp and assess storm damage. Main steam line has parted. No 1 foam monitor torn away from its supports, foot plating has disappeared or twisted out of shape, temporary repairs carried out, temp 1 C, ice forming. Liferaft demonstration at 10.30, in Games Room 20 deg C - well attended - we're no heroes. Sat Com system "died" in September, promised early New Year, still coming like Xmas. All Radio traffic via HF RTT/RTG through European CRS - Canadians asleep (?). Ice berg and International ice patrol warnings commence - incidentally, this was formed following the "Titanic" disaster in 1912 - all by morse - Sparkie in his element! - telex copies mutilate owing severe snow/sleet static, "old faithful" (MORSE) the last link. Which cretin said it was dead?

01 March, crossed the Grand Banks of Newfoundland, dense fog. Ice alert rasied as ice pack has moved Southwards 50 N Miles, altered course accordingly. Out of the fog and enter the Labrador current, temp plummeted to -5 C, sea temp -1 C, scanning for icebergs; brass monkeys everywhere!

Several attempt RTF calls, still can't raise locals, end up going via Norddeichradio in West Germany - marvellous duplex circuits - later find out from one of operators that transmitters were part of Grand Admiral Doenitz's U-Boat warning system - can see why, even after all these years - superb service given by station.

02 March, first sighting of ice about 200 metres away, -8 C, sea temp - 3 C. Steam on deck so winches kept ticking over. Not far from "French" Islands of St Pierre and Miquelon - Canada made agreement so French can go fishing off these islands: locals call it rape of their fishing grounds; sounds like French in Pacific; the last Colonists! Not bad for a so-called republic. Stand by at 2030, the Bay is iced over closer to shore, the land covered with deep snow drifts. Terminal supervisor later described this as a "MILD" winter, our comments unprintable.

03 March. Deck seal steam supply line has choked with ice, scrubber freshwater line is frozen. Ice on deck is 150 mm deep in scupper areas. Cargo whipped out in 24 hours, a RECORD for the terminal, FOC ships are up to 5 days discharging. Poor Lascars have no warm clothing, no heating on board, paid peanuts; according to Local Clinic, usually half end up there with frost bite and related problems - Shipowners haven't changed since days of sail, eh? Locals say these crews usually end up catching local fish - excellent cod, etc, to supplement meagre food rations - no wonder they get great mobs of fish. Funny, our guys aren't out there though, some fresh instead of frozen fish would make a change.

At completion, the Surveyor commented on the excellent working relationship between the engineering and deck departments. Who knows? Maybe the amalgations of the two Unions will be successful after all! As a matter of interest, we are well received in ALL terminals. We have had two assessments on performance, one said 90%, the second that we were in the top five.

As Australians competing in the World arena, we're more than holding our own. If only we could accept a "bag of peanuts" instead of dollars, we would have a job for life. Shame this ship and its fortunes isn't published in the Australian media which seems to delight in denigrating OUR EFFORTS in the National Interest.

"Thales"

J.F. Walton VK4CY/MM
PO Box 537
Mt Gravatt
4122

MURPHY'S CORNER

(apologies to VK8ZWMI)

Errors in last two issues

A number of errors ran the proof–reading gauntlet and survived it in the April issue. The most notable were:

Page 23	We didn't really intend to duplicate agenda item 89.09.03.
Page 31	(near end of page). Callsigns of the first three people listed are in order VK4KZK, VK1ZDX and VK8ZWM.
Page 50	Repeater 3 officer Arthur Trevaskis is VK7SE.
Page 57	Zero became Q in 4WØPA, 3WØA and EL2LMP/40
Page 62	New members omitted were: GR Marsh Associate EMU Plains GE Morris VK2VKS Avoca Beach MP Reardon VK2XFI Ettalong Beach JA Richards Associate Sans Souci IL Rosser VK2PUP Wyoming JR Simon VK2XGJ Brownsville A Whittaker Associate Wingello J Zenner Associate Moss Vale
Page 72	The advertisement for Stewart Electronic Components is on page 28.

In the article by VK5BR on page 38 of April AR, there are three errors in Figure 1. L3 is 150 micro henries, not millihenries. Gate 1 is pin 3, gate 2 is pin 2; these were unlabelled. Also Reference 1 is relevant specifically to the last sentence of the second paragraph "A high drain ..... transistor current". (Ref. 1).

Further back, in the March issue, in the formulae associated with the diagrams on page 7 wherever cos WA appears it should be cos wt. The article "Topical Technicalities" was inadvertently not attributed to Lindsay Lawless VK3ANJ who is of course its regular author.

QSL Postage

The postal rate increases which came into effect on February 13 have probably not aroused much interest among radio amateurs in general. After all, Australia Post told us all that the rate increases were for overseas post only and were necessary since there had not been an adjustment since March 1988. What those announcements failed to point out was that the "Small Packet" preferential rate was, from February 13, eliminated. So who cares? And what's a "Small Packet" anyway? I expect Australia Post expected that kind of response. I also suspect that not one of the QSL Bureaux, major users of the "Small Packet" service was consulted or advised. And, I bet that almost nobody knew that, for one category of "Small Packet" the rate increase was just one hundred percent!

According to "The Postal Guide", the Small Packet category permits the enclosure of "QSL cards (amateur radio call cards)" (paragraph 10.97.2). This is a specfic reference because in paragraph 10.56.1, QSL cards are not acceptable as printed papers. Nor are QSL cards classified as "Greeting Cards" because, according to paragraph 10.41.1, a greeting card must "be in an unsealed cover endorsed "Printed Papers" and bearing no more than five words of greeting added by the sender.

Result, tripple whammy - courtesy of Australia Post.

Now a single card cannot be sent by other than "International Letter Post". And at the new rates that is 75c for Asia and 85c for everywhere else. Oh, but you want AirMail? Then it's from 60c up to $1.10 depending on the area. Previously the rates were 45c or 56 c (seamail) or 55c to $1.00 for airmail. And of course, even at the old rates, it was expensive so most radio amateurs used the Bureau.

Well, if the country of destination was one of the popular ones, U, ZL, J etc the cards were done up in 500 g "Small Packets" since this was the maximum mass allowed for this category. The rate then used to be $1.58 for ZL and J and $1.85 for U and other distant call areas. Now it's $2.50 and $3.00, around 60 percent up. Of course for W, VE and most other countries cards go to a variety of bureaux depending on the numerical suffix. So these often went in smaller "Small Packets". Up to 30 cards cost 57c for Asia and 63c elsewhere. How much now? Over the 60 percent now at 95c or $1.20. But, and here's the real beauty, if the bureau wanted to send around 85 cards, a sensible number to have regular clearances for the less popular bureaux, it used to cost 90c to VS6 for example and $1.00 to, say, LU or PZ. But now it costs $1.50 for VS6 and only $2.00 for the others. Since "the others" are the majority, that's an increase of 100 percent!

This totally unreasonable imposition has been made without any thought for a large group of users for whom a special category at preferential rates had been created. And, cunningly, Australia Post has still included the words "Small Packet" on the rate card. But, "Small Packets" are no more. There is no advantage in making up packets of 500 grams of cards. It might as well be a few cans of passionfruit pulp for your granny in Bulgaria. It'll cost you just the same. The VK2 Bureau expects this stroke of the pen to cost an extra $1000 or so in a full year, a cost which has to flow on to the members. It looks like less service at twice the cost to me.

Keith Howard VK2AKX
PO Box 18
Teralba 2284

Contest Rules

The following is a portion of a letter written by me to the Federal Contest Manager and which was forwarded with my entry in the VK Novice Contest held in June, 1988.

As the Immediate Past Federal Contest Manager I had much soul searching as to the protocol involved in seeming to make criticism of my successor. Since I am now merely an ordinary member of the WIA I have taken interest over more than 28 years in trying to improve the contest situation in Australia and also that I feel most strongly about the points raised. I decided that I should be able to air my views.

As a courtesy, I advised Frank VK7BC that I would take this action, thus allowing him the privilege of replying in "Amateur Radio" at the same time as this letter is published, should he wish to do so. I have not yet received a reply (March 1989).

Thanks for running the contest, which seemed to be fairly well patronised. There seemed a lack of Club stations however, and few stations in the CW section. I did not operate on CW myself.

Just a few comments regarding the rules generally. (Some will also apply to the Remembrance Day Contest Rules).

Lack of CW operators?

Why change maximum allowed CW speed? I should have thought that a decrease could have been advantageous. The speed has been deliberately kept low to try and entice operators who would not normally use morse. Such persons are more likely to try if the speeds they hear being used are fairly slow. I am sure that speeds approaching 15 words per minute would frighten them off. 15 wpm is faster than they needed to get their ticket, even for FULL call stations. What about the unskilled NOVICE CW operator?

Last paragraph in rules entitled "Operator"

PLEASE! Why this addition? If an operator has two callsigns he should be free to use both provided his use is legal. By using both his available callsigns he is doing everyone else a favour by increasing activity. He is not cheating, nor does he receive an advantage. Furthermore, an operator using two callsigns is never going to win any section of a contest. To gain a large score one must go hammer and tongs with only one call sign. Using two logs, even more if alternating callsigns can only slow you down.

Such extra callsign(s) provide more activity in the slower contests, such as the VK Novice and benefit others. In busier contests such as the "RD" it also helps activity and challenges top operators who have to work harder to work the extra stations. It helps to have more stations on the air as even top operators in a big contest like the Remembrance Day are at the end usually scratching around to find just one more station to work.

As regards "CLUB" stations, there should be as many operating as possible. Each Division should be encouraged to participate by airing all the official WIA callsigns available. Remember, most do not have stations set up solely for WIA purposes. In most instances private stations are used with WIA callsigns. Those operators, who so kindly operate on behalf of their Division, are penalised by not being allowed to put in a log using their own private callsign. This is wrong.

Summarising, we should encourage as much activity in all contests as possible. "The More The Merrier".

Remembrance Day Contest Rule Changes

Why re-institute RS(T) Reports in this contest? Such reports are basically meaningless in this and most other contests. I for one will rarely give a report other than "59" in a contest and that goes for virtually ALL other operators. Just listen to a contest and check the logs sent in. With any MAJOR contest (and the "RD" is one) if a station can even get through most of the QRM his signal must be S9. If you don't get his serial number perfectly, he is not R5 and the contact is invalid anyway. So, arguably (I believe definitely) the RS(T) numbers are superfluous. Back in the days when Wally Watkins was FCM, reason was seen on this point. Most operators seemed to appreciate deletion of the signal report, requiring serial number only. All that should be required is proof of exchange and the serial number provides that. No regulations require that we exchange Signal strength reports for any QSO. In my time as FCM I only ever had one station complain about the lack of RS(T) reports and that on the basis of seeking QSL cards for awards. Few operators QSL their contest contacts and to chase Australian Awards in an "RD" Contest!!! I ask you???

Double Points for CW??

Why not give the CW operators 10 times or 100 times the points for each contact? That would still make about as much sense. This point really worries me for several reasons. Firstly, with the change in the scoring format for the Remembrance Day Contest ONLY ONE POINT PER CONTACT "either phone or CW" is NECESSARY, otherwise it unbalances the whole scoring system. Anyone carefully looking at this and following the evolution of the system over the years should be able to see what I mean. The single point per contact approach is needed, because otherwise the formula used to determine the winning Division produces an unbalanced result.

Obviously in most contests there are separate Phone and CW sections. If you are in the Phone section you compete against other operators in that section only. Likewise for the CW section. Why then call for this needless approach? Whilst it is in fact damaging to the finely balanced RD system I have yet to hear logical explanation for double points for CW operation in any contest. If it is because that mode is harder to operate, why then do CW operators claim it is easier to get messages through QRM?

(They say that CW is more effective. And I don't argue against that either).

Re-introduction of the "OPEN" Section in the RD

Why?? Are we neither fish nor fowl?

Under the rules an operator can enter either a Phone log, a CW log OR BOTH. Neither this year's nor last year's rules preclude that approach. For many years this was the case until the idea of an "Open" section crept in. Is there a logical explanation as to why?

The rules state there must be a "reasonable mixture" of the two modes. Will the contest manager reject a separate log entry of 10 CW contacts and a separate log entry of 500 phone contacts from the same station? As stated above, the rules do not preclude such an entry. Both logs obviously qualify.

Why then reject an "Open" entry with 500 phone and 10 CW contacts? This approach does not make sense to me. It should not be possible for Valid QSOs in any section of a contest to be disqualified by a contest manager. This whole matter requires another re-think.

The abolition of the "Open" section in the "RD" brought very few complaints. I would like to see a list of callsigns of the "many requests" for its return to be able to judge what percentage wished reversion to what I would describe as a "Hodge Podge" of sections, aggravated by VHF having been set aside as a separate Category.

Please consider my comments carefully. They do not reflect ill will, but merely try to ensure that our contests are kept on an even keel, as has been my aim for so long. This particularly applies to the Remembrance Day Contest which is surely something special. Even now it still needs a modified system of scoring, but that is a subject to deal with separately.

I will be interested to see what other contest-minded members say regarding these various aspects of contesting. Open discussion on such matters helps to make us all better informed.

Ian J. Hunt VK5QX
8 Dexter Drive
Salisbury East 5109

P.S. I shall be overseas and unable to participate in the 1989 RD contest.

Vigilantes?

Received AR March 1989 today, read it through for the first time and as usual, enjoyed it - particularly the larger type, as the years roll on here and I often forget where I left my spectacles.

Letters (P60) really got to me with the publication by VK3CIS of a system in VK7 whereby the Central Highlands AR Club has the temerity to fine members for "sloppy radio procedure". Is this area not covered by DOTC regulations in an adequate manner?

It is unlikely that I will visit VK7 and even more unlikely that I would join the CHARclub - in the unlikely event that I did, I would defy the club to extract so much as 20 cents from this licensee for a minor misdemeanor.

Certainly, in all VK states I've visited, there are examples of "sloppy operation" from time to time - usually cured by an off air chat - as a rule, it seems that the hobby is self regulating and the last thing we need are self appointed "vigilantes". Haven't we (all Australians) had a gut full of Governmental abuse of authority? We certainly don't need a VK7 replica.

B. Bernays VK6CH
12 Brockmill Ave., Beechboro, 6063

"Q Code" On Phone

I must beg to disagree with Chris VK3CIS on the use of "Q Code" on phone (AR March 89, P60). This code was used by American telegraphists to accelerate the transmission of commercial traffic. Its use on phone is faintly ridiculous and can be taken by outsiders as an effort to state that the user belongs to some elite society.

Self discipline ensures that an operator does not swear on air and should ensure that "Q Code" is not used. The Central Highlands Radio Club of Tasmania merely enforces this as a "fun" method of raising a few cents towards Club funds. Using "Q Code" on phone is equivalent to using the old CB language, so, Chris, the best way to memorise it is continual use of the key.

With a big ten four to you, good buddy,

Bob Jackson VK7NBF
Falmouth House, Falmouth 7215

Reasons Why

I write in reply to the letter from Chris VK3CIS (AR February, 1989).

I hardly think that a small group of VK7s not using Q Code is going to have a world-wide impact. One only has to listen to any DX phone band to know it will never go out of use, and we will never be able to forget it.

We in the Central Highlands Amateur Radio Club of Tasmania choose not to use Q Code on phone, and make it a fineable "offence" for two reasons:

1.It would eliminate over-use of it on phone; and

2.It is a sure money-raiser for club funds - Q Code violations averaged 25% of "offences" 10 months after the formation of our Club, and 80% initially.

QRX a moment, I'm getting QRM from the XYL because this QSO is causing QSB of the TV sound and picture, QSL?

What's wrong with, Standby, the wife says I am causing the TV to fade, OK?

Give me plain language any day!!

Bob Geeves VK7KZ
President CHARC (Tas)
28 Hamilton Street, West Hobart. 7000

Field Days & the Amateur Spirit

What has happened to the Amateur Spirit for Field Day participation and activity?

For last year and this year (March 88 and 89) in the John Moyle Field Days, I made a concerned effort to participate in the spirit of the event.

For 1988 I made it a Family Holiday and hired an onsite caravan over at Stansbury on Yorke Peninsula in SA. Stansbury is about 70km across the gulf from Adelaide. You can see Mt Lofty and access CH7000 with a hand-held from the beach side Caravan Park. Just far enough away from the "Alligators" who run 100 Watts on 146.500 MHz.

I took HF, 6M, 2M, & 70cm, all modes, with antennas to suit each band, a HF multi band dipole, a 2 element Quad for 6M, a 5 element beam for 2M, & a 10 element for 70cm.

Good signal reports were exchanged with the stations worked on the VHF Bands, with adequate reports on the appropriate HF Bands used for day or night. The number of VHF participants worked was disappointing, 12 to 18.

It was a "FLOP"! My new wife and stepson who went to see how exciting Amateur Radio Contests are, were disappointed. My wife ended up knitting instead of log-keeping, and John played on the beach.

Sue said it was a waste of money on the caravan, and petrol on the trip over there; I could go on my own next time!

This year, 1989, I was less enthusiastic. On Saturday evening I fitted 6M, 2M, & 70cm, using magnetic mounts on the car, and a 7MHz whip on the towbar. The car looked like an "Echidna" my wife said. With young John on board to "play Radio" with Dad, I visited the ELIZABETH AMATEUR RADIO CLUB (VK5LZ) Field Day site, in the hills behind Elizabeth.

After a chat and a look at the set up, with only 6 amateurs there, I drove up to an elevated site on the Kersbrook Rd, not far from Mt Gawler. After working VK5LZ on 6M, 2M, & 7MHz, the Barossa Radio Club VK5BAR at their Tanunda site, on 6M, 2M, 70cm & 7MHz, plus a few other strays; that was it on VHF! A total of 12 contacts.

I had noticed that 7MHz was chock a block, so stayed there for another 20 contacts, including several ZLs. By 9.00 local, John had fallen asleep in the back seat, so I returned home. 20 contacts on 7MHz in 40 mins, 12 contacts on VHF in two hours!

On the Sunday, as the weather was delightful, a barbecue picnic lunch was decided upon at the National Conservation Park, some 20km from Elizabeth. I could "play Radio" for the rest of the FD contest in the afternoon.

After a nice BBQ lunch the HF multi band dipole was strung up between a couple of gumtrees, the VHF magnetic mounts attached to the vehicle. Another "FLOP". 6 contacts on VHF. There was nothing wrong with the site RF wise. Four repeaters could be accessed with the whips, Adelaide 7000, Houghton 6850, Barossa 6525 & 8425/70cm; the 6M Beacon was also good strength.

The rest of the afternoon was spent on 7MHz, "Ragchewing" 6 stations and extracting contest numbers from them!

A total of 12 contacts....!

What's wrong with today's Amateurs? Are the other states as poorly supported as VK5? I would be interested to know.

I have been a licensed Amateur for 24 years, and have been "Fiddling with Wireless" for longer than I care to remember. In the 60's when I was first licensed and joined the Elizabeth Amateur Radio Club we had some wonderful Field Days.

A big 10kVA Diesel Generator, Fridges for the beer and coke, 6 to 8 big tents, TH3s on crankup masts, RTTY, and gear galore. There was music and singing for the wives and kids and a portable toilet..... Sheets and sheets of contest numbers had to be gone through and made sense of, something like 2000 QSOs. Yes.....flies and dust and everyone tired out by the end of the day.

I don't think it will ever happen again, nobody wants to be bothered!

They would rather sit home in airconditioned shacks and let the Black Boxes talk to one another with computer controlled "Packet"!

Steve J. Mahony VK5AIM
19 Kentish Road, Elizabeth Downs 5112

40 Metre QRP

I wish to comment on the possible proposal to utilise 7.030MHz for packet network communications. (O to Y AR 2/89).

This frequency is the international CW QRP working frequency. (See 1984 callbook P179).

Enthusiasts experimenting with low power worldwide CW communication, often using home built crystal controlled transmitting equipment can be found on this frequency.

Like packet radio, QRP CW is a growing facet of amateur radio. The CW operators QRP Club, with 130 members recorded a growth rate of 20 per cent last year.

I would suggest a frequency above 7.040MHz as being suitable for the packet network. Listening has revealed that there is a high level of CW activity able to justify a 40kHz wide CW only setment.

40m is a crowded band and all IARU member societies would do well to encourage the use of narrow band modes, (eg CW, RTTY, packet) and the use of only moderate power levels when the band is crowded. This should allow the band to be less crowded and allow the greatest number of people to enjoy QSOs on this band.

73, Peter Parker VK6BWI
C/- PO Witchcliffe 6286

Contests And New Members

The letter "May I Be Permitted" by Terry Robinson VK3DWZ was interesting. I can see what he is getting at. To me there seems to be an ever-increasing number of contests at weekends. I do not doubt that contests and sprints etc have devotees. I believe there are some in our fraternity whose sole interest is in contests and virtually live for them. But from a SWLs point of view to hear nothing but Hullos, goodbyes and best of lucks intersected by a string of numbers being rattled off like rounds from a machine gun could discourage SWLs, who are prospective amateurs, from joining our ranks. The greater our numbers the greater our strength and the more chance we have of retaining our bands and perhaps gaining further frequency allocations.

While points 1,2 and 3 are quite valid, point 4 would be difficult to "enforce" as there are many countries that have their own varieties of contests etc., however, I would like to add to what VK3DWZ has said and suggest that for a contact to be counted communication between the contestants must last at least 2 minutes if not 3.

To change the subject, I would like to make the following comments and suggestions.

1. Please do not divide our bands up into segments for "exclusive use" by "Amtor" and "Packet" (the buzzsaw brigade) as these bands are for the use of all amateurs using any legitimate mode of transmission. I for one like a good rag chew.

2. I suggest that you consider membership of our organisation where the applicant does not receive a copy of AR.

3. As a means of introducing more people into the hobby of amateur radio, I would suggest that you push for a licence free of morse - maybe using reduced power allowing operation on the last 100 kHz of the 20 metre band, the last 150 kHz of the 15 metre band and the last 300 kHz of the 10 metre band. The holder of such a licence to hold it for a period no longer than 2 years. More on this later if you like.

Graham J. Mulrhead VK4WEM
23 Cunningham Street, Warwick. 4370

More Contests?

I couldn't agree more with Terry VK3DWZ. My brother KW7Z, Phoenix, AZ, also gets upset with contests on weekends when we have time for "chewing the rag" and are constantly interrupted with "CQ test" (No request for the Freq). I left CB and became a ham, and this was one of the reasons.

When I visited Australia in 1979, I listened to the bands and couldn't believe what I heard coming out of the USA. It was a "wall of sound" on an average weekend with no contest.

I wish there were rules to limit contests. I feel sure, if a poll was taken on how many hams worked contests, it would open a few eyes on how many wish the contests would just vanish. Can you imagine if 50% were contestors what a mess we would be in. (The USA has almost 500,000 hams) that would mean 250,000 would be on at the same time, nuff said.

Gene Gain ND5H
2514 Manila, Houston TX USA 77043

Emergency

So much for contests, they do populate the bands, but they also can have the opposite effect on someone requiring help.

At 1150am Qld time today, I came across a station (VK2PLT/m) calling CQ the Sydney area. So what, you might say, but later I heard him saying that his XYL had broken her leg and he was trying to get someone to call her sister.

I called several times but he apparently couldn't hear me. The next best thing to do was to look up the call book and ring his home number, hoping someone else was there, but the phone rang out.

A short while later the signals faded and I couldn't hear him at all.

Accident or not the amateur service is populated by very few who know the correct calling procedure for such an event.

I'm open for correction and without my copy of the Regulations I quote from memory - MAYDAY requests help because the ship/aircraft is going to sink/crash with a good chance of loss of life. - PAN PAN requests help because someone on board has need for urgent medical support but there is no imminent danger of crash. - URGENCY requests help or attention to the caller from other stations. The station needs assistance normally because someone near has a problem and may need medical assistance.

I feel that had VK2PLT/m used either PAN or URGENCY at the time of his call instead of CQ, he might have gained assistance faster.

I do hope his XYL has recovered and that amateurs in general take a look in their Regs for Emergency Procedures.

Nick Quigley VK4NFL
PO Box 880, Rockhampton. 4700
ar

SILENT KEYS

Harry Cliff VK3HC

Old timers will be sad to hear of the death at age 79 of Harry Cliff, VK3HC, on December 22, 1988 after a long illness.

Harry was first licensed in April 1928 and was active on air for 60 years. Prior to gaining his licence he had a strong interest in SWL and his earliest cards (now in the WIA archives) date from 1925. His early experiences included being one of the amateurs who supported the 1929 air race.

Harry had a lifetime involvement in the electronics industry. He was instrumental in the establishment of Trimax Transformers in 1935 (eventually sold to LM Ericsson) and purchased Aegis Pty Ltd in 1960. Aegis manufactured amongst other things a range of cable fault locators, bought in large volumes by the PMG

We regret to announce the recent passing of

Mr W E Bischoff	VK2LZ
Mr J E Welldon	VK2MCO
Mr Harry Cliff	VK3HC
Mr Bob Cunningham	VK3ML
Mr C D McQuillan	VK3ACD
Mr Lou Olsen	VK4KLO

and later Telecom. Harry sold the business and retired in 1975, moving to Point Lonsdale with his wife Melda.

Harry was one of the founding members of the RAOTC and became its secretary on the death of Ivor Morgan. He retired from this position in 1985 due to ill health. During his life he established many long and valued friendships through amateur radio, and was a lifelong member of the WIA. He will be sadly missed by all who knew him.

Deepest sympathy is extended to his wife Melda and his children Janet and Jonathan.

Bill Gronow VK3WG

Bob Cunningham VK3ML

Very outgoing, hard-working, kind-hearted, known as a gentleman by all. These words describe Bob Cunningham VK3ML, who suffered ill-health for some years, and passed away at his Malvern home on March 31, 1989.

Bob was first licenced in 1928 and a good DX man. His early WIA activities included being Contest Manager and Technical Editor for Amateur Radio magazine.

His peers described him as a "specialist leader" who took on tasks and did them well. This description typified Bob's involvement in our hobby for 60 years.

The WIA before WWII had tried to interest the armed services in forming a Wireless Reserve with radio amateurs being its members. The idea was rejected by the Army and Navy, but adopted by the Air Force. An RAAF Wireless Reserve was formed around 1931 at the instigation of Howard Kingsley Love. Without Bob picking up the threads the Reserve would never have got off the ground. He became its Commanding Officer, taking on the job with characteristic great enthusiasm.

When war broke out in 1939 he became a Signals Officer and during the war rose in rank to Wing Commander.

After hostilities ended Bob held the office of WIA Victorian Division President from 1947 to 1950.

He was an analytic chemist, but his knowledge and technical ability with radio saw him more and more involved in the business side of audio and communications.

Bob Cunningham VK3ML

Through his company R.H. Cunningham, he imported Eddystone receivers and was agent for a number of well known brand names. A trip to Europe with his wife Kay resulted in his company obtaining and agency for the Geloso range of gear from Italy. This included the famous Geloso VFO which was widely used by radio amateurs.

R.H. Cunningham also served recording studios and broadcasting stations with a range of microphones and headphones.

He was highly regarded by the management of those overseas companies which entrusted their representation in Australia to him.

Through dedication and effort Bob Cunningham founded the Radio Amateurs Old Timers Club and was an active member of the RAOTC. He was always most anxious to assist anyone in need of a helping hand. In recent years Bob provided assistance to the Kooyong Radio Club and was a source of encouragement for its blind members.

Sharing his years of experience the club benefitted from advice on how to run its meetings and set policy, and he became a very vital and interested member of the club.

Bob Cunningham demonstrated his specialist leadership capacity numerous times in serving his fellow radio amateurs. He was a person who wanted to be in the front of things and make it happen.

He will be sadly missed and long remembered for his contributions. Sincere condolences to his wife Kay, daughter Ann, son Jimmy, and to his many friends.

Jim Linton VK3PC.

Ron Guttormsen VK4RL

It is a sad duty to inform readers that Ron VK4RL passed away suddenly on Tuesday 14th February 1989. RTTY operators will remember Ron as the 80 metre relay officer for the Monday night Qardata News Service – and as such, he will be sadly missed.

Ron was born in 1921 and obtained his amateur radio licence in 1948, so he was quite an Old Timer. A long term member of the WIA, he acted in many capacities – member of WIAQ Council, Librarian and QSL Officer – and was awarded Merit Badge No 10 for his services. He found pleasure in making his own equipment and in later years became quite proficient in computers, RTTY and Packet. His favourite saying was, "There are not enough hours in the day to do what one wants to do."

After retirement Ron and YF Dorothy led a full and active life, concerning themselves with many community interests – Meals on Wheels, Senior Citizens, Caravanning (Past President and Life Member), School of Arts – but leaving some time for his favourite hobby, wood turning.

The WIAQ and many friends extend their deepest sympathy to Dorothy, their sons Bevan and Robin and granddaughters Deidre and Kaylene.

Stan West VK4WY, and Alan Shawsmith VK4SS.

Lou Olsen VK4KLO

I feel sad when a devoted Radio Amateur slips silently away. It was 24 November 1988. I first met Lou when he started the Cairns Amateur Radio Club in September, 1968. Lou devoted two good years making a success of that club before going back to sea. (We taught ourselves how to become Radio Amateurs with a little help from outside).

When he returned from sea he rejoined the CARC and later TARC, and for the rest of the time assisted many Amateurs in North Queensland by making or turning out articles on the lathe, where his expertise was never challenged.

Born in Denmark on 4 October 1906, he joined the Merchant Navy at 14 years of age, and in 1928 operated under the call sign OZLO. During the war years he worked for the Resistance Movement. It was 1951 when he arrived in Western Australia, and eventually came to Townsville in 1955, working for the commercial Radio Station, 4TO.

There he met Doris who came from Charters Towers. In 1957 he became a Naturalised Australian, and later married Doris. It must have been about 1972 before Lou became active as a Radio Amateur.

If you come north you may still see the cottage just south of Cairns. All the aerials are still there just the way they were when he went QRT!

Ian Baty VK4AFC
423 Draper Street
CAIRNS 4870

Jim Kirk G6ZO

Many amateurs throughout the world will be sad to learn that Jim Kirk died on the 8th of March 1989 after a fairly short illness.

He was so well known through his many skeds nearly everyday as a dedicated Morse man – and what a perfect fist!

A number of his radio friends had the pleasure of visiting his home where they were warmly welcomed by Jim and his wife Denise.

Some of his VK friends were privileged to meet him during his visit to VK in 1985 when he spent several weeks with his close friends. Barbara and Ray Carter VK2HC (silent key). During the visit he had the call VK2FIP and worked many of his VK and worldwide mates.

Jim was the son of a missionary to China where he was born and received his early education. His Chinese language was apparently pretty good. I was amused during his visit when we took him to lunch at a Chinese restaurant where he and the Chinese waiter became long lost buddies!

During his business life he worked and lived in many countries and had amateur calls including XAZO CE3ZO, ON5ZO, FØAJB and G6ZO/HB.

He came on the air as an amateur in 1935.

During the Second World War he served in the Royal Corps of Signals and had many tales to tell of those years. In the early days he was able to show the "top brass" that some "ham"

HAMADS

RADFAX2: Hi-Res radio facsimile morse & rtty program for IBM PC/XT/AT on 360K 5.25" floppy + full Doc. Need CGA, input port, SSBhf FSK/Tone decoder. Has re-align auto-start view save print. Also "RF2HERC" same as above but suitable for hercules card, and "RF2EGA" for EGA card (640X350 mode). Programs are $30 each + $3 postage ONLY from M. Delahunty, 42 Villiers St., New Farm 4005 Qld. Ph. (07) 358 785.

WANTED NSW

Manual/Handbook for TECH model TE-20D Signal Generator Photo Copy Pay all costs. A. Walsh L20181 QTHR

Valves: 6A8G 6J8G 6B6G 6U7G 6V6G 5Y3G for restoration of vintage RX's for pensioners. New boxed, or good used.
Jock VK1LF QTHR
Ph. (062) 866 920

Kenwood TS600 6MTR. All mode TXCVR or similar. Also Kenwood 70cm all mode. Both in good condition Ph. (02) 982 4457.
Doug VK2XGX QTHR.

Handbook for Heathkit SB620 "Scanalyzer" refund for postage and photocopying etc. Please help!
VK2FHF QTHR

The Geelong Amateur Radio Club wishes to purchase both a 6m and a 2m transceiver each capable of SSB operation.
Ph. A.H. (052) 823 167.

AVO valve tester CT160. Handbook to buy or copy. Collins KWM2 handbook and 6AZ8, 6BN8, 6DC6 valves.
David VK3BFB Ph. (03) 587 1593

WANTED QLD.

Copy of, or information on a "Voltohmyst 2A56074 test meter by AWA Ltd. Sydney" including wiring diagram, or loan of such. Returned after perusal. Reimbursement of costs. Please phone (07) 284 6432. R. Male, 13 Henzell St., Redcliffe 4020

EIMAC 3-500Z tubes (pair if possible).
VK4EBV, Tel. (07) 354 3779 after 5 p.m.

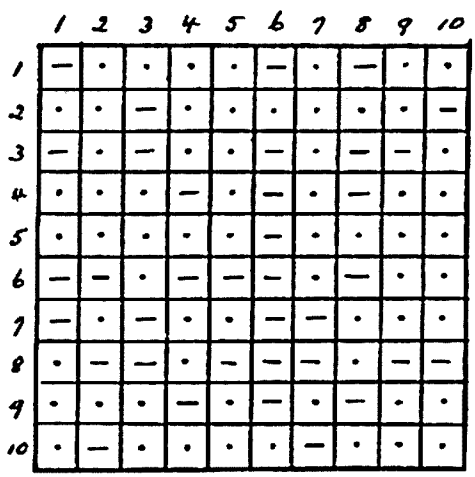
WANTED SA

Back issues AEM relating to Yaesu 757GX - RS 232 interfacing, appearing 18 to 30 months ago. Fax - RTTY- Morse Software Programmers with source code for porting to Macintosh environment.
Phone (08) 497 905 Bill.

Info on converting Hygain 5 or Expo Bushranger CB to six meters SSB. Any details to Alan VK5BWG QTHR
Will reimburse any costs.

Answer to Morseword 26

ACROSS; 1 dice 2 fist 3 king 4 vend 5 sues 6 gore 7 cats 8 poem 9 stare 10 rile
DOWN: 1 cab 2 hart 3 wipe 4 skite 5 sited 6 noon 7 hunt 8 taker 9 eased 10 rife



Obituaries (continued)

influenced transmitters or receivers were far superior to the then huge and heavy army equipment. Later he was sent to Algeria to establish the North Africa army HQ station for high speed communication back to London HQ.

While in Algiers he met the family of his wife-to-be, Swiss/Scottish vineyard owners. He married Denise in Algiers in 1948.

There is much more than could be written about Jim but space here is limited. He will be very sadly missed and already hundreds of letters of sympathy are being received by Denise.

If Heaven were to appear on the DXCC list, Jim would have one of the first calls to be issued there!

Norm Hurll VK4HH

USSR Callsigns

The month of May brings with it some strange callsigns from the Soviet Union.

It seems during this month every year the E prefix is aired to commemorate the end of World War II.

Callsigns starting with EU are in the capitals of the 15 Russian Republics.

Those with EV identify stations in the capitals of the 20 autonomous republics.

Hero cities have EW, and stations in cities with former guerilla activity use the EM prefix.

Cities which were awarded medals for their contribution to victory in the war have EO prefixes.

It is easy to determine the Russian republic by the letter after the number. These are: A, N, V, W or X equals UA. While B, T, V or Y equals UB.

Other letters identify the republic as usual. The DXCC country is the same as the Russian republic, except for Russia itself: you must then refer to the number in the callsign - 2 is Kalingrad; 1,3,4 or 6 is European Russia; and 9 and Ø are Asiatic Russia.

ar

HAMADS

WANTED WA

Crystals Wanted for 6900 repeater CH to suit FM828, ETC TXCVR (TX 18.2875, RX 45.400 MHz) in exchange for pair similar crystals on 6675 or 6850 channels.
Peter VK6BWI QTHR

WANTED TAS

Handbooks for Belcom Liner 430 MHz SSB/CW transceiver and Tempo 2002 2 metre Linear amplifier - Urgent.
Mike VK7MC Ph. (002) 652 715.

TO SWAP NSW

Yaesu 70cm module to suit FTV707 or FTV700 for a 6 metre module to suit same: 70cm unit has had little use.
Phone Peter VK2BIT (042) 833 743 after 6 p.m.

FOR SALE ACT

Tower, 14m, wind-up with TH3jnr and rotator with round controller - Diawa $700 ono. Contact Geoff VK1KP
Ph. (062) 950 887 a.h. - transport to Sydney arranged.

FOR SALE NSW

Keyer, Katsumi EK-150, Iambic paddles 12-240v. $100. Toyo VHF/UHF twin needle wattmeter $75. Daiwa HF-UHF lo-loss antenna switch $25. VHF mast-mounting hardware $25.
Larry VK2OY (02) 949 3124.

"Farnell" PSG52OH Signal Generator 520meg. AM FM Sinad, C/W porta pack $4000 ono. "Farneil" AMM-B Auto dev. mod monitor incl. Int. D.C. Supply $2250 ono. "Helper" "Sinadder" sinad Sig-tracer Ac-Audio V. $550 near-new equipment manuals - incl.
VK2YDA P.O. Box 333 Finley 2713

Yaesu FT102 with MDI Mic. WARC Bands. Original owner. New June 1984. Licensed amateurs only $1100
VK2ETF (049) 454 989.

ICOM 740. Very little use - require minor service. TET HB-35C 5 element Tri-Bander. Has been in store for past 3 years.
Offers to VK2BZM (02) 498 2259.

SM-220 Monitor $550, MD-1 Base Mic. $130, CA-35DX 5 Ele Tri-band Vagi 80ft. cable $450, Emotator 105-TSX extra clamp (new) 57ft. cable $400, SP-520 Kenwood $50, Multi tester meter Q1140 (new) $75.
Deceased Estate VK2MCO. Mrs P Welldon 11 Desmond St Cessnock (049) 90 4468 or Ian VK2PKB (049) 32 8935 after 4.30.

Yaesu FT209RH 2m hand-held, HL35V Power amp, speaker, mike, battery packs, antennas, etc. $500.
Phone (02) 602 2085 VK2MSA QTHR.

Tower 10 metres plus rotator $200.
Ph. (02) 610 3341 a.h.

FOR SALE VIC

Icom IC-751 H.F. all band transceiver and general coverage receiver c/with IC-HM12 microphone. Excellent condition $1350.
Stan VK3BSO QTHR (03) 787 3479.

Books. Some collector's items including ARRL Hbks 1946-72, RSGB Hbk 3rd ed, many historic textbooks.
Estate late Max Hull VK3ZS.
Phone (03) 836 7097

Icom 745 HF transceiver. General coverage receiver has FM, Electronic Keyer, Narrow CW filter fitted plus PS30 power supply IC-SP3. External speaker SM6 Desk-Mic. $2300.
Phone (03) 726 9222.

Deceased SWL Estate.
Yaesu FRG 7000 with FRT 7700 ATU $550, Kenwood R1000 $600, and JRC NRD 515 with speaker, 24-channel memory unit, and JRC 505 pre-selector $1500. Also MFJ-959 ATU/preamp, MJF-16010 random wire tuner and Palomar FL-4 audio filter. All with instruction manuals.
Ken VK3AJU (03) 527 9029 A.H.

Kenwood TS4305 150kHz - 30MHz. All bands, SSB-FM-AM-CW, CW-AM, filters, mobile mount, Mic. Numerous features, manual. Very good

condition $1150.
Andy VK3UJ (03) 735 3335.
Licensed amateurs only.

FOR SALE OLD

Antenna Tuner H.F. ex Aircraft, remote switching adjustable L&C $35. Marconi Mono Sync Decoder, suit A.T.V.? $20.
VK4AIZ QTHR (07) 391 5526

FL2100B Linear 10/80 Metre mint cond. handbook $700.
John VK4ET QTHR (07) 269 3942 anytime.

Yaesu FTDX401 Transceiver. Good condition, new finals $400.
David VK4ADP (07) 800 1406

FL210OB Linear, 80/40/20/15/10m, including 2 brand new 572B tubes plus one as new spare tube, in VGC and working order for $1200.
Bernhard VK4EBV Tel: (07) 354 3779 after 5 p.m.

SX64 includes 5" colour monitor disc drive. Pakratt-64 HF/VHF Packet Amtor RTTY/CW. AAPRA HF/VHF Packet Modem for 64 and/or Vic 20. 12" green screen. Microlog HF/VHF RTTH ASCII CW for Vic 20.
Phone Gordon VK4FO (071) 951 533 B.H. (071) 952 805 A.H.
$1500 the lot.

FOR SALE SA

Telcon semi air spaced twin coax cable, 2kW to 2m. Transmitter, 6V6G osc 6V6 dblr 807 buffer 829B PA, 160 to 6m. Transmitting tubes 4-65A, 4E27 (813), 829B and socket, VCR139 and socket. Grundig reel-to-reel recorder (valves). 2 sets tubes for KW2000. Post-war tubes, receiving & TV.
VK5LC QTHR Phone (08) 271 6841

FOR SALE WA

MFJ CW/RTTY computer interface 1224 with RS232 adaptor, software for C64. Can be adapted other computers. Have no use - unwanted gift. $150 ono.
Paul VK6PY QTHR Ph. (09) 275 1617

Yaesu FC757AT Automatic A.T.U. $400
VK6ZN QTHR (09) 401 1984

FOR SALE TAS

Yaesu FRG-7 Receiver, fitted with extra XTAL filter for SSB $120
Mike VK7MC Ph. (002) 652 715.

ADVERTISER'S INDEX

ATN Antennas 11
Blamac Pty Ltd 53
Dick Smith Electronics ..... IBC
Electronics Australia 16
Electronics Today International .... IFC
Emtronics 21
Ian J Truscott's Electronic World ... 24
Icom ..... OBC
Kenwood Electronics Australia P/L 22
QD Electronics 41
Silicon Chip Publications 44
Stewart Electronic Components 48
West-AM Radio 29
WIA NSW Div Novice Licence 52
Wilkie Trading Co 17

HAMADS

Please Note: If you are advertising items For Sale and Wanted please use a separate form for each. Include all details; eg Name, Address, Telephone Number (and STD code), on both forms. Please print copy for your Hamad as clearly as possible.

*Eight lines free to all WIA members, ninth line for name and address Commercial rates apply for non—members. Please enclosed a mailing label from this magazine with your Hamad.

*Deceased Estates: The full Hamad will appear in AR, even if the ad is not fully radio equipment.

*Copy typed or in block letters to PO Box 300, Caulfield South, Vic 3162, by the deadline as indicated on page 1 of each issue.

*QTHR means address is correct as set out in the WIA current Call Book.

*A courtesy note will be forwarded to acknowledge that the ad has been received.

Ordinary Hamads submitted from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re—sold for merchandising purposes.

Conditions for commercial advertising are as follows: $22.50 for four lines, plus $2.00 per line (or part thereof) Minimum charge — $22.50 pre—payable.

State: .....

❑ Miscellaneous
❑ For Sale
❑ Wanted

Name: .....

Call Sign: .....

Address: .....

.....

DICK SMITH COMMUNICATIONS

Yaesu's Amazing FT-4700RH

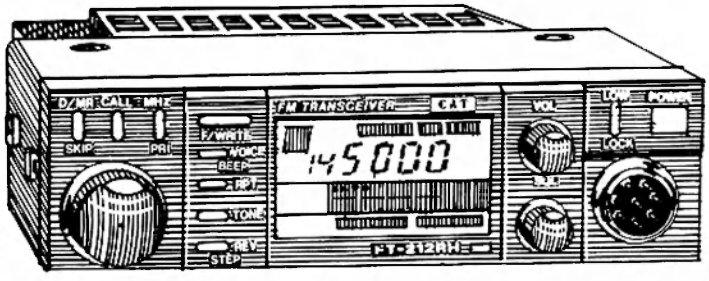
This is the 2m/70cm transceiver you've been waiting for! It boasts high power operation (50 watts on 2m, 40 watts on 70cm), with inbuilt cooling fan, detachable front panel for optional remote mounting of the transceiver body, true full-duplex operation (you can even listen to both bands sumultaneously!), 20 memories, 6 user selected tuning steps, the list goes on and on. Cat D-3300

2 YEAR WARRANTY

SUPER VALUE $1395

BONUS This month only, receive a YSK-4700 Remote Mounting Kit at NO CHARGE! Cat D-3301

Valued at $59.95



FT-212RH

A rugged yet compact 2 metre FM transceiver featuring 45 watts output for extended range, 20 memory channels coupled with a flexible "band" and "memory" scanning system, hand-held mic, optional DVS-1 digital voice recording module, and a 2 year extended warranty. Isn't this the reliable 2 metre mobile you've been looking for? Cat D-3494

$669

SAVE $30

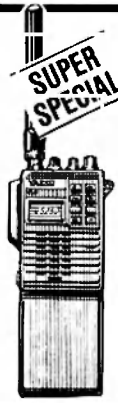
35W 70cm also available. Cat D-3330 $649

FT-411

This ultra compact 2 metre hand-held offers an incredible array of features without the size and weight of previous sets. Compare! CPU control offers 49 freely tunable memories that store repeater offsets, 2 VFO's; huge 1000mAH capacity NiCad battery as standard (yes! 1 AH!) programmable power saver, fast keyboard frequency entry, heavy duty die-cast casing with rubber gasket seals, carry case, carry strap and charger. Cat D-3350

Complete Package

(More stock due shortly) **$549**



FT-23R

Don't need the sophistication of the FT-411, but still want a reliable hand-held? The FT-23R offers 2.5 watts output, 10 memories, scanning, 600 mAH NiCad battery, diecast transceiver casing, carry case, charger and rubber gasket seals to keep out the dust and humidity that's hard to avoid while hand-held! Cat D-3490

Our best price ever! **$439**

DICK SMITH ELECTRONICS

• **NSW** • **Albury** *21 8399* • **Bankstown Square** *707 4888* • **Blacktown** *671 7722* • **Bondi Junction** *387 1444* • **Campbelltown** *(046)27 2199* • **Chatswood Chase** *411 1955* • **Chullora** *642 8922* • **Gore Hill** *439 5311* • **Gosford** *25 0235* • **Hornsby** *477 6633* • **Hurstville** *580 8622* • **Liverpool** *600 9888* • **Maitland** *33 7866* • **Miranda** *525 2722* • **Newcastle** *61 1896* • **North Ryde** *88 3855* • **Parramatta** *689 2188* • **Penrith** *(047)32 3400* • **Railway Square** *211 3777* • **Sydney City** *267 9111* • **Tamworth** *66 1711* • **Warringah Mall** *905 0441* • **Wollongong** *28 3800* • **ACT** • **Fyshwick** *80 4944* • **VIC** • **Ballarat** *31 5433* • **Bendigo** *43 0388* • **Box Hill** *890 0699* • **Dandenong** *794 9377* • **East Brighton** *592 2366* • **Essendon** *379 7444* • **Footscray** *689 2055* • **Frankston** *783 9144* • **Geelong** *43 8804* • **Melbourne City** *326 6088* • **Richmond** *428 1614* • **Ringwood** *879 5338* • **Springvale** *547 0522* • **QLD** • **Brisbane City** *229 9377* • **Cairns** *311 515* • **Chermside** *359 6255* • **Redbank** *288 5599* • **Rockhampton** *27 9644* • **Southport** *32 9863* • **Toowoomba** *38 4300* • **Townsville** *72 5722* • **Underwood** *341 0844* • **SA** • **Adelaide City** *223 4122* • **Beverley** *347 1900* • **St. Marys** *277 8977* • **Elizabeth** *255 6099* • **Enfield** *260 6088* • **WA** • **Canninglon** *451 8666* • **Fremantle** *335 9733* • **North Perth** *328 6944* • **Perth City** *481 3261* • **TAS** • **Hobart** *31 0800* • **NT** • **Stuart Park** *81 1977*

ORDER BY PHONE TOLL FREE (008) 22 8810 FOR 24 HOUR DESPATCH

THIS SCREEN CAN TELL YOU AS MUCH ABOUT THE IC-781 AS WE CAN.

The huge CRT display on this new HF transceiver will show at a glance all the functions we're about to describe here.

That's because it has a built in spectra scope for the first time, for programmable, multi-functional central monitoring.

Plus there's a VFO, A/B contents, memory contents, two menu screens, band scope, and 15 operational screens.

It also has a sub display, and its DDS system offers a lock-up time of just five milliseconds. So it's ideal for data communications systems like PACKET and AMTOR.

The dual watch function is a huge advantage on DX-peditions or when chasing DX-stations. And its computer-controlled twin PBT with high efficiency IF filter eliminates interference.

Maximum frequency stability is achieved at ±15Hz (0-50°C), which is more efficient than other transceivers on the market.

Also, the delay control noise blanker system is adjustable by up to 15 milliseconds.

There's a full and semi break-in function that can output up to 100 words per minute. And a p.a. unit that outputs 150W of power.

However, just because the IC-781 has so many state-of-the-art features, don't think ICOM haven't made it simple to use.

There is a built in 10-keyboard for easy operation. Or you can use the built in remote control communication interface-V system.

This lets you control your transceiver via a personal computer or other compatible equipment. Plus you have a 2 way sleep timer, and 5 separate automatic weekly timers.

For your nearest ICOM stockist, just call (008) 33 8915. And they'll tell you everything you need to know about the IC-781. Then once you've got one, the CRT display will tell you everything you need to know about what it's doing.

ICOM

The Hall Partnership ICO 0014

Amateur Radio

JOURNAL OF THE WIRELESS INSTITUTE
OF AUSTRALIA
VOL 57, NO 6, JUNE 1989

• Sporadic -E Propagation • Distortion Measurement • PEP Power Meter •

Huge Savings on the FT-767GX All Mode Transceiver!

The FT-767GX is the **only** transceiver that offers such a high level of performance on all the H.F. bands, as well as on the 6M, 2M, and 70cm bands! A vast array of both 'operator convenience' and 'DX improving' controls are provided by the 2 microprocessors, while attention to detail in the RF circuitry provides up to 104dB receiver dynamic range (in CW-narrow mode), and transmitter 3rd order I.M.D. of - 35dB (at 100W output, 14MHz). Compare the following features with any other radio.

- All band coverage from 1.8 to 440MHz (100W max H.F., 10W max VHF/UHF)
- All modes - SSB, CW, FM, AM, FSK (on HF, VHF, and UHF)
- Upconverting triple conversion H.F. receiver covering 100kHz to 30MHz, with choice of RF amplification or direct mixer feed.
- Heavily optioned - inbuilt 600Hz CW filter, inbuilt 6kHz AM filter, RF speech processor, I.F. notch and I.F. shift filters, inbuilt heavy duty AC power supply, inbuilt automatic H.F. antenna tuner, high stability PLL (+/—) 3ppm), data IN/OUT sockets for packet T.N.C. connection, all mode squelch.
- Revolutionary facilities include a digital wattmeter and auto calculating SWR meter (for HF, VHF, and UHF!) programmable tuning steps for each mode (from 10Hz to 99.9kHz!), and a front panel TX shift control which allows the operator to adjust the carrier point of the SSB transmit signal to suit his voice characteristics! A large digital display, and keyboard frequency entry are, of course, standard features.
- 2 Year Warranty - the longest in the industry
- BONUS MD-1 desk mic (valued at $199)

D-2935

$3995

SAVE $650!
Limited stocks!

YAESU

DICK SMITH ELECTRONICS

• NSW • Albury 21 8399 • Bankstown Square 707 4888 • Blacktown 671 7722 • Campbelltown (046)27 2199 • Chatswood Chase 411 1955 • Chullora 642 8922 • Gore Hill 439 5311 • Gosford 25 0235 • Hornsby 477 6633 • Hurstville 580 8622 • Liverpool 600 9898 • Maitland 33 7866 • Miranda 525 2722 • Newcastle 61 1896 • North Ryde 88 3855 • Parramatta 689 2188 • Penrith (047)32 3400 • Railway Square 211 3777 • Sydney City 267 9111 • Tamworth 66 1711 • Wenngah Mall 905 0441 • Wollongong 28 3800 • ACT • Fyshwick 80 4944 • VIC • Ballarat 31 5433 • Bendigo 43 0388 • Box Hill 890 0699 • Dandenong 794 9377 • East Brighton 592 2366 • Essendon 379 7444 • Footscray 689 2055 • Frankston 783 9144 • Geelong 43 8804 • Melbourne City 326 6088 • Richmond 428 1614 • Ringwood 879 5338 • Springvale 547 0522 • QLD • Brisbane City 229 9377 • Cairns 31 5155 • Chermside 359 6255 • Redbank 288 5599 • Rockhampton 27 9644 • Southport 32 9863 • Toowoomba 38 4300 • Townsville 72 5722 • Underwood 341 0844 • SA • Adelaide City 223 4122 • Bevarley 347 1900 • St. Marys 277 8977 • Elizabeth 255 6099 • Enfield 260 6088 • WA • Cannington 451 8666 • Fremantle 335 9733 • North Perth 328 6944 • Perth City 481 3261 • TAS • Hobart 31 0800 • NT • Stuart Park 81 1977

Amateur Radio

Cover

The last thing our General Manager, Bill Roper VK3ARZ wanted, when caught at the Gosford Field Day trying out some ancient "wireless set", was that the picture should appear on the cover of ARI But we felt the photographer George Brzostowski VK1GB, had so aptly captured his expression of nostalgic delight that Bill's protestations should be overruled!

Deadlines

	Editorial	Hamads
July	12/6/89	14/6/89
August	10/7/89	12/7/89
September	7/8/89	9/8/89

TYPESETTING :	Redfords Media 25 Glenlerrie Rd Malvern 3144 Tel: (03) 500 0377
PRINTING:	Industrial Printing Richmond
MAIL DISTRIBUTION:	Polk Mailing Co. PO Box 140, Collingwood, Vic. 3066 Tel:(03) 417 5161

Special Features

Seanet 88 Convention Report - David Rankin 9V1RH 28
SWR - A can of worms - John Sparkes VK6JX 32
Awesome Orson - The Big Blow - Harry Atkinson VK6WZ 26
A Short History of Communications (continued) - Ted Roberts VK4QI 26
Writing a WICEN Exercise Instruction - Trevor Connell VK8CO 31
Preston House Revisited - A Shawsmith VK4SS 25

Reviews

Yaesu, FT-411 - Ron Fisher VK30M 30
Timely Tip for Icom IC-2A owners - David Barneveld VK4BGB 19
Book Review - Rodney Champess VK3UG 58

Technical articles

Measurement of Distortion - Lloyd Butler VK5BR 8
Sporadic - E Propogation - Peter Stackpole VK1RX 20
1 KW PEP Power Meter - Frank Antonovic VK4A0I 18

Regular Features

Advertisers Index 64
ALARA 59
AMSAT Australia 33
AR Showcase 46
Awards 57
Club Corner 51
Contests 43
Data and Digital Communications 39
Divisional Notes
- VK2 Bulletin 49
- VK3 Bulletin 51
- VK4 Notes 49
- 5/8 Wave (VK5 Div) 60
- VK6 Bulletin 48
- QRM from VR7 49

Editor's Comment 2
Education Notes 55
Hamads 62
How's DX? 53
Morseword No. 27 57
Pounding Brass 50
QSLs of the WIA Collection 47
Silent Keys 61
Spotlight on SWLing 56
Stolen Equipment 63
VHF-UHF - An expanding World 35
WIA Directory 3
WIA News 4

Amateur Radio

Published monthly as the Official Journal by the Wireless Institute of Australia, founded 1910. ISSN 0002 - 6859. Registered Office: 3/105 Hawthorn Road, Caulfield North, Vic 3161. Telephone: (03) 528 5962.

Inquiries and material to the Editor: PO Box 300, Caulfield South, VIC 3162.

Advertising: Ann McCurdy (03) 528 5962

Material should be sent direct to PO Box 300, Caulfield South, Vic. 3162, in accordance with the deadline date shown on page 1 of this issue.

Acknowledgement may not be made unless specifically requested. All important items should be sent by Certified Mail. The editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying a reason.

EDITOR'S COMMENT

Sharing The Load

As I have mentioned before, the task of editing and to some extent also producing AR, has become too much for volunteer effort to handle, and we have been seeking a paid part-time Managing Editor to take most of the day-to-day responsibility for the work. With this issue we welcome to the job our new Managing Editor, Graham Thornton VK3IY. Graham's radio career goes back many years, first as an army signaller, then with the Royal Flying Doctor Service, before becoming a maritime Radio Officer and eventually taking out an amateur licence. Graham operates mostly on CW, both ragchewing and DX. Go easy on him until he has tied up all the loose ends in what is a very demanding job! I will continue, as Executive Editor, to be the "Aunt Sally" who collects your complaints, in spite of trying not to give you cause for complaint!

Now that (hopefully!) I can get away from the chair for a month or two, as mentioned back in April, I hope to be once again maritime-mobile in our trailer-sailer on the (not so dry now) salt lakes of South Australia soon.

Not only Lake Eyre (both North and South) but also Torrens (first big filling for over 100 years!) Frome, Callabonna, Blanche, Gregory and maybe even Cadibarrawirracanna! It would be delightful to cruise on that one (with the longest place name in Australia!) and explain to all the DX contacts how we are MM5 Lake Cadibarrawirracanna. Each contact could well take more time spelling the name than anything else! Here's hoping. Incidentally, the meteorologists are by no means sure that all the rain which has filled the lakes can be attributed to the developing "Greenhouse Effect" but the possibility exists, and will become more and more a fact of life on this planet as time goes on. Until we stop burning coal, wood and oil and start planting trees, and for many years after that!

Last month's issue (May) seems to have had a few less problem areas than some of its predecessors, but we do apologise for the centre pages of Convention photographs, in which darkness predominated! There are several reasons for this.

The originals were all colour prints, for which fast processing service can be obtained, as distinct from black and white prints. This caused the black and white half-tones to be darker than expected, particularly on our matt paper.

All of this came about because of our tight schedule to get photos from Convention to print in two days. All part of the learning process, I fear! 73

Bill Rice VK3ABP
Executive Editor
ar

Mobile Phone Ban

Using a hand-held telephone while driving a motor vehicle will be banned in New South Wales from July.

NSW Transport Minister Bruce Baird said the new law was in response to the erratic driving habits and a number of accidents or near-accidents attributed to mobile phone use.

In Victoria it had generally long been an offence to use a phone or two-way radio while mobile.

Mr Baird said his Government hoped those wanting to communicate while on the move will instal hands-free phones in their vehicles.

A definition had yet to be reached for the hand-held phones, but Mr Baird said at this stage it was not proposed to include two-way radios in the ban. ar

WIA DIRECTORY

Federal Council

Kevin Olds	VK1OK	ACT Councillor
Stephen Pall	VK2PS	NSW Councillor
Peter Mill	VK3ZPP	Victorian Councillor
David Jerome	VK4YAN	Queensland Councillor
Bill Wardrop	VK5AWM	SA Councillor
Neil Penfold	VK6NE	WA Councillor
Joe Gelston	VK7JG	Tasmanian Councillor

Executive

Peter Gamble	VK3YRP	Federal President
Ron Henderson	VK1RH	Vice Chairman
David Wardlaw	VK3ADW	Immediate Past Federal President
Brenda Edmonds	VK3KT	Federal Education Officer
Bill Rice	VK3ABP	Editor Amateur Radio
George Brzostowski	VK1GB	Federal Executive
Kathy Gluyas	VK3XBA	Federal Executive

Federal Co—ordinators

Amsat	Graham Ratcliff	VK5AGR
Awards Mgr	Ken Gott	VK3AJU
Contest Mgr	Frank Beech	VK7BC
Education	Brenda Edmonds	VK3KT
EMC	Hans Ruckert	VK2AOU
Historian	John Edmonds	VK3AFU
Intruder Watch	Bill Horner	VK4MWZ
Int'l Travel Host Exch	Ash Nallawalla	VK3CfT
QSL Mgr	Neil Penfold	VK6NE
Standards	Peter Page	VK2APP
Tapes (Federal News)	Bill Roper	VK3ARZ
	Ron Fisher	VK3OM
Videotape	John Ingham	VK5KG
WICEN	Ron Henderson	VK1RH

Executive Office

Bill Roper	VK3ARZ	General Manager & Secretary
Ross Burstal	VK3CRB	Assistant General Manager
Ann McCurdy		Advertising & Admin. Manager
Helen Wageningen		Membership & Circulation Mgr
June Fox		Accounts & EDP Manager
Earl Russell	VK3BER	EDP Consultant
Ron Fisher	VK3OM	Librarian

DIVISIONS

VK1 — ACT Division

GPO Box 600, Canberra ACT 2601

Officers		
President	Ted Pearce	VK1AOP
Secretary	Jan Burrell	VK1BR
Treasurer	Ken Ray	VK1KEN

Broadcasts: 3.570 MHz; 2m ch 6950; 70cm ch 8525; 2000 hrs Sun

Fees	
(City) Full (F)	$44.00
(City) Assoc (A)	$44.00
(Country) Full (C)	$44.00
(Country) Assoc (T)	$44.00
Pens. (G)	$33.00
Stud. (S)	$31.00
Family (X)	$25.00

VK2 — NSW Division

109 Wigram St, Parramatta NSW 2124 (PO Box 1066 Parramatta), Phone (02) 689 2417

Officers		
President	Roger Henley	VK2ZIG
Secretary	Tim Mills	VK2ZTM
Treasurer	David Horsfall	VK2KFU

Broadcasts: (R Denotes repeater) Times 1100 and 1930 on Sun; 1.845 MHz AM, 3.595 AM/SSB, 7.146 AM (1100 only); 28.320 SSB, 52 120 SSB 52.525 FM; 147.000 FM(R) 438.525 FM(R); 584.750 (ATV Sound) Relays also conducted via many repeaters throughout NSW.

Fees	
F	$41.50
A	$39.50
C	$41.50
T	$39.50
G	$34.50
S	$22.50
X	$24.50

VK3 — Victorian Division

38 Taylor St, Ashburton Vic 3147, Phone (03) 259 9261

Officers		
President	Jim Linton	VK3PC
Secretary	Barry Wilton	VK3XV
Treasurer	Rob Hailey	VK3XLZ

Broadcasts: 1.840 MHz AM, 3.615 SSB, 7.085 SSB, 147.250 FM(R) Mt Macedon; 147.225 FM(R) Mt Baw Baw; 146.800 FM(R) Mildura; 438.075 FM(R) Mt St Leonard 1030 hrs on Sun

Fees	
F	$50.00
A	$45.00
G	$38.00
S	$27.00
X	$27.00

VK4 — Queensland Division

GPO Box 638, Brisbane Qld 4001, Phone (07) 284 9075

Officers		
President	David Jones	VK4NLV
Secretary	John Aarsse	VK4QA
Treasurer	Neil Fittock	VK4NEF

Broadcasts: 3.605 MHz, 7.118, 14.342, 18.132, 21.175, 28.400, 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday; Repeated on 3.605 & 147.150 MHz, 1930 Mon

Fees	
F	$45.00
A	$45.00
C	$45.00
T	$45.00
G	$36.00
S	$27.00
X	$27.00

VK5 — South Australian Division

Thebarton Rd, West Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001), Phone (08) 352 3428

Officers		
President	Don McDonald	VK5ADD
Secretary	Hans van der Zalm	VK5KHZ
Treasurer	Bill Wardrop	VK5AWM

Broadcasts: 3.550 MHz, 14.175, 28.470, 53.100, 147.000 FM(R) Adelaide; 146.700 FM(R) Mid North; 146.900 FM(R) South East; ATV Ch 34 579.00 Adelaide; ATV 444.250 Mid North; (NT)3.555, 146.500, 0900 hrs Sun

Fees	
F	$44.00
A	$44.00
C	$44.00
T	$44.00
G	$35.00
S	$26.00
X	$26.00

VK6 — West Australian Division

PO Box 10, West Perth WA 6005

Officers		
President	Alyn Maschette	VK6KWN
Secretary	Pending	
Treasurer	Pending	

Broadcasts: 146.700 FM(R) Perth, at 0930 hrs Sun, relayed on 3.560 MHz, 7.075, 14.110, 14.175, 21.185, 28.485, 52.080, 438.525(R); Country relays 3.582, 147.350(R) Busselton 146.900(R) Mt William (Bunbury); Broadcast repeated on 3.560 at 1900 hrs.

Fees	
F	$42.00
A	$42.00
C	$42.00
T	$42.00
G	$35.00
S	$22.00
X	$23.00

VK7 — Tasmanian Division

PO Box 1010, Launceston TAS 7250

Officers		
President	Mike Wilson	VK7ZWW
Secretary	Bob Richards	VK7NRR
Treasurer	Peter King	VK7ZPK

Broadcasts: 146.700 MHz FM (VK7RHT) at 0930 hrs Sun relayed on 147.000 (VK7RAA), 146.750 (VK7RNW), 3.570, 7.090, 14.170, 52.100, 144.100 (Hobart) Repeated Tues 3.590 at 1930 hrs

Fees	
F	$42.00
A	$42.00
C	$42.00
T	$42.00
G	$38.00
S	$24.00
X	$22.00

VK8 (Northern Territory) is part of the VK5 Division and relays broadcasts from VK5 as shown (received on 14 or 28 MHz).
Note: all times are local. All frequencies MHz.

Federal Convention outcome - Questions and answers

The radio society representing nationally the amateur radio service in Australia, the WIA, has now held 53 Annual Federal Conventions to set policy and review how this, the oldest radio society in the world, operates and performs.

These Conventions were a meeting of delegates from the seven WIA Divisions which form a group called the Federal Council. A major change occurred in 1971 when the seven Divisions decided to set up a central Executive and employ a professional manager/ secretary to carry out the day-to-day work and wishes of the Federal Council.

That structure served the interests of the WIA, the Divisions, and the members for many years. However, its operation for at least the last five years has been criticised by the Divisions, those serving on the Executive, and by a succession of Manager/ Secretaries. No one wanted an inefficient structure to continue.

The problem appeared to have two solutions. The first involved the abandonment of the Divisions. This option did not have wide spread support.

The other solution was to restructure the way in which the WIA functioned, and this has been the outcome of the 1989 Federal Convention.

As all members are aware by now, some momentous and far reaching decisions were made by the Federal Council of the WIA at this recent, 53rd Annual Federal Convention.

A lot of discussion has been taking place, both on and off air, about these decisions. Much of this discussion has been constructive and responsible, but some has been ill informed and emotive.

I recently attended, and recorded, an interview between the newly re-elected Federal President of the WIA, Peter Gamble, VK3YRP, and Jim Linton, VK3PC, President of the Victorian Division of the WIA. I am sure that the questions and answers in that interview will be of considerable interest to all members.

Jim Linton....
Peter, what was the general feeling of the WIA Federal Convention in regard to funding for the WIA?

Peter Gamble....
The Divisional representatives saw the need for the WIA to operate on a professional footing. We are dealing with professionals in many organisations, and we need to project a similar image. Also, the WIA is seriously underfunded, and if it is to continue as Australia's national radio society it needs more resources.

Jim....
This really means more money! The Federal component of annual subscriptions will increase by $14.00 making it a total of $47.00! Does the WIA Executive Office really need that amount of funding?

WIA NEWS

Bill Roper VK3ARZ, General Manager & Secretary

Peter....
In the past 20 years, in real money terms, funding has not kept up with inflation. At the Federal Convention this was estimated to mean that the Federal funds were $10.00 behind what they should have been, taking inflation into account. As a result, we are not able to deliver all the services to members that we should be providing.

Jim....
The Federal Convention resolved that there should be uniform fees across all Divisions. Why is this necessary?

Peter...
The uniform funding and fee structure replaces a myriad of different grades and rates of WIA membership across the Divisions. A uniform fee structure will result in a more efficient operation in the Executive Office.

Jim....
Do the Divisions need extra resources and funding?

Peter....
Yes. The additional funding will provide the Divisions with resources to deal with their business in a more professional manner. It is becoming more and more difficult to get suitable volunteers to provide the necessary level of services for members. The Divisions are, and must remain, the contact point for members, potential members, and the general public. And so they need to be readily accessible. The Divisions play a key advocacy role in such local issues as Town Planning and radio masts. Other community based groups are often well organised, well funded, and take a professional approach when lobbying government. To take their place alongside these types of organisations the Divisions need adequate human and financial resources. There are always new challenges and threats against our hobby. We must be prepared to defend the very existence of amateur radio.

Jim....
The bottom line is that the annual membership subscription will be $70.00. Isn't this too much to be a member of a hobby organisation?

Peter....
Consider the $70.00 as being $1.34 a week. This is a small amount when you compare what that will buy in a shop. The WIA is not just a hobby organisation. Our hobby is considered, in some parts of the world, and even by some people here in

Australia, as a non-essential user of the frequency spectrum. Without a strong WIA, this idea could gain momentum and radio amateurs could lose our privileges.

Jim....
Do you think the WIA will lose, say, 20% of its membership through the fee rise?

Peter....
That is a worst case scenario. Of course, we will lose some members for various reasons. However, I believe that, in the coming months, members will see, and understand, the necessity for the increase, and continue to support the WIA, which is supporting them.

Jim....
The WIA has not been too effective in showing some of the benefits of its operations to all radio amateurs. For example, the Customs bylaw exemption, and band-planning.

Peter....
Yes, Jim, that's right. We are supposed to be communicators, but we haven't been doing a good job of communicating the results of our efforts to members. In the case of the Customs bylaw exemption, this has involved the WIA in over five years of complex negotiation with a number of Government departments, and a technical evaluation of each HF, VHF and UHF transceiver being imported into Australia. The result is that import duty is not payable on an amateur transceiver that has been certified by the WIA. This means a saving of about $350 on a typical $1500 to $2000 HF rig. If the DOTC had the job of regulating our use of our bands, like they do in some overseas countries, then you can be sure that that would mean another few dollars added on to the fee amateurs pay each year for their amateur station licence.

Jim....
Does the DOTC really listen to the WIA?

Peter....
In recent years, well prepared submissions to the DOTC have resulted in approval for such things as repeater linking and packet radio. A similar submission, aimed at improving the operating conditions on 50 to 52 MHz, is now before the DOTC, and we are hopeful that it will see greater access to this band segment, particularly in the eastern mainland states of Australia. Negotiations have already started with DOTC to explore the possibility of a new ATV band in the vicinity of 900 MHz to replace the 576 MHz band which was lost in March this year due to government policy and commercial pressure.

Jim....
Fine. Customs bylaw exemption, band-planning, packet radio, repeater linking, 6 metres, and ATV. But these benefit everybody, not just WIA members.

Peter....
You're right. However, I believe that that is the role of a responsible, national, radio society. And as more radio amateurs come to understand, and appreciate, what the WIA is doing for them, membership of our organisation will increase.

AMATEUR RADIO FLYSHEET

Each month, members of the WIA receive the current issue of Amateur Radio magazine in the mail, neatly sealed in a plastic envelope together with the "flysheet" which identifies the magazine as the journal of the WIA, and also displays the address label.

The old style flysheets have now all been used, and your magazine package this month includes one of the new flysheets. Unfortunately, due to an error by the mailing house, a year's supply of this new flysheet was printed in black, and not the requested WIA blue. Needless to say, we are receiving a worthwhile discount for this error.

But it is not only the colour that has changed. Have a look on the back of the flysheet (you didn't really throw it away, did you?).

First of all, there is a section for you to use if you wish to advise this office of your new callsign, your new address, or even if you decide to change your name. Simply fill in the relevant sections and post the complete flysheet to us at the P.O. Box 300 address on the front of the form, and we will amend our records.

One of the neat advantages of this system is that the flysheet will have your current address label on the front, and this will enable us to easily identify who it is that wants to have their details altered in our database. You would be surprised at the odd scraps of paper that arrive in the mail from time to time, advising of a change of details, but without sufficient information for us to identify who it is that wants their membership records changed!

The "Sign up a new member" part of this new flysheet was designed to provide a number of facilities. The most obvious of these is that it is a readily available "application" form for every member to have on hand when he wants to sign up a friend as a member.

It will also enable us to identify who it was that signed up the new member and register them for qualification for "rewards" as part of a membership drive. But more of that in future months.

Another aspect of this new "application" form is the invitation to pay the subscription by credit card. Over 30% of membership renewals are paid by credit card yet, at this time, only one Division is able to provide credit card facilities for a new member. With this facility, the other Divisions will be able to forward the credit card authority to the Executive Office for processing.

One important point I must mention at this point, however. This flysheet "application" form is not a proper application form in the terms of the requirements of the Companies Act and the Articles of Association/Constitutions of the WIA Divisions, but merely an interim form.

As it states on this flysheet "application" form, a full application form will be sent to the applicant for membership as soon as possible.

JOINT DOTC/WIA MEETING...

The most recent Joint Meeting between representatives of the WIA and the DOTC took place in Melbourne on Wednesday, 15th March 1989. The WIA was represented by the Federal President, Peter Gamble, VK3YRP, David Wardlaw, VK3ADW, Brenda Edmonds, VK3KT, and the WIA General Manager.

You may well ask why it has taken so long to publicise the outcome of those discussions. The answer is simple. Under an agreement the WIA has with DOTC, we do not publicise any items discussed until both organisations have agreed that the minutes of

the meeting are correct. The WIA prepared the minutes of this meeting and, although DOTC agreed fully with the minutes as submitted to them for approval, that approval took some time to be advised to us, and occurred just too late to enable us to publish comment in last month's Amateur Radio.

Many Items were discussed at this meeting. Here are just a few.

RECIPROCAL UCENSING WITH ITALY

The WIA raised the question, at the request of the VK2 Division, of a reciprocal licensing agreement with Italy. DOTC advised that they saw no reason why the matter should not be pursued, and requested that a formal submission, including details of matching Italian licence grades to Australian licence grades, and the Italian syllabus information, be forwarded to them.

Dotc also advised that they have initiated reciprocal licence discussions with Denmark.

EXEMPTIONS FOR NON-QUALIFIED AMATEURS OPERATING IN ANTARCTICA

For a number of years it has been the practice of DOTC to grant full privilege status to non-qualified Amateurs stationed in Antarctica. This practice was initiated at a time when communications between Australia and our Antarctic bases was not as comprehensive as it is now.

DOTC advised that, at present, no exempt licences are being issued for Antarctica because of the provisions of the Radio Communications Act, and licences are only being issued that are equivalent to the qualifications held by the applicant.

During discussion, DOTC argued that the reasons for the original exceptions licence no longer apply. Concern was also noted about the use of VK0 licences, not only in mainland VK, but also overseas as a portable call, in direct contravention of the conditions under which the VK0 callsigns were issued.

Finally, after DOTC advised that they are not prepared to have the Minister gazette a notice under section 34 (1) of the Radiocommunications Act 1983 to enable continued issue of the exceptions licence for Antarctica, it was agreed the WIA would formally request, in writing to the Licensing Section of DOTC, that Club Station licences be issued for Antarctica in accordance with the guidelines laid down for club operations.

ALTERNATE FREQUENCIES FOR ATV

The WIA asked that consideration be given to allocation of an unshared alternate band to 576 MHz for ATV operation, particularly in the 614 - 620 MHz or 902 - 928 MHz bands.

DOTC advised that the Spectrum Planning Section had looked at this request, and felt it was unlikely to succeed. The vacancy currently existing in part of the 902 - 928 MHz band will probably be used for digital cellular radio, which is not compatible with ATV; and the same pressures that lost amateurs the use of the 576 MHz band would also apply to the 614 - 620 MHz segment.

DOTC suggested that the WIA desire to find a permanent home for ATV may be justification for removing sharing of one of the UHF bands.

The WIA foreshadowed that we intend to proceed with a strong submission for use of a segment of the 902 - 928 MHz band.

FEES FOR DOTC INVESTIGATION OF INTERFERENCE COMPLAINTS

The DOTC explained it appears likely that future interference complaints will be treated in a similar manner to that being used by the UK DTI. Complainants will receive a comprehensive document which will enable them to self analyse where the fault lies; to determine whether the interference results from an internal problem (eg. TV or radio electronic fault), or from external considerations. As with the DTI experience, most complainants are then expected to either go to a serviceman for resolution of the problem, or to their local electricity supply authority (power line interference, etc.).

If the complainant still persists with DOTC, then an up-front fee of $50 - $60 will probably be charged before DOTC personnel investigate.

DOTC explained it appears unlikely at this planning stage that any fee will be charged to the person causing the interference, therefore radio amateurs probably have no cause for concern. They assured us that the WIA would be consulted if there was any change to this thinking.

DISPOSALS NEWS ITEMS ON DIVISIONAL BROADCASTS

The DOTC explained their concern with what they see as a proliferation of advertisements appearing on bulletin boards and packet radio, and expressed the view that DOTC are considering withdrawal of the facility of including disposal news items on WIA Divisional news broadcasts.

The WIA protested strongly, advising that they cannot agree to the withdrawal of this facility from the WIA offical news broadcasts simply because several individual amateurs and radio clubs are contravening the terms of their licences. They maintained that if DOTC is concerned about this, DOTC should police the transgressors. The WIA could assist by publicising the issue.

POOR QUALITY OF CALLSIGN INFORMATION BEING RECEIVED FROM DOTC RECORDS

Again the WIA protested about the poor quality of amateur radio station and callsign information being forwarded monthly to the WIA to update the Call Book database. We explained the many hours of what should be unnecessary work entailed each month by WIA staff because of the poor design of the DOTC database, and the many errors in the information.

DOTC stated they would again take the matter up with the Licensing section.

RESOLUTION 8 - (CLEARANCE OF 18 & 24 MHZ AMATEUR BANDS BY 1/7/1989)

In answer to a question from the WIA, DOTC advised that the 18 and 24 MHz amateur bands would be completely cleared of other Australian stations by the deadline of 1st July 1989.

This is great news for the users of these so-called WARC bands!

AUSTRALIA'S POSITION ON AN AGENDA FOR THE PROPOSED 1992 WARC

The WIA advised of its desire to be involved in the planning for WARC 1992, particularly in respect to expectation of additional UHF bands, and regulatory items such as Third Party Traffic.

DOTC stated that they believe the proposed 1992 WARC will be a limited re-allocation WARC, rather than a general WARC. They believe that it will consist of:-

- a review of frequencies between 1 - 3 GHz, possibly 7 GHz, and 10 - 15 GHz, with particular interests being mobile to satellite, and mobile services;

- HF broadcasting within existing and previously discussed arrangements; and

- allocation of spectrum between 0.5 and 3 GHz for sound broadcasting from satellites.

DOTC further stated that they believe a general WARC will probably not be held sooner than 1999, but suggested that the WIA write to the First Assistant Secretary, International Section of C-Tech Division, requesting information on the planning for WARC 1992.

DEVOLUTION OF AMATEUR LICENCE EXAMINATIONS

DOTC advised that the first devolved examination is not expected to be conducted until early in 1990, and that DOTC expects to conduct all examinations up to and including the February 1990 examinations.

ISSUING OF CALLSIGNS TO VISITORS TO AUSTRALIA IN ACCORDANCE WITH OVERSEAS PRACTICE

The WIA requested that the issuing of callsigns to visitors to Australia be changed to accord with overseas practice, for example "VK3/WA2OAX", rather than the present system of allocating a temporary VK callsign.

DOTC explained that the new "Smiths" computer system used by DOTC will not allow this type of callsign to be issued. However, it was agreed that, in these instances, a "permit" rather than a "licence" could be issued. The matter is to be referred to the Licensing Section of DOTC.

28 MHZ BEACONS

The WIA advised of proposed frequency and mode changes involved in the move to time sharing for 28 MHz beacons, as from 31st December 1989, to accord with the IARU international band plan.

DOTC stated they saw no problems with this, but requested advice in writing of all the proposed changes.

Mr. Peter Gamble
President
Wireless Institute of Australia

I want to congratulate the Wireless Institute of Australia on its initiative in establishing an award for amateur radio communication with the Antarctic continent.

It is fitting that the WIA administer this award, available to amateurs throughout the world, because of Australia's historic involvement in Antarctica and its continuing and varied scientific work there. You have, of course, drawn attention to this by linking the rules of the award with the first two-way radio communication between Antarctica and the outside world by Douglas Mawson's expedition in 1913.

Amateur radio has been enduring force for international understanding ever since its inception, and I extend the best wishes of the Australian Government to the WIA, and to amateurs generally, wherever they may be.

Senator Gareth Evans
Minister for Foreign Affairs & Trade
18th April, 1989

Mr. Bill Roper
General Manager and Secretary
Wireless Institute of Australia
GPO Box 300
CAULFIELD SOUTH VIC 3162

Dear Mr. Roper

Thank you for your letter of 7 February 1989 and the enclosed copy of "Amateur Radio" which I found to be most interesting and informative.

The opportunity to thank you for sending me a copy of your magazine also enables me to tell you that I recognise the significant contribution Amateur radio has made to the field of radiocommunications and to the fostering of international relations. I am also most aware of the valuable assistance provided in times of emergency, and of the continuing help given by Amateurs to community interest groups.

I therefore wish your members every success in the pursuit of this fascinating hobby.

Yours sincerely
Ralph Willis
Minister for Transport & Communications
21 April 1989

WIA ANTARCTIC AWARD

Mention was made on page 34 of last month's issue of Amateur Radio about the new Antarctic Award, the brain child of the Federal Awards Manager, Ken Gott, VK3AJU. Details of this new WIA award are included in Ken's AWARDS column elsewhere in this issue of your magazine, but there are a few other points worth making...

This Antarctic Award is the first regional award to be administered by the WIA. The NZART runs the Worked All Pacific Award, JARL runs the Worked All Asia Award, and there are a number of awards based on Europe and run by national amateur radio

societies in Luxembourg, Germany, etc.. The Worked All Continents award, now rather passe since it is so easy to achieve, assumes that there are 6 continents. Of course, there are 7 continents, the extra one being Antarctica. Perhaps WAC could be revived as a worthwhile achievement by getting the IARU to include Antarctica as an essential part of it? The DXCC award treats all of Antarctica as one country. Amateurs may confirm contacts with stations using US, USSR, Australian, New Zealand and other prefixes, but only one will count towards DXCC. Therefore, this new WIA Antarctic Award may be of some consolation for the DXers who have superfluous QSL cards for contacts with Antarctica.

Shown separately is a copy of a FAX letter received on 1st May 1989 from the Australian Minister for Foreign Affairs and Trade, Senator Gareth Evans. It seems that not only will the new Antarctic Award gain more international recognition for the WIA, but has already won points for us with the Australian Government.

MINISTER FOR TRANSPORT AND COMMUNICATIONS

Only a few days before receiving the FAX from Senator Gareth Evans, we also welcomed a letter from the Minister for Transport and Communications, the Honourable Ralph Willis, MP, which is also shown separately.

Isn't it great that this marvellous, leisure time activity of ours, amateur radio, is receiving such recognition from senior members of the Australian Government.

Bandits Hit Hi-Tech Firms

Heavily armed bandits have made off with computer chips in a number of raids in Orange County, California.

Five such robberies in six months have authorities concerned that a new breed of bandit will strike high-tech firms right across the United States.

In two of the robberies bandits made off with chips worth more than $100,000.

A shopping bag full of megabyte chips is worth $15,000 but new chips with larger capacity can be worth many thousands of dollars each.

Measureme

Synopsis of Types of Distortion and

Over the years, distortion in amplifiers and other electronic devices has been measured by many different techniques. Some of these techniques have changed with the development of modern test equipment using computer-based technology. The old techniques are still valid and utilise test equipment more likely to be available to the radio amateur. In the subsequent paragraphs, techniques, both old and new, will be discussed.

Distortion in any signal processing device (such as an amplifier) can be defined as any output signal component, generated within the device from the input signal, but which is different in form from the original input signal. Distortion is generally classified separately from noise which is generated within the device, independent of the input signal. (For measurement of noise, refer to an article by the writer in *Amateur Radio* November 1985.).

Distortion can be classified under a number of different headings. The most common of these are as follows:

Frequency or amplitude distortion.
Harmonic distortion.
Inter-modulation distortion.
Phase distortion.

Each of these will be discussed in turn together with methods of measurement. In the discussion, we will refer to the "device under test". This could be an amplifier, or a filter, or any device which transfers analogue signals from its input to its output, including a complete system such as a radio transmitter feeding a radio receiver via a transmission medium.

Frequency or Amplitude Distortion

This distortion is the result of non-constant gain or loss in the signal transfer device over the band of frequencies being used. Measurement of this distortion is more commonly known as frequency response. We might not always classify variable gain or loss as a distortion as we often shape the frequency response for a special purpose, such as in an equaliser or a filter.

Figure 1 illustrates two conventional methods of measuring frequency response. In 1(a), the test equipment used consists of a variable frequency oscillator, a calibrated variable attenuator and a level meter. Measurements are taken at sufficient spot frequencies to construct a response curve. At each spot frequency, the attenuator is adjusted until the meter reads the same for both positions of the switch shown. The gain of the amplifier is then equal to the calibration value on the attenuator. In this

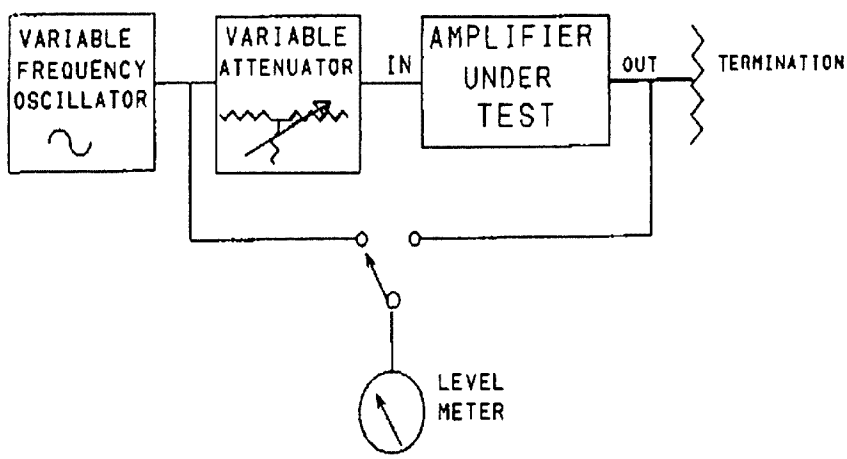


Figure 1a: Methods of Measuring Frequency Response Plotting from Selected Spot Frequencies

nt of Distortion

how Distortion can be Measured

arrangement, the output resistance of the oscillator must match the input resistance of the attenuator and the output resistance of the attenuator must match the input resistance of the amplifier.

In Figure 1(b), the voltage calibration of a cathode ray oscilloscope (CRO) is utilised to measure input and output signal voltages. At each spot frequency, the voltage gain is calculated from the ratio of output to input voltage and converted to decibel form for plotting the response curve.

Figure 2 illustrates a method of plotting frequency response on a modern spectrum analyser. A sweep generator drives a variable frequency oscillator and a variable bandpass filter which has its centre frequency synchronised to the frequency of the oscillator. The frequency is swept over the band required for the test. The oscillator is fed through the device under test and then through the filter to display output level on the Y axis of a cathode ray tube. The X axis is controlled by the sweep source so that a display of output level versus frequency is obtained. Modern analysers

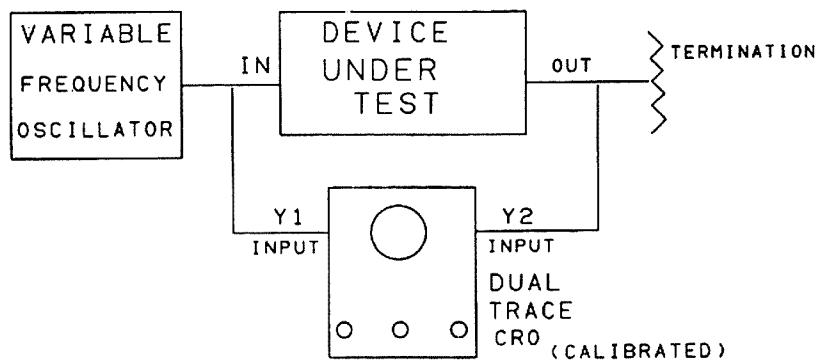


Figure 1b

provide a computer bus across which a programmable plotter can be connected. Using this equipment, a permanent record can be automatically obtained.

Another method, shown in Figure 3, is to feed white noise to the input of the device under test. The white noise has a uniform spectrum and hence the noise at the device output has a spectrum which images the response of the device. The output is plot-

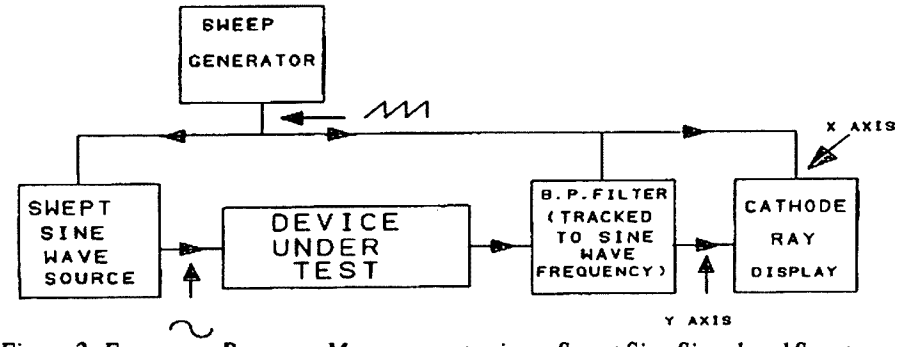


Figure 2: Frequency Response Measurement using a Swept Sine Signal and Spectrum Plot

ted by a spectrum analyser of a dynamic signal analyser (to be discussed later).

Square Wave Testing

One method of assessing frequency response (and sometimes other characteristics) is to feed a square wave to the input of the device under test and examine its output on a CRO. Since the square wave is made up of a fundamental frequency and all odd harmonics, theoretically to infinity, and deficiency within the frequency spectrum, from the fundamental upwards, shows a change in the waveform. The test is subjective rather than precise but gives a good indication of the response.

Typical response patterns taken from a reference source are shown in Figure 4. A further set of examples is shown in Figure 5. The captions under the patterns are self-explanatory. The effect of loss of low or high frequency response is illustrated and to some degree a change in form of the pattern with phase shift. Observe how the ringing is initiated by the steep edge of the square wave in Figure 4(j). The tendency for the tested device to ring might have been less apparent using the test methods previously described with sine waves or white noise.

Related to frequency response, there is another type of specification called "transient response" which is the ability of a device to respond to a step function. "Rise time" is one measure of transient response and is the time taken for the signal, initiated from a step function, to rise from 10 percent to 90 percent of its stable maximum value. Another measure is the percentage of the stable maximum value that the signal overshoots in responding to the step. Figure 6 shows how the square wave, in conjunction with a calibrated CRO, can be used to measure rise time and overshoot.

Rise time is also a measure of the maximum slope of any sine wave component and hence is directly related to the limits in high frequency response. Together, rise time and overshoot define the ability of a device to reproduce transient type signals.

Another specification commonly used in operational amplifiers is the "slew rate" given in volts per microsecond. Such amplifiers have limitations in the rate of change that the output can follow and this is defined by the slew rate. The greater the output voltage, the greater is the rise time and hence the greater the output voltage, the lower is the effective bandwidth. Slew rate is equal to the output voltage step divided by the rise time as measured over the 10 percent to 90 percent points discussed previously. It is an interesting observation that, in specifying frequency response, output voltage should also be part of the specification.

Harmonic Distortion

Harmonic distortion in any signal transmission device results from non-linearity in the device transfer characteristic. Additional frequency components, harmonically related to frequencies fed into the input, appear at the output in addition to the reproduction of the original input components.

Measurement of harmonic distortion can be carried out by feeding a sine wave into the input of the device and separating the sine wave from its harmonics at the output. Distortion is measured as the ratio of harmonic level to the level of the fundamental frequency. This is usually expressed as a percentage but sometimes also expressed as a decibel.

Sine Wave Testing

Subjective testing for harmonic distortion can be carried out by feeding a good sine wave signal into the device under test and examining the device output on a CRO. Quite low values of distortion can be detected in this way.

Some idea of the order of the harmonic can often be determined from the shape of

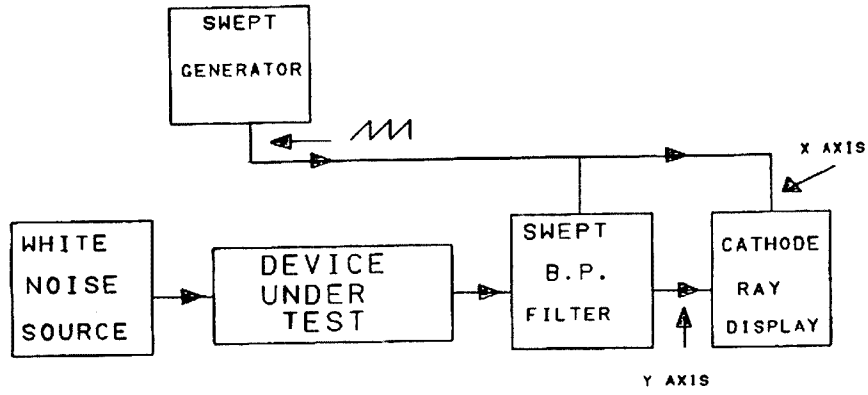


Figure 3: Frequency Response Measurement using a White Noise Source and Spectrum Plot

the waveform. Figure 7 illustrates the formation of a composite waveform from a fundamental frequency and its second harmonic at one-quarter of the fundamental amplitude. Figure 8 illustrates similar formation from a fundamental frequency and its third harmonic, also a quarter of the amplitude. In Figure 8(b), the phase of the

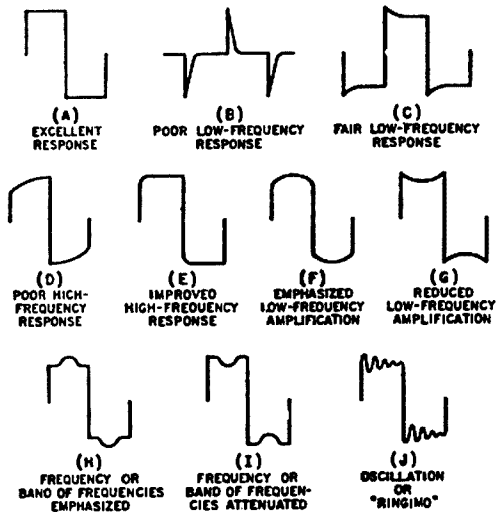


Figure 4: Typical Square-Wave Response Patterns

harmonic is shifted 180 degrees to that in Figure 8(a), and in Figure 8(c), the phase is shifted 90 degrees to that in (a). The figures show that the composite wave forms can be quite different for different phase conditions making resolution sometimes tricky.

Some distorted waveforms directly indicate an out of adjustment or incorrect operating condition. The clipped waveform of Figure 9(a) shows the output of an amplifier driven to an overload or saturated condition. Figure 9(b) is clipped in one direction indicating an off-centre setting of an amplifier operating point. Figure 9(c) shows crossover distortion in a Class B amplifier.

Another method of testing, using sine waves, is to feed the monitored device input signal to the X plates input of the CRO and the device output signal to the Y plates input of the CRO. This plots the transfer characteristic of the device, that is, instantaneous output voltage as a function of instantaneous input voltage. A perfect response is indicated by a diagonal line on the screen, or with phase shift, an ellipse or circle. Figure 10 shows various fault waveforms taken from one reference source. the captions are self-explanatory.

Distortion Meters

One type of distortion meter, of early vintage, is illustrated in Figure 11. The input of the device under test is fed with a sine wave source and the device output fed to a vacuum tube voltmeter (VTVM) to record a reference level. The VTVM is then connected via a bridged-T rejection filter which is adjusted to balance out the fundamental frequency. The VTVM now records the level of harmonic components and the ratio of this reading to the first reading, expressed as a percentage, is the percent harmonic distortion. To be precise, the meter actually reads distortion plus noise and noise should be taken into account if the noise level is approaching the level of harmonic component. Figure 12 illustrates the sharpness of the rejection filter and its ability to allow resolution of distortion components nearly 100 dB down. Because of the tunable filter, the instrument can measure distortion using a wide range of fundamental frequencies. Another early type of distortion meter used a fixed oscillator source of 400 Hz and a fixed high pass filter to separate the harmonic components from the 400 Hz fundamental. It had one advantage in rejecting 50 and 100 Hz hum noise components which could be a nuisance if present when using the previous instrument described.

Whilst measurement of total harmonic distortion satisifies a general performance assessment, there is also a need to examine the individual levels of the various harmonic components. an early type of instrument used to separate these components was called a wave analyser. Figures 13 and 14 show a wave analyser of the heterodyne type. The unit operates much like a superheterodyne receiver using a variable frequency oscillator which is heterodyned with the fundamental, or the selected harmonic, to obtain a difference frequency of 50 kHz. The difference frequency is fed through a 50 kHz narrow band crystal filter to reject all other heterodyned components and then coupled to a VTVM for measurement of amplitued. The fundamental and harmonics are selected in turn by adjusting the oscillator frequency so that a composite table of the waveform components can be recorded.

Total harmonic distortion (Dt) can be calculated from the individual harmonic component levels H2, H3, H4, H5 etc, as follows:

$Dt = \sqrt{(H2^2 + H3^2 + H4^2 + H5^2 + \ldots)}$, etc

Distortion percent = 100.Dt/Vf where Vf = level of fundamental

These early type of of distortion meters and the wave analyser described were

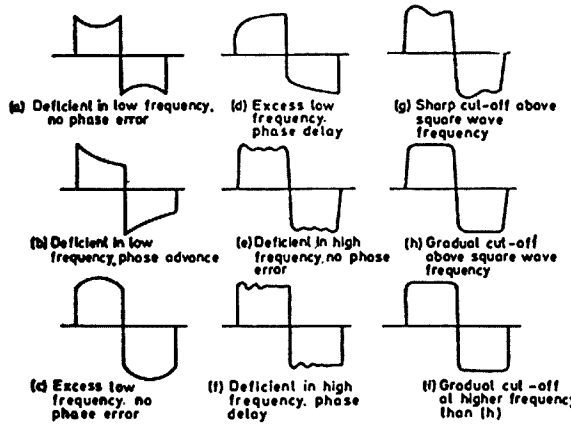


Figure 5: Typical Square-Wave Response Patterns

made essentially for the audio frequency spectrum but there is no reason why the principles involved could not be applied at higher frequencies.

Another method of resolving the individual levels of the fundamental frequency and its harmonics is to display them on a spectrum analyser. Figure 15 shows a modern programmable version of the spectrum analyser made by Hewlett Packard. A typical plot, made on this versatile machine and displaying the various component levels, is shown in Figure 16. Other examples of how this type of machine can display waveform components and also measure frequency response, were published in *Amateur Radio,* September 1987.

A further machine, used to display a composite spectrum, is the Dynamic Signal Analyser, shown in Figure 17. Whilst it can plot a display similar to the spectrum analyser, if functions on a completely different principle. A complex waveform can be resolved into its individual frequency components by a mathematical process called Fourier Analysis. The machine makes use of an internal computing system to achieve this process using an algorithm called Fast Fourier Transform. The machine can carry out a multitude of complex signal processing functions far beyond the scope of this article. Figure 18 shows a spectrum plot, made by the machine, which was set up to measure harmonic distortion. Observe how the harmonics have been separated form the noise components and each flagged on the display by an arrow. The machine has also worked out the total harmonic distortion and printed out its value at the top of the display (THD = -46dB).

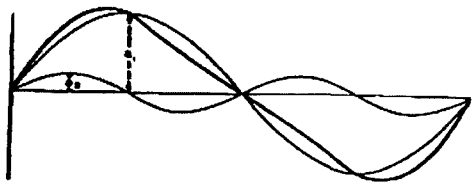


Figure 7: Formulation of Waveform from Fundamental Frequency a1 and Second Harmonic a2

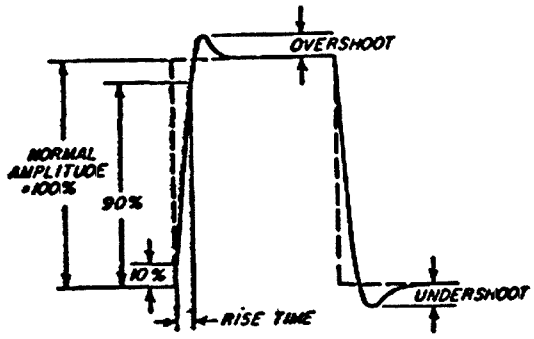


Figure 6: Transient Responses - Measurement of Rise Time and Overshoot

Intermodulaton Distortion

If any form of non-linearity exists in a signal processing device, intermodulation products are generated when two or more individual frequency components are fed through the device. Two individual frequencies generate two additional components equal to their sum and difference frequencies plus, to a lesser extent, more complex products involving harmonics of the two frequencies.

Intermodulation distortion is measured by feeding two different frequency sine waves to the device input and separating out the intermodulation components from the primary frequencies at the output. The relative level of intermodulation components to primary frequencies is a measure of the degree of intermodulation.

A method of measurement is illustrated in Figure 19(a). Two sine wave signals at a frequency within the operating spectrum are fed to the input of the device under test. One signal is a high frequency (fo) and the other is a low frequency (fm). The output of the device is coupled to a calibrated CRO via a high pass filter which rejects the lower frequency (fm). If intermodulation occurs, the CRO displays a typical amplitude modulated waveform in which fm modulates carrier fo. Referring to Figure 19(b), percentage intermodulation equals the ratio of modulation amplitued (Em) to carrier amplitude (Ec), multiplied by 100. This is scaled off from the CRO display, as follows:

Percent intermodulation
= 100.Em/Ec = 100.(b - a)/a

To make the intermodulation easier to resolve, it has been past practice to feed signal fm into the device at four times the level of fo. In audio work, standard frequencies used have been fm = 60 Hz and fo = 3000 Hz.

Another method of measuring the intermodulation distortion is to examine, on a spectrum analyser, the relative levels of either sideband component, (fo + fm) or (fo - fm), relative to fo. for one pair of side frequencies, the distortion is calculated as follows:

Percent intermodulation = 200.Vh/Vfo
or
Percent intermodulation = 200.Vl/Vfo
where Vh and Vl = sideband component levels
and
Vfo = level of fo

Measurement of Phase Shift

Before discussing phase distortion, we will introduce the subject of phase and the means of measuring phase delay of a sine wave through a signal processing device. One method of measurement is to use the

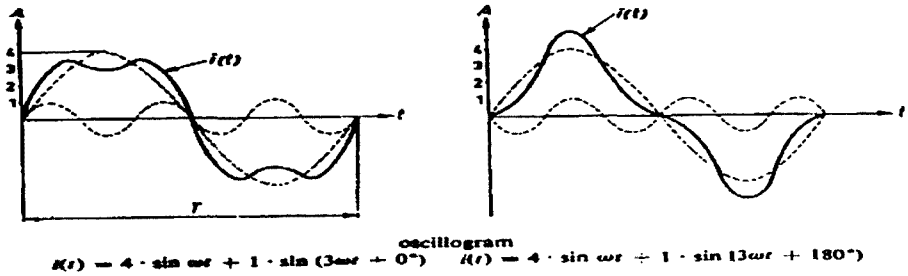


Figure 8: Formation of Waveforms from Fundamental Frequency and Third Harmonic - Diagrams (a), (b), and (c) show Different Phase Relationships between Harmonic and Fundamental

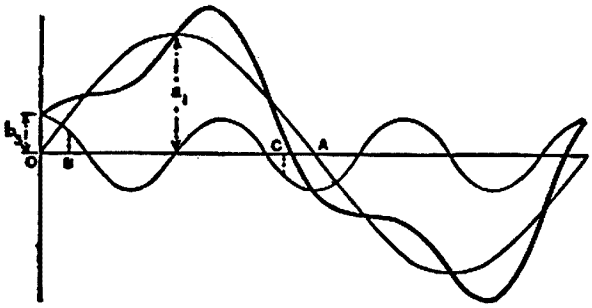


Figure 8c

CRO to obtain what are called Lissajous figures. These are obtained by bridging the input of the device across the X plates input and the output of the device across the Y plates input. This method of connection was also previously discussed under the heading of sine wave testing. Typical Lissajous figures are shown in Figure 20. The phase angle is derived from sine Ø which in turn is equal to the ratio of the Y intercept to the Y maximum (as explained by the diagram).

There are various methods used to directly measure phase. The digital phase meter (Figure 21) is one such example. In this instrument, the two sine wave signals to be compared are first amplified considerably and then clipped to form square waves. The square waves are fed to a three nand gate logic circuit, the output of which is connected to a milliammeter circuit calibrated to read full scale, corresponding to 180 degrees phase shift, when a continuous one is at the logic output. For zero phase shift, the logic output is a continuous zero and the meter reads zero degrees. To understand the logic, carefully examine the waveform timing diagram, Figure 22. For phase differences between 0 and 180 degrees, the average current through the meter is directly proportional to the phase difference and hence the scale of the meter is linear.

Phase Distortion

Transmission circuits and networks with reactive elements almost always introduce different phase delays for different frequencies. There is no problem if there is a linear phase characteristic, ie phase shift is directly proportional to frequency. The ratio of change in phase to change in frequency is given the name of Group Delay (Tg) which is expressed as follows:

$Tg = \Delta\emptyset/360\Delta f$

where $\Delta\emptyset$ = phase change in degrees and Δf = frequency in Hertz

Variation in group delay over the signal passband is what causes signal distortion and this variation defines the phase distortion. Variation of group delay is not normally a problem in audio circuits but causes degradation of picture quality in video circuits and degradation of demodulated audio quality when present in frequency modulated (FM) signal circuits.

Figure 23 illustrates a response measurement taken on a bandpass filter using a series of amplifier stages with overcoupled double tuned transformers. The gain response looks good but observe the variation in group delay of 35 microseconds over the passband. Actually, this response is quite good and used in a narrow band FM system, produced distortion figures better than 60 dB down in the demodulated audio. This performance could not be achieved with good quality ladder ceramic filters of similar bandwidth. Such filters are notorious for their high ripple response and large variation in group delay over the passband.

Group delay as a function of frequency can be plotted on automated instruments such as the HP 4192A impedance analyser. Group delay can also be measured on the HP Dynamic Signal Analyser but this instrument is limited to frequencies up to 100 kHz. Using more basic test equipment, phase shift can be measured at spot frequencies and a curve plotted of phase versus frequency. Ths slope of the curve (which is actually group delay) is scaled off around sections of the curve and a new curve, of group delay versus frequency, is then plotted.

Sine Squared Pules

We have discussed square wave as a broadband test signal which has frequency components theoretically extending to infinity. For any signal transmission system which has a controlled bandwidth, such as a video circuit, it is more meaningful to use a band limited test signal, If a sine wave half cycle is squared, it forms the pulse shape shown in Figure 24 this pulse is known as a sine Squared Pulse or sometimes a Raised Cosine Pulse. If a train of such pulses have a half amplitude duration (HAD) equal to t and a pulse repetition frequency equal to fr, then a band of component frequencies is generated, commencing at a frequency fr and extending in multiples of fr, with a band limited spectrum as shown in Figure 26. Amplitude of the spectrum falls to half (6 dB) at a frequency equal to 1/(2t) and falls to a null at a frequency equal to 1/t. For a television video signal of 5 MHz bandwidth, values of t = 0.1 microsecond and t = 0.2 microsecond are used with fr equal to line time base frequency.

A method of generating a sine squared pulse is to feed a wide band squared pulse through a Thomson filter (Figure 25) which is specially designed to shape the signal to obtain the sine squared response.

To make use of the sine squared source, the pulse train is fed to the input of the

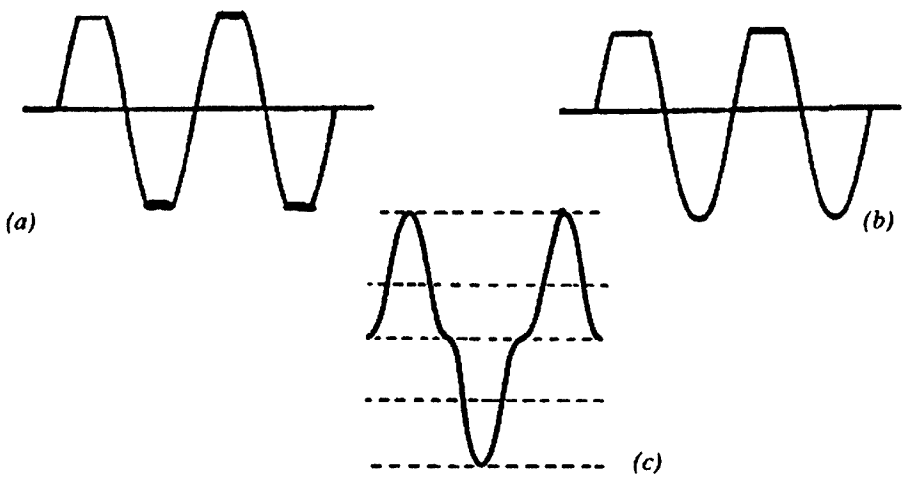
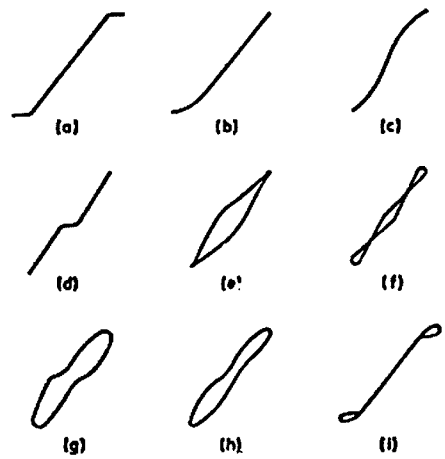


Figure 9: Distortion Waveforms
(a) Amplifier Overdriven
(b) Amplifier Operating Point not Centered
(c) Crossover Distortion in a Class B Stage

transmission system or device under test and the output examined on a CRO. Figure 27(a) shows the effect on the output when there is a loss of high frequencies accompanied by phase distortion. Figure 27(b) shows loss of high frequencies on its own. Figure 27(c) shows phase distortion on its own. By carefully calibrating the graticule of the CRO screen, limits can be defined on the amount of deviation from the original waveform than can be accepted.

It is not intended that this article should extend into the realms of testing television video circuits although they have been referred to as an application where the sine squared pulse is used. It will be sufficient to say that a great deal of information concerning the bandwidth, low frequency response and linearity of a video signal can be obtained by studying the displayed picture of the standard television test pattern.



Distortion measurements using sine wave

Figure 10: Sine Wave Testing with Amplifier Input and Output fed to X and Y Plates of CRO, respectively
(a) Amplifier Overdriven
(b) Anode Bend Distortion in Valve Amplifier
(c) Curvature Distortion
(d) Crossover Distortion in a Class B Output Stage
(e) Magnetising Current Distortion
(f) As (e) with Phase Distortion later in the Chain
(g) As (d) with Phase Distortion earlier in the Chain
(h) As (c) with Phase Distortion earlier in the Chain
(i) As (a) with Phase Distortion later in the Chain

The Ultimate Test

We have discussed, at length, various types of distortion, the test equipment used and how distortion is measured. However, it must not be overlooked that the test equipment , whatever level of sophistication, is there to assist the evaluation of operational performance. The ultimate test is how well all the equipment performs and, in a speech communication system, how good does it sound. If the speech quality is good, then the test equipment is put away. If the speech sounds thin, or it lacks highs, or it is muffled and hard to understand, then the test equipment and the knowledge of how to use it, might be needed to find out why.

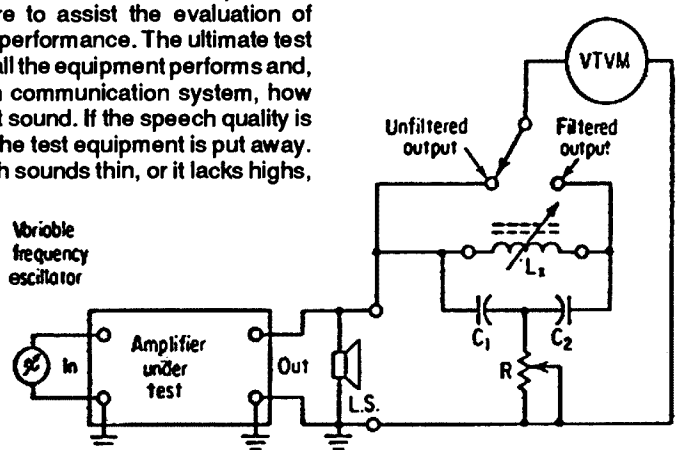


Figure 11: Principle of Harmonic-Distortion Meter, showing Bridged-T Rejection Filter Composed of L, C1, C2 and R.

It is unlikely that the average radio amateur would have access to all of the test equipment discussed in this article. However, it should be apparent from the discussion that a great deal of information on equipment performance can be gained using a simple sine/square wave signal generator and a good CRO.

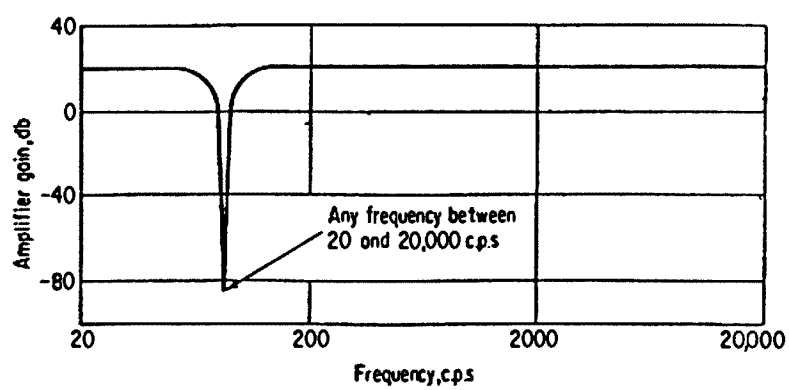


Figure 12: Rejection Characteristic of Variable-Tuned Filter in Harmonic Distortion Analyser

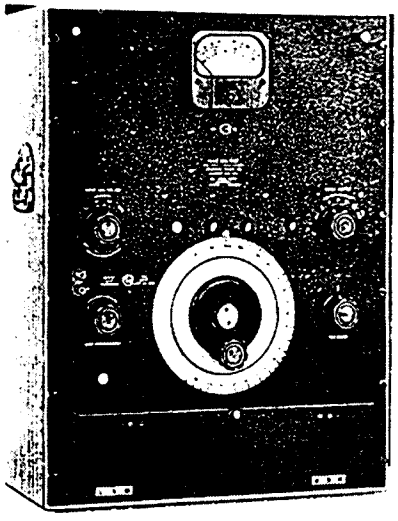


Figure 13: General Radio Heterodyne Wave Analyser

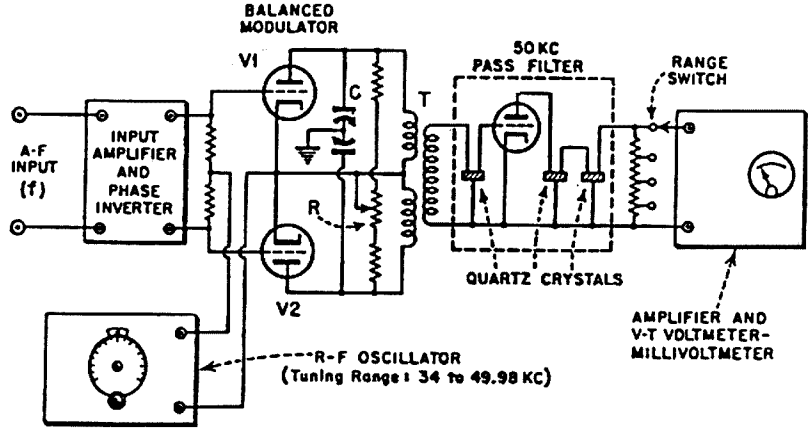


Figure 14: Basic Circuit of the Heterodyne Wave Analyser

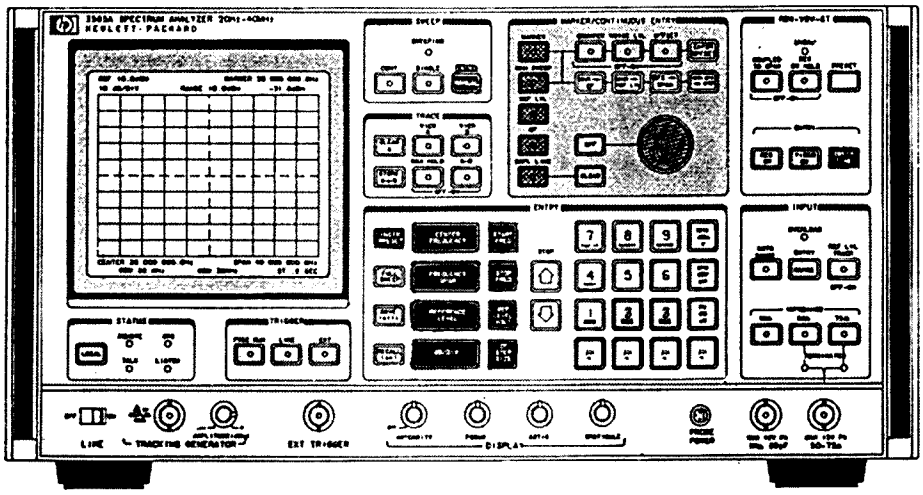


Figure 15: A Modern Spectrum Analyser

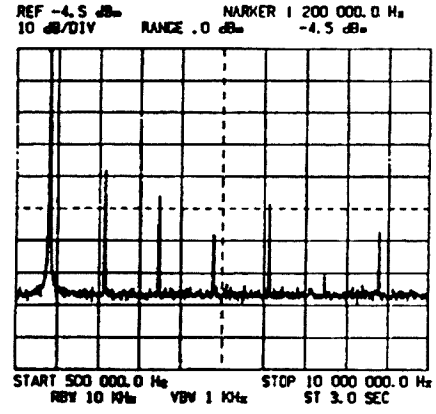


Figure 16: Fundamental and Harmonics displayed on the Spectrum Analyser

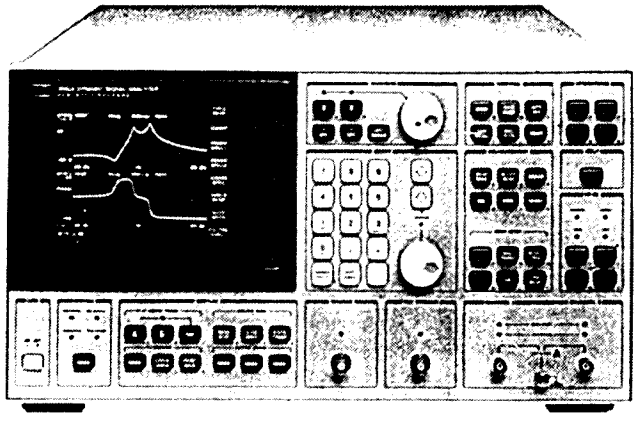


Figure 17: Dynamic Signal Analyser

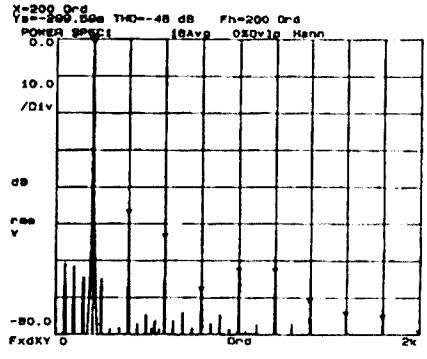


Figure 18: Dynamic Signal Analyser - Measurement of Harmonic Distortion

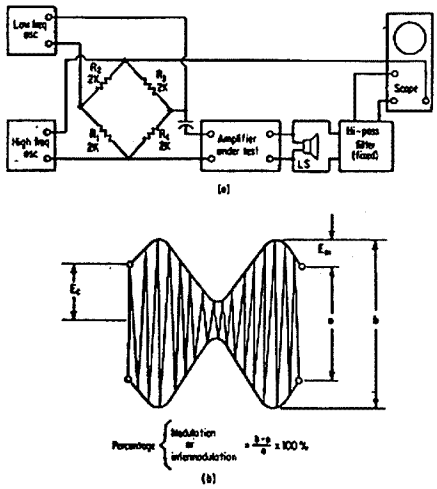


Figure 19: Measurement of Intermodulation Distortion

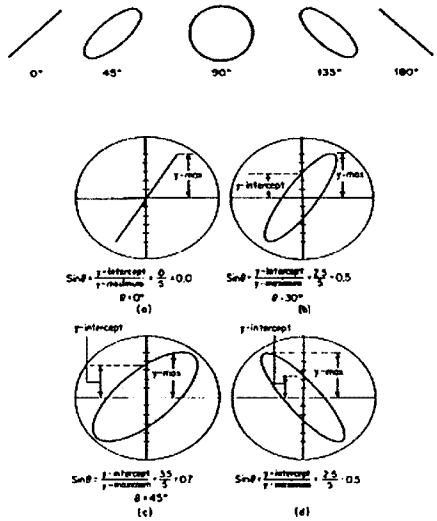


Figure 20: Lissajous Figures for Measuring Phase Difference between Two Voltages at the Same Frequency

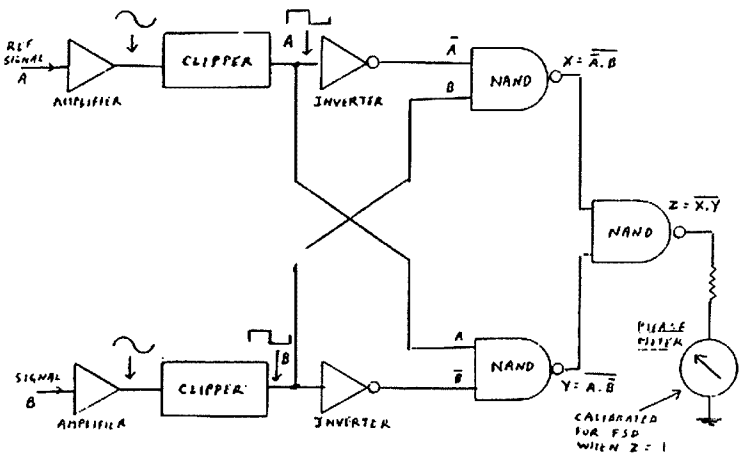


Figure 21: Digital Phase Meter

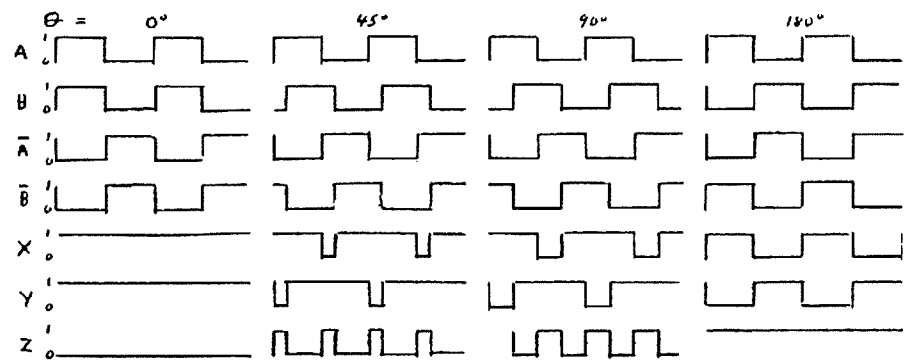


Figure 22: Digital Waveforms for Different Values of Phase between A and B
O = Phase Shift Between A and B
X = A.B.
Y = A.B.
Z = X.Y.

References

1. *TURNER, Rufus P.* Basic Electronic Test Instruments.
2. *PENSKY, Sol D.* Electronic Instrumentation
3. *FINE, Ray S.* Intermodulation Analyser For Audio Systems (Radiotronics *April 1951)*
4. *TERMAN.* Electronics and Radio Engineering
5. *Hewlett Packard Handbooks 3585A, 3562A, 4192A.*
6. *THOMPSON, W E. A paper* - The Syntheses of a Network to have a Sine-squared Impulse Response.
7. *Course of Technical Instruction - Video Test Signals - Australian Post Office.*

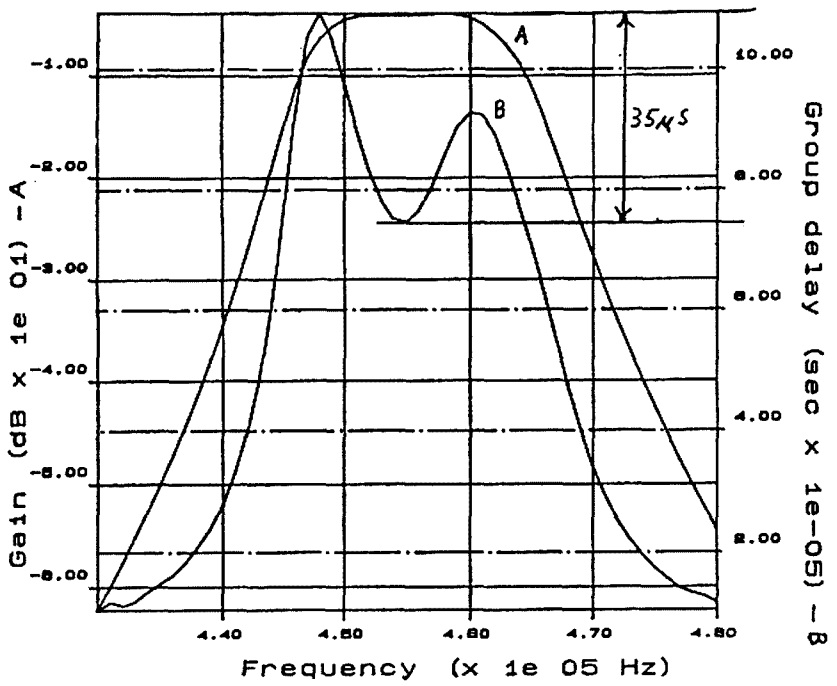


Figure 23: Bandpass Filter - Gain Response and Group Delay

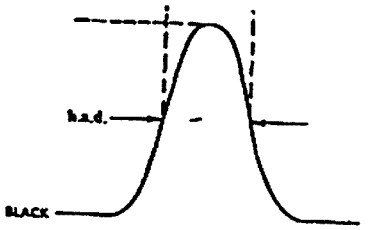


Figure 24: Sine Square Pulse

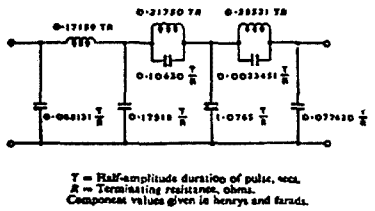


Figure 25: *Thomson Filter for Shaping*

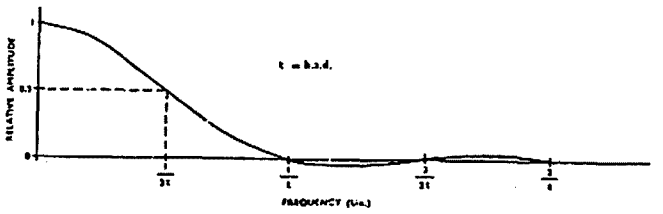
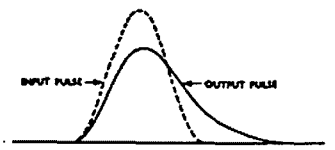
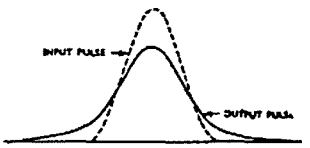


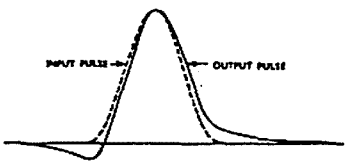
Figure 26: Frequency Spectrum of a Sine Squared Pulse



(a) Amplitude-Frequency and Phase-Frequency Distortion.



(b) Amplitude-Frequency Distortion.



(c) Phase-Frequency Distortion.

Figure 27: Distortion of Sine Square Pulse

1kW PEP Power Meter

Frank Antonovic VK4AOI
16 Haydon Crescent,
Townsville 4814.

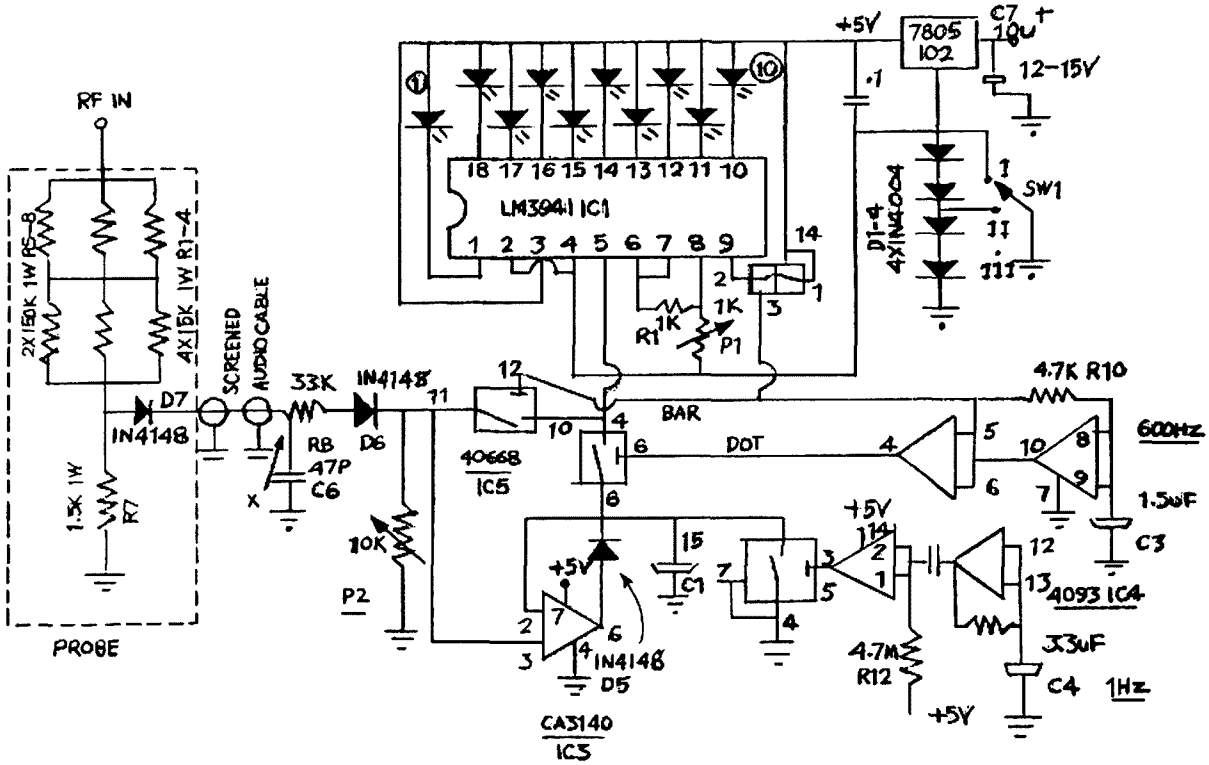


Figure 1: 1 kW PEP Meter

A meter to measure PE power is very useful. This circuit using a LED Bar Graph can be built in two forms and can be set-up for either 1 kW or 150 Watts full scale.

The simpler form provides a dot display with a slow decay showing peak power.

The more complex circuit provides, in addition to the dot display, a bar which indicates the instantaneous output. The meter has an attack time of less than 1 mS and holds the reading in DOT mode. The ranges are 5-150, 150-500 and 500-1050 watts on 50 or 70 ohms.

The unit is simple to construct and can be fitted into a small plastic box, 82x52x30 millimeters. The probe is contained in a metal box from 30x30x60 millimeters to 40x40x60 millimeters or similar, fitted with a male UHF plug (RG8) and connected to the transmitter through a UHF Tee adaptor.

Description

IC1 is a linear LED driver operated in DOT and BAR mode. D1-4 provide two steps of approximately 1.4 volts for two ranges. P1 sets FSD of IC1 to approximately 1.4 volts (two diodes.) R9 sets the LEDs current (12mA). IC5 (4066B) has four individual switches which change IC1 from DOT and BAR mode at 600 Hz rate and discharge C1. IC3 (op amp), D5 and C1 provide hold-in-DOT mode. D6 and D7 provide offset voltage drop for the first LED

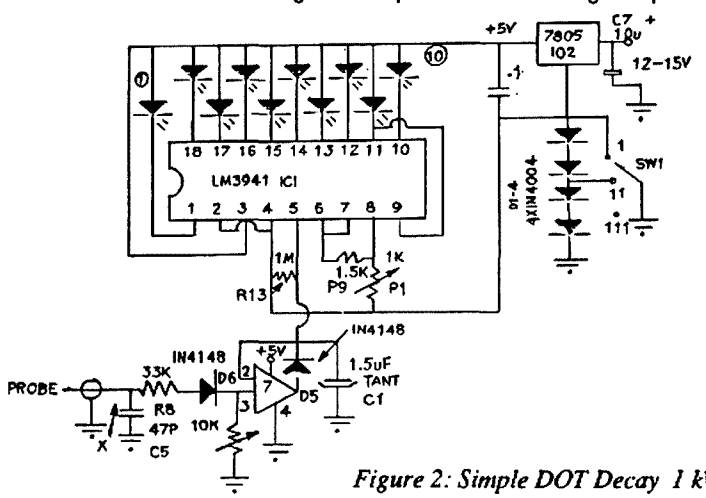


Figure 2: Simple DOT Decay 1 kW Meter

Table 1

LED	RANGE I 50 ohm W	RANGE I 50 ohm V	RANGE I 75 ohm W	RANGE I 75 ohm V	RANGE II 50 ohm W	RANGE II 50 ohm V	RANGE II 75 ohm W	RANGE II 75 ohm V	RANGE III 50 ohm W	RANGE III 50 ohm V	RANGE III 75 ohm W	RANGE III 75 ohm V
1	5	15.8	5.0	19.4	150	86.9	151.0	106.4	500	158.0	499.3	193.5
2	10	23.7	11.2	29.0	180	94.8	179.7	116.1	550	165.9	550.5	203.2
3	20	31.6	20.0	38.7	210	102.7	210.9	125.8	600	173.8	604.1	212.9
4	30	39.5	31.2	48.4	245	110.6	244.6	135.4	660	181.7	660.3	222.5
5	45	47.4	45.0	58.1	280	118.5	280.8	145.1	720	189.6	719.0	232.2
6	60	55.3	61.2	67.7	320	126.4	319.5	154.8	780	197.5	780.1	241.9
7	80	63.2	80.0	77.5	360	134.3	360.7	164.5	840	205.4	843.8	251.6
8	100	71.1	101.0	87.0	400	142.2	404.4	174.2	910	213.3	909.9	261.2
9	125	79.0	125.0	96.8	450	150.1	450.6	183.8	980	221.2	978.6	270.9
10	150	86.9	151.0	106.4	500	158.0	499.3	193.5	1050	229.1	1049.7	280.6

of IC1. IC4 (4093) is quadruple Schmidt trigger, two sections are used as a 600 Hz square wave oscillator to operate IC5, two other sections are used to produce 6 mS + ve pulse at 1 Hz rate to discharge C1. R1-6 and R7 is RF voltage divider. R5-6 are frequency compensation. R1-7 are one watt carbon film resistors.

Frequency response is flat from 3.5 to 28 MHz. Since the meter reads RF voltage, indication will depend on the SWR. Diodes D1-4 are power diodes, 1N4004 or similar, selected for identical forward voltage drops at 10 mA. C1, C3, and C4 are tantalum capacitors. P1 and P2 are miniature 10 turn vertical pots, for ease of adjustment.

DC Calibration

Set P1 for 0 ohms, P2 for maximum resistance. Connect a variable DC power supply through a 1N4148 to point X (the RF probe is not connected at this stage.) Set SW1 to range II, and increase voltage input until first LED just lights up. Measure the voltage with a digital voltmeter and make a note of it. Change SW1 to range I, and adjust P1 until the 10th LED just lights up. Check that the voltage is the same for the 10th LED on range II as for the first LED on rage III. If D1-4 are identical it will be the same.

RF Calibration

Connect the transmitter, via the reference power meter, to a dummy load. Connect the probe to the output of the transmitter or dummy load via a Tee adaptor, SW1 range I. Increase power on any band, to 100 watts and adjust P2 to light up the eighth LED. It can be calibrated for 50 or 75 ohms as required. In case the output of the probe is too low, you can reduce R8 to 22 k ohms.

If on high input, during DC calibration, the display locks-up (that is, the 10th LED stays on), changeover the input/output of the IC5 section used to discharge C1. In my case, pin 11 to ground was locking-up, causing the 10th LED to stay on. Swapping around solved the problem. Other sections of the IC5 used to switch BAR and DOT might also cause problems in a similar manner.

A 10 LED bargraph display was used in this model and is readily available from Jaycar and Altronics.

150 Watt PEP Meter

The meter is identical to the 1 kW version (except that D1-4 and SW1 are omitted). The probe is smaller and P1 is in different positions as shown on the circuits. P1 is used to offset voltage drop of D7.

C1 is 10uF tantalum for the DOT and BAR display. The probe is made of the same type resistors as the other version, and are installed in a metal box 25x25x50 millimeters OD (Sucobox by Suhner, or similar). The frequency response is a flat 3.5 to 30 MHz.

DC Calibration

Set the arm of P1 to ground. Connect a variable DC power supply through a 1N4148 to point X. Adjust P2 for the 10th LED to just light up at one fifth voltage shown in the table for that LED. Repeat the process.

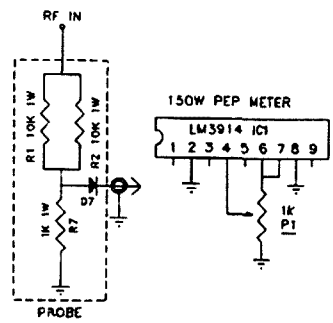


Figure 3: 150 Watt Meter

RF Calibration

Connect all as for the 1 kW meter. Increase CW power to 100 watts, adjust P2 for the eighth LED to just light. Check that the first LED lights for five watts in. If not, adjust P1. Repeat the process.

A Screw Loose?

David G Barneveld VK4BGB
PO Box 275
Booval 4304

Timely tip for Icom IC-2A owners

For those of us who own an IC-2A hand held, and its companion fast charger, the BC-30, one does not have to be told of the convenience of slipping the whole unit, complete with battery pack, into the charger and commencing a recharge cycle.

But beware! Having not removed the battery pack from my transceiver for some months, I was quite intrigued that when I went to replace it with another pack I had obtained, I could barely slide it more than 3mm without it binding in some place. My attempts at gentle persuasion failed to get it to budge.

The cause of the problem turned out to be that one of the screws in the bottom of the transceiver proper had worked its way out, and was catching on the battery pack as it was moved across.

As one cannot get the pack off, how do you screw back the screw, you ask?

The answer is that the two screws on the back must first be removed and then ever-so-gently, the case is prised apart just enough to allow the battery pack to be lifted clear of the runners.

After removal, check the tightness of all the other screws in the bottom plate. Don't let it happen to you!!!

ar

Sporadic - E propagation at VHF

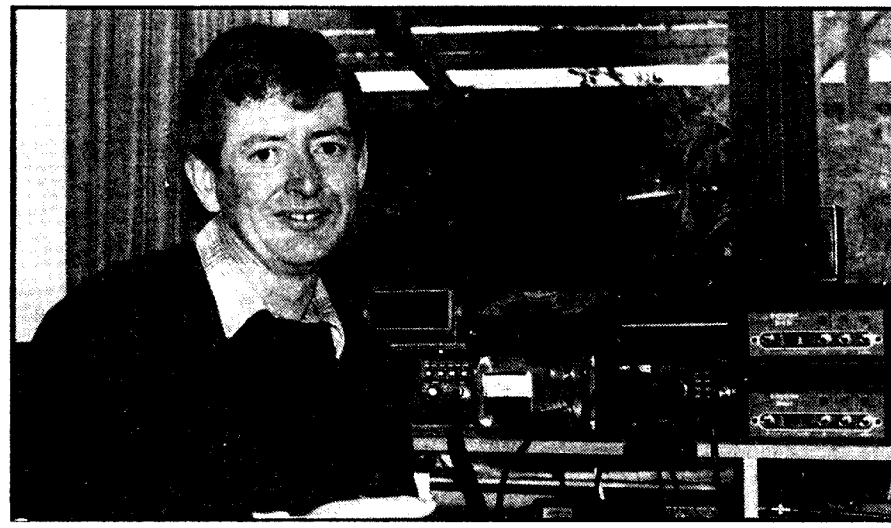
Peter Stackpole VK1RX
18 Sainsbury Street
Wanniassa, ACT 2903

Since the mid 1940's much research has been carried out and many technical articles have been published on the subject of sporadic-E propagation at the low frequency end of the VHF spectrum. In recent years techniques have been developed by the International Radio Consultative Committee (CCIR) which allow the statistical prediction of received field strengths by sporadic-E propagation over paths as long as 4000 km. Such techniques are of use to broadcasting engineers in the planning of co-channel television services on Band I frequencies (Australian channels Ø, 1 and 2) and the same techniques are of interest to 6 metre and 2 metre amateur radio operators as they may be used to predict the likelihood of a sporadic-E opening over a particular path during a given season of the year (especially summer).

In general, the altitude range 90 to 130 km constitutes the E region and encompasses the normal E layer and sporadic-E layers. The normal E layer occurs regularly displaying a maximum density near noon and a seasonal maximum in summer. The altitude of maximum density is usually about 110 km.

The transmission path of a signal reflected by the normal E layer is shown in Figure 1. Initially the transmitted ray is curved during its passage through the lower atmosphere and at incidence with the E layer, if the layer has reflective properties at the frequency in use, the ray is refracted back down to the earth's surface. Generally the maximum usable frequency (MUF) over the transmission path shown is greater at lower E layer heights and increases as the ionisation of the layer increases.

During sporadic-E conditions a comparatively thin layer with high electron density is formed within the normal E layer and propagation is possible at frequencies much higher than usual. The sporadic E layer is distributed in patches ranging in spatial extent from several kilometres to 1000 km and with a thickness typically 500 to 2000 metres. The height of the layer is usually in the range 95 to 135 km with a most probable value of 110 km. Sporadic-E layers are believed to be formed by the interaction of shear horizontal winds at ionospheric heights with the normal E layer and the earth's magnetic field. Uniike the normal E layer the comparatively thin and highly ionised sporadic-E layer is more prone to reflect radio waves than to refract them.



About the author:

Since 1979 Peter Stackpole has been employed by the Department of Transport and Communications as a propagation engineer. During this period he has been involved in the planning many MF radio, FM radio and TV services throughout Australia. In recent years he has been heavily involved in the planning of the new commercial UHF TV services to be introduced into regional Australia.

General Occurrence

At present there is no recognised short-term prediction technique for temperate zone sporadic-E, however it has been observed that intense sporadic-E tends to occur more frequently on magnetically quiet days. In brief, the major occurrence patterns of temperate zone sporadic-E are as follows :

(a) A dominant maximum during the summer months with the seasonal minimum usually near midwinter or the spring equinox.

(b) A diurnal pattern where the majority of sporadic-E propagation occurs during daylight hours. One peak is usually found near mid morning and a second peak near sunset.

(c) A possible dependence on the sunspot cycle which results in maxima at both the sunspot maxima and the sunspot minima. This sunspot cycle dependence is not yet confirmed.

Maximum Usable Frequency

A simplified propagation path for transmissions occurring during sporadic-E conditions is shown at Figure 2. The MUF over the path is directly related to the critical frequency at the midpoint of the path, and in technical circles this sporadic-E mid path critical frequency is designated as foEs.

Generally, with reference to Figure 2, the actual numerical value of the MUF over the transmission path may be evaluated from the following relationship:

$$MUF = \frac{k\ foEs}{\cos i}$$

For a 1500 km path (transmission angle of about 4°) the incident angle i to the E layer at the midpoint of the path is approximately 80°. The value of k specified in the equation above has been experimentally determined by CCIR study groups as being in the range 1.2 to 1.3 under sporadic-E propagation conditions. Thus, if the midpath critical frequency foEs for the above case equals 7 MHz, then the MUF over the path may be evaluated as:

$$MUF = \frac{1.3 \times 7\ MHz}{\cos 80} = 52.4\ MHz$$

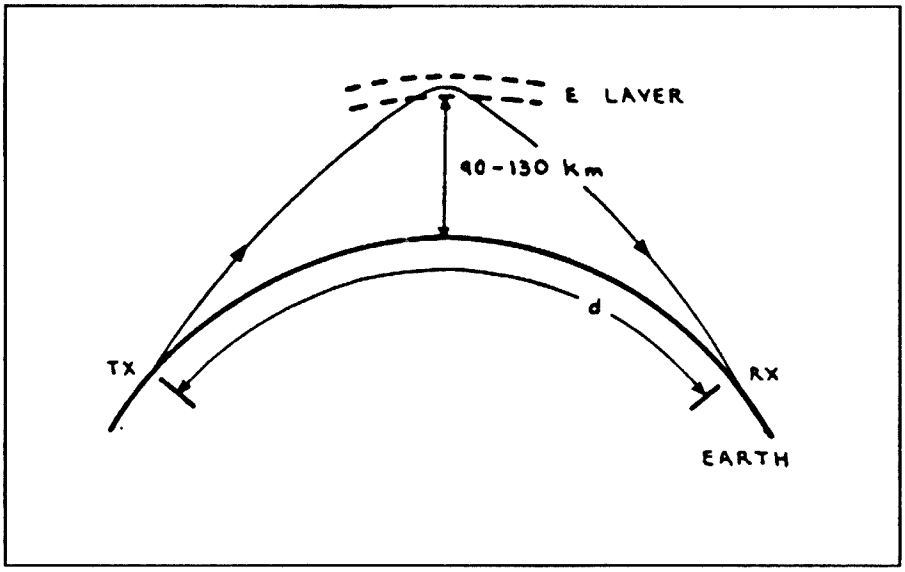


Figure 1 Normal E Propagation Path

Consequently, propagation at the lower end of the VHF spectrum may be expected whenever foEs equals or exceeds about 7 MHz.

A world map showing the estimated percentage of time for which foEs equals or exceeds 7 MHz during the summer months in temperate zones is illustrated at Figure 3. This map is one of a series developed for the CCIR by various study groups in the northern hemisphere and the contours shown for the southern hemisphere are an extrapolation only. In our region the percentage of time for which foEs may equal or exceed 7 MHz is estimated to range from about 3% of the time in Western Australia to 4.5% of the time in Eastern Australia and New Zealand during the summer months.

Illustrated at Figure 4 are graphs showing the estimated value of foEs equalled or exceeded for a given percentage of time for the Eastern Australia/New Zealand region during the November to February (0800 to 2300 only) and March to October periods. These graphs were derived by the author from similar curves published by the CCIR for other regions and from the published world maps disucssed above. As can be seen from Figure 4 sporadic-E occurrences are much more likely during summer months than during other times of the year.

Polarisation Discrimination

VHF signals reflected by sporadic-E layers suffer a considerable degree of depolarisation. Nonethless, measurements conducted by the BBC some years ago over a number of sporadic-E paths indicate that the use of a receive antenna orthogonally polarised with respect to the transmit antenna may result in an average relative cross-polarisation loss of about 5 dB for single hop propagation. Consequently, amateur stations engaged in single hop sporadic-E contacts should use the same polarisation to the obtain optimum performance under marginal conditions. This optimum condition is usually realised as most DX operators on 6 metres and 2 metres use horizontally polarised antennas.

Path Loss

In practice, during a sporadic-E opening, the transmission loss over a particular path may be reduced to a free space loss which is proportional to distance and an ionospheric absorption loss (r) which occurs at the point of reflection from the sporadic-E layer.

The free space received field strength at a particular distance (d,km) from a transmitter, for an effective radiated power of 1 kW, may be determined from the following relationship:

EFS = 107 - 20 log (d) dB above 1uV/m

For an effective radiated power of 100 watts the above formula may be modified to:

EFS = 97 - 20 log (d) dB above 1uV/m

Hence, as an example, for a 1000 km path the free space received field strength from a 100 watt effective radiated power station will be :

EFS = 97 - 20 log 1000
= 37 db above 1 uV/m
= 70.0 uV/m

The ionospheric absorption loss (r) during the sporadic-E propagation conditions may be estimated from the curves shown at Figure 5.

These curves originate from research performed by Miya, Shimizu and Kojima as part of a working party for the CCIR to develop an improved method for the calculation of sporadic-E signal strengths. For a given path distance the ionospheric absorption loss (r) is dependent upon the

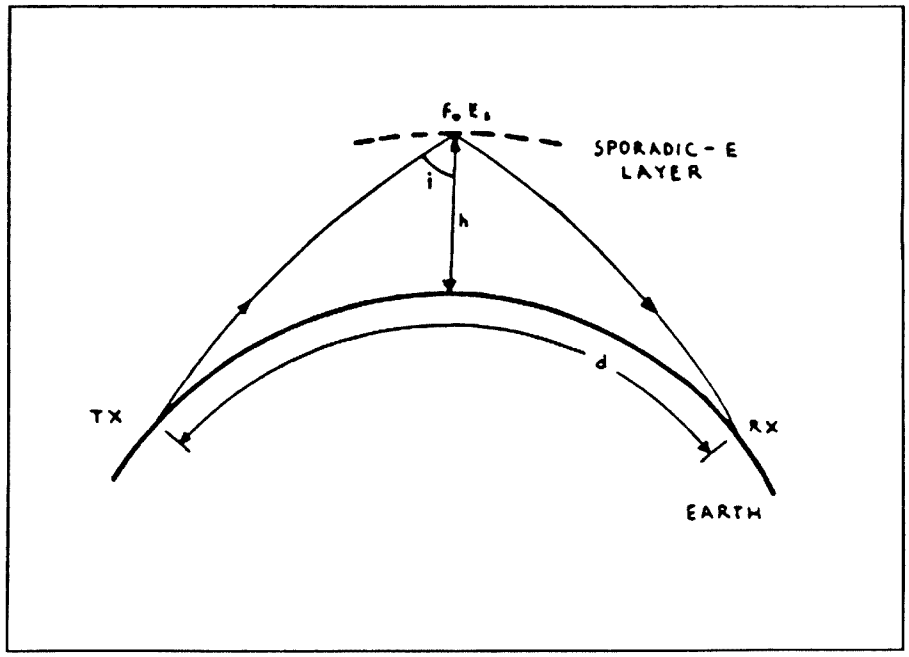


Figure 2 Sporadic-E Propagation Path

transmission frequency in use (f) and the critical frequency at the midpoint of the path (foEs).

Using the above free space propogation law and the CCIR research data which has been presented, it is possible to estimate the percentage of time that the 6 metre and the 2 metre amateur bands will be open during the sporadic-E conditions. To allow a numerical analysis the effective radiated power of the amateur station must be known and the field strength necessary for adequate reception at the amateur station must be determined.

6 Metre Band Analysis

Many amateur stations on 6 metres use a 10 to 20 watt output transmitter feeding a 4 or 5 element yagi antenna. In this analysis it is assumed that the amateur station has an antenna with a power gain eight times that of a dipole (9 dBd). For convenience, ignoring transmission line losses, it is assumed that the station has a total effective radiated power of 100 watts.

The field strength required for adequate reception at the amateur station is a little more complicated to determine.

From theory

$$\Sigma = E\frac{f}{\sqrt{R}} \cdot \frac{2\pi}{300}\sqrt{\frac{120}{G}}$$

where = received field strength (uV/m)
E = receiver terminal volts (uv)
R = transmission line impedance (ohms)
f = frequency in use (MHz)
G = antenna power gain with respect to an isotropic radiator

A typical 6 metre receiver has an input sensitivity of 0.25 uV for a 10 dB output signal to noise ratio and is optimised for a 50 ohm transmission line. An antenna with a power gain of 9 dBd has a relative power gain of 11.15 dBi (13 times over an isotropic radiator). Thus using these parameters at 52 MHz we can evaluate:

$$\Sigma = 0.25\ \frac{52}{\sqrt{50}} \cdot \frac{2\pi}{300}\sqrt{\frac{120}{13}}$$
$$= 0.117\ \text{uV/m}$$
$$= -18.6\ \text{dB uV/m}$$

As a result, in this case, the amateur station will have adequate reception whenever the received field strength is -18.6 dB uV/m or greater (ignoring transmission line losses and external noise).

Using the above amateur station parameters the percentage of time for which the 6 metre band will be open on various transmission paths during sporadic-E propagation conditions may be estimated as follows:

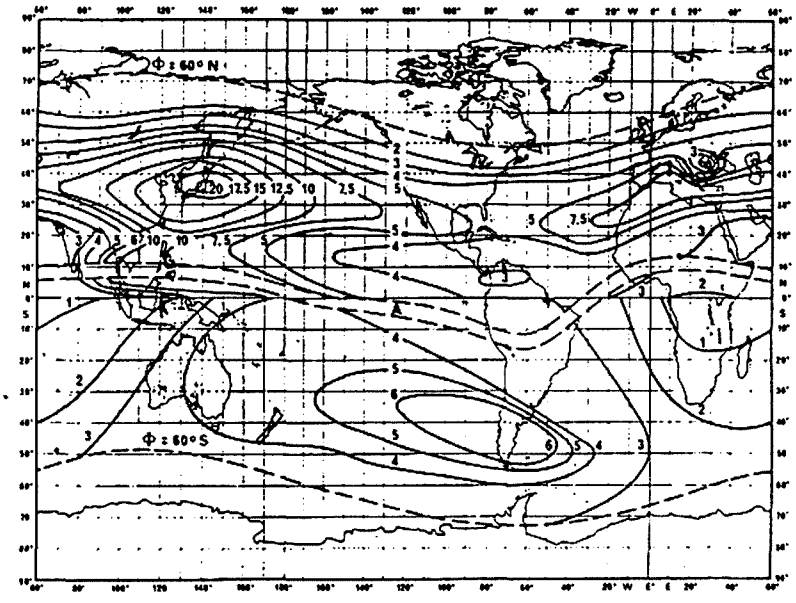


Figure 3 Percentage of time for which temperate sporadic E (foEs) equals or exceeds 7 MHz at vertical incidence in the sones during the summer months.
Summer months in the Northern Hemisphere: May, June, July and August.
Summer months in the Southern Hemisphere: November, December, January aand February.
A: Equatorial zone.

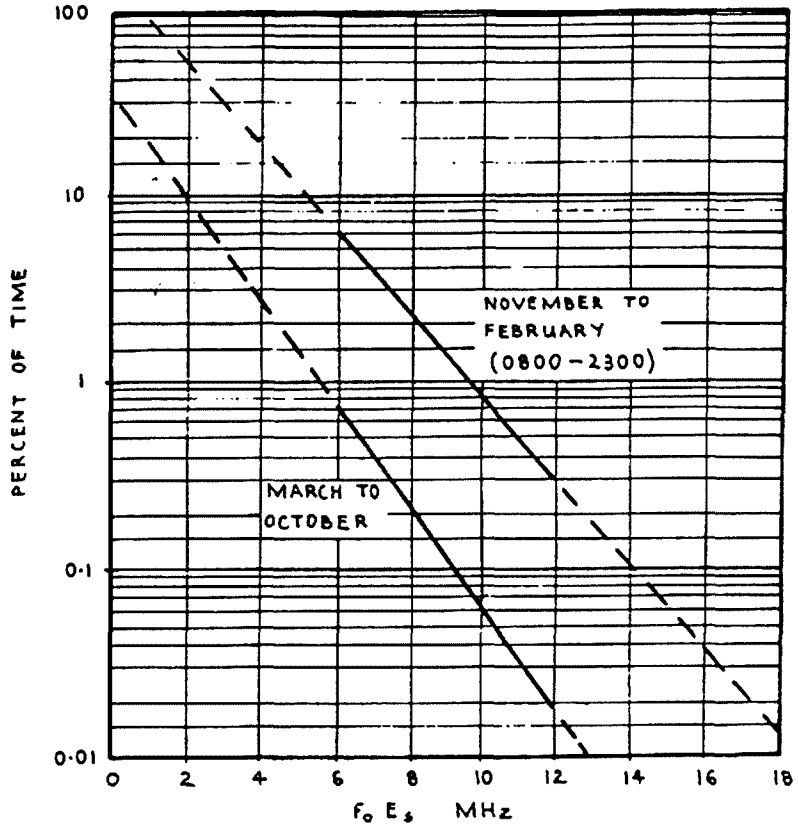


Figure 4 Estimated foEs equalled or exceeded for given percentage of time in Eastern Australia/New Zealand region.

Example 1: Summertime, transmission path 1500 km

(a) the received free space field strength from the 100 watt erp station is calculated to be :

EFS = 97 - 20 log 1500 dB uV/m
= 33.5 dB uV/m

(b) Since the necessary receive field strength at our average station must be at least -18.6 dBuv/m, then the maximum ionospheric absorption loss which can be tolerated is :

Γ = 33.5 - (18.6) dB
= 52.1 dB

(c) From Figure 5, with d = 1500 km and = 52.1 dB then:

$\frac{f}{foEs} = 7.4$

(d) hence for f = 52MHz then

$foEs = \frac{52}{7.4} = 7.0$ MHz

(e) From Figure 4, with foEs = 7.0 MHz the percentage of time that the band will be open equals 3.8%.

Example 2: Summertime, transmission path 500 km

(a) EFS = 97 - 20 log 500 = 43 dB uV/m

(b) I = 43 -(-18.6) = 16.6 dB

(c) from Figures 5, $\frac{f}{foEs} = 3.6$

(d) foEs = $\frac{52}{3.6}$ = 14.4 MHz

(e) from Figure 4, the percentage of time the band is open equals 0.08%.

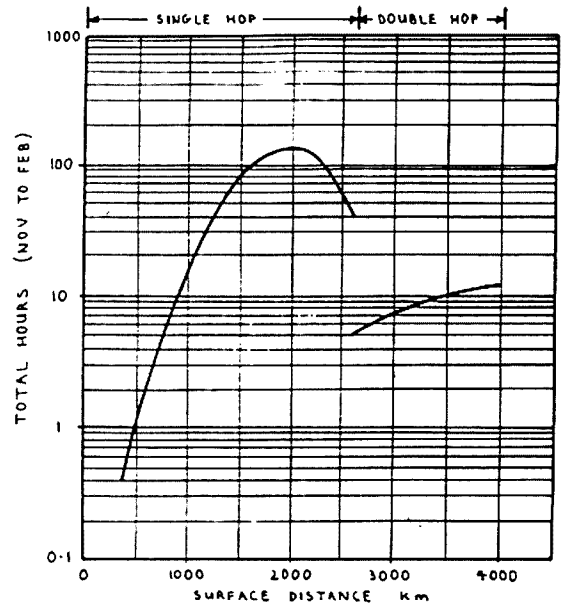


Figure 7

Evaluating all summertime cases between 400 km and 4000 km it is possible to produce the single hop and double hop propagation curves illustrated at Figure 6. These curves show the percentage of time during the months November to February (0800 to 2300) that the 6 metre band is estimated to be open over a given distance between amateur stations of the type described.

As can be seen from Figure 6 single hop propagation occurs infrequently at distances less than about 600 km. This is due to the relatively high ionisation of the sporadic-E layer necessary to reflect signals arriving from comparatively large transmission angles. Optimum single hop propagation occurs over path distances between 1600 to 2300 km (transmission angles of approximately 4° to 0.5°). Beyond about 2600 km single hop propagation is inhibited as at very low transmission angles the path between the transmitter and the sporadic-E layer is obstructed by the curvature of the earth.

Disregarding tropospheric extensions, sporadic-E propagation at path distances longer than about 2600 km is usually achieved via the double hop mode. Statistically the occurrence of double hop propagation is less likely than that of single hop propagation. In general double hop propagation exhibits a broad peak over path distances from about 3500 to 4000 km.

To simplify the interpretation of Figure 6, the percentage of time curves have been reproduced at Figure 7 with the predicted total duration of band openings in hours per summer period (0800-2300) plotted versus transmission path distance. Generally the total hours shown for each path length will statistically be made up of a large number of short band openings and a relatively fewer number of longer openings. Thus whilst in a given summer season there will be many opportunities to make sporadic-E contacts over a 2000 km path (eg Melbourne to Townsville) the number of oppor-

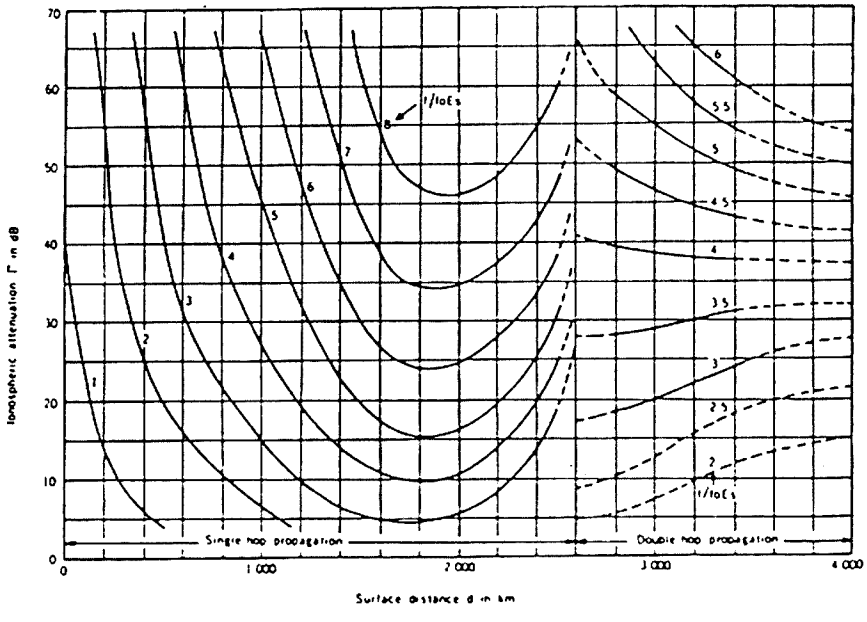


Figure 5 Chart of ionospheric attenuation r in E, propagation in the use of broad directivity antennas.

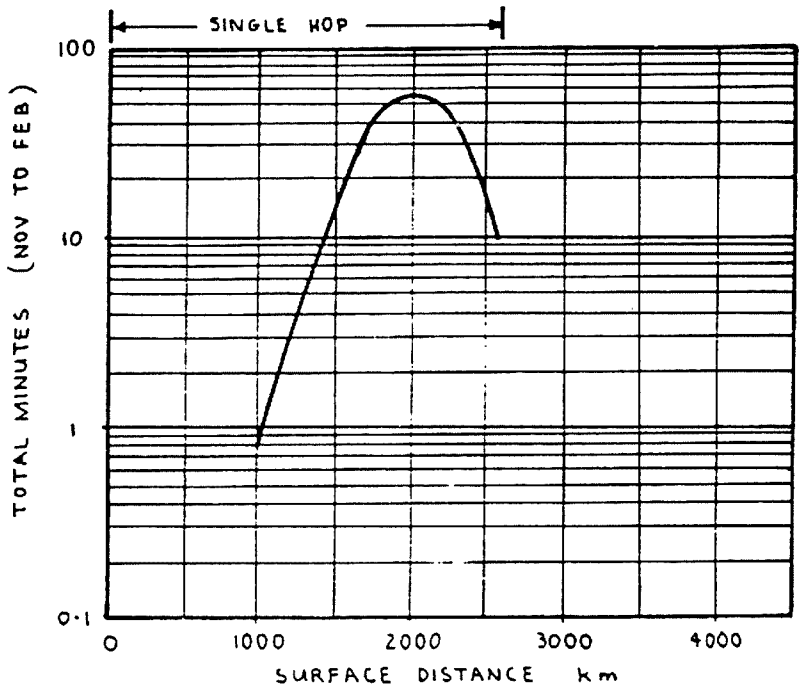


Figure 8

tunities over shorter paths (eg Melbourne to Canberra) will be extremely limited. Similarly, usable double hop band openings will also occur relatively infrequently.

The curves generated at Figures 6 and 7 are considered to be appropriate for many 6 metre amateur contacts, however of course, changes in transmit power, receive capability and local noise considerations will modify the calculated percentages of time accordingly. A similar shaped (but much lower percentage of time) set of curves for single hop and double hop propagation may be generated for the months March to October by using the above method and the appropriate graph at Figure 4.

2 Metre Band Analysis

According to Miya, Shimizu and Kojima the ionospheric abosrption curves at Figure 5 are believed to be applicable from 10 MHz to 150 MHz. Consequently it is possible to rework previous calculations for a frequency of 144 MHz using appropriate 2 metre station parameters.

The results of an analysis for a 1 kW effective radiated power 2 metre station with a 12 dBd gain antenna and a receive sensitivity of 0.1 uV for a 10 dB output signal to noise ratio are given in Figure 8. The single hop curve produced shows the predicted total duration of 2 metre band openings in minutes per summer period (0800-2300) plotted versus transmission path distance. As can be seen from Figure 8 sporadic-E openings occur for a significanly lower percentage of the time on 2 metres than on 6 metres. The likelihood of double hop propagation on 2 metres is negligible.

The optimum sporadic-E propagation path distance on 2 metres is approximately 2000 km, which is the same as for 6 metres. Usable 2 metre openings are only likely to occur during periods of intense E layer ionisation, with a good indication of this condition being the presence of short skip forward sporadic-E signals on 6 metres. For example, the presence of forward sporadic-E signals between VK3 and VK1 on 6 metres indicates the possibility of sporadic-E propagation between VK3 and VK4 on 2 metres.

Conclusion

The preceding article has been written to provide an insight into some of the techniques used by broadcasting engineers at the lower VHF frequencies and also to promote a better understanding of sporadic-E propagation occurrences on both the 6 metre and 2 metre amateur bands. It should be appreciated that the technical calculations made are based on the average of many CCIR measurements accumulated over a number of years, thus it is to be expected that individual sporadic-E seasons will provide more or less band openings than predicted.

Sporadic-E propagation occurrences are known to be a common seasonal event on 6 metres, however greater operator awareness is required to exploit those brief openings which occur on 2 metres. Last summer season produced a number of good 2 metre sporadic-E openings over distances of about 2000 km and it is possible that next season may provide as many opportunities. In any event I hope to catch you in the pile-ups, whether it be on 6 or 2.

References

K. Miya, K. Shimizu and T. Kojima: Oblique - Incidence Sporadic-E Propagation and its Ionospheric Attenuation, Radio Science, Volume 13, November 3, May/June 1989.

E. Smith: Temperate Zone Sporadic-E Maps (foEs >7 MHz), Radio Science, Volume 13, November 3, May/June 1978.

W. Beynon: Sporadic-E Ionisation and Television Interference, BBC Engineering Monograph No. 61, March 1966.

L. Tagholm, C. Bell, P. Knight: Ionospheric Propagation in VHF Television Band I, BBC Research Department Report TD 1975/17.

E. Smith, E. Davis: Wind Induced Ions Thwart TV Reception, IREE Spectrum, February 1981.

CCIR Recommendation 534-1: Method for Calculating Sporadic-E Field Strength, Geneva Plenary Assembly, 1982.

CCIR Report 259-5: VHF Propagation by Regular Layers, Sporadic-E or Other Anomalous Ionization, Geneva Plenary Assembly, 1982.

Preston House Revisited

by A. Shawsmith, VK4SS
35 Whynot Street, West End 4101

At 2 p.m. on the 2nd April 1989 a mixed group of twenty people - young, middle-aged, OOTers and VIPs - braved inclement weather to gather in the vestibule of the Australian Alliance Insurance Building (formerly Preston House), 371 Queen Street, Brisbane.

They were there to attend a short ceremony and unveil a large wall plaque, which was mounted to record and honor the achievements of the first two men to break 'the broadcast sound barrier' in the Sunshine State: Dr Valentine McDowall - radiologist, and wireless experimenter Thomas M.B. Elliott.

In 1920 these pioneers began regular transmissions of voice and music on 800 and then 350 meters. This was five years before Queensland's 'official' station 4QG came on air.

Prior to 1920, unsuccessful attempts had been made to transmit SOUND using high frequency alternators. In 1918 the first thermionic valve suitable for handling watts of RF power was produced in the USA. McDowall and Elliott quickly put this progression to use and designed and assembled a 20 watt Heising modulated transmitter.

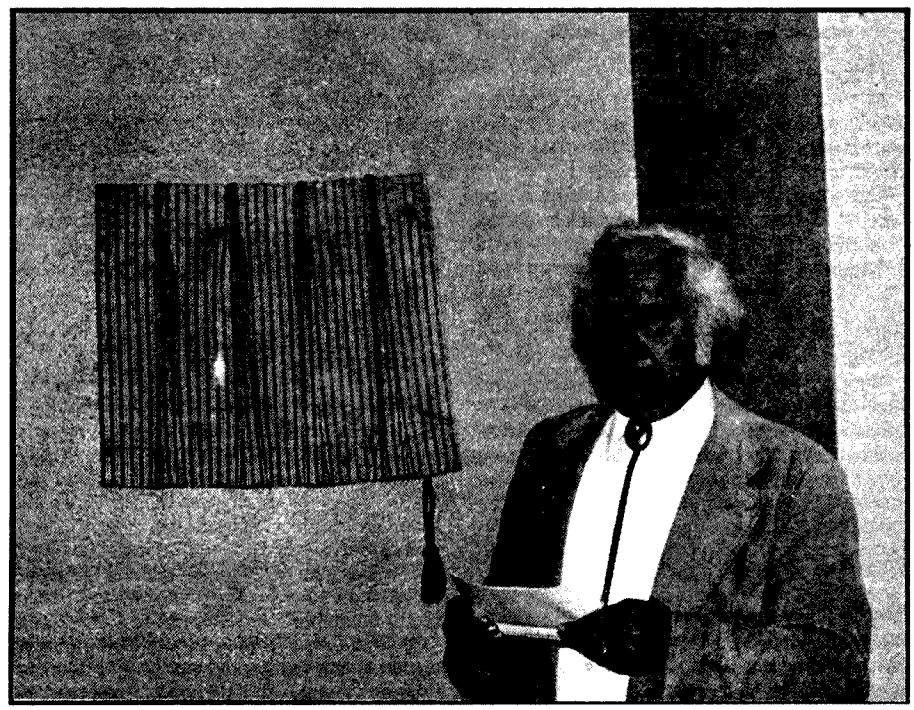
Their choice of a good transmitting site was particularly fortunate - Preston House, newly built, was one of the tallest structures in Brisbane at that time. Two masts were erected on the roof and a resonant L-shaped Marconi-type cage antenna was strung between them at a height above ground of 200 ft, well clear of any nearby object. In an effort to maximize antenna current, many hours were spent trimming and adjusting the multi-wire counterpoise; but this was discarded altogether when it was found that a simple connection to a water tap provided equal antenna current. The building's foundations were close to underground water. This may have had some effect.

Station 4CM (the amateur call sign allotted to Dr. McDowall) quickly expanded beyond studio music into many successful Outside Broadcasts conducted from various venues in and near the city. The broadcasts were heard by thousands of listeners in many parts of Australia and were reported clearly audible on Ocean Island, 2000 miles out in the Pacific. Home-brewing of receivers, both crystal and valve, increased dramatically, consequently, when station 4QG first came on air in 1925, a listening audience was already established thanks to the 'pathfinding' efforts of McDowall and Elliott.

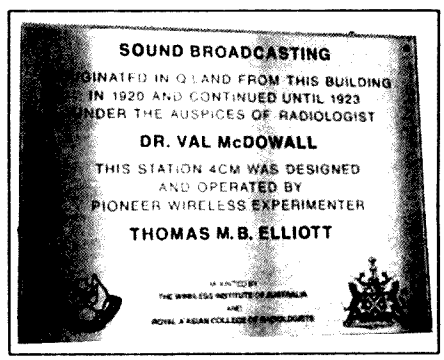
Post 1925, both men turned their attention to TV research, working from the now famous Brisbane landmark, the Old Windmill Tower. After many test transmissions their efforts finally resulted in the regular transmission of TV programmes in 1935. By now, both men were internationally known and acclaimed.

A suggestion was put forward that their names be included in the Birthday Honors list. This did not eventuate, however other honors were bestowed upon them. TMB Elliott was made an Honorary Fellow of the Queensland University (1965) and a Fellow of the Royal Historical Society of Queensland (1966). Two plaques were erected to commemorate their achievements, one in Preston House and the other at the Windmill Tower and a full size photograph of the two men, standing together, has been hung in the Memorabilia Room of the Telecom Tower Building in Canberra.

The mounting of this plaque on 2.4.1989 replaced the original one which had been on public view for over forty years, before disappearing during renovations to the building in 1987. The WIA (Qld Division) and the Royal Australasian College of Radiologists wish to make grateful acknowledgement to Brisbane Broadcast Station 4BC and Mr Alan Campbell OBE for their generous financial help with the above.



MIC Bill Bentson VK4QF at the unveiling cremony. Photo: David Brownsey VK4AFA



Replacement Plaque now on display. Photo David Brownsey VK4APA

"Awesome Orson" - The Big Blow!

Dr Harry Atkinson VK6WZ
Unit 5, 97 Railway Parade
Mt Lawley 6050

Amateur operators in VK6, VK2 and VK3 kept the lines of communication open for health and welfare third party traffic on the day when Severe Tropical Cyclone 'Orson' paid a call to the Pilbara.

The Pilbara in the north west of WA, where they suck oil and gas from the seabed offshore and blast mountains of iron ore from the ground inland, is no stranger to cyclones.

Each "wet" while we in the south have our long, dry summers, people in Australia's top left hand corner from the Kimberleys southwards watch and wait to see if their life giving rain, beginning as water vapour over the Timor Sea will be delivered relatively gently by rainbearing depressions - or hurl viciously at them by cyclones.

Sunday, April 23 was the day 'Orson' - the most severe cyclone ever recorded since Australian weather records began - crossed the WA cost between Point Samson and Cape Preston. 'Orson' had been seen on the evening television weather for several nights, moving towards the coast, then seemingly backing off, then resuming its coastward progress again, all the time deepening in intensity and growing larger on satellite pictures.

Finally, the moment many feared came... In the early hours of Sunday, the centre crossed the coast bringing screaming winds of 280 km/h to places like Roebourne, Onslow, Karratha, Pannawonica, Paraburdoo and Tom Price. Boats were torn from moorings and either carried metres inland or dashed onto rocks. At least one ABC radio station went off the air, power lines were blown down, radio and TV antennas smashed, roofing iron flung about and trees uprooted. Outback stations reported buildings unroofed and many windmills damaged. The Dampier weather radar - which had been vital in tracking 'Orson's' progress over the ocean - was put out of action, and at first feared to be a total loss. Later reports, however, said the antenna damage was bad, but the electrical and electronic gear was OK.

The mining town of Pannawonica was among the worst hit; about eighty percent of its buildings suffered severe damage.

The Cyclone Watch Net

The first contacts via amateur radio began about 3am Sunday between Peter VK6ZW Karratha and Sam VK2BVS Sydney who kept 14.275 open for emergency traffic. Peter was fortunate in that his antenna withstood the blast - as did the power lines in his part of Karratha. Traffic was light at first, since no-one is encouraged to move about out of doors and deliver messages during a red alert!

With daylight came reports from affected areas of strong winds and widespread damage. Emergency services and police welcomed the setting up of the amateur radio net and asked the ABC in Perth to request all enquiries about relatives to be telephoned to 277-1514 - VK6RQ's number - a compliment indeed!

The weekly VK6 WIA news at 9.30am carried announcements asking amateur operators to leave the Cyclone Watch Net frequency of 14.275 clear and this request appeared to be heeded for the most part, and traffic which began slowly, gradually built up and was handled efficiently by those taking part.....VK's 2BVS, 6AJR, 6ZW and 6RQ.

How It Began

The ground work was laid on the Saturday night when Bob Walker, VK2YRX, Australian Third Party Traffic Net co-ordinator telephoned key members to arrange a net for 5am EST Sunday. This mean a 3am start for the man closest to the "action" - VK6ZW Karratha, who stayed with it till 8pm WA time Sunday, when 'Orson', still severe, had moved to sparsely populated areas and the Cyclone Watch Net closed. Ray 6RQ joined the net at 5am WA time and also remained till closing time. Although the actual traffic passed was light, something like 70 enquiries were handled at 6RQ's place where the telephone seemed to ring almost non-stop for most of the day. Ray pays tribute to his married daughter Joanne, without whose work at the 'phone he couldn't have coped.

A Short History of Communications

Continued from April issue

Ted Roberts VK4QI
38 Bernard Street
Rockhampton North
4701

This era passed down in history Nelson's famous signal, "England expects".

With the invention of steam propulsion for ships, it was not too long before electricity appeared on the scene. It didn't take very long for the enterprising matelots to harness this to the searchlight. As its name suggests, this was used primarily as a night-time aid to surveillance or reconnaissance, but it was not long before some "bright spark" fitted a set of shutters in front of the lens allowing the light beam to be interrupted by keying the shutter.

As this would be about contemporary in development with the Morse code, it was only natural to combine the two techniques. I do not know if the Navy ever tried "forward scatter" using searchlights lighting up cloudbases but there is a possibility! On the technical side, the reason for using a shutter to key the output of the searchlight is perfectly obvious. In those days the illuminating source for the searchlight was a carbon arc and these did not take kindly to being keyed on and off as in Morse. Even with the introduction of the incandescent lamp the time lag for the lamp to reach full brilliance slows transmission times drastically unless special types of lamps of low power are used.

Our land bound forces in the Army were not behind in using these light signalling devices but they had also gone through the traumas of developing new types of visual signalling more suitable to their environment. An early system of signalling by Morse was one using a single flag. This flag (usually white) was waved in short arcs (dots) or in long arcs (dashes) and was quite an efficient short range way of signalling as it required very little in the way of support equipment. I have personally operated this system during my pre-WWII Army Cadet and Militia days in a battery of horse drawn field artillery and this system remained until the outbreak of WWII, I believe. Also in use until even later, with good effect, was the Lucas Lamp. This could be carried on horseback or by foot or mechanised units.

All of these visual signalling systems had one failure as a secure signalling system.

The Heliograph was another visual signalling device used by the Army but its use was dictated by the climate of operation. In hot dry climates, they were superb, particularly if the terrain was elevated. The British Army used them with great effect between the forts in the Himalaya Mountains along

what used to be called the North-West Frontier in what is now Pakistan. They worked consistently over ranges of 100 kilometres and, in some circumstances, recorded DX ranges exceeding 150 kilometres. These Heliographs consisted of a mirror mounted on a tripod and aligned so that the sun's rays were directed to the receiving station when the mirror was keyed by a disk on the alignment nut of the mirror. The system needed constant attention to the minor alignment to compensate for the movement of the sun across the sky. When the sun was behind the sending station it was necessary to reflect the sun's rays into the keyed mirror by another mirror called a duplex mirror.

All of these visual signalling systems had one failure as a secure signalling system. This was the inherent fact that they were liable to interception by persons placed strategically along the signalling path. The use of encoded and enciphered messages tended to improve the security of the system but these messages could be decoded eventually, as is still the case for our more sophisticated signalling systems. The immediate remedy lies in the use of encoding systems which take longer to crack and decode than the action called for in the message. The ultimate aim is to make interception impossible by the introduction of new techniques or by such means as frequency agile transmissions of random but synchronised method of frequency switching during the actual transmission of the message.

Up to the present day techniques of digital transmission by radio, fibre optics, microwaves, satellite and space communications, the process has gone on at an ever increasing pace.

The introduction of the electric telegraph on the communication scene had two immediate benefits apart from the formation of a telegraph operators' union. The first was extension beyond visual limits of the length of the possible transmission path, and this distance could be further increased by the use of relaying stations. The second benefit was in the improved security of the traffic. After all, very few people carried a telegraph set with them and the few operators were employed by the telegraph companies. However, in due course, both private equipment and operators became available, and the lure of big money available for early stockmarket and government, and other decisions were exploited by unscrupulous people, as is still being done to the present time. However, the lines were very vulnerable to damage, deliberate or not, and magnetic storms affected long distance lines.

From the beginnings of the technological age with the invention of the telegraph through the development of machine telegraphs such as the teleprinter and teletype, and up to the present day techniques of digital transmission by radio, fibre optics, microwaves, satellite and space communications, the process has gone on at an ever increasing pace. There is a warning to the Amateur Radio Service inherent in this growth of technology, insofar as the value of the frequency spectrum increases greatly with each new technical advance (even if pioneered by amateurs). The present demand for frequency allocation by all kinds of unlikely bodies is nothing to the ferocious demands we will see in the future by new services unheard of at this time.

An improvement in time can be achieved by the use of a telephone at each end!

Throughout the history of communications, the need has been stressed for three major factors. These are speed in the first instance. It must be quite obvious that the faster a message is passed from A to B, the sooner the necessary action can (not necessarily WILL) be taken. The speed of a message path must, unfortunately, include the time taken to deliver the message to the transmission centre and from the receiving centre by the originator and to the addressee respectively. This can well be the slowest part of the system, as we may well be back to square one with a runner or despatch rider type of service needed, particularly for delivery. An improvement in time can be achieved by the use of the telephone at each end but this, in turn, requires some training in message handling to be effective.

Apart from drawing attention to obvious mistakes, the message handler is required to pass the message on expeditiously and accurately.

There seems little to be gained using a system capable of speeds of 600 words per minute, as the beam wireless and cable systems were, if the handling time at each end is measured in minutes or hours. However there is one big advantage in a high speed medium. The amount of traffic passed from C to D (the transmitting and receiving stations) can be very high and an efficient delivery system from and to a large number of As and Bs allows a large number of originators and addressees to be served adequately. A further advantage in the higher utilisation of the path B to C means less requirement for other paths for the same traffic volume. This in turn can mean the use of one data channel instead of several or the need for a lesser number of radio frequency allocations for the service.

The efficiency of the delivery system can be greatly improved by the use of more sophisticated methods and equipment as these become available with new technological developments. These improvements will, no doubt, continue in the future as the price and availability of these techniques become more acceptable. These days the training of students in the operation of keyboard type devices is almost universal, so the extension of these techniques to a communications application is comparatively easy. This would suggest the use of some form of digital communication for message distribution and, indeed there is no major hassle in using the same basic form of communication between major point-to-point communication nets. To quote two amateur technologies which are already capable of use in this way, it is only necessary to mention AMTOR and Packet Radio.

The second need is for accuracy in the handling of the message and this applies to both the transmitting and reception process. It is assumed that the originator has used accuracy in compiling the message, but errors have been known to be made at this level. Apart from drawing attention to obvious mistakes, the message handler is required to pass the message on expeditiously and ACCURATELY. It is pointless to spend large amounts of money setting up an excellent communication facility, if the training of the message handling staff does not ensure fast and accurate transmission of the traffic from C to D. Inaccuracies in transmission only slow the system, as it becomes bogged-down in requests for repeats of garbled text and results in working speeds much slower than the system's capability. This statement holds good for all systems from the simple phone link to the most complex system available. Strangely enough, the simple telephone link proves to be the most prone to error. Perhaps this is because this task is frequently given to the least trained members of the team. This is further compounded by the fact that the addressee on the receiving end of the phone may not have any message handling skills or training at all.

To be continued

Seanet 88 Convention

David Rankin 9V1RH/VK3QV
PO Box 14 Pasir Panjang
Singapore 9111

One of the major social events in the amateur radio calendar in Region 111 took place in Bangkok, Thailand over the weekend of 11-13 November 1988.

It was the Sixteenth SEAnet Convention which has developed into one of the most friendly and informal gatherings of radio amateurs in South East Asia - hence the acronymn SEA.

These days, amateur radio boasts many get togethers on air - nets - and the South East Asia net - SEAnet is one of the oldest. It all started back in the '60s and it has run pretty well continuously since then. Nowadays the net meets at 1200 hrs Z on 14320 kHz +- QRM and with cycle 22 getting well into its stride, worldwide check-ins should once again be possible.

In 1971, John van Lear VE7IR; 9M2IR; 9VIOQ etc etc (the list of John's calls is too long to reproduce here) suggested that the voices on the air meet face-to-face. And so they did in Penang over the holiday period 30 December 1971 - 1 January 1972.

The Convention has been held most years since then but two years 1986 and 1987 were missed. At the initiative of RAST, the IARU member society in Thailand, a convention was planned for 1988.

One hundred and fifty eight people registered including amateurs, wives and families. Of these 64 were from Thailand, 21 from Japan, 19 from Singapore, 16 from USA, 11 from Brunei, 6 from Malaysia and 5 from Australia. Other countries represented included Karen State (1Z9), Canada, England, Germany, Hong Kong, India, Indonesia, Sri Lanka and Sweden. The rep from Sri Lanka was the well known Paddy Gunasekara 4S7PB who has just got back on the air after over 10 years absence. All old time SEAnet stalwarts were pleased to meet Paddy once again.

RAST had set up a programme for all attendees who were kept fully occupied for the entire duration of the Convention. It was noteworthy that the opening ceremony on the Friday evening was presided over by Thai Deputy Prime Minister Thienchai Sirisamphan in the presence of the new Director General of the Post and Telegraphs Dept, Kun Sombat Uthaisang. Guests were entertained with a series of Thai classical and folk dance items. On Saturday a visit to the Thai government earth satellite station at Sri Racha was undertaken. Two busloads of eager amateurs plus families together with a police escort travelled approx 170 km into the province of Chon Buri in double quick time. The three big dishes at the station were a source of envy for most of the amateurs but most had to agree they wouldn't fit well in an average city lot.

The official banquet was held on the Saturday evening during which guests were entertained with Thai songs from Northern Thailand. In addition, a most skilled magician baffled all with his box of tricks and sleight-of-hand magic. He could be a useful person to have on-side at the next ITU WARC. A working plenary session was set for the Sunday morning. In between all this and if one could find the time, there was a most interesting exhibition of amateur radio equipment featuring both imported and locally made Thai products. For the non-amateur attendees, there always was the magnetic attraction of the many and varied stores and markets of Bangkok.

The SEAnet organisation, if it could be called that - is a very loose one indeed. It is not a formal part of either IARU or IARU Region 111 but it does present an excellent forum for IARU officers to learn of grass-roots problems within the area and also allows, in a rather low key way, IARU to project its existence and image to amateurs who may otherwise never get to hear about the Union. And so it was that the recently concluded IARU Region 111 Conference (Seoul, October 1988) was a major subject of discussion during the Sunday morning plenary working session. Such matters as Packet Radio, Band Plans, Future Frequency Allocations and QSL cards were aired.

The date and venue for the next SEAnet Convention - the Seventeenth - was decided and the offer by SARTS Singapore through its President, Selva 9V1UV, was unanimously accepted. Selva announced that the dates would be 17-19 November 1989 in Singapore. Details of hotels and events would be announced later.

SEAnet continues to meet every day on 14,320 kHz +- QRM at 1200 hrs UTC. All interested amateurs worldwide, no matter their QTH, are invited to check-in in accordance with the net controller's instructions. And then the faces behind the voices can be met in Singapore in November 1989.

Join us sometimes both on the air and for an eyeball - you'll enjoy it. ar

Fig 1. The 1Z9 gang . L. to R : Laydo 1Z9A: Stephen Dun 1Z9D: Cheryl Dun 1Z9YL and Sahplo 1Z9C - Photo Frank Aw 9V1OK

Seanet 89

The 17th Southeast Asia Network Convention will be held in Singapore from Friday, 17 November '89 to Sunday 19 November '89. It is a special opportunity for Eye Ball QSO's Programme, includes demo of new technology-interactivity communication system "TELE-VIEW", etc. etc.

Seanet 89 Contest
CW Saturday, 15 July 1989 0000 UTC
to Sunday 16 July 1989 2400 UTC
Phone Saturday 19 August 1989 000 UTC
to Sunday 20 August 1989 2400 UTC
Further details from:
Organising Committee
SEANET 89
Maxwell Road, P O Box 2728
Singapore 9047

Fig 2. L to R. Dr John Ho VK3PP ex 9M2KR and David Rankin 9V1RH/VK3QV "Did you really miss that ZA on 40m?" – Photo Frank Aw 9V1OK

QSO Party to help quality for Lion City Award
Date: Oct 21, 1989
Time: 0000UTC - 2400UTC

Background: the Lion City Award is available to Amateurs and SWLs who have confirmed cntacts with 5 9V amateur radio stations (10 for amateurs in CQ Zone 28). applications must submit a certified log extract (GCR) to the Awards Manager, SARTS, Maxwell Road, P O Box 2728, Singapore 9047 with 5 IRCs.

QSO Party Rules: 9V stations will operate all bands 80 - 10 meters (no WARC for award), CW and SSB. DX stations send RS(T) and CQ Zone; Singapore stations send RS(T) and serial number.

Award applications: For stations working 5 9V stations during the QSO party, contacts need not be confirmed. Submit log extract with complete exchanges to Awards Manager, with reduced fee of 3 IRCs. QSO Party contacts may be combined with confirmed QSOs to quality for the award; minimum of 3 QSO party contacts qualifies for the reduced fee. There is no penalty for invalid submissions, but all applications will be checked against 9V station logs. ar

Roger Harrison returns to ETI

From the May issue, well-known radio amateur and identity in electronics publishing, Roger Harrison VK2ZTB, will be back on the editorial credits of Electronics Today as "Electronics Editor".

Roger will be contributing substantial pages of material each month, comprising news, features, projects, articles, profiles and columns, supported by an experienced editorial and draughting team from the Apogee Group which is producing the material under contract to Federal Publishing.

This move will considerably strengthen the electronics and communications editorial content of ETI, which will be clearly refocussed on three major reader groups: enthusiasts, professionals and consumers.

"Having been licensed for some 25 years now, amateur radio is still a major interest of mine and, as amateurs are a significant and active group among enthusiasts, ETI will have significantly increased content of interest to amateurs and other communications enthusiasts, by way of projects, articles and news items in the magazine month by month", Roger said.

Roger was previously editor or ETI from 1979 through December 1984. During that period, ETI reached a peak circulation of 33.500 and ran issue sizes as large as 228 pages. He started Australian Electronics Monthly in July 1985, which ceased publication in January this year.

Roger has been a contributor to AR over the years and is a four-times winner of the WIA's Higginbotham Award; in recent times he won it twice in successive years in 1986 (jointly with Jim Linton VK3PC and 1987 (jointly with Dr Leo McNamara).

"We're looking for news items on amateur events and achievements from individuals, clubs r WIA divisions. We're also looking for articles and projects, for which a fee is paid on publication", Roger said. "Prospective authors needn't worry about 'getting it right' we'll do the 'polishing' required."

Portion of EYI will still be devoted to articles of general interest and "high tech" features in line with the new format developed late last year.

The Apogee Group will also be producing a number of one-off publications for ETI this year.

The Apogee Group can be contacted on telephone (02) 555-1646, fax (02) 8182949, postal: Locked Bag 888, Rozelle NSW 2039. ar

Equipment Review

The Yaesu FT-411, two metre FM hand-held transceiver.

Ron Fisher VK3OM
'Gaalanungah'
24 Sugarloaf Rd
Beaconsfield Upper
3808

I often wonder where all of the two metre hand-held transceivers go to. The only ones heard on the air are via repeaters and many of those don't seem to be getting in properly. Maybe most use them the way that I use mine, as a monitor for the local repeaters. I must say that the rig I have been using for this application over the last year or so has been the little Yaesu FT-23 and it has performed the job extremely well. I was therefore most intrigued to hear about the FT-411. It's about the same size as the FT-23 but has a full keyboard for direct frequency entry plus an incredible 49 memories. I might be wrong, but it seems that the development of hand-helds is somewhat in advance of the larger mobile and base station transceivers. The amazing thing is how the designers fit it all in.

As might be expected, most of the accessories are interchangeable between the two transceivers. These include battery packs, chargers, external speaker/microphones, mobile mounting brackets etc. Many of the excellent features of the FT-23 have been extended and improved. The power saver system now has selectable options, the read out gives the operator more information although it is not as readable as the FT-23 display. And perhaps one of the greatest improvements is the illumination of the display and the keyboard. This was nonexistent on the FT-23 although a modification is possible to incorporate it. Now not only is the display illuminated but the entire keyboard is brilliantly lit from the rear.

Let's now look at the FT-411 in more detail. As supplied with the FNB-14 battery pack, the dimensions of the complete transceiver are only 55mm wide, 32mm deep and 155mm high. Take the battery off and the actual transceiver is only 85mm high and this includes the knobs. With the FNB-14 pack the transmitter output is rated at 2.5 watts, however substitution of the FNB-11 battery pack gives a whopping 5 watts output. There are five nicad packs available which have either 7.2 or 12 volts output to give either 2.5 or 5.0 watts output and capacities from 200mAh to 1000mAh.

A variety of soft cases is available as options to suit the transceiver and the different battery packs. A soft case is not supplied as standard as it was with the FT-23.

As is usual with keyboards, most of the buttons have dual functions which are brought into use by pressing the 'F' or function button. These include the selection of two VFO's, high or low power selection, battery saver function, keyboard lock etc.

The 49 memory channels can be programmed for frequency, repeater shift, continuous tone controlled squelch system, one instant call channel memory, plus memories that set the frequency limits for band scanning.

And there will be no more flat batteries because you just plain forgot to switch the transceiver off! A period of 10, 20 or 30 minutes can be programmed after which the transceiver switches off if no controls are used within that time. It will even play you a song to remind you that it is going to switch off!

A VOX circuit is built in but it is necessary to use the optional YH-2 headset. I recall trying the VOX on an earlier Yaesu two-metre hand-held some years ago and found it rather awkward to use and certainly not recommended for repeater use.

VFO tuning steps can be selected for 5, 10, 12.5, 20 and 25kHz. For our local band plan either the 5 or 25kHz stepping is fine. The 25kHz steps enable rapid tuning up and down the band. This is also excellent for band scanning.

The FT-411 On The Air

The first impression of the 411 was that the audio quality was rather worse than the FT-23. With the inclusion of the keyboard, panel space is rather limited and so a smaller speaker has been fitted. While the quality is fairly satisfactory for a small hand held, it is noticeably inferior to the FT-23 in both terms of quality and acoustic output. The LCD display is also inferior to the FT-23. While it is about the same size overall, it contains quite a bit more information, so everything is smaller. It also appears to be set further back from the clear plastic front cover so that in daylight there are reflections which cause distorted digits. The symbols that indicate power saver, auto power off, low battery etc. are too small to be discernible to my eyes. If you are younger than I am, you might do better.

Transmitted audio quality was rated as excellent with plenty of punch. As is usual the stubby antenna has rather limited radiation capabilities. If you are locking for consistent results, a larger antenna is recommended.

Battery life is excellent, particularly if the transceiver is used mainly for monitoring. Current drain in transmit is quite high at 1.3 amps for the nominal 5 watt output and about 750mA at 2.5 watts output, so as with all hand-held transceivers, only talk if you have something to say.

The transceiver is supplied with a wall point charger which is fitted with a multiple type output connector, so you might find this useful with other equipment.

The FT-411 On Test

Only a limited number of tests could be carried out on the FT-411 as I have not as yet set up all of my test gear after moving into a new QTH.

Power output using the supplied 7.2 volt battery, 2.7 watts with fully charged battery, dropping to 1.8 watts just before the battery gave out. Low power setting produced exactly 0.5 watts.

The section of the LCD display that represents the 'S' meter was checked with the following results. There are actually twelve segments in the display and they give a range of about 15dB which is a little more than 1dB per segment. Because of its extremely small size and limited range it is of little use.

The transceiver was tested at length using my base station antenna and the receiver front-end performance was found to be very good with no "funnies" being heard. The receiver uses somewhat more front-end selectivity than is usually found in hand-held transceivers. The RF amplifier is an unusual device with two bipolar transistors in a direct coupled circuit but enclosed in a single package. The receiver first IF is at 17.3MHz and the second mixer, 455 second IF and FM detector are all in a single IC.

The FT-411 Instruction Book

As is usual for Yaesu, the instruction book is very well presented. There is unfortunately no technical description included but a full circuit covering four pages is there plus a block diagram. 15 pages are devoted to operation and an

Front panel view of the FT-411

excellent operations chart is included which you can take along with the rig as a reminder for those less-used functions.

The FT-411 Conclusions

If you need a hand-held two-metre transceiver with just about every conceivable feature with 49 memory channels that you can slip into your top pocket then the FT-411 is probably just what you are looking for. Compared with the FT-23, the operation is somewhat more complicated but once you have your required frequencies in the memory it becomes more straighforward. However, again compared with the FT-23 many of the often used functions require the pressing of two buttons as against one for the 23. The choice is yours of course, and if you do choose the 411, you will certainly have one of the most up to date full-featured FM transceivers around. Thanks to Dick Smith Electronics for the loan of the FT-411 used in this review. Full details on price and availability can be obtained from your nearest Dick Smith store.

ar

A handful of transceivers, the FT-23 and FT-411 for comparison

Writing a WICEN exercise

Trevor Connell VK8CO
PO Box 40441
Casuarina 0811

This article, set out in the format of an Exercise Instruction, provides guidance on how to write an instruction. It is supported with an Example Skeleton Instruction and an Aide Memoire for preparing a briefing. Although considerable detail is provided, it does not cover every situation and so there are some items which can be deleted and possibly many which can be added.

Some of you may recognise the format. It has proved its worth many times over to the originators and to me not only in organising WICEN activities but in other events like Novice Courses. I feel sure that with imagination, it can be adapted to anything.

I strongly believe that something like this, even in a different format, is essential. It can be an impressive piece of paper not only to your own members but also to outside agencies, thereby enhancing the image of WICEN and Amateur Radio.

File: If applicable.
See Distribution List.

EXERCISE INSTRUCTION
WRITING AN INSTRUCTION

References:

A. NT Standard Operating Instruction
B. Regional Co-ordinators Manual
C. There may not be any references.

General

1. Every activity requires some preparation and organisation. The culmination of all this should be an Event/Exercise Instruction. In this section you introduce whatever it is very broadly.

Aims

2. The aims of this Instruction are:
   a. To convince you that one is necessary.
   b. To give you an example of how to lay it out.
   c. To suggest some headings.
3. Before planning an exercise the aim must be clearly defined. It must be concise and clear.

Factors

4. The following factors must be taken into account when planning an exercise.
   a. Interest. Unless interest is maintained throughout the exercise much of the value to the operator will be lost.
   b. Time and Space. Is it a suitable time for the majority. Will the time involved in getting to and from the area be too great?
   c. Numbers. Are there enough operators taking part to achieve the aims?
   d. Equipment. Is there enough suitable equipment?
   e. Meals. Will meals be required?
   f. Medical. What do you do if...
   g. Control. No matter how much planning and preparation is done to achieve success it will be to no avail if there is a lack of control.

Reconnaissance

5. A personal reconnaissance of the area is desirable but not always possible

The Exercise Instruction

6. The Exercise instruction contains all the event/activity details required before the exercise commences. It should also include Annexes. An Annex is an item of information too large or bulky for the main part of the instruction. They may be:

a. Stores list
b. Radio Net Diagrams
c. Detailed timetables
d. Event organiser's brochure/information
e. Copies of maps/location diagrams
f. Actions to occur if...

Debrief

7. Details of the debriefing.

Conclusion

8. Not only does writing an Instruction force you to attend to all details, it shows, when issued to the participants, that you have done your bit to ensure the success of the activity. Nothing kills motivation more than an unorganised shambles.
9. The Example Skeleton Instruction lists some possible headings you may like to consider. The list is not exhaustive and will depend on the type of activity you are planning.
10. While this was written for WICEN, it could be adapted for any radio club activity.

Trevor Connell VK8CO
Deputy Director
VK5/VK8

Annexes.

A. Radio Net Diagram VHF
B. Radio Net Diagram HF
C. Stores List

Distribution

All participants Qty
Regional Co-ordinator 1
Spare 5
File 1
Whoever is interested
Outside agencies?
Example Skeleton Instruction
Telephone No
File No:

Distribution:

"Activity" Instruction
"Activity" Name

References: A.

If applicable

General

1.

Aims

2. a.
b.

Conduct

3. a. Phase 1
b. Phase 2
c. Phase 3

Timings

4. Can be listed here or if complicated, given as an Annex.

Communications Plan

5. Radio diagrams, frequencies. (May be left till briefing or given as an Annex.)

Dress and Equipment

6.

7. a. Transport
b. Stores
c. Meals
d. Refuel
e. Medical

Briefing and Debrief

8. Time and place

Conclusion

9.
Signature.
(Name and title)
ANNEXES
A.
B.
Distribution ar

SWR - A Can of Worms

John Sparkes VK6JX
83 Anemone Way
Mullaloo 6025

Next time you are standing around "chewing the fat" at a WIA or radio club meeting, ask your friends what SWR is and what problems it causes you, or more specifically, your transmitter.

You will doubtless receive all sorts of weird and wonderful answers mainly centering around Reflected Power, and how this hazy substance bounces back and forth, up and down the feedline - finally ending up as heat in your finals!

Now, don't get me wrong, I've read the text books, and seen the little "pulse" diagrams showing incident and reflected power - but it all seemed very abstract, and I have suspicion that this probably wouldn't be of much value as an aid to understanding mismatch problems. (When I listen to some of the explanations of SWR, I think I'm right!)

Commonsense

So, I questioned some of my lecturers from Uni days, and it seems my commonsense approach was right - reflected power should not be considered as a substance which flows back down the feedline and heats up your finals - this is carrying an abstract idea too far.

We all know that if an antenna is resonant, and its feed impedance equals the feedline impedance, then we will have "1:1 SWR", and except for small IR losses, all is well. Now if the transmitter output impedance, also equals the feedline impedance, then maximum transmitter power will be transferred to the feedline and all is still well. (This is why you tune up your valve final - to ensure that its o/p impedance = feedline impedance!) This is the point where most people start to perspire and won't look you straight in the eye - what happens if one or all of these impedances aren't equal?

Two conditions can arise:

1. Antenna not resonant, hence reactive component present.
2. Antenna resonant, but feed impedance not equal to feedline impedance.

These two conditions amount to the same thing as far as your transmitter is concerned - the impedance looking into the bottom end of the feedline is no longer 50 or 75 (or whatever) ohms non-reactive. In fact, the impedance at the antenna terminals is transformed to a different impedance by the feedline. (I'm not kidding - look up Smith Charts). This very fact of life is employed in Bazookas and other matching transformers using lengths of feedline.

Now, if your transmitter is not capable of providing a conjugate match (largely a function of how much variable L & C your output stage has got in it) to this unknown impedance than your transmitter finals will get hot - and I didn't mention reflected power once!!

Dielectric Losses

The last problem most people don't realise is that as the mismatch on the feedline gets worse, so the peak voltages and currents on the feedline get higher. This causes your feedline to become more lossy, as the higher the voltages present, the more power is dissipated in the dielectric of your feedline. (This is why open wire feeders are less lossy than coaxial cable - (dry) air is a better dielectric than PTFE or polythene.)

These dielectric losses are also very frequency dependent, which is why long runs of standard coax are bad news on VHF and above.

Tables showing the extra losses incurred by high SWR are in all the text books, and as you'll see - a 3:1 SWR does not mean that 25% of your output power comes back down the feedline and heats your finals!

If your transmitter can match itself into the 3:1 SWR at the bottom of the coax, and it is putting out 100W, then by golly, except for a little bit of IR and dielectric losses in the feedline, all of that 100W is going to be radiated - regardless of the 3:1 SWR indicated by your SWR meter!

If you own a rig with SWR protection, forget everything I've said as it probably won't worry you - your rig will just turn itself down. Then, whatever fraction of this amount of power is left after it negotiates the mismatch between your final and the feedline will (except for the losses discussed above) be radiated.

So, there you are! Forget all about hazy explanations of SWR and reflected power - buy a Smith Chart (or read a decent text on transmission lines) and you too can live peacefully ever after.

AMSAT AUSTRALIA

Notes from VK5AGR

Maurie Hooper VK5EA
11 Richland Road Newton 5074

NATIONAL CO-ORDINATOR
GRAHAM RATCLIFF VK5AGR

Oscar 13

The next attitude change to a nominal attitude LON/LAT 180/0 will commence on Monday 12 June 1969 and the new operating schedule to coincide with this change will occur Wednesday 14 June 1989. This change in attitude will not really be for improving solar illumination but rather to have the high-gain antennas earth-pointing at apogee and hence give lower Squint Angles for a larger part of each orbit.

Oscar 10

Please note that from 1 May 1989 Oscar-10's Mode B Transponder will be available for use from MA 25 to MA 225. However, please DO NOT use the transponder from MA 226 through perigee to MA 24 as Oscar-10 will be subjected to solar eclipses from 7 April 1989 to 13 July 1989 varying in duration from 5 to 43 minutes between MA 229 and MA 253. Also, please DO NOT use the transponder if the beacon or transponder signals start FMing. An estimate of Oscar-10's attitude for 1 May 1989 is LON 64 and LAT -27 (extrapolated from the last known attitude of Oscar 10 in December 1986) which equates to a solar illumination of greater than 50%. The solar illumination is not expected to be less than 50% again until some time in early September, and Oscar-10's transponder should be available for use until then. When the current cycle of solar eclipses is finished on 13 July 1989 Oscar-10's transponder will be available for use whenever the satellite is in view except when FMing occurs.

First Flock of Microsats (continued)

INFORMATION NETS
Amsat Australia
Control: VK5AGR
Amateur check in: 0945 UTC Sunday
Bulletin commences: 1000 UTC
Primary frequency: 3.685 MHz
Secondary frequency: 7.064 MHz
AMSAT SW PACIFIC
2200 UTC Saturday, 14.282 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT Australia net. This information is also included on some WIA Divisional Broadcasts.

Payload Modules

Unused Module

Both LUSAT and PACSAT have an unused module space in location 04. Spacing hardware will be placed in this location so as to maintain the dimensions and thermal characteristics of the MICROSAT.

Eventually, MICROSAT bus may be flown to support customers who need a small space for an experiment of their own, or who require store-and-forward (data collection or communications) capability. This space also opens the way for experimentation and expansion in amateur service satellites as well.

In the event that subsystems under development require more space within the satellite, this module may be used to accommodate parts of the other subsystems. During design and development phases, this option will be used only as a last resort.

Voice Synthesizer and Analog to Digital Buffer/Converter Module

DOVE will contain a voice synthesizer to convert text stored in the computer memory into plain language for modulation of the FM transmitter. The text is stored in computer memory on upload from the ground. Additional text is selected from memory based on computer measurements of various spacecraft electrical parameters, forming a voice telemetry system. After the sequence of telemetry parameters has been repeated several times, the flight computer will interrupt the telemetry sequence and forward a stored voice announcement to the voice synthesizer. After the completion of the announcement, telemetry will resume. This cycle will repeat continuously. However, multiple announcements can be stored and cycled, one after the other, during the announcement window.

Also, a digitized voice or sound capability will be implemented using digital to analog converters. Text or sounds stored in this mode may be reproduced with great clarity.

Announcements in English, Portuguese, Spanish, Russian, and other languages are intended.

Camera Module

The WEBERSAT includes an experimental low resolution camera as its primary payload. Camera control, digital picture storage and compression are all handled by a special module.

The camera module is a collection of experiments designed and built by students from the Center for Aerospace Technology at Weber State College in Ogden, Utah. It consists of module 05 plus an additional extension module unique to WEBERSAT.

The experiments are:

1. A standard miniature colour TV camera modified to operate in a vacuum.
2. A spectrometer sensitive from 300 microns to 100 microns.
3. A 1.265 GHz ATV receiver.

The three experiments interface to a versa-

tile analog waveform digitizer which loads the bank-switched 2 Megabyte memory area.

The digitizer is controlled by the flight computer through the AART. From the computer, any one of the three experiments can be selected as waveform input. Additionally, the sampling rate of the digitizer can be varied from a high rate of 10 MHz to low rates on the order of 2.4 kHz.

The TV camera itself is a Sony Ci-10 product. It produces a standard NTSC analog waveform which is frame synchronized by circuitry on the digitizer board and then digitized at 10 MHz, slightly higher than the Nyquist rate for the 4.5 MHz baseband signal. The pictures are in colour. The CCD element in the camera has a resolution of 780 x 490. With the lends to be used, it is estimated that when the camera is pointing straight down towards the planet, pictures will be of an area of the order of 350 km x 350 km.

The digitized television frame includes all sync signals, colour burst and chrominance information. Digitization takes place chronologically throughout the frame. After storage of the picture in banked memory, it is compressed and archived to the 8 Megabyte area of memory. Pictures will be downloaded in compressed form. Software will be made available for decompression and display of these pictures.

The camera will point out the side of the spacecraft (perpendicular to Z). Given the expected magnetic tumble and solar radiation induced spin, this arrangement provides the maximum sweep of the planet. Positioned next to and on either side of the lens are two small photocells which will act as horizon crossing sensors. They will be designed with a narrow field of view and will be pointed so that their view fields do not overlap. When both sensors are on, the earth (about 135 degrees wide at that altitude) faces that side of the spacecraft, and the lens of the camera. If only one is on, the illumination source could be the sun and picture taking would be inhibited.

It is anticipated that with precise orbital trajectory data and data from these sensors, a good estimate of the tumble and spin profile of the spacecraft will eventually be obtained. Predictive picture taking of selected target areas will then be possible.

The spectrometer is an attempt to provide the spacecraft with sufficient sensing capability to offer substantial educational potential in the area of physics. Spectral reflection from the earth's atmosphere at various latitudes and longitudes is characterized by frequencies of absorption. This data can be used to determine atmospheric components within the field of view of the device. Sample rate of the digitizer with the spectrometer as its input will be variable to support the desired activity. This is important from the perspective of quantity of data gathered for the period of time the spacecraft's rotation permits a given area of the atmosphere to remain in the field of view.

This device will also point out the side (perpendicular to Z) of the spacecraft, but at 90 degrees from the camera. Surface area limitations require this. Two additional horizon sensors will be included on the side of the spectrometer. They will be employed in a manner identical to that described above.

The 1.265 GHz ATV receiver will, when attached to the digitizer with its frame synchronization capability, receive a picture taken on the ground with a TV camera and uplinked in the amateur satellite 23 cm band (1260 to 1270 MHz). Because the format is again NTSC, the storage requirements and overall handling of data on board is identical to that described for the on-board camera. This experiment will permit study of the value of store-and-forward capability as it applies to pictures. It is possible that both the AMSAT and educational community will find this feature valuable as a mechanism for exchanging diagrams and other pictorial data.

Power Module

All MICROSATS include a power module of common design. It is the primary "work horse" of the system. The mechanical module itself is slightly larger than the others so as to accommodate the battery cells. The power module will receive the power from the solar panels and will down-convert the voltage of the arrays (22 V) to the battery main bus voltage of 10 v. It will provide the function of charge regulation for the battery, correcting for array and battery cell temperatures. The current from the arrays will be reduced when the battery is fully charged by adjusting the solar cell operating point. This is accomplished by increasing the array voltage away from the optimum operating point. This technique has been used on all spacecraft since OSCAR-7 and has proved to be a very effective means of preventing battery overcharge.

The solar arrays on the satellite will consist of 20 identical sub-panels referred to as "clips". Each clip contains 20 high efficiency solar cells each measuring 20 mm square (0.79 inch) arranged in a 4 x 5 cell pattern. Five of the six surfaces of the cube contain four clips each. The -Z surface will contain four 10 cell "half clips". The cells are rated to operate at an efficiency of 15.5% at a temperature of 20 degrees C with higher efficiencies at lower temperatures. Plans are to operate the spacecraft at slightly lower temperatures so as to further increase solar cell efficiency and improve battery lifetime. At temperatures of -5 to +5 degrees C each solar cell clip will produce at least 1.60 watts. The side panels of the spacecraft (+x, -x, +y, and -y) will each contain four clips, two series pairs wired in parallel. The top panel (+z) for DOVE, LUSAT, and PACSAT will contain four clips. The top panel (+z) of each spacecraft will also contain four clips, two series pairs wired in parallel.

The power module will include eight 6 amp-hour NiCd battery cells manufactured by Saft or GE/Gates.

These cells will assure adequate capacity to operate continuously during satellite eclipse and can also be used to operate the satellite during peak periods with a negative power budget. The cells will be carefully matched for charge and discharge characteristics to assure maximum reliability and lifetime. The battery main bus voltage will be as high as 11.7 V when the battery is fully charged at ambient temperature and will be as low as 9.2 V at the point of 70% discharge, the maximum safe discharge level.

The transmitter will operate directly from the unregulated battery supply bus at its highest power setting in order to avoid any loss of efficiency due to the regulation process.

The power module will also include two regulated supplies operating at 7.5V and 5.0v. These voltages are needed for all digital equipment and various analog circuitry operating in other satellite modules. The telemetry system will monitor at least 16 voltages, currents and temperatures that power the satellite subsystems.

Satellite Activity for January-February 1989

1. Launches

The following launching announcements have been received:

Int'l Number	Satellite	Date	Nation	Period min	Apg km	Prg km	Inc deg
1989							
004A	GORIZONT 17	Jan 26	USSR	24h33m	36506		1.3
005A	COSMOS 1992	Jan 26	USSR	100.7	814	777	74.0
006A	INTELSAT 5AF15	Jan 27	ESA	1423.1	35709	35355	0.3
007A	COSMOS 1993	Jan 28	USSR	89.9	382	180	64.8
008A	PROGRESS 40	Feb 10	USSR	88.8	262	193	51.6
009A	COSMOS 1994	Feb 10	USSR	114.1	1442	1403	82.6
009B	COSMOS 1995	Feb 10	USSR	114.1	1442	1403	82.6
009C	COSMOS 1996	Feb 10	USSR	114.1	1442	1403	82.6
009D	COSMOS 1997	Feb 10	USSR	114.1	1442	1403	82.6
009E	COSMOS 1998	Feb 10	USSR	114.1	1442	1403	82.6
009F	COSMOS 1999	Feb 10	USSR	114.1	1442	1403	82.6
010A	COSMOS 2000	Feb 10	USSR	88.8	275	191	82.3
011A	COSMOS 2001	Feb 14	USSR	11h49m	39342	613	62.8
012A	COSMOS 2002	Feb 14	USSR	110.4	2315	187	65.8
013A	USA 35	Feb 14	USA	720.0	20455	20010	55.1
014A	MOLNIYA 1-75	Feb 15	USSR	11h38m	38937	486	62.5
015A	COSMOS 2003	Feb 17	USSR	89.5	271	249	62.8
016A	EXOS D	Feb 21	Japan	n/a			
017A	COSMOS 2004	Feb 22	USSR	105.1	1031	993	83.0

2. Returns

During the period one hundred and twenty five objects decayed including the following satellites:

1979-051A	BHASKARA	Feb 17
1988-110A	COSMOS 1984	Feb 13
1988-114A	PROGRESS 39	Feb 07
1988-116A	COSMOS 1986	Feb 11
1989-002A	COSMOS 1990	Feb 11
1989-003A	COSMOS 1991	Feb 01

3. Notes

1988-059A PHOBOS 2

The interplanetary station PHOBOS was changed to an elliptical Mars orbit on January 29 1989.

Orbital paramaters are:	Period	76.5 hr
Apoapsis	79750 km	
Periapsis	850 km	
Inclination	1.0 deg	

1989-008A PROGRESS 40

This satellite carried expendable materials and various cargos for the orbital station MIR. It docked with MIR on February 12 1989. ar

Information compiled by Bob Arnold VK3ZBB

VHF/UHF AN EXPANDING WORLD

All about Six!

Eric Jamieson VK5LP
9 West Terrace, Meningie
5264

All times are Universal Time Co-ordinated indicated as UTC

Beacons On Six Metres

Freq.	Call sign	Location	GridSquare
50.000	GB3BUX	England	IO73
50.005	H44HIR	Honiara	OIØØ
50.005	ZS2SIX	South Africa	KF25
50.011	JA2IGY	Japan	PM84
50.013	P29BPL	Port Moresby	OI3Ø
50.015	SZ2DH	Greece	KM18
50.017	JA6ZIH	Japan	PM51
50.020	GB3SIX	England	IO73
50.020	CX1CCC	Uruguay	(1)
50.025	6Y5RC	Jamaica	FK17
50.028	JA7ZMA	Japan	QMØ7
50.029	CTØWW	Portugal	IN61
50.032	ZD8VHF	Ascension Island	II22
50.035	ZB2VHF	Gibraltar	IM76
50.035	ZS3VHF	South Africa	JG87
50.039	FY7THF	French Guyana	GJ35
50.045	OX3VHF	Greenland	GP60
50.048	TG4BFK	Guatemala	(1)
50.050	GB3NHQ	England	IO91
50.050	ZS6ON	South Africa	KG44
50.057	TF3SIX	Iceland	HP94
50.062	PY2AA	Brazil	GG66
50.064	WD72	Arizona	EL59
50.065	GJ4HXJ	England	IN89
50.065	NB3O/1	Rhode Island	FN41
50.066	VK6RPR	Perth	OF78 (3)
50.063	KH6HI	Hawaii	BLØ1 (2)
50.075	VS6SIX	Hong Kong	OL72
50.078	TI2NA	Costa Rica	EK70
50.080	KH6JJK	Hawaii	BL11
50.080	HC8SIX	Galapagos Is.	EI59
50.085	9H1SIX	Malta	JM75
50.086	VP2MO	Montserrat	FK86
50.088	VE1SIX	Canada	FN65
50.090	KJ6BZ	Johnston Is.	AK56
50.092	W5GTP	Louisiana USA	EM4Ø
50.099	KP4EKG	Puerto Rico	FK68
50.100	HC2FG	Ecuador	FIØ7
50.100	5H1HK	Tanzania	(1)
50.110	KG6DX	Guam	OK23
50.110	A61XL	United Arab Emir.	LL74
50.120	4S7EA	Sri Lanka	MJ97
50.321	ZS5SIX	South Africa	KG5Ø
50.490	JG1ZGW	Tokyo	PM95
50.499	5B4CY	Cyprus	KM54
52.100	ZK2SIX	Niue	AH5Ø
52.200	VK8VF	Darwin	PH57
52.310	ZL3MHF	Christchurch	RE66
52.320	VK6RTT	Wickham	OG89
52.325	VK2RHV	Newcastle	QF57
52.330	VK3RGG	Geetong	QF21
52.345	VK4ABP	Longreach	QG26
52.370	VK7RST	Hobart	QE37
52.420	VK2RSY	Sydney	OF56
52.425	VK2RGB	Gunnedah	QF59
52.435	VK3RMV	Hamilton	QF12
52.440	VK4RTL	Townsville	QH3Ø
52.445	VK4RIK	Cairns	QH23
52.450	VK5VF	Mount Lofty	PF95
52.460	VK6RPH	Perth	OF78
52.465	VK6RTW	Albany	OF84
52.470	VK7RNT	Launceston	QE38
52.485	VK8RAS	Alice Springs	PG66
52.510	ZL2MHF	Mount Climie	RE78

(1) New beacons

With the advent of so much TEP and F propagation, a number of six metre beacons not currently listed above, have appeared during band openings. Their status is unknown, and a number can be found between 50.060 and 50.080 and include K6FV, K6MYC and others.

(2) This beacon has also been observed on 50.072 MHz.

(3) Correction to call sign.

Six Metres

Once again six metres must take pride of place in the log books of a vast army of world operators. Speaking to one well known two metre operator the other day, I asked him if he had noted anything of importance on two metres and above, and his reply was a simple statement that he did not know, he had not been looking there, as six metres occupied all his available time!

As I started on six metres when Cycle 19 was on the wane I cannot draw any direct comparison between that Cycle and Cycle 22 but Hugh VK5BC who has been on the bands for a long time said he believed Cycle 22 would eclipse Cycle 19.

Six Metres for April

The present name of the game is to try and interpret the meanings behind the solar flux counts issued by WWV and IPSO. The actual figures appear to vary according to the time of day you actually take the reading, but throughout February there were some very high counts, with my list showing 277/14 on 9/2, 279/12 on 10/2 and then with up and down fluctuations until a major drop to 214/6 on 18/2. The main effect as far as VK5 was concerned was to produce many strong North American paging signals between 40 and 45 MHz with little else but in VK2 and VK4 stations worked W6 and XE on 9/2.

The high count of 270 on 14/3 brought W5, 6 and 7 to VK5 and the eastern States, while Easter Monday 27/3, with a count of 164/42, brought a number of stations from the Caribbean area to VK5, including P43AS on the island of Aruba, who said he was using 10 watts for a 5x9 report! David VK5KK stretched his signal to PP5JM in Brazil.

5/4 say ZF1RC from Cayman Is. with a count of 191/30. On 14/4 it was XF4L at 5x9 for a count of 196/12. On 27/4 a good opening to W5 for two hours from 2320. While this represents the cream of the openings at least to VK5, what about the times the Mexican stations XE1GE and XE1MD have been worked, almost a daily occurrence at times, starting soon after mid-March right through to the end of April. I recall a similar situation during Cycle 21 with Geoff

XE1GE. Often, they are there, but no other nearby areas.

What this leads me to say is that simply, there is no infallible pattern for predicting openings, a close watch on solar counts is a help, but now and again that lets you down. The most successful way is to spend all your time in the shack, and few can do that to the exclusion of all else. Consequently everyone is going to miss some exotic contacts, no matter how vigilant they are, but that only serves to make the band more interesting. No doubt the scientifically minded will come up with some answers but hopefully more accurate than the article published a few years ago predicting absolute doom for Cycle 22 and probably for the rest of this century. How wrong you can be!

1/4: 2303 H44GR to VK5ZK. 2/4: 2326 VK5ZK worked KX6DS, KG6DX, and heard 3D2ER, 5W1GP and followed the next day by working T3ØDJ at 2316, KX6DS, then YCØUVO 5x9 at 0225. 5/4: 2313 to ZF1RC Cayman Island at 5x5. 6/4: 2200 (5/4 UTC) XE1MD, XE1GE to 5x6. VK5ZK worked three W5s on CW and W5OZI on SSB from 2235. VP5D beacon heard at S5. Next morning at 2345 UTC (6/4) to Geoff T2ØJT on Tuvalu, who reported working that day to VK2,3,4,5,8 and 9! QSL via W6JKV. A strong opening to Japan during which at 0301 Roger VK5NY and VK5RO nabbed KB6FIQ/DU3. Later in the day at 0802 KH6HI 5x9 to VK5LP and others, also at 0909 HL1FF to VK5ZK and VK5KK. Also learned that Dave, KX6DS from the Marshall Islands, would close down on 24/4 and return to the U.S. Worked here on 2/4 so got him just in time. Dave said he had had more than 3000 QSOs on six metres from June 1988 to April 1989, plus more than 600 whilst in KC6 in November 1988.

8/4: Kerry ZL7TPY (ZL2TPY) mounted a DXpedition to Chatham Island for two weeks. Available in VK5 with 5x9 signals on 15, 16 18, 19 20, 21, and doing battle with the Mexican stations. YCØUVO heard by VK5ZK at 0232. Mount Gambier stations were working JAs, via the long path over the South Pole, at 1240.

7/4: VK4BRG to 5H1HK via CW - good contact that, but no DU, VS6 or YCØ. Apparently TI and HP3 were almost daily contacts to Queensland.

12/4: ZL7TPY heard working Caribbean and W stations around 2200. VK5ZK worked two JR6 stations in Okinawa from 1300.

13/4: Kerry ZL7TPY to Jim T2ØJT at 2200, then working W6s at S9 plus. The next day (14/4) worked JAs. XE1GE to VK3 and VK5 at 2200. At 2255 VK8 worked HP3. At 2332 I worked WA6BYA at 5x5, then a scratchy contact to XF4L at 2335. Roger VK5NY to K6QSY, 14/4: VK5ZK to XE1GE on CW at 0000.

On 15/4 at 0007 VK5BC worked XF4L and VK3. VK3s also worked ZF1RC. The UTC morning of 15/4 was particularly lively commencing at 2150 with ZL7TPY heard on backscatter while working W7s and 3D2ER. Then Raj 3D2ER was 5x9 into VK5 at 2203. He stayed in for so long that he ran out of stations to work! At 2220 VK8ZLX snared Henri FK1TK at 5x9, at 2310 Garry VK5ZK worked T2ØAA on CW and at 2328 XE1MD was heard working 3D2ER. At 2330 H44GP was 5x9, 2232 ZL7TPY 5x9, then of course XE1GE who reported hearing VK9YQS on Macquarie Island. The same morning at 2351, VK6RO and a few other Perth stations worked WA6BYA at 5x5, which made them very happy. The K6FV beacon was also heard in Perth.

16/4: At 2200 K7RWP reported via 28.885 that he was hearing ZL video. At 2300 XE1GE and XE1MD to VK5NY, VK5ZDR, VK5RO, VK5LP, VK5ZK, etc. Garry VK5ZK heard the Cuban station CO2KK at S2, who was using a 40 meter dipole for an antenna! Col VK5RO reported the Cuban returned Garry's call, but he was not heard by VK5ZK. CO2KK was worked by David VK2BA at 2200 at 559.

17/4: XF4L started at 2330 at S9, and was still going strong at 0120 (18/4 UTC) at 5x7, when he ran out of stations to work. The next morning started with XE1GE and XE1MD at 2200, XF4L at 2205 at S3. Stations from VK1,2,3,4,5 and 8 with good backscatter signals. At 2345 a Spanish speaking FM station was heard on 50.100, and was not particularly pleased, and said so, when invited to a QSO! The station has been heard on a number of occasions with signals to S5. Any ideas? ZL2KT heard the Gibraltar beacon. ZL7TPY worked W1FC/FS7 and VP5D and these would make Kerry very happy! At 0200 VK5NY to XF4L at 5x2.

19/4: XE1GE and XE1MD again plus at 2355 XE1OT at 5x7. The conditions extended through to the 20/4 UTC day, and at 2200 Steve VK3OT worked ZK1XH, and then called V21PC, finally making it at 2330 with a 5x4 report. At 2226 V31PC was worked by VK2BA, then at 2255 by VK5NY and VK5ZDR with signals at S2. V31PC was operating with 5 watts to an indoor dipole - no wonder he was less than S1 at Meningie! At 2305 worked ZL7TPY, who said he had made 776 contacts, whilst on his DXpedition to Chatham Isx, Kerry also said he had copied the ZB2VHF beacon via the long path for 25 minutes from 2050. At 2345 it was XE1GE again. Late in the afternoon there was strong FM on 49.923 on 38.0 and 38.4 MHz, and appearing to DF in the direction of Africa. Jack ZS6LN reported via 28.885 that weak signals from VK direction were copied between 0700 and 0730. Jack running a keyer on 50.100 from 0645 to 0715.

21/4: Started at 2300 with VK1RX working XE1GE, then at 2316 ZL7TPY was 5x9 plus. Kerry reported hearing the OX3VHF beacon at 2200. Then Tai ZL7TZ cam on for another ZL7 contact. XF4L had made 160 contacts on six metres. V31PC worked by VK5BC, VK5ZDR and VK5NY from 2225. S1-2 at Meningie and Goolwa.

It was about this time that conditions were showing signs of tapering off. Fewer stations were appearing, and for shorter periods. On 26/4 at 0747 KG6DX at Guam was 5x9. At 2340 KA5ULI, KE5CO and KA5VMC were worked on CW by VK5ZK at 2340. From 0030 KH6 at 5x9.

Then through to 27/4 UTC day and at 0001 a 30 minute opening to W5 when WA5AAK, WB5GDN, KB5AMZ, WD5HRI, KA5VMC and KE5CO were worked by the usual gang of VK5NY, VK5ZK, VK5RO, VK5ZDR, VK5BC and VK5LP but there may have been others. Paul KE5OC was strongest here at 5x7. At 0043 Virg KH6JJI was 5x5, and VK5LP worked him using 6 watts. At 0237 KH6HI was S2 in VK6. At 2230 VK3OT to W4SM with signals to S9 plus. At 2240 VK4BRG reported working TI2KD and TI2HL. At 2242 VK5NY heard W6.

28/4: 2230 to 3D2ER at 5x7 and heard 3D2AG. 29/4: from 0058 a good opening to W5 with Garry VK5ZK working N5HVJ, N5JM, W5VAS, WB6GDN, KB5AMZ and finally K5GE at 0122. I missed that opening, but the W5s were also worked by VK5RO, VK5NY, VK5ZDR and possible others locally. At 0255 KH6JJI 5x5. 2325 FK1TK was S2 for ten seconds; at 2332 3D2ER who said he had just worked a 9Y4.

On 2/5 during the evening YBØARA was very strong into VK8 for an extended period.

Throughout all these happenings, the JAs with their courteous operators are available on a daily basis, and can be there during the day and/or the evening.

Garry VK5ZK spent a month at his DX palace at Goolwa, and on his first day 27/3 broke the ice with XE1GE at 2252 and P43AS at 2313. At 2322 KP2A, 2327 KP4A with signals to S9 Plus. At 2312 on 29/3 Garry worked T3ØDJ on Cw, 0406 V85DA, who was running 10 watts, 0513 H44HIR beacon S9, 0603 KG6DX on CW.

1/4: 2310 KG6DX and received a report from Tom VK4DDG that he had worked ZK1, PJ, KH6, P43, HL1, T3Ø, WS, FO, KG6, YS1, TI2, HP3 and JAs. 2/4:

Although VK5 has shared in working the majority of exotic stations, it is recognised that the eastern States have better chances to work those coming from the east We may only have one or two opportunities for a rare one, whereas the same station may present itself to the eastern States many more times However, we are not grumbling, we console ourselves by thinking of the VK6s and their lack of contacts.

Other Six Metre Reports

Since moving to Meningie I had never fired up the old FT101B into the 'sloper' antenna on 28.885 but at 0250 on 28/4 I responded to a call from my friend Graham VK6RO with signals 5x5 both ways.

Graham reported that JAs into Perth were an almost daily occurrence, and mentioned what good operators they were, very tolerant and pleasant. Graham also said that video was heard most days on 48.264 to S5 from a westerly direction. He hopes their general vigilance in Perth will result in one or more contacts to ZS6. So far the Perth boys report hearing a little CW on two occasions from the South African direction. The ZS6 operators work KH6 with some regularity by beaming over Australia!

At 0624 on 25/3 VK6RO worked V85DA for a first contact, and on 28/3 at 0309 he worked KH6IAA at 5x9, and using a simple halt wave vertical antenna! He also heard K6MYC and WB6VYH. ON 29/3 YCØUVO was heard via side scatter whilst he was working VK30T.

On 1/4 he worked KG6DX and V85DA; 2/4 KEØSC/DU3; ;3/4 KG6DX and heard the H44 beacon; on 6/4 T3ØDJ to VK6RO and VK6HK. Plenty of HLs and JAs.

15/4 was his red letter day when he worked WA6BYA at 2351 at 5x5 and heard the K6FC beacon. Several Perth stations also had contacts On 16/4 at 0244 KH6JJI at 5x7; 17/4 to

KG6DX; 18/4 at 0112 heard XF4L. (This does not surprise me as XF5L was 5x9 plus in VK5 for some time.....5LP). On 19/4 FK8 and H44 heard, also K6MYC and K6FV beacons. 27/4: KH6HI beacon in from 0115 to 0550. The beacon was heard at S2 by VK6MR mobile. Graham VK6RO has now worked 13 countries.

VK6KXW reports 17 countries have been worked in Perth, so it appears they have not been too far out on the proverbial limb - but there would be countries they have worked that those to the east have not and vice versa. Thanks Graham.

Mt Isa

Steve VK4KHQ reports that he had had five RTTY QSOs on six metres with Yutaka JH1WHS since 26/3 with signals to 599. Yutaka says he has had RTTY QSOs with VK4s FXX, FXZ, RO, KHZ and ZRO. He operates at 1100 UTC on 52.045 LSB, AFSK, 50/45.45Bd, 170 Hz shift and using an Apple II computer, model 15 printer and homebrew interface, running 20 watts into 10 elements at 20 feet.

VK4KHQ uses his TONO 7000 as an RTTY keyer instead of CW, but so far has had no other contacts. Steve has built a six element beam, and finds an improvement of three S points over the dipole, but has difficulty coming to terms with the narrow beam-width, so still uses the dipole and switches to the beam when needed.

A list of Steve's contacts since January is intriguing, because, apart from JAs he has not worked any other stations but VKs and ZLs, but I suspect it will be necessary to make greater use of the new beam.

January: ZL3AUU, ZL2KT and ZL3MHF beacon. 3xVK1, 4xVK2, 3xVK3, 3xVK4, 6xVK5, 2x VK8, no JAs or VKØ, 6 or 7.

February: 1xVK3, 4xVK4, no JAs.

March: 2xJAØ, 11xJA1, 3xJA2, 1xJA6, 1xJA9, 1xVK4, 2xVK5 and VK8 beacon.

April: 6xJA1, 2xVK4 and JAs nightly to about 1115 UTC.

Report From Fiji

Phill FK1TS reports that, through February and March, six metres has been open every day with JAs on a regular basis. On 6/2 at 0153 he had four W6 contacts and on 9/2 from 0130 a further seven.

Phill worked to W land during March on 1,25,7,9,18,19,20,22,23,24,25,26,27, and again on 1/4. His total contacts were 120 from January to March. JAs worked included 130 on 23/2, 50 on 4/3, 30 on 6/3, 60 on 22/3, 110 on 23/3, 70 on 24/3 and 120 on 1/4. There were many occasions with 20 to 30 contacts! KH6 contacts featured on many days, including a 5x7 report from KL7WE/KH6 who was sitting on the beach at Waikiki using an IC5Ø2!

Additional good contacts included XE2GBO on 2/3; on 6/3 KX6DS; on 23/3 at 0834 BY4RB; on 25/3 at 0045 ZK1WL in the northern Cook Islands and PE1MVJ/MM; 27/3 at 0601 HP3XUH; 28/3 at 1950 PJ9JT. ON 29/3 Phill worked ten countries - TI2KD, HP3XUH, YCØUVO, KG6DX, KH6, BY4RB, T3ØDJ, P29PL, JA8 and VK4.

Phill had a red letter day on 1/4 starting at 0002 with K7IS then a string of W6s, followed by VK8ZLX, FO4NK, KG6DX,3D2ER, ZK1WL, 5W1GP, ZA2XX, HL9TG, KH6, PJ9EE, DL3ZM/YV5, P21AP and to round off the day for a 14th country he worked 120 JAs! Quite a day's effort.

What should interest VK stations is that, despite FK1TS being so much closer to the US, Phill has worked W5, W6 and W7 for all contacts, except for two W8s, which is very similar to results obtained in VK. Do the States of W1,2 and 3 always look to Europe?

The New South Wales Scene

David VK2BA sends a comprehensive letter, and remarks on the sheer quantity of DX which has been available for working, especially from the Central American/Caribbean region.

Since 1 March 1989, David has worked 34 countries as follows: FK. VP5, TG9, VP2M, KP2, 3D2, JA, KG4, TI1, KP4, ZF1, VK6, W4,5,6,7, P43, KG6, YV5, YBØ, ZK1 (South Cook), ZL, KH6, FOØ, 5W1, T2Ø, HL, CO, YS1, PJ9, XF4, ZK1 (Nth Cook), XE, T3Ø, V85, HI8 and KX6. His overall countries now total 50, which is an outstanding effort and indicates a dedicated operator.

During Easter, David operated portable from Walters Trig about 2km from Nev VK2QF, and believed that for the first time Nev encountered real QRM! As David was involved in a Scout Camp, he had limited operating time, but managed to bag WA6BYA, JA8UDE, JHØBBE, JE3TMS, JE1CCD, VP5D, KG4SM, WB4OSN, XE1GE, P43AS, and K6QXY.

David had a good day on 11/3 with 44 contacts to W6 and 7 plus FK1TK. On 18/3 David worked five countries: JQ1, WA6, FK1, KG6, KX6; on 28/3 six countries: KH6, JR8, ZK1, WA4. T39DJ, TG9AWS; on 1/4 ten countries: K6, V85, HM4, JA1, XE1, VP2M, KP4, YV5, 5WI, TG9; on 2/4 thirteen countries: KX6, ZK1, TI2, JA8, FK8, KH6, VP5, VP2, PJ9, KP4, HI8, KP2, ZF1. On several other occasions, David worked six and seven countries.

David is making available a list of QSL addresses for quite a number of rare stations, and this is available for a stamped addressed envelope of a size suitable for A4 paper.

He requests feedback for corrections to information, or additional addresses, and will produce updates as new information becomes available. Thanks David for your interesting letter.

Nev VK2QF from Hargreaves also writes with an indication of working 32 countries this year, for an overall total of 47 countries. He said that the conditions have been exceptional, and as predictable as Cycle 21 in relation to the timing of openings. The Caribbean/W4 path opens from 2100 to 2150 and usually closes around 2230. The Central American path opens about the same time, but can extend until 0000 or until 0230 at times.

On 25/3 Nev called CQ at 2144, and gave VP5D and KG4SM their first VK contacts! He then went on to work W6. ON 28/3 he worked 13 W4s, ZK1WL (first VK), XE1GE, T3ØDJ and JA. In the three day period 31/3 to 2/4 Nev worked JA, KH6, ZK1, XE1, YS1, TG9, W6, YCØ. V85, HL4, KX6, DU3, PJ9, KP4, YV5, 5W1, 3D2, FO5, VP2, KP2, ZF1, T3Ø and heard 8R1AH. That's an impressive total of 23 countries!

Melbourne

Gil VK3AUI writes to say that Melbournians have had a great share of recent DX, and that he was pleased to work Doug VK9YQS/Ø on 20/3, and to learn that he has been worked by a number of countries including JA and W. The interest displayed from Macquarie Island may lead to some future operating from there on 144 and 432 MHz, which should be within operating range.

Gil has snared six new countries this year - P43AS, KP4A, KX6DS, T20JT, XF4L and ZL7TPY for a current total of 27 countries. Several good days were 26/3 for P43AS, XE1MD, KP4A, W5UWB and heard VP2A; 14/4 3D2AG, SF4L, WA6BYA; 15/4 XF4L, JAs, ZL7TPY, 3D2ER, H44GP.

Gil comments that the XF4L and T3ØJT DXpeditions were very good with expert operators. That comment triggers a thought which has been in the VK5LP mind, that some VK operators could take a leaf from the operating books of DXpeditions operators. They never waffle on, and so are able to conclude two or three contacts per minute if necessary, providing the operator at the other end is equally cooperative. My contact with ZF4L lasted 20 seconds, and in that time we exchanged and confirmed signal strength reports, locator squares and names. That was all that was necessary. I subsequently noted some operators were holding up the operations for two or three minutes, whilst they mentioned rig and antenna details, whilst others were waiting on the sidelines for contacts. For rare contacts, fast exchange of information is necessary - if you are one of those at fault and possibly consistently so, how about getting your act together and make room for more stations to share the rare stations.

Closure

Nothing to report for 144 and higher bands; everyone seems to be congregating on six metres and making the most of the good conditions through the equinox.

In response to several requests, I am gradually compiling a list of countries with six metre operating privileges, and hope to publish this soon. This may assist in the identification of stations, and for determining in which direction to point the beam at different times of the day.

Closing with two thoughts for the month: "If you can tell the difference between good advice and bad advice, you don't need advice", and "In many places nowadays, risking life and limb with fireworks is illegal. You have to use a motor car!" 73. The voice by the lake.

ar

DATA & DIGITAL COMMUNICATIONS

Basic Packet Commands

Brian Beamish VK4AHD
AsiaNet Coordinator
SysOp VK4BBS PBBS
35 Chester Road
Eight Mile Plains 4113

Thanks to all the favourable comments and to those who took the time to either write, phone or send a packet message, telling me what they would like to see within this column. Thanks also to those few, including G3PLX and KX6HE who amongst others have offered to contribute articles amongst them some on TCPIP, RTTY, AMTOR, FAX and Satellite digital communications etc. If you can help or know of any one I can approach please do. Readers please keep those enquiries and suggestions flowing in.

I noticed some very interesting Bulletins around the Packet Network since last I wrote. Some included interesting information on the new satellites, 4 of them to fly later this year. Another bulletin I found interesting was one from Roman VK0MP on Casey Base in Antartica. There is also a group playing chess world wide by packet and a very interesting series by Steve VK4FEA on Lightning Discharge.

During the past few weeks I have been experimenting, together with Eddie DU1EAG and Roy JA2IKL, with forwarding on HF PSK. We have found that after the initial setting up period and trials that we are now able to forward around 90% of a traffic on HF by using PSK at 1200 baud, PACL 128 and MAX4. Quite an improvement on the 300 baud FSK. Whilst more experimenting is still required I envisage that we may see a lot more PSK forwarding being carried out in the future. A future article will go deeper into PSK etc. Incidentally JA2IKL, DU1EAG and myself believe we are the first ever to forward VK-DU, VK-JA and visa versa using PSK 1200 packet. We could also hold the PSK distance record also for regular 1200 baud PSK forwarding, although this record is yet to be confirmed.

Well this month I have a Packet Radio User guide for you. I suggest that if you are new or experienced packet operator, you keep this guide beside your terminal. Table 2 is a handy reference guide that you may like to copy and stick on a card, for quick handy reference.

Please note that the address for the AARTG. (Inc) that was published in my last article, has changed, and is incorrect in the Call Book also. The new address is: AARTG (Inc.) PO Box 97, Cannington, WA. 6107. Please kindly use this address and not the one in the Call Book.

My thanks must go to the Rocky Mountains Packet Radio Association for the work and effort that they put into an article, which was the basis for the one you are about to read.

Packet Radio BBS User Guide

The first time on your local BBS you will probably see "Please use N command". Well then, enter your name as:

N Brian

and the BBS will come back to you like "Oh hello Brian". Now each time you connect you will find that the BBS is not so impersonal after all.

Help Commands

Information about the system and how to use it.

Command H or ?

Help - Gives general HELP with all system commands. It is not context sensitive - it always gives the same answer regardless of where you are in the system. If you have this guide this should not be necessary.

Command ?

Detailed HELP with individual system commands for example "?U" for HELP with uploading the descriptions in this guide are similar to those you should get with this command.

Message Commands

Commands are used to read or send messages or bulletins. Messages are referred to in every command by number, which you can find out by using the LIST command.

You will not see any text until you use the READ command.

The first time you log into a PRBBS, you may wish to list all the messages, but PLEASE do not list all the messages each and every time you log on.

There are several variations of the list command that we will go into later.

Table 1 shows a sample message list.

Msg	T$	Size	TO	@BBS	From	Date	Subject
24767	PN	398	N6VV	@W6HTH	VK4SF	02-May	NO RF CAD
24766	PN	456	DU1EAG		VK4BBS	02-May	PSK tests
24767	PY	789	VK4BBS		VK2BBD	02-May	Thanks for Info
24580	B$	1267	ALL	@ASIA	VK1KCM	03-May	Compression discussion
24591	P$	2300	SYSOP	@ASIA	VK6AGC	04-May	Header Stripping
25001	P$	2956	ALL	@AMSAT	VK5AGR	04-May	Amsat Bulletin
25123	PY	234	VK2OP	@VK2EHQ	W6HTH	04-May	New design HF Antenna

Table 1 - Sample BBS message list

Msg - This is the message number. You will use this number in other commands such as READ or KILL etc.

T (Type) - The message type: P Private messages that can only be listed or read by the sender, receiver or SysOp.

S (Status) - This column contained the N not read yet, Y has been read and $ Bulletin ID Indicator

Size - tells you how big the message or bulletin is in Bytes.

To - Who the message is being sent to, generally it will be to a call sign, SysOp or ALL.

@BBS - This indicates another BBS the message is to be sent to, or can also indicate the type of Bulletins. For example @IBM, @AMSAT, @ASIA or @VKNET would mean IBM Hardware or software bulletins, Amsat Satellite traffic, Bulletin traffic intended for the ASIAN area and Bulletin traffic intended for VK.

From This is set automatically to the call of the station sending the message.

Date - The date that the message arrived on the particular BBS you are looking at.

Subject - A description of what the message is about. It is very often used to indicate a town, city or other information that will help SysOps get the message where you want it to go.

You have seen the word SysOp several times. Now SysOp is the name given to the System Operator, or in other words, the chap running the BBS that you are using.

List Commands

Command: L

LIST new messages - List any new messages that have been received since you were last on the BBS.

Command: LM

LIST MINE - List only messages to you

Command: LN

LIST NEW - List only new unread messages to you

Command LL x

LIST LAST - List the most recent number of messages for example LL10 will list the last 10 messages.

Command: L x

LIST from - List only messages above a number. L 2345 will list all messages above 2345.

Command: L x y

LIST From To - List a group of messages. For example L 2000 2075 will list all messages from 2000 to 2075.

Command: LB or LP

LIST TYPE - LB Lists bulletins. LP Lists private messages (although you will only see those sent by you or for you) you can also use LB x y or LP x y etc.

Command: L@ (@BBS)

LIST @ - for example L@ ASIA will list all traffic @ Asia, or L@ VK4XBB will list all traffic for the VK4XBB BBS.

Command: L> callsign

LIST TO - LIST all messages sent to a particular station. For example, L> VK3AVE will list all traffic for VK3AVE.

Command: L< callsign

LIST FROM - List all messages from a particular station. For example, L< VK6AGC will list all messages from VK6AGC.

Read Commands

Command: R x

READ - Read message x (number) up to 6 messages per line. R 200 240 367 412 would read those four messages.

Command: RM

READ MINE - Read all messages addressed to you.

Command: RN

READ NEW - Read all new messages for you.

The messages read with R will have any standard forwarding headers automatically stripped, regardless. This information is not normally required, or of any use to the user. To read the entire message, you may use the V (Verbose) versions of the above R commands.

Kill Commands

Command: K x

KILL - Kill a specific message. Only the sender, receiver or SysOp can kill a message. You may have up to 6 messages per line.

Command: KM

KILL MINE - Kill all messages sent to you, that you have read. This will not kill messages sent to you, that you have not read. PLEASE kill all messages that you no longer need on the BBS.

Send Commands

Command: SP callsign

SEND - Send a personal message to a "callsign".

Command: SP callsign @ callsign

SEND VIA - Send a personal message to a "callsign", via another BBS, by automatic message forwarding. For example, VK2FEX @ VK2XY. Typically, once the message is forwarded from one BBS to another, the sending BBS will kill the forwarded message.

Command: SB ALL @BBS $

SEND BULLETIN - Send a general bulletin to all SysOp at a BBS or category. For example, SB ALL @ VKNET $ will send a bulletin to all BBSs in VK. SB ALL @ C64 $ will send bulletins to all those BBSs who have indicated that they want Commodore C64 bulletins.

Command: SP SYSOP @BBS $

SEND BULLETIN - Send a private bulletin to all SysOp at a BBS or category. For example SP SYSOP @ ASIA $ will send a private bulletin to all SysOps in Asia. NOTE: you can only send a private bulletin to SYSOP.

After you have told the BBS for whom the message is intended, it will ask you to supply subject information. I suggest here, that if there is any possible doubt as to where your message is going, that you omit the subject material. Instead, supply in the small space allowed, as much information as possible that will help the SysOp get your message to the correct BBS, anywhere in the world. You will be then asked to enter your message. When you are finished, you must terminate your text entry by sending a CTRL Z. Some computers are unable to send a CTRL Z. In this case, place the command (/EX) on a SEPARATE LINE.

If you are going to send a rather long message, it is a good (excellent) idea to compose the message off-line with a word processor, or even a simple text editor. Then connect to the BBS, execute the send command, enter the title, and send the precomposed message text to the BBS. You could even include the send message command, and message title, in the precomposed message, as the first and second lines of the message. Add /EX as the very last line of the message, and you can completely automate your message forwarding.

Please Note:

It would be appreciated by all SysOps, if you do not send messages much over 2.5k long. If your message is going to be longer, by all means please send it, but send it in parts of about 2.5k long. For example, if your message is going to end up about 8k long, you would break it up into three messages, each about 2.7k long.

File Commands

The following commands deal with data files, which generally contain text material (AMSAT Bulletins, QARDATA News, VK Maps etc etc) or even programme files etc.

Command: W

WHAT Files - List of Data files available on the BBS. Recall these file's names are in the xxxxxx.yyy format, so you may use wild cards. For example W *.DOC will list all the files with the extension .DOC (Documentation).

In the file list, you may also see file names followed by the designation <DIR>. This indicates a file subdirectory, which will contain a number of additional files. Usually, files that are related will be placed in a subdirectory. All AMSAT Bulletins might be placed in a subdirectory called AMSAT. To list the contents of a subdirectory, enter the W command followed by the subdirectory name. W AMSAT will list all the files in the AMSAT subdirectory. Many subdirectories will have a 'README' file, which may give you information about the files in that directory.

Command: WN

WHAT NEW - List all new files since you last logged on.

Command: D Filename

DOWNLOAD - Transmits a file from the BBS to you. For example, D USER.DOC will download the file called USER.DOC to your terminal. It is advisable to leave the capture buffer open to receive the incoming file.

If a file you are downloading is in a subdirectory, you follow the subdirectory name with a slash. For example, D MAP/VK4.MAP will download the file VK4.MAP from the MAP subdirectory.

Command: D Filename x

PARTIAL DOWNLOAD - If 'x' is 10, you would see the first 10 lines. If 'x' is -20, you would skip the first 20 lines. If 'x' is 5 space 15, you would see line 5 to 15. All this is valuable if you want to preview a file before downloading it.

Command: U filename

UPLOAD - Send a file from you to the BBS (opposite to the D command). The file naming convention is the same for uploading as it is for downloading, including the subdirectory name if any. Terminate the upload by sending CTRL Z. For example, to upload the VK Amateur Ham schedule, type U EXAMSCH/VK D.SCH.

One danger in uploading to the BBS, is that you could use up all the remaining space on the System. This can crash the system, since the mail, user and log files etc. need room to expand. Please ALWAYS check to see that you have enough room with the W command, before uploading something.

Please note that the sysop is the only one who can kill a file.

Other Commands

Command: A

ABORT - Abort a listing, long message or file etc.

Command: B

BYE - Please log off a BBS correctly, by using the B command. Note that you will be logged off automatically, if there is no response to a menu in 4 minutes.

Command: J

CALLS HEARD - List of calls heard, or connected to etc.

Command: JK

CALLS CONNECTED - List of users who have recently connected to the BBS.

Command: Ja

Calls Heard - on TNC 'a' Type A,B,C,D,E or F for up to 6 TNC's. This command may vary slightly from one BBS to another.

Command: N

NAME - Enter or change your name.

Command: T

TALK - Pages the BBS SysOp for you. If the SysOp is available for a chat, you will get a response within one minute, otherwise the BBS will advise you to leave a message for the SysOp.

Command: V

VERSION - Shows the specific version of the software used on the BBS.

Command: E

EXPERT - You can change your status to expert and the menu will give you a short prompt etc.

Command: Y

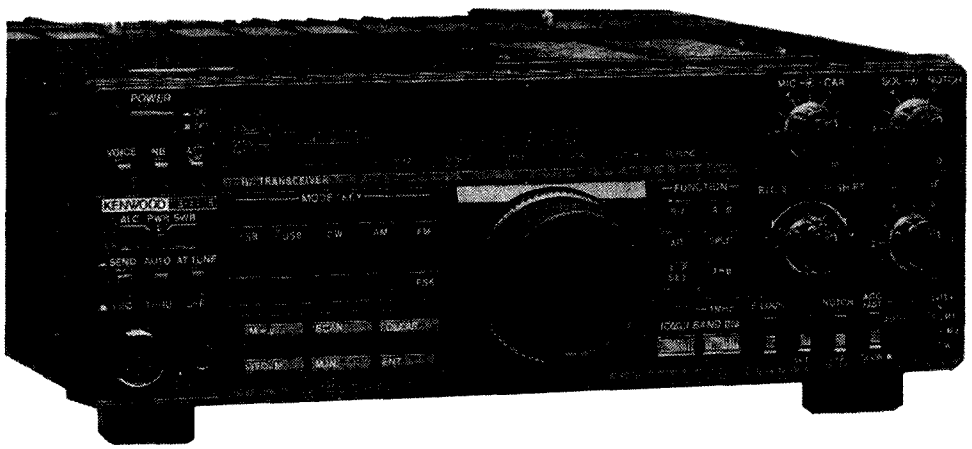
YAPP - Binary transfer programs, more on this in another article.

Forwarding

Automatic forwarding of messages to other BBS, adds a new dimension to packet message handling. It allows mail to be passed between BBS's automatically, according to a predefined list.

Each BBS has the capability to maintain a list of all stations, and their "Home" BBS. When not connected to another user or BBS, the BBS checks the mail file each hour, for stations with mail on the forwarding list. If there is mail to any user on the forwarding list, and it is the proper time to forward to that station, the BBS goes off line and connects and forwards with other BBSs.

KENWOOD



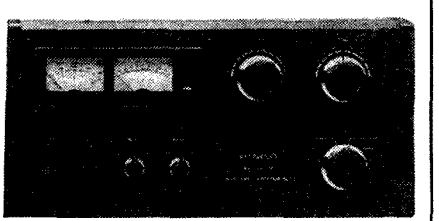
TS-440S

COMPACT ALL-MODE HF TRANSCEIVER/GENERAL COVERAGE RECEIVER

TS-440S provides complete all-mode HF coverage, with SSB, CW, AM, FM and AFSK modes of operation. All in a compact package, with Kenwood quality built-in.

Features include:

- 160-10 metre operations. All mode, complete amateur band coverage.
- Complete general coverage receiver (100kHz-30MHz continuous) with superb dynamic range.
- Automatic antenna tuning.
- Compact and light weight 270 x 96 x 313mm. Weight 7.3kg.
- CW break-in and VOX system.
- Digital VFO tuning system.
- 100% duty cycle transmitter, 110W AM/ 200W PEP (SSB) input



TL-922 HF Linear

The TL-922 provides maximum legal power Suits TS-440S and other transceivers providing 80W or more input power for full output

- 160-10 metre operation.
- Class AB_2 grounded grid amplifier with a pair of 3-500Z tubes for low IMD and long life

KENWOOD ELECTRONICS AUSTRALIA PTY. LTD.
4E WOODCOCK PLACE, LANE COVE, SYDNEY, N.S.W., 2066.
Ph. (02) 428 1455 Fax: (02) 427 6869.
Call now for further information and the name of your nearest authorised Kenwood dealer.

Please phone, or mail/fax for information
Name
Address
Postcode
Publication Issue

Each BBS in the network is assigned a forwarding time - a certain number of minutes after the hour. These are coordinated, where possible, to prevent any two stations from trying to forward to each other at the same time. When not inhibited, forwarding occurs at the same time each hour for a given BBS. You do not have to do anything special to use forwarding, as the SysOp is responsible for getting the forwarding files set up.

All you do is send the message or bulletin. Mail sent to a user served by another BBS will automatically be forwarded, if that user is in the forwarding file, or you assign an @ BBS. Please note, it is recommended that you assign the @ BBS where and whenever possible. Typically, all BBSs in a given area will have entries in their forwarding files for all other BBSs in that area, perhaps the entire country, or even the world. So if you know that VK6ADF reads his mail on VK6AGC, all you need to do when you send your message to VK6ADF, is enter SP VK6ADF @ VK6AGC. Your local BBS will then forward it on to VK6AGC where VK6ADF will see and read it.

However, HF forwarding is a little different. If you would like to send a message Via HF from Sydney say, to a station in Hawaii, you would need to do the following:

1. Address mail to the packet station that will receive it in the TO column.
2. In the forward or @ address column, put the BBS, if known, used by the station to whom you are sending the message. Should you not know this address, use that of your nearest known HF BBS.
3. In the subject column, please put the following City, State etc etc, or any other information that will help the SysOp get your mail to the right location for you.
4. Finally, when you sign your message, please tell the other station your "Home" BBS to which he should reply.
5. Do not forget, if you have any HF Forwarding questions, please leave a message for your nearest HF BBS SysOp.

Not every BBS is set up to forward to every packet user. Only if you tell him, will the SysOp know your home BBS. If might be a good idea to send a message to your home BBS SysOp, and ask him to inform other BBSs of your home status. That way, if someone posts a message to you on a BBS across town, or the country, and does not specify your home BBS when sending the message, the BBS will have a record in its forwarding file of your callsign, and what your home BBS is. That BBS will automatically forward the message to you at your home BBS.

There are, at the time of writing, certain "ALL" destinations that are used to send mail to all users at several BBSs. For example, SB ALL@ VKNET $ will distribute a bulletin to all VK BBSs. What "ALL" designations are available, and where the so addressed bulletins will be, is determined by the SysOps of various BBSs. You might leave a message for the SysOp on your home BBS, asking for a copy of his forwarding file. This should tell you everything you need to know about what goes where.

Please note: That there are changes to take place with the @ address fields for the improved software and forwarding practices of recent times. These changes will be detailed not only on your local BBS, but also within this column. Remember, if in doubt, ask your local SysOp.

Good Operating Ideas From a SysOp's Viewpoint

The following ideas come from many hours watching a SysOp's screen, and seeing difficulties that users have had.

Do NOT send commands more than once. New Users to the BBS will occasionally send a command, wait for a response, and seeing nothing will become impatient and send again. This is unnecessary, because in packet radio, either the packet will get through to the other station, or you will "retry out". If you are still connected, the packet will get through. If you send the command twice, the BBS will respond twice.

Repeatedly executing the information, or help functions, is unnecessary. The H or ? (HELP) command prints a summary list of commands. The I (INFORMATION) command gives information on a particular BBS installation. They are not context sensitive, and their responses will not vary - depending on what you are doing on the BBS. The information is always the same. Therefore, there is no need to print it more than once, but remember to print it once.

If possible, stack multiple commands using the pass character (usually CNTR-V). With TAPR TNC or clone, each time you hit return, you send a packet. You have to end a command to a BBS with a return, so you have to send it. You can save air time, though by "stacking" commands in the same packet, by preceding the return with a PASS character. This will put the commands in the same packet. Of course, do not use the PASS character before the last return, or you will never send that packet at all.

Do NOT list all messages. The message file gets pretty long pretty fast, and listing the whole file takes a long time. Also, please be courteous during peak usage hours - limit your access time so others may pick up their mail.

Table 2 - Command Summary for MBL 5.12

A	ABORT a listing or file
B	BYE, logs off a BBS and disconnects your call
D	DOWNLOAD a file FROM a BBS
H	HELP information file
I	INFORMATION about this BBS
J	List of calls heard by this BBS
JK	Connected
JA	heard on TNC-A, JB TNC-B, JC TNC-C etc etc
K	KILL a message
K x	a specific message
KM	mine that I have read
L	LISTS messages in the mail box
L	New messages since last using the L command
LM	Only messages to you (List Mine)
LN	Only unread messages to you (List New)
LL 10	List last 10 messages
L< callsign	Messages from a 'callsign'
L> callsign	Messages sent to a 'callsign'
L@ callsign	Messages sent care of a 'callsign'
L x	Messages above a given number 'x'
L x y	Group of messages from 'x' to 'y'
N	NAME - N (your first name)
R	READ messages (not 'files') without forwarding headers
R x	Message number 'x' - up to 6 messages numbers
RM	Messages addressed to you
RN	New messages addressed to you
S	SEND messages (not 'files')
SP callsign	Send private message to a 'callsign'
SP callsign @ BBS callsign	Send message to a station at another callsign
SB ALL @ VKNET $	Send a general Bulletin addressed to ALL at VKNET
SP SYSOP @ ASIA $	Send private Bulletin addressed to SysOps at Asia
SB TCPIP @ LAN $	Send General TCPIP bulletin to all at the LAN
T	Talk to your SysOp - Pages the BBS SysOp
U	UPLOAD a file TO the BBS
V	VERBOSE READ messages including forwarding headers
V x	Messages number 'x' - up to 6 messages
VM	Messages addressed to you
VN	New messages addressed to you
W	WHAT's available (File section)
X	EXPERT Status - EXTENDED prompt line
Y	YAPP Binary File Transfer
Y or ?Y or YH	YAPP help file
YW	Binary file directory (What)
YN	Binary new files (What new)
YU	Yapp upload
YD	Yapp download

ar

CONTESTS

Calender, Venezuela Jack Files

Federal Contests Manager, Frank Beech
VK7BC
37 Nobelius Drive, Legana 7277

June:

17-18th WIA Australian Novice Contest. (Rules in May amateur radio).

July:

1-2nd Venezuelan Independence Day Contest PHONE SECTION (Rules this issue)

1st Adelaide Hills ARS Australasian sprint CW SECTION (rules May AR).

8th Adelaide Hills ARS Australasian sprint PHONE SECTION (Rules May AR).

29th - 30th Venezuelan Independence Day contest CW SECTION (Rules this issue).

August:

12th - 13th WIA 1989 Remembrance Day Contest (Rules July AR)

Following an enquiry from a participant in the 1988 Remembrance Day contest, I checked the results published in Amateur Radio. It then became apparent that in the process of typesetting the following results were not printed.

VK2 division VHF phone results had been listed as HF phone.

VK2ALZ	124 omitted from VK2 HF phone list.
VK3XBA	100 omitted from VK3 VHF phone list.
VK3XB	194 omitted from VK3 HF CW list.
VK4AT	60 omitted from VK4 HF open list.
VK4OL	200 omitted from VK4 HF phone list.
VK4APG	90 omitted from VK4 VHF phone list.
VK5TY	85 omitted from VK5 HF phone list.
VK5SE	120 omitted from VK5 VHF phone list.
VK5TY	90 omitted from VK5 VHF phone list.
VK6WC	43 omitted from VK6 VHF phone list.
VK7ZJH	53 omitted from VK7 VHF phone list.

The Adelaide Hills ARS Australasian sprints are becoming ever more popular as the years pass by, and, when you see the photographs of the trophies, and realise their high and enduring quality they will attract much more activity. These wall plaques are engraved polished brass plate, black lacquer filled on a polished natural wood backing 10 x 8 inches, (250 x 200 mm).

As the contest title suggests, these are sprints, and as such can attract more entrants so leave the dishes in the sink and see if you can win one of these very FB trophies.

Next month should see the Contest Championship results announced, and the rules for the 1989 Remembrance Day contest will be published. As is the rule at this time of year, we publish the WIA disqualification criteria. I made a submission to the 1989 Federal Convention that these rules be amended to remove the clause that prohibited an amateur who had been disqualified from entering the same contest the following year. The convention was held only two weeks ago, so it will be some time before I receive any feedback and can then inform you of any changes to the rule.

Please read the rules for the Venezuelan contest, and note the awards section. You will see an added inducement to send in a log. Good luck in the contest.

Venezuelan Independence Day Contest

Phone Starts: 0000 UTC 01-JUL-89
Ends: 2400 UTC 02-JUL-89

C.W. Starts: 0000 UTC 29-JUL-89
Ends: 2400 UTC 30-JUL-89

This is the contest celebrating Venezuela's Independence. It's a world wide type contest; therefore, do not confine your activity to working YV's only. Use all bands, except 160m; 10 through 80 meters (10m, 15m, 20m, 40m and 80m).

There are four (4) classes: single operator, single and all bands, and multioperator single and multi-transmitter (no limit to transmitters, but only one signal per band permitted).

Exchange: RS(T) report plus QSO number starting at 001.

Points: Contacts between stations in the same country one (1) point, contacts between stations on the same continent but different countries, three (3) points and contacts between stations on different continents are worth five (5) points.

Multipliers: One (1) for each YV call area contacted on each band, and one (1) for each different country contacted on each band (included own).

Final Score: Total QSO points from all bands, multiplied by the sum of the multipliers from each band.

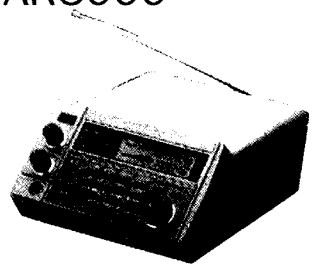
Awards: A plaque to the highest scorer in each class and certificates to stations making more than ten per cent (10%) of the score reached by winner in the same class.

To be eligible to win the plaque a minimum of two hundred and fifth (250) QSO's must be made for SINGLE OPERATOR-SINGLE BAND and five hundred (500) for all other classes.

NEW!! MAGNIFICENT AOR from

the 21st Century communications receiver

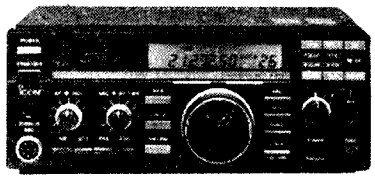
AR3000



Featuring:
Coverage
100 KHz - 2.036 GHz
Modes
NFM, WFM, AM, SSB CW
Memory
400 Memory channels
Scanning Rate
20 channels/second
Tuning Rate
50hz - 100hz selectable

NEW from the ICOM stable

The fantastic budget priced **IC725**



TERRIFIC TRANSCEIVER
TERRIFIC PRICE: ONLY $1550

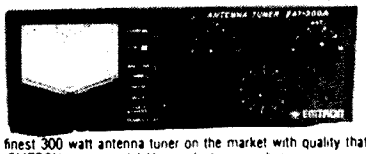
KENWOOD

Full range of all kenwood products available at competitive prices from our 3 stores

NEW 1KW EMTRON TUNER EAT-1000A Only $549

This new EAT-1000/A is EMTRON S latest antenna tuner built on special request by many amateurs. Built with finest components available. 5 position internal antenna switch, cross needle SWR/power meter, built in 3:1 balun for open feedline and antenna terminals for coax line, open feedline as well as longwire. EAT-1000A will tune almost everything from 1.8 to 30 MHz. At lowest price professional design and quality that EMTRON provides. MADE IN AUST

NEW 300W EMTRON TUNER EAT-300A Only $349



The finest 300 watt antenna tuner on the market with quality that only EMTRON can provide! Unique features such as
• Cross needle SW 12/forward & reverse power meter • Built-in 100 watt dummy load • Antenna switch including bypass • Built-in 1:4 balun for open feedline • Lowest price & professional design • Matches everything from 1.8-30 MHz • Made in Australia by Emtron

OVER 1000 FAMOUS EAT-300 SOLD

EMTRON S fastest selling 300 watt antenna tuner with SWR meter, built in 1:4 balun, heavy duty ceramic switch and top grade components. Works with all rigs and is found in Amateur, Commercial and Marine services.

Only $239

THPLinear Amplifiers

Two Metres	was	now
• HL 180 V Auto 170W	$599	$489
• HL1103/10w-120w	$479	$429
• HL 110V/25 25-120w	$449	$399
Seventy Centimetres		
• HL 130U Auto 120 w	$799	$749

KENPRO ROTATORS

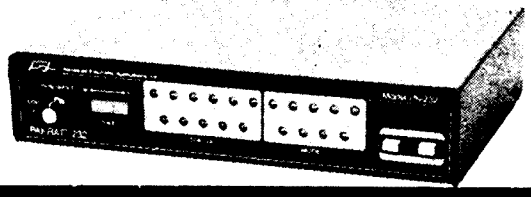
MODEL	BRAKING	ROTATING	PRICE
KR400	1530kg	400kg/cm	$369
KR400RC	1500kg/cm	400kg/cm	$429
KR800	4000kg/cm	800kg/cm	$659
KR2000	10,000 kg/cm	2000 kg/cm	$1299

All units include both top and bottom clamps, 8 core rotator cable available

JOIN THE PACKET REVOLUTION!

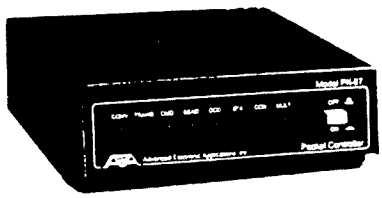
New PK-232 Breakthrough

A new software enhancement makes the AEA PK-232 the only amateur data controller to offer six transmit/receive modes in a single unit.
★ Morse Code ★ BAUDOT (RTTY) ★ ASCII ★ AMTOR ★ Packet ★ Weather FAX



PRICE $649 WITH FAX

NEW



PK-88 ™ PACKET CONTROLLER NOW $350

The PK-88 is not just another copy, it is much more. With all the packet program features of the Multi mode PK-232, the PK-88 is an economical new TNC designed to bring you enhanced completely compatible packet software plus new hardware features for improved packet operation.

BANKCARD
MASTERCARD & VISA
WELCOME

EMTRONICS

MAIL ORDERS
WELCOME

NSW & HEAD OFFICE:
92-94 Wentworth Ave, Sydney
NSW. 2000. TLX:AA73990
P.O. Box K21 Haymarket, NSW. 2000
Ph: (02) 211 0988
FAX: (02) 281 1508

VICTORIA:
288-294 Queen St, Melbourne
Vic. 3000
Entrance from Lt. Lonsdale St.
Ph: (03) 670 8551 or 670 0330
FAX: (03) 670 0671

QUEENSLAND:
416 Logan Road, Stones Corner
Qld. 4120
Ph: (07) 394 2555
FAX: (07) 394 4316

Log Instrcn: All times must be in UTC.

Use a separate LOG sheet for each band, and a summary sheet showing your callsign, name and address as well as the scoring and the usual signed declaration stating that all CONTEST RULES and regulations tor amateur radio in the country of the contestant have been observed. Each YV call area (9) and each country (DXCC country list) should be entered only the first time they are contacted in each band.

Stations considering themselves as possible winners of plaque or certificate should include two (2) IRC's or its equivalent in US dollars.

Mailing deadline is September 30th for SSB entries and October 30th for CW and they go to:

Radio Club Venezolano
Concurso Independencia De Venezuela
PO Box 2285-Caracas 1010-A
Venezuela

Contest Disqualification Criteria

A standardised approach is taken to the disqualification of logs entered in all of the contests which come under the direct control of the Federal Contest Manager appointed by the Federal Executive.

It is suggested that you take note of this particular issue of the magazine for reference to these general rules in the case of all contests for the ensuing year.

Details are as follows:

Disqualification: An entry in WIA conducted contests may be disqualified if, upon checking the logs, it is necessary that the overall score be reduced by more than two per cent. Score reduction does not include correction of arithmetic errors. Reductions may be made of unconfirmed QSOs or multipliers, duplicate QSOs or other scoring discrepancies.

An entry will be disqualified if more than two percent duplicate QSOs are detected as being claimed for credit.

For each duplicate or mis-copied call sign removed from the log by the contest manager, a penalty of the deletion of three additional QSOs of equivalent value to the offending claim may be applied.

The penalty will not be considered as part of the two percent disqualification criterion.

If a participant is disqualified under these aforementioned provisions that operator will be barred from entering the contest for that particular mode in the ensuing year; eg Disqualification from the 1989 RD Contest, phone section will prohibit an entry for the 1990 RD contest, phone section. However, participation in the 1990 RD contest's CW section would be allowed.

Logs which are very untidy, illegible or incorrect in layout to a major degree may also be disqualified. The callsigns of disqualified participants may be listed in AMATEUR RADIO magazine, together with the contest results.

The Sunshine State Jack Files Memorial Contest

1989

All licenced amateur radio operators are invited to participate in the Sunshine State Jack Files Memorial Contest for 1989.

Objects

1. The objects of the Contest are to:

a. perpetuate the memory of the late Jack Files, who was a long time member of the Council of the Queensland Division of the Wireless Institute of Australia;

b. enable amateur radio operators to work Queensland stations for the "Worked All Queensland" Award, and other Awards issued by Amateur Radio Clubs in Queensland;

c. encourage mobile/portable operation from the lesser populated towns and shires of Queensland;

d. provide a 'warm up run' for the Remembrance Day Contest.

Period

2. The Contest will be run in two time periods;

a. 1st period, Saturday, 15th July, 1989, from 0730 hrs UTC to 1230 hrs UTC;

b. 2nd period, Saturday/Sunday, 15/16th July, 1989, from 2330 hrs UTC to 0030 hrs UTC.

Sections

3. Stations within VK4:

a. Tx all bands. 20% of contacts claimed must have been made on the V/UHF bands;

b. Tx HF phone;

c. Tx HF CW;

d. Tx V/UHF only;

e. Club stations in a. to d. above, single transmitter.

4. Stations outside VK4:

a. Tx all band phone;

b. Tx all band CW.

Preferred Contest Frequencies

Phone	CW
1.820 - 1.840 MHz	1.805 - 1.815 MHz
3.570 - 3.590 MHz	3.525 - 3.535 MHz
7.100 - 7.120 MHz	7.010 - 7.020 MHz
14.180 - 14.200 MHz	14.050 - 14.060 MHz
21.170 - 21.195 MHz	21.125 - 21.150 MHz
28.480 - 28.520 MHz	28.125 - 28.150 MHz

Operation

5. The WARC Bands may not be used in this Contest. Cross band operation is permitted only via a satellite repeater, contacts made via a net are not admissable, cross mode operation is allowed.

6. The Contest is primarily for single operator stations, but log keepers are allowed. Where two licencees use a single station, each is to submit a separate log.

7. Club Stations may use multiple operators, provided that there is only one transmitter in use at any one time.

8. Home based stations may be worked again after an elapsed time of one (1) hour.

9. Mobile or portable stations are not subject to the one hour rule when operating from a different City/Town/Shire. When operating within one hour from that of previous operations, they are regarded as "new" stations for their own and the contacted stations scoring purposes. (Different is not to be taken as alternating, eg., operations from Area A for 50 minutes, then move Area B, operate for 50 minutes and return to Area A, would be regarded as alternating, not different). Operations from the same City/Town/Shire after one hour, regardless of movement within that area, are regarded as home station operations.

Calling Procedure

10. Phone; CQ Jack Files Contest.
CW; CQ Test Jack Files
Exchanges

11. Each exchange is to contain the following elements;

a. the location designator, N or S, see SCORING;

b. the serial number beginning with 001 and continuing in sequence throughout the Contest and on all bands worked;

c. the "Code Letters" of the designated City/Town/Shire, as set out in the attached "Designated Areas and Code Letters".

Scoring

12. For scoring purposes Queensland is divided into two zones by the Tropic of Capricorn. Stations in designated areas North of the Tropic are to use the letter "N" as the first element of contact exchange. Those in designated areas South of the Tropic are to use "S" similarly.

Example. A valid exchange for scoring purposes might be;

S	001	MH
Zone	Contact	City/Town/Shire
N	132	RH

13. Stations within VK4, phone contacts;

a. HF/V/U/HF within the same zone 3 points

b. HF/V/U/HF with the opposite zone 5 points

c. HF/V/U/HF outside VK4 2 points

d. ALL CW contacts score double points, i.e. 6, 10, or 4.

14. Stations outside VK4, ALL phone contacts, 2 points, ALL CW contacts, 4 points.

Bonus Points Applicable To All Stations

15. A bonus of ten (10) points may be claimed for the first contact with a City/Town/Shire, other than the one from which the claimant is operating, over the whole Contest.

16. A further bonus of ten (10) points may be claimed for each Club station on each occasion it is worked (one hour rule still applies).

Examples:Phone. A VK4 station in S zone, first contact with VK4000 in Cairns, which is the Club Station of the Green Island ARC Inc., ... score 5 points for across zone, 10 points for first contact Cairns City, 10 points for Club Station, total 25 points.

CW. For the same contact, score 10, 10, 10, total 30 points.

Stations outside VK4 would score 2, 10, 10, or 4, 10, 10 for phone or CW respectively.

NB. No further bonus may be claimed for Cairns City.

Logs

17. Logs must show the full name, address and call sign of the operator(s), the Section entered, points claimed for each contact and the total points claimed, a signed and dated statement that the Rules have been followed, and the appropriate licence conditions observed. A recommended form of log is:

DATE TIME	BAND	MODE	CALL	No. SENT	No. REC'D	QSO	POINTS C/T/S	CLUB	TOTAL
15									
7									
89									
0834	7.0MHz	Phone	VK4000	S001BE	NOO2CS	5	10	10	25
0837	7.0MHz	Phone	VK4SSS	S002BE	S001BE	3			3
(Assumes VK4SSS is not a Club station)									

18. Logs are to arrive at:
VK4 Contest Manager
T. Mulholland, VK4AEM
PO Box 35, Caloundra City 4551
ON or BEFORE the 11th August, 1989.

Awards

19. Trophies will be awarded by the WIA (Q) Awards Manager to the highest scorer in each section, provided that there is a minimum of five entries in that Section.

Code to Define Cities, Town and Shires For the Jack Files Contest

Cities/Towns

Brisbane	BN	Goondiwindi	GI	Redcliff	RC
Bundaberg	BU	Gympie	GY	Rockhampton	RH
Cairns	CS	Hervey Bay	HB	Roma	RM
Caloundra	CA	Ipswich	IP	Toowoomba	TO
Charters Towers	CT	Logan City	LC	Townsville	TV
Dalby	DY	Mackay	MC	Thuringowa	TH
Gladstone	GD	Maryborough	MB	Warwick	WA
Gold Coast	GC	Mount Isa	MI		

Shires

Albert	AL	Douglas	DG	Mornington*	MZ
Allora	AA	Duaringa	DU	Mount Morgan	MM
Aramac	AC	Eacham	EA	Mulgrave	MG
Arakun*	AN	Eidsvold	ED	Mundubbera	MU
Atherton	AT	Emerald	EM	Murgon	MY
Burdekin	BK	Esk	EK	Murella	MX
Balonne	BL	Etheridge	ET	Murweh	MH
Banana	BA	Fitzroy	FZ	Nanango	NN
Barcaldine	BC	Flinders	FL	Nebo	NE
Barcoo	BO	Gatton	GT	Noosa	NO
Bauhinnia	BH	Gayndah	GH	Paroo	PO
Beaudesert	BT	Glengallan	GL	Peak Downs	PD
Belyando	BY	Gooboorum	GM	Perry	PY
Bendemere	BD	Herberton	HT	Pine Rivers	PR
Biggenden	BG	Hinchinbrook	HK	Pioneer	PI
Blackall	BX	Ilfracombe	IL	Pittsworth	PT
Boonah	BV	Inglewood	IW	Proserpine	PP
Booringah	BQ	Isis	IS	Quilpie	QL
Boulia	BZ	Isisford	IF	Redland	RD
Bowen	BW	Jericho	JE	Richmond	RI
Broadsound	BS	Johnstone	JO	Rosalie	RO
Bulloo	BP	Jondaryan	JY	Rosenthal	RL
Bungil	BI	Kilcoy	KY	Sarina	SA
Burke	BR	Kilkivan	KK	Stanthorpe	ST
Caboolture	CB	Kingaroy	KG	Tambo	TB
Calliope	CL	Kolan	KO	Tara	TA
Cambooya	CM	Laidley	LA	Taroom	TM
Cardwell	CD	Livingston	LV	Tiaro	TI
Carpentaria	CP	Longreach	LO	Torres	TE
Chinchilla	CH	McKinlay	MK	Waggamba	WG
Clifton	CF	Mareeba	MA	Wambo	WO
Cloncurry	CY	Maroochy	MO	Warroo	WR
Cook	CK	Milmeran	ML	Widgee	WE
Crows Nest	CN	Mirani	MN	Winton	WI
Croydon	CR	Miriam Vale	MV	Wondai	WD
Dalrymple	DL	Monto	MT	Woocoo	WC
Diamantina	DI	Moreton	MR	Woongarra	WN

*Permission to operate in these shires is required.

AR SHOWCASE

Fully Submersible Connectors

The Buccaneer range of 3 pin 250VAC/10AMP environmental connectors have now been approved by the State Electricity Commission of Victoria for operation under IP68 conditions.

The approval enables these connectors to be safely operated at 10M (33ft) depth, equivalent to 100 Kpa (15psi) for 16 hours at rated voltage and current.

This makes Buccaneer the ideal choice for applications involving dangerous voltages where complete protection from the environment is paramount.

Buccaneer is also available in 2 to 9 pin and BNC versions to the same EP68 specification.

Further information is available from:
Ericsson Components Pty. Ltd.
PO Box 35
Preston 3072
Tel: (03) 480 1211
Fax: (03) 484 3645

CSIRO Antenna for Aussat

The CSIRO has won a $250,000 contract to design an antenna for the next generation of Aussat satellites.

Through its Radiophysics Division, the CSIRO will build a prototype antenna for the Hughes Aircraft Co.

Antennas based on the prototype will be fitted to Aussat satellites launched in 1992 to produce footprints covering Western Australia, the North-West Shelf, Christmas Island and the Cocos-Keeling Islands.

ar

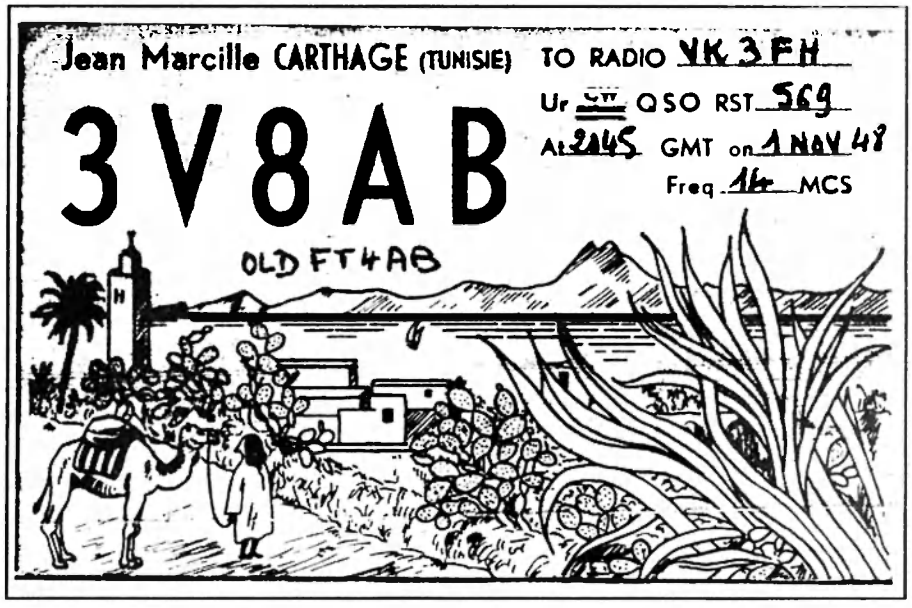
QSLs From the WIA Collection

Former French Colonies

Ken Matchett VK3TL,
PO Box 1,
Seville 3139

3V8ONU

This QSL from Tunisia portrays a map of this North African country. It is really a peninsula jutting out into the Mediterranean Sea. Flanked by Algeria to the west and Libya to the east, it lies almost opposite Italy. A Moslem country, it was forwarded in the fight for women's rights having prohibited polygamy in the mid 1950's. Formerly occupied by the French, the country fought bitterly for its independence which finally was declared on the 20th March 1956. This QSL dated September 1979 was for a DXpedition organized in part by West German radio operators. This accounts for the word Tunesien written on the map. The suffix letters of the especially allocated call-sign (ONU) stand for the French initials of the United Nations Organization, the aim of the DXpedition being to raise funds for U.N.I.C.E.F., the United Nations' organization established to help the disadvantaged children of the world. The Arabic word at the top of the QSL is the word for Tunisia, Arabic being Tunisia's official language although French is widely spoken particularly in the business world. At the very top of the map is marked the naval port of Bizerte, scene of the last struggle against the French (despite the country having already gained its independence). Interestingly enough, the country itself was the scene of the last battle in the North African campaign before the expulsion of the Axis forces.

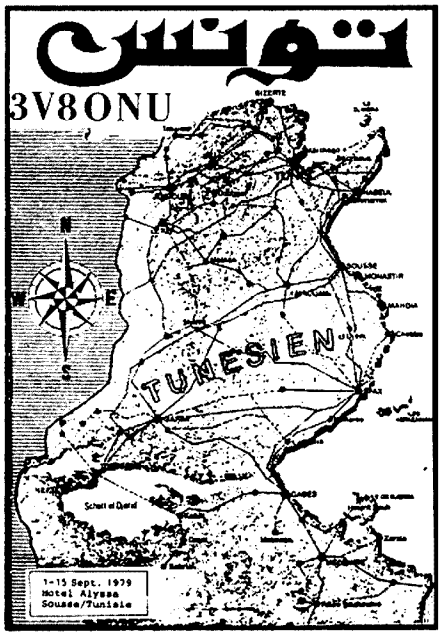


FT4AF

Under the Washington Convention of 1927, the prefix F was allocated to France and its possessions (including colonies and protectorates). The first lists of countries that could be contacted by amateur radio showed only the F prefix but in early 1930 the prefix FM was allocated to Tunisia. In the ARRL Amateur Handbook of 1936 we find a prefix change from FM to FT, the FM prefix being taken by Martinique (another French possession). The FT prefix appeared in the first of the post-war DXCC country lists, being replaced by 3V8 in 1948 (the 1947 International Telecommunications Conference in Atlantic City had allocated the prefix block of 3Va - 3VZ to Tunisia). Although numeral prefixes have become quite common today, they were still rare in the early 1950's. In fact, Tunisia 3V and Israel 4X, were at one time the only numerical prefixes used. The QSL dated October 1935, originated from the coastal city of Sfax lying to the east. On the front of the card is shown an olive plantation with workers picking the fruit, bagging it and loading it on to camels. Olive cultivation is very high in the country's economy. The radio operator was Madamoiselle Andree Costa, who must have been (at that time) one of the very few YL operators in the region.

3V8AB

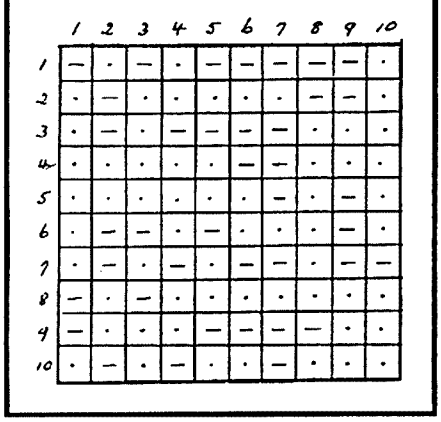
This QSL dated November 1948 was one of the first QSLs from Tunisia using the new 3V8 prefix. The QTH of the station is shown as Carthage an ancient city founded by the Phoenicians and lying about 20 kms from the modern capital, Tunis. Over two thousand years ago, the Carthaginians comprised one of the most powerful trading nations on earth, having conquered most of the Mediterranean nations before Carthage finally fell to the Romans in 146 B.C. Note that Jean Marcille has indicated his old call-sign of FT4AB. The drawing depicts a



typical North African coastal scene with its desert plants, flat white buildings and the ubiquitous "ship of the desert".

If you would like to play a part in building up the WIA QSL collection and to save something for the future, would you please send a half-dozen (more if you can spare them) QSLs which you feel would really help the collection along.

All cards are appreciated but we especially need commemorative QSL's, special event stations QSLs, especially assigned call QSLs (eg. VK4RAN), pre-war QSLs, unusual prefixes, rare DX and pictorial QSLs of not so common countries. Could you help? Send to PO Box 1, Seville, 3139 or phone (059) 643 721 for card pick-up or consignment arrangements for larger quantities of cards. **ar**



Solution to Morseword No. 27

Across: 1 come 2 lip 3 rode 4 hats 5 hear 6 write 7 arty 8 chi 9 bone 10 alb

Down: 1 beep 2 pax 3 bend 4 fix 5 Cain 6 year 7 norm 8 give 9 mums 10 hits

DIVISIONAL NOTES

WA Division

Council has welcomed 92 new members during the year keeping membership static at approximately 760. (Unfortunately we do not get monthly figures from the federal office).

Meetings continued at the Westrail Lecture Theatrette, not without a few problems; lifts and tea etc.

In May VK6UU gave us a talk on repeaters. June saw the presentation of the amateur of the year award to VK6IW, and also the twenty metre packet debate with VK6LZ, ZLD, AGC and ART all speaking on the subject. This continued into the July meeting with the vote on preferred frequencies. In September VK6AN spoke about JOTA and during October Harry VK6WZ played the tape of a commercial broadcast about the travellers net. In November Cy VK6IK had us learning about linear amplifiers, December saw us entertaining senior staff from DOTC at our Christmas party with the manager winning the door prize and Lee VK6HC winning the raffle. The meritorius service awards were presented to VK6ATA and VK6ZRY. In January we asked Will VK6UU back to show us the new generation repeaters with the almost completed Mt. Saddleback repeater which is a near copy of the new one at Mt. William. In March we were ably entertained by Professor George Hatton with a lecture on water diving and its relationship to bird migration.

During June and August we held two very successful morse workshops and October saw the Institute participate in the Northern Corridor's Hamfest whilst in September we had the letter competition.

1988 was Australia's Bicentennial year, we celebrated with a special call sign VI88WA which was used by various amateurs around the state, especially during JOTA when we enjoyed the Aussat Link to Sydney and Melbourne.

On May 31st Council entertained the Federal President at a working dinner. This was followed at midnight by an on air welcome to the novices who gained 2 metre privileges from June 1st.

During October the saga of the Wanneroo Mast case came to an abrupt end when in sheer desperation and frustration Peter moved to the bush. However Council is continuing to monitor local authority attitudes to masts in general.

Thanks to Peter VK6BWI for suggesting the crystal bank and to Bruce VK600 for looking after it.

Silent keys: The LY luncheon group began the year by saying farewell to their founder Daphne Hugo, widow of Ron VK6KW. The ladies also noted the passing in October of Mrs. Bobbie Hill VK6MH. Also marked by the Institute in a minute of silence was the passing of the following: Charlie Savory VK6ACS, Harry Pride VK6HP, Reg Davies VK6BQ, Bill Hornridge VK6KBP, Ron Stitfold VK6RS, John Denny VK6NT and John Klinge VK6AKL.

In conclusion I wish to thank all councillors and all the many volunteers who freely gave so much of their leisure time to further the cause of amateur radio and its many facets in Western Australia.

Christine Bastin VK6ZLZ
President VK6 Division.

VK6 Bulletin

The South West Amateur Radio Group

About 180 km south of Perth is the peaceful city of Bunbury. Situated on the coast around Koombana Bay, Bunbury still manages to combine the feel of a coastal resort town with a high-tech future racing forward at the speed of 6ZRY's Sigma!

In Bunbury and surrounding districts, there are around 60 amateurs enjoying this lifestyle, of which 15 members of the SWARG. The club was founded a long time ago but was inactive for many years until the noisy arrival in Bunbury of Barry VK6AVO back in 1985 stirred the gourds a bit, and rekindled interest in the Group.

Meetings are held on the first Tuesday of every month at the First Carey Park Scout Hall, starting at 2000 hrs local time.

The group has a shack, nestled in one corner of Scout Hall. Equipment installed includes a TS130 SE HF transceiver feeding a TH3jr. on top of a 50 feet homebrew tower. The TH3 has been modified slightly to improve performance.

The rotation system is currently of the Armstrong variety, but the Group will be investing in a heavy duty commercial unit in the near future.

The Group sports its own repeater, VK6RBY operating on Ch1 (146.650, -ve) which was bought by the club and built by Bob 6ZRT. The repeater resides in the shack, and operates through a 6dB collinear antenna mounted above the TH3.

There are plans afoot to move the repeater to a far better site - I will provide details when they are available.

A large 2 metre STC base rig has been built up, and will be installed in the shack shortly. It currently has 3 channels and 50W RF output. Installation of a good antenna will ensure excellent coverage around the south west corner of our great state.

The club has an extensive library of publications including AR, CQ, 73 and ARA some of which go back for many years. These may be borrowed by members of the group at no charge. Also, a very extensive junk box is maintained by the club, including some old VHF/UHF rigs which may be fodder for future repeaters!

Office bearers for 1989 are as follows -

President & Technical Officer	VK6ZRT Bob
Vice President	VK6VS Terry
Secretary/Treasurer	VK6ZB Colin
Librarian	VK6ZKK Kevin
Publicity Officer	VK6AVO Barry

By the way, the Group holds an on-air meeting on the third Tuesday of every month on 3.605 MHz at 2000 hrs local time, with liaison on

the Ch1 club repeater.

Plans for the future include building an ATV, and an HF linear amplifier. This latter project is being managed by Vic VK6BK who now has all the components together for a dual 813 unit.

Can we expect slow morse transmissions from Bunbury?

Finally, don't forget the re-transmission of the VK6 Divisional broadcast every Sunday morning.

The SWARG are back in business again. Why don't you become a shareholder?

John VK6JX
83 Anemone Way
Mullaloo 6025

The Southern Electronics Group

The very southern end of the great state of Western Australia is populated by approximately 58 licenced radio amateurs of which 20 are members of the Southern Electronics Group. They are a very active group with activities and interest encompassing many facets of our impressive hobby.

The SEG, based in Albany, meets on the second Thursday of most months in the meeting hall behind the Uniting Church in Duke Street, Albany at 1930 hrs local. Every 3rd month, there is no Thursday night meeting - instead the group hosts a social outing for members and wives on the Saturday evening at Wilner House, Middleton Beach. This has turned out to be a very popular event with 18-20 people attending. Start time is 1900 hrs local and the food is superb!

SEG personnel get involved every Sunday at 0930 hrs local with rebroadcasting the WIA VK6 Division News broadcast via the Mt Barker repeater on 146.825 MHz (-ve offset).

This repeater, as well as one on 146.725 MHz (-ve offset) in the town of Albany itself, are owned and operated by the Group.

The group also operates and maintains 3 beacons -

-	10m VK6RTW	28.266MHz
-	6m VK6RTW	52.465MHz
-	2m VK6RTW	144.465MHz

The SEG was instrumental in the adoption of a Federal policy whereby all VHF and higher frequency Beacons in any given city or town must have the same 3 digits on the right of the decimal place in the frequency allocation for those beacons.

The group encourages Packet Radio, and there are currently 12 members with the capability of running this latest mode. A packet radio bulletin board service is operated by Aub VK6XY on 7.025MHz and 147.575MHz. The 2 metre frequency will be changed to 144.850MHz when new crystals arrive. The 40 metre BBS takes over from 1700 - 2200 local.

The office bearers for the Group are currently

President	- VK6TR Tom
Secretary	- VK6PHL Bevan
Treasurer	- VK6NQ Merv
Albany Repeater Officer	- VK6XY Aub
Mt Barker Repeater Officer	- VK6ZP Mike
Beacon Officer	- VK6XW Carl
Publicity Officer	- VK6BE Bob

Future plans for the group include -

1. Provision of a packet radio digipeater link with Perth. The SEG is providing the equipment to be installed at the Mt. Barker TV Transmitter site, and Aub VK6XY will be doing the installation work. This system will then remove the necessity for the 40 metre bulletin board!

2. Later this year, the SEG in collaboration with the Perth Repeater and RTTH Groups will be promoting packet operation in the town of Esperance - using 2 metre and 40 metre bulletin boards. One day the whole of WA may be linked by repeaters/digipeaters.

3. Provision of a 70cm beacon. However, the only holdup is shortage of equipment. So if you have any gear which could be pressed into service, please let the Group know!

With active, forward-thinking clubs like the Southern Electronics Group promoting Amateur Radio, our hobby can only go from strength to strength.

See you all next month if not on the bands. 73's

John VK6JX

QRM from VK7

The following Office Bearers for this Division were elected at our AGM on 18 March for the coming year.

PRESIDENT	Mike Wilson, VK7ZWW 23 Mc Cann Crescent, Lenah Valley, 7008
SECRETARY	Bob Richards, VK7NRR PO Box 1010, Launoeston 7250
TREASURER	Peter King, VK7ZPK 97 Brent Street, Glenorchy 7010
MEMBERSHIP	Bob Richards
BROADCASTS	John Rogers, VK7JK 1 Darville Court, Blackmans Bay, 7051
FTAC	Anthony Tulk, VK7ZTA 20 Athleen Avenue, Lenah Valley, 7008
INTRUDER WATCH	David Spicer 5A Helen Street, Ulverstone, 7315
QSL BUREAU	Chas Harrison, VK7CH PO Box 3, Hobart, 7001

The Federal Councillor and Alternate Councillor remain unchanged.

VK2 Notes

By the time you read these notes the Annual General Meeting and elections will be over, and the Division is settling down for another year. During May there was considerable discussion and forums on the proposed fee increase. The VK2 delegation to the recent Federal Convention felt that insufficient notice had been given to the Membership and refrained from voting until the matter had been referred back to the Membership. They also refrained from voting on the suggested introduction of a no-code Novice grade license until the membership had been advised. You should listen to the Divisional broadcasts for progress in these matters.

A reminder that the annual fireworks night will be held at VK2WI Dural on Saturday evening the 3rd June. (63 Quarry Road). The Oxley Region ARC hold their annual field day over the weekend 10/11 June at Port Macquarie. Details from the club at PO Box 712, Port Macquarie 2444.

A meeting to plan this years JOTA operation was held at Amateur Radio House on May the 5th last. The next meeting is set down for the 4th August. It is suggested that if you will be taking part with a group this year, that you notify the JOTA committee via the Divisional office so that the prepared information may reach you in time.

WICEN renewals were sent out mid-April together with some information on possible changes to WICEN operation upon the release of the "Grey Review" into NSW Emergency Services. A report is being sent to those WICEN members who have renewed.

Additional personnel are required for the Sunday Broadcasts, in particular, full calls for the evening. Over the past few months several people have moved to the country. The next roster period is July to September so if you can assist please contact the Divisional office. The hard disc on the VK2RWI packet board Ch 4850 had a head crash and was out of service for a while. The slow morse service from VK2RCW also suffered a computer failure and was not available for a few weeks. It is only when a facility is not available that the operators find out how many are using the system.

ITU Day, May 17.

The Division will be operating the special event station on this day, VI2ITU. For some time there have not been any great circle bearing maps based on Sydney available. The VK2 Division is working with a map company to produce one. More details when production is completed. With increasing interest in the Maidenhead Grid, members are advised that the Divisional Bookshop has an Australian version of the Maidenhead available for $4.00 plus postage.

New Members

A warm welcome is extended to the following who were in the April intake.

NC Craigie	VK2MNC	Croydon Park
MJ Dower	VK2ENG	Forestville
WC Dwyer	VK3DMP	Batemans Bay
JH Evison	Assoc.	Matraville
B Harris	Assoc.	Terrigal
HD Hartman	VK2FPM	Woodbine
DW Heathfield	VK2JDH	Warnervale
P Hodgins	VK2PSD	Orange
IT Howard	VK2XX	Picnic Point
ER Milne	VK2KFX	Blaxland
J Rowe	VK2ZLO	Arncliffe
WJ Tyler	Assoc.	Somersby
RE U'Brien	Assoc.	Ermington
RW Vulhop	Assoc.	Mascot
DR Walmsley	Assoc.	Elermore Vale
GR Wright	Assoc.	Tamworth

VK4 Notes

Jack Files Contest

This year the contest is on 15/16th July.

Many stations will be operated from portable sites.

Among these will be VK4's .. NLV, NEF, MWZ, NHF.

The following shires and cities will be activated on 80m. On 3.605 +- you will find; Boonah, Glengallon, Warwick, Rosenthal, Alora, Clifton, Cambooya, Esk, Toowoomba, Jondaryn, Rosalie, Crows Nest, Gatton, Laidley, Moreton, Ipswich, Logan, Beaudesert, Albert, Redland and Brisbane. Listen for the Special Callsign.

Others you will hear will be: Wondai, Nanango, Murgon, Caboolture and Landsborough.

Good luck to all,
VK4 Division, per VK4MWZ
Bill Horner.

Precise Key Adjustment

Getting the gap and spring tension on a Morse Code key just right used to be a matter of trial and error and personal preference.

But Leicester ZL4LW believes a more scientific approach to the problem is needed. In a letter to The Morseman column, NZARTs Break In magazine, he said: "Set the contact gap to eight thousands of an inch (0.02mm) with an automobile distributor feeder gauge.

"Then adjust the tension by placing the key on a set of kitchen scales. Note the weight, then gently press down until the contacts close. The weight difference (hand force) should be between 750 and 800 gm for correct operation."

Sorry Leicester, but it all sounds a bit too analogue. Is there anyone who has a computer program to carry out the vital task of adjusting a Morse Code key?

The 10 Metre Satellite Downlink

Satellite users have complained that the 10 metre downlink band of 29.300 - 29.510MHz has been increasingly disrupted by stations using FM.

All radio amateurs are reminded that this band segment has been set aside by international agreement for use as a downlink passband for Mode A satellites.

By operating in this segment 10 metre FM stations wipe out a considerable portion of the downlink spectrum and make it useless for using of the RS10 and RS11 satellites.

If you are one of the many now enjoying FM operation on 10 metres and working plenty of DX, please consider others and avoid using the satellite band.

POUNDING BRASS

Telegraphic History

by Gilbert Griffith VK3CQ,
7 Church Street, Bright 3741

My 11 year old son spent two weeks in Canberra last year as a part of the local school's exchange program. He spent most of the time there visiting places of interest and upon returning home, described a few of them - such as the war memorial. Like most kids, he must have failed to mention a lot of other places I would have been interested in, and when he saw me reading through a pile of info sent to me by John VK1AK, he gave me the full story. It is the National Science and Technology Centre. To quote from John's letter: We have some tentative plans to establish an amateur station in the Centre to encourage interest in communications technology".

"The Centre is an interactive or hands-on operation where visitors are encouraged to operate many exhibits we have on display. These range from high-tech robotic dinosaurs, to an earthquake simulator, where visitors can experience a Force 6 tremor, and on to much simpler exhibits demonstrating the physics of light, sound, gravitation and so on. In all we have about 150 exhibits."

"One of our latest activities is the installation of a telegraphic link to the old telegraph station at Alice Springs which has been restored as a Bicentenary Project. The telegraphic terminal in the Centre, and the link to Alice Springs, have been sponsored by Telecom. The operators are members of the Morse Codian Fraternity...."

"As part of the exhibit, again sponsored by Telecom, we have a simple Morse Code circuit which will enable visitors to send messages to each other (using straight keys!)..."

I recently took the family to Albury to visit the Questacon Science Display (travelling), in the hope of seeing the singularity simulator (black hole gravitic field simulator) which fascinates me. Evidently you can roll steel balls into the simulator and watch them go into orbit(s) around the black hole. Wow!

Some of the info includes the following details about the Overland Telegraph. The construction of the Overland Telegraph Line was one of the greatest civil engineering feats in the history of Australia. It connected the Australian colonies with Britain and the rest of the world by telegraph lines.

Charles Todd, the South Australian Superintendent of Telegraphs, had arrived in Australia in 1855 with ambitious plans to connect Adelaide with Melbourne and Sydney, followed by a link with England. The link depended on subsidies by the British and colonial governments, and involved complex negotiations.

Influenced by Todd, the South Australian Government decided to build a line from Port Augusta to Darwin independently of the other colonies, and work began in September 1870.

The harsh conditions of the arid centre and the tropical north, and the difficulties that the construction teams encountered, made the construction of the Overland Telegraph Line an epic achievement.

The Overland Telegraph Line was finally completed in August 1872. It linked up with a submarine telegraph cable which had been laid between Darwin and Java, which then connected with the extensive British telegraph network, so providing Australia with its first telecommunications link with the rest of the world.

While browsing through the bookshelves of the local newsagent I recently picked up a paperback novel by Hugh Atkinson called "The Longest Wire". (Sphere books $ 1982) Although Morse code hardly gets a mention throughout the book, and.... "Apart from the historical facts, the main characters are fictional, and bear no relation to the actual history of its building", the story presents a good entertaining yarn and gives many details which one's imagination would probably overlook. When you remember that in 1870 when the line was built, there were no roads, let alone four-wheel-drives and engel fridges, you realise some of the difficulties involved. My favourite was the white ants eating the wooden poles, which required iron poles to be imported from Britain, to re-do the tropical section. It is interesting to note that when men began talking about an Overland Telegraph Line, they were treated like lunatics. Much as Morsiacs are treated I guess.

If you were looking for the poem CRTB by Frank Spruhan in Aprils column (which is the main poem I submitted), I was looking too. I hope to have room to re-submit it at a later date, unless the editor is holding it for a later issue. By the way, thanks for the enquiries, and my ribs are healed now and we (in Bright) are trying to get fit enough to snow ski this winter. Lets face it, there may not be many more opportunities!

73
Gil.

Coming Round the Bend

I well remember Charlie Teede,
Who used to work the races;
No need, indeed, to ask for speed,
He'd pace it with the pacers.
Lord help the man who "broke" him once
Or questioned his "creations";
On him a flood of scorn was turned,
The atmosphere with brimstone burned,
And Pitman, green with envy, squirmed
At his abbreviations.
"Te field got wl awa to ti
& as ty settld dwn
Te Shicer 1st t bk te li
ws flwd bi Jo Brown.
In close proxim ws Tired Tim,
Tn cme Arbtratn,

Bhnd te bunch ws Cntr Lunch,
Gd Luck and Hi Taxatn.
Ty whizzed alng (and so did Charles)
Wthout te least cessatn.
"Cr t b te topwt jumped
& got on trms wi Shicer,
Wo tn & tre bundl dumpd
Wh labld him a twicer."
I scrambled after Charlie
Like a trailer round a bend,
Then gave OK - but queried:
"C R T B' u send.
Now what is that in aid of?
Enlarge a bit my friend.
The sounder nearly hit the roof
As Charlie scorched the line.
"U ort t be on te rabtproof
Or up at Doodlekine
Chasin poddies rnd te yd
Shd b ur chf pastime.
T tnk u cndt wrk tt out
It nrly mkes me sik.
Ani ole gin or rousabt
Cd write it wi a stik.
Fanci a man wo calls hmslf
A tgst askg tt!
A record O S vacuum
Is located neath ur hat.
D' u want it in oils bi Lambert?
Or carved on a marbl stone?
Ole "Winja" Mortill cd tke it
& ud nvr hr a moan;
Not spelt out li lve dun fr u
Bt cut dwn t te bone.
"Wl I mst sa te bst dspla
Of ignrce lve hrd,
O all te sqrtrs in WA
Ur crtnli te "BIRD"
& ani hrsh remks lve mist
Ty all cn be inferd
'C R T B' - its knwn bi rote,
Wt wd ud ha me snd?
Its cmg rnd te bnd - u goat
COMING ROUND THE BEND!"
By Frank Spruhan (Telegraphist)

CLUB CORNER

Port Macquarie Field Day

Port Macquarie's Annual Amateur Radio Field Days will be held on Saturday, 10th and Sunday 11th, June 1989, at their big new venue -

Tacking Point Surf Life Saving Club, Matthew Flinders Drive, Lighthouse Beach, Port Macquarie.

Surplus gear sale - both days - no commission charges

Fox Hunts - trade displays - WIA book stall
Coffee - tea - biscuits on tap
Trophies * Prizes *
Free guessing competitions
Lucky registration prizes
Saturday lunch available
Sunday barbecue lunch
Saturday night smorgasbord -
soup, hot foods, sweets and wine
$6 adults, $3 children.

Fees Includes	Full Registration	Sunday Only
XYL	$8.00	$5.00 Sunday
O.M.	$10.00	$7.00 Barbecue
Family	$20.00	$15.00 Lunch

Write or phone for programme
Oxley Region Amateur Radio Club
PO Box 712, Port Macquarie, NSW 2444
Telephone Secretary Bruce 065 838 913
President Peter 065 853 406
Remember Their Big New Venue
Tacking Point Surf Life Saving Club
Lighthouse Beach, Port Macquarie.

Sunbury Amateur Radio Group

This club has been formed to assist potential Radio Amateurs to achieve their aims; it has attracted membership from surrounding districts.

Meetings are held at the Sunbury High School, Racecourse Road, at 8pm on the first friday of each month. A weekly net is conducted on Wednesdays at 8pm on 146.450 MHz. Classes are held 7.30 p.m. Tuesday nights at the Sunbury home of Ian Morris VK3YVO.

The group welcomes membership enquiries. Contact John Canning VK3PBX on 744 4772.

The Dove Project

Do you know about Project Dove? Are you ready to take part in the project? Can you use it to take our hobby into the school classroom?

Think about it seriously and do your bit to use the Digital Orbiting Voice Encoder as an easy means of propagating amateur radio into your community.

VK3 Notes

INWARDS QSL BUREAU

After eight years service as the VK3 Inwards QSL Bureau Manager, Barbara Gray VK3BYK has retired for family and personal reasons.

This resulted in a temporary suspension of the Inwards Bureau operation. Steps are being taken to restore the service as soon as possible.

In the meantime we ask Bureau users to be patient. The WIA is taking the opportunity to reorganise the Inwards Bureau operation so it can provide an efficient service.

The Bureau handles an average of 8,000 cards a month and currently has 900 users registered. A major headache for the Bureau is the DOTC policy of instantly re-issuing callsigns. This has resulted in half of those registered with the bureau wanting cards for more than one callsign.

A callsign can be held by three or more people within the same year, each activating it and attracting DX QSLs, and all wanting "their cards" has considerably slowed down the sorting of cards.

As part of the Bureau reorganisation consideration is being given to how this intolerable situation can be overcome. An announcement on the new Bureau and its procedures will be made on the weekly VK3BWI broadcast and in this column.

WIA MEMBERSHIP SUBSCRIPTIONS — AN EXPLANATION FROM THE VICTORIAN DIVISION

Membership subscriptions are now made up of three parts. These are the Divisional component, a Federal component, and a levy for international representation.

The Divisional component will increase $3 for membership applications and renewals on or after July 1st this year.

You should bear in mind that the Victorian Division had already absorbed a $2 rise in the current Federal Component set last year.

Members of Australia's national radio society are being required to pay a levy of $2 each to fund WIA representation at the World Administrative Radio Conference expected in 1992 — and other important meetings leading up to the WARC.

From July 1st this year the Federal Component of membership subsriptions increases by $4. The membership subscription — the Divisional and Federal Components, and the WARC levy, will total $70.

A concessional rate will be considered when the WIA Federal Council meets next month, and at this time it is expected to apply to current pensioner grade members and possibly some others. The renewal period for 80 per cent of members occurs at the end of the year.

The amount of $70 will be on the renewal notices sent to those members in October. The membership subscription of $70 represents

Continued page 59

Radio Amateurs: Have you checked out EA lately?

No doubt most radio amateurs are aware that *Electronics Australia* is by far this country's largest-selling electronics magazine, as well as being its oldest (we began way back in 1922, as *Wireless Weekly*). But have you looked inside the magazine lately?

It's true that a few years back, the magazine went through a troubled time, and may not have been quite as interesting and exciting for a while. But in case you haven't heard, things are a lot different now.

Remember Jim Rowe, VK2ZLO? Jim used to be Technical Editor, and then Editor – back in the late 1960's and 1970's. You may recall some of the amateur radio and test equipment projects he developed, which proved to be extremely popular. Well, Jim is back at the helm of the magazine, and has been busy giving it a new lease of life.

You'll now find lots of new 'departments' in the magazine, including Solid State Update (with news of new semiconductor devices), Silicon Valley Update (news from the USA) and What's New in Entertainment Electronics. Plus all of your old favourites like Forum, The Serviceman, Circuit and Design Ideas and so on. And of course plenty of 'meaty' technical articles and contruction projects.

FEATURES IN THE JUNE ISSUE:

BROADCAST BAND LOOP ANTENNAS - PART 3

The third article in our series, describing a tuned loop and FET buffer suitable for DX reception.

IMPROVED FM RADIO MICROPHONE

Easy to make and tune up, with performance equal to many commercial models. Low in cost, too.

OLD TIME INDUCTION COIL - 2

Concluding the construction details, the author tells how to put it all together.

VINTAGE RADIO

This month we look at the 6J7 valve, and all of its relatives and descendants - including the 6C5 triode!

What about *amateur radio* projects? Well, there still aren't too many, at present – Jim Rowe's been a bit too busy! But he's *very* interested in boosting the amateur radio content, so if YOU have developed an exciting amateur radio project, please contact Jim by writing to him at EA, 180 Bourke Road, Alexandria 2015 or phoning him on (02) 693 6620 – to discuss the possibility of publishing it as a contributed article.

Take a look at the new, rejuvenated *Electronics Australia* – on sale at your newsagent at the beginning of every month. Or subscribe now, by phoning (02) 693 9517 or 693 9515.

Electronics Australia

Australia's Top Selling Electronics Magazine

HOW'S DX

New Countries Mushrooming?

Patrick Kelly VK2RZ, PO Box 41,
Ourimbah NSW 2258

There is quite a deal of muttering going on around the bands concerning the number of new DXCC countries mushrooming up all over the place. Radio amateurs are never short on some home-spun philosophy when given an opportunity, and DXers are not exceptions.

Most of these discussions start out with expressions of dread, and wondering as to where it will all end. You know serious things like "If one floor of the United Nations Bulding in New York can count for DXCC - why not every office in the Pentagon?"; "I only had five (countries) to go - do you think I'll need a new log book?"; "My DXCC countries list is now out of date", and "but I'm causing really bad TVI at the moment!". This carry on usually ends with something like - "Oh well, it'll give the big guns something new to work".

Roll On 400!

I received a letter from Hassan EP2HZ, giving me the state of play for amateur radio in Iran. Interesting as it was, it is unfortunate that there is still no possibility of legitimate operations from there in the forseeable future.

Hassan said that in the ten years since the revolution that saw the overthrow of the Shah, there have not been any licenced amateurs in Iran. He described the radio involvement of the thirty or so amateurs there as being very dangerous! Also, that in spite of this they are still strongly united by their love of ham radio, and hope that one day they can form a radio club. To end, Hassan told me that all their equipment was "home-brew" and always QRP!

Makes you think doesn't it!

Wallis and Futuna

Ron ZL1AMO had an enjoyable stay here operating as FWØBX. For his last visit in 1984, band conditions were very poor, and he was pleased to report that this time the openings to Europe were good. He made 6000 cw contacts and 3000 on SSB. QSL to his home call.

Conway Reef

Six members from the Cologne DX Group activated this remote location in the hope of claiming a new DXCC country. Using 3D2CR they were here for ten days, and attracted enormous pile-ups, with listening frequencies as wide as twenty kiloHertz.

QSL to DJ9ON for CW contacts and to DK9KX for SSB

Johnston Island

Peter KNØE/KH3 is an engineering contractor, and he expects his work for the U.S. Government to keep him here for about four months. QSL to PO Box 1139, APO San Francisco, CA, 96305, USA.

Bing's On The Road Again!

On the 14th of May Bing VK2BCH is setting off on his sixth DXpedition to the Pacific.

Here is his proposed itinerary:

. May 14 to June 7 in Rarotonga on the South Cook Islands. Call is ZK1XV.

. June 8 to 15 in Apia, Western Samoa as 5WIGY.

. June 16 to July 7 in Pago Pago, American Samoa. Call is VK2BCH/KH8.

. Depending on shipping Bing will pay a short visit to Tokelau ZK3, so no firm dates for here.

. July 8 to August 8 Rotuma Island by way of Suva, Fiji. No 3DZ callsigns at present.

Bing will be working all bands from 160 to 6 metres. For 20, 15, 10 and 6 metres he will be using a five element yagi, and for the low bands an inverted "V" and long wires.

QSL is direct only to Ronald "Bing" Crosby, PO Box 344, Forster, NSW, 2428. Do not send via the bureau and don't forget a S.A.E. and postage. IRC's or greenstamps are preferred.

Equatorial Guinea

After having kept several skeds at 2200Z and 0730Z, Manuel 3C1MB gave many VK's and ZL's this hard to work country on ten metres. Contacts were made at both times over both paths with the earlier daytime ones being made over the long path. QSL to EA7KF.

South Shetlands

Felix LU2ZO on King Georges Island has been reported active on 20 metres CW around 1140Z. QSL to GACW, PO Box 9, 1875, Wilde, Argentina.

Western Sahara

I picked up SØ1MZ for a new band country at 2136Z on 14.225. This is a new callsign from here and unfortunately I did miss the operators name. The QSL manager is EA2JG who also handles cards for Naama SØ1A and SØ1RASD.

Revilla Gigedo

The recent DXpedition, using the call XF4L, was very active with at least two of the international team on air most of the time. With never ending pile-ups, mainly due to the Europeans needing this one, and smooth operating, I'm sure the operators were pleased with their effort. QSL to OH2BN.

During a short break with Mary-Anne WA3HUP, one of the XE operators passed on the news that there may be an operator on the island after they leave.

Honduras

A surprise caller from this part of Central America was Kenny HR1KAS. We started out on 15 metres at 0620Z went to 40 metres, than 20 metres and 10 metres. While he was very readable on 40 metres he was unable to copy my report, and on 10 metres there was just too much QRM to even know if a contact was possible.

Kenny has been licenced for over twenty-five years so I am sure that some old timers will be happy to know that he is still around. QSL is direct, and he is OK in any callbook.

Rodrigues Island

If you are regularly on 10 metres around 0630Z, chances are that you have worked Robert 3B9FR. He has always been very active on this band, as well as 15 and 20 metres, but the good news is that he will soon have antennas on 40 and 80 metres. QSL to F6FNU with IRC's, no greenstamps.

Papua New Guinea

Several members of the Eastern Highlands ARC in Goroka have planned a weekend DX trip into the mountains, commencing on either the 3rd or 10th of June. They will be on air from 2300Z on the Saturday, and want to work as many stations as they can over the two days on 10, 15 and 20 metres.

No QSL information was given but they will be using the club callsign P29CEH.

Juan Fernandez

Rosa CEØMTY has been worked and heard regularly on 10 and 15 metres around 2100 - 0000Z. The only problem you may find is breaking the European pile-up, while her antenna is in that direction. QSL to CEØICD (who

is also active) or to CE3ESS.

Easter Island

After quite a few unsuccessful attempts to work Marco CEØDFL on ten metres, I finally made it. He is very easy to find on fifteen metrs on 21.290MHz around 0200Z, talking with Micky CE3ESS and other Chilean stations. Breaking into this QSO is not for the faint hearted, and not recommended, unless you want a lesson in manners from Micky.

Marco does use this particular frequency for his long periods of DXing at other times. He checks in regularly on 14.222 with VK9NS too, and on ten metres he works just above 28.500MHz. QSL to Marco A Meza Ramirez, PO Box 7, Easter Island, Chile. (Do not use callsign).

Turks and Caicos

It's not every day of the week you can find two stations from this part of the Caribbean working within a few kc's of each other on ten metres. On Grand Turk there was Leroy VP5LJ, and on Providenciales there was Bob VP2D. QSL to WN5K and W3HNK respectively.

Look out for two new YL operators from Providenciales. Karen and Alison have been successful in passing their examinations and should have their callsigns by now.

USSR

LLoyd (W6KG) and Iris (W6QL) Colvin are soon to visit all fifteen Soviet Republics. I have had several reports of Stateside visitors being allowed to operate in the Soviet Union with UA calisigns. So this next DXpedition by the Colvins certainly shows the benefits amateur radio has received from Glasnest.

Kenya

After his recent stay in Sydney, and here on the Central Coast, Rod 5Z4BH is now back in Nairobi. He is usually on air on weekends, and operates on SSB, RTTY and Packet.

Rod's line of work keeps him on the move and this accounts for the impressive list of calisigns he has operated with - 9G1RT, C5AZ, 5T5AZ, TL8AZ, TU4BB, EL7AE, 3D2RH, /AH2, ZLØAGS, VK2EFI, VK1HR, /5NØ, /VS6, /DU1, WA7NEV, WB6BOW, KB7NK and 9X5AA.

Also active from Nairobi are Ben 5Z4BP and Christine 5Z4LL. I have yet to find Christine on 10 metres, as she does appear to spend most of her time on 20 metres, but Ben can be found on most of the DX nets, as well as working all bands.

QSL routes are:
5Z4BH to KE3A
5Z4BP to PO Box 73029, Nairobi, Kenya.
5Z4LL to Christine Sachse, PO Box 14425, Nairobi, Kenya
5Z4RT Herman - Christine's OM (late addition)

Bounty Mutiny Day on Pitcairn Island

To celebrate the bicentennial of this historic event, seven of the islands amateurs VR6TC, VR6MW, VR6KB, VR6ID, VR6YL, VR6KY and VR6CL operated over a twenty four hour period on the 28th April commencing at 0001Z. Contacts were only made on 10, 15 and 20 metres with signal reports being accompanied by a contact number for QSL purposes.

A special commemorative QSL card is available if you send an SASE to- Bounty Mutiny Day, 7462W Lawler Ave, Niles, IL 60648, USA.

Rwanda

Two operators have been using the callsign 9X5KP. Colin has checked in to the ANZA Net several times and Linden is also active with the call. I don't know who owns the licence, but the QSL route for both is W4IEN.

QSL Information

AHØD	-JH2BNL	USØSU	-UAØKK
(Saipan - Marianas)		VK2FVN/VK9N	-DL8FP
D68JL	-AK1E	VP2EXX	-KC8JH
FG5CL	-FG4CL	(New Man - not AA4FS)	
FG5R	-W7EJ	VP2VM	-KW1K
FR4FD	-F6FYA	VP5T	-NM2Y
HBØLL	-DJ9ZB	VP5V	WD4JNS
JAØOWD/JDI	-JH1AJT	VP8BWL	-G3NKQ
(Ogasawara)		VP8PU	-WA4JQS
KH6JEB/KH7	-Home Call	VS6CT	-KC9V
PZ2AC	- WA4JTK	XX9KA	- KC9V
S92LB	-Callbook	ZF2NR	-WA4HFB
T30RA	-KN6J	ZK1TB	-W7TB
T32AF	-K7EHI	3AZAH	-Callbook
T5MF	I2MQP	3B8FQ	-Callbook
TE89R	TIØRC	7S3HK	-SM3CER
TU4NW	-AL7EL	7X2AK/3-Bureau (Direct)	
TY8BYL	-DJ6SI	9Q5NW	-AL7EL

CN8MW	Mike, PO Box 162, Tangiers, Morocco
FK8EW	Carl, PO Box 465, Noumea, New Caledonia
FO5DB	Serge, PO Box 813, Papeete, Tahiti, French Polynesia
FOØBEF	Mgr. FE1JCN (not in callbook) PO Box 5, F-63018 Blanzat, France
J39AL	Gil, PO Box 448, St. George's, Grenada
NY6M/KHZ	Gary Dein, 216 Holden Street, NCWP, FPO, San Francisco, CA, 96630 - 1847, USA
UP2BKY	Stasys, PO Box 36, Telshay, 235610, USSR
ZS3J	PO Box 90606, Eros, Namibia
3D2AG	Antoine, PO Box 14633, Suva, Fiji
5W1AT	Marty, PO Box 2015, APIA, Western Samoa
7P8EG	Hans, PO Box 7583, Maseru, Lethsoto

Final Comment

All too often I hear DX stations and QSL managers being held up during pile-ups, nets and list operations, by operators enquiring about their QSL cards. Now this ill-considered behaviour not only can cause embarassment, whether intended or not, but it also inconveniences everyone else on the frequency. So unless it is absolutely necessary to take this sort of action, then please be patient.

Well that about wraps things up for this month, except to thank VK2's - BCH, HD, PS, WU, VK4FAX, VK5QJ, VK9NS and all those who have passed along information on air.

Good DX!

Rotary Conference

There will be an international conference ol all the Rotary clubs in the world, in Seoul Korea, from the 21st to the 24th May, 1989.

News received from KARL (the Korean Amateur Radio League) indicates that there will be a special event station operating during that period with the callsign HL89ROAR.

Submitted by Stephen Pall VK2PS

Distinguished U.S. Amateur Honoured

Hugh Archer, W8JA, from Dearborn, MI 48124 USA will be elected as world President for the year 1989 - 1990 of Rotary International at the International Conference at Seoul on the 24th of May, 1989.

There are 23943 rotary clubs in the world with a membership of 1,063,123 in 465 districts and 164 countries and geographical regions.

In Australia and Papua New Guinea, there are 1341 rotary clubs with a membership of 51,407.

Submitted by Stephen Pall VK2PS

ar

EDUCATION NOTES

Devolvement Soon?

Brenda Edmonds, VK3KT

Discussion with Mr. Alan Jordan, Manager of the Regulatory Division of DOTC, at the recent WIA Convention confirmed the Department's intentions to have the Devolvement of examinations completed by February 1990. The newly appointed Examinations officer has been joined by two other officers seconded for a few months to complete the arrangements, and finalise the production of the new Regulations brochures. Present information is that it is unlikely that the brochures will be available for a couple of months yet, so the August examinations at least should still be on the old (1978) Handbook.

For the benefit of those who may be considering arranging examinations but have not as yet indicated their intentions to DOTC, I would like to quote a section of the letter received from the Examinations Officer following his appointment:

"The current legislation does not allow *us to approve* or accredit individuals or organisations. "Accreditation", as we interpret the word in the current instance, means that an individual or organisation has presented an examination to the Department for approval. To be accredited, the examination itself will have been approved as to form, balance, degree of difficulty, venue, administrative and invigilation arrangements and all the other things which will be spelt out in the Accreditation Package."

The letter was accompanied by a form for completion to indicate our continuing interest in producing examination materials, so we assume that all others who had earlier indicated interest will have received similar letters. If there are members who now wish to become involved, it would perhaps be wise to approach the Department with a request for information as it becomes available.

Most Divisional representatives at the Convention stated that their Divisions intend to prepare examination materials and have them accredited. If the "accreditation" also has to include approval of the physical arrangements such as venue, it may become more difficult for us to share approved papers. I was anticipating from the earlier information that a paper approved for, say VK2 Division could later be used by another Division, so saving both us and DOTC both time and effort. This is one of many points which still remain to be clarified.

It is to be hoped that the initial enthusiasm for devolvement shown by the amateur body will not have completely evaporated by the time the machinery is fully in place ar

The VK3 WIA Answers its Correspondence

All letters received by the WIA Victorian Division are acknowledged. Since the opening of the new Divisional Headquarters in Ashburton in February and the hiring of a General Manager Secretary, all incoming mail is logged on a computer.

It is true that under the previous overloaded volunteer system correspondence was not always handled in an appropriate manner. But since February, a professional approach has been taken to all administrative operations of the Victorian Division.

Those of you who have communicated in writing to the Division know that a prompt reply is received — commonly within 48 hours of receipt. Matters that require checks with the responsible office bearer or need to be considered by a Council Meeting can take a little longer.

Just ask any new member who has joined the Division this year how long it took to get a response. New member applications are generally handled within the next two working days. Under the previous system it took up to six weeks to process such aplications.

Provided Australia Post delivers — all correspondanoe received by the WIA is handled in an efficient business-like manner.

SPOTLIGHT ON SWLING

Long Path Signals

by Robin L. Harwood VK7RH
52 Connaught Cres
W Launceston 7250

As expected, HF conditions during the daylight hours have improved, especially on the 25 and 31 meter broadcasting allocations. We are hearing the European stations beaming to North, Central and South America quite well as early as 0100 UTC. About now, signals should be appearing across the South Pole below 7.5 MHz from 0200 UTC. You will notice the fluttery note on signals.

Many European domestic broadcasters have all-night programming, particularly in West Germany in the 49 meter band and these normally are drowned out by the larger senders at other times. Listen for Radio RIAS in West Berlin on 6005 kHz from 0330 UTC, as it is in German naturally, although funded by the United States Information Service. There are also other stations both in the German Democratic Republic and the Federal Republic of Germany also in the 49 metre allocation.

But you might take the time to tune down on the 60 and 90 meter tropical band broadcasting bands from 0400 for signals from Africa signing on. My spies inform me that southern and central regions of Africa will be audible this year. Yet beware, Latin American signals could also be on, although they mainly are in either Spanish or Portuguese. The Africans will be in indigenous local languages or either English or French.

The "World Service of the Christian Science Monitor" has commenced utilizing their two 500 kW senders in Cypress Creek, South Carolina and have an excellent signal into this region, compared to WCSN in Maine or KYOI in Saipan, their other sites. I am hearing WSHB best on 13760 from 0400, when they broadcast in either Spanish or English, although they do target Australasia from 0800 UTC on 17855 kHz in English. They have cut back KYOI's daylight schedule as they wish to upgrade their facilities, with the intention of installing a second sender and improving their antennas.

Another interesting region I have been casually observing of late is between 26 and 28 MHz. Naturally there are plenty of CB signals, both legal and illegal, yet there are some interesting low powered carriers that have nothing to do with CB.

There are some harmonic or parasitic emissions from various broadcasters, mainly in South-East Asia and Africa being noted.

Often the fundamental is not heard, while the harmonics are. Radio Nepal has been heard on 30030 KHz at 0900 UTC in W.A. It is the sixth harmonic of 5050 kHz which is not audible at that time, of course. Radio Beijing and other Asians are also heard, although these are all well down at about S1.

The next scheduled transmission from the Red Cross Broadcasting Service to Australasia will be on the 26th of this month from 0740 to 0757 on 13685 kHz from Swiss Radio International. At 1310 to 1327, the Red Cross broadcasts from Beijing on 11695 kHz. Transmissions are in English.

Well, that is all for June. Until July, all the best and good listening! ar

Lockerbie & Raynet

The disaster when a Pan Am jetliner crashed at Lockerbie in Scotland was brought to the world via television pictures and newspaper reports.

A little known fact was the role played by radio amateurs through the Raynet organisation after Flight 103 ploughed into Lockerbie.

A newspaper clipping of the Glasgow South & Eastwood Extra dated January 12, 1989, and supplied to AR magazine by the WIA ACT Division, tells the story.

"Police chiefs who master-minded rescue operations at Lockerbie have praised the unrelenting work of a Netherlee amateur radio enthusiast," the story headlined Radio Lifeline said.

Ronald Cowan the Raynet Regional Controller mobilised his team and made a mercy dash down the A74 motorway to Lockerbie accompanied by ambulances. Raynet was on air within 10 minutes of arriving.

The Raynet team continued their operation for 10 days. Visitors to their station included Prime Minister Margaret Thatcher.

Chief Constable John Boyd summed up their work as "the vital cog in the wheel of communication."

He said: "Their professionalism proved a tremendous help in the vitally important field of communication."

At the height of the operation 112 Raynet members were in the field. They serviced the police, armed services, regional emergency planning officer, the volunteer search and rescue dogs, police underwater search teams, and the Aircraft Accident Investigation Bureau. ar

AWARDS

WIA Antarctic Award Marks Mawson Achievement

The WIA Antarctic Award has been established - the first new federal WIA award for some years. It needs confirmed contacts with ten amateur stations conducting valid operations in Antarctica. The ten must include stations licenced by at least six different government authorities, and one must be a VKØ.

Antarctica is defined as the land mass, including islands and permanent ice shelf below latitude 60 degrees south. (This, incidentally, excludes Heard and Macquarie Islands. These are sub-Antarctic, not Antarctic).

QSOs may be on any amateur band, including the WARC bands, but crossband contacts are not eligible. All modes, except those using terrestrial repeaters, are acceptable and endorsements are available for particular bands and modes. QSOs with aircraft or with ships under way, or capable of being put under way, are not eligible.

QSOs must have been made after 0001 UTC, February 23, 1988.

Mawson Anniversary

This date was chosen to mark the 75th anniversary of the first two-way radio exchange between the Antarctic continent and the world outside. On February 23, 1913, the exploration team led by the Australian geologist and explorer Douglas (later Sir Douglas) Mawson sent messages to the Australian Governor-General and to King George V from their base at Commonwealth Bay.

Sadly, the messages reported the deaths of Mawson's two companions, Ninnis and Mertz, during an exploration trip from which only Mawson returned.

The messages to Australia and the UK went by relay, through a station set up on Macquarie Island in 1911 when the expedition was on its way to Antarctica. More than a year passed before Mawson's party was able to make contact with it, the main trouble apparently being difficulty in maintaining an antenna in the blizzard conditions at Commonwealth Bay.

In his book, The Home of the Blizzard, (6th ed., 1938, pp. 303-304), Mawson described the event:

> On the night of February 15, Jeffryes suddenly surprised us with the exciting intelligence that he had heard Macquarie Island send a coded weather report to Hobart. The engine was immediately set going, but though repeated attempts were made, no answer could be elicited. Each night darkness was more pronounced and signals became more distinct, until, on the 20th, our call reached Sawyer at Macquarie Island, who immediately responded by saying "Good evening." The insulation of a Leyden jar broke down at that point, and nothing more could be done until it was remedied.
>
> At last, on February 21, signals were exchanged, and by the 23rd a message had been dispatched to Lord Denman, Governor-General of the Commonwealth, acquainting him with our situation and the loss of our comrades and, through him, one to his Majesty the King requesting his royal permission to name a tract of newly discovered country to the east, King George V Land. Special messages were also sent to the relatives of Lieutenant BES Ninnis and Dr X Mertz.

Earning a Low Numbered Award

Knowing that many amateurs aim at winning certificate no. 1 when a new award is announced, I have publicized the Antarctic Award widely overseas, and made the following rules to give all amateurs and SWLs worldwide a fair start in the race.

All certificates will be numbered and issue will start on July 31,1989. Valid applications received by that date will be ranked by date and time of the last QSO needed to qualify for the award.

The first to qualify will receive certificate no. 1, and so on. Endorsements will also be given for the first to achieve the award on each band and mode.

After the applications received by July 31 have been dealt with, certificates will be numbered in the usual way, i.e., as applications are processed.

However, "firsts" for various modes and bands may still be given at the discretion of WIA Federal Awards Manager.

The usual WIA verification rules apply. Cards need not be sent if two amateurs certify on the list that they have personally inspected the cards. The list, of course, must be in the form of a log extract, giving date, time, frequency, mode and signal reports exchanged.

However, the WIA Awards Manager reserves the right to call for the cards or photocopies of them.

The Antarctic Award is free to WIA members. Others must pay $A5 or $US5 if overseas.

Liberia: Special Prefix and Award

Liberian amateurs can use the special prefix 6Z during July, and an award is offered to amateurs who work five Liberian stations on any band or mode during the month. It is also available to SWLs.

The event marks the 142nd anniversary of

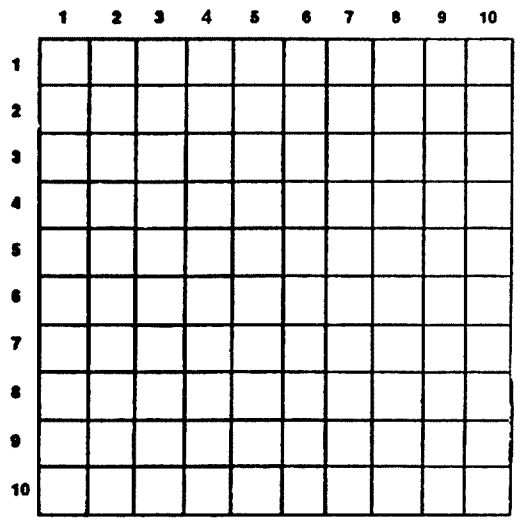
Morseword No. 27

SOLUTION PAGE 48

Clues

Across
1 Arrive
2 Part of the face
3 Went astride
4 Akubras
5 Listen
6 Pen
7 Chichi
8 The Greek X
9 Femur is one
10 Priest's robe

Down
1 High pitched sound
2 Peace
3 Curve
4 Repair
5 Abel's brother
6 1989 for example
7 Par
8 Donate
9 Mothers
10 Raps



Liberian independence, and all cards for QSOs during the month must be sent to its QSL manager, Robert F Wynhoff, K5HUT, 12915 Memorial Drive, Houston, TX 77079. To ensure a prompt return, a SAE and return postage should be included.

However QSL cards are not required for the award. A log extract certified by a WIA official or two licensed amateurs will do. The award costs US$5 or 10 IRCs and applications should go to the LRAA Awards Manager, PO Box 10-0987, 1000 Monrovia 10, Liberia.

VK Awards Survey

In April I sent enquiries to more than 70 managers of awards offered by VK divisions, zones, clubs and other groups which have been mentioned in WIA callbooks or in AR.

I need to know which awards are still being issued and to have up-to-date information on rules, costs, addresses, etc.. I hope that this can be then published by the WIA. Apart from that, I need the data to respond to enquiries from amateurs and SWLs, both local and overseas, wanting details of VK awards.

I am proposing to close the survey on June 30. If I have not had a response by then, I will assume that the award in question is defunct. It will not be included in the WIA list of VK awards and editors of worldwide guides to amateur awards (see my columns in the February, March and April issues of AR) will be advised to delete it from future editions.

A Still Bigger Awards Guide

In March AR I described G4FAM's "Amateur Radio Awards", published by the RSGB, as "the most comprehensive" book of its kind. What am I to say now, having received a copy of "The KIBV Directory of DX Awards" which gives the rules for more than 1,050 awards? That's about 40% more than in the G4FAM book.

Ted Melinosky K1BV has produced his directory of 290 pages in loose-leaf format punched for acceptance into a standard 3-hole office binder. This gives him flexibility in up-dating his directory, which he proposes issuing annually.

Apart from award rules, it includes reprints of general award information of several national amateur societies (e.g. JARL's list of cities and prefectures needed for some of its awards) and other data such as UN membership, and an islands of the world list.

The RSBG book takes less space in the shack and has check-lists which can be filled in en route to qualifying for particular awards. But for sheer number of awards, Ted's directory wins easily. Also, several years elapsed between the 1988 edition of the RSBG book and the previous one. Ted's method and format makes it possible for him to keep the data much more up-to-date with annual editions.

Ted aims at covering costs but his venture is essentially non-commercial, designed as a service to amateurs and SWLs.

You can obtain his 1989 edition for US$14 (surface mail) or US$21 (airmail) from Ted Melinosky, K1BV, 525 Foster Street, South Windsor, CT 06074-2936, USA.

BOOK REVIEW

Secret warfare

Rodney Champness VK3UG
2/95 Benalla Street
Benalla 3672

by Pierre Lorain,
translated by David Kahn.
Published by Orbis Publishing.
ISBN 0-85613-586-0

You might say "Not another book on all sorts of clandestine war activities"! Most of the books that the general public, including us radio amateurs, have read have been more about the exploits of all sorts of under cover agents, spies, etc.

This book is rather different and concentrates on communications and supplies, and briefly how they were used in the second World War. A very large section of it is devoted to the spy sets that were used during WWII. A bit about the history of their design, use, limitations, and last, but not least, pictures - or should I say - drawings of them and copies of some of the schematic circuit diagrams. Older amateurs will remember the Type 3 MKII and the Type A MKIII. These sets are described in the text as well as a number of other "spy" sets made before and after them. Each type had its particular niche. Would you believe, there was a 51/1 transmitter. It measured about 5.75" x 4.5" x 1.5" (150 x 115 x 38mm). In this tiny package was an AC power pack, 3 CV136 valves, capability to tune 3 to 10.5MHz, and as for all of the "spy" sets, it had only CW capability via an in built key, and had an output of up to 4 watts. Quite a performance for such a small set during WWII, when you consider the size of the normal domestic broadcast receiver of the day.

We all know that spies used various codes to make it difficult or impossible for the enemy to know what the messages were about. If you are keen on this side of communications, as well as the radio equipment used, you will find the chapter on Ciphers most interesting.

Have you ever thought how the aircraft from Britain found isolated little fields in the dark and even managed to land in one piece and then take off again? On the ground, the resistance had a small radiotelephone called "S-Phone Type 13/Mark IV (1943)" - being a small UHF transceiver, complete with directional antenna. It was not capable of being heard on the ground further than about 2 kilometers, but able to be heard up to about 65 kilometers at 10,000 feet (about 3km). The equipment in the aircraft was able to determine in which direction the aircraft should head to approach the landing site. Another device used to indicate how far away was the landing site is two pieces of equipment called "Rebecca" and "Eureka" - Rebecca in the aircraft and Eureka at the landing field. Interrogatory pulses were sent out from the aircraft and the Eureka device replied. The time lapse and direction indications showed the aircraft crew how far away they were from the field and on what heading.

If your specialty is weapons, and various explosive devices, there is quite a large section devoted to these.

The Germans did have quite good Direction Finding facilities, but the tactics used by the resistance fighters with their radio operations meant that not a great deal of success was achieved in silencing the radio transmitters.

This is probably not the book for everyone, but it is an extremely interesting one for anyone who is interested in the equipment used during WWII by the resistance fighters, mostly in the European theatre. If, like me, you have some of these interesting little spy radios, you will find this book of interest to fill in some of the gaps in the information you might have on the history of these remarkable devices. My feeling is that James Bond of 007 fame, if his time had been in the early '40's, would have loved to put his hands on many of the devices described in this book.

It is not an easy book to obtain and you will probably have to order it, and it is not cheap either - at around $35, but it contains 185 pages of top notch information.

Radio Theory Handbook For Amateur Operators Errata

The above publication written by Fred Swainston VK3DAC was reviewed in the August edition of AR magazine. Since then and following consumer demand, the book's publishers have issued a double-side A4 sized errata.

It was believed all known purchasers of the book had already been supplied with an errata sheet. The publishers are Prentice Hall of Australia Pty. Ltd., 7 Grosvenor Place (PO Box 151) Brookvale NSW 2100. Their phone number is (02) 939 1333 or they can be contacted on fax (02) 938 6826.

ALARA

Our Mavis

Joy Collis VK2EBX
PO Box 22 Yeova 2868

On 6 June 1989, Mavis Stafford VK3KS will be celebrating 50 years as an amateur radio operator, and friend to hundreds of enthusiasts around the world - a wonderful achievement, and certainly cause for celebration.

Mavis' success story had its small beginnings in the little Victorian town of Minyip in 1939 when the local school teacher, boarding at her family's home, was endeavouring to coach her brother in Morse Code. Mavis became interested, learned the Code and the theory, and passed her exams on 30 May 1939, to gain her Certificate of Proficiency. She became VK3KS on 6 June 1939.

Radio operation became a reality for Mavis with the use of a 5 watt crystal controlled transmitter, her first contact being with Les VK3XF. Unfortunately, storm clouds were gathering, and the outbreak of World War II in September 1939 saw the suspension of amateur radio transmission.

In 1943, Mavis married her "teacher" Ivor VK3XB. There was no electricity connected to their East Gippsland home, so when they recommenced radio activity, it was with a 2 1/2 watt input battery powered rig, Mavis being one of the very few YL operators in Australia at the time.

In 1951, they moved to Box Hill South, gradually building up a well-equipped shack, and tower to support the DX beam. A far cry from the early days!

Mavis' favourite mode is CW, and for her it is a special language. In 1966, she became one of the first YL members of the First Class Operators' Club, which requires 25 words a minute Morse and the sponsorship of at least five other members - not an easy organisation to enter. Mavis' sponsors came from around the world, attesting to her popularity and proficiency with the key.

In spite of this recognition, she is always ready to slow down from the speed of the "hare" to that of the "tortoise" in order to assist someone nervously struggling to come to grips with the Code, cheerfully spending time assisting and encouraging the learner towards confident CW operation. Her patience in this direction is well known.

Mavis was an inaugural member of the Australian Ladies' Amateur Radio Association, taking an active role in all ALARA functions and seldom missing "on air" meetings and regular nets. For the last eight years she has been the Awards Custodian, and Historian since 1983. In this capacity she has written up a very comprehensive history of ALARA since its inception in 1975, working from what records were available, and her own memory of events. She is the only Life Member of ALARA, an award justly merited by all the hard work she had done on our behalf.

Mavis pictured at the VK3KS/VK3XB Rig.

Mavis has visited, and been visited by, many amateurs from around the globe as well as within Australia, and the hospitality extended by both Ivor and Mavis is legendary. They have been members of the Old Timers Club since 1976, and Mavis is a member of several YL clubs, including YLRL, CLARA, WARO, JLRS and YL ISSB.

She is an active participant in contests, particularly YL contests, and her impressive and lengthy list of awards includes Australian DXCC (284 countries confirmed on CW), YLRL/DXYL, Worked All States YL, YL-DXCC, Worked All Countries QRP, first place CW for Australia in 11th. All Asia Contest and First, three times in the World DX Hager Award.

Mavis' other interest include crocheting, knitting and gardening, and a family of three children and six grandchildren (none of them amateurs at the present time). Radio involvement still takes up much of her time, however, with regular nets and skeds forming a pleasurable part of her life.

She has an extensive knowledge, learned from long experience, of correct radio operation, QSL-ing, Contest logs, etc., and is never too busy to help a newcomer on air along the path to confident radio operation.

We salute you Mavis! You are a shining example of what amateur radio is all about, and hundreds of well-wishers everywhere will be with you in spirit as you celebrate your 50 years. Here's wishing you plenty more contacts, and many more enjoyable hours with amateur radio.

Good on you, you've "done us proud."

(I would like to thank my anonymous "informant" for supplying the information used in this article.)

Continued from page 51

about $1.30 a week. The Divisions are facing cost increases which cannot be absorbed.

The Victorian Division is faced with an immediate escalation in the operation of the QSL Bureau. Australia Post has changed the parcel categories rates for international mail, and there's also a general rise in postal charges. The Outwards QSL Bureau postage bill will increase by between $1,200 and $1,500 per year. The Outwards Bureau is still being run entirely by unpaid labour. However the Inwards Bureau is a different matter. As members appear no longer prepared to supply sufficient volunteer labour it is now necessary to put it on a commercial basis. We are unable to pay full commercial rates but a major radio club will undertake this onerous task for a payment. Added to this is the setting up and initialisation of about $3,000 worth of computer equipment needed to run the bureau efficiently. The WIA Victorian Divisional Council — your elected representatives — is sure this Division will continue to attract a good level of membership despite the increase in membership subscription levels.

'5/8 WAVE'

ALL went well despite shaky start

Jennifer Warrington VK5ANW
59 Albert St
Clarence Gardens 5039

Our Clubs' Convention on the weekend of 7th - 9th April, was a most successful event, despite the very shaky start. There was a great deal of panicking done when, three hours before the weekend was due to start, we discovered that we were not booked at the venue! Thanks to prompt actions of Bill and Gill Wardrop, we were able to use Ridgehaven Primary School, which was considered by all to be a very good alternative venue. It was a bit harder on Gill and the ladies who had to cater in more difficult circumstances, but who did a magnificent job nonetheless. Although we were disappointed not to see more Country Members, perhaps it was just as well, in some respects, those that did attend were accommodated at the home of Rowland and Pam Bruce.

Bill Roper VK3ARZ, our Federal Secretary/ Manager, was our Guest of Honour for the weekend and was very informative, both throughout the weekend, and particularly at the informal Question & Answer session that he held on the Saturday night. Our grateful thanks to all those who helped to "save the day" and to make the weekend such a success. Clubs represented were, Adelaide Hills (VK5s KGS & RG), SA ATV Grp (KTV, ACF & WA) South Coast (KAK), Elizabeth (ZSV), Moonta Scouts (BL), 2nd Adelaide Scouts (Peter Koen), Lower Murray (JP & ABW), ACBRO (Brian Harrison & Bob Kay), SAPUG (RA) Port Adelaide (BJM) & Alice Springs (VK8KRX)

A corrected copy of the minutes, also a Federal Convention report, will be sent out to all clubs in the near future. Incidentally, we now have a position on Council called "Convention Co-ordinator". (Yes, you guessed it, you'll be able to blame me if things aren't booked and don't run like clockwork next year!)

VK5 Clubs Convention Sat 8th April barbecue lunch. Lto R: John VK5BL (Moonta Scouts), Gordon VK5KG (Adelaide Hills), Ian VK5KIA (WICEN Director) and Bill VK5AWM (Treasurer, now Federal Councillor).

WELCOME..... to John Mc Kellar VK5BJM, and Ben Broadbent VK5ABE our new members on the Divisional Council. Ben has been co-opted to replace a member who will be leaving us shortly. We hope that they will both enjoy their time on Council. Next month a full list of Council members and positions.

Rowland VK5OU, has volunteered to take over the running of the QSL Buro from John Gough VK5QD. We were sorry to lose John's services and thank him for the time and effort he and his family put into it. I understand that Rowland made the sudden decision after hearing that a group of young ladies had offered to help sort the cards! (Thanks for taking it on Rowland, whatever your reasons!) THE NEW BOX NO FOR THE QSL BURO IS PO Box 10092, Gouger Street, Adelaide 5000.

OLD TIMERS NOTES

RAOTC 14 MHz QSO Party

Compiled by I Stafford VK3XB for John Tutton VK3ZC who is away overseas at present.

This QSO party took place on 13th March, with CW around 14050 kHz and SSB around 14150 kHz.

Logs submitted indicate that 32 old-timers (only 5 were aged under 70) participated, comprising 17 from VK and 15 from ZL.

Due to the solar flare and the resultant fade-out, operators were somewhat frustrated, but scoring standards were maintained and would have been much higher if there had been greater participation.

Scores:

Call Sign	Points	Mode
VK3JA	880	CW/SSB
VK3KF	800	CW/SSB
ZL2KU	700	SSB
VK3VF	680	CW/SSB
VK7RY	560	CW/SSB
VK3NV	560	SSB
VK2AHU	560	CW/SSB
VK2AKE	455	CW
VK3AMB	300	CW/SSB
VK3ZC	175	CW
VK2KA	90	SSB
VK5RK	45	CW/SSB

New Zealand stations preferring to submit unscored logs were: ZL4AI, ZL1CD, ZL4DU, ZL1VX, ZL3JF, ZL3BJ, ZL1LR, ZL2AB, ZL2AT and ZL4ID. We thank them for their participation.

Next QSO parties are scheduled for:
Monday 7th August on 80 metres.
Monday 14th August on 40 metres.
Details are in the OTN Magazine Number 5.

It would be great to have a couple of hundred or more participants. Let's show these "young squirts" what we can muster!!!

SILENT KEYS

Frank Shiells VK3CAK

We regret to announce that Frank passed away at Easter this year following a short period of illness.

Frank became interested in the hobby in later years and was a keen and regular member of the Tuesday morning group at Moorabbin Amateur Radio Club.

While interested mainly in HF and DXING he spent considerable time on the road in his caravan with the RACV Caravan Club of which he was a life member operating portable.

The VK3 Division forwards its condolences to Frank's wife and family.

Henry Pearce VK3EN

Henry Robert J. Pearce VK3EN was the father of Melbourne's Metropolitan Fire Brigade (MFB) radio network.

He joined the MFB workshops staff in 1924 after leaving 3AR where he assisted with the installation of their transmitter in a 'Beckett Street, Melbourne.

Before that he worked for some years in the electrical workshop of Oliver J. Nilsen.

During 1924 the MFB obtained permission from the Radio Department to experiment with radio as a means of communication. A licence was granted with the callsigns of 3EH and 3EJ Portable.

Henry wrote an article "Radio and Electronics in the Brigade 1924-71" which was published in the MFB magazine.

The article has a sub-heading 'MFB First to Equip Applicances with Radio in Australia'.

The MFB workshops had to build its own equipment - transmitters, self excited oscillators with a power of 25 watts, and receivers.

It was found that more transmitter power was necessary for reliable working so the Radio Department granted an increase in power to 100 watts.

At about this time Henry took out his own amateur station callsign VK3EN.

The MFB was assigned the callsign VKD until 1971, when it switched to UHF, and it has been VKN8 since.

Those who saw Henry on the job repairing the MFB radios used to say he knew every radio by its first name. He knew their previous faults and particular quirks.

This intimate relationship between man and radio came about because the MFB workshops built their own equipment up until 1971 when commercial UHF gear was used.

He was held in high esteem by those in the MFB from the members of the board of management and down through the ranks of firefighters.

Henry lived for many years in Cromwell Street, Caulfield, where his backyard radio mast and antennas were a landmark.

He homebrewed a lot of his early gear and antennas. Henry was a stalwart on the 160 metre net in Melbourne - some would say the net was his life.

The mobile antennas he built for the 160 metre band were well known, and most likely a carry over from his MFB days when the Brigade operated on 180 metres at the top end of the broadcast band.

The antennas included helical whips and loaded whips. Henry broke his hip while bending metal for an antenna and it appeared he would be confined to a wheelchair.

However through determination he got back on his feet again. Later he suffered an electrical shock which caused a deterioration in his eyesight.

The agile and active old timer remained active in the hobby until the end and had a keen interest in receiving Amateur TV, and listening to Hi Fi music.

Henry Pearce, a pioneer in the field of mobile radio and well liked decent chap, became a silent key on February 8, 1989. Sincere condolences to his son David, family, and friends.

Jim Linton VK3PC.

Silent Keys for June

We regret to announce the recent passing of:

Mr H T W Griffiths	VK2FO
Mr T Allan	VK2DAX
Mr N Ericsson	ex-VK2MF
Mr Frank Shiells	VK3CAK
Mr Reg Carter	VK5ACQ
Mr J G Denny	VK6NT
Mr R G Stitfold	VK6RS
Mr J Klinge	VK6AKL

ABC Radio National Early Wireless Programme

The Social History Unit of the ABC is currently running an eight part series of Australian Radio stories. It is broadcast each Sunday on Radio National at 1.30 pm and repeated on Thursday on regional stations at 7.30 pm.

Entitled "Bright Sparks" the series started on May 7th and will end on June 25th.

Stolen Car Foxhunts

A vehicle tracking system is the latest suggestion aimed at reducing the rising number of car thefts in Australia.

New South Wales police have advertised for companies interest in producing a radio transponder suitable for use in such a system.

The transponder needs to emit a signal which can enable police to pin-point stolen vehicles within a 50 meter radius.

HAMADS

TRADE ADS

RADFAX2: Hi-Res weather fax, morse & RTTY receive program for IBM PC/XT/AT on 36ØK S.25" floppy & full Doc. Need CGA, input port, SSBhf FSK/Tone decoder. Has re-align auto-start view save print. Also "RF2HERC" same as above but for hercules card, and "RF2EGA" for EGA card (64Øx35Ø mode.) Programs are $30 each + $3 postage ONLY from M. Delahunty 42 Villiers Street, New Farm 4ØØ5 Old. PH. (Ø7) 358 2785.

AMIDON FERROMAGNETIC CORES: For all receiver and transmitter applications. Send large SASE for data and prices to: RJ & US Imports, Box 157, Mortdale NSW 2223. Closed during August. (No enquiries at office please...11 Macken St, Oatley.) Agencies at: Geoff Wood Electronic Components, Lane Cove; Webb Electronics, Albury; Electronic Components, ACT; Truscott Electronics, Vic; Willis Trading Co, WA; Associated TV Service, Hobart.

FOR SALE - ACT

ICOM IC 751 HF Transceiver with built in power supply, high-stability crystal unit, microphone and manual. QTHR or phone Barry (VK1ABR) on (062) 865652. Price negotiable.

FOR SALE - NSW

DEAD CRO HP140A DUAL-TRACE too good to junk, too hard to fix. Yours if you come and get it. Stephen VK2ESG QTHR Ph: (046) 819675

DSE COMMANDER 2M, goes well plus wattmeter, 5/8 whip, gutter and dash mounts - $200 Chris VK2ZCS (046) 571563.

AMATEUR RADIO MAGS. Oct 1977 - Aug 1987 incl. and 11 odd issues from 1959 to 1966 from a deceased estate. I would rather get them a good home than pulp them! $20 the set, and 20¢ ea. for the odd copies + postage. VK2DYP, Frank, QTHR (02) 4525172.

DSE COMMANDER 2M TXVR in good working order $220 Rick VK2KRH (048) 711067 after 5pm. Licensed amateurs only.

13.8V 10A power supply $80: Emtron EAT300 antenna tuner $150; Tokyo Hy-Power HL-2ØU 70cm power amp $200; Jumbo HP-50v 144MHz linear amp. $175; Colrose PBC-III colour bar generator $100; Goodwill GOS955 5MHz CRO c/w Coline probe $225; Tech TE20D RF signal generator 120kHz-500MHz $40; Tech TE22D AF generator 20Hz-200kHz $40; Osker Block SWR200 power meter $100; NLS FM-7 freq counter $100; NLS LM-350 digital multimeter $50; Daiwa PS120M 3-15V 10A power supply $80; Corona HP-80VDX GaAS FET 144MHz linear amp $175; Tokyo HY-Power HL-82V 144MHz 80W linear amp $200; BK Precision Mod 830 auto range capacitance meter $75; BK Precision Mod 2800 digital multimeter $80; Kaise SK9000 EHT probe 45kV $30; Yaesu FP80A 13.8V 4A power supply $50; Trio DM-801 GDO $80; Yaesu FT-77 HF transceiver $600; Yaesu RSM-2 mobile ant base c/w RSE-2A 144MHZ antennas $45; KDK FM-2033 144MHz mobile transceiver $200; Yaesu FRG-7 HF receiver $120; Yaesu FT-208R 144MHz handheld $200; Toyo Meter T-430 144-430MHz watt meter $50; Ramsay CT-70 600 MHZ freq counter $200; BK Precision E-200D 100 kHz-200MHz signal generator $175; BWD 539C 20MHz dual trace CRO c/w Coline probe $500; Tech TE15 TRADIPPER GDO $80; BK Precision 510 transistor tester $30; BK Precision DP50 digital probe $20; Tokyo Hy-Power 45W 70cm amp $200; ICOM IC-4E 70cm handheld c/w spare batt pack. All equipment in gd condition. Deceased Estate VK2LZ Mrs Bischoff (02) 4385791.

YAESU FT101 Txr complete with Manual and Circuit $250. All boards, valves and Fan OK. Requires new Power transformer. Will pack. Freight extra. Lewis VK2LS, QTHR or (065) 820424.

FT290R with extras. 2M 30W linear all $550; new transmitting tubes : RS1016 (New cost $550) - make an offer; QY250 (2X) $50 ea; transistor dipmeter DM4061 0.1÷250MHz also new $80. Andrew (02) 8055463 BH.

KENWOOD TR2500 2M/FM H/H TXVR NICD/ Charg 2/PB25 Recharg batteries SMC-25 SPKR/ MIC Soft/Case Belt/Clip MS-1 Mobile Charger Stand Manuals as new $350 the lot. Manfred (02) 3718854

FOR SALE - VIC

TRANSFORMER 750-0-750 500 mills $40; Dick Smith GP100 Printer $150; Realistic Pro-31 Scanner with Nicads $150. VK3ATK (03) 7988510

ICOM 471A 70cm all mode 30 watt $900 Roger VK3XRS (051) 568291.

ICOM IC2A 2M hand held c/w spare BP3 battery pack, ext MIC/SPKR and handbook EC $220 Steve VK3JY QTHR.

SPEECH synthesiser AEM4505 ASCII code to speech synthesiser for IBM compatible. With sample BASIC software $95 VK3MZ Ringwood (03) 8763643.

MATCHED paid of 572Bs used sparingly over the last year in Yaesu FL2100Z on reduced power. Usage would not have exceeded 200 hours $200 the pair Roth Jones VK3BG (03) 7253550.

COMPONENTS, amplifiers, radio/PA equipment. Cable, tools, assorted hardware, large collection of records (78rpm & LP) (03) 836 7097. Estate late Max Hull VK3ZS.

BOOKS; Some collectors items; ARRL Handbooks 1977, 78, 80; Bound copies QSTs 1939-1954 except 1952; RSGB Handbook 3rd edition; Radio Handbook USA 1975 12th edition, also 13th edition (Editors & Engineers); US Callbook 1984; Basic Television, Bernard Grob 3rd edition 1964; Electronic Calculators, H Edward Roberts 1974; Guide to Mobile Radio, Leo G Sands 1958; How to Use Your VOM/ Multitester or DVM, Louis M Dezettel 1981; Principles of Electricity Illustrated, Roy C Norros 1947; Standards for the Technical Equipment and Operation of Medium Frequency Broadcasting Stations, Aust Broadcasting Control Board 1968; Suppressing Radio and Television Interference, BL Morley 1956. Television Analysing Simplified, Milton S Kiver 1958; Television Interference, Remington Rand Lab of Advanced Research 2 Ed, undated but with reprints of articles published 1946-1953; Television Simplified, Milton S Kiver 1954; Transistors and Crystal Diodes, B R Bettridge 1954; Transistor Manual, Ed JF Cleary GEC 6th Ed 1962; Transistor Projects Vol 1, Forrest M Mims 1977; Transistor Substitution Handbook, Howard W Sams Staff 1972; WIA Book Vol 1, Ed BR Bathols; Wireless World Annual, 1976; Large collection photography books; Estate late Max Hull VK3ZS (03) 8367097.

DAIWA CL-66 Antenna Coupler with manual $175; set of HF antenna handbooks by "CQ", "73" and "ARA" $6; VHF antenna handbook by "73" $3; "Zeppy Vertical" 2 MX antenna with 50 OHM co-ax $15. I Stafford VK3XB (03) 2884686 QTHR.

DECEASED Estate equipment: Kenwood antenna coupler AT230 with manual $200; Daiwa antenna coupler CL-66 with manual $175; set of antenna handbooks (HF) by "73", "CQ", "ARA" $6; Antenna handbook (VHF) by "73" $3. I Stafford VK3XB (03) 2884686.

KENWOOD HF transceiver TS120S with mic and manual good working order $600; mounting bracket $25. Alan VK3ADK (03) 3377332 QTHR.

EMOTATOR 102 Rotator (unused) $100; BC221-AK freq meter $20; AWA AF osc 20Hz-200kHz $40; Sig gen 50 k/50M, 1u-1V $100; RF OSC 140k-24M (HB) $20; tape recorder Truvox 3sp rtr $25; Marconi cct mag meter (Q) VHF $150. Oscilloscope Trio CS - 1560A dual-trace DC - 15 MHz $400. Selsyns (unused) 2 pr $20 ea; power valves - various 6JB6 6LQ6 807 809 813 829 832 SYD. VK3ASC QTHR (059) 711861.

Since there was only one contribution we decided to omit Over To You this issue.

YAESU FRG-7 EC $300; Yaesu FRG-7700 EC $475. AH (052) 481410.

FT 757 GX + Mic + Handbook $1300; 2 MDX antenna 16 elemt Yagi Gain17db $130. Franz VK3DVD (03) 7267137.

ICOM 720A HF all band transceiver + IC PS15 power supply, mic, batt, charger, instr manuals, circuit layout $1200. VK3EIM (03) 2117219.

DSE Commander 2M FM transceiver in GWO $200. VK3TCH QTHR (053) 317425.

FOR SALE - QLD

ANTENNA tuner HF ex Aircraft remote switching adjustable L&C $35; Marconi Mono Sync Decoder suit ATV $20; Genuine coaxial 4-POS switch, coaxial interior, 75Ω N-connectors supplied $30. VK4AIZ QTHR (07) 3915526.

KENWOOD 2M transverter TV502 with book & leads, pair transistors T20A6 for DC P/S (TS520/ 820). Dennis VK4ADY (075) 652226 New QTH.

YAESU FT-101E transceiver; Yaesu FL-2100B Linear; Kenwood AT-200 tuner; Yaesu FT-7 transceiver: Best offers. Brian VK4ST (071) 445720.

VIC20 $100; Leader GDO $75; set Hustler whips $200; TS520S $475; MC50 mike $50; TS530S $700; Electronic keyer $50. Contact Keith (07) 824 0897.

ICOM 730 solid state all band HF transceiver as new condition in original carton c/w manuals and mike, 240V AC/12V DC 200W PEP SSB, CW and AM modes $950 ono; AWA carphone junior VHF transceiver model MR6A 12V DC c/ w mike, GC $50 ono. John VK4AJH QTHR (07) 262 2076 AH, (07) 2525597 Bus.

FOR SALE - SA

METRONIX PSU adjustable 15V 6.3A $150; B&W heavy duty PI-coupler coil assy (2KW) $150; Murch Electronics UT2000 transmatch-coupler 2KW wide-spaced C's roller coil $350; Frequency counter DC-300 MHz oven-controlled $200; 6146's new $25 ea or $45 pair, used $15 ea. Ian Hunt VK5QX QTHR (08) a2596418 Bus, (08) 2501708 AH.

YAESU mobile antennas for 15m, 10m, and 2m incl gutter mount, all in mint condition, used only a few times $60 ONO. VK5KBE (08) 250 7259.

YAESU FT200 and power supply $200; Yaesu FT707 $750; Realistic AX190 receiver $125. Gary VK5DX (08) 370 9196 AH, (08) 230 6339

Brand New Call

Brand new Novice on the bands
Tapping morse with shaking hands;
First contact is quite a mess
(quickly sending QRS);
SENDING OK, no real trick,
But RECEIVING - must be quick.

"UR sigs are 599,
Name is Bill and WX fine;
QTH is in the book
OSL is OK - look;
QRM is coming fast
Sorry, QSO can't last"

"Rig is homebrew, ant is 'v'
Power out is QRP,
Morse is OK, but you see
More at home on SSB"

"Hope to see you down the log,
Licence new - mind all agog,
So I'll sign, TU for call,
73, CL - that's all!"

From Bill Martin VK2COP

STOLEN EQUIPMENT

YAESU two meter hand held, Serial No. 4E382078; also Yaesu FT708R 70cm hand held, Serial No. 2J181463; both stolen from Enmore on 29 March 1989. Contact owner, Peter Jeremy VK2PJ (02) 5503419, Newtown Police, or your local police.

Bus.

YAESU FT730R 70cm FM mobile 10W 10 memories $325; 2M Corona Dengyo low noise GaAs FET preamp $50; Kenwood MC355 noise cancelling mic 50K $35; All items unused. VK5XW (08) 317576 QTHR.

KENWOOD TS8205 transceiver and Chirnside Five band vertical antenna. VK5VE QTHR (08) 2586070.

FOR SALE - TAS

YAESU FT101ZD exc cond with full service manual and two spare final tubes $800; also speaker/line unit SP901P $50. Ian VK7JY (003) 272011.

WANTED - NSW

REASONABLY late edition of RSGB radio communication handbook will purchase also book or illustrations of waveforms. David Kidd 8 Gosse Ave Dubbo 2830 (068) 818906.

WANTED - VIC

TH3 MK3 good condition, details and price to Bob QTHR VK3EFD (03) 3742416.

WIRING instructions to modify Siemens Model 100 MK2 for RTTY use, postage expense returned. Vic Lonsdale VK3DND Tambo Crossing Vic 3893.

CIRCUIT and tune up info for AWA RT80 VHF hi band transceiver, appreciate any help, will pay costs. (053) 317425 VK3TCH QTHR.

ICOM IC R70 communications receiver, must be in GC, would also consider Drake R4C. (053) 358083 Daryl VK3VXQ.

WANTED - SA

BUTTERNUT vertical antenna or info and dimensions to build one. Gary VK5DX (08) 3709196 AH, (08) 2307199 Bus.

CIRCUIT, data, calibration chart etc, RAAF TA1010 signal generator (Philips), any info, please help, all costs, photocopy paid by QTHR VK5SJ (08) 295 6751.

WANTED - QLD

DOWKEY coax relay type 77-114 12 volt, two RCA outputs, ex Old, WIA Ballot mid 1970. VK4JH 28 Macrossan St Townsville Qld (077) 712285.

WANTED - NT

INTELSAT (C-Band) TVRO system, cash or trade ICOM IC-751, w/cash adj. Eddie De Young VK8XX (089) 513138 BH, (089) 527560 AH, Box 912 Alice Springs NT 0871.

ADVERTISER'S INDEX

ATN Antennas 56
Blamac Pty Ltd 33
Dick Smith Electronics ..... IFC
Emtronics Australia 52
Electronics Today International ..... IBC
Emtronics 44
Ian J Truscott's Electronic World 9
Icom ..... OBC
Kenwood Electronics Australia P/L 41
Silcon Chip Publications 38
Stewart Electronic Components 55
TSM Ideal Pty Ltd 54
WIA NSW Division Novice Licence 36
Wilkie Trading Co 43

TRADE ADS
RJ & US Imports 62
M Delahunty 62

HAMADS

Please Note: If you are advertising items For Sale and Wanted please use a separate form for each. Include all details; eg Name, Address, Telephone Number (and STD code), on both forms. Please print copy for your Hamad as clearly as possible.

*Eight lines free to all WIA members, ninth line for name and address Commercial rates apply for non—members. Please enclosed a mailing label from this magazine with your Hamad.

*Deceased Estates: The full Hamad will appear in AR, even if the ad is not fully radio equipment.

*Copy typed or in block letters to PO Box 300, Caulfield South, Vic 3162, by the deadline as indicated on page 1 of each issue.

*QTHR means address is correct as set out in the WIA current Call Book.

*A courtesy note will be forwarded to acknowledge that the ad has been received.

Ordinary Hamads submitted from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re—sold for merchandising purposes.

Conditions for commercial advertising are as follows: $22.50 for four lines, plus $2.00 per line (or part thereof) Minimum charge — $22.50 pre—payable.

State: .....

❑ Miscellaneous
❑ For Sale
❑ Wanted

Name: .....

Call Sign: .....

Address: .....

.....

ICOM'S NEW HF TRANSCEIVER HAS MORE ARROWS THAN ANY OTHER HF TRANSCEIVER.

Frequency synthesis by Direct Digital Synthesizer which provides low noise floor and fast lock up.

Built in controller for automatic antenna tuning. Compatible with AH-3 HF automatic antenna tuner.

Twenty six memory channels. Channels 23 and 24 memorise both receive and transmit frequencies for split operation.

Semi break-in with adjustable delay timing and sidetone for CW operation.

Band stacking register (identical to that of IC-781).

105 dB dynamic range.

Three scans: programmed, memory and selected mode memory.

Automatic gain control (fast/slow).

20 dB receiver attenuator.

Switchable tuning steps, 20Hz, 50Hz, 1KHz and 1MHz.

And one highly advanced feature that no other brand of transceiver will ever have. Call Melbourne on (03) 529 7582 or interstate on (008) 338 915 for your nearest Icom stockist.

10 dB receiver preamplifier.

General coverage receiver 30KHz to 33MHz. (500 KHz to 30 MHz guaranteed.)

Built in CI-V system for computer control (CT-17 required) and transceive function.

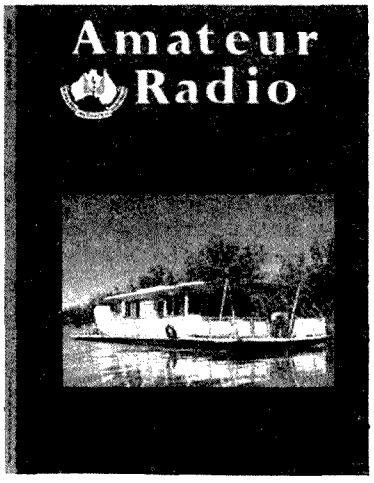
100 watts output on USB, LSB and CW transmitting and receiving. 100 watts FM and 40 watts AM with optional unit.

Amateur Radio

JOURNAL OF THE WIRELESS INSTITUTE
OF AUSTRALIA
VOL 57, NO 7, JULY 1989

• Logic Probe • Houseboat on Six • Designing QSL Cards •

Amateur Radio



Cover

"Liba Liba 4" houseboat mobile on the Murray River. A 'Slim Jim' for two metres is located abaft the six metre quarter wave vertical antenna. We liked the nature of the antenna support. See "Houseboat on Six" by Richard Cortis VK2XRC on page 18.

Deadlines

	Editorial	Hamads
August	10/7/89	12/7/89
September	7/8/89	9/8/89
October	11/9/89	13/9/89

TYPESETTING : Redfords Media
25 Glenferrie Rd
Malvern 3144
Tel: (03) 500 0377

PRINTING: Industrial Printing
Richmond

MAIL DISTRIBUTION: Polk Mailing Co.
PO Box 140,
Collingwood,
Vic. 3066
Tel:(03) 417 5161

Special Features

Designing a QSL Card - Ken Matchett VK3TL 20
Houseboat on Six - Richard Cortis VK2XRC.....18
Interference ,Spectrum Pollution and Reception Problems - Jim Linton VK3PC 23
Unusual Ship Visits Australia - Ron Churcher VK7RN .19
Federal Council News Release 4

Technical Articles

An Antenna Mount for Poles - Colin Mackinnon VK2DYM.....15
A Simple Logic Probe - Mike Groth VK4CDG.....13
Radiation Immunity in Domestic Equipment - Hans Ruckert VK2AOU 9
Two Metre Mobile Installation Tips - Gil Griffith VK3CQ 14

Regular Features

Advertisers' Index 64
ALARA 38
AMSAT Australia 34
Awards - HMCS Protector Award 52
Club Corner 53
Contests 43
John Moyle 43
Ross Hull 43
Novice 43
RD 1989 Rules 45
WAEDC 44
West Aust. Annual SSB & CW 47
Divisional Notes 50
VK2 Bulletin 50
VK3 Notes 50
VK4 Notes 50
5/8th WAVE 51
Editor's Comment 2
Education Notes 36
Hamads 62
How's DX? 37
Intruder Watch 27
Morseword No. 28 48
Murphy's Corner (errata) 48
Over to You - Members Opinions 58
Pounding Brass 31
QSL's of the WIA Collection 25
Silent Keys 56
Spotlight on SWLing 26
Stolen Equipmen 2
VHF-UHF : An Expanding World.....28
WIA Directory 2
WIA News 6
WICEN 42

Amateur Radio

Published monthly as the Official Journal by the Wireless Institute of Australia, founded 1910. ISSN 0002 - 6859. Registered Office: 3/105 Hawthorn Road, Caulfield North, Vic 3161. Telephone: (03) 528 5962.

Inquiries and material to the Editor: PO Box 300, Caulfield South, VIC 3162.

Advertising: Ann McCurdy (03) 528 5962

Material should be sent direct to PO Box 300, Caulfield South, Vic. 3162, in accordance with the deadline date shown on page 1 of this issue.

Acknowledgement may not be made unless specifically requested. All important items should be sent by Certified Mail. The editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying a reason.

EDITOR'S COMMENT

Serendipity and the Do-It-Yourselfer

As I have mentioned in the last couple of issues, we have high hopes of cruising on and operating from several usually-dry salt lakes in VK5, before they evaporate back to their usual state. One prerequisite has already been achieved; I can now go away for a month or two and leave AR in the capable hands of our new Managing Editor VK3IY! Many other prerequisites still need attention. One of these is completion of the wind-driven generator to be mounted on the trailer-sailer, hopefully to provide at least some of the 12 volt power to keep us on the air. It is, like most of the VK3ABP equipment, home-brew. The 32 pole permag alternator (laminations from an old refrigerator) is direct-driven (no gearbox) by a one metre diameter three-bladed propellor (should I say wind-turbine?), whose blades have an outer skin which was once many aluminium cans!

More and thicker aluminium was needed for the casing to weather-proof the alternator. All I could find in my capacious junk box (in effect, the whole shack!) was too thick. Then I found, out in the garden shed, a discarded piece of heater-flue casing which looked just right; but was it aluminium? It was fairly soft sheet metal, non-magnetic, easy to cut, but it weighed too much to be aluminium. Obviously zinc. How would it go, wrapped around the aluminium end plates of the alternator? Corrosion? Where do zinc and aluminium come in the electropotential table? Where is that table? ARRL Handbook? No. RSGB Ditto? No. G3VA's "Amateur Radio Techniques"? No. (These were all books on the shack shelf.) The ETI "Radio Experimenter's Handbook" edited by VK2ZTB? No. But, isn't that an interesting SSB generator, using a polyphase network? Something very similar in the G3VA book. Might be the way to go for my next mobile HF rig.

Come on, Bill! Back to reality! Just think of all those lakes evaporating at two metres a year! (Hopefully much less in the winter, but there's no time to waste!) Zinc, remember! Will it be OK in contact with aluminium? And don't forget that editorial you have to write! One of these days you can write up the wind generator for AR, but not yet. And then, of course there's that article on the VK2ABQ beam. Harry, VK2OQ, sent in all that information in response to your invitation in June 1988. Combined with the 3ABP experiences it should have been done months ago! Sorry, Harry, it's still coming, but as you see there still isn't a lot of spare time! But with 3IY in the chair, the situation is improving.

Eventually I found the electropotential table in an encyclopaedia in the lounge. Zn and Al are adjacent, but there's still 900 mV between them. Zn of course plates well on to Fe (only 320 mV); so does Cd (40 mV). Maybe I should rush off and buy (?) some 22 gauge aluminium. But the zinc might be OK with a good coat of paint. In the meantime, haven't we found a lot of interesting things to think about? Serendipity? That's when you find something good while looking for something else; the ancient princes of Serendip were good at it. Serendip? Try Ceylon, Sri Lanka. 4S is the prefix...and what about that editorial that had to be written? It's done!

73.
Bill Rice VK3ABP
Executive Editor

Stolen Equipment

ICOM u2A two metre hand-held transceiver, Serial No. 2261. Stolen from Revesby Workers Club on 1 May 1989. Contact Owner, Fred Smith VK2DLE phone (02) 778206, Revesby police, or your local police.

Kenwood TR2600A hand-held two metre FM transceiver Serial No. 5060895, including rubber duckie antenna; Kenwood MS1 Mobile mount and Super Cheeta 27 MHz AM/SSB transceiver, Serial Numbers unknown. Stolen from car on evening of 30 May 1989. Contact owner Bob Allan VK5BJA.

WIA DIRECTORY

Federal Council

Kevin Olds	VK1OK	ACT Councillor
Peter Jeremy	VK2PJ	NSW Councillor
Peter Mill	VK3ZPP	Victorian Councillor
David Jerome	VK4YAN	Queensland Councillor
Bill Wardrop	VK5AWM	SA Councillor
Neil Penfold	VK6NE	WA Councillor
Joe Gelston	VK7JG	Tasmanian Councillor

Federal Co—ordinators

Amsat	Graham Ratcliff	VK5AGR
Awards Mgr	Ken Gott	VK3AJU
Contest Mgr	Frank Beech	VK7BC
Education	Brenda Edmonds	VK3KT
EMC	Hans Ruckert	VK2AOU
Historian	John Edmonds	VK3AFU
Intruder Watch	Bill Horner	VK4MWZ
Int'l Travel Host Exch	Ash Nallawalla	VK3CIT
QSL Mgr (VK9, VKØ)	Neil Penfold	VK6NE
Standards & FTAC	Rob Milliken	VK1KRM
Tapes (Federal News)	Bill Roper	VK3ARZ
	Ron Fisher	VK3OM
Videotape	John Ingham	VK5KG
WICEN	Bill Wardrop	VK5AWM

VK1RH

Executive

Peter Gamble	VK3YRP	Federal President
Ron Henderson	VK1RH	Vice Chairman
Brenda Edmonds	VK3KT	Federal Education Officer
Bill Rice	VK3ABP	Editor Amateur Radio
George Brzostowski	VK1GB	Federal Executive
Kathy Gluyas	VK3XBA	Federal Treasurer
David Wardlaw	VK3ADW	Immediate Past Federal President

Executive Office

Bill Roper	VK3ARZ	General Manager & Secretary
Ross Burstal	VK3CRB	Deputy General Manager
Peter Styles	VK3EBP	Administration
Ann McCurdy		Advertising & Administration
Helen Wageningen		Membership & Circulation
June Fox		Accounts & EDP
Earl Russell	VK3BER	EDP Consultant
Ron Fisher	VK3OM	Librarian

DIVISIONS

VK1 — ACT Division

GPO Box 600, Canberra ACT 2601

Officers		
President	Ted Pearce	VK1AOP
Secretary	Jan Burrell	VK1BR
Treasurer	Ken Ray	VK1KEN

Broadcasts: 3.570 MHz; 2m ch 6950; 70cm ch 8525; 2000 hrs Sun

Fees	
(City) Full (F)	$44.00
(City) Assoc (A)	$44.00
(Country) Full (C)	$44.00
(Country) Assoc (T)	$44.00
Pens. (G)	$33.00
Stud. (S)	$31.00
Family (X)	$25.00

VK2 — NSW Division

109 Wigram St, Parramatta NSW 2124
(PO Box 1066 Parramatta)
Phone (02) 689 2417

Officers		
President	Roger Henley	VK2ZIG
Secretary	Tim Mills	VK2ZTM
Treasurer	David Horsfall	VK2KFU

Broadcasts: (R Denotes repeater) Times 1100 and 1915 on Sun; 1.845 MHz AM, 3.595 AM/SSB, 7.146 AM (1100 only); 28.320 SSB, 52 120 SSB 52.525 FM; 147.000 FM(R) 438.525 FM(R); 584.750 (ATV Sound) Relays also conducted via many repeaters throughout NSW.

Fees	
F	$41.50
A	$39.50
C	$41.50
T	$39.50
G	$34.50
S	$22.50
X	$24.50

VK3 — Victorian Division

38 Taylor St, Ashburton Vic 3147
Phone (03) 259 9261

Officers		
President	Jim Linton	VK3PC
Secretary	Barry Wilton	VK3XV
Treasurer	Rob Hailey	VK3XLZ

Broadcasts: 1.840 MHz AM, 3.615 SSB, 7.085 SSB, 147.250 FM(R) Mt Macedon; 147.225 FM(R) Mt Baw Baw; 146.800 FM(R) Mildura; 438.075 FM(R) Mt St Leonard 1030 hrs on Sun

Fees	
F	$50.00
A	$45.00
G	$38.00
S	$27.00
X	$27.00

VK4 — Queensland Division

GPO Box 638, Brisbane Old 4001
Phone (07) 284 9075

Officers		
President	David Jones	VK4NLV
Secretary	John Aarsse	VK4QA
Treasurer	Eric Fittock	VK4NEF

Broadcasts: 3.605 MHz, 7.118, 14.342, 18.132, 21.175, 28.400, 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday; Repeated on 3.605 & 147.150 MHz, 1930 Mon

Fees	
F	$45.00
A	$45.00
C	$45.00
T	$45.00
G	$36.00
S	$27.00
X	$27.00

VK5 — South Australian Division

Thebarton Rd, West Thebarton SA 5031
(GPO Box 1234, Adelaide SA 5001)
Phone (08) 352 3428

Officers		
President	Don McDonald	VK5ADD
Secretary	Hans van der Zalm	VK5KHZ
Treasurer	Bill Wardrop	VK5AWM

Broadcasts: 3.550 MHz, 14.175, 28.470, 53.100, 147.000 FM(R) Adelaide; 146.700 FM(R) Mid North; 146.900 FM(R) South East; ATV Ch 34 579.00 Adelaide; ATV 444.250 Mid North; (NT)3.555, 146.500, 0900 hrs Sun

Fees	
F	$44.00
A	$44.00
C	$44.00
T	$44.00
G	$35.00
S	$26.00
X	$26.00

VK6 — West Australian Division

PO Box 10, West Perth WA 6005

Officers		
President	Alyn Maschette	VK6KWN
Secretary	Pending	
Treasurer	Bruce Hedland - Thomas	VK6OO

Broadcasts: 146.700 FM(R) Perth, at 0930 hrs Sun, relayed on 3.560 MHz, 7.075, 14.110, 14.175, 21.185, 28.485, 52.080, 438.525(R) Country relays 3.582, 147.350(R) Busselton 146.900(R) Mt William (Bunbury) Broadcast repeated on 3.560 at 1900 hrs.

Fees	
F	$42.00
A	$42.00
C	$42.00
T	$42.00
G	$35.00
S	$22.00
X	$23.00

VK7 — Tasmanian Division

PO Box 1010, Launceston TAS 7250

Officers		
President	Mike Wilson	VK7ZWW
Secretary	Bob Richards	VK7NRR
Treasurer	Peter King	VK7ZPK

Broadcasts: 146.700 MHz FM (VK7RHT) at 0930 hrs Sun relayed on 147.000 (VK7RAA), 146.750 (VK7RNW), 3.570, 7.090, 14.170, 52.100, 144.100 (Hobart) Repeated Tues 3.590 at 1930 hrs

Fees	
F	$42.00
A	$42.00
C	$42.00
T	$42.00
G	$38.00
S	$24.00
X	$22.00

VK8 (Northern Territory) is part of the VK5 Division and relays broadcasts from VK5 as shown (received on 14 or 28 MHz).
Note: all times are local. All frequencies MHz.

FEDERAL COUNCIL NEWS RELEASE

1990 MEMBERSHIP FEES

The Divisional Councillors and Executive of the WIA met in Melbourne over the weekend of 17th and 18th June 1989. The major item for consideration was the issue of the 1990 budget, and the level of member subscriptions.

The Delegates were mindful of the responses to the April Convention resolution which, if adopted by all Divisions, would have meant a uniform subscription of $70 per member.

An extensive examination of costing of all services was undertaken.

This effort to find further economies led to a recognition that the current level of services, and the current level of obligations being imposed upon the WIA, cannot be reduced.

It must be borne in mind that the WIA has a specific role to perform as the body representing radio amateurs in Australia. It must perform that role in an environment which requires well-informed and immediate responses to approaches from the Federal Government, Divisions and individual members. There is a need for a capacity to respond within acceptable time limits, and the days when volunteer reaction was tolerable, are gone.

In addition, the WIA has had to meet increasing requirements from the Corporate Affairs Commission, just like any other incorporated organisation.

This has meant that dependence on casual, even rostered, volunteers has ceased to be an option. Many of the tasks are beyond the capacity of casual helpers. The WIA has not been over-endowed with successful yuppies from the fast lane.

The people acting for the WIA on a day-to-day basis must be competent in a number of fields. There is a need for diplomacy; an understanding of how government works; competence in office management; familiarity with business practices; and skills in public relations. People no longer accept waiting a fortnight for an answer.

The stark facts are that -

(a) there are new workloads being imposed by outside agencies;
(b) more efficient responses are required from the WIA by government, members and industry;
(c) for the first time there has been a proper recognition of what must be done;
(d) for the first time there has been a proper analysis of c o s t - ing;
(e) we had become accustomed to thinking that we were getting proper sevices while remaining seriously under-funded in the past;
(f) we had not previously recognised what had to be done;
(g) we cannot continue to live in a fool's paradise;
(h) reserves are being depleted by a succession of past d e c i - sions to keep subscriptions to artificially low levels; and
(i) the WIA has to have its services performed by employees.

The fact is that our Executive office staff have been working inordinately long hours. The burden is really quite horrific.

For example, the Executive office receives an average of 70 items of correspondence each day. Sometimes this has risen to over 120 items in a day. In addition, there are the innumerable telephone enquiries. Someone has to respond!

Many come from members. Some of the enquiries require a considerable time for response. For instance, even telephone calls about reciprocal licensing with overseas countries; or about customs duties and by-laws applicable to items being brought from overseas, or on what should be done if complaints are made about RFI, are all legitimate enquiries. In a further category are the administrative matters raised by members, like changes of address, notifications of non-receipt of AR, and some which should even be addressed to DoTC. Yet telephone enquiries alone take up about one man-day per week!

In a related area is the task of keeping records consistent with what the DoTC has. Some of the problems are imposed on the WIA by defective information received, and by a need to ensure that DoTC data is meaningful, for example VK0 sometimes shows up as VKO; or VK1 is shown as VKI. Such errors seem to be of no significance to DoTC, but play havoc with our data base which also needs to identify licensed members by callsigns.

This is not a small task, and now includes many changes of callsigns as people up-grade, and one has to identify so-called new licensees with existing holders of former licences.

Then there is the need to service advertisers in AR. This requires someone to contact advertisers, check on copy of advertisements, chase up outstanding accounts. Apart from the commercial aspect of AR, there is the administration involved in the production and distribution of copies. Someone has to do the costing, to co-ordinate delivery of material to printers, to arrange for posting - even to decide on weight and cost of paper. Yes, someone has to do it - and to do so as well as possible.

We are now rapidly approaching the stage where examination devolvement will take place. Someone has to prepare for that task, and to do so with credibility.

However, a vital role is that of representing the interests of amateurs in Australia. This role benefits all amateurs, and it is unfortunate that so many choose not to recognise that, without some organisation resisting the pressure on our bands, we would not have much of a hobby any way.

It is futile and deceptive to say we are "just a hobby".

We may be a hobby, but we are using the resource of spectrum which potentially has a value worth mega-dollars to a government. There is little to stop governments allocating our spectrum to commercial interests. Business would love to have our bands above 2 metres. Political, propaganda agencies and public interest groups are always on the lookout for HF frequencies.

Where would all those who just want to enjoy their hobby, be then?

The cost of this representational role is really quite monumental. One cannot ignore the salary component related to work done in preparation of submissions to DoTC, the IARU and the preparatory work for WARC 92. It may not cost members directly, but one cannot forget the personal sacrifice of individuals who devote their time, often at loss of personal income, by attending meetings with various agencies, various WIA bodies, and in preparation of submissions.

The reality is that the hobby is surviving in an hostile environment. Here in Australia it is not a matter of personal freedom or national security, but it is in spite of domestic deficits, while invaluable spectrum is left out of reach of business, and out of government revenue raising.

Amateurs need more than just a magazine and a QSL facility!

In an effort to meet all these requirements, our staff have had to make great personal sacrifices. Sometimes this has led to health breakdowns. One cannot keep working over 80 hours a week in the office. At the moment, Bill Roper does just that, yet the WIA can only barely afford to pay him for 40 hours of work. The rest is done at personal sacrifice. Ross Burstal has also extended his work hours to significantly exceed his paid time.

Therefore, there is no doubt that there is a workload which is being met with inadequate resources.

These issue were examined, addressed and evaluated by the Councillors and Executive. With much concern for all our members, but bearing in mind that there are no immediate options, the delegates came to pass the following motion:-

This Convention affirms:

1. That the Executive component of the 1990 fees shall be $47, with an additional levy of $2 for international representation:

2. There will be a Concessional Rate available at a discount of 20% for the categories defined below:-
   a: Existing Pensioner members;
   b: Members in receipt of a full Pensioner Health Benefits Card;
   c: Needy members, whose financial circumstances are not better than those of persons eligible for a full pensioner benefit card, upon application to the relevant Division;
   d: Student members; and
   e: Family members, for second or subsequent members living at the same address. Family members do not receive AR.

3. That the 20% discount be split proportionally between Executive and Divisional Components, except that the discount applicable to members who do not receive AR shall be borne by the Executive.

In summary, the Executive does that which the Divisions tell it to do. The Divisions come to decisions by meeting as a Council. The services are selected by the Divisions. It is a total misnomer to suggest that "Federal", which is really a secretariat doing the Divisions' bidding, is "greedy" or that it acts like some form of governing body.

Those who hold such a view, fail to understand that the Executive is a group of individuals who are doing what the Divisions have charged it to do.

Having settled the question of the Federal fee component, the delegates then turned their attention to the question of a uniform fee for all Divisions.

It was acknowledged that a uniform subscription structure applicable to all Divisions is a desirable and practical necessity. However, it was also accepted that, because the different levels of services offered to their members by individual Divisions is done so at varying levels of cost, complete uniformity is something that can only be introduced over a period of time.

In addition it was recognised that the Divisional component of membership fees can only be set by the individual Divisions, not by the Federal Council. Taking these, and many other points into consideration, the Convention passed the following motion:-

This Convention recommends that, for the sake of uniformity between the Divisions, the Divisional component be set at $16.00.

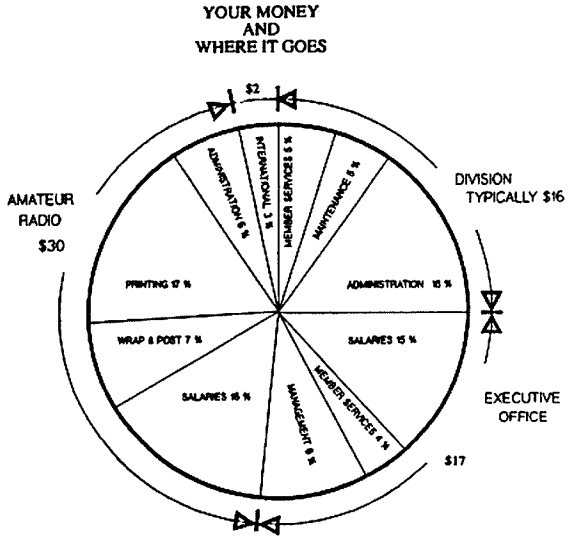
The bottom line of all this means that the recommended membership subscription for the 1990 calendar year will be $65.00, but that some Divisions may actually set a slightly different fee.

A pie chart is shown to give members an idea of just what is involved in this recommended fee structure.

It goes without saying that the Council, Executive and Divisional Councils will continue to examine ways and means of minimising cost to members.

These are hard times, and hard bullets have to be bitten. The delegates have not shrunk from their responsibility upon being fully aware of just what are the risks, demands and costs.
While constructive suggestions are welcome, uninformed comment is not.

With adequate funding the WIA will be able more effectively to fight for the survival and advancement of amateur radio in Australia.



WIA NEWS

Bill Roper VK3ARZ, General Manager & Secretary

Michael Owen, VK3KI, NEW IARU Vice President

The Federal Council and Executive of the WIA is proud to announce that the member-societies of the International Amateur Radio Union (more commonly known as the IARU) have ratified the nomination of Michael Owen, VK3KI, to serve as their Vice President for a five year term.

The election was by unanimous vote of the 75 IARU member-societies who cast the ballots. Michael's election marks the first time that a radio amateur from outside North America has served as a Principal Officer of the IARU, and is therefore a great honour for the Wireless Institute of Australia, and all Australian radio amateurs.

Michael, who presently works and lives in London, England, has been actively involved in IARU affairs for 20 years. He was Federal President of the WIA for four years from 1969 to 1972 inclusive, served as a Director of the IARU Region 3 Association from its inception, and was a member of IARU President Noel Eaton's ad hoc WARC Advisory Committee in the years prior to the 1979 Conference.

At the 1978 Special Preparatory Meeting of the International Radio Consultative Committee (known as CCIR) and at the 1979 WARC, Michael was a member of the Australian delegation, by his nomination from the WIA as representing the Amateur and Amateur-Satellite Services. Michael also served as the Region 3 representative on the IARU Administrative Council between 1983 and 1986 and, in addition to VK3KI, is also licensed as G3ZML and ZL1BGY.

HAVE YOU ADVISED WIA EXECUTIVE OFFICE OF YOUR CHANGES FOR THE 1990 CALLBOOK?

Is the information in the current Call Book relating to your personal particulars correct? Now is a good time to correct your name, address and callsign for publication in the next Australian Amateur Radio Callbook. We also request that current repeater information be checked for accuracy by referring to the February 1989 edition of AR magazine. Please advise the Executive Office in writing at PO Box 300, Caulfield South, 3162, should you locate any errors.

The 1990 Australian Amateur Radio Callbook is scheduled to be published in September 1989 and, in addition to the most up-to-date listings of licensed Australian Amateur Radio stations, will also include the latest information on Australian Beacons, Repeaters, DXCC, and Bandplans.

The information in the Callbook is only as good and up-to-date as the information received from DOTC, and from WIA members. We need your assistance now to keep our records correct. Please advise the Executive Office as soon as possible if you require any amendments or additions to be made.

STOLEN EQUIPMENT REGISTER

The Stolen Equipment Register is one of many important services offered to members of the WIA. It has been in operation since 1984 and is now maintained on a computer database in the Executive Office.

At regular intervals, updates of the complete list, sorted into categories of:

. Equipment Manufacturer/Model;
. Owner; and
. Date Stolen

are distributed to each Division.

Members wanting to take advantage of this register, either to publicise the theft of their equipment, or to check equipment they are about to purchase, may contact their Division.

Any telephone reports of stolen equipment must be followed up immediately with written confirmation of the details to the Executive Office.

For maximum efficiency, these details should include:

* Manufacturer's name;
* Model;
* Type of Equipment;
* Serial number;
* Date stolen;
* Owner's name, address, and callsign;
* Distinguishing features or modifications to equipment; and
* Police contact (if any).

When equipment is recovered, it is important that you advise the Executive Office as soon as practicable to enable our records to be noted. Meanwhile, it is important to remember not to advertise your impending absence from your residence "on air". You never know who is listening. In a recent case a member inadvertently told all those on frequency that he was about to go out for the day. He came home to find a theft of considerable proportions had occurred. There are many stories on similar lines on record. BE WARNED!

BACKLOG OF TECHNICAL ARTICLES FOR PUBLICATION IN AMATEUR RADIO MAGAZINE

You could bo one of the authors who has submitted an article to Amateur Radio magazine for possible publication, and are wondering when your article will be published.

For information there are presently 38 technical articles being processed by Amateur Radio's technical editors, most of them ready and awaiting publication in our magazine. Some of these articles have been outstanding for several months. Whilst this may seem an enviable position for the magazine to be in, the WIA understands that this is not necessarily a satisfactory one for the authors.

The Publications Committee is mindful of the delays occurring but they can assure you that our outstanding list is monitored in full on a monthly basis to keep track of all articles in our possession.

The editors usually do not publish two articles on the same or a similar topic in the one issue. Therefore, careful planning has to be given, not only to the topic but also to the size of the article.

The WIA is grateful to all those authors who have put so much work into preparing technical articles for consideration and ultimate publication in Amateur Radio magazine.

REDUCED PRICES FOR ADVERTISING IN AMATEUR RADIO MAGAZINE

In an endeavour to make advertising in Amateur Radio magazine more attractive to the small businessman, the Publications Committee decided to reduce some of the prices for the smaller advertisement space available in the magazine.

For instance, the 1/6th page advertisement has been competitively reduced in price to $90.00 per month for a 12 month contract.

The Business Card size advertisement is only $25.00 for members, or $45.00 for non-members. This represents excellent value for money for radio amateurs who desire to advertise their business and themselves in the form of a business card sized advertisement.

VICKI GRIFFIN, VK3BNK, NEW DRAFTSPERSON FOR AR

Recently, Amateur Radio magazine acquired the services of Vicki Griffin, VK3BNK, a qualified Graphic Designer who lives in Melbourne.

Each issue of your magazine has the need to have certain circuit diagrams and similar drawings effectively drafted to enable a professional presentation of particular articles. When this requirement arises Vicki ably assists us with her skills in the drafting field.

Vicki studied for her graphic communications degree with the Chisholm Institute of Technology from 1978 - 1981.

She passed her AOCP in 1977 at 18 years of age. Vicki comes from a radio active family. Not only is her husband a radio amateur, but her mother, father, two brothers and sister are all radio amateurs. Vicki says she is already working on her 17 months old son to qualify as soon as he is old enough!

We are very pleased to have Vicki as part of our team.

CAN YOUR CLUB BEAT 65% MEMBERSHIP WITH WIA

ALARA, which is the acronym for Australian Ladies' Amateur Radio Association, advised the WIA some time that membership figures showed, on a percentage basis, that WIA membership to non-WIA membership was around 65%.

As this figure is well above the national average, it occurred to us as reasonable to ask whether there are other Clubs affiliated with the WIA who can beat this figure. ALARA presently have 89 members in their association.

It will be interesting to receive feed-back as to whether there are other clubs with more than say 40 members who can beat the figure of 65%.

RECOGNITION OF AMATEUR RADIO

In June issue of Amateur Radio I advised of letters the WIA has received from senior members of the Federal Government which have acknowledged the important role of amateur radio in Australia.

I am also pleased to quote an extract from a letter received by Ken Ayers, VK4KD, the Queensland State Co-ordinator for WICEN, from the Queensland Government Minister for Emergency Services and Administrative Services.

".....I understand that through a long standing arrangement your members voluntarily man their own radio equipment assisting with communication in liaison with the State Emergency Service.

I take this opportunity to thank you and the WIA's members for their past efforts and look forward to a long and fruitful association, especially in times of disaster."

KEYLINK

As a number of members will know from first hand experience, several months ago the WIA set up a national telephone bulletin board, on a trial basis, using the Keylink system.

Unfortunately, this service was used by only a very small percentage of members of the WIA, and has therefore been cost inefficient.

Also, the work involved in maintaining current news information on the bulletin board has been more than the original volunteers were able to maintain.

When the question of the viability of maintaining the WIA Keylink bulletin board was discussed at the May Executive meeting, the Federal President, Peter Gamble, VK3YRP, commented that, since Amateur Radio magazine now had a much shorter lead time, the need to bring members up to date via Keylink was not so

pressing. He also pointed out that use by Clubs and Divisions was at a minimal level, and it had become obvious from the activity figures that this facility had lost the favour it originally had.

Executive then decided to discontinue the WIA Keylink facility for the time being, and the Keylink authorities were advised accordingly.

DEVOLVEMENT OF EXAMINATIONS

Brenda Edmonds, VK3KT, the Federal Education Co-Ordinator, recently received from the Department of Transport and Communications, draft copies of the NAOCP and AOCP Theory Question banks, together with the computer disk for generation of Morse Code exams.

The WIA has been given the opportunity to comment on this material before it is released for use.

A Working Party comprising of Brenda and Divisional representatives was convened for the weekend of June 24th and 25th, to look at the question banks, after which the comments from all Divisions will be collated and forwarded to DOTC.

CONTRA ADVERTISING

You may have noticed some new advertisements, aimed at attracting new members to the WIA, are now appearing in commercial electronics magazines such as SILICON CHIP, ELECTRONICS AUSTRALIA, and ELECTRONICS TODAY.

These advertisments have been taken out in exchange for those magazines placing an advertisement in Amateur Radio.

Our ads have been composed with several categories of people in mind who may be interested in the multi-faceted aspects of amateur radio, eg retirees, with time on their hands, CBers, or those interested in computers.

ANOTHER AMATEUR IN SPACE

According to the May, 1989 edition of QST, tentative approval for the Space Shuttle Amateur Radio Experiment (SAREX) has been received from NASA. An Amateur Radio station is now scheduled to fly aboard the Space Shuttle in March, 1990. Astronaut Ron Parise, WA4SIR, will operate the station using voice, video and packet communications from the orbiting shuttle. The orbit of the shuttle will allow amateurs located between approximately 46 degrees North and 46 degrees South latitudes to communicate directly with the shuttle. Further updates will be available later in the year.

CYCLE 22 NEWS

TNX Worldradio reports that the 11 year sunspot cycle is gearing up for a predicted peak in December 1989. Researchers predict it will be one of the most violent in 250 years.

According to researchers at the National Oceanic and Atmospheric Administration (NOAA), the intensity of sunspot activity is expected to increase between now and next December. NOAA believes the average number of solar flares (51.3 per month over a 13 month period) is greater than that observed in a similar period in 1957 (40.7), previously the strongest sunspot cycle ever recorded.

NOAA researchers predict that the present cycle will peak close to 200 sunspots per month. Massive magnetic storms on the sun, which have played havoc with radio communications and electric power transmission, are expected to continue throughout this period.

NZART ANNUAL CONFERENCE

Every second year, two members of the WIA attend the Annual Conference of the New Zealand Association of Radio Transmitters (the New Zealand equivalent of the WIA) as guests of the NZART. And, on alternative years, two members of the NZART attend the Federal Convention of the WIA as our guests.

The Federal President of the WIA, Peter Gamble, VK3YRP, and I attended the 1989 Annual Conference of the NZART in Masterton over the weekend of 3rd June to 4th June.

It was most interesting and informative to discover at first hand that, even though the structure of organised amateur radio in New Zealand is substantially different from Australia, the problems facing amateurs in that country are virtually identical to ours. The hospitality extended to Peter and myself by all of the New Zealanders we met was almost overwhelming. Considerable benefit to our respective organisations will result from this visit.

In addition to the Conference, I was fortunate enough to be able to attend a monthly meeting of one of the 83 radio clubs which are the Branches of the NZART. As in Australia, the clubs are where "grass roots" amateur radio is flourishing. I thoroughly enjoyed that evening with the members of the Waihi Amateur Radio Club.

Eye Glass Screen

A computer screen less than 12cm sq which fits on to an eye glass or headset should be available soon.

The image is said to have a picture quality and resolution equal to an ordinary personal computer monitor.

Name the Private Eye the United States innovation has its own focus knob. Applications include connecting it to a telephone modem so incoming messages can be instantly displayed.

It may even result in the development of a portable fax machine for those on the move.

An old amateur sat pounding a key,
"What a very slow business said, he,
If I had a good mike,
I could say what I like,
To my friends where-ere
they may be.

ar

Radiation Immunity in Domestic Equipment

Hans Ruckert, VK2AOU,
EMC -Reporter
25 Berrille Rd,
Beverley Hills, 2209

The following article, "Requirements to obtain Immunity in Domestic Electronic Equipment" was written by Dr Ing Blechert, DL9TJ, and appeared in the German amateur magazine CQ-DL of November 1988. It has been translated by VK2AOU.

The question, what limit value for passive immunity should be laid down for radio and TV receivers, occupied the experts for over 10 years and is still controversial. This question applies beyond receivers and is relevant to all kinds of electronic apparatus used in households.

The general operating approval of the Minister for Posts and Communications (May 1979) requires that all radio receivers (sound and TV) have to comply with certain technical specifications. These present valid regulations have been gazetted under No 478 document of the BPM (Postal Ministry) of 10 June 1981 (No 69, 1981) [1]. The relationship of these regulations covered by the document and the DIN-VDE 0872 Part 1-5 Norm is stated as it applied to radio and TV receivers at that time.

Insufficient passive immunity of electronic equipment to unwanted signals, which enter via attached cables, and which are not on the wanted signal channel, can usually be overcome by applying filters (depending on the case, single or combined use of high-pass, low-pass, braid breakers, ferrite chokes or effective screening of cables). The practical application is not discussed here in detail. It may be sufficient to mention that the procedure can be very difficult and costly.

Once manufacture is complete it is usually impossible to overcome the unwanted effects caused by direct radiation of electromagnetic fields on components and subassemblies. The equipment remains unable to function properly in the existing electromagnetic environment.

The intensity of the effective electromagnetic field is the first matter to be considered, because "direct radiation" is the hardest immunity problem to be dealt with. Success can only be anticipated, if adequate immunity has already been provided during development and production.

The Deutscher Amateur Radio Club (DARC) expressed its opinion in 1978. During discussions and correspondence with the "FTZ" (Telecommunication Central Office of the West German post office) at the preliminary stage on the BPM regulation 478/1981, they stated that a field strength immunity of 15 volt/metre was desirable or at least 10 V/m as a compromise.

Initially the DARC could only base its stand on an official Canadian Government document, which stated that an interference level of 15V/m max. is to be expected in the range of 1.7 to 30 MHz [2].

The hon. technical officer of the DARC, Dipl Ing Gunter Schwarzbeck, DL1BU conducted his own investigations to confirm the requested limit values for radiation immunity. [2] Experiments were carried out by him in Spring 1978, measuring the field strength in the neighbourhood of typical antenna configurations. [3]. These examples are shown in Figs. 1 to 5. These results were later published elsewhere .[4].

It may be useful to make a few remarks

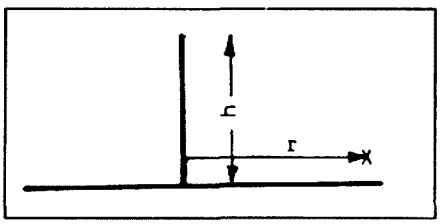


Fig. 1 Vertical antenna with 10 radials, buried 5 cm deep.

as to why such measurements are actually necessary. It should be possible, following the work of J C Maxwell and H Hertz, to predict mathematically the existing field strength. Such predictions meet with insurmountable difficulties because the questions deal either with the field distribution in the near-field or perhaps in the intermediate field, but usually not in the far field of the source (transmitter antenna). The usual formulas are only valid for far field conditions, where the electromagnetic field E (electric field strength) and H (magnetic field strength) are perpendicular to each other with values depending on the transmitter power P and the distance to the transmitter antenna. The nearby surrounding conditions (the electrophysical properties of the ground under the antenna, buildings and the topography (etc) of the antenna have to be considered.

It is vividly demonstrated in [5], how the environment of the antenna determines the field strength and effectiveness of long distance communication.

Let us go back, after this departure, to Figs 1 to 5 and let us see what results the measurements have given and what follows as far as the requirements of radiation immunity are concerned. Fig 6 is a summary. Short wave amateur bands at 1.8, 3.5, 7 and 14 MHz are covered. Our time did not permit measurements at 21 and 28 MHz.

Wire antennas (inverted V-dipole and Beverage antennas) were used, and the field strength was measured nearby (Fig 2, a,b,c, and d) at selected positions, because the dimensions of these antennas were substantial, and other already available structures (eg tree, fence, house, roof or wall, balcony, flag pole) were around. Such radio amateur antennas and their consequent RF potential were in close proximity to electrical equipment used in these buildings. This is basic to the nature of the amateur radio station, as specified by the international regulation re radio services and the treaty "Geneva Issue 1982", which is internationally respected (Chapter 1, Definition paragraph 1, Terms and Regulations No 53,54.) This treaty applies equally to other radio services (high power radio transmitters serving the public), and radio services are necessarily concentrated in densely populated areas. Thus the electronic appliances serving the public are subjected to disturbances in densely populated places with similar equipment distribution.

The field strength near the more compact antennas (vertical and Yagi antennas) was also measured at various points X and at distances r (Figs 1,3 and 4). Naturally these antennas have also to be installed in inhabited places. As a result values of r between 10 and 20 metres have to be considered typical distances to electronic equipment. In this situation, the usual 100W amateur transceiver, considered the minimal power necessary under present band conditions, can easily create or exceed 15 V/m, as can be seen by reference to Fig 6.

A transmitter power of 750 W (transmit-

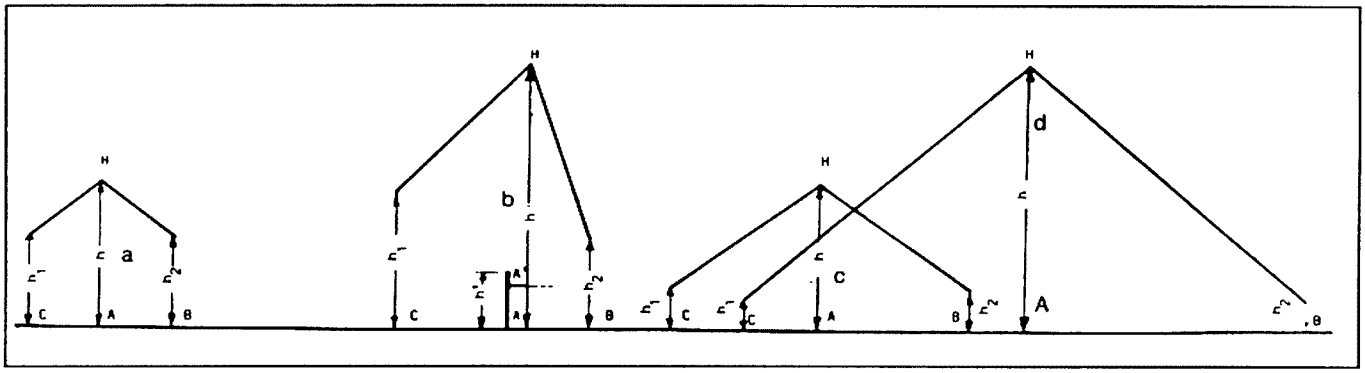


Fig. 2 Inverted V Dipoles, fed at H, used for various frequencies. a: 7 MHz b and c: 3.5 MHz; d: 1.8 MHz. In case b, Point 'A' is placed above the floor of a balcony at height h' of the parapet.

ter power of class B - West Germany - usually used) increases this field strength by a factor of $\sqrt{7.5}$, or about 2.7 times. If one considers that the possibly affected equipment is in buildings, which may be constructed of timber or steel re-inforced concrete etc causing an attenuation of only 6 dB average, then this effect does not markedly change the statement. Similar results, as found for 7 and 14 MHz, are also expected for 21 and 28 MHz, because the antennas are similar, and the intermediate field extends similarly to distances like 60m (for 21 MHz) and 40 m(for 28 MHz). The measurements carried out by DL1BU in 1978 are therefore a confirmation of the data published by the Canadian Government document.

At least two more publications have since appeared which support strongly the 15 V/m field strength values. Ing H Chichon, SP9ZD and Dr H Trzaska, SP6RT conducted field strength measurements in a different way at 14, 21 and 28 MHz, in the vicinity of a three element three band beam (trap type) HyGain TH3 MK3), which was installed 5 m above the roof top of a two storey building (case a). Measurements were further carried out with a multiband version (trap type Hy Gain 18 AVT) antenna and radials installed on the flat roof of a three story building, and a 2.5m high mast, transmitting on the 3.5, 7, 14, 21 and 28 MHz band (case b). They also investigated the field strength near a horizontal symmetrical dipole for 3.5 and 7 MHz (W3DZZ trap type), which was strung between a 10m high tree and a short mast on the roof top. Tests were also done with a .42 m long end fed wire antenna, installed between two adjacent 4 storey houses at the flat roof level, which resulted in the field strength of case d. The field strength near a 10 element long Yagi antenna (two-wave length boom) for 144 MHz, mounted 5 m above the flat roof of a 3 storey house is shown in the case e data.

The transmitter power in case a was 500 W, and the field strength inside the building usually did not exceed 2 V/m, but near the coaxial feedline and the transmitter cabinet 25 V/m resulted from inductively induced RF radiation. Such secondary effects together with some resonances are naturally to be expected with non-immune electronic equipment and their leads and have often been observed (eg speaker cables of Hi Fi systems). It has been observed that even weaker fields can cause undesirable effects.

250 V/m field strength was measured in "case b" also with 500 W above the roof near the feedpoint and radial system, which went down to 12 V/m max inside the building. Similar induction effects, as in case a, showing up to 60 V/m at 3.5 MHz, were also observed. 5 V/m were found in case c (feeding with coaxial cable and balun) using 150 W transmitter power (-5.2 dB compared with case a and b).

The end fed antenna case d with 100 W transmitter power (-7 dB compared with case a and b) represented the worst case, causing 20 V/m field strength inside the building. Even higher field strength was observed in the vicinity of the feeder wires, which were supported parallel to the house wall.

In this case also, metal objects showed far more secondary re-radiation than in other cases. This type of aerial can therefore - as expected - not be recommended. In the VHF ranges 100 W transmitters may deliver 5 V/m max and usually not more than 2 V/m. But these values are not valid with regard to electronic equipment in neighbourhood buildings, because of the effect of the antenna directivity, and one has to expect 10dB field strength gain.

If one combines the results of [6], one sees that 15 V/m field strength is confirmed and has to be seriously considered.

Prof Dr T J Dvorak (Institute of Communication Technology, Swiss Technical University, Zurich) published an important paper in "Nachrichten Technisches Zeitschrift" about the continuously growing problem of electromagnetic compatibility. [7].

He gave figures for the expected field strength values to be obtained by the Amateur Service at a typical distance of 20 m. He quoted 8 V/m at 7 MHz, rising to 16 V/m at 30 MHz. Between 30 and 440 MHz, intensities greater than 60 V/m can be expected, due to higher antenna gain.

The following examples can be observed, if one looks at the 176 West German and West Berlin radio broadcast stations at July 1979 operating in the range of 155 to 21,680 kHz [8], 82 of which are found at long and medium waves, and 194 at short waves from 3960 to 21,680 kHz. Not all transmitters operate 24 hours per day, and not all frequencies are occupied during the year. because the short wave transmitter plans are matched in the months of February, May, September and November to the short

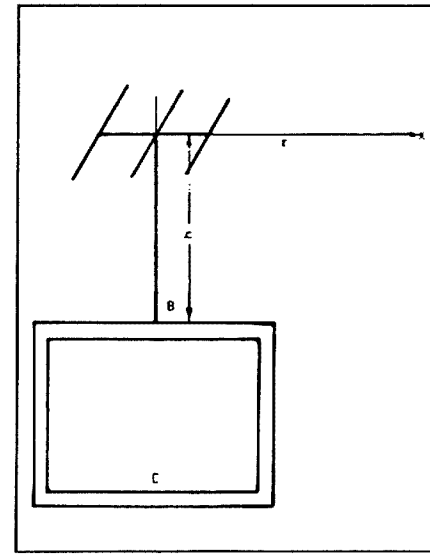


Fig. 3 Multi-band Vertical Antenna (eg GPA 5). Wooden ceiling and concrete enclosed roof space (Three Radials under the roof.

wave propagation conditions. This is unimportant with regard to the evaluation of radiation immunity of electronic equipment, because the apparatus should be fully usable at any time and day of the season. For video recorders in play-back mode, the frequency range up to 7.5 MHz is especially critical.

The signal level is very low and the amplitude diminishes only gradually from 5 to 6 MHz. Considerable spectrum components are still found beyond 10 MHz (example Fig 1 in [4]. There are 159 radio transmitter frequencies in this range, having individually up to 2000 kW of power.

It is therefore not surprising that VCRs could not be used, even at some distance from radio transmitters, because their radiation immunity was completely inadequate. The following example (1984) has become known: In the area of the town of Heusweiler near Saarbrucken (position of a 1200 kW broadcast transmitter working at 1422 kHz) it has become impossible to operate a VCR without corrective measures, and some VCRs could not be effectively made immune [8].

The transmitter used a directive antenna, which increased the effective radiation power to 5800 kW [9], and that meant, that the field strength at 1.6 km distance [4] was still 15 V/m. Even at 8 km distance the field strength dropped only to 3 V/m. Such conditions are quite possible at other locations (eg Berlin), and have been observed.

Some 330 VHF sound radio transmitters exist in addition to the long-, medium- and short wave stations mentioned. The power has most likely not been reduced in the meantime (in the FM range 87.5 to 102.5 MHz [8]. The further proliferation of private radio stations is likely to increase the number, and this is the reason why these transmitters move ever more closely to densely populated areas.

Measurements in band II, carried out recently in the Netherlands, showed what field strengths were generated in this frequency range over 1 to 45 km distance in suburban and country areas [10]. The data can be extrapolated, showing that VHF transmitters of quite common power can generate significant V/m field strengths over short distance (eg 500 m). This is in line with data in [7].

The picture can be rounded off with the fact, that in addition to the sound broadcast transmitters according to [8], already mentioned, 1065 TV transmitters in band IV and V have to be added [5] many of which use only low power (to fill in service areas - but quite a few use 100 kW of power (eg Hamburg -ZDF- on channel 30).

50 different spectrum users operated 1,411,359 transmitters on 31-12/1982, and more are expected in West Germany and

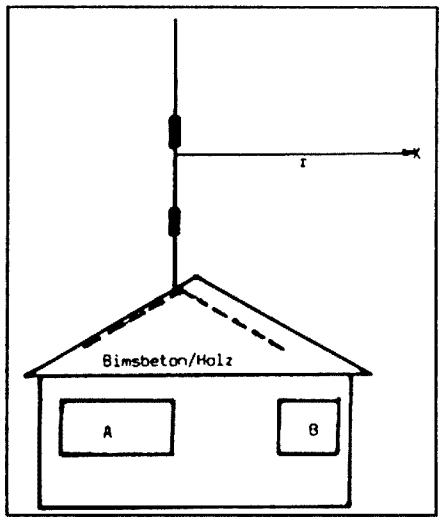


Fig. 4 Three element three band yagi a space completely surrounded by reinforced concrete of thickness 20 cm.

Berlin (West) [11]. Among these are the transmitters of the amateur radio service and ISM stations. Information [11] does not mention the power used or frequencies, and therefore the occurring field strengths are not known, but it is is to be expected that most are operated according to their use in populated areas and it is obvious that all these stations have a great potential for creating disturbances.

The future of wireless communication was discussed in a paper by the magazine for "Post and Telecommunication" (ZPF) in April 1988. We can expect that the upper UHF range will be very much needed by the mobile (D-Net) service during the next year [12]. At the end of 1990 one expects, according to assumptions, that 10 million users will telephone via 5000 stationary radio stations and about 500 relay stations. One expects 2 million participants for this radio service. We can therefore expect that this electro-magnetic spectrum will also be radiated in populated areas. This radiation expands to even higher frequencies, and the required immunity levels cannot be reliably stated. This question will be dealt with in a later paper at the appropriate time, as far as amateur radio service is concerned. The development shown of the ever-intensified use of electronics and the naturally occurring consequences have been foreseen for many years by the interested observer. Industry appeared not to appreciate the unavoidable necessity when (10 years ago) the DARC resolved to determine the correct and adequate radiation immunity level for broadcast and TV receivers, as far as the Telecommunication Law (FAG) and the authorities are concerned.

Even the German Post Office did not foresee the possibility, according to the author's knowledge, to request more than about 3 V/m (more precisely 3.16 V/m equal to 130 dB (uV/m) radiation immunity for the frequency range of 0.15 to 150 MHz (with exception of even lower field strength values for selected frequency bands), and adopt these for the regulation no 478/1981. The recommendation to adopt 15 V/m, as proposed by the DARC representative during discussions, has been dropped later by the German Post Office on legal grounds. Therefore one was still 13.5 dB below the compromise found to be necessary by the DARC and also 10dB below the 10V/m value considered healthy and (as we have seen) still valid.

The German Standards (Norm), which contain basically the same material, were eventually adopted after "tough wrestling" at the German Electrotechnical Commission DIN and VDE (DKE). They came into force only years later in March 1984 (DIN VDE 0872 Part 6), Radio Interference Counter Measures of Sound, Radio and TV Receivers, Radiation Immunity Requirements.

An additional paper will report about the modern world-wide development, and especially in connection with the political aims of the European Community and the so-called Common Market, which is being developed step-by-step and is to be finalised at the end of 1992. We can already say, that a substantial reduction of the consumer protection gained so far has to be feared.

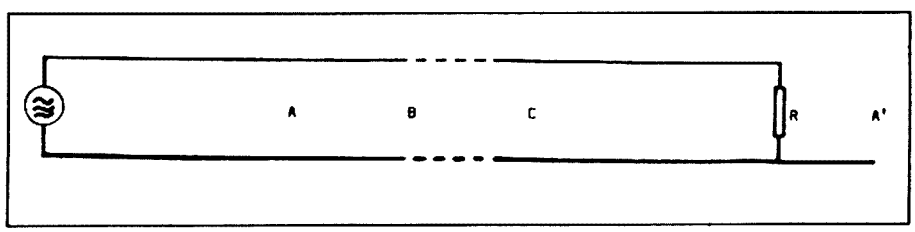


Fig.5 Beverage antenna (200 m long about 3 m above ground, terminated with R = 600 Ohms). The distance from the fed end to points A, B and C were 50, 100 and 150 m respectively.

TECHNICAL INFORMATION

Amateur Band	Antenna Configuration as shown in Figs 1-5	Transmitter Power (W)	Electric Field Strength (V/m) at the Points shown in Figs 1-5 Point A	Point B	Point C	Point A'	Point X(r)
1	2	3	4	5	6	7	8
1.8 MHz	Inverted V Dipole Fig 2d: h = 29m, h_1=h_2=3.5m. Antenna length = 2x40m	1 50 75	10 2 3	30 67 82	(30) (67) (82)		Note: Values in brackets were not measured or calculated, but are probably correct due to symmetry. * At a distance of 20 m from Point A, a value of 6 V/m was measured. In addition. The calculated values for this point were 3 V/m and about 8V/m for 100 and 750 W respectively. ** In the case of the timber ceiling, the value at point C is estimated to be 10-15 V/m.
3.5 MHz	Inverted V Dipole Fig 2b: h = 29 m, h_1= 15m. h_2= 10, h' = 6 m. Antenna length = 2x20m	400 100 750	4 2 6	36 18 49	20 10 27	30 15 41	
	Inverted V Dipole Fig 2c: h = 16 m, h_1 = h_2 = 4.5 m. Antenna length = 2x20 m.	400 100 750	24 12 33	180 90 247	180 90 247		
	Beverage Antenna, Fig 5: (200m long, about 3m above ground). Measured directly under antenna 1.5m above ground.	400 100 750	90 45 33	50 25 69	30 15 41	3 2 4	
7 MHz	Inverted V Dipole Fig 2a: h_2 = 16m m, = h_1 = h_2 = 10m, h' - 6m. Antenna length-2x10m	400 100 750	20* 10* 27*	30 15 41	(30) (15) (41)		
	Vertical Antenna with Radials, Fig 1: h = 10m; Measurements made 1.5m above ground at Point X, r metres distant.	400 100 750					72 (2 m), 40 (4 m), 30 (8 m), 18 (16 m) 36 (2 m), 20 (4 m), 15 (8 m) 9 (16 m) 99 (2 m), 55 (4 m), 41 (8 m), 25 (16 m)
14 MHz	Multiband Ground-plane Antenna (trap type) with individual radials in roof space.	400 100 750	10 5 14	7 4 10			15 (20 m), 6 (40 m) 8 (20 m), 3 (40 m) 21 (20 m), 8 (40 m)
	Three-Band, Three-element Yagi Antenna (trap type), Fig 4: h = 10m. Reinforced concrete building.	400 100 750		18 9 25	1** 0.5 1.4		4 (20 m), 2 (40 m) 2 (20 m), 1 (40 m) 6 (20 m), 3 (40 m)

Fig. 6 Overview of the Field Strength Measurements according to refs 3 & 4 (table translation given.)

Author's Footnotes

1) A receiver (eg Sound or TV) with sufficiently good shielding would in the ideal case, only accept electromagnetic energy through the antenna input. Ideally, it should only respond with channel selection, to signals that fall into the channel being used. Instruments other than radio receivers, with sufficiently good shielding, should not respond at all to electromagnetic energy which acts from outside.

2) For a definition of the regions Near Field, Intermediate Field and Far Field, we point to the relevant literature on antennas, eg the standard work of J D Kraus, Antennas, McGraw Hill Book Company. In the Near Field the distance is less than one tenth of a wavelength; this extends to four wavelengths for the Intermediate Field, where the Field Strength Vector has measurable radial components. It is only in the Far Field that the Field Strength is inversely proportional to distance.

3) The so-called WARC bands 10.1 to 10.15 MHz, 18.068 to 18.168 and 24.89 to 24.99 MHz were allotted to the Amateur Radio Service in the World-wide Radio Administration Conference of March 1979 and were not considered in these investigations.

4) The Far Field begins with the given sending frequency about 850 m distance to the sending antenna, so that simplifying assumptions can be made.

5) With the exception of low power transmitters in the 47-68 MHz band, all other transmitters are in the frequency range above 174 MHz.

References

[1] G Blechert: Kommende Technische Vorschriften fur Videogerate. CQ-DL 4/86 pp 228-229.

[2] Government of Canada, Telecommunication Regulatory Service: EMC Advisory Bulletin issue 1 (EMCABI) Sept 1 1977.

[3] G Schwarzbeck: Private Communication Mar/Apr 1978

[4] G Schwarzbeck: Video recorder Beeintrachtigung durch Funksenderanlagen (TVI, VRI) CQ-DL 11/84 pp 524-545.

[5] G Schwarzbeck: Streifzug durch den Antennenwald (Teil 3) CQ-DL 11/78 pp 502 -507.

[6] H Cichon & H Trzaska: Electromagnetic Radiation Hazards and the Amateur Radio Service. Proc Intl EMC Symposium, Zurich 1983 (Paper 21E5).

[7] T J Dvorak: Electromagnetische Vertraglichkeit. Eine Wachstumsgrenze der Funktechnik ?. NTZ 6/87 (Bd 40) pp 432 - 437

[8] Fermeldetechnisches Zentralamt der Deutschen Bundespost: Verzeichnis der Ton-und-Fernseh - Rundfunksendestellen in der Bundesrepublik Deutschland und Berlin (West) 19 Ausgabe Stand 1 July 1979.

[9] J Kaiser: Private Communication July 1984.

[10] J Doeven: Propagation over short distances in urban and rural area in Band 11. EBU-Review - Technical 8/87 (No 224) pp 191-197.

[11] Kurzbericht (Tabelle) uber die in den einzelnen P{D-Bezirken am 31/12/1982 genehmigten Funkanlagen. NTZ 8/83 (Bd 36) p 526.

[12] Ch Schwarz-Schilling: Fahig sein zu ruhigem Handeln. Die Revolution im Informations-und Kommunikationswesen und die Rolle der Deutschen Bundespost. ZPF 4/88 pp 4-11. ar

A Simple Logic Probe

Mike Groth VK4CDG
PO Box 136
Samford 4520

A logic probe is a helpful device for trouble-shooting digital circuitry, which shows the logic state of a circuit point, or the presence of digital pulses. This very simple probe is suitable for medium speed TTL and CMOS devices operating from 5 to 15V power supplies. It will display single pulses down 200 µs and clock frequencies to 100 kHz. Shorter pulses and higher frequencies could be handled by a more sophisticated probe, but the extra components could not be fitted in the space available.

The probe is powered from the circuit being tested, via a twisted cable fitted with a pair of crocodile clips. If the clips have been connected correctly to the supply rails, the yellow LED will light, indicating the probe is ready for use.

The logic states are displayed by a red and green LED.

Both LEDs off	Probe tip not contacting circuit, OR Gate stuck be tween states.
Red LED only	HIGH state.
Green LED only	LOW state.
Red and Green LEDs	Pulse train greater than 5 Hz.

The circuit (Figure 1) is designed around the LM339 quad comparator. The HIGH state corresponds to an input voltage above 3/4 of the supply voltage, and the LOW state corresponds to an input voltage below 1/4 of the supply voltage. The probe is biased to half the supply voltage, so neither logic LED will light unless the probe is in contact with a logic gate. The diode and capacitor between the input and output comparators, stretch short pulses to a visible duration.

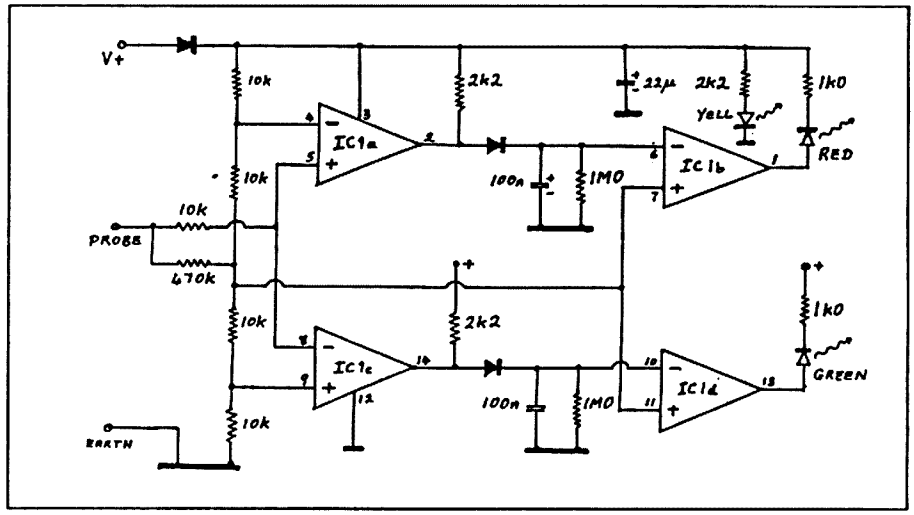


Figure 1 Circuit of Logic Probe

The general construction of the probe can be seen from the photographs. The circuit was constructed on both sides of a piece of vero-board, mounted in the barrel of a 10ml plastic syringe, with the LEDs viewed through the transparent wall. The input lead is a fine solid core wire passing through the bore of the needle. When the needle was cut to length with a pair of pliers, the cutting action crimped the wire to the needle, which forms the probe tip.

The electronics were secured in the syringe barrel by using the rubber cap from the plunger as a stopper, with the power cable passing through a small hole drilled in it. The space above the cap was filled with a neutral cure silicone sealant, which anchors the cable and seals the unit. The finger lugs at the top of the syringe were cut off with a pair of shears and the stumps filed smooth. ar

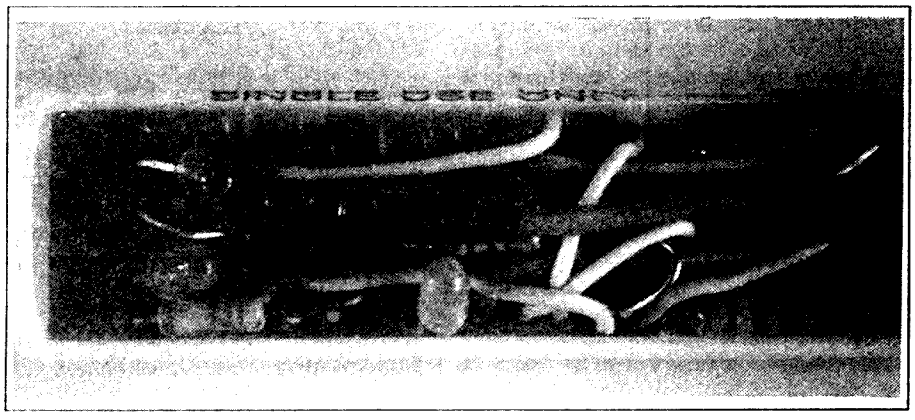


Figure 2 An internal view of the probe

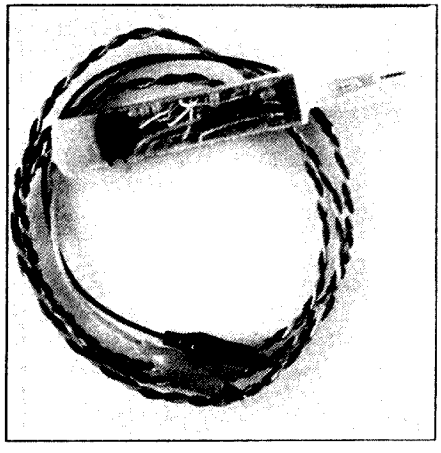


Figure 3 The completed probe

Installation Tips For Two-Metre Mobile

Gil Griffith VK3CQ
7 Church Street
Bright 3741

If you intend to use a repeater, spare a thought for those who are monitoring it.

Recently I and many other amateurs spent a fun afternoon listening to engine noises on the local repeater. The repeater timed-out regularly over a period of about two and a half hours.

I thought at the time that the expected influx of new operators on two metres might cause much more of this type of embarrassment, hence this article.

If you intend to use a repeater, have a thought for those who are monitoring it. Many amateurs keep their transceivers on 24 hours a day to listen for emergency traffic. They cannot be expected to answer all calls - or even any of them if they are busy - but reckless use of the repeater can cause them to switch off altogether. (My pet gripe is people who drop carriers, often many times, without identifying themselves). As I monitor two repeaters during the day, and one all night, it can get very tiring, especially at bedtime or later, when one is woken by a couple of very annoying "kerchunks". Not only is this practice selfish, it is illegal.

Anyway, on this occasion, it is probable that someone's microphone had become jammed beside the car seat and the PTT had caused the transmitter to turn on, unbeknown to the operator. (I hope they don't have to buy new finals!).

Figure 1 shows a single timer that can be fitted to almost any transceiver to prevent the above type of embarrassments. The original version was found in an old police radio, and was set up for a 50-second delay. If you experiment with the resistance value it is possible to set whatever delay you like. I suggest a 5.6 M ohm resistor, which will give about two minutes 40 seconds before the transmitter shuts down. With this value you will never time-out the repeater again! I expect you could use a switching transistor in place of the relay, in which case the whole circuit would cost only a dollar or two. It would even be smaller, too.

Many amateurs install their transceivers

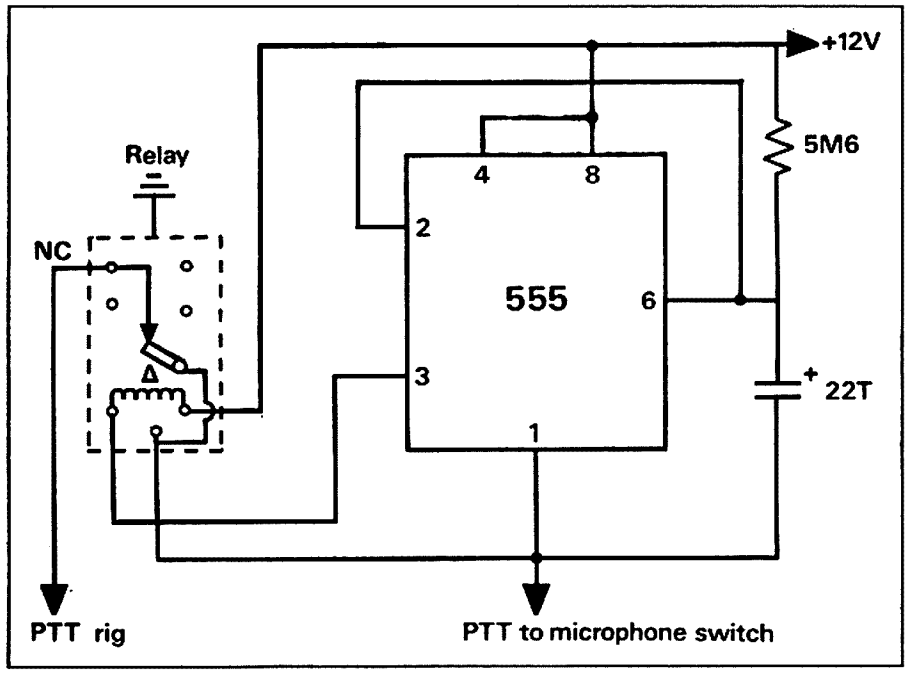


Figure 1: Transmitter Timer 1820k ohms = 51 seconds 6M6 = 3 minutes 10 seconds 5M6 = 2 minutes 40 seconds

with the power leads connected directly to the car battery terminals. This may have been necessary with high power or valve units in order to keep the voltage as high as possible, but the average 10-to-25-watt modern FM transceiver draws little current, so it is preferable to use the accessory supply. This means that, if you leave the vehicle, the unit is switched off with the ignition switch. You can still operate stationary with the engine off and the key turned to ACC and, as an added bonus, the unit will be temporarily disconnected when starting the engine - although this depends on the car. If you want to run a high-power linear you can connect that to the battery terminals, if necessary, and run the transceiver from the ACC switch.

When installing your unit in the car, put it where you can see the display and hear the speaker, and also reach the controls comfortably. Then, if for any reason it starts transmitting, you will have visual warning. When making installations, it is a good idea to discourage thieves in every way possible. If you just have it sitting on the seat, you can be assured that it will disappear very quickly. The more difficult it is to install the longer it will take to remove. This could mean the difference between keeping or losing your expensive equipment. As a further deterrent, it is wise to engrave your name on the equipment. Stickers advising of this marking, or a sticker saying "This is not CB" are a good idea. Ensure you install a microphone clip - and use it. If you are fortunate enough to have a new car, you can try fitting the transceiver in the ashtray space or elsewhere behind the dashboard if there are holes available. The glove box is not recommended.

Hand-held transceivers can be used while mobile by a passenger, although their audio output is usually inadequate in a noisy car. I have a mount just above the upper seat-belt bolt, right beside my ear, which holds the belt-clip firmly. An external antenna plug and power lead are connected, and a hand-mic will be one day. You can also permanently fit a small linear and plug your hand-held into it when required. This will give more realistic power output and can be mounted out of sight.

Mobile antenna systems are whatever you require; anything from a fixed mount in the centre of the roof, which is best, to a magnetic base or gutter mount etc. Dozens of types of whip antennas are available or you can make your own out of old CB whips cut down to 19 inches and covered with braid and heatshrink tubing. Even a piece of wire joined to the coaxial cable and potted in epoxy will work. You can then glue it to an old speaker magnet for a really cheap mount.

For driving in mountainous areas, it has been found by experience that a quarter-wave groundplane antenna works better on repeaters than a five-eighth antenna. This may be because the repeaters tend to be on the hilltops and the radiation angle is higher for the quarterwave whip, but could also be because the longer whips tend to bend over at speed and distort the radiation pattern.

The opportunities are endless, especially if you are willing to experiment with items from the junk box.

For more information on two metres for the newcomer, see Ron Cook's excellent article in July AR, page 5.

Remember to check up on the road rules of your state, as in many it is an offence to transmit whilst driving. ar

An Antenna Mount for Poles

Colin MacKinnon VK2DYM
52-54 Mills Road
Glenhaven 2154

A mount was needed to support an antenna and rotator on top of a telephone pole, as shown in Figure 1. The resulting unit and the method of erection could well be useful to other amateurs. A telephone pole can be a good alternative to metal towers, and doesn't require guy wires.

The mount design that evolved is light weight, simple, and allows the rotator to be removed easily, whilst the antenna stays in position. It also allows a longer mast to be used. It was decided to use a commercial thrust bearing to take the side loads of the mast and to ease the stress on the rotator, but a plastic thrust bearing will do as well.

The mount is made from 25mm angle iron, and 6mm steel plate. See Figure 2. It consists of two side rails of angle iron spaced about 100mm apart, to which are welded 3 cross pieces. In turn, each cross piece has a 6mm thick plate welded to it. The plates are drilled for the rotator and thrust bearing bolts. As well, large clearance holes are provided so that the mast can slide up through the plates, an advantage for long masts. Only basic sizes have been shown as each installation and rotator system will require different dimensions.

If you have a heavy antenna system, the rotator plate may need to be braced as shown on the drawing. If instead, the thrust bearing at the top is to take the vertical load, the top plate needs to be braced as shown in the photos, using 6mm diameter rods welded from the plate to the rails.

A further 3 cross pieces of angle were made up to clamp the mount to the pole, using long bolts, or threaded rods. A few extra small holes were drilled to allow attachment of wire antenna fittings etc.

It is very important that all three plates are in line. To ensure the alignment, 3 plastic bushes were made to fit in the centre holes of the plates, with an inside diameter to take the mast snugly. The mast was assembled through the plates and supported above and parallel to the rails. Everything was securely clamped in position and then the plates were tack welded to the rails, and later fully welded.

The rotator can be unclamped and removed if needed, because the middle plate with its plastic bush prevents the mast and antenna from swinging sideways. The plastic bush was machined out to have about 2mm clearance so that there is no chance of binding against the mast.

Notice that the 3 cross pieces extend beyond the rails on one side and have holes drilled to take U-clamps. This allows a gin pole to be clamped to the mount and makes it easier to lift and position the antenna etc.

The cost to manufacture the mount will depend on your workshop facilities and whether you use the local welding/machine shop. Our unit was a "Foreign Order", so no costs are available.

Once the mount was complete, had been tested and cleaned of weld splatter, it was galvanised at a cost of about $50.

An assembly procedure was worked out

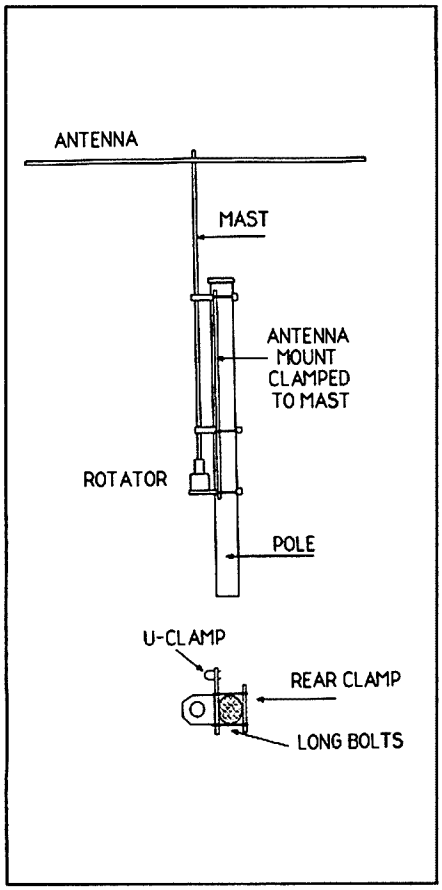


Figure 1 diagram of completed installation

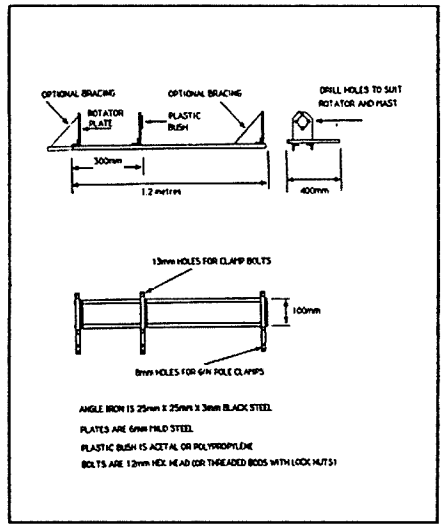
so that the antenna system could be lifted and installed safely and with minimum effort. It requires one person at the top of the pole and one on the ground to pull the gin pole rope.

Note:

Trial assemble everything on the ground first to make sure it's all there, and all fits!

The installation procedure is as follows :-

1 Bolt the thrust bearing to the top plate.
2 Lift the mount to the top of the pole and clamp it into position. As most poles are not a constant diameter, some judicious axework and/or hardwood packing pieces may be needed to ensure the mount rails are truly vertical. The mount has little torsional rigidity, so make sure not to twist or distort it.
3 Lift a gin pole to the top and clamp it to the mount.
4 Lift the mast to the top and slide it into the thrust bearing, but only extend it sufficient to fit the antenna boom clamp. Clamp it securely in position. It may help to fit a muffler clamp around the mast to stop it slipping down inadvertently.
6 Lift the antenna using the gin pole, and attach it to the mast.
7 Connect and secure the co-ax etc.
8 Release the mast clamping, and raise the mast to its full height.
9 Lift the rotator and bolt it in position.
10 Clamp the mast to the rotator after making sure the antenna is pointing in the desired direction relative to the rotator.
11 Attach the rotator control cables, water proof and secure the installation. The details of correct antenna installations have been described by others in previous AR technical articles.



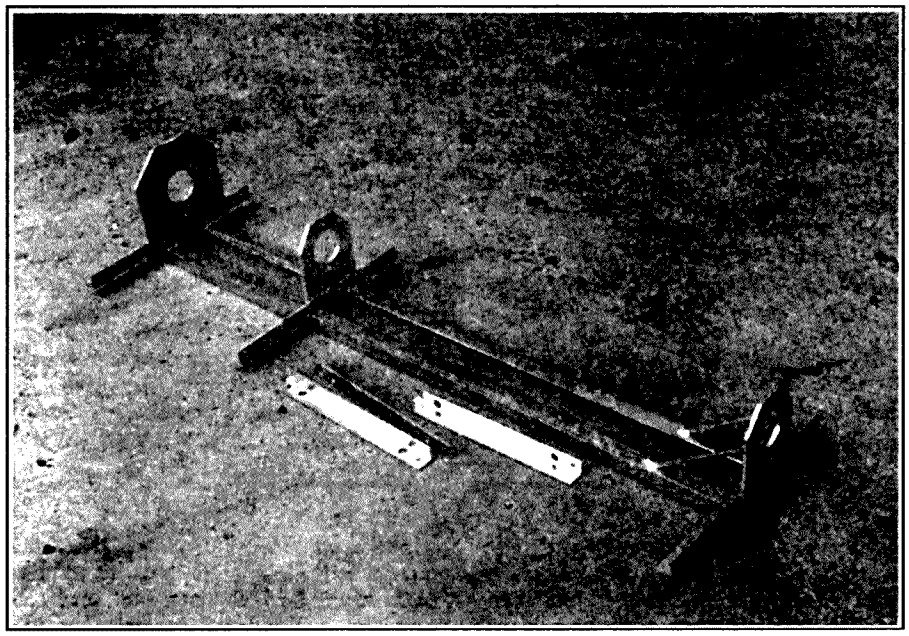


Photo 1. Basic antenna mount and the three clamping pieces. All three plates are bored out so a long mast can slide up through the middle.

350 Tasmanian Devils!

Lewis Smith VK2LS
30 Cunning Street,
Port Macquarie 2444

On April 18, Lewis VK2LS logged his 350th individual Tasmanian station for the Tasmania Devil Award: this is a record for any Amateur Radio station outside of Tasmania.

The net for this Award is run by Bob VK7NBF Falmouth, Tasmania each Tuesday night at 1000 hrs UTC on 3.590 MHz.

Since commencing in 1980, Bob has issued 443 individual Awards; 198 of these being to overseas countries, including England, America and New Zealand. Come along to the net and enjoy the freshness of the Apple Isle company.

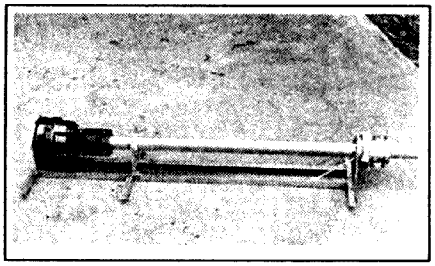


Photo 2. Mount with thrust bearing, rotator and mast assembled. Note the braces added to the top plate to take the vertical load of the mast.

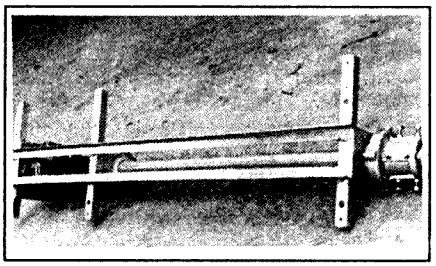


Photo 3. Rear view of the mount. The angle rails "bite" into the pole to hold the mount securely. Note the extra length of the brackets on one side and the holes to clamp a gin pole.

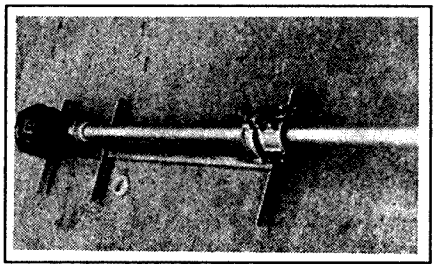


Photo 4. Note that the mast passes through a plastic bearing in the middle support plate. There is about 2mm clearance between mast and bearing. (A spare bearing is shown next to the mount.)

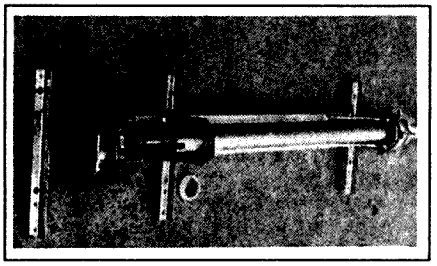


Photo 5. This view shows how the rotator plate is welded to the lower bracket. It is a simple matter to undo the rotator screws and mast clamp and then remove the rotator if needed.

From The International Police Association Journal (IPAGRAM)

Contributed by Dean Probert VK5LB

C/- PO Mt Compass 5210

To: All policemen and any HAM friends who are policemen.

We are very pleased to advise you that our Japanese branch of IPA & IPARC has just located in Japan.

Hereby we were officially admitted to join by the IPA Head Office in January 1987.

Our current branch is being managed by 19 policemen who are interested in the radio communication as a HAM.

For Japan is the country where its surroundings are all sea, and consists of four major islands, being quite different from other countries in Europe.

Japan had not been good at going about in company with any foreign countries openly for a long time in every ways.

And no differences are still existing here even now. So we, all members of Japan branch, desire to make contacts and communicate with the policemen in the world through activities of IPA. We would never hesitate to help you support as possible and also be very glad if you accept our cordial services for you with no charge when you, or your family, or your friends have a chance to come over to Japan.

For those purposes to be better as possible, kindly please be sure to understand and recognising the following:

1. We are not in the position to have any relationship to the prior Japanese Branch which was existing before January 1987.

2. We are the only Japanese Branch that was admitted by IPA Head Office.

3. If you want to get in touch with us, the Japanese Branch, please address as "Secretary-General".

4. You are required to correspond us in "Japanese or English". Since only few staff can understand English perfectly here at our branch, and just as this letter you are reading has been translated by an interpreter, you have to write your English correspondence clearly in block letters. (Typewriting will be much appreciated).

Then your English letter will also be translated into Japanese for us.

But please don't worry about our English-Japanese translations, because we were able to deal with your daily English conversation when you are here in Japan. So you are very welcome whenever you want.

Kindly please advise us the name of your hotel you stay, room number and your itinerary in Japan prior to your visit.

5. Meanwhile, you are also very welcome to spend less than two nights or so at my house if you want.

Japan has own unique culture, which is quite different from the one in America or in Europe. We hope you will admire our wonderful history facina and touching our traditions or arts.

Tasting and enjoying our "real Japan" will excitingly be great fun for you and we are looking forward to your letters.

Name and address for your letters:
IPA & IPARC
RC Japan Section
Secretary-General
2653, Suarashi,
Sagamikomachi, Tsukui-Gun,
Kanagara-Ken 199-01
Japan
Name Michinori Jimbo
Phone: Ø4268-51324 or 04268-52010
Sincerely yours
IPA & IPARC

Japan Section - Michinori Jimbo
Secretary-General
Radio Club Japan
Section Membership
Member Ham Radio Call
JR1SSH - Michinori Shiratori
Saitama Police Department
JE1TTI - Michinori Jimbo
Kanagawa Police Department
JF1JCS - Kenji Hayashi
Saitama Police Department
JJ1HCB - Kichisuke Ogata
Saitama Police Department
JA2IPI - Fumio Minami
Mie Police Department
JA2APA - Kazumi Kitade
Mie Police Department OB
JA2DOH - Norio Matsuda
Shizuoka Police Department
JA2KSA - Yoshitake Yabune
Mie Police Department
JR2FKB - Masaji Suzuki
Aichi Police Department
JR22MZ - Hideki Yasuda
Mie Police Department
JG3GYU - Tetsuro Ito
Shizuoka Police Department
JA3BAW - Kazuyuki Taguchi
Hyogo Police Department
JR3UHK - Takeshi Shimamura
Wakayama Police Department
JA6LRB - Kazuhisa Nagaishi
Nagasaki Police Department
JA7MQM - Satoshi Suto
Aomori Police Department
JA8ATU - Norihiko Tanimura
Hokkaido Police Department
JH8MKQ - Kazuo Natori
Hokkaido Police Department
JA9JDX - Yasuyuki Ishiguro
Toyama Police Department

Houseboat on Six

Richard Cortis VK2XRC
4 Victory Street
CLOVELLY 2031

We hear from time to time,and read considerable amounts about major DX expeditions, and we hear of the many thousands of contacts that these professionally organized expeditions make. However, there are many hundreds of family expeditions which take place, where one member of the family attempts to make occasional contact on amateur radio. This article attempts to report some of the background to one of these light family-orientated expeditions.

Early in 1988, my family and I booked a houseboat holiday on the Murray River. The intention was to travel by rented houseboat from Renmark in South Australia upstream along the Murray River to Wentworth in New South Wales, at the junction of the Murray River and the Darling River. After some discussion and correspondence, the family rented "Liba Liba 4"; it was 54 feet long and approximately 22 feet wide, and was powered by a 173 Holden motor driving a pair of paddle wheels through a tractor gearbox and differential. The vessel had a top speed of five knots. The average current in the river was approximately half a knot against us. After some experimentation, we determined that the most economical travelling speed was a bit over four knots, giving us an effective over the bottom speed of approximately 3.7 knots. On this basis, we could expect to motor approximately 4.5 hours per day.

The available time of four and a half hours per day of motoring offered the most magnificent opportunity to operate six metres at the high point of the six-metre DX season.

Accordingly, in preparation for the trip, I packed my FT69ØR, together with a small power amplifier and a number of bits and pieces. Upon arrival at Jane Eliza landing in Renmark, we moved aboard "Liba Liba 4" and stowed all our various belongings, food and drink etc. A two-metre 5/8 antenna was installed in an appropriate position on the steel support frame for the canvas foredeck awning. With some very minor trimming, this performed very well as a quarter wave on six metres. The radio and power amplifier sat on the end of the bunk behind the steering position, and a power lead was led through the boat to the house-lighting battery near the engine at the rear of the vessel. There was a separate starting battery to guard against overuse of the linear after dark.

The arrangement for the antenna, and the power supply as set out above, appears to be somewhat simple. However, there are many criteria to be met in the preparatory arrangements. First of all, my wife has to find room for the equipment in the car on the way. This is always a problem, as we have three large-size teenage children, together with ghetto blasters and associated equipment, which must take precedence over amateur radio. Experience operating maritime mobile in a number of Sydney-to-Hobart yacht races led to a minimization of basic equipment. In a small plastic toolbox, I packed a fairly long length of coax on a base, together with a PL259 plug. Also included was a roll of heavy (12-volt) cable, pliers, wire cutters, screwdriver, Phillips head screwdriver and a scope soldering iron with 10-metre leads and alligator clips, so it could be used directly from the 12-volt battery. In this mode, the scope soldering iron works well, providing satisfactory operation for the user. However, one must be prepared to replace the carbon elements on a regular basis. I have been unable to determine a more satisfactory soldering iron for use in similar situations. However, one must be careful to ensure that one disconnects the power before soldering certain items, as several volts of potential difference may exist between the tip and various components.

Having managed to satisfactorily cool the beer and amuse the teenagers, I finally managed to get my station on the air.

I make no pretensions whatsoever about the capability of my station. I was operating effectively a quarter-wave vertical antenna in an otherwise horizontally polarized environment. For the purists, I considered the alternatives: I could have operated a six-metre halo antenna, which would have provided horizontal polarization and roughly omni-directional properties. However, the family would not allow it in the car. In case others should suggest it, I also considered operating a three-element Yagi. However, the directional stability of the vessel, together with the serpentine route of the river, made this somewhat impractical. I had to steer the vessel and operate amateur radio at the same time. The rest of the family stayed in bed or were sunbaking.

Despite the crude nature of my antenna system, and the low (30 watts) power I was operating, I managed to log approximately 40 stations during our 10-day trip. This may not seem to you to be a great number; however, I am a rag chewer by nature. My wife says I talk a lot. Stations worked included some in Albany, Tennant Creek, New Zealand, South Australia, Tasmania, Queensland, New South Wales and Victoria. I heard, but did not work, stations in New Caledonia. Not bad for a quarter wave mounted on a steel pipe.

This family DXpedition does not break any records. However, it may prompt other amateurs to "have a go" on the average family holiday. The number of contacts made was not particularly large, but the number of QSL cards seemed a lot when I sent them out. The purpose of the operation was not to make a large number of contacts. Rather, it was to have fun and add to the enjoyment of my annual holiday. I believe that I achieved this aim.

I commend this type of simple low-key operation to other amateurs as a very fulfilling activity. I had fun.

I look forward to reading of further simple family DXpeditions in the future. ar

Transistor Works at over 100 GHz

Roy Taylor VK2TR
from Computerworld Australia
September 1988

Melbourne - Siemens Ltd reports that players in leading edge communications areas, such as radar, space travel and satellite technology are interested in its gallium arsenide transistor, which operates at frequencies of more than 100 GHz.

Siemens' US operation and researchers at New York's Cornell University have designed the transistor. It is called a modulation-doped field effect transistor (Modfet) and uses a sandwich chip.

ar

Unusual Ship Visits Australia

Ron Churcher VK7RN
Box 277, Devonport, 7310

A strange ship is visiting our Australian coastline — well, they may object to the "strange" — let's say different.

I refer to the MV Doulos, a missionary training ship operated by "Operation Mobilisation", a world-wide inter-denominational group with headquarters in West Germany. On board are about 300 young people from over 40 countries. It has two other claims to fame - it is the oldest passenger ship (1914) still operating, and it operates the world's largest floating bookstore. Over half a million books. Its first Australian landfall, Devonport, was its 200th port of call. Operated as a "faith" ministry no-one on the ship, from the captain down, gets paid!

Where does Amateur Radio come into this?

Firstly, the Radio operator, Manfred from West Germany, operates as VK7AAT and usually can be found around 14.31 or 3.69 MHz. Look for him.

But amateur radio can come into the Doulos' life by interested amateurs allowing these young people to talk to their families back home. On three occasions, Canadian and eastern US people spent the evening in my shack - TALKING. The amateurs in Canada and USA cooperated wonderfully, demanding that they be allowed to put through long distance phone patches if necessary - time seemed no worry.

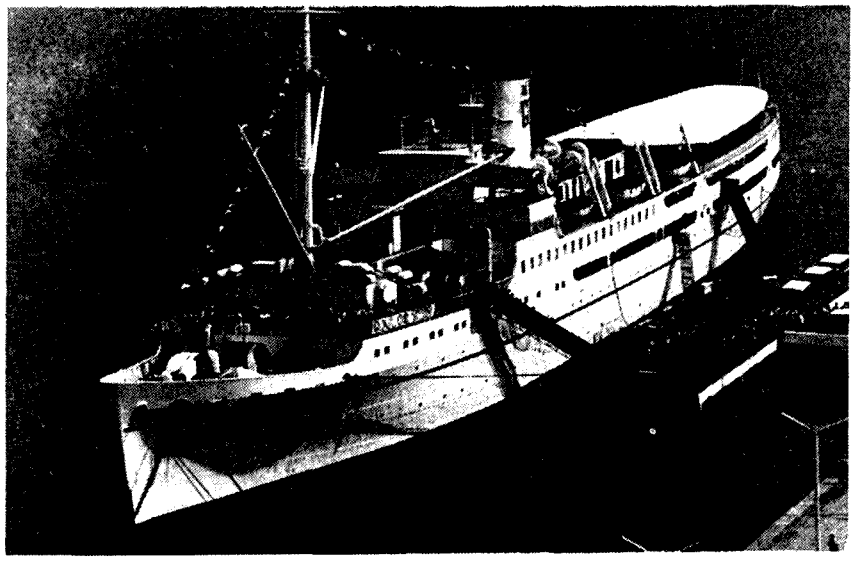
The joy on the faces of the people as they talked and the emotion in the voices of their parents made it all worthwhile.

Amateur Radio Serving The People of the World - Be Part of It.

Listed below is the schedule of their Australian visit. Your contacts would be Manfred (above) or Joe Parker, Book Store manager.

Doulos Schedule 1989-1991 Asia & Oceania

Sdist miles	STime d	hr	Port	Country	Dates Arr	Dep	Number of wknd	days
1170	4	21	Devonport, Tas	Australia	2 May	15 May 1989	2	14
584	2	10	Adelaide, SA	Australia	18 May	30 May	2	13
514	2	8	Melbourne, Vic	Australia	1 Jun	20 Jun	3	20
582	2	10	Sydney, NSW	Australia	23 Jun	11 Jul	3	19
70		7	Newcastle, NSW	Australia	12 Jul	25 Jul	2	14
450	1	21	Brisbane, Qld	Australia	27 Jul	15 Aug	3	20
275	1	4	Gladstone, Qld	Australia	16 Aug	29 Aug	2	14
246	1	1	Mackay, Qld	Australia	30 Aug	5 Sep	1	7
215		22	Townsville, Qld	Australia	6 Sep	26 Sep	3	21
174		18	Cairns, Qld	Australia	27 Sep	17 Oct	3	21
			expected changeover of personnel ..... ca.			2 Oct		
472	1	23	Port Moresby	Papua New Guinea	19 Oct	7 Nov	3	20
1340	5	14	Vila	Vanuatu	13 Oct	21 Nov	1	9
608	2	13	Suva	Fiji	24 Nov	12 Dec	3	19
416	1	18	Nuka'alofa	Tonga	14 Dec	27 Dec	2	14
1612	6	17	Honiara	Solomon Islands	3 Jan	8 Jan 1990	1	6
340	1	10	Kieta	Papua New Guinea	10 Jan	16 Jan	1	7
262	1	2	Rabaul	Papua New Guinea	17 Jan	30 Jan	2	14
412	1	17	Madang	Papua New Guinea	1 Feb	14 Feb	2	14



The MV Doulos - The world's oldest passenger ship.

Designing A QSL Card

Ken Matchett, VK3TL
PO Box 1
SEVILLE VIC 3139

There have been in the past several articles on QSL design and QSL procedures. Most have been written with an eye on making the onerous task of QSL managers and their helpers a little easier. This article (dealing with both QSL design and procedures) is no exception. There will be points of disagreement since we all have our own ideas upon the subject. The article is not in any way a criticism of existing QSLs but is offered mainly as a guide for those to whom the subject of QSLs is new. It is the writer's hope that it will prove useful to those who read it.

1. SIZE AND SHAPE

No single factor is a greater cause of unnecessary problems than that of QSL size. It should be remembered that outward QSL managers are obliged to forward QSLs in bulk. If a card is appreciably larger than the majority of QSLs received, it is folded and can thus be ruined (as far as its aesthetic value is concerned). So many beautiful QSLs end up at their destination little different from a creased, and often torn, chunk of cardboard. Apart from adding to the difficulties of QSL managers, the postage is at a considerably higher rate should one wish to send such a QSL direct. Choose a size of QSL that will fit into an ordinary envelope. Avoid long or square-shaped QSLs at all costs.

There is no such thing as an "average" size QSL, but the common recommended size is 140mm by 85mm. Many envelopes on the market measure 145mm by 90mm, and so can take one or more such QSLs comfortably. The 140mm x 85mm QSL will also be found to have pleasing proportions. Some radio amateurs go to a lot of trouble to print very small QSLs or even odd-shaped QSLs; these may engender comment, but they are really a great nuisance to QSL handlers, and are almost impossible to file.

If making use of oversize postcards, ensure that they are bulk-guillotined before you design and print the written material upon them.

Unless an artistic design strongly demands it, avoid vertical-type QSLs. Horizontal QSLs are easier to both read and file.

2. WEIGHT, QUALITY AND COLOUR

The weight and thickness should be such that the card can stand up to considerable handling but not be so heavy that unnecessary postage costs are incurred. Printers use the GSM numbers as a measure of weight (grams per square metre). Card weighing less than 200 GSM is inclined to be flimsy, whilst one weighing more than 300 GSM, although of superior quality, possibly will not justify the additional cost. The growing use of computer paper QSLs (which are both larger than the recommended size and very much flimsier) can make the QSL managers' task of packaging a really onerous one.

Many printers will employ art board, which is white and has a gloss surface. If you want a coloured card, ask your printer to show you the available range in systems board. If a coloured gloss surface is required, cast-coated board is available, but is fairly expensive. If choosing coloured board and/or printing, ensure that there is sufficient contrast between the board and the print. As a suggestion, black, dark blue or bright red lettering upon yellow will be found to be both attractive and most readable.

3. ONE OR TWO-SIDED QSLs

Apart from design, one has to decide upon whether to have a card printed on one or both sides. Obviously one printed on one side only will be considerably cheaper. However, if you are keen on design, then a card printed on both sides will allow you infinitely more scope, since the data will not interfere with the chosen design. If you anticipate a change in QTH, you might think about using a rubber stamp with which to print data on the reverse side of the card.

4. DESIGN

(a) FRONT SIDE OF QSL Apart from the scene, drawing or photograph (if these are options), the most prominent feature should undoubtedly be the sender's callsign. If printing this upon a postcard or similar pictorial representation, you will need some good advice from your printer since nothing is worse than a callsign that can *rub off over* a glossy surface. In any case, make sure of these things:

(i) Set the callsign up in such a size that it is prominent. (Suggestion: approximately 18mm or nearly 3/4 inch) preferably near the top of the QSL. If printing upon a photograph you may be forced to print on that part of the card where the photograph is lighter. On a one-sided QSL it is essential that the sender's callsign is much more prominent than the receiving station's callsign, otherwise QSL sorting will become a difficult task.

(ii) Always print horizontally. Vertical callsigns are not easy to read quickly. Obliquely printed signs too are not to be encouraged.

(iii) Do not use dots or hyphens in the callsign, and make all letters and numerals the same size and of equal spacing.

(iv) If two or more callsigns need to appear on the QSL, make use of small boxes next to the callsigns (in which a tick or cross may be placed). This will avoid the scratching out of the unused callsign(s).

(v) Have the callsign printed in plain letters. Avoid old-fashioned lettering (e.g. "Old English") and modern computer-type lettering, which many find quite difficult to read. The letters and numerals should be bold but simply printed. Unless you are particularly skilful, avoid the temptation of incorporating the callsign in an artistic design or drawing. It may be creative, but it is often a headache for others who have to decipher it. Make your callsign stand out. As far artistic design is concerned, this itself presents a challenge to the designer. Perhaps the following points may help:

1. Keep the design simple. Some QSLs seem to have a "bit of everything" on the front, which detracts from the central theme or callsign.

2. If you decide upon a sketch (and this is a difficult task) pay some attention to accuracy. Either use a tracing method or seek the advice of a professional. This applies particularly to map outlines.

3. If you are printing the callsign over a background scene, ensure that the scene is not too lightly printed. Several excellent scenes cannot be appreciated because superimposed printing almost completely masks them.

4. As mentioned previously, printing a callsign on the glossy surface of a postcard can present difficulties, but in many cases,

it can be done. If not, such a QSL displayed on a wall would seem to be nothing more than a postcard. When the callsign appears on the front, however, the pictorial QSL can become a most attractive idea.

(b) REVERSE SIDE OF QSL The most prominent feature here will be the callsign of the station to which the QSL is to be sent. It is written clearly (in block letters about 15mm high) on the top of the card. It is prefixed by the words "TO" or "TO STATION" (which can be printed on the QSL) so that there can be no confusion of intent. This will greatly facilitate sorting by QSL managers. With some outwards QSL bureaux, special procedures apply. Enquire of your club whether an information sheet on the subject is available. Ensure that the correct QSL information is received when working a rare DX station. Write both the station called and the QSL manager's callsign on your card. Remember that some rare DX countries have no QSL bureau so it is a waste of time sending your card to your QSL bureau if no QSL manager is specified. Obtain up-to-date information from DX news in amateur radio magazines. Ensure, too, that your outgoing QSLs are sorted before forwarding them for dispatch (as well as checking, of course, that you are a current financial member!!!).

• Double-check the accuracy of the callsign from your log. Use an oblique stroke through the letter "O" in order to indicate a zero, and dot the letter "I" if this could be read as a numeral. Pay particular attention in writing the letter "U" (making it flat at the base) so that there will be no confusion with the letter "V". Ensure too that the curve of the letter "C" is exaggerated so that it will not be misread as an "L" (always made with two straight lines).

• If the QSL is one-sided only, the receiving station's callsign (clearly printed) will be the first piece of information given in the data sent, and not be hidden amongst the RST report or dates. Even though on a one-sided QSL the receiving station's callsign will, of course, be written in, it will be of great assistance to QSL managers if this callsign could also be written on the top of the blank reverse side of the QSL. In this way, there will be no need for the card to be turned over when sorting.

• Additional but non-essential information such as awards gained, equipment used, pse QSL and 73 (never 73's) can be included, but should not be allowed to eclipse the essential data on the card.

• Ensure that the words QSL (or confirming QSO) are stated. Some award managers insist that the QSL is seen to be a confirmation of a QSO as distinct from a shortwave listener's report. In order to cater for shortwave listeners' reports, some operators print "your SWL report (or similar)" as an alternative to the "confirming QSO" printing on the QSL.

• The phrase, two-way or 2X CW (or whatever mode is used) should be used. Some award rules stipulate this requirement.

• Always use UTC (GMT) and Greenwich Mean Date for DX reports - never local times. Employ a four-number sequence for the UTC.

• When writing in the date, use the written word for the month, eg: 7 March 1989, and not 7.3.1989, since Americans and many other DX stations will surely read this as the third of July 1989. This has cost many an operator a DX QSL. Some radio amateurs make use of "data boxes" at the top of which is printed DAY - MONTH - YEAR.

• Include on the QSL your name and full postal address, including postcode. Several receiving stations will depend upon this information in order to reply to your QSL.

•Remember, when filling in a QSL, to avoid making any alterations. Rewrite another QSL. Alterations on QSLs submitted for awards are generally rejected. All data should be in ink, never in pencil.

• Remember that your report will not be complete unless each of the following is recorded: station worked, date, time, frequency, mode and RS(T) evaluation.

QSLs these days are costly items. They are also valued by many receiving stations. These are reasons why a little thought given to QSL design can give greater satisfaction to other radio amateurs, save you money and facilitate the QSL delivery process. Let us look at three QSL cards:

Parabolic Dishes Worry Councils

Satellite dishes are as common as TV antennas in some countries and in South America they've been nicknamed "The white daffodil".

It was now common in Australia to see dishes pointing towards Australia's national satellite Aussat which is geostationary at the equator.

Municipal councils in Victoria and probably elsewhere in Australia appear not to have control over the installation of the dishes.

While the dishes are mainly confined to TAB agencies, hotels, and some business premises, councils are concerned about them appearing in back yards of private homes.

The adjoining Melbourne east-suburban municipalities of Box Hill and Nunawading have expressed concern about the dishes appearing in the backyard of homes.

The Ministry for Planning and Environment has written to councils requesting comment on the need for planning control over satellite dish antennas. ar

VK4VC

An excellent example of a one-sided QSL card. The sender's callsign is prominent, and the data boxes clearly give all the information required. There is no confusion whatever over what station is sending the QSL and the station to receive it. Note, too, how clearly the receiving station's callsign has been recorded in the data box and how other information given (including the full postal address) does not eclipse the data of the QSO.

QUEENSLAND AUSTRALIA

VK4VC

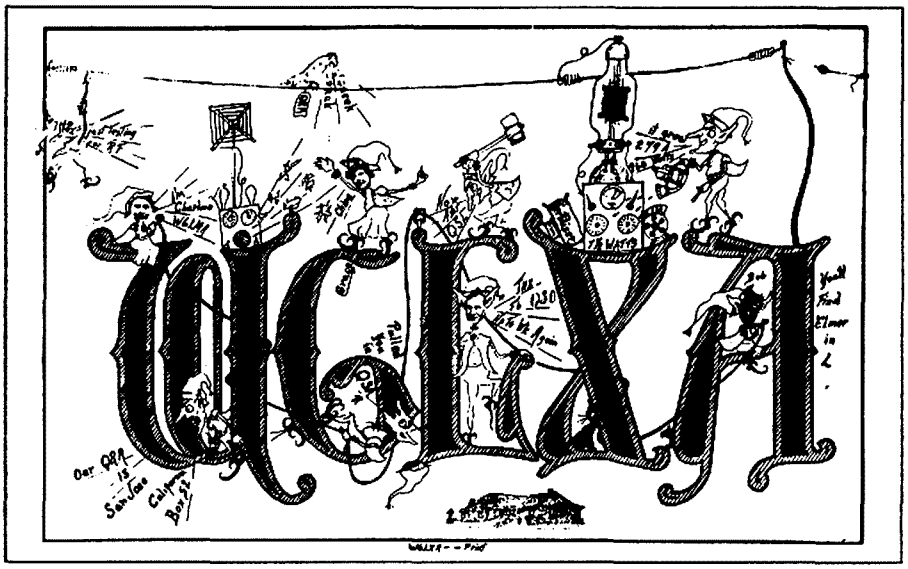
TO RADIO	CONFIRMING QSO						
	DAY	MONTH	YEAR	GMT	MHZ	RST	MODE
VK3KUB	16	12	87	2313	144	59	2X SSB

KEN. CHIVERTON
3 BAMBAROO AVE.,
NAMBOUR. 4560
QUEENSLAND, AUSTRALIA

73 Ken

☑ PSE QSL

☐ TNX QSL



W6LXA

Although considerable thought must have gone into the fine detailed drawing shown, the reader has to look twice to work out the callsign of the station. Clarity has, unfortunately, been sacrificed for artistry.

VK3CDP

A fine example of a two-sided QSL. Many VK QSLs display Aboriginal motifs, coats of arms, the Australian flag and native animals. This one, printed in the colours green and gold, displays a humorous sketch embodying a kangaroo. Despite the fact that the card also shows the operator's name, QTH and the WIA emblem, the designer has ensured that the station callsign remains a prominent feature through a wise choice of varying letter-size printing.

ar

Travellers Net Changes Frequency

Barry Wilton
VK3XV

The net frequency was changed from 14.106 MHz to 14.116 MHz on 1 June 1989. There is no change to the net time of 0300 UTC.

ar

Interference, Spectrum Pollution and Reception Problems

Jim Linton VK3PC

Changes to Departmental Policy

The Department of Transport and Communications (DOTC) has received some bad press over its plan to charge an upfront fee before investigating complaints of radio and television interference.

The media has run stories critical of the move, claiming it was a revenue making exercise.

According to the reports, the elderly and disadvantaged would suffer because they could not afford to pay the planned fee of $60.

The Department has not come out with a press release to defend its plan to charge before it investigates interference to TV and radio broadcast reception.

It feared that publicising the current free investigation service would result in a deluge of reception complaints which it could not handle.

Delegates to this year's WIA Federal Convention were fortunate to be addressed by the Director of DOTC's Interference Task Force, John Higginbottom.

He commenced his address by correcting what the Department saw as two misconceptions concerning the proposal. Mr Higginbottom said the plan to charge a fee was not a revenue making exercise.

Secondly, the Department will continue to investigate genuine interference complaints involving the reception of broadcasting services, he said.

He made the point that interference caused to a radio communication service will continue to be investigated free.

This type of interference is a spectrum management problem and its investigation is an overhead built into licence fees, Mr Higginbottom said.

He explained that DOTC field staff were overloaded with investigations of interference which mostly turned out to be receiving system problems, or faulty power lines.

"There's 16,000 complaints of alleged interference currently handled free of charge each year. Some 75%, or over 12,000, are readily found to be not real interference," Mr Higginbottom said.

Statistics show that receiving systems accounted for 58% of complaints, and power lines were to blame in 36% of cases.

Mr Higginbottom said that of the 58%, some 20% related to immunity problems, the ability to reject unwanted signals.

DOTC wants its skilled, well-equipped staff to be able to quickly provide assistance to people who really need it and have no where else to go - that is, in genuine cases of interference.

The Department cannot do this at present because it is overloaded with requests to fix problems which can, and should be dealt with by TV service technicians or electricity authorities.

Mr Higginbottom emphasised that while Departmental officers can give advice on these problems, they are not in a position to fix any of them.

Free Service Costs $1 Million

In recent years, there has been a growing tendency for members of the public to call on the Department's investigation service, primarily because this service is free.

Each time the Department's highly skilled staff attends, it uses human and equipment resources worth about $175 which amounts to about to $1 million every year.

Mr Higginbottom said the planned call-out charge is intended to encourage people to go directly to their service technician or to their local electricity authority, where appropriate.

In a public education program, to begin soon, a glossy handbook will be issued free to help the non-technical person identify the likely cause of their reception problems.

In addition to television and radio problems, the handbook will also cover home entertainment equipment.

No Mandatory Standards for Power Lines

The handbook will show the public the effects of power line interference to TV reception, and advise that an approach should be made to the electricity authority where faulty power line devices are implicated.

The Government has not used the Radio communications Act to set emission standards for power lines and distribution systems.

Emissions from power lines cause spectrum pollution which is of concern to the Department. It is considering the question of emmission standards for power lines and associated equipment.

The handbook will identify other reception problems and their causes such as inadequate or faulty antenna, or poor immunity.

The recommended solution will be to contact a qualified TV serviceman to check out and fix the antenna or take action to improve receiver immunity.

Mention will be made of typical filters which can be fitted to a TV set to cure some cases of poor immunity.

Interference to other domestic equipment including recorders, amplifiers, telephones and intercoms will be cited as requiring a serviceman or help from the manufacturer.

Mr Higginbottom said DOTC is consulting with the TV service industry to highlight the role of TV servicemen in dealing with reception problems, particularly those due to a lack of receiver immunity.

Power supply authorities were being advised and their help would be sought to overcome complaints of degraded TV reception caused by power line faults, he said.

Telephone Advisory Service

In addition to providing the new information booklet, the Department proposes to introduce a telephone advisory service, to help members of the public who need further advice.

This service will be of particular assistance to the elderly and disadvantaged.

Departmental officers will also provide liaison/referral service with electricity authorities, in any cases where direct approaches from complainants do not resolve the problems.

DOTC hopes these measures will virtually eliminate its involvement in cases of straight-forward power line interference and reception problems in all except the genuine interference problems.

Mr Higginbottom said by greatly reducing the unnecessary workload investigating power line, immunity, and receiving problems, DOTC will be better able to cope with genuine interference.

However, a member of the public can still disregard the advice in the handbook and that give over the phone by DOTC, pay a $60 fee, and request an investigation.

Concerns Expressed by the WIA

The Institute believed DOTC should put in writing its findings after investigating any complaint where it was inferred, or an allegation made that interference was caused by a neighbouring Amateur station.

If an Amateur station is blameless, a statement should be available, e.g. some form of certification, for the protection other radio amateur. It would also help avoid any misunderstanding which can arise when a member of the public is verbally told "it's an immunity problem".

The WIA believes certification of the problem will assist the complainant to advise a TV serviceman of the problem accurately. Without such a document, the general public could continue, wrongly, to blame the nearby amateur installation for causing interference.

This type of situation based on ignorance or misunderstanding has the potential to result in a blameless radio amateur facing harassment, or even cost litigation from a disgruntled neighbour. ar

Western District Christmas Party held in Forbes. Barbeque was washed out by a thunderstorm. Standing L to R: Paul VK2BRW, Peter VK2EDD, Peter VK2BXQ, Nev VK2DR, Brian VK2DHO, Gio VK2FJP, Vie VK2EVM, David VK2BJI, Ron VK2DDO, Steve VK2MEM, Adrian VK2MCY, Alan VK2KW. Seated L to R: John VK2AMV, Walter VK2NND, George VK2PXG, Marg VK2PNG, (ex P29NUN), Peter VK2ETK, VK2XAQ had to leave early. Photo: John Meagher VK2AMV.

Author's Corrections

PEP Power Meter - June 1989

Frank Antonovic VK4AOI
16 Haydon Crescent
Townsville 4814

Thank you for publishing my article on 1 kW SSB power meter in June 1989, but I am afraid gremlins got into it in the rewriting.

The beginning of the article is confusing and not correct.

Both meters, 1 KW and 150 W with BAR and DOT display, indicate instantaneously RMS power on CW and peak of audio cycle. BAR decays rapidly, but DOT holds indication for part of a second.

Probes should be in specified size metal boxes, and resistors 1 W, L 13mm, D 4.5mmm (body, not caps) correct, as ones made in Taiwan. Dick Smith has them. Otherwise, frequency response will be very far from flat.

Different physical sizes of resistors have different I and c.

150 W Meter, DC Calibration

One sentence is left out...for that LED. Then adjust P1 for second LED to just light up at one fifth the voltage shown in the table for that LED. Repeat the process.

1 kw, DC Calibration

First LED of display turns on slowly, others snap on fast. So check that P1 is set correctly after following the described calibration. Set SW1 to range III, set DC power supply to 22.9V (for 50 Ω), adjust P2 for tenth LED to just turn on. Then check that second LED on ranges III and II just light up for a tenth of voltage shown for that LED. If it is not right, increase P1 slightly, and repeat the process, until you get it right. That sets ranges II and III. For the low end of range I, there is no fine adjustment, D6 takes care of that. ar

QSLs From the WIA Collection

Former African Colony

Ken Matchett, VK3TL
HON CURATOR,
WIA QSL COLLECTION
Po Box 1 Seville Vic 3139
Phone (059) 64 3721

ZD6DT

This QSL dated October 1956 is from the former British Protectorate of Nyasaland. The QTH is given as Zomba, the operator being David Taylor. At that time, Zomba was the centre of Government ministries before the shift to the country's new capital of Lilongwe in the late 1970s.

David, employed by the Ministry of Posts, was particularly active for many years from Nyasaland, and an excellent QSLer. He operated from the country just after the war when a member of the Royal Signals. The year of the QSO, 1958 was the year in which the present-day Life-President, Dr Banda returned to Nyasaland from the USA to assume political leadership of the country. He ended up in prison the following year, but went on to lead his country to independence.

Malawi lies on the east side of the African continent, being bounded by Zambia to the west, Tanzania to the north, and by Mozambique to the east and south. It is a small nation, being half the size of Victoria, with the population about half that of Australia.

The Portuguese reached the area in the sixteenth century, but the first significant contact with Europeans was the arrival of David Livingstone along the shores of Lake Malawi in the year 1859. Scottish churches were soon established, one of their major aims being the abolition of the slave trade. In 1891, the British established the Nyasaland Protectorate, the word Nyasa meaning "lake". (Lake Malawi occupies approximately one fifth of the total area of the country).

The Radio Amateurs' Handbook of 1930 indicates the provisional allocation of the prefix block ZBA-ZHZ, which was to be used by the governments of several British possessions and protectorates, the prefixes ZB, ZC, ZD, ZE and ZF being issued. Of the ZD prefixes, Nigeria ZD2 was the first allocated, the Nyasaland ZD6 listing occurring in 1936.

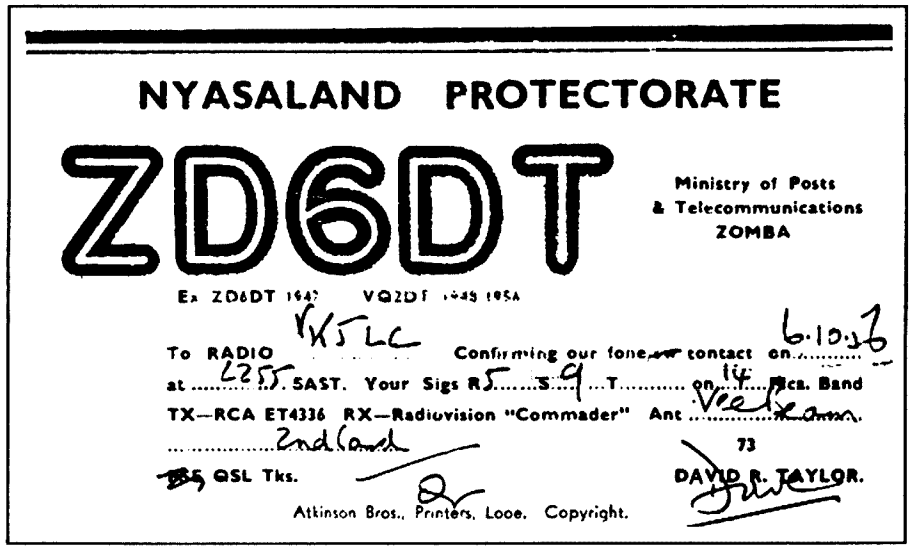
7Q7GN

Malawi became an independent nation on 6th July 1964 under its new name as a member of the Commonwealth of Nations (formerly the British Commonwealth). Two years later, Malawi adopted a new constitution and became a republic. The name "Malawi" is derived from the Maravi, a Bantu people who came from the southern Congo several hundred years ago. The 7Q7 QSL originates from Blantyre, the country's largest city and its commercial centre. The prefix change from ZD6 to 7Q7 was made after independence, from the ITU allocation of 7QA-7QZ. This QSL portrays a clever silhouette of a native with a tom-tom. The population of present-day Malawi consists of several native tribes, the Chewas on the west side of Lake Malawi making up the bulk of the population. There are definite tribal differences, but no significant friction seems to exist, the concept of a Malwaian nationality being gradually accepted.

If you would like to play a part in building up the WIA QSL collection and to save something for the future, would you please send a half-dozen (more if you can spare them) QSLs which you feel would really help the collection along.

All cards are appreciated, but we especially need commemorative QSLs, special-event stations QSLs, especially assigned call QSL's (eg. VK4RAN), pre-war QSLs, unusual prefixes, rare dx and pictorial QSLs of not-so-common countries. Could you help? Send to PO Box 1, Seville 3139, or phone (059) 643 721 for card pick-up or consignment arrangements for larger quantities of cards.

The Wireless Institute of Australia would like to thank a further group of generous people who have contributed towards the collection:



NYASALAND PROTECTORATE

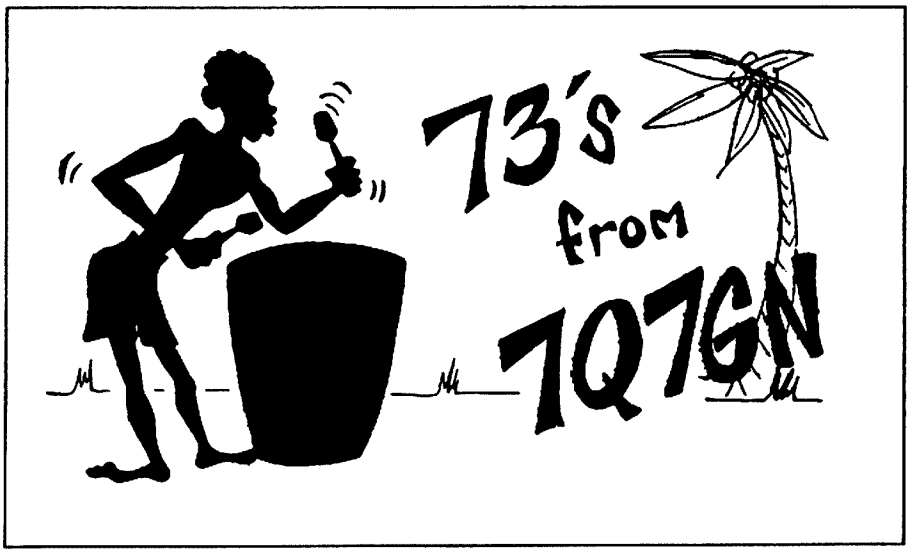
ZD6DT

Ministry of Posts & Telecommunications
ZOMBA

Ex ZD6DT 1947 VQ2DT 1948 1954

To RADIO VK5LC Confirming our fone contact on 6.10.56
at 2255 SAST. Your Sigs R5 S9 T ..... on 14 Mcs. Band
TX—RCA ET4336 RX—Radiovision "Commader" Ant Vee Beam.
2nd Card 73
QSL Tks. DAVID R. TAYLOR.

Atkinson Bros., Printers, Looe. Copyright.



Alex	VK2BYO
Ken	VK3AKK
Betty	VK4BET
Ossie	VK3AHK
Ken	VK4ABL
Jim	VK6RU
Vic	VK5AGX
John	VK6BA
Steve	VK2PIF
John	VK3KMW
Kevin	VK3ZI
Brian	VK4LV
Robin	VK6LK
Eddie	VK8XX
Chas	VK4UC

Also thanks to the friends and families of the following "silent keys" who have helped the collection along:

Allan Heath	VK5ZX
Arthur Stehn	VK4IS
Arthur Heckenburg	VK2AHL
Morrie Pfeffer	VK4ANU
Mal Ireson	VK3AIR
Andy Domjan	VK3AEW (VK1XX)
Henry Pearce	VK3EN
Geoff Haskard	VK5RH

If it is your sad duty to assist in the disposal of equipment for a family of a "silent key", would you kindly approach the family to see if it would like to donate QSLs to the WIA Collection? Ken will send a circular to the family indicating what we are trying to achieve.

DX QSL Contributors' Ladder

Here is a further list of DXers who have contributed rare DX and unusual prefixes to the collection. (See page 55 of the March 1989 issue of 'AR' for details of the Contributors' Ladder).

Chas, VK4UC - (54 points) PYØRE Trinidade (new country to our list). Prefix: ZAØ. Special calls: OJØMR PYØSP

Eddie, VK8XX - (50 points) 3D2XX Rotuma (new country to our list)

Vic, VK5AGX (29 points) Prefixes: ED7, NN2, NZ5, NB3, KR1, ND8, KI9, NI9, NG9, EV1, TOØ, ZV2, OF8. Special calls: DL4WCY, DL9WCY, DFØ1R.

John, VK3KMW (8 points) Prefixes: 6C35, DH1, SO5, TI1

Our thanks to all contributors. How about a few more of you FB DXers joining in? Will you help?

SPOTLIGHT ON SWLING

Chinese Jamming

Robin L Harwood VK7RH
52 Connaught Crescent
West Launceston 7250

This month, the spotlight has turned on China. Student protests erupted in Beijing's Tienanmen Square in late May, just at the time when the world's media was in Beijing. Soviet President Gorbachev had come for a Summit Meeting with Chinese leaders, after a thirty year hiatus. This meeting was supposed to be the main news, but the protesting students outside quickly took attention away from the Summit. These protests continued for another three weeks after the Soviet leaders had left. Because the Chinese domestic media did not cover the demonstrations, people in other regions of that populous nation tuned-in to international radio to find out what was happening in Beijing.

Eventually, the authorities clamped down martial law on the city, although it took some time to implement because of public resistance. One immediate effect was the re-introduction of jamming of international radio broadcasts in Mandarin (Putonghua) and other Chinese dialects. The VOA in Washington was the first to experience jamming from 22 May, with three of its 5 channels being heavily jammed. Other broadcasters, such as the BBC and Radio Australia, and even Radio Moscow's Chinese Service, received jamming. A sign of just how nervous the Chinese became, was when they even jammed the VOA feeder from Delano in California to the Philippines which was on SSB.

The day that I am writing this, news has come in that the Peoples' Revolutionary Army violently put down the Student Protest with hundreds, perhaps thousands, of casualties on the streets. Jamming is, therefore, expected to become even more intense in the days and weeks ahead, for the domestic media, so far, have suppressed details of what has happened. There, listeners will be tuning in on short wave to find out what is happening. Frequencies to watch are (VOA) 7285, 11965 AND 15410 between 1000 and 1500 UTC; (BBC) 7180 and 11955 kHz between 1000 and 1045, 1200 and 1245 UTC; and (Radio Australia) on 7120 kHz between 10 and 14 hours UTC. Check also the VOA feeder on 9350 Khz USB. All are in Mandarin or Putonghua as it is known locally.

The "International Radio Daze" in Berlin on the last weekend in May turned out to be a flop, despite extensive publicity, with only 60 turning up. Half of them were broadcasters. This event was designed to be a bridge between the broadcasters and listeners, but DX'ers boycotted it, arranging their own gathering in Sweden a few days later. Activity there was concentrated exclusively on DX'ing and technical matters. You can expect the rift between DX'ers and international broadcasters to widen. For example, many international stations have discontinued issuing QSL cards, sending no-details response cards.

Radio Canada International is facing severe budgetary cutbacks, threatening the viability of their services. Their parent organisation - the Canadian Broadcasting Corporation, have had their budget slashed, and one option is the complete axing of RCI. As you are aware, RCI has entered into agreements to share broadcasting senders with Chinese, Japanese and Austrian organisations.

While the Chinese agreement is in doubt at present, because of the political turmoil, the use of the Austrian and Japanese senders has improved RCI's audibility in Asia and the Middle East.

Radio New Zealand International is on target for the commencement of their new service to the central Pacific, using their new 100kW sender near Taupo. It is planned to commence in mid-January to coincide with the Commonwealth Games in Auckland. They plan to use six or seven indigenous languages. Radio New Zealand International are hoping other target areas could be added later, depending on finance.

Keep an ear out for VNG - Australia's Time and Frequency Service, on the standard frequencies of 10 and 15 MHz. They did hope that their experiments on these frequencies early last month in daylight hours will see them go ahead permanently on them. The 5 MHz signal of VNG from Llandino (NSW) is heard here well in the evening hours.

Well, that is all for July. Until next time, the very best of listening and 73.

ar

Hand-Held Holy Bible

A pocket-sized computerised Bible went on display recently at the annual Consumer Electronics Show in Chicago, and should be available from October. The EB200 produced by SelectTronics Inc, contains the text of the Bible and measures 9 x 15.5 x 2.4 cm and weighs less than 168 grams.

A user of the hand-held electronic Bible can find texts by typing in parts of a passage, for example the familiar "Valley", "Shadow" and "Death" words of the 23rd Psalm.

The information compression technology it uses is expected to also result in the development of portable language translation devices. ar

INTRUDER WATCH

Catching Up the Backlog !

Bill Horner VK4MWZ
26 Iron Street
Gympie 4570

For the last couple of months, you will have all noticed the absence of this column. For the most part, I am unable to control the APO, so needless to say, your reports are late, and thus, my report is late, and I have missed the deadline. How can you help? Easily - Please make sure that from now on you close off all your reports by the 25th day of each month, and forward your logs to me ASAP. Then, just maybe, I will get them in time to make the deadline for our magazine.

There have been some enquiries from various clubs throughout, and some personal enquiries also. I look forward to receiving your logs.

To date there have been 7% more intruders logged compared to last year. These appear to be increasing, as three months ago the figure was only 4.7%. If any of you wish to receive a copy of my report, it is available for a cost of $8.00 per year.

This is the total cost for twelve months. Your Federal Councillor receives one, so if you wish to see his, then please enquire. In Queensland, a copy of the report is issued with the monthly divisional meeting minutes. It is very important to keep up with what is going on.

VK4KEL Geoff, from the Sunshine Coast, also has been able to list the report on Packet Radio BBS, so if you have access, then try there.

I have said it before, and I say it again, the ball is in your court. It is up to you to get the most out of the bands.

Old Habits Die Hard . . .

even though you have all been requested to kindly close off your reports on the 25th day of each month, and forward them to me ASAP. By doing this we can get some guarantee that they will arrive here in time for me to get them collated, and a report done in time to make the deadline for this magazine. For the most part, a lot of reports arrived here in time, however, some didn't get here at the time of writing this. Again, I ask all of you, to please send your reports in as soon as you can get them to the PO.

Reports received so far, VK's: 2PS, 2COP, 2EYI, 3XB, 3CIS, 3MBU, 4BG, 4OD, 4ADY, 4AKX, 4 BHJ, 4BTW, 4BXC, 4VLT, 5GZ, 5TL, 6RO, 6XW, 6NHX, 8HA and T Baines from VK7. Many thanks to those people. A lot of intruders reported on 10 mtrs, it appears that in Indonesia the amateurs don't even seem to be worried by the AM stations.

A classic recently was reported where an amateur actually got a name and address of an intruding station who asked him to QSL direct.

Remember - Get Your Reports In.

WIA Federal Intruder Watch Report for April 1989

FREQ (khz)	Mode	Date	UTC Time	Id	Comments
7000-7002	dsb	mm	1130 +	.	tone carrier.. phone patch
7002	a1a	dly	1158 +	V	beacon
7004-7011	nOn	04	1140	.	
7012-7014	2x r7b	mni	0958 +	.	
7009	a1a	21	2058	UMS	5 figure groups
7028	f1b	04	1139	.	
7039-7043	f1b	20	2213+	.	Fax 6 khz wide
7053	f7b	mni	1130 +	.	USSR. .. using UGX
7080	A3E	mni	1120 +	.	Radio Bangladesh
14002	f1b	12	1105	.	
14008.5	r7b	07	0815	.	multi mode & channel
14024	f1b	mni	0713 +	.	400 hz shift rtty
14023.5	f1b	mni	0623 +	.	
14012	a1a	05	1108	DCLI	calling 3mxzdo
14068		mni	0349 +	.	teletype wheel
14069-14072	f1b	mni	0505 +	.	
14072-14076		mni	0536 +	.	teletype wheel
14079	f1b	mni	2345 +	.	fax 3 khz wide
14075	a1a	mni	1400 +	VRQ	calling CQ
14070	a1a	mni	1032 +	VBX	calling VPO
14081	a1a	23.03	0139 +	KFB	calling CQ - QRV
14085	a1a	mni	1000 +	NPO	calling CPQ
14100	a1a	10	0930 +	NBZ	calling ZBK
14102	a1a	02	1030 +	EYU7	De EYU7 BT U55T DA5N AR ???
14140.5	f1b	dly	0610 +	UMS	
14124.6	f1b	dly	0406 +	.	sending "V" in CW
14153	r7b	mni	0734 +	.	
14167.5	f1b	mni	0833 +	.	
14172	a1a	14	1100	PUN8	calling PQNM
14172	a1a	24.03	1005	Q2BY	calling BI6M.. QSO
14185	a1a	15	0740	UTL2	called UTL3
14200	a1a	mni	0900 +	VMO	calling VLQ
14212-14215	a1a	dly	1000 +	5VR	calling CPQ
14230-14232	mni	dly	0648 +	.	multi modes/channels
14250	nOn/a3e	dly	1100 +	.	Russian B/C station (NUISANCE)
14274	a1a	dly	0957 +	CQ5	calling CQ
14294	fsk	mni	0913 +	UIH54	calling UGN75
14314	a1a	20	0925	FBHJ	calling KNWD and WY25
14318	fsk	21	1010	TL4R	calling NROK
14318	fsk	29.03	1025	XBZ ??	calling J8EU
14337	a1a	11	0640	LQF46	calling LQF15
21000-21002	f1b	mni	0618 +	.	suspect French Polynesian(20995)
21032	f1b	dly	0123 +	UMS	USSR NAVAIL RADIO
21245.5	f1b	mni	0608	.	multi channel
21268.5	f1b	mni	0612 +	.	
21283	fsk	dly	0100 +	mni stns	.. XSC, 3SN, a lot with no ID
21270	a1a	mni	0500 +	FH6	calling 5LH
21320	a1a	mni	0600 +	F9Z	calling XC4
21327	a1a	mni	0510 +	7DR	calling HC3
21345	a3e	dly	0700 +	.	European Stn
214005	a3e	dly	0500 +	Moscow	Midnight in Moscow
21450	a3e	dly	24hrs	Moscow	always tx from Moscow
28425-28465	r7b	10	0810 +	.	S9 multi channel
28575	a3e	15	0824	.	musical broadcast
28815	a3e	04	0011 +	Moscow	another Russian
28901	f1b	dly	0835	CZCAA	50 baud RTTY 425 shift USB normal

Over 2090 CB type stations logged by VK6RO; others logged nearly 750.

Summary:

The logs received need to be neater, with more detailed information.

If everyone did similar to VK2EYI and VK4BHJ we would be better served.

A lot of intruders logged - approximately 7% more than this time last year.

Try This...

AJ Brean VK6SY advises that "Pelo" rail joiners for OO/HO model railway track make good socket connectors, for such TO3 transistors as 2N3055.

These nickel silver connectors have a good area to allow soldering of 10 or 15 Amp wire.

They cost about $3 per dozen from any good model shop.

VHF/UHF

An Expanding World

Eric Jamieson VK5LP
9 West Terrace
Meningie 5264

All times are Universal Time Co-ordinated indicated as UTC

AMATEUR BANDS BEACONS

Freq	Call sign	Location	Grid square
50.056	VK8VF	Darwin	PH57(1)
50.066	VK6RPH	Perth	QF78
52.200	VK8VF	Darwin	PH57
52.320	VK6RTT	Wickham	OG89
52.325	VK2RHV	Newcastle	QF57
52.330	VK3RGG	Geelong	QF21
52.345	VK4ABP	Longreach	QG26
52.370	VK7RST	Hobart	QE37
52.420	VK2RSY	Sydney	QF56
52.425	VK2RGB	Gunnedah	QF59
52.435	VK3RMV	Hamilton	QF12
52.440	VK4RTL	Townsville	QH3Ø
52.445	VK4RIK	Cairns	QH23
52.450	VK5VF	Mount Lofty	PF95
52.460	VK6RPH	Perth	QF78
52.465	VK6RTW	Albany	QF84
52.470	VK7RNT	Launceston	QE38
52.485	VK8RAS	Alice Springs	PG66
144.022	VK6RBS	Busselton	QF76
144.400	VK4RTT	Mount Mowbullan	QG62
144.410	VK1RCC	Canberra	QF44
144.420	VK2RSY	Sydney	QF56
144.430	VK3RTG	Glen Waverley	QF22
144.445	VK4RIK	Cairns	QH23
144.445	VK4RTL	Townsville	QH3Ø
144.465	VK6RTW	Albany	QF84
144.470	VK7RMC	Launceston	QE38
144.480	VK8VF	Darwin	PH57
144.485	VK8RAS	Alice Springs	PG66
144.530	VK3RGG	Geelong	QF22(2)
144.550	VK5RSE	Mount Gambier	QFØ2
144.600	VK6RTT	Wickham	OG89
144.800	VK5VF	Mount Lofty	PF95
432.066	VK6RBS	Busselton	QF76
432.160	VK6RPR	Nedlands	QF78
432.410	VK1RBC	Canberra	QF44
432.420	VK2RSY	Sydney	QF56
432.440	VK4RSD	Brisbane	QG62
432.445	VK4RIK	Cairns	QH23
432.445	VK4RTL	Townsville	QH3Ø
432.450	VK3RAI	Macleod	QF22
432.535	VK3RMB	Mount Buninyong	QF12
432.540	VK4RAR	Rockhampton	OG56
1296.198	VK6RBS	Busselton	QF76
1296.410	VK1RBC	Canberra	QF44
1296.420	VK2RSY	Sydney	QF56
1296.440	VK4RSD	Brisbane	QG62
1296.445	VK4RIK	Cairns	QH23
1296.480	VK6RPR	Nedlands	QF78
2304.445	VK4RIK	Cairns	QH23
2306.440	VK4RSD	Brisbane	QG62
10368.000	VK3RGZ	Pretty Sally Hill	QF22
10445.000	VK4RIK	Cairns	QH23

(1) This is an additional frequency for VK8VF in Darwin, according to Bill VK8ZWM, the changes being handled by Rex Pearson VK8RH.

(2) Charlie VK3BRZ writes that this beacon is now operational, and reliability tests are being conducted from the Geelong Amateur Radio Club's premises prior to removal to its permanent site on Mount Anakie. The output power is 15 watts to a 12-element yagi at 20 metres. The antenna is at present pointing towards Adelaide, where it will probably remain until the permanent site comes into use sometime in July; there the proposed antenna is to be stacked crossed dipoles. A possible boost of power to 40 watts is being considered.

The keying is CW as follows: de VK3RGG QF22 and eight seconds of carrier before repeating the cycle. There is a possibility of the keying cycle being changed to include the six-character locator square, and the call-sign becoming VK3RGL.

Charlie would welcome reports, and can be contacted most evenings on (052) 823 167.

Ian Glanville VK3AQU at Myrtleford, writes to say he is hearing VK3RGG with signals to S5 when the Melbourne beacon VK3RTG is barely readable. Similar results are obtained by Phil VK3KUB at Springhurst, north of Wangaratta. Ian asked for more details on VK3RGG and these are listed above.

Six Metres

May certainly produced a dramatic change on six metres. Where previously there had been almost daily contacts across the Pacific, they rapidly declined in VK5. The last such contact at VK5LP was YBØARA at good strength. On 5/5, the American paging stations were very strong on 43.5 MHz at 2300. At this time VK8AH in Darwin was hearing W5 and W8 stations but unable to work them. At 2355 VK5ZDR, VK5NY and VK5RO worked K5CM and N5KM at S2. At 2400 VK3OT was heard working W5, 6 and 7.

On 6/5 at 0008 K4EJW into VK3 and VK5. At 2210 YJ0AMI to VK3OT at 5x9. Rex VK8RH said April provided a daily path from Darwin to Hawaii. K5ZMS on 28.885 said a very widespread Es opening had occurred in the US and 50.110 was so cluttered with local US stations that DX working was impossible!

7/5 at 0005 YJ0AMI was heard at S2 on CW. Since then there has been little else other than Roger VK5NY hearing the beacon H44HIR on 8/5 at 5x9 with no one to work! On 17/5 Roger said the US pagers were strong, but no other signals.

On 4/6 there appears to have been an opening from the eastern states to W and KH6, but no other details.

Darwin Report

Bill VK8ZWM telephoned to report details of the new Darwin beacon on 50.056 MHz, and this is included in the beacon list.

Bill said that there should be increased activity on six metres from Darwin, with Mike VK8ZMA moving from Alice Springs, and the pending July return to Darwin of Graham Baker, formerly VK8GB, now resident in Canberra. Readers will recall Graham set the pattern for collecting six-metre countries in Cycle 21, when he amassed 42 countries. No doubt he will quickly add to that score with the return of F2 contacts next September, when six-metre operators from Darwin will include VK8ZWM, VK8RH, VK8AH, VK8ZMA and VK8GB. VK8KG has moved to Melbourne.

At the moment, the areas of contact from Darwin are JA, YB and KH6, the last being very consistent.

From Brunei

Andrew Davis, V85DA, reports from Brunei that during March and April 50 MHz opened to JA most evenings, and below is a summary of his contacts. However, Andrew says he is unable to devote all his time to radio and, because Brunei is a rare country for many operators, he needs to share some time on the HF bands, where he finds that, to many, 3.5 MHz is needed as much as six metres.

Andrew says he is happy to work strings of stations in countries he has already worked, and tries to give everyone a fair go, but finds it irksome that in a dogpile there are operators well aware of the crowded conditions, who will persist in telling him about his rig, the weather and mowing the lawn etc! If you are at fault, please take heed of the comments, and limit your contact to an exchange of signal reports, name and locator square, if that is requested.

Andrew reports the band opened to JA most evenings during January to April. He had almost decided that a large tree in front of his antenna was causing the loss of VK contacts, when he finally worked VK8AH on 23/3! Since then, on the nights VK has been open, he has heard beacons from VK2, 3, 4, 5, 6 and 8, but nothing from 1, 7, 9 or 0. Most contacts have been on 50 MHz, but some on 52 MHz. He runs 10 watts, and has worked more than 500 JAs with that power, but believes in most countries there are stations with poor receivers or high noise levels, as he finds it difficult to equate a 5x5 report he gives a station running 100 watts with the 5x1 he received for his 10 watts.

Andrew quotes VK1DA as his QSL route, and cards arriving there are forwarded to Brunei each month. Cards sent to VK1DA via the Bureau are answered as soon as time permits. Whatever problems may have occurred with previous V85 operators, Andrew assures readers they will receive QSL cards in due course. Although he does not ask for same, it would be courteous to include two IRCs if you are expecting him to send your card by airmail.

4/2: 0549 XX9CT and XX9KA. 23/3: At 1600 beacons VK4RIK and VK8VF heard for first time, at 1606 worked VK8AH for first VK contact, then 15 JAs and VS6SIX beacon. 25/3: 0620-0636 14 VK6s; 1210-1256 20 JAs and VK8AH and VK8RH. 26/3: from 1450 VK8RH, VS6UP, YCØUVO, VS6XMQ, JA4OK, JR6BU. 27/3: from 1132 VK8s ZLX, KTF, ZWM, GF, RH, AV, KTM and ZCU, 1242 YBØARA at 559; 1303 VK6JQ at Broome, followed by 51JAs. 229/3: VK5s ZDR, ZK, ACY, NY, LP, ZHS, ZMK, ZTS and beacons JA1IGY, VK6RPR, VK3RMV, VK4RTL, VK5VF, VK8RAS, VK2RSY and VK4ABP; from 1102 worked VKs 3AMZ, 4VV, 3AMK, 8ZCU, 4KIT, 8ZLX, 3KKJ, 4AFC, 3OT, some on 50 and 52 MHz.

1/4: 0245 band sounded dead. Called CQ on 50.100 and worked FK8EB. Than VKs 2ASZ, 3OT, 6KXW, 2BA, 6AKT, 6KDX, 6RO, 6BQN, 6YAB, 6HK, 2QF, 6PR, 8KTH, 5BC, 4VV and P29PL. 2/4: 0152 VK5BC and VK5NY. 3/4: from 1310 many JAs on CW. Heard 5H1HK calling with beam on JA, worked him, then turned beam and worked him again at 559; at 1504 YBØCXN. 6/4 heard 5H1HK working JAs. 9/4 heard VK5ZDR and VK5RO with JA dogpiles.

New South Wales

Nev VK2QF had a theory that during Cycle 21 Ws would arrive at the coast of VK2, and work its way inland to VK3 and VK5. He said that whilst this did occur on a few occasions, more often this time signals arrived at his QTH of Hargraves first, stayed there for half and hour and then moved elsewhere, eg: on 28/3 around 2200 he worked 15 W4s in half an hour, then the band changed. Later on 28.885 VK2BA said he first heard W4s half an hour after the first contact to VK2QF, and VK4DDG reported no contacts until an hour after VK2QF. Nev wonders whether the fact that he is 750m asl has some effect.

In VK5 I noted the pattern was much as Cycle 21. We would hear east-coast stations via a backscatter working Ws, then VK3OT and others would work them; next it would be Hugh VK5BC at Berri, and finally, Adelaide and Meningie if I was lucky!

5/4: W7, W4, XE1, ZF1RC. 6/4: JA, W5FF, ZF1, W6, XE1. 7/4: KHØAC 2202, T2ØJT 2205. 9/4: KEØSC/DU3 0139, JAs, HL1AJY, JR6WPT. 10/4: PJ9JT 2242. 12/4: W4, W6. 14/4: XE1GE to 2140 then called by XF4L for their first VK contact. 15/4: ZL7TPY, T2ØAA 2326. 16/4: JAs, ZK1XH 2136, ZK1CG 2146, CO2KK 2201, ZF1RC. 17/4 FO5DR. 18/4: ZF4L 0018, 8P6JW 0031 and 8P6LL 0034 both 5x9, ZK1XH, 26. 19/4: JA, HL5BAS, XE1GE, XE1MD, V31PC 2349. 20/4: V31PC 2232. 24/4: W5, W6. 27/4: YBØCXN 0037, JAs, XE1, W4, WB4OSN 2224 at S9 for half an hour, KG4SM 2234. 28/4: N5JM 2127, W5VAS, WB5GDN etc, VP5D 2339. 29/4: YBØARA 0146, KH6JJI 0248 at S9+. 7/5: FOØAQ heard at 2141.

Nev has confirmed 30 countries, and awaits confirmation from a further 22.

The United States

Bob WA6BYA sent a letter with my QSL, in which he says that conditions have been so good on 50 MHz that during March/April he worked VK1, 2, 3, 4, 5, 6, 7, 9, 0 and heard VK8GF. Also worked ZL1, 2, 3, 4, 7 and 0. New countries in the Pacific area have been 5W1, ZK1, P29, ZL7, VK9 (Norfolk Island), T20 (Macquarie Island), bringing his total countries worked to 67.

For his more distant stations, Bob has worked VK5s BC, NY, ZK, RO, ZDR, AMK, EE, NC, AKM, LP, KK; VK6s RO, KZW, IM and YU; VK7HL.

QSL for T2ØDJ and T3ØJT is via W6JKV. Cards will be sent out after 1 June.

Bob uses an antenna system consisting of two M-squared nine-element beams on a two-wavelength boom, spaced 24 feet apart. The top antenna is 130 feet above ground!

Hong Kong

With my QSL card from VS6UP came some news of happenings along the southern coast of China. There is a mass of information, and the following are some extracts from the logs of Hong Kong stations who worked as follows:

19/2/89: 0940 9H1CG, 1815 YBØARA. 20/2: 1256 VK8ZLX. 25/2: 0856 PAØRDY, PE1EVX, G4UPS, G3KOX, PA3CII, PAØPKD, G4AHN, G3COJ, G3JVL, G3SED, G4JCC. F5QT, F6DOK and FC1 were heard working JAs to 1011. 26/2: 0822 9H1BT, 0836 9H1FL. OE1CIW heard.

10/3: 1524 817TT reported hearing VS6SIX, later worked 5H1HK at 1539. 12/3 1244-1400 VKs 3AKK, 3AZY, 3HAY, 2WK, 4FN1, 4JH, 5LP, 5NY, 5RO, 3AKK, 3XQ. 16/3: 0700 5H1HK, also on 18/3. 22/3: VK4, VK6, VK8, YCØUVO. 23/3: 1447 4S7NMR, 4S7AVR; 1517 VQ9OM. 24/3: 0933 9H1B5, 9H1FL, 9H1GB working VK; 1226 P29PL, 1339 YCØFTE, 1416 VQ9QM, 1516 4S7ET. 25/3: 1129 5W1GP, 1420 JAs work KP4EOR on long path, 1456 VK85DA. 26/3: 1630 5H1HK and on 27/3 and 28/3.

QSL information; VS6CT - KA6V or JA4ENL; VS6DO - WA3HUP not K4CIA; VS6DX - WA4BCQ; VS6UO - G3IFB; VS6UP and XX9TDM - 1989 CBA not W7TIR; VS6WA - W7TIR; VS6WV - KØTLM; XX9CT - KA6V; XX9DX - WA4BCQ; XX9JN - KU9C; XX9KA - KC9V. The VS6 Bureau cannot handle cards for non-resident XX9s.

Chatham Island

Kerry ZL2TPY sends some information regarding his DXpedition to Chatham Island where he worked as ZL7TPY. He worked 41 call areas in 23 countries, and logged 830 QSOs on 50, 51 and 52 MHz.

Kerry said there was an element of risk going south for F2 DX, but he went, because there was no operating from ZL7, 8 or 9 for Cycle 22, and he could 'sleep' with the equipment for possible openings to Europe or Africa - but no luck.

Kerry said that most contacts to VK and ZL were via backscatter as the band opened and closed to the US. Only three openings to VK were beaming west.

Kerry says that the Chatham Islands are the last stop to nowhere - real old fashioned, with the 450 or so residents depending on the fishing season for a living. It can be very windy, so he limited himself to a five-element yagi, and the pole was aluminium with a 5mm wall thickness.

While on Chatham, Kerry tried RS10 and had 20 QSOs, using a TS700A and eight watts to a ground plane at five metres. He used an Eddystone receiver, which did not fine tune correctly, and this caused many problems. Worked ZL 1, 2 and 3 and heard VK2 and VK3.

11/4: 0509-0808 84 JAs; PJ9JT, 2042 N6XQ. 12/4: 2032 KP4A, 2250 KP4/KB8RO, then 7xW4, 25xW5, 20xW6, 1xW7. 13/4: 0906 JE2QJJ, 1929 ZL1AKW followed by 5xW4, 5xW5, 35xW6, 12xW7, XE1GE, T20JT, KG4SM. 14/4: 0034 N6VI, 29xJAs; 1854 KP4BZ, 9xW6, 2X27, KP4A, KP4EKG. 2200 KP4BZ; 2234 27xJAs then W5, W6, VK4FXX, VK4FXZ, VK4FNQ. 15/4: 0038 K6TQ, 27xJAs, 1911-2042 XE1GE, ZL1WOB, KP4BZ, KP4EOR, KP4EIT, KP2A, HI8WPC, ZL2KT, ZL2AGI, KG4SM, YS1ECB, XE1MD, FK1TS, 2T, W6, W7, VK4TUV; 2053 1xW5, 55xW6, 9xW7, VK4TUV; 2225-2259 VKs 2QF, 3OT, 3AKK, 3BQS, 3XQ, 3AUI, 4DO, 4TL, 4FXZ, 4FNQ, 4FXX, 5KK, 5ZDR, 5ZK, 5NY, 5RO, 5BC, 5LP, 7HL, 8ZLX, 8GF and at 2342 H44GP.

16/4: 0108 WA6BYA, 105xJAs, 0741 KH6HI, 0959 NI6E, 2034 W5OZI, KG4SM, WW4, 5, 6 and 7 for 13 QSOs, VK4FNQ, VK4BRG. 17/4: 0129 23xJAs; 1950 KP4A. 27xW5, 6, 7; 2148 XF4L, 2204 ZF1RC, XE1GE, VK4FN HI8WPC, VK4BRG. 18/4: 0036 19xJA, VK8ZC VK4BRG, VK5, VK8XX, VK8GF; 1917 W1FC/FS7, HI8WPC, KP2A, ZL1AKW, KG3SM, VK2, VK4; 2122 VP5D, 2130 8xW6, 7; 2243 ZF1RC, VK2. 19/4: 0043-0114 VK5s NY, ZK, ZDR, BC, AMK, RO, ACY, LP; Ø304 ZL7TZ; 2127 22xW5, 6, 7; 2158 V31PC. 20/4: 0028 VK4FNQ; 0236 JAs, 0814 JAs; 2053 W5FF, ZL1, 2; 2115 N6XQ, K6GMV; 2213 XE1GE, XE1MD, W6UXN; 2236-2348 VKs 4BRG, 5ZK, 3LK, 5DK, 5NY, 5LP, 4KJL, 5ZDR, 3MC, 5AAQ, 3QT, 3AOS, 8GF, 5RO, 5ZMJ, 5BC, 3CDI, 4RO. 21/4: 0010 VK3OT; 2034 ZK1WL, WA5LIG/6, 3D2ER, AD6C, N6XQ, K6JZK; 2305 VKs 3OT, 5NC, 5ZK, 5NY, 5LP, 5BC, 5ZDR, 5ACY, 5RO, 3DQJ, 5KAA, 5DK, 3NM. 22/4: 1909 W1FC/FS7, KP4A, HI8WPC.

Kerry said that he used an IC551D with an IC560 as back-up, five-element NBS-type yagi at 7m, and a Heathkit SB-620 Panadaptor scope. On 28.885 he used an Eddystone 1837/2 receiver with dipole antenna and a 12-volt battery supply. The station was maintained 24 hours a day for two weeks. ZL7TZ Tai-Rio had about 25 contacts to W5, 6, VK3, 5, using Kerry's rig during meal breaks.

ZL7TPY became the first ZL for 43 years to hear all six continents on six metres, when he heard the ZB2VHF beacon on 22/4.

Other highlights included the reception of the VP5D beacon practically every day, also Russian TV on 49.750 daily. On 19/4 at 2042 ZB2VHF beacon on 50.035 at Gibraltar was heard, and rose to S9+10dB at 2050, beaming long path at 165 degrees. OX3VHF beacon on 50.045 in Greenland was heard at 559 for five minutes on 21/4 beaming short path. On 22/3 Spanish FM on 50.020, 50.070, 50.100, 50.110 beaming north-east to east at 2100.

Northern Territory

It seems Peter VK8ZLX and Jeff VK8GF like trying for the impossible. Last month I reported on the two-metre contact to JA6GSW on 19 April. Latest reports suggest this may not be a distance record, and that Steve VK4ZSH may still hold that record. More details when to hand.

The other contact that these two were involved in was the contact I reported in the May issue, when VK8ZLX and VK8GF worked P43AS on the island of Aruba, off the coast of Venezuela at 2216 on 25 March. I did not realise it at the time, but it appears this distance is probably further than that originally set between VK8GB and 9Y4LL in Trinidad on 10/4/82 at 18665 km. The new distance is reported as being 18824 km. Congratulations! Now that Peter has sent Mike VK8ZMA to Darwin, the way may be open for spectacular contacts.

Radar

In May AR under that heading I made mention of the possibility of a proposed Civil Aviation Authority facility in the Mount Lofty Ranges being associated with Bureau of Meteorology wind shear radar.

Mr Chris Howell, Navigation Aids and Radar Engineer for the SA/NT Region, has written to say that the proposed facility will serve one purpose only - as an International Civil Aviation Organisation (ICAO) standard Secondary Surveillance Radar (SSR).* There is no association with the Bureau of Meteorology, or any other organisation, in establishing this facility.

Mr Howell says that the 'chirp' every 12 seconds which is experienced with audio and computer equipment in the vicinity of Adelaide Airport is caused by the 2 MW Primary Radar, and no interference has been recorded from the low-powered SSR installation.

"SSR operates on 1030 MHz transmit and 1090 MHz receive, had a peak power of 2 KW and a very low-duty cycle. The purpose of the facility, besides to determine aircraft position, is for the communication of identification and altitude data from the aircraft for display to air traffic controllers."

My statement in the May issue was in the form of an exploratory comment, and an answer to part of the query has been received as above. In the light of current media publicity regarding the selection of the Marble Hill site for the SSR installation, I can understand Mr Howell's concern that the SSR and Wind Shear Radar should be seen to be connected, and regret that my informant was incorrect; however, it would seem preferable for an incorrect supposition to appear in AR than the daily press.

I have been in touch with Mr Rod Potts and Dr Greg Holland of the Bureau of Meteorology in Melbourne, and they have informed me that the radar to be installed at Darwin is a Vertical Wind Profiler or Doppler Radar, and will be used to measure the vertical wind profile, as an aid to aircraft making final approaches to primary airports. The unit will operate on 49.920 peak power of 40 kW (average power of 2 kW) and will transmit pulses of two to 16 microseconds, at a pulse 100 metres wide. One signal will be transmitted vertically, and two other signals at an angle of 15 degrees in an east-west and north-south direction, and the signals may be varied according to requirements.

Dr Holland said that the frequency had been selected in preference to 90 MHz, due to the increased penetration of the ionosphere at the lower frequency. Channel 0 interference had been considered, but appeared not to be a problem at Darwin. There was more concern for interference to a nearby military installation.

Dr Holland said that he believed there was a similar installation at Adelaide on 50 MHz, using a phased array antenna, and there appeared to be no reports of interference. So far, I have not been able to confirm the existence of such an installation.

EME Contacts

No doubt partly due to six-metre signals becoming scarce, amateurs were able to turn their other rigs on and achieve some notable contacts.

For some time, Mick VK5ZDR, has been hearing Dave W5UN during his EME skeds with other stations on two metres. Finally, with the help of others on 28MHz, Mick was able to arrange a sked with W5UN on 11/5/89. At 0300 Mick successfully completed a two-way contact with Dave with O and R reports. Mick did not

* *See full text of Mr. Howell's letter p58.*

have the advantage of a mast-head amplifier.

It was a particularly important contact for Mick for two main reasons: that of being his first EME contact, and his first contact on the air using CWI Mick spent some days brushing up his code skills and, although understandably hesitant at first, succeeded with a two-way contact at his first attempt. Good work!

Two other stations which also achieved their first contacts via EME were Roger VK5NY on 13/5 at 0440 with O and R reports to W5UN, and Garry VK5ZK.

VK5LP will have to wait until the mast-head pre-amp is repaired!

From Western Australia comes news that Don VK6HK had an EME contact with W5UN on 30/4/89, for a possible first for two metres in Western Australia.

Other News

I note from the West Australian VHF Group Bulletin that Canadian amateurs are in serious danger of losing the entire 220 MHz band, and possibly the 440 MHz band.

QSLs received by VK5LP include ZF1RC, KX6DS, XE1MD, W5UWB, WA6BYA, YVØUVO, VS6UP and VK3OT.

Martin Haasen OY7ML, of the Faroe Islands, sends a card confirming that at present no six-metre operation is permitted from OY. OY9JD had made several crossband 10/6-metre QSOs, and has applied for a six-metre licence, but this may not be available until September/October 1989.

QSL routes: VP5D to W3HNK; ZF1RC to Roger Corbin, PO Box 1549, Cayman Islands, West Indies; 5W1GP to PO Box 1625, Apia, Western Samoa.

Closure

Mid-winter provides a period for possible Es contacts on six metres, and operators should not overlook this fact.

Closing with two thoughts for the month: "Painting is the art of protecting flat surfaces from the weather - and exposing them to the critic", and "Don't be afraid to ask dumb questions - they are more easily handled than dumb mistakes".

73. The Voice By The Lake.

ar

Try This - .

Graham Muirhead VK4WEM advises that tea chests, suitably reinforced, can be stacked to make useful cupboards. They can be stacked in any configuration, but he recommends a maximum stack height of four chests.

POUNDING BRASS

IARU Region 1 : High Speed Telegraphy Championship

Gilbert Griffith VK3CQ
7 Church Street
Bright 3741

The 2nd IARU Region 1 HST Championships will be held at the DARC Interradio Exhibition at Hanover from 10th to 12th November 1989. Invitations have been sent to all Region 1 national societies to send team to take part in this event. For the first time, as reported in MM9, there is also an Open Class competition for "all-comers".

Each national team may comprising 3 to 6 members, with no more than 2 senior males (over 18 years); 2 senior females; one junior male (up to 18 years); and one junior female. Each team will have a teamleader, who may or may not be a competitor; a trainer; and an interpreter, and the team may also be accompanied by an HSC International Class Referee serving as a member of the International Jury.

The Open Class competition has four categories :-

(a) "Youngsters", up to 15 years of age
(b) "Juniors", up to 18 years
(c) "Seniors", older than 18 years, and
(d) "Veterans", 46 years or older

The Tests

The Championships consist of two competitions.

The HIGH SPEED competition comprising four tests, each one of one minute duration:

1 Reception of letter messages
2 Reception of figure messages
3 Transmission of letter messages
4 Transmission of figure messages

Each reception message is sent at progressively higher speed with competitors withdrawing as the speed becomes too high for them. Any form of writing or symbols may be used to record the messages, but the formal entries must be re-copied onto an official form in capital letters.

The transmission messages are given to competitors a day in advance. Two-letter messages and two-figure messages are provided, and a contestant may attempt each test twice by using the different messages, declaring the better attempt to be his/her entry for the test.

The OPEN CLASS competition comprises three tests:

1 Reception, with copying, of mixed text messages (letters, figures, and punctuation marks) during a period of three minutes, and reception, with copying, of open English text during a period of two minutes ;

2 Reception, with memory copying, of three open English text messages, each containing about 100 characters ;

3 Transmission of mixed text messages during three minutes, and transmission of open English text during two minutes.

Competitors in the Open Class competition having more than five errors in a received message are required to resign. The use of a typewriter is allowed.

In the memory copying test, competitors are allowed three minutes after each transmission to write down the text received.

In the Open Class, only one transmission attempt is allowed, and the number of corrections is limited to five.

Keys Allowed

Straight keys or electronic keys (single or double paddle) are allowed. Electronic keys shall produce dots and dashes in the ratio 1:3. Electronic keys with additional adjustments or with memory systems, capable of transmitting messages automatically or semi-automatically, or keyboards, may not be used. Electronic keys used shall be powered from 220 volts AC and their output must be capable of activating a polarised electromagnetic relay.

Entering the Championships

There is a very short time-scale to allow national societies to select their teams, unless they have begun to make their arrangements in advance. Anyone interested in taking part in either the team evens or the Open Class should contact their national society *immediately.*

The results of the 1st IARU Region 1 HST Championships, held in Moscow in 1983 are inside the back cover of MM9 so that prospective competitors can see the level of performance they need to achieve. If any reader of Morsum Magnificat attends or takes part in the championship please send a report to me (and me, Gil) ASAP so that the details of the results can be included in an early issue of MM (and PB).

Please Note

The above information is a very brief summary of the rules for the HST Championships and should not be treated as an official description of the Championships. It is taken from Morsum Magnificat #12, and I doubt the the WIA have been notified. I suggest that prospective competitors contact Colin Turner G3VTT, Hurley, Weavering Street, Maidstone, Kent, ME14 5JJ, UK.

Although I manage to get hold of most Morse-related literature, I am unaware of any similar competition for Region 3. Any reader input would be appreciated in the form of information, or proposals for a national or regional competition.

Continued page 34

Huge Savings on the FT-767GX All Mode Transoeiver!

HF, 2m, 6M and 70cm

The FT-767GX is the **only** transceiver that offers such a high level of performance on all the H.F. bands, as well as on the 6M, 2M, and 70cm bands! A vast array of both 'operator convenience' and 'DX improving' controls are provided by the 2 microprocessors, while attention to detail in the RF circuitry provides up to 104dB receiver dynamic range (in CW-narrow mode), and transmitter 3rd order I.M.D. of - 35dB (at 100W output, 14MHz). Compare the following features with any other radio.

- All band coverage from 1.8 to 440MHz (100W max H.F., 10W max VHF/UHF)
- All modes - SSB, CW, FM, AM, FSK (on HF, VHF, and UHF)
- Upconverting triple conversion H.F. receiver covering 100kHz to 30MHz, with choice of RF amplification or direct mixer feed.
- Heavily optioned - inbuilt 600Hz CW filter, inbuilt 6kHz AM filter, RF speech processor, I.F. notch and I.F. shift filters, inbuilt heavy duty AC power supply, inbuilt automatic H.F. antenna tuner, high stability PLL (+/—) 3ppm), data IN/OUT sockets for packet T.N.C. connection, all mode squelch.
- Revolutionary facilities include a digital wattmeter and auto calculating SWR meter (for HF, VHF, and UHF!) programmable tuning steps for each mode (from 10Hz to 99.9kHz!), and a front panel TX shift control which allows the operator to adjust the carrier point of the SSB transmit signal to suit his voice characteristics! A large digital display, and keyboard frequency entry are, of course, standard features.
- **2 Year Warranty** the longest in the industry
- **BONUS MD-1 desk mic**

D-2935

$3995

SAVE $600!

Limited stocks!

YAESU

DICK SMITH ELECTRONICS

• NSW • Albury 21 8399 • Bankstown Square 707 4888 • Blacktown 671 7722 • Campbelltown (046)27 2199 • Chatswood Chase 411 1955 • Chullora 642 8922 • Gore Hill 439 5311 • Gosford 25 0235 • Hornsby 477 6633 • Hurstville 580 8622 • Liverpool 600 9888 • Maitland 33 7866 • Miranda 525 2722 • Newcastle 61 1896 • North Ryde 88 3855 • Parramatta 689 2188 • Penrith (047)32 3400 • Railway Square 211 3777 • Sydney City 267 9111 • Tamworth 66 1711 • Warringah Mall 905 0441 • Wollongong 28 3800 • ACT • Fyshwick 80 4944 • VIC • Ballarat 31 5433 • Bendigo 43 0388 • Box Hill 890 0699 • Coburg (03) 383 4455 • Dandenong 794 9377 • East Brighton 592 2366 • Essendon 379 7444 • Footscray 689 2055 • Frankston 783 0144 • Geelong 43 8804 • Melbourne City 326 8088 • Richmond 428 1614 • Ringwood 879 5338 • Springvale 547 0522 • QLD • Brisbane City 229 9377 • Buranda 391 6233 • Cairns 311 515 • Chermside 359 6255 • Redbank 288 5699 • Rockhampton 27 9644 • Southport 32 9863 • Toowoomba 38 4300 • Townsville 72 5722 • Underwood 341 0844 • SA • Adelaide City 232 1200 • Beverley 347 1900 • St. Marys 277 8977 • Elizabeth 255 6099 • Enfield 260 6088 • WA • Cannington 451 8666 • Fremantle 335 9733 • North Perth 328 6944 • Perth City 481 3261 • Midland 250 1460 • TAS • Hobart 31 0600 • NT • Stuart Park 81 1977

ORDER BY PHONE TOLL FREE (008) 22 6610

Outstanding Value & Performance

FT-736R VHF/UHF Transceiver

The sky's not even the limit for the FT-736R!. This base station rig is the most complete, feature packed radio ever designed for the serious VHF/UHF operator, whether your interest is talking through the local repeater or working the world via satellite. As standard, it provides 25 watts output on the 2 metre and 70cm bands in SSB, CW, or FM modes, and can be expanded to also cover the 6 metre and 23cm bands by installing optional modules as required. Some of its many features include...

- Flexible frequency control, with keyboard frequency entry, 115 general purpose memories, 10 full-duplex crossband memories, 2 independant VFO's per band, band/memory/mode selective/limited-band scanning functions, as well as 2 full-duplex VFO's which can have their transmit and receive frequencies (and modes) tuned independantly or tuned synchronously for satellite operation.
- IF shift and IF notch filters, noise blanker, all-mode VOX, 3 speed AGC, Speech processor, GaAs Fet front-ends on 430 and 1200MHz, high stability (+/- 1ppm) reference oscillator, VFO or selectable channel steps on FM, narrow FM mode, inbuilt AC power supply, as well as a large fluorescent digital display • **2 Year Warranty** D-2920

$2695

or $2995 with 2m/70cm/6m modules (D-2925 only)

Bonus MD-1 Desk Mic

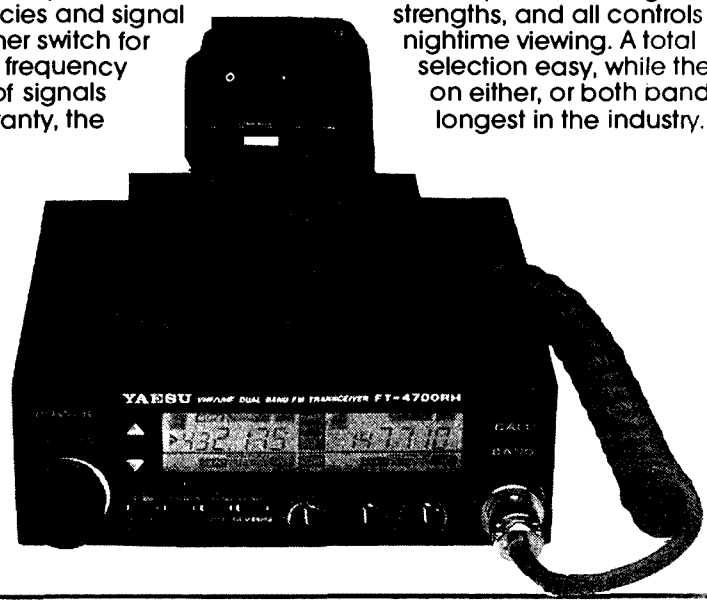
Optional 6m module $499
Optional 23cm module $949

Save $450!

FT-4700RH Dualband Transceiver

Continuing the tradition started by Yaesu with the FT-2700RH, the new FT-4700RH dualband 2M/70cm FM transceiver now provides higher levels of performance, while offering even better value for money!

Features include 50 watts output on 2 metres (144-148MHz), and 40 watts output on 70cm (430-450MHz), with an inbuilt coding fan for long term reliability. True full-duplex crossband operation is supplemented by dual band simultaneous reception or auto-muting reception (with independant squelch and mixing balance), so you can listen for calls on both bands simultaneously, or work someone on one band while also listening on the other band. The optional YSK-4700 controller cable allows the main body of the transciever to be installed under a seat, while the front panel/controller mounts conveniently on the dashboard. On the control panel, the bright amber back-lit LCD shows both VHF and UHF frequencies and signal strengths, and all controls have back-lit labels for clear readability, with a dimmer switch for nightime viewing. A total of 20 memories and 5 selectable tuning steps make frequency selection easy, while the advanced scanning features allow quick defection of signals on either, or both bands. And all this is backed up by our exclusive 2 year warranty, the longest in the industry.
D-3300
Optional YSK-4700 (D3301) $49.95



$1295

Save $100

With Bonus

D-4207 2m 5/8λ antenna
D-4030 70cm Co-linear antenna

DICK SMITH COMMUNICATIONS

From page 31

Don't forget that subscriptions for Morsum Magnificat are available from Tony Smith, 1 Tash Place, London, N11 1PA, UK, for £7.50 sterling surface mail, or £9.00 sterling air mail.

Readers may remember that I featured the Howes transmitter kit from Dick Smith Electronics back in December 1988. I have, waiting for assembly in my file, both the Howes CVF80 VFO kit and the DcRx80 receiver kit. I hope to feature each kit in the column as soon as possible. They are available on "special" at the moment, so perhaps you would like to grab one even before you read the articles. The transmitter is working very well, as it has from the very first switch-on, with no sign of chirp or drift. I even plugged my homebrew VFO into it with excellent results.

73's Gil VK3CQ

ar

WIA 80 Logo Competition

The world's first and oldest national radio society will soon begin celebrating its 80th birthday.

A part of this celebration will be the creation of a logo. We need your ideas on paper. WIA members, their family or friends can submit logo designs.

The WIA 80 logo must include the familiar standard WIA wings emblem. It should also clearly give the message that the WIA was founded in 1910, or 80 years ago.

A judging panel will review all entries. It will have the right to chose any design submitted, parts of one or more entries, or simply use the entries as inspiration to create a logo.

Entries close on August 14, 1989. They should be sent to: WIA 80 Logo Competition, Wireless Institute of Australia, PO Box 300, Caulfield South, 3162.

AMSAT

AMSAT Australia

Maurie Hooper VK5EA
11 Richland Road
Newton 5074

National Coordinator:

Graham Ratcliff VK5AGR

Information Nets

AMSAT Australia
Control: VK5AGR
Amateur check in: 0945 UTC Sunday
Bulletin commences: 1000 UTC
Primary frequency: 3.685 MHz
Secondary frequency: 7.064 MHz
Amsat SW Pacific
2200 UTC Saturday, 14.282 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT Australia net. This information is also included on some WIA Division Broadcasts.

Latest Satellite News

AO-13 Transponder Schedule Update (from VK5AGR)

14 May 89 to 14 June 89 Mode-JL from MA 160 to MA 200 ! Mode-B from MA 200 to MA 160. Also, for a trial period the omnidirectional 70cm antenna will be connected to the Mode-B receiver from MA 20 to MA 40. These changes have been introduced to enable stations who have access around perigee to experiment with perigee operation. Mode S unchanged. 14 May: BLON/BLAT 212.0/+2.4 with a drift rate of 0.016/-0.061 deg/day, respectively.

Date:	14 Jun 89-16 Aug 89	16 Aug 89-16 Nov 89
Attitude:	180/0	210/0
Mode-B:	MA 0 to MA 1100	MA 3 to MA 160
Mode-JL:	MA 110 to MA 145	MA 160 to MA 200
Mode-B:	MA 145 to MA 255	MA 200 to MA 240
OFF:	%	MA 240 to MA 3
Mode-S:	MA 150 to MA 160	MA 210 to MA 222

Transponders will be in operation during the whole orbit from June 14 until August 18 due to excellent sun angle and power budget. No perigee operation between August and November due to perigee solar eclipses!

MICROSATs Launch Set for November 9, 1989

Arianespace officials have now informed AMSAT-NA that the launch of the MICROSATs (and Uosats D and E) has been "pushed back" and is now pegged for November 9, 1989. This particular mission in which the MICROSATs will fly on is commonly referred to by the French as a "call-up" mission. It is called this because the primary payload, the SPOT-2 earth resources/ photo-reconnaissance satellite, which is being launched, is to replace the ageing SPOT-1, which has been operational for several years now.

DOVE MICROSAT Downlink Frequency Changed to 145.825 MHz

Originally DOVE (Digital Orbiting Voice Encoder) was designed to use 145.970 MHz as its voice downlink frequency. However, after consultation with AMSAT officials, a decision was made to change it to 145.825 MHz, in order to maintain "commonality" with previous amateur radio, "scientific and educational" amateur radio satellites, that is, UO-9 and UO-11. From analysis of the projected DOVE orbit, it was found that the potential for mutual interference between DOVE and UO-11 was minimal. Also, it was pointed out that many schools had previously acquired simple FM receivers, which were crystal controlled and only operated on 145.825 MHz. Therefore, it was BRAMSATs desire to see this "commonality" maintained, and so the DOVE downlink frequency was changed.

"The First Flock of Microsats" Part 4

Flight Computer Module

Each MICROSAT contains a general purpose microcomputer, for command and control purposes, and for digital data management. The computer is responsible for ensuring that all spacecraft functions are properly carried out. It performs the following tasks, among others :-

- Battery-charge regulator set-point control
- Telemetry measurement or calculation and conversion
- Transmitter power level selection and scheduling
- Command reception and decoding
- Telemetry packet or data initiation
- AX.25 protocol implementation, transm i t and receive
- Text output to the speech synthesizer or digital sound output to the digital to analog converters on DOVE
- Picture data handling on WEBERSAT
- Bulletin Board store-and-forward uses ervices on LUSAT and PACSAT
- "Watchdog" operation to reset the computer, if no commands are received in a certain period, or to reduce transmitter power output, if the battery voltage becomes un-

acceptably low.

The flight computer is a customer design based on NEC V-40 microprocessor. Three primary memory areas are supported. For executable image storage, 256K bytes of RAM are implemented with Error Detection And Correction (EDAC) hardware, employing twelve bits per byte, eight data bits and four check bits. A 2K byte ROM boot loader is non-volatile, and provides a means of safely restarting the flight computer from a hard reset. User messages, telemetry mass storage, voice, picture, or other data are stored in a nominal two megabytes of RAM, which is accessed in half megabyte switched memory banks. Up to eight additional megabytes of RAM may be accessed as a serial-interface mass storage medium. Half megabyte memory banks may be individually powered down, in order to conserve spacecraft power when the memory is not in use.

A single 8 bit analog to digital (A to D) converter in the computer measures voltages on a pair of bus lines reserved for analog measurements. This provides the means for the flight computer to monitor operating parameters throughout the spacecraft, for telemetering and operational purposes.

On-board programs are managed by the Quadron Multi-tasking operating system, which looks similar to MS-DOS to each of the running applications. This approach is used, in order to greatly simplify ground based software development on existing PCs.

Telemetry will be encoded from A to D measurements, and logically organised into 32 or more channels within software. The proposed telemetry to be monitored includes at least :-

Channel No (ref. LUSAT or PACSAT)	Parameter	Module No
00	TX PA Temperature	01
01	Base plate Temperature	01
02	Tx RF Power Output	01
03	Mod 02 (Unassigned)	02
04	+X Array Current	03
05	-X Array Current	03
06	+Y Array Current	03
07	-Y Array Current	03
08	+Z Array Current	03
09	-Z Array Current	03
10	Total Batt. Load Cur.	03
11	Total 7.5 V Bus Cur.	03
12	Total 5.0 V Bus Cur.	03
13	Battery Voltage	03
14	7.5 V Bus Voltage	03
15	5.0 V Bus Voltage	03
16	BCR Input Voltage	03
17	Batt. Cell #1 Temp.	03
18	Batt. Cell #5 Temp.	03
19	-Y Array Temp.	03
20	Flt. Computer Temp.	04
21	RX #1 Sig. Level	05
22	FX #1 Freq. Offset	05
23	RX #2 Sig. Level	05
24	RX #2 Freq. Offset	05
25	RX #3 Sig. Level	05
26	RX #3 Freq. Offset	05
27	RX #4 Sig. Level	05
28	RX #4 Freq. Offset	05
29	RX Mod. Temperature (Top Plate Temp.)	05

The -Y array temperature is of interest, because the -Y array covers the side of the MICROSAT containing the electrical bus channel. This parameter also provides a backup source of spacecraft spin rate information.

Other calculated or derived parameters to be included in the telemetry selections are :-

- Total Array Current
- Total Power Output from Solar Arrays
- Total S/C Load Power
- Number of RX Channels Active
- Downlink Serialized Frame Number
- Uplink Serialized Packet Number
- BCR Solar Voltage Set Point
- Battery Voltage Set Point
- UTC Clock and Date
- Current Satellite Keplerian Elements
- S/C in Sun/Eclipse
- Battery Charging/Discharging (since last frame)
- Battery Charging/Discharging (over last orbital period)

This list is to be expanded further.

Use of a flight computer, so intimately connected with spacecraft functions and mission, allows unprecedented opportunities for statistical and scientific data collection and on-board processing. The quantized, and fully identified nature of packetized information, will allow the flight computer to determine and analyse usage geographically, and to monitor trends. This data will be useful to mission operators in maximizing satellite performance and data throughput through schedule, operating parameter, and protocol adjustments and experiments.

FSK Packet Receiver Module

LUSAT, PACSAT, and WEBERSAT all contain digital receivers that operate on four channels in the amateur 2 m satellite bands (144.3 - 144.5 and 145.8 - 146.0 MHz.)

Each of the uplink channels may be set independently to receive FSK uplinks, at either 1200 or 4800 bits per second, by the flight computer or from ground command.

At both speeds, the uplink bit stream is Manchester encoded, NRZ-I, HDLC, and used to frequency shift a carrier at the channel frequency. At 1200 bps the bandwidth of the uplink signal is approximately 4 kHz. At 4800 bps, the uplink signal approximately fills the entire 14 kHz channel. As noted above, satellite telemetry contains uplink frequency offset and signal level information, which can enable users to adjust their uplink freqency for best performance.

A low noise amplifier, a dual gate MOSFET device (MRF-966) and a highly selective 3MHz band-pass filter, comprise the front end of the receiver. The filter is required to protect the receiver from strong out-of-band signals. A double conversion heterodyne scheme, with a first IF in the vicinity of 40 to 50 MHz, is then employed. Mixers are 40673s. Power dividers are used after this IF to split the receiver channels before conversion to the second IF at 10.7 MHz on four separate IF strips. These strips are nearly entirely implemented using Motorola MC3362 FM receiver integrated circuits. Each receiver channel finally demodulates the audio tones to produce a NRZ-I or Manchester serial data stream (depending on what was sent) that is decoded with clock recovery and used by the flight computer.

Amateur radio stations will be able to connect to the mailbox satellites (PACSAT and LUSAT) at various functional levels governed by appropriate software verifications. Stations authorized to perform BBS and engineering housekeeping will be responsible for short and long term satellite health, mission efficiency, and observance of regulations governing the amateur satellite service. Functional levels are as follows :-

0 - The ability to request particular elemetry information (all users)
1 - The ability to upload broadcast bulletins
2 - The ability to do forwarding BBS housekeeping
3 - The ability to configure telemetry functions
4 - The ability to change spacecraft operating parameters
5 - The ability to re-boot/reload the computer

Each ground station with special access also has all lower level capabilities by default. Command stations operating at levels 4 and 5 must utilize a ground base engineering test model of the MICROSAT, for thorough software verification, before loading the actual orbiting computer.

Standard AART

Each module in each MICROSAT, except the flight computer itself, will be attached to an AART (Addressable Asynchronous Receiver/Transmitter) board, a simple, standardized CPU-to-module interface for command (both discrete digital and analog multiplexer) data, by the use of a three wire bus (transmit, receive, and common) which uses ordinary ASCII communications at 4800 bps. An identical PC board is used in each module (aside from the Flight Computer Module) to provide these command functions.

The inter-module electrical interface is a 25 wire bus. Each AART board provides the mechanical mounting for the DB25 connector on each model. Wires on the bus include +5, +7.5 and +10 v. DC module power, an analog pair from the modules to the A/D converter, various discrete control lines and mission specific signals, and the 4800 bps AART data.

For each module the AART provides: 24 discrete bits for module control; a 4-way conditioned thermistor multiplexer; and 8 bit multiplexing for analog telemetry ports. The board is based on the Motorola MC14469 AART chip.

Analog data sampling devices are designed to relinquish the bus, so as not to interfere with measurements from other points. Analog measurements are made one at a time via the A/D converter in the Flight Computer Module.

Spacecraft Antennas

There are two sets of antennas on each satellite; one for transmit, and another for receive. For LUSAT, PACSAT, and WEBERSAT, the 70 cm (437 MHz) transmit antennas are a set of four radiating elements mounted on the -Z surface (the face nearest the launcher while

attached). These form a canted turnstile and, when properly fed, produce a circularly polarized signal along the Z axis. The antenna elements are made of flexible, springy, semi-cylindrical metal, approximately 1.0 cm in width, similar to ordinary tape-measure blade material. This arrangement will ensure that no nulls are produced by the antenna, even for users with linearly polarized antennas. In general, very strong downlink signals are provided to the user community.

The DOVE uses a 2 m (145 MHz) canted turnstile, made of the same material and mounted in the same way, producing similar performance.

For LUSAT, PACSAT, and WEBERSAT, the 2 m (145 MHz) receive antenna is a whip made of blade material mounted on the +Z surface of the spacecraft. This antenna will be a quarter wavelength or more long, as dictated by good loading and RFI practice. It has a linear polarization pattern. It is anticipated that transmitted uplink signals will be circularly polarized, making the link less sensitive to spacecraft orientation, but incurring a 3 dB penalty over the most favourable matched-polarization case.

The WEBERSAT contains a third antenna, for L band (1265 MHz) uplinks, probably a quarter wave whip mounted on or near the camera module.

MICROSAT Thermal Characteristics

The thermal (heat transfer) characteristics of MICROSAT are designed specifically for low earth orbit (LEO) operation. Spacecraft coatings are designed to minimize heat inputs from the sun, earth and earth reflection radiations. The objective is to keep the spacecraft temperatures low (in the -5 to +5 C range), in order to promote as high an efficiency from the solar cells as is possible. Long lifetime of the Nickel-Cadmium storage cell batteries is also enhanced by the lower temperatures.

Spacecraft Attitude Control

The attitude of the satellites will be controlled by means of a passive magnetic technique. The spacecraft frame will contain four small permanent magnets, aligned parallel, with their north poles directed in the +Z direction. This will cause the satellite Z axis, while the polar orbit, to rotate twice per orbit, as the magnets "track" local geomagnetic field lines.

The satellite will be caused to rotate about the "stabilized" Z-axis, by making use of four solar torquing vanes, and several hysteresis damping rods. The four blade elements, forming the turnstile antenna, will each be painted white on one side and black on the other. At any instant, at least one black surface, and one white surface on the opposite side will be exposed to solar photons, resulting in a net solar photon torque about the Z-axis. The differential transfer of linear momentum of photons, colliding with the white surfaces and the black surfaces, will cause a net rotation about Z. The rate of rotation will increase until equilibrium occurs between this torque, and hysteresis damping caused by a series of small steel rods oriented parallel with the X-axis. Energy damping occurs as the lossy iron rods cut the earth's magnetic flux lines, which are parallel to the spacecraft Z-axis, as discussed above. The resultant rotation rate is expected to be between one rotation every minute, and one rotation every four minutes. The purpose of the rotation about the Z-axis is to eliminate thermal gradients that would otherwise build up across the spacecraft, particularly in the X-Y plane.

The receive whip is painted black on both sides, and does not apply appreciable torque to the spacecraft mass.

This technique was used very successfully on both the AMSAT-OSCAR 7 and AMSAT-OSCAR 8 spacecraft missions. ar

EDUCATION NOTES

DOTC Question Banks

Brenda Edmonds VK3KT
c/- Executive Office
PO Box 300
Caulfield South 3162

Firstly, I must explain the above for those who have read thus far. At the time of writing, we are in the process of moving from Frankston to an as yet undecided location in Melbourne's eastern suburbs, so for the time being, if you wish to reach me, please write care of the Executive Office. I will be in close touch with the Office to collect mail as required, and will publish a new address as soon as possible. The change should be effected in time to be corrected in the new Call Book. (Have YOU checked to see that YOUR Call Book information is correct? Remember to notify the Executive Office of any alterations necessary.)

Moving house is a bit like entering for a licence exam. Once the initial decision is made, there is a certain amount of inevitability about the subsequent events. Once the packing begins, each item poses a question with four possible answers - Should I,

(a) keep it ;
(b) throw it out ;
(c) give it away ;
(d) put it in the "too hard" box

Would anyone like a very large "too hard" box?

On a more serious note, I recently received a draft copy of the DOTC examination theory Question Banks, and a computer disk containing the program for generating Morse code exams.

From the time the idea of distributing the Question Banks was first mooted, the WIA has urged that we should be allowed to view and comment on them before their release, so that any disagreements about level or content could be discussed, and the banks could be released with a "WIA seal of approval". I was not expecting to receive them until about mid-July, but at the Convention I discussed with the Divisions how we intended to handle them.

We think it is important that all Divisions have an opportunity to view the questions and comment on them, so a meeting of Divisional representatives has been arranged, at which we will consider the questions as such, the balance of questions in each bank, and the presentation.

Because of the size of the banks (over 100 pages each), and because I made a commitment to DOTC not to allow them out of my control, I have not sent copies out in advance. I have, however, had each bank read and criticised by at least four experienced people, and have collated their comments. Questions which attracted comments from two or more readers have been copied and distributed to the Divisional representatives for consideration.

The readers agreed that most of the questions were fair and acceptable. Of the AOCP bank, only about 50 were of doubtful validity. It seems likely that after some minor modifications are negotiated, the banks will be acceptable to all users without any further amendments. It is highly desirable that, at least at first, all intending examiners use the questions from the bank without alteration. I will pass on information about further developments as they occur.

The Department's intention is to release the banks, both as a booklet and on IBM compatible disk, with a program for automatic generation of whole exam papers.

We have not yet had the opportunity to examine the paper-generating program, but hope to have a copy of it soon, also.

The Morse code disk has also been tested by a small group of enthusiasts, who are preparing reports. I will publish their comments later.

The Regulations question bank will not ba available for some time yet, as the three brochures are not yet finalised. At this stage, they will not be ready in time for the August exam, and probably not for the November one either. Notice will be given in AR and in broadcasts when it is intended to start examining on the new brochures.

For any further information about examinations, please contact me, or your Divisional Councillor, who will be in close touch with the representative who attends the Question bank meeting.

It is very pleasing to have some action at last on devolvement. I hope those who were originally enthusiastic and energetic have not lost interest. We now have a chance to provide a faster and more efficient service to our future members. Let us make the most of it.

73, Brenda VK3KT ar

HOW'S DX

Marion Island and others

Patrick Kelly VK2RZ
PO Box 41
Ourimbah 2258

It was good to log Peter ZS8MI after he turned up unexpectedly on the ANZA net. Although reports from VKs and ZLs who had worked Peter were numerous, there were still a lot of nervous DX types who had been getting a little anxious. Circumstances can change, and early contacts are important, 4W0PA was a good example.

Peter is more active than information given prior to his arrival had indicated. Working frequencies are varied, except for 10 metres, where he is regularly on 28.40 MHz around 0900Z, and 28.80 MHz around 1400Z. Logs are sent daily to ZS5E via Packet. QSL is OK via the bureau. Direct QSL to Peter Sykora, Box 1387, Vanderbijlpark, 1900, South Africa.

Banaba (Ocean Is)

After a week's delay, Jim VK9NS and Bob T3ØRA (KN6J) did manage their planned fortnight as T33JS. When Jim arrived on Tarawa, he found that equipment he had sent five weeks previously had not reached there. Then, to top this, the vessel which was to take them to Banaba was not available, hence the delay.

While on Banaba, Jim and Bob made 27000 SSB/CW QSO's on 160-10 metres, 150 on 6 metres as T33JS, and 826 contacts on RTTY using T33RA. QSL to HIDXA, PO Box 90, Norfolk Island, 2899.

Sable Island

When CY0SAB same on air in mid-May, band conditions were down. Daytime signals were only just audible and it was most frustrating listening to the North Americans and Europeans giving five-nine plus reports.

The best opportunity was on John KD0JLs net on 7.159 MHz, which is where most VKs and ZLs got through. QSL to VE1CBK.

St Peter and St Paul Rocks

Here was another tough one. The DXpedition here by the Natal DX Group occurred at the same time as Sable Island. With depressed band conditions, the route over Antarctica provided little joy in this part of the world.

Three callsigns were used, ZY0SS for SSB, ZY0SW for CW and ZY0SY for RTTY. QSL is direct to the Natal DX Group, PO Box 597, 59021, Natal RN, Brazil.

Malyj Vysotskij Island

When 4J1FS cam up towards the end of May, first call contacts on 20 metres were the order of the day for VKs and ZLs. On 10, 15 and 40 metres, pretty much the same, even though signals were not strong. Last year's twenty-four hour operation left a lot to be desired, but it did put MV Island on the DXCC map. QSL to OH5NZ.

Chad

Alain J28CB is here for four months as TT8CW. He is only active as work commitments will allow, and I found him on 14.250 MHz at 0300Z with Zerdan JY3ZH on several occasions. QSL to F2CW.

San Andreas Island

A few stations who are active:-

HK0HEU-QSL to HK0FBF.
HK0LIT-QSL to PO Box 362, San Andreas Is, Colombia.
HK0EFU-QSL to K4TXJ.
HK0TCN-QSL to K4TXJ.

Vanuatu

Local operator from Port Vila, Norman YJ8JS (previously YJ8NJS) was on Motalava Island in the Banks Islands for five days as YJ1BKS. He told me that this was the first time that any amateur had operated from here in forty or so years. This DXpedition was mainly of interest to those chasing British Commonwealth and IOTA awards.

Norman had also intended going to the Torres Group, but poor weather conditions prevented this. By the sound of the rain on the roof of his shack, it sounded just like home. QSL to G0CGL.

Two JA's who were in Vanuatu recently were YJ0AMI-QSL to JL1RUC and YJ0AKS-QSL to PO Box 34, Tama, Tokyo, Japan.

Chagos

There are two operators on Diego Garcia that have been heard around the bands in recent months. Larry VQ9LW-QSL to WA2ALY and Joe VQ9ZZ-QSL to W1HZZ Via Bureau Only.

Egypt

From Moadi, John SU1EK operated around 21.200 MHz from 0100Z, and on 10 metres he could be found on 28.5632 Mhz and 0630Z. QSL to W2QUV.

Eastern Carolines

I had not heard of Nishi KC6IN on Ponape Island until he suddenly appeared on 15 metres one day. He is resident there, so hopefully we may hear more from him. QSL to callbook address.

Johnston Island

Curtis KB5ENR/KH3 is still active. It has been some months since he was last heard, so I did not mention him in my previous report. QSL to KA5WOO.

Antarctica

This continent, for DXCC purposes only, counts as a single country, but offers a variety of prefixes for the DX'er. CE9, FB8Y, KC4, LU, VK0, VP8, ZL5, ZS1, 3Y, 4KI and 8JI are usually used, although variations do occur, particularly with the French allocations.

Of further interest is that Antarctica is included in the continents of South America, Oceania and Africa for the WAC Award. For WAZ, the seven zones of 12, 13, 29, 30, 32, 38 and 39 can be worked here.

At present, there are three stations down there you should be looking for.

Casey Base has Roman VK0MP and John VK0JV, and at McMurdo Station there is Tom KC4USV.

This last callsign is available to US personnel stationed there, so check the QSL route with the operator.

In the Antarctic for last winter's season were Robert FT5YB at Dumont D'uraville Station, Allen ZL5BKM and Sojo ZL5BA at Scott Base. All three were very active, until they were rotated out in December last.

QSL routes for the above are :-

VK0MP to VK6AGC
VK0JV via the VK2 bureau. Cards will not be available until early 1990.
KC4USV to Tom O'Brien, PO Box 100, Code 50, NSFA, Det, McMurdo, FPO, San Francisco, CA, 96692-1000.
FT5YB to F6ESH
ZL5BKM to ZL2HE
ZL5BA to KB4GID

Marshall Islands

Most of the activity from here is on Kwajalein Island which is at the wrong end of a missile testing range. The operators are usually US military personnel with their own callsigns, and it is important to obtain QSL information from them. Visiting operators can use the club station KX6BU. For these contacts, you can QSL to the Kwajalien Amateur Radio Club, Box 444, APO San Francisco, CA 96555, USA.

On Majuro Island, Donna KX6MU and her OM Dave KX6DU have been there for ten months of a two year stay. QSL to PO Box 746, Majuro Island, Marshall Islands.

Monaco

I worked Alex 3A/IK5DVV for a new country on 21.267 MHz at 0151Z. From the size of the pile up, it was obvious that I wasn't the only one who needed this one. QSL to Alex's homecall.

Gibraltar

Here was another good one, this time on ten

metres. Ernie ZB2FK came up at 2300Z on a pre-arranged schedule, and obliged quite a few stations in the short time he was able to stay. QSL to Ernie Stagnetto, 74 Kingsway House, Red Sands Road, Gibraltar.

Gabon

Christian TR8SA continues to operate at weekends. One band you are sure to find him on is 10 metres, if you look around 0700Z-QSL to F6FNU (no Greenstamps - 2 IRC's required.)

Belize

Don V31PC has now expanded his activity to 6 metres. He managed to pick up a ten watt National rig, and has a three element yagi that was donated by SM1RK to improve his signal into the States. He has also been able to work quite a few VK and ZL stations on this band.

On 10 and 15 metres, Don usually appears around 0130Z, and prefers to rag chew rather than hand out signal reports. So, if you do manage to come across him, keep this in mind, and only call when he completes his QSO. QSL to Don Owen-Lewis, PO Box 7, Punta Gorda, Belize. Greenstamps for postage are preferred.

Rotuma

There was more activity here this time from Yama 3D2YY. Not too much was heard from him, but if you did manage a contact, you can QSL to JH4IFF.

Cyprus

While turning around on 20 metres, I came across Andy with a special callsign C4GSC/XA/A. He never gave me the chance to enquire about the significance of his call or the occasion. When someone asked if he was in Mexico, he did give a negative response, however. The QSL route was to PO Box 5589, Limassol, Cyprus. Having to give this as well as his callsign, I could see why he was not using CW.

Perhaps the most active operator from Cyprus is Mike 5B4TI. Most times he can be found around 14.200 MHz, but lately he has been on 10 and 15 metres from about 0500Z. He is in big type in the callbook or you can QSL via the bureau.

Mike reports that there have been serious problems with the mail due to disputes and he is still receiving Christmas cards! At present he has a backlog of 700 cards; so do not QSL again.

Algeria

Longpatch propagation to the Middle East on 10 and 15 metres is giving many VKs and ZLs plenty of opportunities around 2300Z and 0430Z. Boucif 7X4BL and Mohammed 7X4AN have both been very active lately. With only five watts PEP, and a three element tri-bander, Boucif is definitely QRP, which makes things even more interesting. For 7X4BL QSL to PO Box 929, Tlemcen, Algeria. The manager for 7X4AN is DJ2BW.

Morocco

Mike CN8MW has been active on 10 metres at 2300Z and 0630Z. I have worked him at both these times with very good reports. QSL to PO Box 162, Tangier, Morocco.

Kuwait

Another good one for 15 metres was Mohammed 9K2MJ. He was on 21.255 MHz at 0509Z with a 5/9+ signal, and is good in any callbook since 1986, or you can QSL via the bureau.

QSL Information

A92BE Callbook
FK/JH6SOR Homecall
FS5DX WB7RFA
FS5T AI7B
T27YRA KN6J
T77T I0ERW
TG9GI I0WDX
UC1AWC UC2ABC
ZB2AZ Callbook or Bureau
A41KJ PO Box 741, Muscat, Oman
AP2ZA Azim M. Zaidi, PO Box 4787, Karachi, 0223.
HH7PV Patrick de Verteuil, Abricots, Jeremie, Haiti
HI1UD HI8LC (For Beata Is.)
HI3OCM PO Box 100, Salcedo, Dominicon Republic
JT1T Bureau or Direct to JT1KAA (Club Station)
LE3JP LA1K (Special call for Pope's visit June 2 and 3)
TA1AL Mustafa is the Bureau Manager
9K2KS PO Box 3181, Safat, 13032, Kuwait.

Stop Press

French DX Foundation has reported the deaths of Henri F1HJW and Marcel F2SA who had operated as 3V8AZ and 3V8VA in May. Their Cessna 182 aircraft crashed in the Pyrenees Mountains in Spain when returning from an aviation rally in Northern Africa.

It is requested that QSL cards not be sent until another route is arranged.

Courtesy QRZ-DX

Final Comment

On several occasions, DX stations have remarked to me about the courtesy shown by VK operators. This is as it should be, of course, but it is nice to hear..So use your full callsign whenever possible, when calling in pile ups, because it does help. Sometimes, DX stations will ask for the last two letters in your suffix to minimise QRM. Whichever way you do it, space your calls and listen, so you know what's going on.

Good DX!

ALARA

Overseas Visit

Joy Collis VK2EBX
PO Box 22
Yeoval 2868

I am gradually "coming back down to earth" after a most enjoyable trip to Canada and England.

One of the highlights was the opportunity to meet some of the VE7 ALARA members, Elizabeth VE7YL, Bobbie VE7CBK and Margaret VE7DKC, together with her OM, Al VE7KC.

It was a meeting that nearly didn't happen, because the plane was four hours late leaving Sydney, and during the flight I couldn't help wondering if they would still come to the airport as arranged, or give up the whole idea!

I need not have worried. The first thing I saw on arrival at Vancouver was a large computerised banner proclaiming "Welcome Dan and Joy". It was far too late for the supper we had

planned, so we settled for a cup of coffee and a chat at the airport. We managed to fit a great deal of talking into a very short space of time!

The following morning, Al and Margaret very kindly took us on a tour of Vancouver to see something of the city before we continued our journey to Edmonton.

I can truly say the warmth and hospitality of the Canadian friends, none of whom we had met before was a wonderful experience, and certainly exceeded all expectations.

Office Bearers 1989

At the Annual General Meeting held on air on Monday 22 May, the following were elected :-

President	Jenny Warrington	VK5ANW
Secretary	Meg Box	VK5AOV
Vice President/ VK5/8 State Rep	Maria McLeod	VK5BMT
Treasurer/Souvenir Custodian	Val Rickaby	VK4VR
Minute Secretary	Christine Taylor	VK5CTY
Publicity Officer/ VK1/2 State Rep	Joy Collis	VK2EBX
Awards Custodian	Mavis Stafford	VK3KS
Contest Manager/ Historian	Marilyn Syme	VK3DMS
Librarian	Kim Wilson	VK3CYL
Sponsorship Secretary	Gwen Tilson	VK3DYL
Editor/VK3 State Rep	Bron Brown	VK3DYF
VK4 State Rep	Josie Gleadhill	VK4VG
VK6 State Rep	Bev Hebiton	VK6DE
VK7 State Rep	Helene Dowd	VK7HD

We would like to extend a sincere vote of thanks to the outgoing Committee members, in particular, Marilyn VK3DMS, our President for the past three years.

Marilyn has worked very hard to keep ALARA in the forefront of amateur radio activity, and has given unsparingly of her time and energy to achieve this goal.

We would like to wish our new President, Jenny VK5ANW every success in her new position, and we are sure she will handle it as competently as she has handled the job of Secretary. We would also like to welcome Christine VK5CTY, a new office bearer this year.

To all who are continuing on with their present positions, or "changing hats", may the next twelve months prove rewarding for you.

ALARA Contest and the Florence McKenzie Trophy

Novice YL activity for the Florence McKenzie Trophy was very disappointing during the 1988 ALARA Contest. It may not be generally realised that YL's with a "K" or "J" call (Novice/Limited) are also eligible to compete. Not too early to start dusting down your key and brushing up on the CW for the next Contest, which will be held on Armistice Day, Saturday, 11 November this year.

As a mark of respect, two minute silence will be observed at the beginning of the Contest, which consequently will start at 0002 UTC.

Murphy's Furphies

Murphy got busy with the results of the 8th ALARA Contest published in April "Amateur Radio".

Melva ZL4IO, was winner of the Phone Only Certificate. This fact was omitted from the list.

Second place in the Contest went to Joanne VK4CYL, not Aimee FK8FA.

Apologies to Melva and Joanne.

Membership List 31 March 1989

VK2ACP Kathleen
VK2AMU Betty
VK2BBM Beryl
VK2CAK Ree
VK2DDB Dorothy
VK2DJO Norma
VK2EBX Joy
VK2HD Heather
VK2MI Joyce
VK2MV Margaret
VK2PNG Margaret
VK2PXS Bobbie
VK2VCC Chris
Jean Darling
VK3AGO Lorrie
VK3AYL Rae
VK3BIR Mavis
VK3BJB Joan
VK3BRE Mona
VK3BTU Janet
VK3BYK Barbara
VK3CWA Margaret
VK3CYL Kim
VK3DML Margaret
VK3DMS Marilyn
VK3DVT Valda
VK3DYF Bron
VK3DYL Gwen
VK3FML Marlene
VK3HD Jan
VK3JAW Marlene
VK3JQ Liz
VK3KS Mavis
VK3MCZ Margaret
VK3NLO Joan
VK3PBL Bonnie
VK3PRV Patricia
VK3PYL Phyl
VK3UE Clarice
VK3VAN Jessie
VK3VBK Joyce
VK3XBA Kathy
VK3YL Austine
Jean Truebridge
Raedie Fowler
Muriel May
Jean Shaw

VK4ANJ Noela
VK4ANN Anne
VK4AOE Maraget
VK4ASK Jill
VK4ATK Connie
VK4BDH Dulcie
VK4BET Betty
VK4BSQ Wendy
VK4CEK Cathy
VK4CPL Phyl
VK4CYL Jo-Anne
VK4FAB Anne
VK4KCA Christine
VK4MAZ Hazel
VK4NAM Dorothy
VK4NNJ Valarie
VK4PT Pat
VK4PZ Mary
VK4QW Cecily
VK4VG Josie
VK4VR Val
Bonnie Pounsett

VK5ANW Jenny
VK5AOV Meg
VK5BMT Maria
VK5CTY Christine
VK5LM Lorraine
VK5QO Marlene
VK5YL Denise
Pauline Koen
Bev Tamblyn

VK6DE Bev
VK6HI Helene
VK6JMP Joan
VK6NKU Peggy
VK6OL Trish
VK6PJL Jan
VK6YF Poppy
Olive Couch
June Greenaway
Lynda Francis

VK7HD Helene
VK7TN Grace

VK8NXL Rae

VK9NL Kirsti

CP5LE Barbara
DF1LV Christel
DJ1TE Christa
DL2BCH Gaby
DF2SL Anny
DF3LX Heidi
DK5TT Margot
DJ6US Walli

FK8FA Aimee

JA1AEQ Fumi
JH1GMZ Akiyo
JJ1CAS Hiromi
JI1VLV Nanako
JE6JQC Mizuyo
JA6KYP Etsuko
JR5MVX Masayo

K1IJV Jean
WA1UVJ Karla
KA1OKF Cathi
W2GLB/7 Phyllis
WB2YBA Christine
KA3CEO Jeanne
W3CDQ Liz
WA3HUP Mary ann
WB3CQN Ruthanna
WB3EFQ Lois
WA4NRX Merilyn
KA5ONE Betty
KE5UO Mary
KK5L Carol
WD5FQX Darleen
KA5WXE Karen
KA6INK Jerrie
KA6V Joanie
KA6NZK Elizabeth
KB6CLL Mary
N6GGR Maxine
N6GZW Claudia
N6LFZ Joanne
WA6OET Jessie
KA7CRO Martha
N7KEL Jean
KC7TE Daurel

KD7RA Gerry
KD7SH Alice
KO7YB Joan
KQ7Y Shirlee
WA7TLL Marion
WB7SUQ Mary
KB8RT Lee
KM8E June
WD8MEV Shirley
K9RXK Ann

G3HCQ Sheila
G4EYL Ann
G4EZI Diana
G4JMT Rae
G4KFP Jasmine
G4KVR Cilia
G4OUZ Joy
G4VBT Sylvia

G4VFC Dee
GØCCI Angelika
GØEIX Rita
Jeannette Arter

GM4LUS Shirley
GM4UXX Anne
GM6KAY Kay

GWØARP Jean

IT9KXI Santina

OH3ST Eeva

PA4ADR Agnes
PA3DST Paula

P29ZL Jeannette

PY2JY Inge

SM5HYL Rozita
SMØHNV Raija

VE6AUP Hallie
VE7YL Elizabeth
VE7CBK Bobby
VE7CIX Rae
VE7DKC Margaret
VE7LQH Muriel

VR6YL Betty

YJ8NJW Junia

ZL1ALE Aola
ZL1ALK Celia
ZL1BBN Win
ZL1BDZ Clarrie
ZL1BIZ Elva
ZL1BWQ Ethel
ZL1BQW Christine
ZL1CAV Phillipa
ZL1FV Gail
ZL1OC Vicki
ZL1TDB Margaret
ZL2ADK Cathy
ZL2AGX Dawn
ZL2AWP Alma
ZL2AZY Biny
ZL2BOA Marilyn
ZL2BOD Jeanne
ZL2BOX Anne
ZL2PQ Lynn
ZL2QW Pauline
ZL2QY Pearl
ZL2TZG Gail
ZL2UKG Gwen
ZL2VQ Carol
ZL3GW Val
ZL3VR Anne
ZL4IO Melva

ZS1YL Lee
ZS5V Mary
ZS5YO Mimi
ZS6GH Diana
ZS6VCS Pat

A Surprise for Mavis VK3KS

A surprise party was held at the home of Gwen VK3DYL to celebrate Mavis' (VK3KS) 50 years as an amateur radio operator.

As Mavis later remarked, "it was a very well kept secret". Many YL's (and OM's) around the world knew about it, but Mavis was completely in the dark.

Present were 16 ALARA members, two daughters of members, and 6 OM's. Newly elected President Jenny VK5ANW and daughter Wendy travelled by bus from Adelaide, and city and country were represented.

Greeting cards came from Canada, England, USA and New Zealand, as well as from Australian amateurs. Lois WB3EFQ/VK3FYL who recently visited Australia arranged for a lovely corsage to be presented to Mavis from our three Pennsylvania members, Lois, Mary Ann WA3HUP and Ruthanna WB3CQN.

The luncheon was delicious, including a beautifully decorated cake with the number "50" depicted on it. With plenty of food, talk and good company, the time passed all too quickly.

The highlight of the day was the presentation by Jenny, on behalf of ALARA, of the sheepskin rug for Mavis' radio operating chair. (No more cold shoulder, Mavis. Hi!)

Congratulations, Mavis, and we all hope the sheepskin rug will be put to good use for many years to come.

Canadian ALARA Members with Joy. L to R: Elizabeth VE7YL, Al VE7KC, Margaret VE7DKC, Bobbie VE7CBK, Joy VK2EBX

Award Update

No 147. 8 March 1989 Anna L Arnholt K9RXX 2 stickers

There appears to be some confusion about the cost of the ALARA Award. Currently, the cost is $3.00 (Australian or equivalent), or 7 IRC's.

YLs at Mavis' Party. Standing L to R: Raedie, Bron VK3DYF, Kim VK3CYL, Margaret VK3DML, Gwen VK3DYL, Barbara VK3BYK, Marilyn VK3DMS,, Kathy VK3XBA, Phyl VK3PYL, Marlene VK3FML. Seated L to R: Bonnie VK3PBL. Mavis VK3BIR, Mavis VK3KS, Jenny VK5ANW, Jean. Photo: Alison Gray.

Bits and Pieces

Congratulations to Christine VK6ZLZ (President of VK6 Division), Cath VK3XBA (Federal Treasurer of the WIA) and Meg VK5AOV (Secretary of the Adelaide Hills Radio Society) on being elected to those positions.

For those unable to sleep, the net run by Christine GM5YMM on 14.241 MHz, at 1700 UTC is attracting some rare YL DX, including TA2YA, the only licensed YL in Turkey.

Melva ZL4IO caught up with Maria VK5BMT and Jenny VK5ANW during a visit to Adelaide in May.

We were pleased when Lois (WB3EFQ) came on the ALARA Net on 1 May with the callsign VK3FYL/4.

Congratulations to Margaret Hamilton, now VK3MCZ and OM Tony, VK3MDA.

The VK6 ALARA Net is conducted by Poppy VK6YF on Mondays at 1200Z, (alter the official ALARA Net) on 3.585 MHz. All VK6 YL's are welcome to join in. The VK6 monthly luncheons are also still being held. Please contact Poppy VK6YF for further information.

The VK3 Annual Birthday Luncheon will be held at the home of Raedie Fowler on Sunday 30 July. Those interested in attending should contact Raedie or Bron VK3DYF for further details.

New Members

A warm welcome to new members :-

Cathy KA0SNF
Marga DL2HBM
Anne VK4MUM
Joy VK4JOY
Sylvia VK4FPT and
Pam VK4PAM

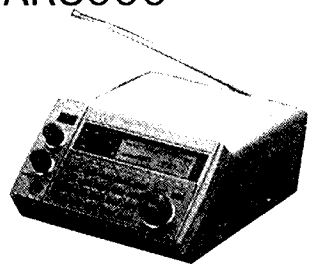
Welcome back to Alma VK4YC (formerly VK4VAR) who has rejoined us.

Until next month, 73/33, Joy. ar

NEW!! MAGNIFICENT from **AOR**

the 21st Century communications receiver

AR3000



Featuring:
Coverage
100 KHz - 2.036 GHz
Modes
NFM, WFM, AM, SSB CW
Memory
400 Memory channels
Scanning Rate
20 channels/second
Tuning Rate
50hz - 100hz selectable

NEW from the ICOM stable
The fantastic budget priced **IC725**

TERRIFIC TRANSCEIVER
TERRIFIC PRICE: ONLY $1550

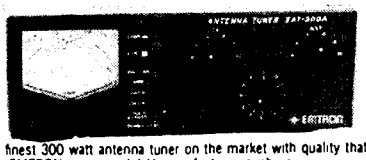
KENWOOD

Full range of all kenwood products available at competitive prices from our 3 stores

NEW 1KW EMTRON TUNER
EAT-1000A Only $549

This new EAT-1000/A is EMTRON'S latest antenna tuner built on special request by many amateurs. Built with finest components available. 5 position internal antenna switch, cross needle SWR/power meter, built in 3:1 balun for open feedline and antenna terminals for coax line, open feedline as well as longwire. EAT-1000A will tune almost everything from 1.8 to 30 MHz. At lowest price professional design and quality that EMTRON provides. MADE IN AUST.

NEW 300W EMTRON TUNER
EAT-300A Only $349



The finest 300 watt antenna tuner on the market with quality that only EMTRON can provide! Unique features such as:
• Cross needle SW 12/forward & reverse power meter • Built-in 100 watt dummy load • Antenna switch including bypass • Built-in 1:4 balun for open feedline • Lowest price & professional design • Matches everything from 1.8-30 MHz • Made in Australia by Emtron

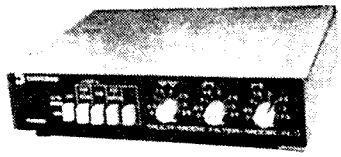
OVER 1000 FAMOUS EAT-300 SOLD

EMTRON'S fastest selling 300 watt antenna tuner with SWR meter, built-in 1:4 balun, heavy duty ceramic switch and top grade components. Works with all rigs and is found in Amateur, Commercial and Marine services.

Only $239

PROVEN POPULAR PRODUCTS FROM DATONG ELECTRONICS

MODEL D-70 MORSETUTOR
THE ANSWER TO MORSE TEST **$249**



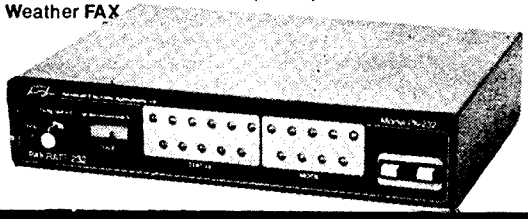
MULTI-MODE AUDIO FILTER
- WITH AUTOMATIC NOTCH FILTER
MODEL FL-3 **$575**

ASP AUTOMATIC SPEECH PROCESSOR
MODEL ASP
boosts transmitter talk power yet simply connects in series with microphone lead. It gives similar improvement on any band and with any speech transmission mode. **$369**

JOIN THE PACKET REVOLUTION!

New PK-232 Breakthrough

A new software enhancement makes the AEA PK-232 the only amateur data controller to offer six transmit/receive modes in a single unit.
★ Morse Code ★ BAUDOT (RTTY) ★ ASCII ★ AMTOR ★ Packet ★ Weather FAX



PRICE $699
WITH FAX

NEW

PK-88 ™ PACKET CONTROLLER
NOW $350

The PK-88 is not just another copy, it is much more. With all the packet program features of the Multi mode PK-232, the PK-88 is an economical new TNC designed to bring you enhanced completely compatible packet software plus new hardware features for improved packet operation.

BANKCARD
MASTERCARD & VISA
WELCOME

EMTRONICS

MAIL ORDERS WELCOME

NSW & HEAD OFFICE:
92-94 Wentworth Ave, Sydney
NSW. 2000. TLX:AA73990
P.O. Box K21 Haymarket, NSW. 2000
Ph: (02) 211 0988
FAX: (02) 281 1508

VICTORIA:
288-294 Queen St, Melbourne
Vic. 3000
Entrance from Lt. Lonsdale St.
Ph: (03) 670 8551 or 670 0330
FAX: (03) 670 0671

QUEENSLAND:
416 Logan Road, Stones Corner
Qld. 4120
Ph: (07) 394 2555
FAX: (07) 394 4316

WICEN

Announcing... WICEN NSW Inc.

Ian Nance
22 Truscott Street
North Ryde 2113

WICEN in New South Wales is now an incorporated association under the provisions of the Associations Incorporation Act of 1984. Incorporation was a requirement of the NSW Volunteer Rescue Association, of which WICEN is a member squad, and was agreed to by the NSW Divisional Council of the WIA.

One of the major reasons that the VRA required all rescue and specialist support squads to incorporate, was to protect individual squad members from any legal liability stemming from their operations.

The Act was introduced in NSW because of the previously limitless personal liability of members belonging to club-style organisations. Now, financial liability is limited to the extent of unpaid membership fees.

Incorporation took effect from 24 May, and later this month NSW members will receive a mail-out, giving full details of the new organisation.

In the meantime, it's important that existing financial members of WICEN are aware that their membership of WICEN NSW Inc is automatic.

Non-financial members will be invited to join.

Our incorporation is timely, in light of major changes to rescue and disaster planning for NSW, recently announced by the Minister for Police and Emergency Services, Mr Ted Pickering.

The management of WICEN NSW Inc is :-

President	Steve Boyd	VK2DNN
Vice President	Ian Nance	VK2BIN
Secretary	Peter O'Connell	VK2EMU
Treasurer	Tim Mills	VK2ZTM
Committee Members	Alan Boxsell	VK2YEQ
	Morton Williams	VK2DEX

ar

WICEN (South) Helps Derwent Clean-Up

Alan Widdowson VK7CI
29 Kingston Heights
Kingston Beach 7050

On 1 April, 25 members of WICEN (South), and co-opted operators, manned the western shore section of the communications network for the Day of the Derwent clean-up. The 2m repeater on Mt. Wellington was used to cover the 25 operating positions from Howden to New Norfolk.

The eastern shore section was manned by 20 member of the Clarence SES communications group and 8 members of the Crest organisation, giving a grand total of 53 operators.

A separate 2m simplex link was used to integrate the SES Hq at the eastern end of the Tasman Bridge with the WICEN Hq in the old Marine Board building near Constitution Dock.

Watches were opened at 0745am for checking and traffic immediately began to flow at a brisk rate which continued until after 2pm.

At least two "firsts" were chalked up for the day. One being the sheer size of the network, exceeding in numbers anything we have ever tackled before and secondly the fact that three distinctly different communications groups were brought together for the first time and without any rehearsal, functioned like a well oiled machine.

This, from the point of view of your co-ordinator, was the most rewarding aspect of the whole operation.

The experience gained in organising and running an operation such as this is invaluable, particularly when it turns out to be so successful.

The excellent work done by the network was greatly appreciated by the organisers of the Cleanup Day and my personal thanks go to all the SES, Crest and Wicen operators for a job well done. ar

WICEN (South) Co-ordinator, Alan Widdowson at the controls of VK7CI Photo: Hobart Mercury.

CONTESTS

John Moyle, Ross Hull, Novice, RD and WAEDC Contests

Frank Beech VK7BC
Federal Contest Manager
37 Nobelius Drive
Legana 7277

Contest Calendar

July;	
1st-2nd	Venezuelan Independence Day Contest (rules last month) Phone section
1st	Adelaide Hills ARS Australian Sprint CW (rules May AR)
8th	Adelaide Hills ARS Australian Sprint SSB (Rules May AR)
16th	RSGB Low power field day (QRP operators delight)
29th-30th	Venezuelan Independence Day Contest CW section (rules June AR)
August:	
10th-20th	SEANET Contest SSB
12th-13th	WIA Remembrance Day Contest (rules this issue)
12th-13th	DARC European DX contest (rules this issue) CW section
September:	
3rd	LZ DX Contest (rules in August AR)
16th-17th	Scandinavian Activity Contest CW section (rules in August AR)
23rd-24th	Scandinavian Activity Contest SSB section (rules in August AR)
9th-10th	DARC European DX Contest Phone section (rules this issue)
October:	
8th	RSGB 21/28MHz Phone Contest
7th-8th	VK-ZL Oceania DX Contest SSB section (rules September AR)
9th	RSGB 28MHz Cumulative Contest
14th-15th	VK-ZL Oceania DX Contest CW section (rules September AR)
15th	RSGB 21MHz CW Contest

It is some time since the guidelines for all WIA contests were published, either in AR or in the Callbook.

Meanwhile issues raised by Ian VK5QX in his letter published in the May issue of AR have led to some uncertainty. In an effort to clear the air, I am summarising the relevant sections of WIA contest guidelines. Further on you will find the complete rules for the 1989 Remembrance Day Contest.

John Moyle National Field Day Contest

Object: To encourage portable operation on all bands by radio amateurs in VK and P2.

Frequencies Used: All authorised amateur frequencies except 10, 18 and 24 MHz.

Timing and Duration: Held on a weekend in February-March for a duration of 24 hours; a six hour duration section is also included.

Scoring Philosophy: Conducted in several sections encompassing field and home stations, single and multi-operator situations, CW, phone, HF, VHF and receiving classifications, with two time sections - 6 and24 hours. Points scoring biassed towards field operation. Contacts outside entrant's call area, including foreign, are permitted.

Trophies and Certificates: Will be awarded at the discretion of the FCM.

Ross Hull Memorial Contest

Objects: Australian amateurs will endeavour to contact as many other amateurs as possible using frequencies above 30MHz.

Frequencies Used: All authorised amateur frequencies above 30MHz.

Timing: Held during the summer VHF/UHF propagation season from December to January for approximately three weeks.

Scoring Philosophy: Conducted in sections, eg experimental (all bands) and contesting (limited bands), phone, CW, and receiving. Scored on a basis of locator squares (Maidenhead system). Entries are submitted for a 7 UTC day (not necessarily consecutive), or a 2 UTC day consecutive period.

Trophies and Certificates: The Ross Hull perpetual trophy is awarded to the winner. Certificates will be awarded at the discretion of the FCM.

Australian Novice Contest

Object: To encourage operations of amateur radio stations in Australia, NZ and PNG, with special emphasis on contacts with novice and club stations.

Frequencies Used: All authorised novice amateur frequency allocations.

Timing and Duration: Held on a weekend in winter for a period of 24 hours.

Scoring Philosophy: Conducted in sections, eg CW, phone and receiving. Contacts with novice and club stations score higher than full call stations.

Trophies and Certificates: The "Keith Howard VK2AKX Trophy" is awarded to the novice entrant with the highest aggregate phone and CW score. Certificates will be awarded at the discretion of the FCM.

Remembrance Day Contest

This contest is held to commemorate those amateurs who died during the second world war and is designed to encourage friendly participation between all amateurs and to help improve the operating skills of all participants.

Objects: Amateurs in each VK call area will endeavour to contact other amateurs:

(a) in other VK call areas, P2 and ZL on all bands 1.8 through 30 MHz (except 10, 18 & 24 MHz)

(b) in any VK call area (including their own), P29 and ZL on authorised bands above 52 MHz

Date and Time: The weekend nearest to 15 August (VJ Day) for a continuous period of 24 hours.

Scoring Philosophy: The contest is conducted in sections, viz transmitting CW, transmitting phone, receiving, and open. It is scored on a divisional basis using a combination of three factors: involvement, activity and weighting (handicap.)

In the "terms of reference" for the purpose of these rules "administration" means:

(a) Publication of the relevant rules no later than the issue of "Amateur Radio" preceeding the month in which the contest is to take place, as far as practicable.

(b) Reception of all log entries forwarded to an address determined by the FCM

(c) Checking and scoring of such number of logs as he may consider adequate, to satisfy himself that the generality of logs submitted is accurate

(d) Collating and publishing the results of WIA contests after the checking and scoring has been completed

(e) Preparation of appropriate certificates for those contestants who qualify for each such certificate

(f) Compilation of a register a contest entrants for the purpose of the contest champion trophy

(g) The FCM is required to clear all contest rule changes that are outside the attached contest guidelines with the executive prior to their publication.

(h) The submission of an annual report to the council, which report shall be lodged with the Secretary of the Institute 30 days prior to the date set for the commencement of the Federal Convention in each year.

(i) The FCM shall endeavour to maintain consistency in the rules from year to year.

These guidelines do not mention such things as multipliers, points per contact, signal report requirements. Details are left to the discretion of the FCM, who endeavours to keep the contests popular, with rules that are broadly acceptable and are in harmony with the majority of contests worldwide.

In May AR, Ian VK5QX took me to task for allowing double points for CW contacts. My answer is that by giving extra points for CW, I try to achieve two things: Firstly to encourage more CW operation in the contest (the more the merrier), and secondly, to reward skill (anyone can use a microphone); it IS more difficult to operate CW in a contest situation.

Ian also takes me to task for increasing the maximum CW speed allowed in the novice contest from 10 WPM to 15 WPM. In my opin-

ion, and I was taught CW professionally 36 years ago, sending and receiving CW at speeds up to 10WPM is very difficult. Novice stations should not be encouraged to use CW at 10 WPM, but encouraged to operate at a speed higher than they used to pass the Morse test. By doing so, they will very quickly begin to get the rhythm and feel of CW, and become proficient. The vast majority of amateurs who work CW will answer a CW call at the same speed as the calling station sends; this in itself gives encouragement to operators who normally do not use CW, or are still developing a fist.

Why reinstate RS/T reports in the RD contest? The answer is: because they should never have been removed as a contest exchange requirement in the first place. It may have been trendy, in keeping with the "let's do away with logbooks", and "let's make the exams easier" changes that occurred years ago. Has the number contest entrants increased since those changes where made? No. What contest of any repute overseas does not require a signal report to be exchanged. Try and give honest signal reports in the next contest that you enter. Do not assume that is all 599 or 59. Many contest logs are marked down, and even cause disqualifications, because of the assumptions that appear in them. It may be old fashioned, but some people enter or operate in contests just to pick up the odd prefix or new country, to obtain a QSL card for some award or other ladder requirement. Why not exchange honest signal reports? The contest exchange is really an effort that you have to make, in order to participate in the contest.

Ian also sounds off about the reintroduction of the "open" section in the RD contest. I will refer you to the "Guidelines" particularily the Scoring Philosophy section.

The prevailing thoughts behind the requests for the reintroduction of the "Open" section in the RD contest was to make it more interesting, and to enable the station to maintain a higher rate of scoring throughout the contest period. What happened was that all the Open section logs received contained a good mix of phone and CW contacts. Not one was a "smart" log. In other words, all the entrants in the "Open" section had "done the right thing".

Ian's paragraph regarding the need to modify the RD scoring is correct. I do not have the answer to the problem Eg RD formula for determination of results for each division is: number of logs/number of licences (participation) X total points X weighting factor (average of last four weighting factors).

What about the number of amateurs who send in more than one log (some up to five logs), what about club stations with three or four operators? It really is a can of worms.

The portion of Ian's letter that was published in May AR caused me to go searching through the boxes of contest logs to find the full text. Perhaps a postcard would have reminded me to answer the mail. I do get a lot of mail, and I probably lose one or two in the mountain of paperwork.

By devoting so much space on the subject of the contests guidelines, and the letter from VK5QX, I now find that the contest championship results will have to wait until the August issue of "AR".

European DX-Contest

The Deutscher Amateur-Radio-Club (DARC) has the honour to invite amateurs all over the world to participate in the annual European DX-Contest.

1: Contest Periods

CW: August, second weekend 12/13 August, 1989

SSB: September, second weekend 9/10 September, 1989

RTTY: November, second weekend 11/12 November, 1989

1200 UTC Saturday to 2400 UTC Sunday

2: Bands 3.5, 7, 14, 21, 28 MHz.

The minimum time of operation on a band after a band change is 15 minutes - except for working a new multiplier. According to IARU-region 1 regulations contest operation is not allowed on the following band sections :-

CW: 3550-3900; 14075-14350; 21100-21450; 28100-29700 kHz

SSB: 3650-3750; 14300-14350; 21400-21450; 28700-29700 kHz

3: Classifications

(a) Single operator - all bands

(No assistance in log-keeping and multiplier-searching allowed.)

(b) Single operator - high bands

(As above, but operation on 14-21-28 MHz only.)

(c) Multi operator - single transmitter

(Only one signal on any band at the same time is permitted.)

(d) SWL

See special regulations (Rule 12).

4: Rest Periods

Of the 36 hour contest period, only 30 hours of operation are permitted for single operator stations. The 6 hours of non-operation may be taken in one, but not more than three periods at any time during the contest. They must be clearly noted in the log.

5: Exchange

A contest QSO can only be established between a non-European and a European station (except in RTTY). Exchange the usual five or six digit RS/RST plus a progressive QSO number starting with 001. A station may only be worked once per band.

6: Multipliers

(a) The multiplier for non-European stations is determined by the number of European countries worked on each band (see WAE country list).

(b) European stations use the current DXCC-country-list. Each non-European country counts one multiplier unit per band.

Multiplier Bonus: 3.5 MHz.

The multiplier on 3.5 MHz may be multiplied by FOUR

The multiplier on 7 MHz may be multiplied by THREE

The multiplier on 14/21/28 MHz may be multiplied by TWO

7: QTC-Traffic

Additional point credit can be achieved by reporting a QTC, i.e. data of a QSO between a non-European and a European station earlier in the contest, back to a European station. After working a number of European stations, these QTCs can be reported back during a QSO with another European station. A QTC can only be sent from a non-European to a European station (for RTTY see Rule 13).

(a) A QTC contains the time, call sign, and QSO number of the station being reported. QTC: 1307/DA1AA/431 mean you worked DA1AA at 1307 UTC and received his serial number 431.

(b) A QSO may be reported only once and not back to the originating station.

(c) A maximum of 10 QTCs can be sent to the same station, which can be worked several times to completed this quota. Only the original contact, however, has QSO point value.

(d) Keep a uniform list of QTCs sent. QTC 3/7 indicates that this is the 3rd series and that 7 QSOs are now being sent.

(e) European stations may record the QTCs received on a separate sheet with a clean indication of their sender.

(f) If more than 100 QTCs are claimed, a QTC checklist must show that the maximum quota of 10 QTCs per station is not exceeded.

8: Scoring

The final score is computer by multiplying the sum of the total number of QSOs and QTCs by the sum of multipliers from all bands (cf. Rule 6).

9: Contest Awards

Certificates will be awarded to the highest scorer of the different classifications in each country. Continental leaders will receive a plaque. Each participant with at least half the score of the continental leader will receive a certificate.

10: Disqualification

Violation of the rules of this contest, or unsportsmanship conduct, or taking credit for excessive duplicate contacts will be deemed cause for disqualification. Each duplicate QSO or excessive QTC will result in a penalty of 3 QSO/QTC points.

11: Logs

To ease checking, participants are expected to arrange their logs according to the official WAEDC log form. All band changes have to be clearly indicated. The log must be accompanied by a summary sheet and dupe check sheets for all bands with more than 200 contacts. Sample log and summary forms are available from the address below. Please send an SASE or sufficient postage (IRCs).

12: Special Regulations for SWLs

SWLs log stations working in the WAEDC. Participation is only possible in the single operator/all band class. SWL-logs from members of a team in the transmitting category cannot be accepted.

The same call sign - European or non-European - may only be logged once per band. The log must contain both call signs and at least one of the control numbers. Each contest QSO logged counts 2 points, each completed QTC (max. 10 per station) 1 point. Multipliers are determined by the DXCC-and WAE-country-lists (Rule 6).

13: Special Regulations for RTTY

In the RTTY-section of the WAEDC there are no continental limitations. QTC-traffic, however, is not allowed within one's own continent. Each station may send and receive QTCs. The sum of QTCs sent and received must not ex-

ceed 10.

14: Deadline for log entries

CW: September 15th; SSB: October 15th; RTTY: December 15th.

15: Mailing Addresses

WAEDC-Contest-Committee, PO Box 1328, D-8950 Kaufbeuren, FRG.

16: WAE-Country-List

C31-CT1-CU-EA-EA6-EI-F-G-GD-GI-GJ-GM-GM Shetlandd-GU-GW-HA-HB-HB0-HV-I-IS-IT-JW Bear -JW Spitsbergen-JX-LA-LX-LZ-OE-OH-OH0-OJ0-OK-ON-OY-OZ-PA-SM-SP-SV-SV5 Rhodes-SV9 Crete-SY Athos-T7-TA1-TF-TK-UA1346-UA2/UZ2F-UA1 Franz-Josef-Land-UB-UC-UN/UA1N/UZ1N-UO-UP-UQ-UR-Y2-YO-YU-ZA-ZB2-1A0-3A-4UI Geneva-4U1 Vienna-9H1.

Criteria for the Awarding of Certificates and Trophies in the WAEDC

1: Minimal Requirements for a certificate or a trophy are 100 QSOs or 10,000 points. In addition, at least one of the following conditions must be fulfilled.

2: Certificates

(a) Top score in a country

(b) In countries or districts with high participation an additional certificate will be given for each full block of ten participants.

(c) Members of the Top Ten or Top Six (multi operator) lists

(d) Continental winners.

(e) Stations with at least half the score of their continental winner.

(f) Participants with at least 100,00 points.

3: Trophies

(a) Continental winners in the single operator category are awarded a plaque.

(b) Continental winners in the multi operator category will be awarded a plaque if they have at least 100,00 points, or at least the score of the winner in the single operator category in their continent.

(c) A station may receive a plaque in the same category only once within a three year period.

(d) Special plaques will be presented to all members of the Top Ten/Six if they have been in this list for a t least five times.

(e) The WAEDC-Committee reserves the right to honour outstanding achievements in the contest by additional plaques.

Remembrance Day Contest 1989 Rules

Objectives: Amateurs in each VK call area will endeavour to contact other amateurs in other VK call areas, P2 and ZL in the bans 1.8 to 30 MHz, with the exception of the WARC bands 10, 18 and 24 MHz. Also, in any VK call area, including their own, P2 and ZL on bands above 52 MHz, and as indicated in the rule 5.e.

Contest Period: Between 0800 UTC August 12th and 0759 UTC on 13 August 1989.

*All Australian amateurs stations are requested, as a mark of respect, to observe 15 minutes silence prior to the commencement of the contest. During this period, the Opening Ceremony broadcast will take place.

Rules

1 There will be two contest categories

(a) High frequency (HF) for the bands below 52MHz

(b) Very High Frequency (VHF) for the 52MHz band and above

2 In each category there will be four sections

(a) Transmitting phone

(b) Transmitting CW

(c) Transmitting OPEN

(d) Receiving

2A Modes applicable to each section are as follows:

(a) AM, FM, SSB, TV

(b) CW, RTTY

(c) AM, FM, SSB, TV, CW, RTTY

(d) Any of the above listed modes

3 Eligibility

All Australian amateurs (VK call sign), ZL and P2 stations may enter the contest, whether their stations are fixed, portable, or mobile. Members and non-members of the Wireless Institute of Australia are eligible for awards.

4 ***Cross Mode*** operation is permitted. Cross band operation is not permitted, excepting via a satellite repeater.

5 Scoring

(a) Phone contacts score ONE point

(b) CW and RTTY contacts score TWO points

(c) On all bands, a station in another call area may be contacted once on each band using each mode, i.e. you may work thesame station on each band on phone, CW, RTTY and TV

(d) On the VHF bands, the same station in ANY call area may be worked using any of the modes listed, at intervals of not less than two hours since the same band mode contact. However, the same station may be contacted repeatedly via satellite not more than once by each mode on each orbit

(e) Acceptable logs for all entries must show a minimum of at least TEN valid contacts, and in the Open section, a reason able mixture will be required, i.e. a log with 500 phone and 10 CW contacts would be judged as a phone entry.

6 Multi-operator stations are not permitted (except as in Rule 7), although log-keepers are allowed. Only the licensed operator is allowed to make a contact under his/her own call sign.

Should two or more operators wish to operate any particular station, each will be considered as a contestant, and must submit a log under the individual call sign which applies to that operator.

7 Club Stations

Club stations may be operated by more than one operator, but only one operator may operate at any one time, i.e. no multi-transmission. All operators at a club station must sign the declaration.

8 Contest Exchanges

For a contact to be valid, a signal report and serial number must be exchanged. This will consist of a RS/RST plus a serial number. The serial number will commence with 001, and will increase by one for each contact. Should a serial number of 999 be reached, the serial number again reverts to 001.

9 Terrestrial Repeaters

Contacts via terrestrial repeaters are not permitted for scoring purposes. Contacts may be arranged through a repeater, and if successful on another frequency, will count for scoring purposes. The practice of operating on repeater frequencies in simplex mode is not permitted.

10 Portable Operation

Log scores of operators, located outside their allocated call areas, will be credited to that call area in which the portable operation took place.

11 Entries

A log of all contacts must be submitted. This should be in the format as shown in the examples, and must be on one side of the paper only.

Entries must be on a standard size sheet such as Foolscap or A4 etc. Larger computer printout sheets are acceptable. Bits of scrap paper and narrow rolls will not be accepted.

A front sheet must also be included showing the following information in this order: category (HF or VHF), section (phone, CW, open, receiving), call sign, name, address, total score, page tally.

Declaration: "I hereby certify that I have operated in accordance with the rules and spirit of the contest"

Signed: .....

Dated.: .....

Logs are to be forwarded to the Federal Contest Manager, C F Beech VK7BC, 37 Nobelius Drive, Legana, Tasmania 7277.

Envelopes are to be endorsed REMEMBRANCE DAY CONTEST on the front. Entries must be forwarded in time to reach the Federal Contest Manager by 30 September 1989.

12 Disqualification

See the general disqualification rules as printed in the Contest Section of June 1989 "Amateur Radio".

Contestants should note also, the General Contest basic rules in the same issue of "AR". Any station observed during the contest as constantly departing from the generally accepted codes of operating ethics, may also be disqualified.

Late Entries: These will be used as check logs only.

Receiving Section

1: This section is open to all shortwave listeners in Australia, New Zealand and Papua New Guinea. No active transmitting station may enter this section.

2: Contest times and logging of stations on each band are as for transmitting.

3: Logs should be set out as per example. It is not permitted to log stations calling CQ. The details shown in the sample must be recorded.

4: Scoring will be as per rule 5 for transmitting, with other aspects of that same rule also applying.

5: Club stations may enter this section. All operators must sign the declaration.

6: Awards: Certificates will be awarded to

the highest scorer in each call area. Further certificates may be issued at the discretion of the FCM.

Determination of the Winning Division

Scores of stations in VK0 are added to VK7.

Scores by VK9 stations are added to the mainland call area which is geographically nearest. Scores claimed by ZL and P2 stations are not included in the scores of any VK call area.

The formula used to determine the winning WIA division is applied on a divisional basis, using a combination of three factors, namely: involvement, activity and weighting factor.

Guidelines for Certificate Issue, Remembrance Day Contest

Certificates will be issued on the following basis:-

1 Top scorer in each section (see also 4 below).

2 Top novice station in each section, but as per proviso 3 below. (N/K calls compete on an equal basis when operating in HF (novice) band segments, therefore, there is no justification for separate certificates for each different type of call sign.)

3 Where an entry other than the top scorer is concerned (as per 2 above), a certificate will only be issued to a station, if that station's score is equal to, or greater than, the average score in the applicable section for that state/division.

4 Where only one entry exists in any section, a certificate will only be issued when the score for that category/section of the contest.

5 On VHF, the top scorer in each section will be awarded a certificate. There is no justification for separate awards for holders of Full, Z or K calls, as each competes on an equal basis on VHF.

6 The above rules apply with the understanding, as an already determined policy, that the Federal Contest Manager has the power of discretion in such matters, and may either award additional certificates where he considers it warranted, or not issue a certificate, if he considers one unwarranted.

Example Front Sheet - Remembrance Day Contest 1989

Category: HF Section: (a) Transmitting phone
Call Sign: VK8ZZZ Name: Tom Brown
Address: 807 Iceberg Road, Darwin, 8100
Total Score: 2536 points

14 Sheets 2536 points

Page 1	46 points
2	38 "
-	- -
-	- -
-	- -
14	21 points

Total 14 Pages 2536 points

Declaration: I hereby certify that I have operated in accordance with the rules and spirit of the contest.
Signed: T. Brown Dated: 3.9.1989.

Example Transmitting Log - Remembrance Day Contest 1989

Call Sign: VK8ZZZ Category: HF
Section: Transmitting Open

Date/Time (UTC)	Band (MHz)	Mode	Call Sign	Number Sent	Number Received	Points
12.8.89						
0801	14	SSB	VK6NE	57001	56001	1
0802	14	"	VK4TI	59002	58001	1
0804	14	"	VK7BJ	59003	59003	1
0806	7	CW	VK0AA	559004	479002	2
0809	7	SSB	VK7BC	55005	58001	1
-	-	-	-	-	-	-

Page 1 of 13 Page Total: 62.

Example Receiving Log - Remembrance Day Contest 1989

Date/time (UTC)	Band (MHz)	Mode	Stn. calling	Stn called	No. Sent	No. Received	Points
12.8.89							
0800	21	SSB	VK1XXX	VK6LLL	001	002	1
0815	7	SSB	VK7YY	VK8QW	014	009	1
-	-	-	-	-	-	-	-

Page 1 of 8 42 Points

Remembrance Day Contest 1989 - Commemoration

As in previous years, I will list the names of those amateurs who lost their lives whilst on active service during the second world war, and who are commemorated with their names being engraved on our Remembrance Day Contest trophy. It is these names that you will hear read out as part of the opening ceremony prior to the commencement of the contest.

VK2BQ	F W S Easton	RAAF	VK2AJB	C G Curie	RAAF
VK2JV	C D Roberts	AMF	VK3DQ	J D Morris	AMF
VK2VJ	V J E Jarvis	RAAF	VK3GO	T Stephens	RAAF
VK2YK	W Abbott	RAAF	VK3HN	J McCandish	AMF
			VK3IE	J E Mann	RAN
			VK3NG	N E Gunter	MN
			VK3OR	M D Orr	RAAF
			VK3PL	J F Colthorp	RAAF
			VK3PV	R P Veall	AMF
			VK3SF	S W Jones	AMF
			VK3UW	J A Burrage	RAAF
			VK3VE	J E Snadden	RAAF
			VK4DR	D A Laws	AMF
			VK4FS	F J Starr	RAAF
			VK4PR	R Allen	RAAF
			VK5AF	C A Ives	RAAF
			VK5BL	B James	RAAF
			VK5BW	G J Phillips	AMF
			VK6GR	A H G Rippin	RAN
			VK6JG	J E Goddard	RAAF
			VK6KS	K S Anderson	AMF
			VK6PP	P P Paterson	RAAF

The 13th West Australian Annual 3.5MHz CW & SSB Contests

C Waterman VK6NK
42 Kennedy Street
Melville 6156

Transmitting and Receiving

1 Duration: CW Sunday 30 July SSB Sunday 17th September
Between the hours of 1030z and 1330z time, i.e. three operating hours for each contest.

2 Frequencies: All contacts to be made in the 3.5/3.7 MHz band using frequency allocation applicable to your licence conditions.

3 Calling: Stations will call CQ WAA using the three times three technique. Infringement of this rule by the use of long CQ calls may entail disqualification, as will prearranging of a QSO.

4 Scoring: Points for contacts are as follows:-

Within Western Australia	5 points per contact
WA to all Mainland Eastern States	2 points per contact
WA to VK7	4 points per contact
WA to VK0 and overseas	8 points per contact
With WA stations only	3 points per contact

5 Multipliers: A multiplier of 2 per WA Shire worked will apply to the final score. WA Stations north of the 26th Parallel only an additional multiplier of 1.3 will apply per contact confirmed with stations south of the 26th Parallel.

6 Contacts: Stations may be worked twice on each night, i.e. once between 1030z to 1300z; these contacts will count for points. Each time, the contact for WA stations will take the form of an exchange of five characters, comprising RST/RS and Shire Letters. eg: A station in Northam sends 579NM, or if in Harvey, 579HY. This helps towards the worked all shires award. Eastern states and overseas stations will send RST/RS plus a running number starting at 001.

7 Logs: Contest Logs to be set out on one side of a Quarto or Foolscap sheet, with columns headed as follows:

DATE: CALL: OPERATOR:

TIME Z	CALL WKD	RST OUT	RST IN	SHIRE LETTERS	SHIRE MULTIPLIER	POINTS CLAIMED

Column 7 to be totalled at the foot of each page and the running totals brought forward. The last page to contain the following summary: total number points scored, input power, equipment and antennas used, along with comments on the contest in general.

All logs to be addressed to the WAA Contest Committee, 42 Kennedy Street, Melville, WA 6156, and posted so as to reach us not later than 6 October, for both contests. The results will be published in the December issue of AR.

Shire Identification Letters

1	-	Albany Town	AT
2	-	Albany	AL
3	-	Armadale	AK
4	-	Augusta/Margaret River	AM
5	-	Bassendean	BA
6	-	Bayswater	BW
7	-	Beverley	BV
8	-	Boddington	BO
9	-	Boulder	BD
10	-	Boyup Brook	BB
11	-	Bridgetown/Greenbushes	BG
12	-	Brookton	BK
13	-	Broome	BE
14	-	Broomehill	BH
15	-	Belmont	BL
16	-	Bruce Rock	BR
17	-	Bunbury	BY
18	-	Busselton	BN
19	-	Canning	CA
20	-	Capel	CL
21	-	Carnamah	CH
22	-	Carnarvon	CN
23	-	Chapman Valley	CV
24	-	Chittering	CI
25	-	Claremont	CT
26	-	Cockburn	CR
27	-	Collie	CE
28	-	Coolgardie	CG
29	-	Coorow	CW
30	-	Corrigin	CS
31	-	Cottesloe	CO
32	-	Cranbrook	CK
33	-	Cuballing	CB
34	-	Cue	CU
35	-	Cunderdin	CD
36	-	Dalwallinu	DU
37	-	Dandaragan	DN
38	-	Dardanup	DP
39	-	Denmark	DK
40	-	Donnybrook/Balingup	DB
41	-	Dowerin	DR
42	-	Dumbleyung	DG
43	-	Dundas	DS
44	-	East Fremantle	EF
45	-	East Pilbara	EP
46	-	Esperance	ES
47	-	Exmouth	EH
48	-	Fremantle	FM
49	-	Gingin	GG
50	-	Gnowangerup	GP
51	-	Geraldton	GN
52	-	Goomalling	GM
53	-	Gosnells	GS
54	-	Greenough	GR
55	-	Halls Creek	HC
56	-	Harvey	HY
57	-	Irwin	IN
58	-	Kalamunda	KA
59	-	Kalgoorlie	KL
60	-	Katanning	KG
61	-	Kellerberrin	BN
62	-	Kent	KT
63	-	Kojonup	KP
64	-	Kondinin	KD
65	-	Koorda	KO
66	-	Kulin	KU
67	-	Kwinana	KW
68	-	Lake Grace	LG
69	-	Laverton	LV
70	-	Leonora	LA
71	-	Mandurah	MB
72	-	Manjimup	MP
73	-	Meekatharra	MK
74	-	Melville	MV
75	-	Menzies	MZ
76	-	Merredin	MD
77	-	Mingenew	MW
78	-	Moora	MA
79	-	Morowa	MR
80	-	Mosman	MS
81	-	Mukinbudin	MU
82	-	Mullewa	ME
83	-	Mundaring	MG
84	-	Murchison	MH
85	-	Murray	MY
86	-	Mt Magnet	MM
87	-	Mt Marshall	ML
88	-	Nannup	NP
89	-	Narembeen	NN
90	-	Narrogin	NG
91	-	Narrogin Town	NT
92	-	Nedlands	NL
93	-	Northam	NM
94	-	Northam Town	NO
95	-	Northampton	NH

96	-	Nungadin	NG
97	-	Pepperming Grove	PG
98	-	Perenjori	PJ
99	-	Perth	PH
100	-	Pingelly	PY
101	-	Plantagenet	PT
102	-	Port Hedland	PD
103	-	Quairading	QG
104	-	Ravensthorpe	RT
105	-	Rockingham	RM
106	-	Roebourne	RB
107	-	Sandstone	SS
108	-	Serpentine/Jarrahdale	SJ
109	-	Shark Bay	SB
110	-	South Perth	SP
111	-	Stirling	ST
112	-	Subiaco	SU
113	-	Swan	SW
114	-	Tambellup	TP
115	-	Tammin	TM
116	-	Three Springs	TS
117	-	Toodyay	TY
118	-	Trayning	TG
119	-	Upper Gascoyne	UG
120	-	Victoria Plains	VP
121	-	Wagin	WN
122	-	Wandering	WD
123	-	Wanneroo	WO
124	-	Waroona	WR
125	-	West Arthur	WA
126	-	Westonia	WS
127	-	West Pilbara	WP
128	-	Wickepin	WI
129	-	Wiluna	WU
130	-	Williams	WL
131	-	Wongan/Ballidu	WB
132	-	Woodanilling	WG
133	-	Wyalkatchem	WY
134	-	Wyndham East Kimberley	WE
135	-	West Kimberley	WE
136	-	Yalgoo	YO
137	-	Yilgarn	YN
138	-	York	YK

ar

Have You Renewed your Licence?

The Department of Transport and Communications has introduced a new system of payment for radiocommunications licence fees.

Under the system licensees should receive an annual first and final notice for renewal within four to six weeks prior to the expiry date.

DOTC will no longer issue reminder notices. Instead licensees who don't pay their fees by the due date will be notified that their licences are no longer valid,

The onus still remains with the licensee to pay the fee by the appropriate date, even if they claim no first and final notice was received in the post.

Under the current computer system used by DOTC there is a possibility that an expired amateur callsign could be immediately re-issued.

ar

Editorial Apologies - June Issue

Measurement of Distortion.

This article was printed without any acknowledgment of the author! Regular readers would have recognized the clear and unambiguous style, together with the thorough and comprehensive technical treatment, as being the work of none other than Lloyd Butler VK5BR.

As Lloyd himself rightly states, omission of the by-line is the "ultimate publishing sin". Injury was added to insult, by corruption of his mathematics :-

Page 13, under Phase Distortion Δf should have been equal to frequency CHANGE in Hertz.

Page 16, figure 22 should have read :-

Θ = Phase Shift Between A and B

$X = \overline{A}.B \qquad Y = \overline{A.B}$

$Z = \overline{X.Y}$

On page 26, Harry Atkinson VK6WZ was awarded what we trust will be the last honorary doctorate issued by this magazine! Apologies to Harry for any leg-pulling he has had to suffer.

On page 3 the VK4 Treasurer is Eric Fittock. We seem to have insisted that he be called Neil, despite the wishes of his Mum and Dad!

On Page 57 the Awards column was of course written by our Federal Awards Manager, Ken Gott VK3AJU. Ken has expressed the philosophical view that any of his mistakes will be recognised nevertheless. Thanks Ken.

Murphy can take some of the blame for these publishing sins; the balance is due to the change in editorial arrangements. ar

Imported Power Cords Hazard

Some imported power leads designed for personal and business computers have not been approved by electric supply authorities and at least two were found to be very dangerous.

Victoria's Chief Electrical Inspector Ian Coleman warned that use of unapproved power leads could create a very dangerous situation when computers were switched on.

Two types had been found to have the earth conductor connected to the active pin of the three-pin plug.

Anyone who has either of the two types of leads should stop using it immediately and return it to the store from which it was purchased.

The State Electricity Commission of Victoria in a statement said one of imported products had the plug marked "Stabile" SP-2 and its cord had the identification "Ta Hsing" 3344002.

The other had an unmarked black three pin plug with the cord marked "Yeh Yang" 0444016.

Anyone in doubt about the safety of their power leads should contact their electric suipply authority. ar

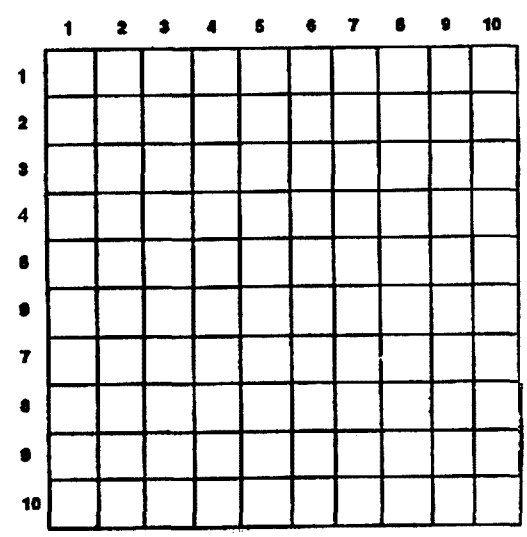
Morseword No 28

SOLUTION PAGE 52

Clues

Across
1 Felines
2 Genuine
3 Went
4 Cry
5 Dispossess
6 Catch
7 Post
8 Wat cut
9 Grabs
10 Type of cheese

Down
1 Ship
2 Deeds
3 He gives a time to
4 Strict
5 Modified iron
6 Arthritic disease
7 Take
8 Leafe of a book
9 Certain
10 Icecreams



Don't miss a single issue

IF YOU'RE THE KIND OF READER that can't wait to get the next copy of SILICON CHIP, then why not have the magazine delivered direct to your door? Each month, we'll bring you the best and brightest electronics magazine in the business, put together by Australia's most experienced team.

- ★ **Constructional Projects for the Enthusiast**
- ★ **Amateur Radio by Garry Cratt**
- ★ **The Serviceman's Log**
- ★ **The Way I See It**
- ★ **Hifi Features & Reviews**

Subscribe Today by filling out and mailing this subscription coupon

FREEPOST* SUBSCRIPTION COUPON

☐ New subscription ☐ Renewal Start in_____

Name_____
(PLEASE PRINT)

Street_____

Suburb/town_____ Postcode_____

	1 year (12 issues)	2 years (24 issues)
Australia	☐ $A42	☐ $A84
NZ & PNG (airmail)	☐ $A65	☐ $A130
Overseas surface mail	☐ $A62	☐ $A130
Overseas airmail	☐ $A120	☐ $A240

Enclosed is my cheque/money order for $_____ or please debit my
☐ Bankcard ☐ Visa Card

Card No. | | | | | | | | | | | | | | | | |

Signature _____ Card expiry date____/____/____

Subscription Hotline

We can accept your subscription order by telephone. Just ring us on (02) 982 3935 and quote your Bankcard or Visa Card number and the expiry date.

Detach and mail to:
FREEPOST 25
SILICON CHIP PUBLICATIONS
PO BOX 139
COLLAROY BEACH
NSW 2097

***No postage stamp required in Australia.**

DIVISIONAL NOTES

VK2 Notes

Tim Mills
VK2ZTM

New Council

About 65 Members were in attendance for the deferred AGM held 27 May last. For the first time since 1985, an election was required. A little over 300 ballots were returned. Some of the returned envelopes still had this year's membership card in them. Based on the number of cards returned, perhaps some 60 to 70 VK2 Members have their 1989/90 cards still in their annual report. If you have since discarded your annual report, and forgotten to collect the card, you may apply at the office for a replacement in person, or send in a stamped self-addressed envelope.

The ballot resulted in the following being elected :-

Peter Balnaves VK2CZX	Secretary
Reg Brook VK2AI	Affiliated Clubs
Roger Henley VK2ZIG/NWH	President
Dave Horsfall VK2KFU	Treasurer
John Martin VK2EJM	Membership
Tim Mills VK2ZTM	Vice President
Terry Ryeland VK2UX	Vice President

A full listing of the various office-bearers and portfolios will be included in future notes.

Bookshop

The Divisional bookshop has some stock of ARRL and RSGB publications at the moment. Most back orders should now be filled.

Survey

There was a good early response to the VK2 survey which was an insert to June Amateur Radio. A lot of information was obtained for the benefit of Council. By now the broadcast will have reported on the major points. Thanks also to the many Members who wrote, often with detailed comments, on the proposed fees increase. There have been several reports on the Sunday broadcast, including some of the comments received.

Historic QSL Cards

The Divisional Historian, Jo VK2KAA advises that Val Bourke, XYL of Stan VK2EL, has taken over the section maintaining the historic QSL card collection. Some members appear to be unaware that the Division has been maintaining this side of the old records, and have been sending historic material interstate. If you have any items which may be of an historical benefit to the Division, please contact either the Divisional Office or Jo, VK2KAA direct.

Events

June 3rd was a little wet for the Dural fireworks, and another attempt was made on the 17th. The "Trash and Treasure" at Dural on 28 May was very successful, with a good attendance and a day without water. Hopefully, the first of regular T&T's at Dural. The next T&T is July 30 at Parramatta.

The Satellite Seminar during May, when Graham VK5AGR provided over 7½ hours of information in three sessions, was well attended. A set of video tapes will soon be available for loan from the office, as well as a new printing of the notes. The broadcast will advise.

WICEN

For many years, WICEN has been a member squad of the VRA, which is in turn supported by the State Government through the Police Department. In order to take better advantage of this association, and the guidelines laid down, WICEN has become incorporated. Incorporation was granted to WICEN (NSW) Inc on the 24 May 1989. A separate report is being prepared to inform VK2 Amateurs of the changes.

Donations

During the Annual General Meeting, there was the opening of VK2AWI, the station established in the library at Amateur Radio House. A generous donation by Kenwood Electronics Australia Pty Ltd provided equipment for all Amateur Bands, from 160 metres to 70cm. A permanent antenna installation is now being completed.

Dick Smith Electronics have donated Yaesu equipment, to establish a 23cm FM repeater to be installed at VK2WI. Work is proceeding, and it is likely that simplex transmissions of the broadcast will be made while the remaining repeater system is constructed.

Divisional Council would like to thank these organisations for their support of the Division and Amateur Radio with their equipment.

New Members

A warm welcome is extended to the following people, who were in the June intake :-

E F Byrne	Assoc	Goulburn
H L Charlton	VK2PHC	Wilberforce
M M Erskine	Assoc	Nowra
M P Galvin	VK2XOC	Round Corner
R Katsch	VK2EIK	Epping
G F Macrae	Assoc	Uralla
N McGilvray	Assoc	Auburn
S Peck	VK2FTV	Lane Cove
G J Rees	VK2PYU	Kempsey
L J Roach	VK2PBM	Muswellbrook
M Sinclair	VK2BMS	East Willoughby
D Stock	Assoc	Lae PNG
G Stockton	Assoc	Ryde

VK3 Notes

The WIA QSL Bureau

The Inwards QSL Bureau has been closed since May 2 and is being reorganised. Due to the lack of adequate voluntary labour, the WIA Victorian Division has reached an arrangement with a major radio club to sort and despatch the cards. The Bureau will remain a WIA service, provided free to WIA members.

People who are not members of the WIA will have to pay an annual fee if they wish to use the Bureau. Only those registered with the Bureau can use this facility. The Moorabbin and District Radio club is willing to assist the WIA by taking on the basic tasks of sorting and despatching cards and maintaining Bureau records. The Club will provide the labour and storage needed for the Bureau, and will receive from the WIA an annual payment into its Club funds.

Under new procedures, the Bureau will send cards at regular 90 day periods to distribution points throughout the state. These distribution points, estimated to be 15, will then make cards available at meetings or by other mutually agreed methods. The distribution point method is not new and has operated successfully in two country regions for a number of years. All Bureau users will be invited to register with the Bureau and nominate from a list the distribution point they want to use to obtain their cards. An individual letter will go to some 900 people who had been registered with the old Bureau.

Those who had lodged deposits with the old Bureau in excess of $1.00 will receive a refund. Full details of the new procedures and the distribution points will be issued on the weekly VK3BWI broadcast, through the VK3 Notes column, and via clubs and zones.

WIA 80 Logo

The WIA will soon begin celebrating its 80th anniversary. There are a number of activities planned and it's hoped Victorian Division members will give them their support.

The first activity is to create a unique WIA 80 Logo. Details will be publicised in AR magazine.

Have a think about it, make a sketch, and submit an entry to the WIA 80 Logo competition. You may have someone in your family, or a friend or work colleague who is artistic; they are also eligible to enter.

Membership Fees

In this column last month, the WIA Victorian Division gave an explanation about the, then, proposed new structure, planned to start from July 1, 1989.

After that material went to print, the Division became aware that the proposed new fee of $70.00, although passed by a majority vote at the WIA Federal Convention,had been rejected by at least two other Divisions. As soon as this information was available, it was put on the WIA Sunday broadcast through VK3BWI.

The situation is that there will be no fee rise in Victoria this year. The 1990 membership fees are yet to be determined.

Jim Linton VK3PC

VK4 Notes

New Awards Manager

We thank our past manager John VK4YX who over the years has worked hard, and now takes a well earned rest. A big welcome to Val VK4VR, who has undertaken to keep this important portfolio going. Each week, the Queensland Net is on 3.605 MHz ± at 10.00 utc on Thursdays. We would like to hear your station call in, and work towards the various awards.

Bill Horner VK4MWZ
26 Iron Street
Gympie 4570

COLUMNS

DIVISIONAL NOTES

"5/8 Wave"

Jennifer Warrington VK5ANW
59 Albert Street
Clarence Gardens 5Ø39

New Council Members for 1989

President	Don McDonald VK5ADD
Secretary	Hans Van Der Zalm VK5KHZ
Treasurer	Bill Wardrop VK5AWM
Federal Councillor }	
Vice President }	Rowland Bruce VK5OU
QSL Buro Manager }	
Vice President }	
Alternate Fed C }	
DOTC Liaison }	Bob Allan VK5BJA
SATAC Co-Ord. }	
Assist. Treasurer }	
Past President }	Jenny Warrington VK5ANW
Convention Co-Ord }	
Minute Secretary }	Ben Broadbent VK5ABE
SATAC Assistant }	
Membership Secretary }	Alan Mallabone VK5NNM
Public Relat. Officer }	
Clubs' & Country	
Members Rep.	Ken Westerman VK5AGW
Program Organiser	Peter Maddern VK5PRM
Education Officer	John McKellar VK5BJM
WICEN Director	Ian Watson VK5KIA

We welcome Ben and John on to the Council and hope that they will enjoy their time with us. Unfortunately, we shall be losing Ken from Council later in the year, when our loss will be VK2's gain. We shall miss you and Jann, Ken; you have been part of the Divisional Council for so long now that it will seem strange not having you around.

Deceased Estates Committee

We are still looking for people to help with the disposal of Deceased Estates. So far, Steve VK5AIM has volunteered to do the areas North of Grand Junction Road. (He didn't say whether that takes in Darwin and Alice Springs, or not!) Ron VK5ACC has also offered to help Steve. Don Nairne VK5XX has also volunteered his services. As Don lives at Millswood, he could do some sort of Central Area, so it looks as though we are looking for someone Central to help Don, and perhaps a couple of people in the Southern suburbs. Bona-fide members will be given a letter of introduction to take with them.

Do you FAX?

Steve Robertson VK5BSR would like to hear from anyone who can transmit FAX and Slow Scan TV. Steve has been transmitting from time to time, but so far has been unable to contact anyone else. If you, like Steve, are looking for contacts on either of these modes, please contact Steve (who is QTHR in the call book).

Diary Dates

Tuesday 25 July, 7:45 p.m. (Speaker unknown at time of going to press.)

Flight Phones Agreement

Airline passengers will be able to make telephone calls, and send and receive fax's under an agreement signed by telecommunications authorities.

In-flight calls will be available from 330 airlines including Qantas late next year using the latest in satellite communications technology.

An agreement involving telecommunications authorities including Australia's OTC involves the construction of a global network of six ground stations.

Using 18 metre dish antennas the stations will be in Western Australia, Canada and France.

AWARDS

HMCS Protector Award: Net Details

Ken Gott VK3AJU
Federal Awards Manager
38A Lansdown Road
St Kilda 3183

I wonder how many readers know that HMCS stands for "Her Majesty's Colonial Ship". It had me stumped until I read the details of this new award offered by the VK5 group of the Royal Naval Amateur Radio Society.

Before Australia federated in 1901, each state had its own armed forces and their naval vessels were designated as HMCS.

HMCS Protector, launched in 1863 at a cost of £65,600, was the only ship in the VK5 Colonial Navy. For her time, she was a beauty, with, with an 8" gun, five 6" guns and five ten barrel Gattling guns. She was no stay-at-home either. She sailed to China as part of the multinational force sent to intervene in the Boxer uprising in 1900.

HMCS is commemorated on the new RNARS award certificate (see illustration). The artwork was designed by Bill VK5RA, enhanced by George VK5CGB, and prepared for printing by Derek VK5ADH. The Army gave a helping hand with the actual printing, making the job a real combined operation.

The HMCS Protector Award is operative from July 1, 1989, and to win it, VK's and ZL's must QSO VK5RAN and two other VK5 members of the RNARs, plus one other RNARS member in three different states (total of six contacts). Log extracts must contain the RNARS membership numbers of the operators contacted. The log extract must be signed by two other amateurs.

DX applicants need only contact VK5RAN, one other VK5 RNARS member, and one other from another state. Membership numbers are again required.

All bands and modes are acceptable, with appropriate endorsements available. Cost is A$5 or five IRC's.

RNARS members commonly use these frequencies:-

On Mondays:3.615, 1000-1130Z, and 3.620 MHz, 1100-1200z

On Tuesdays:3.521 MHz, 0930-1030z and 3.527 MHz, 1030-1130z

On Wednesdays:21.33 MHz 0930-1030z, and daily on 14.0+52 MHz, 0500-0900z

Other frequencies used by members are:-

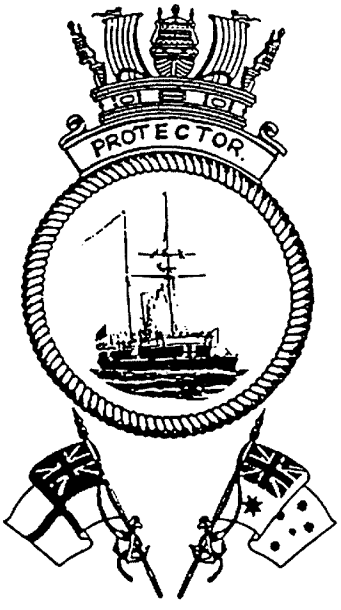
7090 mHz, 144.335, 21.360 and 28.410 (SSB) and 3.520, 3.527, 7020, 14.052 and 28052 (CW).

South Australian group members active include VK5's AF, HH, RM, VG, WE, YT, AFB, AFN, AFP and NDX.

Award applications should go to Jack Peatfield VK5AF, 1 Filmer Avenue, Glengowrie, SA 5044.

The group always welcomes new members and any VK5 with a naval or maritime past (or present) is welcome to join by contacting VK5CGB QTHR.

(In 1949 I worked my passage to the UK as a supernumerary at a shilling a month on the SS Lochybank. I wonder if I qualify?)



Artwork for HMCS Protector Award

	1	2	3	4	5	6	7	8	9	10
1	—	·	—	·	·	—	—	·	·	·
2	·	—	·	·	·	—	·	—	·	·
3	·	—	·	·	·	·	·	—	·	—
4	·	·	·	—	—	—	—	·	·	·
5	—	—	—	·	·	—	·	·	·	—
6	—	·	—	·	·	—	·	—	—	·
7	—	—	·	—	·	·	·	—	·	·
8	·	·	·	·	—	·	—	—	—	·
9	—	·	—	—	·	—	·	·	·	·
10	—	·	·	·	·	—	·	·	·	·

Solution to Morseword No 28

Across: 1 cats 2 real 3 left 4 sob 5 oust 6 trap 7 mail 8 sawn 9 takes 10 brie

Down: 1 boat 2 acts 3 dater 4 stern 5 steel 6 gout 7 nail 8 page 9 sure 10 ices

Bargain IRC's :For WIA Members Only

I find myself with a growing pile of IRC's, which thickened considerably last month when I received 29 applications from the USSR for the WAVKCA and HAVKCA awards, each accompanied by five IRC's.

These coupons cost $1.35 each at the post office, but if you redeem one you will only get stamps to the value of 65 cents.

That's why so many IRC's are never redeemed. They pass from amateur to amateur as a form of currency to pay for award certificates, to cover postage for DX cards, and for other purposes.

IRC's have no expiry dates, so countless numbers of them seem doomed to wander the earth forever, like Wagner's Flying Dutchman.

After that whimsy, I have an offer to WIA members: IRC's at 80 cents each, plus a SASE. Please quote your WIA membership number, or the code number from your copy of AR.

Remittances as you please. If you are a WIA member, your cheque is as good as gold.

China Back on Air

As a result of the much publicised political and military activity in China, the operation of amateur radio stations was suspended for a month.

Many who regularly chat with friends in China on the amateur bands were concerned when regular skeds were not met.

However, on Sunday, June 18, up popped BY4AA, operator Zhou, at the Shanghai Amateur Radio Sports Association.

He confirmed in a contact with VK2BVS, Sam Voron, that the station and all others in China had been off air for a month due to "trouble" but did not wish to elaborate.

There was also some good news from China, with examination sessions being held for individuals who wish to have their own amateur station.

Since the return of amateur radio to China several years ago only club stations have been permitted, mainly at universities and technical colleges.

However, from August 6, 1989, individual stations using the prefix BZ are expected to be heard on air.

At exams in Beijing about three months ago it was reported that 40 individuals had qualified, and a further 20 candidates were due soon to be examined in Shanghai. ar

AWARDS

New Check Point to CQ Magazine Awards

Bill Vogel VK5NVW has been appointed a CQ magazine "check point". This means that Bill is authorised to check QSL cards needed to qualify for the many attractive and challenging awards offered by CQ, thus obviating the need to send your cards to the USA.

Bill says he will be very happy to answer queries and supply rules and application forms for the various CQ magazine awards - provided that the request includes a self-addressed, stamped envelope. The envelope should preferable be business size.

Bill's address is 16 Wandilla St. Largs Bay North, SA 5016.

First DX to Win WAVKCA on VHF

Congratulations to Yoshiteru Mori JA2BZY for being the first amateur outside Australia to be awarded the WAVKCA certificate on VHF. Several other J amateurs also qualified for this award on 6m. The break came in the form of VK9YQS VKØ on Macquarie Island. No doubt AR's VHF/UHF will have more to say about recent happenings on 6m. JA2BZY's award numbered 32, not 31, as reported in June AR. (Gremlins again) The numbers below are the correct ones.

1661	Vlad Gorbachov	UA1ADY
1662	Oleg V Yashkin	UA9CB
1663	Rostov ARC	UZ6LWT
1664	Anatol Shmoylov	UA0KCJ
1665	A P Indrajaya	YC2OK
1666	Minoru Akahori	JI2EMF

HAVKCA

142	Vlad Sotnicov	UL7 023 135
143	Rimantas Talacka	UP2 038 915
144	Sergey V Kolesnichenko	UB5 077 1244
145	E A Kasatkin	UA3 121 2601
146	Mikle Zhidkov	UA3 121 555
147	Reef F Makaev	UA9 161 193
148	N Tagie	UA9 154 1289
149	Radko Club "Sweep"	UK5 073 31
150	Larry G Shagarov	UB5 073 2845
151	Alexander Zhigachov	UA6 101 62
152	Tihoo Titooh Gennady Titooh	UB5 073 307
153	Michael Demidov	UA3 142 112
154	Yuri A Lobatshev	UA0 139 76

WAVKCA (VHF)

32	Yoshiteru Mori	JA2BZY (6m)
33	Matsuo Chimuma	JA1UIU (6m)
34	Hideo Kirii	JA2DDN (6m)
35	Kenzo Nose	JA3EGE (6m)
36	Gil Sones	VK3AUI (6m)
37	Takashi Araki	JH1ECU (6m)

Help Call Goes Far

An amateur radio enthusiast in Tasmania phoned Clermont (near Rockhampton Qld) police on May 17, after picking up a call for help from a couple caught in a flooded gully near the town.

The couple, Horst and Patricia Muller, of Peak Vale Station, made the radio call for help at 10.30 am after their utility slid into the gully, stalled and started to float in more than 1meter of water, about 40km southwest of Clermont.

Police and State Emergency Service members were quickly on the scene, but Mr Muller was able to move his utility by using the starter motor.

Clermont policeman, Sergeant 2/c Peter Kickbusch said the signal was also picked up in Gatton, Maryborough and Springsure.

The Morning Bulletin, Rockhampton

Contributed by Charles Thorpe
L40018 (VK4)
ar

Awards Issued Recently

WAVKCA

1643	Steven Cima	VK3CIM
1644	J E Annakin	G4KDV
1645	Idris Abdul Rahim	V85IR
1646	Jonathan Darrin Wright	G0ANH
1647	Radioklub Lok	SP3KEY
1648	Shinobu Kataoka	JH8BOE
1649	Lev Kryshin	UA0QO
1650	Vitaly	RB5NT
1651	S Sobolev	UA0SR
1652	Leonid Uvarov	UA3DRB
1653	Imant Baumanis	UQ2AP
1654	Troitsk Club	UZ9AXB
1655	Arthur Woitekunas	
1656	MRII (Minsk ARC)	UC1AWC
1657	V V Shishko	UD6DKW
1658	A V Rekunov	UL7BY
1659	Al Zharikov	UA6AIR
1660	Gera Chukhlebov	UA6ADC

CLUB CORNER

Air Forces Amateur Radio Net (AFARN)

Geoff Neville VK3GN
President

This net was launched in 1982, to foster a bond between those with the common interests of amateur radio and air force personnel, either serving, or having previously served in any recognised national air force.

Members must be in VK, P29 or ZL areas.

Our magazine, AFARNews is edited and distributed four times each year, by our Secretary and Editor, Bruce VK3VKT.

On air *nets are* conducted :-

3.610± at 2030 hours each Tuesday evening, mainly VKs7, 5,3,2,1.

3.565± at 2030 hours each Tuesday evening, mainly for VK4s, and VK2s.

3.605 at 1600 hours each Friday afternoon.

All times are local Vic/NSW, regardless of daylight saving. Any stations interested are cordially invited to join the nets.

The ADASTRAL Award is available in Green for 'phone contacts, and Gold for CW only contacts. Ten contacts are needed for each award. For members of AFARN, 20 points are needed. Cost is the same for all - namely, $3.00 (three dollars). The Awards Manager is Bob VK4NFE.

The Kittyhawk Award is awarded for only one contact, and is free of charge, except that a standard sized envelope, stamped and self-addressed, should be sent to contact station.

KENWOOD

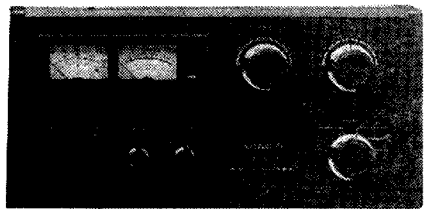
TS-440S

COMPACT ALL-MODE HF TRANSCEIVER/GENERAL COVERAGE RECEIVER

TS-440S provides complete all-mode HF coverage, with SSB, CW, AM, FM and AFSK modes of operation. All in a compact package, with Kenwood quality built-in.

Features include:

- 160-10 metre operations. All mode, complete amateur band coverage.
- Complete general coverage receiver (100kHz-30MHz continuous) with superb dynamic range.
- Automatic antenna tuning.
- Compact and light weight 270 x 96 x 313mm. Weight 7.3kg.
- CW break-in and VOX system.
- Digital VFO tuning system.
- 100% duty cycle transmitter, 110W AM/ 200W PEP (SSB) input



TL-922 HF Linear

The TL-922 provides maximum legal power. Suits TS-440S and other transceivers providing 80W or more input power for full output.

- 160-10 metre operation.
- Class AB_2 grounded grid amplifier with a pair of 3-500Z tubes for low IMD and long life

KENWOOD ELECTRONICS AUSTRALIA PTY. LTD.
4E WOODCOCK PLACE, LANE COVE, SYDNEY, N.S.W., 2066.
Ph. (02) 428 1455 Fax: (02) 427 6869.
Call now for further information and the name of your nearest authorised Kenwood dealer.

Please phone, or mail/fax for information
Name .....
Address .....
Postcode .....
Publication ..... Issue .....

Queensland Amateur Radio Data and Teletype Association

The Weekly International RTTY News Bulletin

The VK4TTY news network transmits at 50 BAUD and 170Hz shift via the group's repeater VK4RBT-1, 147.050/147.6500MHz with relays on 3.630, 7045 and 14.090 MHz each Monday evening at 8.00pm Eastern Standard Time, 1000 hours UTC. An amateur television relay can also be seen through the SEQATVG vision repeater VK4RTV, 579.25 MHz, (Brisbane City) Channel 34 UHT TV.

The Association can be contacted by writing to:

The Secretary QARDATA, PO Box 184 Fortitude Valley, Brisbane Queensland , Australia 4006. Within the range of the repeater, members may be contacted on the association's RTTY/phone repeater VK4RBT-1 or preferably on VK4RBT-2, 147.675 MHz.

Meetings of the Association are conducted on the first Friday of each month commencing at 7.30pm at St Brendan's School Library Hall, Hawtree Street, Moorooka, Brisbane (excluding public holidays). All members and visitors are extremely welcome. Details of the Association's RTTY printed circuit project boards will be printed periodically in the bulletin, or may be obtained by writing to the Association's secretary.

Queensland Digital Group Inc

PO Box 2224
Chermside Centre
Brisbane 4032

The group has been established to further the interest in Packet Radio and other forms of digital communication in Queensland. In part, the groups objectives are:-

- to formalise and guide the growth of the Packet Radio Network in Queensland
- to encourage persons to pursue activities using data communications
- to educate, and if necessary, assist in good operating practices
- to install and maintain Packet Radio Repeaters (Digipeaters)

The group was formed independently and is affiliated with the Wireless Institute of Australia. There is a current membership of about 35 and it is actively involved in installing digipeaters in the greater Brisbane area. It has also helped various other clubs in getting their own digipeaters up and running.

There is a lot of research and development underway for various modem circuits that can be used for packet. There are circuit boards and kits available for those who have a Commodore 64 or VIC 20 to get up and running on packet in only a couple of hours. There are other circuits also being designed for other computers. The group is at present engaged in the construction of a digipeater on the Springbrook mountain site, to allow easy access to the VHF packet network, by operators on the southern side of Brisbane. We are also working on the design of radios and modems for high speed linking that will used in the future.

We have already installed or assisted other groups in Queensland to install the following digipeaters :-

Maleny	VK4RZC	144.900/147.600 (Separate Systems)	(QDG)
Mt. Cootha	VK4RZB	144.850	QDG
Mt Perserverence	VK4RZD	147.600	(Toowoomba Club)
Mt Goonanamon	VK4RBU	144.900	(Bundaberg Club)
Mt Archer	VK4RAR	144.900	(WIACQ Branch)

The group meets at 7:30pm on the last Friday of the month at the Hooper Centre, Kuran Street, Wavell Heights.

The WH Hooper Centre is part of the Pre-School Centre in the grounds of the Wavell Heights State School.

There is always some sort of lecture after our (generally short) business part of the meeting.

Visitors are always most welcome

One of our biggest problems at the moment is the lack of money and manpower. All the construction up to this time has come from mainly donated equipment. We need MORE MEMBERS and clubs to join us, to help us complete our plans.

Membership fees are as follows :-

Joining fee $5.00

Full membership (Licensed Amateur) $10.00 per year

Associate membership (Unlicensed Amateur) $10.00 per year.

For more information about the group, please write to us at the above address or you may contact the following people :-

President:John Bews VK4KJB Work Phone: 837 4419

Secretary:John Morgan VK4XC Phone: 269 5491

Brisbane North Radio Club

Following the AGM of the above club earlier this month, there were a few changes in office bearers.

The Club Office bearers are as follows:

President:	Ed Fisher VK4ABX	Ph: 357 6696
Vice President:	Paul Keating VK4BGT	Ph: 266 7936
Secretary:	Bill Rahmann VK4BIL	Ph: 263 2630
Treasurer:	Cress Clarke VK4CCA	Ph: 261 3363
Station Manager VK4WIN:	John Rahmann VK4APZ	Ph: 266 9874
Asst Station Manager:	Col Hinxman VK4ACH	Ph: 356 9816
Library & Property Officer:	Don Wilschefski VK4FBA	Ph: 350 2681
QSL Officer:	Seb Calabro VK4FAX	Ph: 359 3539
Intruder Watch (IARUMS):	David Brownsey	Ph: 835 8322 (Work)
WICEN Rep:	Brian Mennis VK4XS	Ph: 263 6327
Education Officer:	Trevor Sherrard	Ph: 265 4974
Awards Manager:	Secretary carries out this task.	
Publicity Officer:	Vacant at present.	

Club Net:

Monday evenings 7.30 pm local time on 28.42 MHz +/-. Also Saturday Evenings, same time on 3.62 +/- (calling freq., no net).

Club Meetings:

Second Friday of the month at 7.30 pm, in Preschool Room at the Hooper Education Centre, Kuran Street, Chermside.

Fourth Friday extra workshop night, about every three months, ONLY when there are five Fridays in the month. Same time and frequency.

QSLs

The QSL Bureau is available only to WIA members; however, all club members can use the club PO Box as a QSL address. The Secretary will clear the box before meetings, and bring along the cards, and give them to the QSL manager, or the member if he is there. QSL cards bearing the club emblem may be purchased from the club, from time to time, at $6.00 per 100. Also the club keeps a stock of WIA QSL Bureau stickers. These are supplied at a slight premium, which goes to club funds.

The Club Award

Any amateur or SWL may obtain this by contacting (or logging if an SWL). sufficient members to obtain five points if you are a VK or three points for others. Contact with (or logging for an SWL) a club member counts one point, and the club station, VK4WIN counts two. Fee: $2.00.

Annual Subscription

This is now only $7.00. There is a joining fee of $2.00 for new members. Apart from other benefits, members are admitted free to Technical Classes when these are held. Subs are due straight after the AGM in May.

CHARC

The first AGM of the Central Highlands Amateur Radio Club of Tasmania (CHARC) was held on Thursday, 25 May 1989, on air at 3585 at 0945 UTC.

Elected Office Bearers of the coming year were :-

President:	VK7KZ	Bob
Vice-President:	VK7NBF	Bob
Treasurer:	VK7NDO	David
Secretary:	Sandy Geeves, wife of VK7KZ	

Two items of general business resolved were:-

1. Any member not calling in or tendering an apology for the weekly net on 3590 at 0900 UTC Tuesdays, will be fined 20 cents.

2 An award, to be called "The Tassie Trout Award", is to be instigated. The recipient of the Award will be required to work members of the CHARC of Tas. to gain an overall "weight" of "trout".

The Executive members will carry more weight than members. Details will be worked out in the near future and publicised in AR Awards column.

Bob Geeves VK7KZ
President, CHARC of Tasmania
28 Hamilton Street
West Hobart 7000

SILENT KEYS

We regret to announce the recent passing of :-

Mr Peter R Armstrong	VK1AX
Mr Erik W Bierre	VK2BEK
Mr Sydney Westerman	VK2ESW
Mr William Knowles	VK2VYB
Mr Ed Kosseck	VK3AKE
Mr Jim Keenes	VK3KE
Mr Greg Cusick	VK3MQ
Mr Max Lindsay	VK4HD
Mr Frank McGrath	VK4YJF
Mr Bram Gellet	VK5AB
Mr John Rankine	VK5JF

Herbert Maxwell Lindsay J P VK4HD

On 17 April 1989, yet another old-timer's key became silent. Amateur radio lost yet another of it's most ardent VHF enthusiasts, at the age of 75. Max lost his battle with an illness that lasted some eighteen months. He was so uncomplaining and retiring, that even those of us who knew him best, were completely unaware of this plight.

Max first became licensed in 1935, using, as most of us did in those days, all home-brew equipment scrounged, begged, and liberated, even bought when necessary, until the cessation of hostilities released the much welcomed flood of disposals gear.

A qualified accountant by profession, he was equally well versed in the electronics of the valve era. Always ready to unstintingly pass on to newcomers this vast store of knowledge.

A member of the WIA from the very beginning of his association with the hobby, Max always insisted that potential Hams become members also, and so help the Institute increase in strength for the betterment of all, and ultimately themselves.

A man of many skills, at first an accountant with the ES&A Bank for 15 years, before trying his hand at farming the fertile Buderim soil. Then, after a sojourn with the firm of Evans Deakin, Max entered the realm of the sugar industry. First with the Mill Suppliers Association, and then on the staff of the mill itself; he spent the remaining 15 years of his working life as secretary to the Moreton Central Sugar Milling Company.

Although his list of achievements in the amateur field were many, it was only with great difficulty that some of them were tracked down:

WBE Certificate, CQ WW DX, 100 Consec QSO's,HCIFS, Ragchewers Club, AJD, WAJA, VHF CC, W all VK VHF. One was written entirely in Japanese, and therefore unreadable by us, and some were missing.

Max was a keen gardener in his retirement, growing magnificent roses - his specialty. Abundant vegetables were produced as a result of his green thumb. He was an active golfer, and private organist. Nevertheless, we remember Max VK4HD best of all as a courteous and dedicated Amateur.

Our sincere sympathies are extended to his wife Mavis, Daughter Pam and Son Maxie.

John Purdon VK4PU
32 Hill Street
Woombye 4559

Erik Warburg Bierre, VK2BEK

His many friends will mourn the passing of Erik, who died in the Manning River Base Hospital, Taree, on May 1 after a short illness.

Erik was a real old-timer, receiving his first amateur license in 1924. This was in New Zealand where he was born on April 8, 1900 of Danish parents.

On leaving school, he joined the NZ post office as a telegram messenger, later to become a post office telegraphist, which instilled in him a love of morse communication lasting throughout his life. His impeccable fist was frequently heard keeping his regular skeds right up to the end.

After leaving the postal service, Erik joined the New Zealand Government Film Unit as a motion picture camera man, during which time he married Vera, an Australian. Subsequently, receiving an offer from Fox Movietone News, they came to Sydney. Later, he was appointed chief camera man, a job which took him to many parts of the world.

He created the well known kookaburra newsreel title and was the only one to film a Tasmanian tiger, now extinct. Much of the Australian wartime footage, now often seen on TV, was his work during his time as an accredited war correspondent.

After the war, Erik left Movietone and established his own photographic company. Years later, after the death of his wife, he sold this business and went to live in a Taree retirement village.

Erik was a true gentleman, a loyal and supportive friend, always ready to lend a helping hand to all.

Farewell old friend, you will long remain in our thoughts.

Bill Dukes VK2WD
44 Avian Crescent
Lane Cove 2066

Jim Keenes VK3KE

Jim Keenes' radio activity extended over a long period before getting his amateur license in August 1947. Prior to then, in company with Col Gibson, later VK3FO and Jack Harris, later VK3ALX, all three used to visit my shack to have a yarn about amateur radio, and also to get a bit of the atmosphere of amateur radio.

When Jim got his callsign VK3KE, he used to say that he was "King of the earbashers", and while living in Daley Street Bentleigh, he erected a beam for 14 MHz and proceeded to work the world of DX, together with a lot of the local stations, becoming well known on the bands.

About 1947, Col Gibson used to hold gatherings of some of the local amateurs in his shop in Centre Road, from where the Moorabbin and District Radio Club had its beginnings.

IN 1948, an inaugural meeting was held in the Library Hall in Moorabbin, where the MDR Club was established, Jim was elected the foundation President, a position he held for two years. He then said, to avoid the possible label of being run by a clique, the position should be rotated.

As founding President, his work involved the establishment of the Club Constitution; being the first of the post war clubs outside of the WIA meant that there were many hours of work to produce something which was used by a number of other clubs, as a basis for their own Constitutions.

He was a first class tradesman as a printer, and for a number of years he was the manager for a large printer in Melbourne. In 1956, when TV became popular, Jim decided that if he could make money for others, he would start a TV aerial business for himself. The problem was that he made such a good aerial, there wasn't enough profit to keep going, so he became a consultant to the printing industry.

After his only daughter married, Jim and Edna, his wife, moved from Bentleigh to McCrae where our contacts became rather fewer, and later they moved back to Frankston, where his wife Edna died.

Jim continued to live in Frankston, where we made contact, both in person, and over the air occasionally.

Our last personal contact with Jim was at the M&DR Club 40th Anniversary get together, and although he was using a stick, he looked well.

He was the guest of the Moorabbin Radio Club for the day, being the founding President, so we were all very surprised, shocked and very unhappy to hear of Jim's passing.

To daughter Beverley, her husband Jim and family, we extended our sincere sympathy as you have lost a fine father, and we a fine friend.

Vale Jim Keenes VK3KE

Ed Manifold
VK3EM

Noel Ericsson, VK2MF

It is with regret that I report the passing of Noel Ericsson, formerly VK2MF on 10 April 1989.

Noel was born at Hull in England in 1909. His parents came to Australia and settled in the South West of Western Australia.

He was educated first at Nangabrook public school, and furthered his education at Wesley College. It was here that Noel decided to make Radio his career. He came to Sydney as a student of the Marconi School of Wireless and qualified as a Radio Officer, obtaining his second class and later his first class Commercial Operators Certificate of Proficiency.

After many years at sea, from about 1928 to 1941 serving with companies such as P and O, Union and Adelaide Steam Ship, he decided that it was time he took a shore job and settled down. In the earlier part of the above service, he was unfortunate to have been shipwrecked when employed as the Radio Officer on the trawler "Gunandaal".

It was reported by the "Sun" newspaper of the time with words to the effect that the trawler "Gunandaal" ran aground on rocks about a mile south of Cape Howe, the southern-most point of the New South Wales Coast, at about 2200 hours on Sunday night November 3 1929. An SOS was sent by Noel on 220 metres.

It took only 10 minutes for the engine room to flood and all power for the wireless ceased. It was then that the youthful Noel displayed his resource. Attaching an ordinary light globe to his 345 volt battery, he succeeded in improvising a morse signal lamp, by means of which he was able to direct the movements of the steamers "Mernoo" and "Saros" which had hastened to the scene after hearing his SOS call.

The "Mernoo" and "Saros" were unable to effect a rescue due the close proximity of the rocks. Nevertheless, it was the youthful (19) Noel's improvisation of the signal lamp, and the answer from "Mernoo" and "Saros" by lamp, that gave the crew comfort to await in the murky darkness, or take their chance in the sea, as the lifeboats were destroyed on the first impact.

This was an experience that young Noel would not easily forget. His first and final job ashore partly fulfilled his career interest in Radio, when he joined the Department of Civil Aviation (DCA) as an Aeradio Operator, later known as Flight Service Officer, whose duty it was to supply Air Traffic information, and Ground to Air Communications to civil and sometimes military aircraft.

His service with DCA was at Lord Howe Island, Rose Bay - Flying Boat Base, Alice Springs and finally Kingsford Smith Airport, where he was stationed until his illness and retirement in 1970.

Noel's other activities included election as a Governing Councillor of the Union representing Professional Radio Employees, which covered industrial awards, such as Overseas Telecommunication (OTC), DCA - Technical and Communications, Meteorology and many others. It was during this period that he became the foundation editor of the Union's information circular-journal known appropriately as "QTC".

About the year 1960, still with a desire for extra radio activity, he became interested in Amateur Radio. He applied for a licence and was allocated the callsign VK2MF. He operated this station with an FT DX400 and a Hustler 80 metre to 10 metre trapped vertical antenna. This period of activity on the bands made him many new friends and lots of DX was worked as his many QSL cards reveal.

During his retirement he was most active in the St George Youth Radio Communication Service Annexe, operating from his home QTH, using his equipment for practical demonstrations and general theory, enabling some 100 students to qualify for their ham tickets. His class 1975 won a pennant for NSW. I feel sure that Noel has fulfilled the ambition of many of us, having aimed at, and successfully achieved, a wide and varied career in radio, commercially and as a hobby. He is sadly missed by his wife Stella and family, and his many friends that he made during operating as VK2MF in the hobby that knows no boundaries, that creates international friendship and goodwill. The hobby we all know so well - "Amateur Radio".

Ern Brown VK2AJ

Frank McGrath VK4YJF

It is with regret that we advise the passing of Frank VK4YJF. We convey our deepest sympathies, on behalf of the Wireless Institute of Australia to wife Bety, and family of the deceased.

OBITUARIES

John Rankine VK5JF

John Beddome Ranking became a silent key on 21 May 1989 at the age of 67. He trained as a professional brasspounder at the Marconi School of Wireless and embarked on a maritime career when the U-boat war was at its peak, keeping radio watch on merchant ships in convoys around the world. He survived torpedo attacks, and after WWS ended, he returned to South Australia to work in other branches of radio. He founded a successful recording and servicing business in Adelaide, FARR Electronics, which lasted 25 years.

His operating ability and interest in radio soon led him to become an amateur operator, and scarcely a day in the past 40 years passed without a contact.

His interest in the Malay and Indonesian languages, which began when, in the Merchant Navy he visited Malaya, led him to make contacts with amateurs in south-east Asia. Regular skeds became a daily net on 14 MHz which he named the "kangarudarimau" net, from kangaroo, for Australia; the garuda, the symbolic bird of Indonesia;and rimau, the Malay tiger; thus symbolizing the three nations involved.

Many of the participants became John's personal friends, staying with or visiting him on visits to Australia, which were reciprocated on trips to south-east Asia by John and his wife Barbara, when callsigns and voices became real people who extended very genuine hospitality to their visitors from Australia. Many VK amateurs must have heard John operating the net from Indonesia, with Barbara also contributing with a competent microphone technique.

On at least one occasion, he worked the net "Airliner Mobile", using the radio installation of a Garuda airliner through the courtesy of the friendly Indonesian Captain. John's extrovert personality, with drive and enthusiasm in everything he did, will be missed by his family and many friends in the amateur world. He pursued a wide range of activities such as slow-scan TV, movie-making, and videotaping, as well as "home-brewing" in which his practical ingenuity was put to good use. He was no mere black-box operator, as the numerous items of home-brew equipment which filled his shack testified. Some of them were highly unconventional, but they worked.

Peter Thomas VK5ZPT

JA (Bert) Cusick VK3MQ

JA (Bert) Cusick was one of the veteran operators, receiving his call in 1939. He served in the Armed Forces during the Second World War in the 3rd Division AIF Signals Corp, and then went on to make a career of his interest in the Department of Supply (Army Inspection).

Upon his retirement he continued to look after his wife Grace and five children while maintaining an active interest in his hobby.

With his quiet, unassuming nature, he brought a number of relatives and friends into the hobby. His distinctive voice and fist will be long remembered.

Greg Cusick VK3BRQ

OVER TO YOU

Equipment Circuits Wanted

Assistance is needed for our project aboard HMAS Castlemaine Corvette-Minisweeper WWII, now "Maritime Museum Memorial Ship" and the only one left afloat of this "Bathurst Class of RAN".

Our radio room requires handbooks, circuitry and so on, if available now, for following :-

Radar Sets A272 and A286PPlus Plans of Antenna Used

Radio Receiver B40 handbook and other knowledge

Mf AWA CI6940

HF AWA CI6940

HF Transmitter RC8AWA

Main Transmitter AWA 18J 5385

Emergency Transmitter AWA K5394

Motor Alternator 220/240V 50 Hz, 240V 500 Hz

DF Receiver AWA C143A

The RNARS runs VK3RAN aboard HMAS Castlemaine when our members are available, using their own gear, as no transceiver is aboard. I am a member of the radio station as SWL-Co-ordinator as 4th deck officer MN (ex WWII - Atlantic and Mediterranean Zones) and duty-security officer aboard.

Also I am a member of RNARS.

Hopefully in September 1989 we will move ship for full flash up, both boilers, 2/1000 HP steam engines- triple expansion.

In August 1991 our 50th Anniversary, we hope to take her out down bay on Anniversary Cruise with RAN-Maritime crew, plus special guests.

Addison Lowes
PO Box 305
Hedelberg
3084

Let's All Pay Up!

This letter is directed to all members of the WIA. Recently I sent my subscription away and became an Associate Member of the ARRL in the United States of America. The main reason for joining was to receive their monthly QST.

Upon perusing this very well presented magazine, I came across a few words at the start of the Ham-Adds column which caught my attention and interest. These words said, to quote, "Ham-Adds will cost 25 cents per word to all members".

My personal opinion is that the WIA should also adopt a format for the Ham-Adds column based along similar pricing structures as those used by the ARRL in their magazine.

A quick check of a recent edition of AR magazine, coupled to a little bit of mathematics, showed that an income to the WIA in excess of $12,000 per year would not be unjustified, if the system were to be implemented. This would be equivalent to having 172 new members join the WIA at the proposed new membership fee of $70 each.

This revenue could be channelled back into AR magazine to help pay for a better quality paper stock than the present material. An interesting suggestion, don't you think?

David G Barneveld VK4BGB
PO Box 275
Booval 4304

Radar at Mount Lofty

I am writing to you about Eric Jamieson's VHF/UHF column in the May 1989 issue of Amateur Radio.

Under the heading of "RADAR", Mr Jamieson ponders the possibility of a proposed CAA facility in the Mt Lofty Ranges being associated with Bureau of Meteorology wind shear radar.

I would like to assure Mr Jamieson, and your readers, that the proposed facility will serve one purpose only; as an International Civil Aviation Organisation (ICAO) standard Secondary Surveillance Radar (SSR). There is no association with the Bureau of Meteorology, or any other organisation, in establishing this facility.

The "chirp" every 12 seconds which is experienced with audio and computer equipment in the vicinity of Adelaide Airport is caused by the 2 MW Primary Radar, and no interference has been recorded from the low powered SSR installation.

SSR operates on 1030 MHz transmit and 1090 MHz receive, has a peak power of 2 kw and a very low duty cycle. The purpose of the facility, besides to determine aircraft position, is for the communication of identification and altitude data from the aircraft for display to Air Traffic Controllers.

We are currently going through the exercise of explaining the facility to the concerned residents of the area, and the publication of a rumour that could have been easily dispelled with a phone call, does nothing to assist in a reasoned evaluation of the proposal.

Chris Howell
Navigation Aids and Radar Engineer
Civil Aviation Authority
SA/NT Region

Mobile Telephone Ban

On reading AR and listening to the VK2 broadcast, I have been very disappointed with what seems to be a very disinterested and head-in-the-sand attitude towards this threat to

our mobile privileges.

It has rated only one mention a couple of weeks ago, and nothing since. There has been no indication of any action by the VK2 Division to counter this threat.

I cannot believe that intelligent people on our VK2 Council are so naive as to believe that, if the present plan to ban headphones is implemented, it will not be extended to ban microphones as well — ultimately. You trust politicians more than I could credit.

"In the entire history of (hu)mankind, no government has ever willingly given a freedom or right to its people, they have always had to fight for them." *(Abraham Lincoln)*

The petitions, etc, have been receiving good support up here from amateurs, CBers, the Taxi Council, commercial users, truckies, etc, and many other varieties of radio users who are alarmed by this pointless imposition. I hope they are being as energetically promulgated in the metropolitan area.

John Alcorn VK2JWA
33 Spring Street
Lismore 2480

Fee Rises

On this matter, congratulations to the VK2 delegates for refraining from voting and returning for direction from our members and executive.

The proposed increase in Fees will lose the WIA members. When I became Treasurer of the Summerland ARC about ten years ago, we had over 80% WIA membership, this has reduced over the years, until it is now under 50%. The almost universal reason given for not renewing is the increasing fees.

It is obvious to blind Freddy that with increasing commercial pressure worldwide for our frequencies, without strong political lobbying, AR may not be around much longer. In a lot of countries, AR is insignificant, or illegal, and the commercial value of our frequencies is an immense lure for politicians.

We have the largest frequency block allocations outside of the Armed Services. The excuse given for this allocation has always been our value in emergency situations such as backup communications services. This was once true, it may even still be, but it is no longer perceived as such by the public (read "voters"), and hence, by the politicians. It is not even taken seriously by amateurs, hence WICEN's present state.

To minimise the necessary fees, the WIA must rationalise its services, especially those which do not recover their cost of operation. Federal Council is one such service. Because of its importance as a SOS (Save Our Skins) operation, Federal Council should be a watchdog to liaise with the DOTC and to lobby or pressure its political masters as needed.

Federal Council should co-ordinate policies derived from the Divisions and present these to the DOTC/Government.

It should watch for, and react to, threats to our bands from commercial or political pressure groups (who will be much better funded that we will be). This would include international representation in WARC's etc.

Financially, this would be a total loss operation, and should be shared by all members equally. This should be the only reason for the Federal levy. However, as this also affects all users, members or not, a continuing "Fighting Fund" should exist, which should seek support and donations from allied organisations, businesses, amateurs (WIA or not), indeed from everywhere.

This would need promulgation by all methods, AR, other mags, Clubs, nets and newsletters etc. As propagandists, amateurs are truly amateur in our attitude and methods.

Many non-WIA amateurs may be willing to support such a fund to fighting for our survival, reducing the cost to Members. Federal Council should not get involved in other costly services that might be better provided to Members by the Divisions.

As for services, these seem to be better provided at State levels by the Divisions, who then set their Fees to suit. Services should be where possible on a user-pays principle.

Charges should be calculated for all such services at cost, or slightly less, for Members, and at cost plus profit for non-Members. The net service should be at not less than cost, and if possible at some profit to the Division as a part share of general administration costs.

By doing so, various services would be paid for by those who use them, and the General Fee could be reduced, which might induce more amateurs to join and support the WIA.

Now, to "Amateur Radio" — the same should apply here.

The cover price of AR has been kept very low, because very precise print runs are possible, due to exact circulation figures. The vagaries of news stand availability produces a need for considerable wasted over runs, the costs causing a much higher cover price as seen on such publications.

A compromise is possible. AR should be available as an optional subscription, and not as an obligatory inclusion in the annual Fee. AR should also be available to non-Members by subscription as well. Being on a subscription basis, this would still provide accurate figures for economical print runs. AR should be autonomous and self funding. I suggest three subscription levels :-

For Members, with Annual WIA Fee:Cost, plus Slight Profit (CPI)

For Members at other times:An Intermediate Rate

For non-Members:Cost, plus Commercial Profit Margin

If required, rates could be pro-rata to renew on the next January. Once it was argued that all this was too difficult. This is no longer valid, a piece of cake now for the most miserable computers and programs.

Subscription losses of Members who think they can't afford the combined Fees might be compensation by outside subscriptions. AR should make a profit which could be allocated to :-

- The magazine for its future development, or
- Pro-rata by circulation figures to Federal and Divisions.

Whatever system is adopted, the Renewal Notice should show full details of the charges, ie Federal, Division and AR.

Amateurs, like the rest of Australia, must realise that there ain't no such thing as a free lunch. We'll get what we pay for, and we'll get what we deserve from the politicians.

John Alcorn VK2JWA
33 Spring Street
Lismore 2480

Contest Rules

I sympathise with VK4AIM ("Comments" AR May 1989), when he bemoans the passing of big-time field day contests in VK. I too, remember going portable with the radio club, taking beams for 20, 15 and 10 metres, linear amps for all bands, working flat-out for 24 hours, making hundreds, even thousands of QSO's.

But, these days, along with the rest of the operators with whom I went portable for the John Moyle Memorial Field Day Contest, I feel, "what's the point?"

Here we are, almost at the peak of the next sunspot cycle, and the field day rules do not allow contacts with DX stations other than ZL. On 20, 15 and 10ml? They've got to be joking!

Furthermore, it has become trendy for successive contest managers, almost by divine right, to chop and change the rules of every VK contest at their whim and fancy, and then, more often than not, publish these rules in only one issue of AR before the date of the relevant contest. Some contests, in particular the John Moyle contest, are so confusing, have so many sections, and are so irrelevant to the real capabilities of each band, that it discourages many operators from entering. Just compare the number entries for this contest in 1980 to the last one.

My suggestion to the contest manager is to revert to the rules of ten years ago for the John Moyle contest; and for contests in general, to keep the rules simple, give plenty of warning of rule changes, and above all, maintain some degree of stability in rules from year to year.

All the above, notwithstanding, I have a very high regard for the Federal Contest managers, past and present, and I do not envy their task. They are in the unenviable position of sticking their heads above the trenches, with the inevitable result of having them shot off.

Charlie Gnaccarini VK3BRZ
66 Smeaton Close
Lara 3212

Operator Wanted

May I, through your correspondence letter pages, acquaint your readers with Savusavu Marina operations in the South Pacific Fiji Islands which will require, in due course, the services of an amateur radio operator.

We are developing a marina on the second largest island in the Fiji group at a small town called Savusavu, which is in a particularly beautiful area. The marine will service the 600 plus yachts that cross the Pacific every year, most of whom operate a "ham set" and talk on "marine nets".

A retired person or couple might find this of particular interest and could write to me at my English address.

VHF and the official maritime bands such as 2182 and 6215.5 will also be operated.

Robin Irwin
Barton Grange, Corfe
Taunton, ENGLAND

Membership Subscription Rates

Times are tough at the moment, especially for those of us paying off a mortgage, (no need to get out the violins!), and with the cost of living increasing all the time, a lot of the luxuries will have to be "put on hold". Hopefully, only temporarily.

I consider subscription to the WIA one such "luxury", maybe one that a lot of us will have to do without in the near future. In fact, unless the subscription comes down substantially, then I for one, will not be renewing next year. Even though it's only a matter of $50 (?), it's $50 that can go towards other necessities.

Now, if you're reading this and thinking along the lines of ..... "aren't our Amateur bands worth $50 a year to save", don't bother replying in these pages, as I would rather see the magazine full of interesting articles, rather than the jibberish sometimes presented to us in these "Comments" pages.

Now, while we're on the subject of cost, how much will subscription be next year? On the information page (page 3, AR May 1989), we can see that for full membership in Victoria the cost is $50, mind you this is also the dearest rate for anywhere in Australia(?) Now upon flicking through the magazine, I noticed on page 34 a piece entitle "Changes to Membership Arrangements". Point 3 is, and I quote: "that the recommended subscription rate from 1st July 1989 be set a Division component of $23 (subject to Divisional ratification), and a Federal component of $47".

What does this all mean? Does it mean the membership will be $70? You've got to be kidding! That's way over the top, considering most of us subscribe to obtain a copy of AR and nothing else, and how many of us are up at 10 o'clock on a Sunday morning to listen to the broadcast? Obviously not Peter O'Connell who wrote the article "How to Record the Weekly Broadcast"! In my three years of membership, the only other service I have called upon was to obtain a copy of the booklet "Guide to Antenna Mast Applications", which by the way, is very informative and well worth a look for anyone thinking about putting up a tower, sorry, a mast.

Dare I suggest a cheaper subscription rate for those of us who are not interested in the other services available, and when the time comes when we do require them, it can be on a "user-pays" system, like a lot of other services in our community? You never know, membership might increase dramatically if it were more attractive to join. Let's face it, wouldn't it be better for the Institute to have more members paying a lot less, rather than, less members paying a lot more?

Incidentally , Jim Linton VK3PC wrote in his "By the News Editor" column for May: "....in commercial terms you could expect to pay around $40 to subscribe to similar magazines...." This obviously assumes that you're buying 12 or 13 issues a year, but remember, if there's nothing of interest in a magazine for that particular month, then why bother buying it at all?

Adam Maurer VK3YWV
1 Jeffrey Street
Dandenong North 3175

We don't agree with your assertion that most members only require AR, Adam, but you are entitled to express your view! — Ed.

Amateur Radio -vs- CB Radio

I was first licensed as VK2AEW on 23 January 1953. I was active for the first three months, then put it away for about twenty years, because of study and work commitments. (I was only 18 years old at the time).

I came back to Amateur Radio in 1979 on MF/HF and 144 MHz, and have been reasonably active on the amateur bands ever since. Recently, I have taken to CB radio on 27 MHz SSB, and have made more friends on CB in the last six months than on Amateur Radio over the last ten years!

I wonder if this is because CB radio has recognised and used call channels which HF Amateur Radio has not. In my letter published in the April issue of AR I canvassed the idea of "optional channelization" of frequencies for HF Amateur Radio operation. (Also for the exclusive use of USB). I wonder if there has been any feedback about these two issues?

Although this letter is apparently directed to CB operators, many members of the WIA are both licensed amateur operators and licensed CB operators. Indeed, my own CB Club, the Sydney Radio Group (not yet incorporated) has six licensed and very active amateur radio operators.

The distribution of the amateur licenses is :-

(a)	Unrestricted License	2
(b)	Limited License	2
(c)	Novice License	2

These are my suggestions :-

1 CB 27 MHz AM radios be restricted to channels 1 to 20 with their present carrier power of 4 watts.

2 SS 27 MHz CB radios have exclusive use of channels 21 to 40 with transmission on upper side band only.

3 Nineteen new 27 MHz CB channels be created between channel 20 and channel 40 with a spacing of 5 kHz.

4 The maximum power of 27 MHz for SSB CB radios be increased to Novice Amateur Radio power; that is, from 12 watts PEP to 30 watts PEP, an increase of 4dB.

5 That consideration should be given to the idea of establishing five exclusive FM channels on 27MHz CB frequencies, possibly channels 16 to 20.

John Robinson VK2AEW
203 Tryon Road
Lindfield 2070

Amateur Radio is a Hobby - Or Is It?

In any hobby one starts from a simple basis, and by application, expands to greater personal achievements. One can't start with a "four minute mile".

Our structure contains a few elements to encourage this. We provide no real scope for the co-operative practice of Radio techniques. There is enormous scope for communications - mainly via refined commercially-made equipment. progress in radio and commercialisation has led to this up-swing — probably inevitable, currently unstoppable and having some merit. A minimum of change will accommodate our "communication arm" as it proceeds to packet radio and inevitably to FAX - Instant QSL's - shades of Polaroid cameras!

We could nurture an area of active radio practice with a few small segments of frequencies devoted entirely to home constructed equipment. I include kit sets. If you can build it and de-bug it, you have one foot in the door! I do not think all bands would be necessary - 3.5, 10, 18, 50 and 1296 would give adequate frequency scope, and have little impact on existing equipment, especially pre-WARC. A 30 kHz slot as a divider between models would be adequate.

This is merely an extension of the original P/CW split to accommodate a new/old facet of radio! The regulations should remain the same for the quality of transmission, but be less stringent on the means of achieving it. If we want our hobby to retain a profile in radio techniques, it must be fostered and we, the WIA, must lead the way for DOC to listen.

It cannot be too bad to follow a trail pioneered by Max Howden and the thousands that followed his lead. You can always QSY and compete with global factory products in another competition, chase another country, zone, or certificate, etc, or happily exchange techniques with other DIY operators whose interests are in this aspect of our "Hobby", Amateur Radio.

Robert McGregor VK3XZ
2 Wiltshire Drive
Somerville 3912

Radials for Vertical Antennas

The fifty year old theory...to have as many as 120 radials buried in the soil, is being challenged. Computer analysis has found that four above ground radials are more effective, provided that both the radiator and radials are above ground level at distance of between three to six metres. On an average ground conductance, a height of 4.5m for 3.8 MHz gives a far better performance than the usual on ground and underground 120 radials. Se also, QST for August 1988, Elevated Vertical Antenna Systems by Al Christman, KBBI.

Translated by John Aarsse VK4QA from Electron, March 1989

ar

Correction!

I have read "Signals Reflected via Aircraft" in "AR" for May.

There is an error which needs correctling because it changes the phase of the particular point by a full 180°.

In the Appendix (1), third sentence reads:-

"This *appears* when the reflected signal assumes massive predominance, (etc, etc...)"

This should read:-

"This *disappears* when the reflected signal assumes massive predominance, (etc, etc...)"

Otherwise it all seems fine. Thank you.

Gordon McDonald VK2ZAB
59 Wideview Road
Berowra Heights 2082

More on Aircraft Enhancement

In your May issue, Gordon McDonald, VK2ZAB, accuses me of adding to the body of myths, furphys, half-truths and plain nonsense existing in amateur radio lore. He finds no fault with the argument I presented in the March issue which prompts him to make the accusation, but attempts to debunk it by exception, using a mixture of overt scorn and bad mathematics.

The mathematics presented by Mr McDonald may appear plausible to the non critical reader, but in practice, they are simplistic to the extent of producing results which are seriously in error.

In presenting his maths, Mr McDonald both assumes that the Earth is flat, and ignores the 900 feet difference in elevation between the aircraft and "prism". However, the Earth is round, and the aircraft and "prism" follow circular trajectories with respect to the baseline of Mr McDonald's diagram. The aircraft elevation may be assume to start at 12km, whilst over the VK1BG QTH, but if so, it peaks at about 15.7km over the centre point of Mr McDonald's baseline.

If we assume, for the moment, that there are interfering signal paths, as Mr McDonald proposes, and correct his maths as suggested above, then we find that the difference in path length generated by the first 22 km of aircraft movement is about 6.38 metres, not 12.48 metres, as Mr McDonald calculates.

Wave cancellation takes place only once per wavelength, not twice as asserted by Mr McDonald.

Thus, the perceived beat frequency in the above situation would be about 1 in 10 secs. on 432 MHz (not 1 in 2.5), and 1 in 30 secs. on 144 MHz. This can hardly be called "flutter" - and on 2 metres, the band both VK2ZAB and VK1BG make the most use of, it would be called slow QSB and would be regarded as normal! At the limit of range at which VK1BG can "see" the aircraft (some 68 km beyond the centre) the beat on 2 metres still only works out to be about one in 5 seconds.

There are other problems with Mr McDonald's argument.

First, for significant interference to be noticed between two signals from the same source, but arriving over two paths, they must have approximately the same amplitude. Some years ago, during a social visit, Mr McDonald was good enough to calibrate my "S" meter for me. As a result of that exercise, we established that there was a discrepancy of almost 14 dB between his calculated signal strength from VK3UM and VK1BG on 2 metres, and that actually occurring, (he has not since been able to explain why the signal is so much stronger than he would have predicted). With a difference of such magnitude between allegedly interfering signals, it is most unlikely that interference would be noticed at all.

Second, Mr McDonald's "flutter" argument seems to be based on CW signals, not SSB as is normally used for aircraft enhancement work. The circuit between VK3UM and VK1BG is long, compared to a wavelength at 21 metres - in fact, there are in excess of 210,000 wavelengths involved at 144.2 MHz. If a signal at precisely 144.2 MHz happened to arrive via 2 paths in exact antiphase at the Rx, then signals about 345 Hz above and below this frequency would be in phase, and reinforce. Thus, in the passband of a normal SSB receiver there would be several adding, and several subtracting frequencies all at the same time.

To the ear, on a normal SSB signal, the effect of a slowly changing two path system over such a long circuit would be a slow change in audio quality, and the non-critical listener would probably not notice it.

Finally, the hot aircraft wake crosses the "line of sight" path from the aircraft body towards the horizon directly to the rear. Attenuation of VHF signals due to refractive scattering on this signal path would result, further reducing the potential for noticeable interference between aircraft path, and prism path signals. In other words, the wake tends to shield the aircraft itself from RF. Therefore, under the special circumstances described in my article, the wake acts to inhibit Mr McDonald's reflections from happening at all.

Like Mr McDonald, I have better things to do, and would rather not engage in further fruitless dialogue with him on this subject. As I have said to him privately, I am grateful to him for his early assistance in refining the theory presented in the March issue.

He has been consistently and resolutely opposed to the notion of a hot gas supported mode of propagation, and has, therefore, acted as an excellent critic by being very quick to point out any flaws in my reasoning. But his counter arguments now boil down to the contention that I am trying to present something new, and that, because he has not seen the phenomenon previously reported, it cannot exist. In fact, there is nothing new in what I propose - it's just a linkage of ideas gleaned from some pretty old text books.

For the record, the word "forthright" in my article, to which Mr McDonald seems to take exception was not mine. At that place in the text my draft used the word "bruising"; from the tone of his article in the May issue, you will understand that my choice of "bruising" was no accident!

Ian Cowan VK1BG
13 Mainoru Place
Hawker 2614

HAMADS

TRADE ADS

RADFAX2: Hi-Res weather fax, morse & rtty receive program for IBM PC/XT/AT. on 360K 5.25" floppy & full Doc. Need CGA, input port, SSB HF FSK/Tone decoder. Has re-align auto-start view save print. Also "RF2HERC" same as above but for hercules card, and "RF2EGA" for EGA card (640 x 350 mode). Programs are $35 each and $3 postage ONLY from M. Delahunty, 42 Villiers St., New Farm 4005 QLD. Ph. (07) 358 2785.

AMIDON FERROMAGNETIC CORES: For all receiver and transmitter applications. Send large SASE for data and prices to RJ & US IMPORTS, Box 157, Mortdale, NSW 2223. Closed during August. (No enquiries at office please . . . 11 Macken St., Oatley). Agencies at: Geoff Wood Electronics, Lane Cove; Webb Electronics, Albury; Electronic Components, ACT; Trusoott Electronics, Vic; Willis Trading Co., WA; Associated TV Service, Hobart.

FOR SALE - NSW

FL2100B HF linear $1100. FRG7 rcvr $170. TR2200A 2m FM TRCVR $110. All in good working condition. Dave VK2BRA QTHR. (02) 4871840 AH.

BWD 509B CRO with probe and handbook. Ray VK2FW QTHR after 5pm. Ph: (02) 624488.

WIND-UP TOWER 3 sections 20m. Yaesu FT107M. Kenwood SM220 monitor 3 elements 10m and 15m. VK2VE QTHR. (02) 4494950.

FT101 C/W MIC HANDBOOK. Spare, finals, good order. Late model. $350. VK2BDT QTHR. (048) 215036.

YAESU FT707 HF TRANSCEIVER workshop manual, owner's manual, MH1B hand mic. Good cond. $700. Phone Dave (043) 676629. VK2FFK QTHR.

AT PORT MACQUARIE RADIO CLUB field day. Long weekend in June. Very reasonable prices being charged due to the no commission charged on "disposals". Number of high-voltage 3000-volt working 20 MFD block capacitors, ideal for high-voltage power supplies. Wide-spaced tuning condensers, lots of WWII disposal gear. Phone Brian, QTHR. (066) 556135.

YAESU YO100 STATION MONITOR, mint condition, C/W cables, $375. Phone Ray VK2AWQ QTHR (064) 941347.

TELEREADER GWR685A GW/BAUDOT/ASCII, complete with keyboard and display screen on main unit, $650 ONO. VK2ETF. (049) 454989.

YAESU FV-107 EXT VFO, $100. Webster band spanner 80-10M mobile antenna, $200. Yaesu FT230R 2M transceiver, $450 ONO. Ph: (063) 675095 Peter VK2DBI QTHR.

YAESU FT DX 400 ext vfo and manual, $300. Yaesu FT 227R and manual, $200. Yaesu FT 7 and manual, $350. CPI linear amp 10-80 metres, $100. T/S 323 UR heterodyne freq meter and manual, $40. Gertsch heterodyne freq meter and instructions, $40. Ph: (02) 6051993.

YAESU FT101E, good condition. New driver and finals. YM34 Yaesu desk mike, price $500. Contact Peter VK2DBI QTHR (063) 675095.

KENWOOD TS811B/70 CM TXVR, all mode, few hours use. Warranted. $1150. Yaesu FRG/7700 FRT7700 RX/ATU VGC, $550. Aerospace 70cm/18el beam, $95. VK2AHD. (069) 211004.

YAESU FL2100Z LINEAR, $1195. Two section telescopic tower 17M, galv complete, $785. First class. VK2ECR. (02) 5229784.

FOR SALE - VIC

DSE COMMANDER 2m transceiver kit (Cat K-6308) unassembled. In original unopened carton, $150 plus postage. Ralph VK3CQK. (058) 521372 QTHR.

4W QRP TX 3535 CRYSTAL. Good order, complete with VFO, $60. VK3CK Don QTHR (059) 873950.

EMTRONICS EAT-300 antenna tuner, as new, used only once, $150. Roth Jones, VK3BG (03) 7253550.

NALLY TOWER, buyer to dismantle, $500. Rotator Toyamuro KR-400, $100. Power supply Icom PS-15, $150. Antenna tuner MFJ-941B, $80. EW paddle bencher model, $100. Keyer AEA model MM-2 with memory and beacon facilities, $120. Speaker Yaesu SP-102, with 5 built-in filters, $75. Antenna tuner, Kenwood AT200, $80. 100W dummy load, $30. Stan VK3BSO QTHR (03) 7873479.

ICOM IC730 solid state transceiver (WARC), C/W manuals and HM10 scanning hand mike. Comes with audio CW filter (Icom), not installed. VGC. $850. (054) 721455.

YAESU AUTO ANTENNA tuner FC757AT, $400. Neil VK3CNT. (03) 7546410.

AR88 RX, in going order, $150. Hallicrafters SX73 RX - 540 kHz to 54 MHz, exc cond, $250. ATN 2MX 13-element beam - 17.3 dBi gain - brand new, $150. 13.6 volt (adjustable) 30 amp pwr supply - New $300. Frequency counter 20 MHz/200MHz, dual range, $50. VTVM Trio VT121 1mv to 300v FSD, $50. 7-metre self-standing portable mast in carry case, $100. Harold L Hepburn VK3AFQ QTHR. Ph: (03) 5962414.

KENWOOD TS52OS HF TXVR 240V/12V AC/DC, DG5 digital readout, AT200 ATU, SP520 spkr, mic, spare finals, VGC. Orig boxes and handbooks, $850 the lot. VK3CCB Cliff, phone (065) 235778.

FRG7 YAESU MUSEN COMM RCVR, $300 or best offer. Handbook and good order. 1 Birko transformer soldering iron unit, $10. Multimeter VF370 tester, Arlec, $20. Apply Addison Lowes, 45 2802, or 4/74 Handon Street Heidelberg.

YAESU FT-7B with YC7B digital readout, $500. Also Yaesu gutter mount antennas for 80m 15m and 2m, $50. VK3PCJ, 16 Langford Street Morwell 3840.

PAIR NEW RCA 4-125A with sockets, $90. Brand new boxed ITT 813, $45. 813 sockets, $15. Fil trans to suit pair 813, $25. 300PF 3KV silver-plated cap, $75. 30µH roller inductor, 2in diam, $50. Qty parts to build high-power amps, inc high-voltage caps etc. VK3GY QTHR. (03) 7894363.

STANDARD HANDHELD C500, 2 metres, 70cm, including charger and 2 Nicad batteries, all as new in box. Ph: (051) 992811.

BARGAIN IRCs. WIA members only. See details in the Awards Column in this issue of AR.

FOR SALE - QLD.

YAESU FT707, FP707, FC707, FV707DM and base station rack, all in PC. Will not separate, $1600. Ph: (071) 851240 AH, VK4VGS Pat.

COMMUNICATIONS RECEIVER, Realistic DX400 AM/FM/SSB direct entry keypad. Digital readout. Little use. Still in box, $190. Ph: (071) 851240 AH, VK4GS Pat.

YAESU FT102 classic rig, in exc cond. 160-10m. Extra filters, handbook and service manual. Original owner. Will accept $1050. Ph: (071) 947443. John VK4WLX QTHR.

MICROWAVE MODULES MM432 transverter 432/144 SSB transverter, $200. Microwave modules MMC144/28 converter, $50. Both as new. Geoff VK4KGE QTHR. (071) 6211877 AH, (0771) 621499 BH.

DISPOSALS GEAR FOR SALE at auction, North Queensland Convention, Townsville, September 22/23/24. PO Box 964 GPO Townsville 4810 for details.

48FT GUY MAST in 6ft sections. Fully galvanised, no rust, includes guy wires, nuts, bolts and baseplate. Contact Henry VK4KF. $380

ONO. Ph: (07) 8821193.

UHF/CAVITIES FREQ 400-500MHz 70db isolation, $250. VHF/cavities high band, set of six, $950. Tokyo hypower UHF/linear HL12OU, $550 THP. ATU $250. Dick Smith rotator, $100. Offers considered. Mick VK4BMT. (071) 982176.

KENWOOD TS940OS auto ATU spotless condition, consider trade-in T/S140, TS680 etc. Mike Haagsma VK4KCF QTHR. Ph: (07) 2847739.

YAESU FT101ZD transceiver SP901 speaker YV844A microphone plus FL2100Z linear. Exc cond. $2000 the lot. Ph: Roger VK4CD QTHR (077) 740221 AH.

FOR SALE - SA

ANTENNA, four-element cubical quad for 10m and 15m, $150 ONO. VK5KBE. Ph: (08) 2507259.

TELCON SEMI AIR SPACED twin coax cable, 2kW to 2m. Transmitter, 6V6G OSC 6V6 dblr 807 buffer, 829B PA, 160 to six-metre. Transmitting tubes 46-5A, 4E27 (813), VCR139 and socket. Grundig reel-to-reel recorder (valves). Two sets tubes for KW2000. Post-war tubes, receiving & TV. Admiralty Handbook of Wireless Telegraphy 1931. VK5LC QTHR. Ph: (08) 2716841.

BENDIX TA12B aircraft transmitter, original WWII surplus condition. Enquiries to Keith, ph: (08) 3566184.

YAESU 290R 2M all mode portable, with nicads, power supp/charger and 30W Alinco linear, $520. Philips FM806 2m mobile, with REP7000 and 147-575, $150. Commodore 64 late-model keyboard and power supply, $220. Phil VK5AKK QTHR (08) 3815427.

FOR SALE - TAS

ANTENNA TOWER 9MX high, square section welded steel construction, suit rotary beam to 14MHz, $250 ONO. Details phone Roy VK7EZ. (003) 834589.

R71A COMMUNICATIONS RECEIVER for sale, mint condition. Ph: (004) 313020.

SWAP - VIC

FANON COURIER SSB 24-channel CB converted to 10m band, for 40-channel SSB CB. VK3BLV QTHR. (03) 782 1983.

TO SWAP - Kenwood antenna tuner AT200, for a Kenwood antenna tuner AT1805 to complete a TS180S base station. Chris VK3CXP QTHR. BH (03) 3284849, AH (03) 3665060.

WANTED - NSW

YAESU FL2100, in good cond - valves not needed, for project. Contact Scott VK2JSR QTHR or (066) 295127 after 5pm.

SWAN 100MX, Astro 200, Atlas 215/210X. Need not be working. Allan VK2EFM, (066) 532463 or (02) 6638161.

DUMMY LOAD capable of 750W CW for 5 minutes and 2000W PEP for 1 minute. Will pay freight. FT-902DM or FT-902D. Must have 600Hz CW Xtal filter fitted. John Robinson VK2AEW QTHR. Ph: (02) 461091.

WANTED, VALVES TYPE 7094. VK2ZEV QTHR. (02) 6451078.

WANTED YAESU FC901 antenna coupler, top condition. Alf VK2API QTHR. (044) 711381.

FTV107R, SP107P, FP107E, all ivory faced. EAT2000. Ph: Ken (02) 5195669 AH.

VIC20 COMPUTERS AND MONITORS needed by a school group into robotics. Help some kids to help themselves.
Dave VK2KDW, (02) 6303139 bus. (02) 4842596 AH.

CIRCUIT DIAGRAM COMPONENT values etc. Collins ATU. Model unknown. Contains variable inductor HV/variable capacitor 2 ceramic switches bank of fixed capacitors. George VK2YT. QTHR.

WANTED - VIC

COUNTERMEASURES RECEIVING EQUIPMENT from the RAAF Neptune aircraft, tuning units TN 128/APR9, TN 179/APR13, TN180/APR13. Also switch unit assembly SA 416/ALR8, remote control type C426/APR9 and C654/APR9. W Babb, VK3AQB QTHR.

COLLINS EQUIPMENT, any condition. 51S-1, 51J-3, 51J-4, 75S-3B, 75S-3C, 312B-4, 312B-5, 32S-3A, 302C-3, DL-1, KWM-2A, MP-1, PM-2, 516E2. Collins Parts, tubes or literature. VK3GY QTHR. (03) 7894363.

HANDBOOK OR PHOTOCOPY of manual for Marconi HF CCT mag meter TF886A. All costs reimbursed. Syd VK3ASC QTHR.

WANTED - WA

YAESU FT200 and spare parts, handbooks, ESP valves. Trying to rebuild 2/FT200 sets, would like to collect them also. Maurice VK6NST QTHR. Ph: (09) 4192951.

WANTED - QLD

AEA DR DX UNIT, suit C64 oomputer. Also Philips FM828 MkII A or B band for conversion to packet repeater. Ron VK4BRG QTHR. Ph: (079) 561155.

70227A Z759 valves AVO model 16 multimeter circuit TV single strength meter - old radio test equipment - circuit of Advance voltmeter (Nixie tubes) EF3533 valves - valve tester _ Sig generator. QTHR. (071) 961186.

WANTED ELECTRONIC KEYER. VK4EAB QTHR. Ph: (071) 835162.

KENWOOD TS-120S or similar equipment for beginner on HF (ie not too expensive). Contact via Glen VK4PPE, Ph: (07) 3762804 AH.

KENWOOD TS-120S or similar equipment for beginner on HF. (le: not too expensive). Ph Greg VK4CAL (02) 2875372 BH or (02) 856579 AH.

WANTED - TAS

MANUAL, INFORMATION OR SOFTWARE for Adler Alphatronic word processor. Postage refunded. Steve VK7SC QTHR. (002) 716349 BH, (002) 723489 AH.

TELL THE ADVERTISER YOU SAW IT IN AMATEUR RADIO

ADVERTISER'S INDEX

ATN Antennas 38
Blamac Pty Ltd 13
Dick Smith Electronics ..... 32 & 33
Electronics Australia ..... IBC
Electronics Today International ..... IFC
Emtronics 41
Ian J Truscott's Electronic World 22
Icom ..... OBC
Kenwood Electronics Australia P/L 54
QD Electronics 28
Silcon Chip Publications 49
Stewart Electronic Components 51
M.E. Tonon Electronics 61
West Am Radio 61
WIA NSW Division Novice Licence 24
Wilkie Trading Co 56

TRADE ADS
RJ & US Imports 63
M Delahunty 63

HAMADS

Please Note: If you are advertising items For Sale and Wanted please use a separate form for each. Include all details; eg Name, Address, Telephone Number (and STD code), on both forms. Please print copy for your Hamad as clearly as possible.

*Eight lines free to all WIA members, ninth line for name and address Commercial rates apply for non—members. Please enclosed a mailing label from this magazine with your Hamad.

*Deceased Estates: The full Hamad will appear in AR, even if the ad is not fully radio equipment.

*Copy typed or in block letters to PO Box 300, Caulfield South, Vic 3162, by the deadline as indicated on page 1 of each issue.

*QTHR means address is correct as set out in the WIA current Call Book.

*A courtesy note will be forwarded to acknowledge that the ad has been received.

Ordinary Hamads submitted from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re—sold for merchandising purposes.

Conditions for commercial advertising are as follows: $22.50 for four lines, plus $2.00 per line (or part thereof) Minimum charge — $22.50 pre—payable.

State: .....

❑ Miscellaneous
❑ For Sale
❑ Wanted

Name: .....

Call Sign: .....

Address: .....

.....

Radio Amateurs: Have you checked out EA lately?

No doubt most radio amateurs are aware that *Electronics Australia* is by far this country's largest-selling electronics magazine, as well as being its oldest (we began way back in 1922, as *Wireless Weekly*). But have you looked inside the magazine lately?

Remember Jim Rowe, VK2ZLO? Jim used to be Technical Editor, and then Editor – back in the late 1960's and 1970's. You may recall some of the amateur radio and test equipment projects he developed, which proved to be extremely popular. Well, Jim is back at the helm of the magazine, and has been busy giving it a new lease of life.

You'll now find lots of new 'departments' in the magazine, including Solid State Update (with news of new semiconductor devices), Silicon Valley Update (news from the USA) and What's New in Entertainment Electronics. Plus all of your old favourites like Forum, The Serviceman, Circuit and Design Ideas and so on. And of course plenty of 'meaty' technical articles and contruction projects.

FEATURES IN THE JULY ISSUE:

INTERVIEW WITH GROTE REBER

Inventor of the dish antenna, 'father' of radio astronomy – the famous Grote Reber is alive and well, and living in Tasmania. Tom Moffat tracked him down for this fascinating interview.

WHATEVER HAPPENED TO AMATEUR RADIO – THE RESPONSE

What did your fellow amateurs think of Jim Rowe's provocative piece in the April issue? The first batch of responses make interesting reading...

TV-DERIVED FREQUENCY STANDARD

Need to measure your frequencies *really* accurately? Here's the design for a unit which uses TV network signals to provide very close to Rubidium-standard accuracy.

What about *amateur radio* projects? Well, there still aren't too many, at present – Jim Rowe's been a bit too busy! But he's *very* interested in boosting the amateur radio content, so if YOU have developed an exciting amateur radio project, please contact Jim by writing to him at EA, 180 Bourke Road, Alexandria 2015 or phoning him on (02) 693 6620 – to discuss the possibility of publishing it as a contributed article.

Take a look at the new, rejuvenated *Electronics Australia* – on sale at your newsagent at the beginning of every month. Or subscribe now, by phoning (02) 693 9517 or 693 9515.

Electronics Australia

Australia's Top Selling Electronics Magazine

Amateur Radio

JOURNAL OF THE WIRELESS INSTITUTE
OF AUSTRALIA
VOL 57, NO 8, AUGUST 1989

• Six metre Go-ahead! • AMSAT Colloquium Report •

• Low Noise Mic Pre-amp •

OUT NOW

At all good newsagents and book stalls

Electronics Today

AUGUST

eti

ELECTRONICS · TECHNOLOGY INNOVATION

Moonwalk

The 20th anniversary

Staying alive

Mercedes' stronger chassis

New series: Building blocks of Electronics

Part 1: The simplest blocks

Projects to build:

- VGA card
- Signal injector/tracer

PLUS

eti Sound Insights

AUSTRALIA'S HIGHEST CIRCULATING HI-FI MAGAZINE

Sound Ideas — Sound Advice — Sound Products

More information and 84 pages of colour!

CAN YOU AFFORD NOT TO READ IT!

Amateur Radio

Cover

The Remembrance Day Contest Trophy won by VK4 in 1988. Which Division will win it later this month? Photo by John Friend VK3ZAB.

Deadlines

	Editorial	Hamads
September	7/8/89	9/8/89
October	11/9/89	13/9/89
November	9/10/89	11/1089

TYPESETTING : Redfords Media
25 Glenferrie Rd
Malvern 3144
Tel: (03) 500 0377

PRINTING: Industrial Printing
Richmond

MAIL DISTRIBUTION: Polk Mailing Co.
PO Box 140,
Collingwood,
Vic. 3066
Tel:(03) 417 5161

Special Features

ZL Licensing for Visiting VKs
- Ross Garlick ZL3AAA 24
Report of Third AMSAT- UK Colloquium
- Graham Ratcliff VK5AGR 39
Down Memory Lane - Joe Ellis VK4AGL 16
Great Victorian Bike Ride - Ted Borowiecki VK3DXK 21
China Revisited - Wally Watkins VK4DO 20
Putting Up an Antenna Tower and Antenna
- Tony Williams VK2DJW 18
Cobourg with an Extra Oscar - Jim Linton VK3PC 23
RAEM Calling - Tony Smith G4FAI 18
How Radio Came to Pitcairn Island
- Bob Lowry VK4FPO 21
More of Cyclone Orson - Ray Gray VK6RQ 17
Tales of the Unexpected - David Barneveld VK4BGB 14

Technical Articles

Low-noise Mic Pre-amplifier - Ivan Huser VK5QV 12
Tearing the Hair with a Yaesu FT-7
- Eric Brookbank VK2EZB 4
Transmission of Data Information by Light
- Paul Weaver VK6OF 9
RF Impedance Measurement Program Update
- J Hodkinson VK2BHO 13

Reviews

Yaesu FT470 - Bruce Bathols VK3UV 26
BATC - The ATV Compendium (Book)
- Doug White VK3BOW 8

Regular Features

Advertisers' Index 64
ALARA 43
AMSAT Australia 36
Awards, CARIE, FAMPARC 52
Club Corner 48
Contests - Calendar, All Asian, HF Results,
Rules - LZ DX, ... 49
30th All Asian Rules 50
Scandinavian, SEAnet Rules 51
Divisional Notes, VK3, VK4, 5/8th WAVE 52
Editor's Comment 2
Hamads 62
How's DX? 45
Intruder Watch 44
Morseword No. 29 27
Murphy's Corner (errata) 25
Over to You - Members Opinions 57
Pounding Brass 35
QSL's of the WIA Collection 28
Silent Keys - Obituaries 55
Spotlight on SWLing 29
Stolen Equipment 60
VHF-UHF : An Expanding World 31
WIA Directory 3
WIA News 4

Amateur Radio

Published monthly as the Official Journal by the Wireless Institute of Australia, founded 1910. ISSN 0002 - 6859. Registered Office: 3/105 Hawthorn Road, Caulfield North, Vic 3161. Telephone: (03) 528 5962.

Inquiries and material to the Editor: PO Box 300, Caulfield South, VIC 3162.

Advertising: Ann McCurdy (03) 528 5962

Material should be sent direct to PO Box 300, Caulfield South, Vic. 3162, in accordance with the deadline date shown on page 1 of this issue.

Acknowledgement may not be made unless specifically requested. All important items should be sent by Certified Mail. The editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying a reason.

EDITOR'S PRESIDENT'S COMMENT

On Saturday, 17 and Sunday, 18 June, the first of the "new style" Executive meetings took place. Members of the Executive gathered from all around Australia to consider many issues of interest and concern to amateurs in this country.

It all began some time back, when a number of people began contemplating the structure and method of operation of the Wireless Institute of Australia. These discussions started to take a more definite form with the "Corporate Planning" day that was held last August (see the article "Why Corporate Plan" by Ron Henderson in April 1989 AR). Out of this came a better definition of the problem. Then came the possible solutions.

These solutions were canvassed at divisional level and gradually a definite proposal took shape - involve the divisions in more of the day to day running of the national body. Previously, the divisions (through their Federal Councillors) were only involved in setting policy directions once a year - the Federal Convention. Now it was suggested that they meet more often and help implement those policy decisions and make some of the day to day decisions that are part of the running of a national body.

Following a presentation and discussion on various management issues, the 1989 Federal Convention passed a key resolution on the structure of the WIA. Motion 89.08.01 resolved, ". . . to create an Executive consisting of one management oriented Councillor from each division, in order to extend awareness of Executive issues into the Divisions and in order to facilitate feedback of members' opinions", and ". . . to hold quarterly meetings of the full Executive".

The meeting on 17 and 18 June was the first such quarterly meeting. Members attending were those listed under the headings of "Federal Council" and "Executive" in the WIA Directory on the opposite page. Together with a couple of visitors, a total of eighteen people crammed into the Executive Office in Melbourne. ft started at 10.30 am on the Saturday morning with a number of routine (but nonetheless important) matters. The Executive members first reported on their activities - ranging from attendance at a regional barbecue to participation in divisional activities. From there, the discussion moved to correspondence, progress on Executive and Council resolutions, allocation of portfolios and so on.

The afternoon was taken up with a review of the 1989 financial performance to date and the 1990 budget. This included a review of the fee structure that was first proposed at the Convention in April. It was interesting to note a couple of things with respect to this debate. Firstly, Executive members were better briefed on this issue, having had the chance to discuss it with their Divisional Councils and members. Secondly, one of the Divisions which was a principal supporter of the increased fee structure at the April Convention was now voting against it!

At around six pm, the meeting adjourned for a buffet dinner. This was an excellent occasion for the Executive members to get to know each other in a relaxed atmosphere. Ann McCurdy was present, and welcomed the opportunity to meet some of the well known "voices on the phone". There was also the chance to explore some of the financial issues and options in an informal way. This was a great help in drawing the more formal discussion to a conclusion when the Executive resumed its meeting on the Sunday morning. Other items covered on Sunday included the office computer systems, recruitment plans, the Call Book, 80th Anniversary Celebrations, disposal news items on Divisional Broadcasts, and liaison with the DOTC.

Then followed an "Extraordinary Convention" - a meeting of the Federal Council consisting of one representative from each Division. This allowed a number of items discussed by the Executive to become policy by being approved by the Council. Under previous arrangements, this could only have happened by a postal ballot process, or by waiting until next April! So, the final word on the financial issues was given by the Federal Councillors. A more detailed report on the proceedings appears on page 4 of July AR. At a quarter to four on the Sunday afternoon the meeting finished, and everyone started for home. Was it a success? It most definitely was! The Executive members from around Australia came to a better understanding of the running of the national body. A greater range of expertise was there to make the necessary decisions. Most importantly, it was a positive step in bridging the gap between the members and the Executive. No longer is the Executive remote from the Divisions, as each Division is represented on, and part of, the Executive.

Peter Gamble VK3YRP
Federal President

WIA DIRECTORY

Federal Council

Kevin Olds	VK1OK	ACT Councillor
Peter Jeremy	VK2PJ	NSW Councillor
Peter Mill	VK3ZPP	Victorian Councillor
David Jerome	VK4YAN	Queensland Councillor
Bill Wardrop	VK5AWM	SA Councillor
Neil Penfold	VK6NE	WA Councillor
Joe Gelston	VK7JG	Tasmanian Councillor

Executive

Peter Gamble	VK3YRP	Federal President
Ron Henderson	VK1RH	Vice Chairman
Brenda Edmonds	VK3KT	Federal Education Officer
Bill Rice	VK3ABP	Editor Amateur Radio
George Brzostowski	VK1GB	Federal Executive
Kathy Gluyas	VK3XBA	Federal Treasurer
David Wardlaw	VK3ADW	Immediate Past Federal President

Federal Co—ordinators

Amsat	Graham Ratcliff	VK5AGR
Awards Mgr	Ken Gott	VK3AJU
Contest Mgr	Frank Beech	VK7BC
Education	Brenda Edmonds	VK3KT
EMC	Hans Ruckert	VK2AOU
Historian	John Edmonds	VK3AFU
Intruder Watch	Gordon Loveday	VK4KAL
Int'l Travel Host Exch	Ash Nallawalla	VK3CIT
QSL Mgr (VK9, VKØ)	Neil Penfold	VK6NE
Standards & FTAC	Rob Milliken	VK1KRM
Tapes (Federal News)	Bill Roper	VK3ARZ
	Ron Fisher	VK3OM
Videotape	John Ingham	VK5KG
WICEN	Bill Wardrop	VK5AWM

Executive Office

Bill Roper	VK3ARZ	General Manager & Secretary
Ross Burstal	VK3CRB	Deputy General Manager
Ann McCurdy		Advertising & Administration
Helen Wageningen		Membership & Circulation
June Fox		Accounts & EDP
Earl Russell	VK3BER	EDP Consultant
Ron Fisher	VK3OM	Librarian

DIVISIONS

VK1

Address
ACT Division
GPO Box 600
Canberra ACT 2601

Officers

President	Ted Pearce	VK1AOP
Secretary	Jan Burrell	VK1BR
Treasurer	Ken Ray	VK1KEN

Broadcasts
3.570 MHz
2m ch 6950
70cm ch 8525
2000 hrs Sun

Fees

(City)	Full (F)	$44.00
	Assoc (A)	$44.00
(Country)	Full (C)	$44.00
	Assoc (T)	$44.00
	Pens. (G)	$33.00
	Stud. (S)	$31.00
	Family (X)	$25.00

VK2

NSW Division
109 Wigram St
Parramatta NSW 2124
(PO Box 1066 Parramatta)
Phone (02) 689 2417

President	Roger Henley	VK2ZIG
Secretary	Peter Bainaves	VK2CZX
Treasurer	David Horsfall	VK2KFU

(R Denotes repeater) Times 1100 and 1915 on Sun
1.845 MHz AM, 3.595 AM/SSB, 7.146 AM (1100 only)
28.320 SSB, 52 120 SSB 52.525 FM
147.000 FM(R) 438.525 FM(R)
584.750 (ATV Sound) Relays also conducted via many repeaters throughout NSW.

F	$41.50
A	$39.50
C	$41.50
T	$39.50
G	$34.50
S	$22.50
X	$24.50

VK3

Victorian Division
38 Taylor St
Ashburton Vic 3147
Phone (03) 259 9261

President	Jim Linton	VK3PC
Secretary	Barry Wilton	VK3XV
Treasurer	Rob Hailey	VK3XLZ

1.840 MHz AM, 3.615 SSB,
7.085 SSB, 147.250 FM(R) Mt Macedon
147.225 FM(R) Mt Baw Baw
146.800 FM(R) Mildura
438.075 FM(R) Mt St Leonard 1030 hrs on Sun

F	$50.00
A	$45.00
G	$38.00
S	$27.00
X	$27.00

VK4

Queensland Division
GPO Box 638
Brisbane Old 4001
Phone (07) 284 9075

President	David Jones	VK4NLV
Secretary	John Aarsse	VK4QA
Treasurer	Eric Fittock	VK4NEF

3.605 MHz, 7.118, 14.342,
18.132, 21.175, 28.400,
52.525 regional 2m repeaters and
1296.100 0900 hrs Sunday
Repeated on 3.605 & 147.150 MHz, 1930 Mon

F	$45.00
A	$45.00
C	$45.00
T	$45.00
G	$36.00
S	$27.00
X	$27.00

VK5

South Australian Division
Thebarton Rd
West Thebarton SA 5031
(GPO Box 1234
Adelaide SA 5001)
Phone (08) 352 3428

President	Don McDonald	VK5ADD
Secretary	Hans van der Zalm	VK5KHZ
Treasurer	Bill Wardrop	VK5AWM

3.550 MHz, 14.175, 28.470, 53.100,
147.000 FM(R) Adelaide
146.700 FM(R) Mid North
146.900 FM(R) South East
ATV Ch 34 579.00 Adelaide
ATV 444.250 Mid North
(NT)3.555, 146.500, 0900 hrs Sun

F	$44.00
A	$44.00
C	$44.00
T	$44.00
G	$35.00
S	$26.00
X	$26.00

VK6

West Australian Division
PO Box 10
West Perth WA 6005

President	Alyn Maschette	VK6KWN
Secretary	Pending	
Treasurer	Bruce Hedland - Thomas	VK6QO

146.700 FM(R) Perth, at 0930 hrs Sun,
relayed on 3.560 MHz, 7.075, 14.110, 14.175,
21.185, 28.485, 52.080, 438.525(R)
Country relays 3.582, 147.350(R) Busselton
146.900(R) Mt William (Bunbury)
Broadcast repeated on 3.560 at 1900 hrs.

F	$42.00
A	$42.00
C	$42.00
T	$42.00
G	$35.00
S	$22.00
X	$23.00

VK7

Tasmanian Division
PO Box 1010
Launceston TAS 7250

President	Mike Wilson	VK7ZWW
Secretary	Bob Richards	VK7NRR
Treasurer	Peter King	VK7ZPK

146.700 MHz FM (VK7RHT) at 0930 hrs Sun
relayed on 147.000 (VK7RAA), 146.750 (VK7RNW),
3.570, 7.090, 14.170, 52.100, 144.100 (Hobart)
Repeated Tues 3.590 at 1930 hrs

F	$42.00
A	$42.00
C	$42.00
T	$42.00
G	$38.00
S	$24.00
X	$22.00

VK8 (Northern Territory) is part of the VK5 Division and relays broadcasts from VK5 as shown (received on 14 or 28 MHz).
Note: all times are local. All frequencies MHz.

WIA NEWS

Bill Roper VK3ARZ, General Manager & Secretary

USE OF 6 METRES IN AUSTRALIA

As keen VHFers are only too well aware, the fiasco of Channel 0 and 6 metres has caused a lot of headaches, particularly to east coast amateurs in recent months when propagation has opened up this frequency to much of the world, and they were legally prohibited from using any frequency below 52 MHz.

Well, I have great news for you. The concerted approach by the WIA, the largest body representing radio amateurs in Australia, has paid off, and achieved a result that could never have been achieved by fragmented approaches from individuals.

The submission by the WIA to the DoTC about the use of frequencies in the prohibited 50 - 52 MHz portion of the band has been approved, with only minor amendments. This submission was the result of work, advice and suggestions from many keen 6 metre enthusiasts, but its success was due mainly to the efforts of Peter Stackpole, VK1RX.

Let me now give you the details of the new rules pertaining to operation in the 50 - 52 MHz segment of the 6 metre band.

First of all I quote extracts from a letter, signed by Bill May, the Acting Manager, Regulatory Section of DoTC in Canberra, and received by the WIA on the 4th July.

Amongst other things, Bill wrote.....

> "The submission put forward by the Institute was found most comprehensive and has been carefully considered. While several minor problems were identified, essentially the proposed radial sharing criteria appear to provide a simplified set of rules for shared use of the band.
>
> Accordingly, I am pleased to advise that as from 1 July 1989, the revised conditions set out in attachment (A) will apply to the use of the 50 to 52 MHz band by the Amateur Service. These provisions replace those contained in departmental brochure DOC71 appendix C footnote H.
>
> In essence Amateur Stations located in South Australia, Western Australia and the Northern Territory may operate unrestricted. Amateur stations which are located outside certain radial distances, in the remaining states, are subject to limits in operating frequency, emission mode and power. In the Australian Capital Territory no distance contraints apply.
>
> Notwithstanding the changed conditions, I would stress that the shared use of the 50 to 52 MHz band by the Amateur Service is strictly on the basis that no interference is caused to the reception of Channel 0 television stations. Should the Department receive complaints, the sharing arrangement will be reviewed."

The bottom line of the revised conditions that Bill May referred to in his letter is as follows:

Amateur stations in VK5, VK6, VK8, VK9, & VK0 may operate, provided no interference is caused to the reception of Channel 0 transmissions, anywhere in the 50 - 52 MHz band, using any of the authorised modes, and with the legal maximum transmit power of 400 watts.

Amateur stations located in VK2, VK3, VK4 & VK7 are permitted to operate, provided no interference is caused to the reception of Channel 0 transmissions, in the sub-band 50.05 to 50.20 MHz, on the following conditions:-

They must be located outside the following minimum radial distances:

120 km from Channel 0 main television stations
60 km from Channel 0 translator stations
60 km from translator stations with Channel 0 inputs; and
They must only use emission modes of CW and SSB, with a maximum power of 100 watts.

Brochure DOC71 Appendix C Footnote H.

H. Amateur Stations are permitted to operate within this band subject to the conditions set out below;

(i) No interference is caused to the reception of channel 0 transmissions;

(ii) In New South Wales, Victoria, Queensland and Tasmania, operation is restricted to:

(a) the sub-band 50.5 to 50.20 MHz;
(b) locations outside the following minimum radial distances from;

Television channel 0 main stations 120 km
Television channel 0 translators stations 60 km
Television translator stations with 60 km
channel 0 inputs

(c) emission mode 200HA1A with a maximum transmitter power of 100 watts pY; and
(d) emission mode 4K00J3E with a maximum trans mitter power of 100 watts pX.

(iii) In the Australian Captial Territory operation is restricted to:

(a) the sub-band 50.05 to 50.20 MHz;
(b) emission mode 200HA1A with a maximum trans mitter power of 100 watts pY; and
(c) emission mode 4K00J3E with a maximum trans mitter power of 100 watts pX.

Amateur stations located in VK1 are permitted to operate the same as those in the other eastern states of Australia, except that the radial distances do not apply.

The attachment (A) referred to in the letter from DoTC is published in full so that you can amend your copy of DOC71.

The letter from DoTC also included a list of the locations of the various Channel 0 main TV stations and translators. This list is also published so that amateurs will be able to calculate accurately just where they are in relation to the radial distance limitations.

I am sure that all amateurs will be pleased at the commonsense approach used by the DoTC in approving the WIA submission, and appreciate that the approval has come through a little quicker than at first thought possible. There will certainly be a lot of activity on 6 metres at the next equinox when prime F2 conditions should re-appear.

Channel O Station Locations

Callsign	Location	Co-ordinates Latitude Deg	Latitude Min	Longitude Deg	Longitude Min
MAIN STATIONS					
ABMNO	SW Slopes/E Riverina Mt Ulandra	34	49.5	147	54.0
DDQO	Darling Downs Toowoomba	26	53.5	151	36.5
TRANSLATOR STATIONS					
ABC/0	Goulburn Mt Gray	34	45.5	149	45.5
ABCN/0	Kandos Mt Cumber Melon	32	52.5	149	59.5
ABCN/0	Portland/Wallerawang Garlands Hill	33	24.5	149	57.0
ABSN/0	Cooma Nanny Goat Hill	36	14.0	149	7.0
ABUN/0	Glen Innes Carpenters Hill	29	43.0	151	41.5
ABWN/0	Narooma Buckeridge Lookout	36	12.0	150	5.5
NEN0	Tamworth Bald Hill	31	4.5	150	57.5
ABMQ/0	Nebo Smiths Hill	21	38.5	148	42.0
ABNQ/0	Gordonvale 5 km North of town	17	3.5	145	46.5
ABNT/0	St Helens St Helens, Parnella	41	20.0	148	17.0
ABMN 0/11	Young (landra St)	34	18.0	148	18.8
ABMN 0/66	Tumbarumba (.8 km east of PO)	35	46.5	148	1.0
DDQ 0/5A	Toowoomba (Picnic Point)	27	35.0	151	59.0
DDQ 0/65	Chinchilla	-		-	
DDQ 0/66	Murgon	-		-	
DDQ 0/64	Millmerran	-		-	
DDQ 0/66	Tara	-		-	
DDQ 0/5A	Moranbah	-		-	

EXAMINATION DEVOLVEMENT

Examination Question Banks

After the flurry of activity by DoTC early in 1988, and then the long period of no apparent activity at all, the examination devolvement process started to move again following the long delayed appointment by DoTC of an Examinations Officer, Keith Carr-Glynn.

Although being earlier advised that they would not be available until mid-July, the DoTC drafts of the theory question banks were received by the WIA on 11th May 1989. These question banks were immediately reviewed by a number of interested and qualified amateurs, and those questions which seemed to call fo comment were circulated to Divisional Education Officers for comment.

The weekend of 24th and 25th June 1989 saw a meeting of some of these Officers, and a few other interested people, at the Executive Office in Melbourne. For over 22 hours on that weekend, this Education group reviewed questions, and discussed examination procedures.

By general agreement a few questions were recommended to be deleted, some were modified rather drastically, and many were reworded in minor ways.

This does not mean that the WIA was dissatisfied with the questions overall. Most of the questions are ones which have been appearing on examination papers for years without attracting complaint. The aim of the Education group was to ensure that the "average" examination candidate would be quite clear about the intention of each question, and to check that questions no longer relating to the current syllabus did not continue to appear.

The Education group's suggestions and comments on the question banks were returned to DoTC as promised early in July. As yet the WIA has not received a formal response to our suggested amendments, but telephone discussion suggests that our ideas were welcomed, and will be incorporated.

However much revision has taken place now, further refining of the question banks will be inevitable. It is probable that the initial release of the question banks will be on a trial basis for the first 12 months, with comments accepted from all users.

The Education group stressed the importance of all WIA groups intending to administer examinations working together and sharing information and experience gained. Ideally, Brenda Edmonds, VK3KT, the WIA Federal Education Co-ordinator, would like to receive reports on all examination papers used, and analyses of individual questions so that the anticipated regular reviews of the question banks will be based on statistics, not just feelings.

In the meantime, while we are awaiting the introduction of devolved examinations, DoTC have advised that they will be running the existing style examinations up to and including February 1990.

Morse Code Generation Program

When the amateur examination devolvement program started moving again some weeks ago, DoTC sent out a pro-forma to all those parties who had indicated last year that they may be interested in conducting examinations on behalf of DoTC.

In a Devolution Update circular letter received on 22nd June 1989, DoTC advised that they received 27 responses to those pro-formas. In addition to a rather inaccurate attempt to suggest that the WIA was holding up devolvement because we needed more than a few weeks to review the many shortcomings with questions in the DoTC proposed question banks, this circular letter enclosed a copy of the DoTC examination Morse generation program.

The program is on a 5 1/4 inch diskette and has been designed to be used in an IBM, or clone, personal computer. A certain amount of flexibility seems to have been built into the program, and early tests seem to indicate its' suitability for Morse receiving examinations.

MORSE TRAINING COMPUTER PROGRAM

As it stands the DoTC morse program is a one-time-run utility, doing what it was designed to do. However, for use as a morse training utility, it falls a bit short of ideal because the training aspect was not a part of the original design.

The VK1 Division was concerned about these shortcomings and, with DoTC approval, has now considerably improved the program to become a fully enhanced, menu driven, model.

At the start of the development exercise, two major requirements were identified. Firstly, the program had to be user friendly; and secondly, transmission should be repeatable and adjustable from within the program, not just at the start. The overriding requirement not to change any timing algorithms or formulas was retained, as stipulated by DoTC.

Eventually, after many candles were burnt, particularly by Phillip Rayner, VK1PJ, and several tests were made by DoTC, Phillip's wife and other VK1 amateurs, the final model surfaced, was tested, and is now approved for distribution.

Upon program execution the user is presented with the Main Menu. From there the user may select new settings for the speed, etc, get a block of text to transmit, transmit the current morse buffer, edit the morse buffer, display important program information, or exit the program.

"SET UP" on the main menu involves answering a series of questions selecting either ITU, AOCP or NAOCP format, speed, sound on/off, hard copy on/off, etc. All of which can be repeated until the transmitted morse is tailored to the user's requirements.

When the program executes, the morse buffer initially contains test text which, when transmitted, will allow the user to accurately time program execution. This is presented to enable users to check and ensure program timing is correct because, unfortunately, some "home" computer timers can be way off.

When the user is satisfied with the timing and requires some text to transmit, there are options to load random 5 letter groups with (or without) numbers, ASCII text files, text from the keyboard and, of course, the test message.

Selecting the "KEYBOARD ENTRY" option will present the user with a simple screen editor for text up to a length of 500 lines with each line containing up to 70 characters.

Output can be achieved in a combination of three ways. Sound through the PC speaker, hard copy on the printer, or through the parallel/serial ports.

As a minimum the program requires less then 200k of RAM and will execute on any IBM XT/AT, and most clones. Other PCs covered include the Sanyo 550/555, WANG APC and the Commodore PC (not C64).

In giving me the information about this program, Phillip, VK1PJ, stressed that acknowledgement must be given to DoTC staff for making the program available, and to the DRI office staff in Canberra for their invaluable assistance during program development and testing. Thanks are also extended to DoTC for granting their approval to the VK1 Division to distribute the program.

Copies of the program are available on disk by sending $5.00 for P & P, to either the VK1 Division (see the WIA directory on page 3), or directly to Phillip Rayner, VK1PJ, 33 Willoughby Crescent, Gilmore, ACT, 2905.

Having checked out the program, I can thoroughly recommend it as being by far the best morse training program on computer that I have seen. A definite must for anyone who is interested in Morse and who has an IBM style computer.

DOC71

Welcome news was received from the Canberra office of DoTC this week. After many delays the booklet, "Licence Conditions and Regulations Applicable to the Amateur Service", more commonly known as "DOC71", has finally been printed and distributed to State DoTC offices.

However, as mentioned above, Appendix C, Footnote H, appearing on page 19 of the booklet will need to be modified in view of the new operating conditions now current on the 6 metre band.

Further news is that the "Amateur Service - Operating Procedures" booklet, more commonly known as "DOC72", is currently at the printers.

WIA 80 LOGO COMPETITION

The WIA, which is the world's oldest national radio society, will soon begin celebrating its 80th birthday.

A part of this celebration will be the creation of a logo.

We need your ideas on paper. WIA members, their family or friends can submit logo designs.

The WIA 80 logo must included the familiar standard WIA wings emblem logo. It should also clearly give the message that the WIA was founded in 1910, or 80 years ago.

A judging panel will review all entries. It will have the right to choose any design submitted, parts of one or more entries, or simply use the entries as inspiration to create a logo.

Entries close on August 14th, 1989. They should be sent to:

WIA Logo Competition, Wireless Institute of Australia, PO Box 300, Caulfield South, 3162.

MAGPUBS

For many years now, the WIA has made available to its members a range of overseas radio publications at a discount price. This service, known as MagPubs, was handled at the Divisional level by the Divisional Book Shops, with overseas purchases and orders being centrally handled by the Federal Office.

In recent years a number of problems arose with the overseas ordering of publications. In the past 12 months there has only been a restricted number of books available at Divisional Book Shops, and overseas orders were often taking over 6 months to arrive at the Divisional Book Shop.

Members will be pleased to learn that the MagPubs operation has been completely overhauled and is now back in business, bigger and better than ever before.

Monthly half page advertisements showing some of the greatly expanded range of publications now available will appear in Amateur Radio magazine each month, commencing with this issue. If your Divisional Book Shop does not have the particular publication that you want in stock, then the expected delay in obtaining it is expected to be no more than a couple of weeks.

Divisional Book Shop officers have the latest list of publications available, so make sure you contact them first if you are contemplating purchasing a publication relating to amateur radio.

EXECUTIVE PORTFOLIOS

Although a substantial amount of the time put in by the delegates from all Divisions at the Executive meeting held over the weekend of 17th & 18th June 1989 was spent dealing with the financial aspects of the WIA (and they have been comprehensively reported elsewhere), a number of other business items were handled.

Among the 24 business items on the agenda, was the appointment of the Federal Co-ordinators for 1989. The listing of these Federal Co-ordinators is published in the WIA Directory, which now appears on page 3 of every issue of Amateur Radio magazine.

The only change from last year was the appointment of Bill Wardrop, VK5AWM as the WICEN Co-ordinator.

Also at that meeting, the Executive portfolios were allocated, and they are as follows:

Vice Chairman	Ron Henderson, VK1RH
Editor	Bill Rice, VK3ABP
Recruiting & Membership	Brenda Edmonds, VK3KT
FARWP II Co-ordinator	George Brzostowski, VK1GB
Treasurer	Kathy Gluyas, VK3XBA
IARU Liaison	Ron Henderson, VK1RH
Scanner of News and Press Releases	Bill Rice, VK3ABP
DoTC Liaison	Peter Gamble, VK3YRP
DoTC Liaison Assistant	Kevin Olds, VK1OK
FTAC Chairman	Rob Milliken, VK1KRM
FTAC Liaison Officer	Kevin Olds, VK1OK
Standards	Rob Milliken, VK1KRM
CCIR Liaison	Ron Henderson, VK1RH & David Wardlaw, VK3ADW

SERIAL NUMBERS OF EQUIPMENT OFFERED FOR SALE

Also on that weekend, during the Extraordinary Convention, a motion, proposed by the VK2 Division, and unanimously passed by all delegates, recommended that all advertisements for sale or disposal of equipment via a WIA publication or broadcast should include the serial number of the equipment offered.

In proposing this motion, the VK2 Division argued that this proposal would reduce the likelihood of stolen equipment being advertised via WIA outlets. If the serial number was included in the advertisement, then all equipment offered for sale could be readily checked against the Stolen Equipment Register, and if the serial number advertised did not match that on the equipment, then it would be up to the seller to explain the discrepancy to the buyer's satisfaction.

The inclusion of the serial number in all future Hamads is not compulsory, but is strongly recommended to all members.

32ND JAMBOREE-ON-THE-AIR 1989

Each year there seems to be a last minute rush organising amateur stations to operate with the scouts and guides, etc for this annual event.

The 1989 Jamboree-On-The-Air will take place over the weekend of 21st and 22nd October, commencing at 00.01 LOCAL TIME on the Saturday, and ending 48 hours later.

With the sunspot cycle improving radio conditions worldwide, this 1989 JOTA could be bigger than ever.

Have you started planning your participation yet?

WIA 80TH ANNIVERSARY AUSTRALIAN RADIO AMATEUR CALLBOOK

Have you bought a Call Book lately? Do you buy one faithfully every year? Did you buy one when you first became licensed, and then just never bothered to update it?

Every active amateur should arm himself with an up-to-date Call Book.

The next Call Book to be published by the WIA is to be called the 1990 80th Anniversary Australian Radio Amateur Call Book, and it should be available towards the end of September this year.

It will contain as many up-to-date callsigns as our records, and DoTC records, contain. It will also incorporate reference material, including repeater listings and location maps, beacons listings, DXCC, and Australian band plans.

Members may not realise the amount of work that goes in to publish this list of callsigns in a Call Book format. It requires the efforts of every staff member in the Executive Office for some weeks, not to mention the several volunteers whose assistance is invaluable.

Last year the WIA negotiated an agreement with the Australian Government Publishing Service to print, publish and sell the list of callsigns of all licensed Australian amateurs.

This agreement is a strict contract to publish the Call Book annually for the contract period of three years.

Certain conditions apply, including payment of a royalty to the Government amounting to 7 1/2% of the retail cover price of each copy sold.

The WIA membership database records show details of members and non-members and, in the past, these records were updated from hand-written lists provided to us by the DoTC at regular intervals.

This system changed when the Department was computerised. The lists of changes, new licensees, etc. was not forthcoming, so our records of non-member amateurs was not as accurate as we would have liked.

After many months of negotiation, these records are once again available to us. However, because it takes an incredible number of hours to go through the many changes listed - change of address, upgrading of callsign, change of name, etc etc, a decision was made to combine the DoTC list with our records only at Call Book publication time.

As our members keep us informed of their changes of address (otherwise Amateur Radio magazine does not arrive), their details published in the Call Book are taken from the WIA records and not DoTC records. Bear in mind that these WIA records are only as accurate as we, and you the member, make them.

One of the most important priorities in the production of a Call Book is the list of suppressions. For one reason or another a few amateurs do not wish their address, and sometimes even their name, to be identified in the Call Book, but this suppression request must be on file in writing in the Executive Office.

We will endeavour to keep the recommended retail price of the 1990 Call Book to the same level as the 1988 Call Book, that is $9.90 to non-members and $8.50 to members. However, we cannot promise that this will be the case every year!

We hope to gain more advertisers for this Anniversary edition of the Call Book, and if you can assist in this regard, please do not hesitate to contact the Executive office.

The Executive Office has a strict priority check-list and calendar, which has already been in progress for several weeks, to commence the countdown for publishing the 1990 Call Book.

This includes advising DoTC of computer tape specifications, planning front cover design, begin warnings in Federal Tapes and Amateur Radio magazine about the cut-off date of 11/8/89 for information to be published, forward a computer tape to DoTC, correspondence to potential advertisers, tapes back from DoTC to be translated to language and disks our computer can read, telephone follow-up to advertisers, letters to Divisions and booksellers soliciting orders, editorial content to be gathered and forwarded to typesetters, collection of advertising copy, completion of WIA database and merging with the DoTC tape, checking of the final result for errors, especially suppressions, final proofing, and eventually the delivery of the Call Books in cartons for transport to purchasers.

Will you be buying a copy of the 1990 WIA 80th Anniversary Australian Radio Amateur Call Book?

FEDERAL INTRUDER WATCH CO-ORDINATOR

It is with regret that I announce the reluctant resignation of Bill Horner, VK4MWZ, from his position as Federal Intruder Watch Co-ordinator. Bill has only been in that position for a short period of time, but devoted a lot of effort towards the interests of Intruder Watching in Australia.

The new Federal Intruder Watch Co-ordinator is to be Gordon Loveday, VK4KAL. Gordon has been the VK4 IARUMS Co-ordinator for many years and is very experienced in the field of Intruder Watching. I understand that Gordon, who lives west of Rockhampton, is blessed with a virtually noise free receiving location.

RECIPROCAL LICENSING AGREEMENT WITH DENMARK

A last minute item of news to hand from DoTC advises that a reciprocal licensing agreement has finally become effective as from 19th June 1989 between Australia and Denmark. Negotiations for this long awaited agreement first started in 1971.

This nows brings the number of countries, with whom Australia has reciprocal licencing agreements, to 16.

ar

Book Review

Doug White
VK3BOW
5 Penfield Avenue,
North Ringwood 3134

BATC "The ATV Compendium"

The WIA has received the latest handbook from the British Amateur Television Club. This new publication puts before the Amateur, exciting information and projects, within the ability of the average amateur to construct and get going. The latest techniques and devices are use in the projects, so that the constructor does not need elaborate equipment to build the systems, nor expensive test gear to adjust the projects to achieve excellent results.

There are three sections: Video Circuits; Special Projects; R F Projects.

Video Circuits

There are ten projects in this section to provide video signal generation, video switching, fading, superimposition and signal distribution functions prior to the modulation and transmission of video information. Each circuit is described using a circuit diagram.

Special Projects

There are three - digital framestore, universal sync generator, spectrum Eprom programmer.

The digital framestore (in simple terms) uses an analogue to digital converter to change the analogue video signal into a digital signal. In the digital format, the signal can be processed to a level of very high quality. A digital to analogue converter returns the signal to the analogue form. It sounds simple, but the project is the most complex one in the compendium, because of the need to sample the analogue signal at a suitable rate, store the digitised signal in memory, allow for processing, and retrieve the signal at the same rate and sequence as in the original.

RF Projects

There are three: GaAs converter; 24cm FM ATV transmitter, 3cm ATV transceiver.

These days, Amateurs are not motivated to construct transmitters or receivers, because the commercial units provide facilities which are difficult to copy. Power supplies, power amplifiers, converters and computer "add-ons" seem to be the extent of home-brewing. The 24cm transmitter consists of a video and audio modulator and a phase lock loop (PLL) exciter. The 3cm unit

Continued on page 13

New Headine this too long

Transmission of Data Information By Light

Paul Weaver VK6OF
23 Waddell Road
Palmyra WA 6157

What's So New About That?

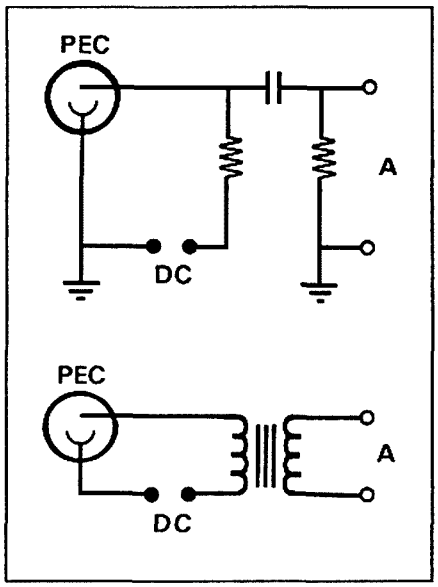
Marvellous applications of fibre optic techology today are turning up in almost every imaginable location. Telecom are busy installing vast networks of optical cable across the continent and sophisticated aircraft are increasingly relying on light for the transmission of vital data rather than electrically by wire.

To what must amount to many thousands of radio amateurs throughout the world who have worked as cinema projectionists the modern technology presents little mystery. The main source of synchronised sound in cinemas has been, for many years, achieved by an optical scan of a photographed modulation pattern printed on the side of the film being projected.

Simply explained, a stable, narrow slit of light is aimed at the sound track and the result is a fluctuating amount of light on the other side. This light falls on to a photo sensitive surface and the optical fluctuation this is converted to an electrical signal for amplification.

Modern projectors use variations of solar cells for this conversion but in the "good old days" the only device was the photo electric cell, the PEC. I have a certain amount of reverence for the PEC. It must rate as one of the most reliable electronic devices ever invented. There would be many old 35 millimetre cinema projectors still operating with photo electric cells 40-50 years old and, in this age of compact discs, that's not too bad. I wonder how many of today's CD players will still be working in 20, let alone 50 years. To be sure there have been PEC failures but more often than not they have been induced by tinkerers who have slipped with a screwdriver. New replacements are next to impossible to obtain and the solution has been to improvise with an ordinary solar cell.

The two examples of PECs in the photograph are typical examples taken from old 35 mm projectors. The CE-70 is an American type made by Cetron of Illinois. The base has come loose at some time and been secured with sticky tape. The CM8 is an Osram (UK) model and differs from the former inasmuch as the cathode is connected via the screw terminal at the top. Both cells are still usable.



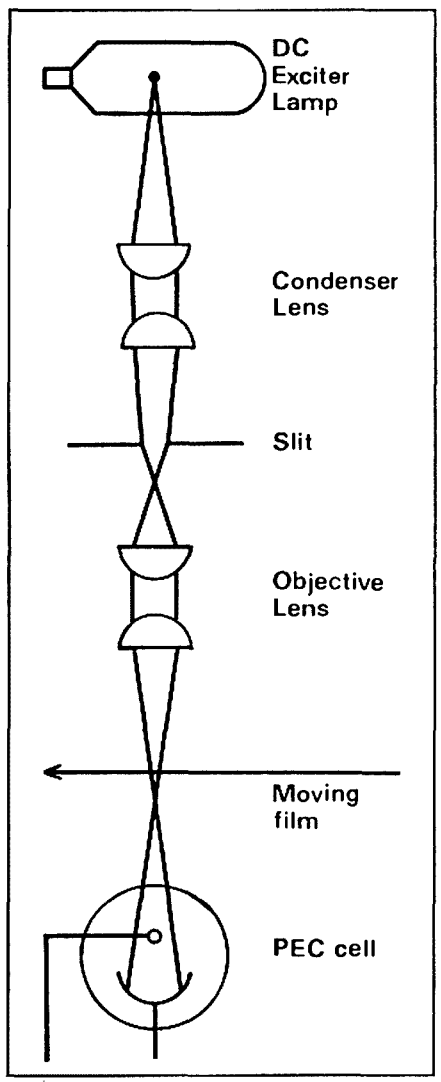
Typical PEC Amplifier Couplings

The reliability of these devices, no doubt, is due to the fact that they operate cold. There is no heater as in conventional valves. The large shield shaped element is the cathode or emitter as it is sometimes known. The rod assembly in front of it is the anode and is so designed as to cast as little shadow as possible on the inwardly curved surface of the cathode which faces the light source. When light fluctuates on the surface of the cathode, a proportional emission of electrons is attracted to the anode or again, as it used to be known in the old days, the plate. The electrical fluctuation is coupled to an amplifier and speaker and the resulting sound transmitted to the audience.

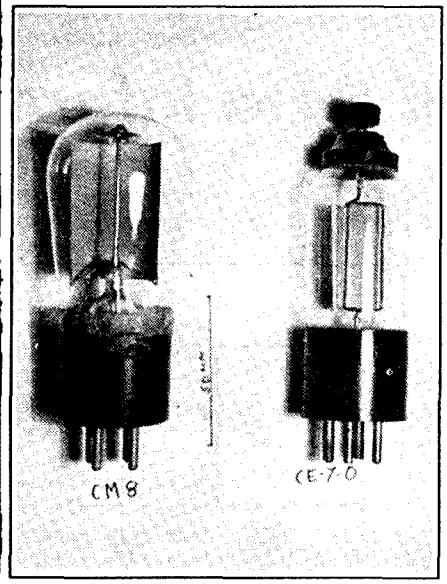
A standard test still carried out by all projectionists when the equipment is first switched on is to flick a scrap of paper or finger in the path of the light beam. The reassuring plop from the speaker tells that all is well. The component that does fail in this type of optical system is the exciter lamp and many operators have burned finger tips replacing a failed lamp during a performance.

The argon filled photo-cells typically operate on 90 volts DC. The power supplies for both the exciter lamp and the PE cell has to be very well filtered as the slightest voltage ripple does disastrous things to the audio quality. Similarly, the light slit must be focused precisely and horizontally on the film plate otherwise there is also a great fall off in sound quality.

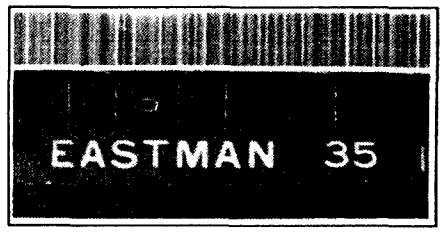
Apart from new chums with screwdrivers the prime enemy of such systems is oil. Projectionists regard the oiling of their beloved machines as a kind of ritual and the result more often than not is an accumu-



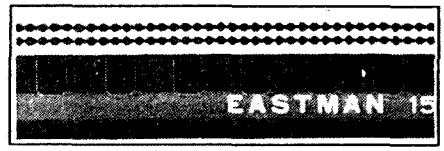
Optical Schematic Diagram



Two PE cells - CM8 and CE-7-0



An enlargement of a variable density soundtrack (negative image).



An enlargement of a duplex variable width soundtrack (negative image).

lated pool of Castrol's Perfecto Medium. Oil in the lens assembly has a rather deadening effect on the sound and is due to the fact that the PE cells are not very sensitive to yellow light. Perfecto Medium is also ideal for lubricating Model 15 teleprinters and other intricate machinery and amateurs who manage to cadge some from their friendly local projectionist should remember that a little goes a long way!

Despite the apparent basic simplicity of this type of sound system, very sophisticated optical versions have appeared from time to time involving stereophonic sound and control tracks for volume and other effects. They never took-off. Cinema owners are notoriously "tight fisted" and too few made the conversions when offered. Most cinema films screened in Australia today are 35 mm and still use the monophonic, variable width sound track as is shown in the example although there was a recent flush of optical stereo. Many of the old black and white Australian newsreels had what was called a variable density track which is also shown and there were a half dozen or so other variations but I don't think too many films have such tracks today even though no conversion is required to run these different types of sound track through a conventional projector.

Superb sound quality is obtained from magnetic soundtracks and, believe it or not, there have been many Australian theatres equipped for this multi-track mode for close on 30 years. Alas, 35 mm films with magnetic sound are almost non-existent today, however those that are released in 70 mm are totally magnetic with up to six usable tracks. I used to smile at such a great technical effort being poured into a single four inch drive-in theatre speaker at one theatre I worked in.

Even the most antiquated theatre equipment can achieve some pretty impressive sound results and it is often by a combination of traditional acoustic materials, large speakers and the favourable signal to noise ratio acquired via the high speed that the film passes through the sound head - 90 feet per minute with the 35 mm and even faster with 70 mm.

Since I began showing movies 27 years ago, I have worked in some 17 cinemas and drive-ins and, despite much of the equipment having been manufactured before I was born, I have never had a photo electric cell fail on me. There were, however, plenty of disasters. Most of the theatres I worked have now been torn down or converted to uses such as Chinese food halls, although I see from the newspaper advertisements that one or two have survived. ar

Tearing The Hair With A Yaesu FT-7

Eric Brookbank VK2EZB
115 Myall Road
Cardiff 2285

I have heard it said that experience is the best teacher and no doubt this is true. Of course, the one who said something similar about patience wasn't fixing a faulty FT-7. The fault in my FT-7 plagued me over a period of two years. It usually appeared after about 10 minutes on air and would then disappear just as quickly. The fault took the form of frequency instability. Sometimes no more than a few Hertz either way and other times the frequency would jump upwards a few kilohertz and then revert back to the correct frequency. At other times, the signal suffered a 'picket fence' effect on both transmit and receive.

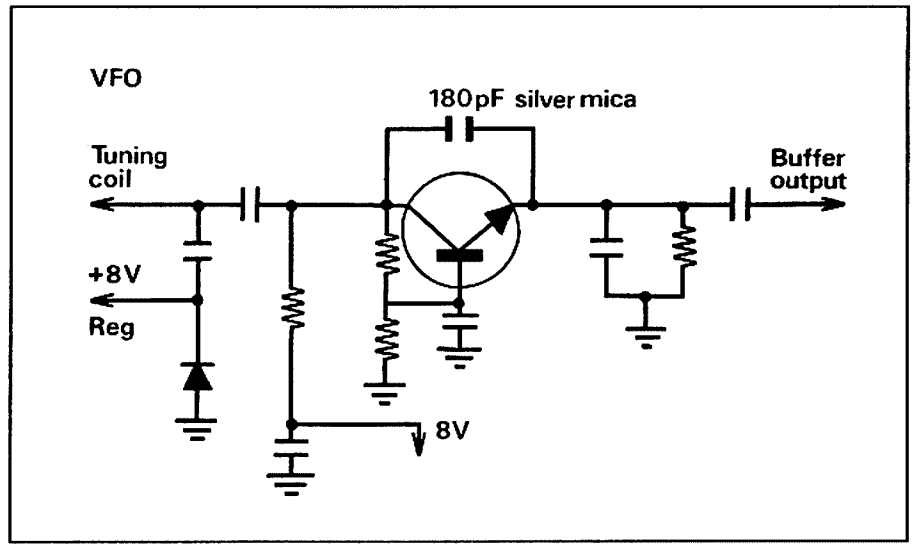
The plug-in boards were all removed and the contacts cleaned but to no avail. Voltage regulation was thought to be the problem but proved to be a non-event. In fact a whole range of options tried proved to be dead ends. Then during a bout of trouble-free operation, the rig decided to do its boldest act yet. Both the transmitter and receiver ceased operation. Only rapid switching of the band selector fixed the problem. It appeared as though it might be dirty switch contacts, so the wafer switch was treated with tuner cleaner. The receiver played merrily for the rest of that day but it then proved to be another wild goose chase.

The next time the radio failed it was noted that it was not completely dead as some noise was detected from the speaker. This gave the impression that something was amiss in the mixing sections. Probing around the common circuits (pre-mix, mixer, local oscillator and VFO) all caused the equipment to operate correctly again. Something was sensitive to pressure or short bursts of voltage. There were plenty of non-events in these sections also. Even soldering many believed dry joints didn't solve the problem. The results were always the same, joy for a while and then back to the drawing board.

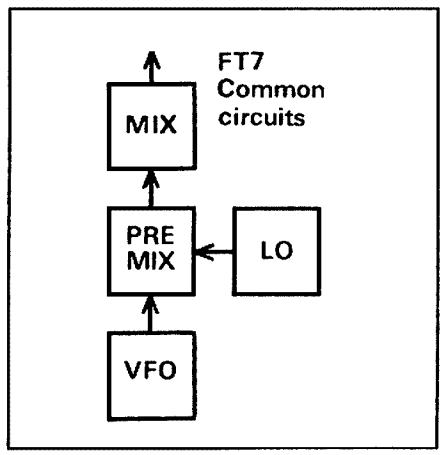
The trouble had to be in one of these common circuits. Signals injected into the premix and mixer circuits proved these circuits to be working OK. This narrowed the search down to the two remaining common circuits (local oscillator and VFO). "Please, not the VFO!!!"

Now I needed a frequency meter, and not having one I visited Col VK2KNN. This visit proved worthwhile. The local oscillator was proved to be spot on, which left the dreaded VFO. The output from the VFO was erratic and sometimes dropped out completely. Another chase for dry joints in the VFO didn't solve the problem. Next suspects were the FET and transistors. The FET was hard to get, so just the two transistors were tried unsuccessfully. Back to square one. I decided to go back to the basic theory. What type of oscillator is it? The manual says it is a Colpitts. What does that 180 pf silver mica capacitor between the collector and emitter do? It provides positive feedback (the flywheel effect) and sustains oscillation. The capacitor was replaced and positive joy (excuse the pun) was experienced. What a devious fault it had proved to be. As was said at the start, experience is the best teacher, but in this case what drawn out homework.

Three months later and the rig is still operating perfectly. I might even go on the air again shortly. ar



FT-7 VFO circuit



FT-7 common circuits

Don't Forget

Amendments for the 1990 Call Book must be at the Executive Office by August 21, 1989.

Low-Noise Microphone Pre-Amplifier

Ivan Huser VK5QV
7 Bond Street,
Mount Gambier 5290

This low-noise microphone pre-amplifier can be used to increase the signal from a low output low impedance microphone to a level suitable for use with most transceivers.

Many microphones are notorious for having a very low output and so some pre-amplification is often needed to allow them to effectively drive a transceiver. This was the case with a very nice Racal headset which I was lucky enough to pick up cheaply from a disposals source.

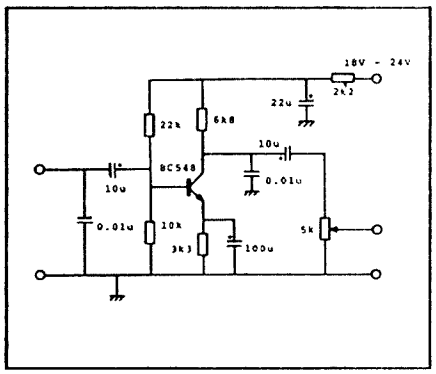


Figure 1 - Circuit of pre-amplifier

Problems

When extra amplification is added to the microphone circuit of a transceiver, several problems can be introduced. One of the main concerns being, of course, RF feedback.

If the shack is "clean", this will be minimal and all that may be necessary is to build the pre-amplifier in a good quality metal box and use a battery supply enclosed in the same box. The problem now is to remember to turn off the batteries when not in use.

This pre-amplifier in its bread-boarded form has been used right alongside the rig running 400 watts PEP without any sign of RF feedback. However, suppression capacitors have been included on the input and output just in case.

Another problem that often arises is noise. This is generally a pronounced hiss produced by the current flowing through both the active and passive components of the circuit. By using high quality components and close impedance matching of the input circuit, the hiss can be reduced to an almost undetectable minimum.

When the pre-amplifier is operated from a rectified and filtered power supply, the filter capacitor can contribute greatly to the noise problem. Decoupling of the supply rail will generally be an effective cure for this. If operated from batteries, the R-C decoupling components shown in the circuit may be omitted, in which case the supply voltage should be limited to 18 volts.

Operating the pre-amplifier from an AC supply may also increase the possibility of RF feedback and the creation of hum loops. Both of these problems can be overcome by the use of sound construction practices.

Due to the very low level signals being processed, any AC supply must be extremely well filtered, and preferably regulated using a three terminal regulator. A suitable circuit is shown in Fig 2.

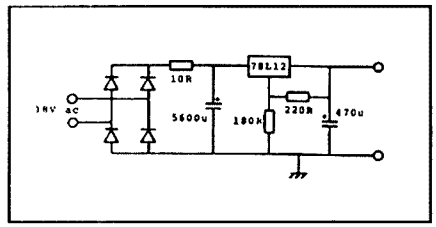


Figure 2 - Three-terminal regularor

Components

Unlike their early counterparts, modern small signal silicon bi-polar transistors produce comparatively little noise if used in the right type of circuit. Almost any general purpose transistor such as the BC548-BC549 series should be suitable.

A good idea is to feed the output of the completed pre-amplifier, with microphone attached, into a tape recorder and substitute various transistors to compare the noise levels produced. This is probably easiest done at the breadboarding stage.

To minimise the noise, resistors should be metal film types although cracked carbon resistors would be acceptable.

Polarised capacitors should be tantalum where possible, and room has been allowed on the PCB for two 47 µF tantalum capacitors in parallel for the emitter bypass. The 0.01 µF capacitors are disc ceramic.

If the 5k gain control is mounted on the printed circuit board, a cermet type preset is probably the best choice.

Construction

As a guide to construction, a suitable PCB pattern is given in Fig 3, but the layout is not critical and may be varied as required.

If the problem of RF feedback is encountered, then try constructing the pre-amplifier on double-sided board using one side of the laminate as a groundplane with the components mounted on the track side rather than through the board.

If all else fails - clean up the shack!

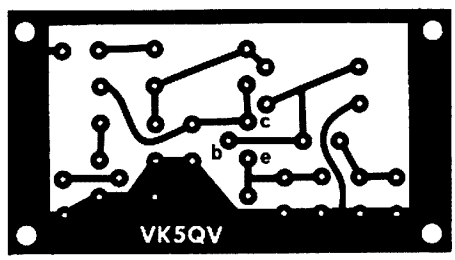


Figure 3 - Printed circuit layout for pre-amplifier

Component List

Resistors
1 x 2k2 metal film
1 x 3k3 metal film
1 x 5k6 metal film
1 x 10k metal film
1 x 22k metal film
1 x 5k cermet trimpot

Capacitors

2 x 0.01µF disc ceramic
2 x 10µF tantalum
1 x 22µF electrolytic
1 x 100µF electrolytic (see text)

Transistor
1 x BC548 or similar (see text)

Specifications

Voltage gain (Av)	> 100
Gain (G)	> 40dB
Input impedance	1k5
Output impedance	5k

ar

RF Impedance Measurement Program

J Hodkinson VK2BHO
Box 511 PO
Wollongong 2500

```
100 REM RF IMPEDANCE  VECTOR CALCULATIONS
110 REM TO DETERMINE "J" TAKE SECOND SET OF READINGS AT A HIGHER FREQ.
120 REM IF THE "J" VALUE INCREASES THE "J" FACTOR IS POSITIVE
130 REM RS = SERIES SENSE RESISTOR VALUE CHANGED IF OTHER THAN 100 OHMS USED
140 RS=100
150 CLS : PRINT :PRINT " RF IMPEDANCE VECTOR CALCULATOR  ver 2.0   VK2BHO 1989 "
160 PRINT:PRINT " INPUT ------ METER READINGS AS MEASURED AT TEST HEAD "
170 PRINT : INPUT " A READING ";A : IF A=0 THEN 170
180 PRINT : INPUT " B READING ";B : IF B=0 THEN 180
190 PRINT : INPUT " C READING ";C : IF C=0 THEN 190
200 IF (B+C)<A THEN GOTO 470
210 X=(RS*A)/B :Z=(RS*C)/B : Y=RS
220 CO= ((( A^2+B^2 ) -C^2) /( 2*A*B))
230 GOSUB 420
240 R=(X*CO)-Y : IF R <= 0 THEN 470
250 JA= ((Z^2)-(R^2))
260 IF JA <= 0 THEN 280
270 J = SQR ( JA )
280 IF J <= .5 THEN J = 0
290 IF R > (RS*50) THEN GOSUB 550
300 IF R < (RS/50) THEN GOSUB 550
310 IF Z < (RS/50) THEN GOSUB 550
320 IF Z > (RS*50) THEN GOSUB 550
330 REM CALC FIN
340 PRINT :PRINT :PRINT  "LOAD --- COMPLEX IMPEDANCE =  ";Z; " OHMS"
350 PRINT :PRINT  " RESISTIVE ELEMENT = " ; R; " OHMS"
360 PRINT :PRINT  " REACTIVE  ELEMEMT = " ; J; " + OR - J  OHMS "
370 IF A=B+C THEN  PRINT :PRINT   " NON REACTIVE LOAD  AT THIS FREQUENCY "
380 PRINT : PRINT :INPUT "ENTER NEW VALUES  ( N )   EXIT  ( X ) ";QS$
390 IF QS$="N" OR   QS$="n" GOTO 100 :IF QS$="X" THEN PRINT "END"
400 IF QS$="X" OR QS$="x" THEN PRINT "PROGRAM TERMINATED BY OPERATOR":ELSE GOTO
    380
410 END
420 REM TEST CO
430 IF CO=1 GOTO 460
440 IF CO.> 1 GOTO 550
450 IF CO > 0 THEN 460 ELSE 470
460 RETURN 240
470 REM ERROR MESSAGE
480 PRINT :PRINT
490 PRINT "   ****  DOES NOT COMPUTE   ****  WITH THE READINGS PROVIDED"
500 PRINT :PRINT " CHECK READINGS AND REMEASURE IF NECESSARY "
510 PRINT :PRINT " RULES ****    B + C MUST > A  ,  B OR C MUST NOT > A  "
520 PRINT :PRINT "                IF  B = ZERO  THEN  LOAD IS O/C
530 PRINT :PRINT "                IF C = ZERO THEN LOAD IS S/C "
540 GOTO 380
550 PRINT :PRINT "CHECK LOAD / READINGS AS CALCULATIONS ARE SUSPECT ----***"
560 PRINT :PRINT "CALCULATIONS INDICATE A MORE APPROPIATE SENSE RESISTOR VALUE M
AY BE NEEDED"
570 RETURN 330
```

Version Two

Following my "RF Impedance Measurements" published in April 1989 AR, the program shown at left is an updated version. It is much simpler and gives more accurate results.

(For those who prefer to use a calculator, the following fomulas are offered :

$$Z = \frac{C.RS}{B}$$

$$R = \frac{RS(A^2-B^2-C^2)}{2B^2}$$

$$X = \sqrt{(Z^2-R^2)}$$

See also letter by Ray Hinks VK4LU on page 60 - Ed.)

VNG Plans Moving Ahead

The provision of a standard frequency and time signal service is considered by 21 other nations to be a normal service like the provision of roads, telephones and a postal service.

Thanks to the VNG Users Consortium, the revived VNG service is set to ensure Australia continues to provide such a facility.

Telecom Australia operated the service from Lyndhurst in Victoria, but closed it down, claiming a number of reasons including its cost. However, not wanting to see the service disappear, the Consortium worked hard, which led to the imminent full resumption of VNG transmissions.

On-air tests have been conducted and final approval was expected from the Department of Transport and Communications for VNG, now located at Llandilo, NSW, to transmit on 5 MHz, 10 MHz and 15 MHz. In the long term, the 10 MHz outlet will be continuous, except for brief maintenance periods, while 5 MHz will run 0645-2200 UTC and 15 MHz will transmit 2200-0900 UTC. Reception reports to the VNG Users Consortium, GPO Box 1090, Canberra ACT 2601, will be acknowledged with a QSL card.

Responsibility for VNG has now been accepted by the Australian Surveying & Land Information Group of the Department of Administrative Services. ar

Continued from page 8

(10,000 MHz band) would be the most technically challenging project.

It is worth noting that the combination of digitised video and frequency modulated transmission has the potential to give significantly better results than the present analogue - amplitude modulated system. Some might argue that the 24cm and 3cm carriers are little used in Australia in comparison with the British, where there are several repeaters in the 24cm band. Therefore, why bother with construction for use in those bands? A check of the 1988 WIA Call Book shows that UHF and SHF bands are there to be used - yet another challenge for us.

After reading the ATV Compendium, many of us may become uneasy, or perhaps guilty, that we are not investigating new techniques, nor experimenting in the time-honoured Amateur spirit. An old-timer remarked that the Amateurs in the past showed the professionals how to use the bands, which were then taken away from them and given to the professionals!

Well, the Compendium reveals that there is plenty of opportunity for Amateurs to show the way forward. It is an excellent guide, worthy of inclusion in the Amateur technical library.

Enquiries can be made directly to : BATC Publications, 14 Lilac Avenue, Leicester LE5 1FN. ar

Tales of the Unexpected

David G. Barneveld VK4BGB
PO Box 275
Booval 4304

You are about to enter the outer limits. The beginning of the end. The forces have full control of your body. Do not attempt to push any button on your rig. Do not turn over this page. Slowly and steadily the throbbing noise of the creature gets nearer. Advancing steadily as it senses the heat of your body. Any minute now it will be here.....Aaaaaaaaahhhhhhhh!!!!!

Stop! Wait! What's this? Has everyone gone crazy? Has AR branched into writing science fiction stories in order to make a quick quid? Heaven forbid!

At first glance you may be pardoned for thinking that this is the case. However, the theme of this article, whilst having nothing to do with amateur radio, should provide a little bit of laughter, providing one can look on the funny side of the story, and also educate many amongst us to the fact that nothing is as it seems at first glance.

The story to be told is of a near-typical work day I experienced some eight years ago, in the operations section of a medium sized thermal power station. I arrived at work one morning and relieved the operator from the previous shift in the firing aisle of number three boiler house. These firing aisles each comprised four Babcock and Wilcox stoker fed, coal fired, water tube boilers. For the steam buffs among us, of which I am one, each boiler was rated at 650 psig, 160,000 pounds per hour, and at 950 degrees Fahrenheit final steam temperature.

A pair of these boilers each fed one Parsons 30 Megawatt steam turbo-alternator via a common steam range system. In the incident that I am about to reflect upon, firing aisles one and two, which were identical to number three, were inoperative at the time, and maintenance was being carried out on boilers one and two in firing aisle one. These boilers were almost stone cold as they had not been used for some days.

Maintenance

Shortly before morning tea, I was approached by the maintenance foreman and asked if I would be kind enough to start an induced draught fan on boiler number one and crack the damper open just a whisker to allow a flow of cooling air to pass through the boiler draught passages. For those not in the know, the induced draught fan sucks the products of combustion out of the boiler and forces them into the chimney for dispersal to the atmosphere. It is usually married up with another fan known as the forced draught fan. This fan does the opposite and forces air into the boiler to aid the combustion of the fuel.

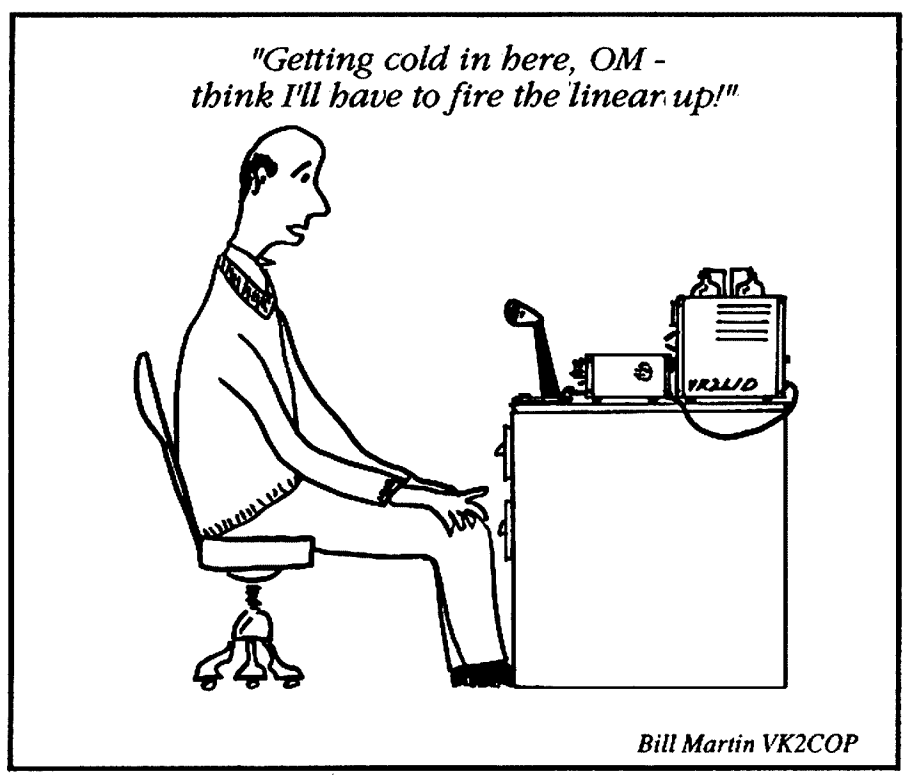
Seeing no problem with this request, I told my offsider that I would wander over and run this fan up to keep the boys happy. This fan incidentally, is driven by a 250 horsepower electric motor, coupled to the fan by a hydraulic fluid coupling. Speed regulation is achieved by varying the scoop position in the coupling via a pneumatic ram, controlled from the boiler firing console.

Upon arriving in firing aisle one, I walked over to the console and opened the appropriate dampers associated with the induced draught fan. Depressing the motor start button I watched the ammeter rise to full scale as the starting current took effect, and then drop off as the motor came up to full speed. This achieved, I then wound up the air control pilot valve on the pneumatic ram, and, watching my furnace draught gauges, anticipated a fall in furnace pressure as the fan came up to controlled speed. However, not so! In fact, nothing happened. The control by this stage had reached the 100% mark. Suspecting something amiss, I jumped into the lift to the top of the building to investigate the problem.

Actuator

Reaching the roof, I walked over to, and climbed down, the ladder into the fan bay situated below the chimney stack. Now to the task of finding out what was wrong. Could it be a stuck actuator? Broken control line perhaps? No, none of these. The cause of the problem turned out to be accidental sabotage.

It appears the fitters when working on



the fan a few days earlier, had isolated the air supply to the pneumatic speed control actuator. Here was the cause of the problem. Opening up the control air brought an immediate response. Actually, a very large response!

As the control valve downstairs in the boiler house was still at 100%, the pneumatic ram proceeded to rack itself out to full throttle at an enormous rate of knots. With a powerful drone, the fan came up to full speed and settled down at that.

With success in the back of my mind, I headed over to the lift and proceeded back down to the firing aisle to drop the fan speed to a comfortable level. From there I would go and join the rest of the troops for some morning tea. Or so I thought. As the lift doors open directly into the boiler house, you can imagine what a shock I got as I stepped out of the elevator and was confronted with five rather shocked and filthy negroes doing some sort of tribal ritual dance on the floor beside the boiler firing console. The words they were chanting were meaningful, but unprintable!

To cut a long story short, it appeared that the five negroes happened to be five of the maintenance fitters who had decided to have an early morning tea break (one that the foreman was not aware of) and the best place to do this was on the wooden planks that had been placed in the economiser section of the boiler a couple of days beforehand by the mechanical section.

So, there they were! Five sitting ducks, complete with makeshift table, 240 volt safety lamps, good tucker and a pack of playing cards. The only thing missing was the gentle breeze about to be supplied by the duty boiler attendant. Yes! Yours truly.

Cyclonic Disturbance

It is not hard to visualise the scene at that table, when, instead of a cool breeze, something that resembled Cyclone Tracy, complete with every bit of dust, dirt, and grit that it could find on its travels, smashed its way through the economizer tube banks where our friends (they were up till that point) were sitting. Sheer chaos must have reigned. I was told a couple of days later, that the record would have been broken in the Guinness Book of Records for five blokes trying to squeeze through an entry door about two feet square all at onoe. I'm only sorry that I missed seeing it. The motto of this story, I believe, is, although things may appear OK to start with, it sometimes pays to double check, lest you or somebody else gets caught.

In this case, the fitters got caught by doing something that they were not supposed to at the time, and I got caught by not checking the personnel situation before running up the plant. Let's hope that you do not get caught like these chaps.

Incidentally, the fitters never did disclose who had the best hand when Cyclone Barny struck! ar

Down at Moorabbin

Ken Gott VK3AJU
President

Having recently assumed responsibility for distribution of VK3 inwards QSL cards, the Moorabbin and District Radio Club looks like being an even greater than usual hive of amateur activity.

The club is trying out a new idea in the form of a Book Night. This will be an opportunity for members and others to buy, sell, and swap books and magazines relating to radio and electronics. However, there will also be a centre-piece in the form of a display of the latest editions of publications of the ARRL and other overseas manuals by a leading importer. These will be on sale at special discount prices. The Book Night will be on Friday, September 15.

On the evening of August 18, the club will be addressed by Graeme VK3NE, VK0NE. Graeme went to Macqaurie Island in December 1987 on the last, ill-fated voyage of the Nella Dan and worked there for a year as radio and radar technical maintenance officer. During this year on the island, he was not only active as VK0NE, but used his camera to good effect. His talk will be illustrated with slides of scenes and activities on Macquarie. ar

Down Memory Lane

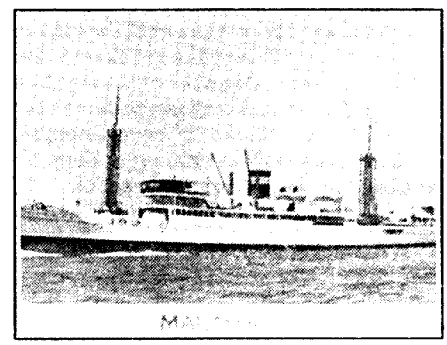
Joe Ellis VK4AGL
Burnside Road
Nambour 4560

Joe Ellis VK4AGL circa 1942

In the March issue of Amateur Radio I read with interest the article on the resuscitation of VNG and that the voice announcement was done by VK2BL, Graham Conolly. Most people would be aware of Graham as a newsreader on ABC radio stations, but might not be aware that he was a Radio Officer at sea during World War Two.

Graham and I sailed off together in the Motor Vessel "Malaita" in August 1942, and on the return trip were torpedoed by a Japanese submarine off the cost of Papua-New Guinea. It was a fine Saturday afternoon and everyone was feeling super safe as we had a brand new destroyer, the HMAS Arunta in attendance. I was dressing for lunch when the explosion occurred directly under my cabin, tearing a twenty metre hole in the ship's side. I hurried up to the Radio Office just in time to be ordered to abandon ship. The Chief Radio Officer appeared to be uninjured although heavily stressed (he died in the Wahroonga Sanatorium some weeks later), so I grabbed the radio code books in their weighted canvas bag and went to my appointed lifeboat which was already launched. Graham went off to his abandon-ship station also. During the row back to Port Moresby we picked up the ship's cadet clinging to a life raft. He had been the only member of the crew who had seen the torpedo coming and had run through the bridge and jumped overboard!!

The MV Malaita, although on fire, did not sink and later in the day we mounted a rescue mission with a coastal steamer and towed her back to Port Moresby. She spent the rest of the war tied up at a wharf in Sydney, and was subsequently scrapped.



MV Malaita - later torpedoed off PNG

My orders were to assess the damage to the Wireless Office and then find my own way back to Australia which I did by hitching a ride in an American Flying Fortress to Townsville. I never did see either of my fellow radio operators again, but I am glad to learn that Graham VK2BL is still in the land of the living. I am sure that he, like myself, finds pleasure in remembering the years spent at sea; it was a period of high excitement and adventure.

Incidentally, I still show interest in marine radio traffic and these days copy the Amtor traffic on 13 MHz. ar

More of Cyclone "Orson"

Ray Gray VK6RQ
160 Hardey Road
BELMONT 6104

On the evening of 22nd April '89, I received a telephone call from Bob Walker VK2YRX who was in Alice Springs. He informed me that a cyclone watch was being arranged as a consequence of Cyclone Orson which, at that time, was situated near the coast of north-west Australia, and approaching the Karratha/Dampier area, moving south at 25km per hour. At that speed, and assuming it held course, the time of crossing the coast was approximately 5am WAST.

He had informed the police in Karratha, Dampier and Onslow of the availability of amateur radio operators, who could render assistance, if required, through IARN. This would take the form of sending and receiving health and welfare traffic between the disaster area, and the general public requesting information about relatives and friends.

This proposal was accepted by the police. It would take the load off the telephone lines, and leave them free for official use. At Bob's request, I phoned the State Emergency Services here in Perth, and informed Chris Robins of the arrangements made, and offering the assistance of the radio amateurs if necessary, also giving him the frequencies on which we would operate – 14275, 7070 and 3570 kHz.

Having done this, I contacted Sam VK2BVS in Sydney, and confirmed the operational details. He gave me a list of amateur radio operators in the area who could give assistance. These were VK6AJR Exmouth, VK6ZW Karratha, VK6NTE Onslow, VK6BDE Karratha. At 2030 WAST, the net went to a listening watch in order to obtain some sleep. The local broadcast stations were putting out hourly bulletins on the progress of the cyclone.

Watch was opened again by VK6RQ Ray at 0500 WAST on 23rd April, and contact was established with VK2BVS Sam and VK6ZW Peter. Peter had opened watch at 0300 WAST, and reported that ,through his window, the winds were very strong, and that a tree had been uprooted from his garden and was lying across the fence between his and his next door neighbour's gardens.

At 0700 WAST, I telephoned the ABC in Perth and requested that, via its radio stations, it inform the general public that police had requested all health and welfare messages be sent and received by amateur radio, and to contact VK6RQ (telephone number supplied) who would endeavour to meet the requests.

Cyclone "Orson" crossed the coast between Karratha and Dampier. The time? Well, I have heard many different estimates; but, one thing is certain, it was the early morning of 23 April. High winds were experienced as early as 2am, as far inland as Pannawonica.

At 0730 WAST, my telephone started ringing, and continued to do so all the morning and into the afternoon. My daughter took charge of the inquiries. She was able, from the information from the broadcast stations (which were issuing bulletins every hour), and the information collected on the net from Peter VK6ZW, to advise enquirers that there were no reported fatal casualties, although there was extensive damage and possibly minor injuries. A total of 10 messages were originated during the morning, and none during the afternoon.

Peter took the opportunity to go QRT to inspect the damage at his QTH, and to get some sleep. He had been on air for 15 hours.

Before going QRT, he had sent replies to all but four enquiries. Two of these were addressed to Pannawonica, and he was unable to get through. The telephone lines were down, and there was no radio amateur in the town who could be contacted, the last one having left some time ago. Sam VK2BVS also went QRT around this time, and his place was taken by VK2DTN. The frequency was kept open, with periodic calls inviting traffic and enquiries to the net. Among the callers were VK6BU John, VK6ATS Graham, VK6AB Kevin, VK6QG Tony, ZL2ART John. Also VK6BKC/M Ken, who was on holidays with his wife and family in the Kalgoorlie area, so naturally he was interested in the latest position reports. They are now back in Perth safe and sound, and thinking of taking off again to resume their holiday.

When Peter resumed watch, we checked outstanding traffic, and only two required replies, plus the two which were still on hand for Pannawonica, and could not be delivered.

Of the other two, one was "safe and sound", and the other was unable to be contacted - the phone was ringing but not being answered. He therefore went to the address, but no one was at home. The next-door-neighbour informed him that the person concerned had not been home the previous night as well.

All traffic being accounted for, a listening watch was kept until 2030 WAST. As the cyclone was now well to the south in open country, no further enquiries or traffic were taken.

I was pleased to be in a position to render assistance to the public and hope that in some small way our efforts relieved its anxieties and fears. ar

Putting Up an Antenna Tower and Antenna

Tony Williams VR2DJW
PO Box 131
Wahroonga
2076

So – you want to put up an antenna tower? How do you go about it? Here goes with the practical experience of one amateur, in nice easy steps:

1) Before you buy the beam and tower, talk to your immediate neighbours, get their verbal permission. Not playing speaks? You DO have a problem (but see later). They cannot make up their minds? Again, see later.

They give verbal permission (hopefully your Minister for Home Affairs is with you when they give permission – as a witness, of course).

2) Make up a plan and approach your local council for a DA (Development Application -mine cost $5) and then return to your neighbours and obtain their signatures, either on the back of the DA (my council had a special rubber stamp) or on a previously made-up, suitably worded letter to the council.

3) After obtaining the required number of neighbours' signatures (ha, ha), you return the DA to the council and wait (and wait) for its official approval.

4) After receiving council's written approval, comes the easy part – find a suitable tower, erect it and festoon it with the appropriate antennas (I've seen one small backyard which looked like a Russian spy ship!)

5) Your neighbour/s will not give you permission, either verbal or in writing? You now do have a problem. Find out what their objections are, and quietly – without any rancour – counter them with logic and truth. Still have a problem? You now have to approach the local council.

VERY IMPORTANT: Before approaching the council, you must do some homework.

a) Dig out ye olde trusty box Brownie and photograph similar antenna layouts to your proposed layout within your council's jurisdiction, which have been approved by council (see the amateur first to get his OK). Put a film in the camera first, silly.

b) Talk to amateurs in the council area to see what their traumas were (if any) and how they got over them.

c) Join WICEN, get involved with Scouts or Guides, help with JOTA (every October). Even join the SES (State Emergency Services). ie, show that you are community oriented – you may also enjoy yourself!

d) Find out the names and addresses of your local councillors. Write a short treatise on what is amateur radio; why a tower; 'break through' and the neighbour's recourse to DOTC.

Also, about yourself, that you are community minded (like the local councillors), that amateur radio is your hobby, that is has proven to be of inestimable assistance during natural disasters (Darwin, Mexico City, bushfires etc), that it has been, and is, a fantastic medium for making friends with people overseas, that people of high and low status (monarchs and yourself, for example) indulge in the hobby. If applicable, stress that your current set-up is not as efficient as a tower plus the super-dooper Yagi you want to erect. Incidentally, if you have an upset neighbour and you are causing him TVI/RI etc, STAY OFF THE AIR until you have got council permission – no sense in upsetting him any further (he may decide to take up a petition against you, and that does make the problem decidedly harder).

e) Go to see each of your local councillors, especially those in your Riding. Give them each the paper you have so carefully prepared, and talk to them about the good things in amateur radio.

Be truthful and say that if breakthrough is being caused by you that you are quite willing to help the neighbour with the problem. That it will probably all go away anyway, when you put up the tower and antenna.

6) Now approach council with your application and ask the council officer when the application will be put before council, as you wish to be in attendance at the meeting so that if council wants any more information you will be able to supply it.

7) Pray! ar

RAEM Calling

Tony Smith G4FAI

Reprinted from 'Practical Wireless' Jan 1988, contributed by Stephen Pall, Box 93, Dural 2158.

Ernst Krenkel was a famous Russian radio amateur whose exploits in the 1930s are depicted on a commemorative QSL card used by many Russian amateur stations today. Some recipients of the card will know that he was an Arctic explorer/radio operator who played a vital part in a Polar rescue. Some may also know that he was honoured by the issue of a special postage stamp in 1973, that the Central Radio Club of the USSR is named after him and that he was allowed to use a special callsign unlike that of any other Russian amateur.

In July 1933 Krenkel was chief radio operator on the *SS Chelyuskin* under the command of Prof Otto Schmidt who had special responsibility for opening up the shipping lanes through coastal waters north of Siberia. Unfortunately, like so many of her predecessors, the *Chelyuskin* became trapped in the Arctic ice and her plight eventually became world headlines. Ships have survived this ordeal before and, to start with at least, it was just a question of waiting through the winter until the thaw set in. In 13 February 1934, however, disaster struck. The ship was crushed by the ice pack and sank in the Chukchi Sea off the north coast of Siberia. The survivors, some hundred men, women and children, fled to the ice with such supplies as they could take from the sinking ship. Krenkel's own personal QSL card shows the dramatic

scene.

For nearly two months, in Polar darkness, the survivors remained on an ice floe, with Krenkel's radio their only lifeline to the outside world. Fissures began to appear in the ice, and desperate plans were made to send in Russian Air Force planes to effect a rescue, something which had never before been attempted in the Arctic region.

Three aircraft were used, and the daring rescue attracted worldwide interest. On April 13, the last six people, plus eight dogs, were airlifted to the rescue base at Cape Vankarem, some 483km away. The Soviet Government instituted a new title on April 16 - Hero of the Soviet Union - the highest personal award that could be made to anyone, and the first recipients were the three young aviators who had rescued the *Chelyuskin's* expedition.

For his part, Ernst Krenkel was also awarded a high honour and was allowed to take the *Chelyuskin's* call, RAEM, as his personal amateur callsign, a privilege which has never been bestowed on any other Russian operator. He had been trained as a wireless operator in 1920, and first worked amateur stations from the Arctic in 1927 when he was based in the northern island of Novaya Zemlya.

In January 1930, when based in Franz Josef Lane, he established contact with Admiral Byrd's expedition in the Antarctic, on 7.4MHz (42m), using 250 watts. This was literally from one end of the globe to the other and was the first time such a contact had been achieved.

For some years after the *Chelyuskin* the idea has been debated of setting up a scientific station on a drifting ice floe in the Arctic Ocean. The man charged with bringing this idea to reality was Otto Schmidt. A base station was set up on Rudolph Island, north of Franz Josef Land, and on 21 May 1937, the world was astounded to learn that an expedition had been landed at the North Pole by air. Four four-engined aircraft equipped with ski runners flew over 10 tonnes of supplies to the Pole. Schmidt, with a supporting party, stayed there for 11 days. They then departed with the aircraft, leaving four men and a dog on the floating station. The leader was Ivan Papanin, and other members were Peter Shirshov and Eugene Fedorov, both scientists, and Schmidt's old radio operator from the *Chelyuskin*, Ernst Krenkel.

The first activity on May 21 was the setting up of the expedition's wireless station and the initial signal was put out that day using the callsign UPOL, which was to become internationally famous in the months ahead. The main purpose of the expedition was to carry out a wide range of scientific observations as the floe drifted southwards and, of course, the radio's main purpose was to communicate all findings to base on Rudolph Island immediately they were available. Four weather reports were sent daily, and all members of the party were commissioned to write and despatch articles on their experiences to various newspapers and magazines. All of this, coupled with personal traffic for each member, plus official business, kept Krenkel very busy. Yet, at various times he also managed to communicate with amateur operators in many countries.

The first amateur contact was on June 24 when he worked a station in Aalesund, Norway, and he was then hopeful of soon establishing contact with amateurs from his own country. He had already announced that his own receiver, which he had lodged with the office of the journal Radiofront, would be presented to the first USSR station to work him on UPOL. In the meantime, other amateurs worldwide were clamouring to make contact with him. On June 26 he worked stations in France, Brazil, Hawaii and the USA. By July 3 he had established contact with the USSR, and worked other amateurs in Norway, France, England, Ireland, Iceland and North America on that day. He also managed to work South Australia on September 7.

His transmitter power was only 20 watts, with an antenna that was 76 metres long, strung between two masts. His basic power supply came from accumulators which were charged by a wind generator. When there was no wind and the accumulators were flat, there was a standby "bicycle" generator which took two men to operate, using hands and feet, so that on those occasions only the most essential messages were transmitted. There was also a standby petrol generator, but this was rarely used because of the need to conserve fuel in case of a genuine emergency.

Much meteorological data was collected as the floe began its long drift to the south as the Soviets were very interested at the time in the proposed Polar air route between Russia and the USA. During June the first flight took place between Moscow and Vancouver, passing very close to the Polar station in the process. Less than a month later, in July, a world record non-stop, non-refuelling flight of 10,077km followed the same route and landed in San Jacinto, California, 62 hours after leaving Moscow. Then, in August, a polar flight went missing in the Arctic. The expedition was put on alert to prepare an airstrip on the ice in case it was needed by rescue aircraft, and Krenkel spent many long hours monitoring the aeronautical frequency in case help was required.

By early December they were nearly 1287km from the Pole, and fast approaching the danger line of latitude 80°N. Here the floes begin to crumble and break up before sweeping down the east coast of Greenland. Cracks were beginning to appear and the party was preparing to move to find firmer ice if necessary. Conditions became appalling. In the darkness of the polar night there were violent blizzards, continual movement of the ice pack, and heavy snowfalls.

The radio antenna had to be re-erected several times in the teeth of fierce gales, and in the sub-zero conditions they had to repair the wind generator. On February 2, the camp had to be moved, together with all supplies, away from dangerous fissures threatening to split the site in two.

All this time, meteorological, hydrological and other scientific observations continued to be made. Krenkel kept at his transmitter to ensure everything was recorded at Rudolph Island and to maintain contact with the ships now coming to their rescue through the icefields.

At one point, the radio equipment was mounted on a sledge and operated in the open air ready to be moved to safety at a moment's notice. To operate his telegraph key Krenkel had to use bare hands so he could manage this for only 10 minutes at a time; the conditions under which he worked can be imagined. As they drifted further south, contact with Rudolph Island became difficult, and messages were then relayed through the approaching ships or through the Norwegian radio station on Jan Mayen Island.

They were finally rescued by the icebreakers *Murmanetz* and *Taimyr* in the face of many difficulties on 19 February 1938. The solid ice, which had measured about two by four kilometres when they started, and on which four large aircraft had landed, now measured about 30 by 10 metres.

They had drifted 2510km and had arrived off the east coast of Greenland. All the scientific equipment was saved, and before the transmitter was removed, Krenkel sent a final message saying the North Pole station was being closed down in latitude 70° 54' N, longitude 19° 48' W.

It was all over, but it was not forgotten. The party returned in triumph to Moscow and all received important decorations and rewards for their success. Ernst Krenkel, Hero of the Soviet Union, was subsequently honoured by his country in several ways. He was an active operator on the amateur bands in the 1960s, and many stations round the world must have received his original and unique QSL card.

After a lifetime of remarkable achievement, he died on 8 December 1971. He had

been made President of the USSR Federation of Radio Sport in 1959; he was on the boards of the magazine of Radio and the publishing house Energiya; and he was head of the All-Union Society of Philatelists. He achieved his final ambition when he commanded an Antarctic research expedition in 1968/9, which travelled 51,000km. A gulf in the island of Komsomets is named after him, as is a Polar Geophysical Laboratory and a Communication Polytechnic in Leningrad. He was one of a breed of men, found in all countries, for whom achievement is measured in terms of personal qualities of skill, courage and endurance. Amateur radio itself is honoured by having had such a man in its ranks. ar

China Revisited

W Watkins VK4DO
PO Box 262
Airlie Beach 4802

Independent travel in China is the only way to see the country and to enjoy the pleasure of meeting people. So once again, this time accompanied by son David, I made my fourth visit to China. Apart from visiting friends in Changsha City in Hunan Province with whom we spent Christmas Day in their home, the other purpose of the visit was to renew old friendships with the Chinese Radio Sports Association (CRSA) in Beijing.

To my delight my good friend Wang Xun has been appointed Secretary General and Tong Xiao Yong, Chief Operator of BY1PK, is now his Assistant. The previous Secretary of CRSA, Huong Yonglian has retired, but he came along with me as interpreter.

It was a magnificent welcome that we received, even though my last visit was only two years ago. An invitation to operate BY1PK during the morning was accepted, however, 28 MHz was the only band open to VK. Stations worked included VK4KK and VK6RO. This was followed by a luncheon banquet of seafood. After the lunch there was a visit to BY1BJ which is under the large parachuting tower in the south east of Beijing. Our hosts there were Wang Xin Min and Sun Gui Hua. We returned to the hotel, the Tiantan Sports Hotel, which is opposite the office of the secretary of CRSA in Tiyuguan Road, (Room $23 per night) and only a ten minute walk from BY1PK which is located at the south east corner of Tiantan (Temple of Heaven Park). A second day was spent with Wang and Huang so we visited BY1BH and BY1SK even though it was snowing at the time.

BY1BH is located at the Childrens' Cultural Palace and with its colourful traditional buildings covered in snow it presented an eyecatching picture. The station overseer introduced us to three middle school operators, Sui Tian Shu (Diana), Niu Xiao Feng (Hunter) and Anna. They tried to raise a VK station for me but no luck as conditions were not good.

The station was started in 1988, has 30 members aged between 13 and 18 years, from middle schools in the area. At the Palace there are 60 groups active in arts, sport, science etc. This is a part time school where students come in their spare time of an afternoon, evening or weekend to pursue their individual interest. Equipment there is 757GX and a 4 element Yagi at 33 metres. So far they have made 300 contacts, 100 to VK and have worked 50 countries on SSB. Their English language is quite good, rather better than my Chinese.

The next visit was to BY1SK which is at the Beijing Science and Technology School. Students are encouraged to construct their own electronic equipment with emphasis on the technical aspect. The station manager and teacher, Kong, advised that the operation started in 1985 with SSB. CW and RTTY. Equipment is a 107DM and they have made 20,000 contacts to 80 countries. Kong teaches betwen 20 and 30 students from Grade 2 (14 to 15 years) who attend the school.

After a visit to Liulichang, a Hutong (narrow street) south west of Tiananmen Square, where rare books and curios are sold, we returned to BY1PK where we were feted once again to a banquet where we made more friends.

The next day we left Beijing for Guangzhou by train (38 hours).

Since my first contact with CRSA in 1982 I am now delighted with the progress that has been made with setting up of some 28 stations, 6 being in Beijing, and also the positive involvement of CRSA in the activities of IARU Region III affairs.

This development has been achieved through the various scientific and technological centres such as the one in Chongwenmen District in Beijing (BY1CKJ).

This centre for youngsters is located in an ancient building of the Ming Dynasty, the Temple of Long An. It is an after-school education unit that launches youngsters (middle and primary school) into scientific and technological activities. There are 45 teachers, workers and staff members. Its activities are: aviation, navigation models, electronics, radio direction finding, astronomy, earth sciences, and computers. As well, there are labs for phyics, chemistry, and biology. Every day it can admit 150 group members at the same time from more than 500 that take part in the activities. This centre will play a positive role in the whole development of the youngsters' moral, intellectual and physical education. ar

L to R Huang, Wang Xun - Secretary General CRSA, Wally VK4DO, Tong Xiao Yong, BY1PK, Wang Xin Min BY1BJ.

How Radio Came to Pitcairn Island

Contributed by Bob Lowry VK4FPO
22 Campbell Street
Rockhampton

This interesting story of how radio came to Pitcairn Island was written for the Pitcairn "Miscellany" by Andrew Clarence Young, an octogenarian who was born at the end of the last century and who is a direct descendant of Midshipman Edward Young, one of the original "Bounty" mutineers.

In 1921, Captain Hemming (who was the captain of one of the NZ Shipping Company passenger vessels) gave a card with Morse code on to the magistrate, Mr Fred Christian.

When Fred showed me the card, my interest in communication started. My uncle, Fisher, and my cousin, Percy, were also interested, so we made three copies of the code and started learning the dots and dashes. We practised in the evening by flashing sentences to one another down the main road. As we improved, we would sometimes go off to two mountains which were about a mile apart and flash messages. So far, so good. My idea was to stop ships passing at night time to take our mail.

Our first trial came when my uncle and I were in the leading boat. He asked the ship if it could stop for mail and it replied it could; and that was the first ship to be stopped by Morse.

News of our practising got to the Marconi Co, and it sent a small crystal receiver with dry batteries, which none of us knew how to connect up. Lincoln Clark tried and he thought the earth connection would have to go to the sea. Everything was set up to listen, but we heard nothing. After a long trial and hearing nothing, Captain Cameron on the "Remuera" sent his chief operator ashore to see if he could find the trouble. He went into the radio shack and asked me where my earth connection was. I said it led to the sea. He laughed, and said to cut it off and bury it under the building. After doing this, we began to pick up signals.

I continued listening and practising on a small buzzer. After a long time of trying to pick up ships' messages, the great big surprise came – I heard a ship. If I got the message right, the "Corinthic" was arriving at 7am the following morning. My friend rushed out of the radio shack calling "Sail Ho!" When the people heard the message, they began picking fruit. Oh my heart was pit-a-patting over whether it was the right message, and I couldn't sleep that night. Was I glad when the ship appeared on the horizon at 7am. And when I went on board and told the radio operator about it, he was as pleased as me to know that his was the first message to be received on Pitcairn Island.

From then on, messages were received at five words a minute, and I feel I was the first Marconi operator.

In 1928, a family came from New Zealand whose trade was building small wireless sets. They brought two car motors with them. One was put in our first motor boat, the other one they used to make a small spark gap transmitter for the wireless receiver. Ships could pick up signals from this 150 miles away. This radio helped me a lot in reading up to 10 words a minute. One operator told me my transmitter signal sounded like a monkey p...ing on a drum. I told him I didn't care how it sounded as long as it was received.

When the "Yankee" called in 1937, the radio operator stayed with my wife and me, and he was amazed at the set I was using. So he wrote an article in the 'QST' magazine. Then 13 different firms put in parts to make me a small ham set which was called 'Pitcairn Expedition'. In 1938, Lew Bellem and Granville Lindley brought the set to Pitcairn. They got a temporary ham licence for me from the WPHC, but then the war came and I had to close down.

Nelson Dyett was sent here for the duration of the war as part of the New Zealand Army team. Nelson stayed on as a radio operator after the war until Mr Long arrived. He didn't stay very long, for the power supply went off and he left. Once again, all the worries of radio contact were mine and Anderson's, until 1948. When the schoolhouse was built, the power supply was put in working order, and Anderson Warren, Floyd McCoy and I worked together. But Floyd was making so many mistakes that the Adviser gave him the weather reports to do, which left Anderson and me the other duties till Tom arrived from his schooling, and that was that. ar

The Great Victorian Bike Ride

Ted Borowiecki VK3DXK
WICEN Coordinator for the Ride

This bike ride travelled from Swan Hill in Victoria's north-west to Melbourne during December 3-11, 1988. It was not a race against time, but a ride that could comfortably be undertaken by a reasonably fit person.

Those taking part ranged from about eight years to 80, male and female, families, school groups and just friends out for a good, healthy time. A total of 4202 started off on the ride.

Participants reached Swan Hill by train or bus from all over Victoria, and some from interstate. Victoria's intrastate rail service, V/Line, advised that it was the largest movement of people by train since WWII.

The ride is run by Bicycle Victoria, a non-government organisation which aims to promote road safety, bicycle awareness and encourage the use of bicycles.

It took five semi-trailers to move the baggage each day. The riders consumed 11,200 litres of milk, 3200 loaves of bread, 144,000 bread rolls, six tonnes of meat, 1500kg of pasta, six tonnes of cereal, 68,800 pieces of fruit, 12 tonnes of vegetables and 700 dozen eggs.

WICEN had a vital role to play in the event. It passed routine traffic between the St John first-aid units, bike-ride officials

and police. At times, urgent messages of a medical nature, or on vehicle traffic, were also handled.

When radio conditions were not suitable for direct communication between St John units and police, WICEN provided a relay, through its net control station VK3WI.

Calls for the ambulance service were relayed to Melbourne, where St John station VK3SJB was manned by volunteers in the home of Les VK3BGW, who would phone Ambulance Service-Melbourne. There were over 2000 messages logged at VK3WI and four requests for ambulance attendance passed to VK3SJB.

The above gives a background to the ride, and WICEN's role. I will now go into the day-to-day activity of the event from the eyes of the coordinator.

Several months prior to the event, WICEN was asked to provide communications. This bicentennial year had two bike rides; the other ride being Melbourne to Sydney, which ran over 20 days, started a week before the Swan Hill-Melbourne ride, and finished at the same time. This stretched the manpower and resources of WICEN. A lot of people came forward willing to help, and without them the ride would not have been the success it was. Ian VK3FOX, complete with plaster cast, and John VK3XJB, were able to go with me to survey the route. This involved identifying possible checkpoints and preparing paperwork for the ride.

On previous Great Victorian Bike Rides, WICEN had two command caravans which would leapfrog each day, allowing one coordinator to rest. But, for the 1988 ride, one caravan was assigned to the Melbourne-Sydney ride, and the other was out of action. Fortunately, Preston City Council donated its community caravan. At the end of the day's ride, the caravan would go to the next finish point.

I could foresee problems along the route. The first was the river crossing near Torrumbarry, where riders would be ferried across the river by paddle steamers and punts. There were insufficient WICEN operators to be stationed on the NSW side to provide communications for about 40km of the ride, and vehicles could not cross on the water craft.

The problem was solved by two competent radio amateurs who were bicycle mobile on the ride - Bob VK3YSH and Greg VK3VT. They were able to provide communications along the route using hand-held facilities, and Bob just happened to have a Slim Jim antenna attached to his bike, which drew some strange looks throughout the ride.

Upon waking up in Echuca the morning of day three, all set for this difficult day, I was welcomed by the cheery faces of Peter VK3YF and Laurie VK3KL who said: "G'day, we're locals here to help. Where do you want us?"

I could have kissed them, but, as I hadn't shaved for a couple of days, I resisted (HI HI) and sent them off to the NSW side of the ride. Communications for the second and third days proved difficult, as the Swan Hill repeater had only a small coverage area. The planned use of the Bendigo group's portable repeater on Mt Kerang did not eventuate, due to problems with the repeater and poor conditions, despite the best efforts of Doug VK3DJY and group.

Two metres simplex and 3.600MHz were used to overcome these problems. Two metres 146.500 was boosted by the UHF/VHF translator installed in Echuca by Peter VK3ZPP.

Plans were made to use the Bendigo repeater for the Echuca-to-Castlemaine section of the ride, as this repeater had shown reasonable signal strength when the ride route was surveyed earlier. But this was not to be the case, because Murphy had to step in and, although the signal strength was good at night prior to the start of that leg, it had become useless during the day.

The Shepparton repeater was used to Colbinabbin, and the Mt Macedon repeater right through to Melbourne. Instances of deliberate QRM were experienced whilst using the Mt Macedon repeater. These instances did not result in significant delay to the summoning of either St John first aid or Ambulance Service-Melbourne.

However, the potential to seriously jeopardise emergency communications was there, and could have delayed ambulance arrival in the case of serious accidents. The deliberate QRM disgusted the WICEN operators and others listening on the repeater. It also reflects on our hobby, and can harm its image, if heard by ride organisers and emergency service personnel.

Day seven found us in Kyneton where we had suffered rain yet again, although this time it was coupled with fog and greasy roads. Fortunately, the rain cleared during the day and the riders were able to dry out, as did our radios.

During briefing at Kyneton, I had to advise David VK3DY some good news and bad news. The bad news was he was on duty that night, but the good news was, as our spies had discovered that it was his birthday, Greg VK3VT had cunningly obtained a birthday cake, and we all, including ride marshals, chorused David with "Happy Birthday".

The next difficult day I had coming was the last day from Bacchus Marsh to Melbourne's Batman Park. I did not have the route from the ride coordinator, Paul McKay, so was unsure where there were sufficient WICEN operators.

Finally, Paul McKay was cornered, and we plotted the route and set checkpoints. But there was an alternative route for the ride in case the West Gate Bridge had to be bypassed. The call went out, and more volunteers came in to help. However, the alternative bypass route was not needed, as bike riders had a tail wind for the bridge crossing.

The last rider reached Batman Park at 1332 on the Sag Wagon, and the WICEN net closed at 1333. We made it!

As WICEN coordinator for the ride, I can proudly say that all the radio amateurs who took part in the WICEN effort behaved as professionals, and were a credit to the Amateur Radio Service. I wish to thank the following personnel who either helped or took part in the ride.

Allan	VK3TCT
Allan	VK3KEP
Andrew	VK3JJJ
Andy	VK3CAP
Ben	VK3AKP
Bob	VK3KAH
Bob	VK3YSH
Colin	VK3AKQ
David	VK3YWZ
David	VK3DY
Denis	VK3BGS
Denis	VK3XP
Derek	VK3BYA
Doug	VK3DJY
Greg	VK3VT
Ian	VK3FOX
Janet	VK3BTU
Johanas	VK3PAR
John	VK3DKD
John	VK3XJB
John	VK3MAK
Keith	VK3CWT
Ken	VK3MCJ
Laurie	VK3KL
Len	VK3BGM
Len	VK3NJE
Lyle	VK3KLR
Margaret	VK3DML
Mark	VK3EME
Michael	VK3NJN
Neil	VK3XNW
Peter	VK3YF
Peter	VK3ZPP
Rob	VK3XL
Robyn	Brown
Rod	VK3JRF
Ron	VK3ECV
Ross	VK3JZ
Russ	VK3KRT
Sel	VK3CRZ
Stephen	VCY896
Steve	VK3DCA
Wilma	Maidment

All those who manned VK3SJB

Preston City Council

ar

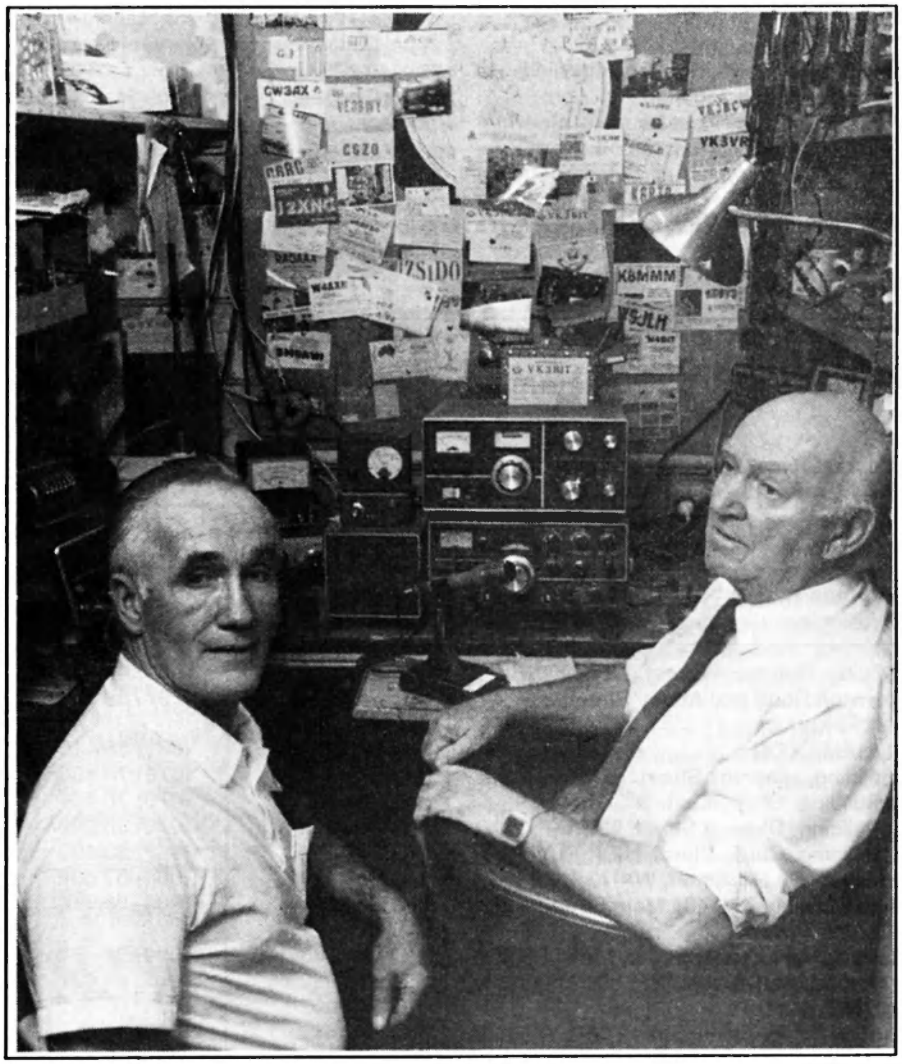
Cobourg With An Extra Oscar

Jim Linton VK3PC

When the Canadians decided in 1819 to rename the town of Hamilton, a spelling mistake was made. You see, they called the town Cobourg, and added an extra letter 'o' in Coburg.

Charlie Ryan VK3BIT says all the Coburgs in the world, except the Canadian one, are spelled the same, and it happened due to a simple clerical error.

That quirk of history has been a source of amusement for Charlie Ryan VK3BIT. He lives in the Melbourne northern suburb of Coburg. His suburb changed its name from Pentridge to Coburg in 1870. The change was partly due to community feeling that the image of the town was being harmed by sharing its name with the Pentridge Prison which is in its municipality.



A quirk of history sparked an on-air friendship between Bill Turland VE3MDE and Charlie Ryan VK3BIT. They met earlier this year when Bill, from Cobourg – a Canadian town on Lake Ontario – visited Charlie in the north-suburban Melbourne city of Coburg.

Bill and Charlie first met on air last year when radio clubs and councils in Coburg, Cobourg and a third Coburg in Oregon, USA, did a three-way link-up to celebrate the Canadian town's 150th birthday. The pair have chatted up to three times a week for more than a year.

Charlie researched the source of the name Coburg - it was taken from the German royal house of Saxe Coburg. Canada's naming was in honour of the marriage of Princess Charlotte to Prince Leopold of Saxe Coburg, while Pentridge changed its name officially to recognise the visit of England's Prince Alfred, a descendant of the German royal house.

Bill VE3MDE decided to visit Coburg earlier this year and, after being a guest of honour at the Coburg City Council, he visited Charlie's shack for an eyeball QSO.

A fine example of the role our hobby has in fostering international friendships and understanding.

There is, however, another place that uses the name Cobourg. The Cobourg Peninsula in the Northern Territory, the most northern point of the Territory's mainland.

Charlie had a theory that it was named after Cobourg in Ontario. However, Cobourg Peninsula was discovered by marine surveyor, Phillip Parker King, in 1818, a year before Hamilton was renamed Cobourg.

A check with the Northern Territory Place Names Committee has solved the mystery. The peninsula was named after the Saxe of Coburg, like all other Coburgs. The spelling error in this case has been traced to King, and clearly shows up in his hand-written diary. ar

ZL Licensing for VK Visitors

Ross Garlick ZL3AAA
Reciprocal Licence Bureau
NZART

Amateur Radio reciprocal licensing between our countries is covered by a Commonwealth recognition agreement.

The type or grade of reciprocal licence issued is dependant on the grade of the home licence.

Applicants with less than 12 word per minute morse qualifications will be granted a limited licence (VHF).

Qualifications of 12 wpm morse speed will be granted a general licence (VHF and HF, i.e. all bands coverage).

New Zealand offers two types of visitors licences:

A. A short term type. One month minimum but extendable to two or three months. The cost is set at $10 per month.

B. A Twelve month reciprocal licence is issued at a fee of $38.50.

Novice grade licence. An agreement between our countries allow the issue of a reciprocal visitors licence.

When applying for a New Zealand reciprocal licence it is necessary to produce the following:

1. Operators certificate (which must be valid for the term of the reciprocal licence applied for)
2. A certificate to indicate the morse speed at which the applicant is qualified.
3. A birth certificate or similar evidence of birth is required.
4. Applicants must submit a permanent postal address in New Zealand to which all correspondence can be sent.
5. Visiting operators will be allocated a call sign from the ZL0 series.

The New Zealand radio regulations governing the amateur bands operation must be adhered to.

Additional information on New Zealand conditions, band plan and regulations is available from:

Russ Garlick ZL3AAA, NZART Reciprocal Licensing Bureau, 23 Lydia Street, Greymouth 7801, New Zealand. Phone (027) 7332 Fax (027) 7133.

NZART Callbook is available from: NZART Headquarters, General Secretary, Box 40-525 Upper Hutt, New Zealand.

The cost of the callbook is $13 plus postage.

No prior application is necessary to obtain a visitors licence.

Personally apply at any NZ radio frequency service office and a licence will be issued 'over the counter'. ar

New Zealand Radio Frequency Service Offices

- All amateur radio licensing matters.
- Examinations for Amateur Radio Operator's Certificate

Office	Delivery Address	Postal Address	Telephone No.
Head Office	21-23 Cambridge Terrace, Courtenay Place, Wellington	PO Box 9343 Courtenay Place	(04) 850 009
Whangarei	National Mutual Building, Rathbone Street, WHANGAREI	PO Box 449	(089) 488 491
Auckland	Altos House, Cnr Newton Road and Abbey Street, Newton, AUCKLAND	PO Box 68-217 Newton	(09) 788 537
Hamilton	134 Victoria Street, HAMILTON	PO Box 982	(071) 387 150
Rotorua	Chief Post Office Building, Hinemoa Street, ROTORUA	PO Box 847	(073) 73 730
Gisborne (Senior RI)	New Zealand Post Building, Grey Street, GISORNE	PO Box 339	(079) 78 424
Napier	New Zealand Post Building, Dickens Street, NAPIER	PO Box 947	(070) 53 299
New Plymouth	New Zealand Post Building, Currie Street, NEW PLYMOUTH	PO Box 217	(067) 88 138
Wanganui	Gas Department Building, St. Hill Street, WANGANUI	PO Box 4102	(064) 57 538
Palmerston North	Telephone Exchange Building, 486-489 Main Street, PALMERSTON NORTH	PO Box 71	(063) 66 710
Masterton (Senior RI)	MS Lands Trust Building, 136 Queen Street, MASTERTON	PO Box 243	(059) 82 758
Wellington	Third Floor, 21-23 Cambridge Terrace, WELLINGTON	PO Box 9228	(04) 723 927
Nelson	34 Vanguard Street, NELSON	PO Box 997	(054) 60 832
Greymouth (Senior RI)	Telephone Exchange Building, Tainui Street, GREYMOUTH	PO Box 442	(027) 80 312
Christchurch	St. Elmo Court, 47 Hereford Street, CHRISTCHURCH	PO Box 1800	(03) 533 611
Timaru	28 Canon Street, TIMARU	PO Box 589	(056) 48 120
Dunedin	12 Hanover Street, DUNEDIN	PO Box 5647 Moray Place	(024) 771 125
Invercargill	Post Office Building, 13 Esk Street, INVERCARGILL	PO Box 247	(021) 44 952

QSLING SWL Reports

The transmissions of amateur radio stations on the HF bands are tuned in by Short Wave Listeners (SWLs) throughout the world.

The SWLs, particularly in the northern hemisphere, have their own QSL cards which they send through the bureau system to amateur stations they hear. However, SWL cards are being treated as junk mail by some VK radio amateurs, and tossed in the rubbish bin.

Some are puzzled and don't know what to do with a trickle or flood of listener cards received among the QSLs of amateur stations they have worked. While others routinely respond to each and every listener card by sending their VK card back to the SWL via the bureau.

The junk mail treatment is a little unfair to the genuine SWLer needing your card to confirm a country or for an award. It is also foolish to send off your QSL to anyone who claims to have heard you on air but who has not provided adequate proof. The SWL may not have heard your signal at all, but simply heard the station you were working. And it has been known for some unscrupulous SWLers to share listener logsheets among a number of friends. This practice results in a number of SWL cards from the same area with identical details. Your suspicions should be aroused!

The following guidelines are based on what several active DX stations do when they receive SWL cards:

1 Check that details correspond with your log.

2 If not found, either return the card via the bureau endorsed "not in log", or toss it in the bin.

3 Should the contact referred to on the card be found in your logbook, then weigh up the value of the report. Is it deficient in detail? Has the SWL proven s/he actually heard your transmission by making a reference to something specific? If deficient, endorse their card "Details insufficient - no proof you heard me", and be helpful by returning it via the bureau.

4 If asked to provide a QSL for a new locator square, country, state, or zone, or for an award, remember to include the salient details in your comments if they are not already printed on your QSL.

There are genuine SWLs in need of QSL cards.

If they don't supply accurate or sufficient reports, help educate them in the error of their ways.

Also remember that a fair percentage of Short Wave Listeners eventually become radio amateurs.

If they're treated fairly and encouraged, the good will can only increase the prospects of a continued influx of SWLs into the hobby of amateur radio. ar

1990 Australian Radio Amateur Call Book

WIA 80th Birthday Edition

Australian radio amateurs are advised that, subject to the following paragraphs, all Australian Amateur Radio licensees will have their callsign(s), names and notified address, included in the 1990 Call Book to be published in September 1989.

However, those amateurs who wish to have their name and/or address deleted from details to be printed, are advised that they may make such a request in writing to the Executive Office of the WIA, setting out what they wish to have suppressed. Any such requests must be received by the Executive office on or before Monday, 21 August 1989.

The WIA will take all reasonable care to meet licensees' wishes, but the WIA will not be responsible for any errors or omissions. In-so-far as WIA members are concerned, the WIA will publish the current information held in its own records. Non-members details will be published as received from the DoTC. ar

One Millionth Licence

There are now more than one million radiocommunications licences on issue in Australia.

The overall demand for radiocommunications services is growing at a rate of 15 per cent a year. The number had tripled in recent years.

The one millionth licence was personally issued recently by the Telecommunications and Aviation Support Minister, Ros Kelly, to a Limited Coast Station at Bundaberg in Queensland. ar

Murphy's Corner

Lloyd Butler VK5BR seems to have attracted an unfair degree of attention from the above named gentleman! Even our corrections to his article 'Measurement of Distortion' have themselves been corrupted! Page 48 of July AR should have shown:

$$Y = A.\overline{B}$$

instead of a Boolean function identical to X.

On pages 10 and 11 of the July issue, figures 3 and 4 were transposed. Fortunately, this error was obvious so it did not seriously detract from Hans Ruckert's excellent submission 'Radiation Immunity in Domestic Equipment".

ar

Review of the Yaesu FT 470 Dual Band Handheld FM Transceiver

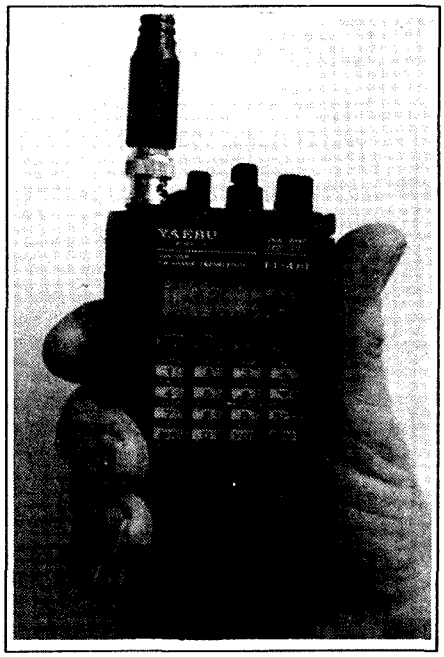
Bruce Bathols VK3UV
6 Ann Court
Aspendale 3195

Description

On first examination of the Yaesu FT470, you will be amazed at its compact size. Without the battery pack attached, it is slightly larger than a packet of cigarettes. However, this little device contains some amazing features.

Primarily it is a Dual Band, 2 *metres* and 70 centimetres handheld FM Amateur transceiver. It is difficult to comprehend that such miniaturisation actually exists. A comparison is being made of the features to a model five years older, being a single band (2 metres) and operated by thumb wheel switches, and nearly twice the size. In several dual band transceivers, the second band is an option; not so with the Yaesu FT470. BOTH 2 metres AND 70 centimetres are available ready for use.

The transceiver is controlled by a miniaturised computer system, complete with backlit Liquid Crystal Display (LCD) and numeric key pad. Operators purchasing this type of equipment are well advised to read the instructions first. Gone are the days where you just connect the antenna, switch on, and then start operating. This transceiver requires the operator to become fully conversant with ALL of the functions PRIOR to commencing operations. Failure to push the correct buttons and initialize the transceiver first, could create some remarkable headaches, even for the most experienced operator. However, all is not as dismal as the above statement appears. The instruction manual is very well written and documented, and very easy to follow. There are even "prompt" cards supplied for the forgetful.



Yaesu FT 470

The transceiver covers 4 MHz of two metres - 144.000MHz to 148.000 MHz, and 20 MHz of 70 centimetres - 430.000 MHz to 450.000 MHz. It has a total of 42 memory channels, 21 for each band, including three "special" memories. It also contains scanning and priority call channel facilities, and dual VFO control.

Initially, the operator enters the favourite frequencies and bands desired via the numeric key pad. These are stored permanently in the selected memory channel, and are able to be amended at any time. When power is disconnected, such as when removing or changing the battery pack, it is most pleasing to note that the contents of the memory channels are NOT lost.

Although not specifically mentioned in the instruction manual, it is obviously that either non-volatile Random Access Memory (RAM), or separate memory backup facilities are contained within the transceiver. This is a most welcome and advantageous feature, and alleviates the necessity to re-key the memory each time the power pack is removed.

Cross band operation is a major feature of the Yaesu FT470 transceiver. The LCD contains a host of information. The primary frequency to which the transceiver is tuned is shown in large figures, and the second band, or "sub-band" is displayed alongside in smaller figures. Pressing the "BAND" button on the key pad swaps bands. The "sub-band" now becomes the primary band and vice-versa.

The transceiver comes equipped with a special "dual band" helical antenna. This contains matching for both bands in the form of a duplexer type of matching arrangement. It is very neat and compact, and no larger than most stubby helicals to which we are currently accustomed. There is no need to change the antenna when using the alternate band during normal or portable operation. However, for Base Station use, it is preferable to change antennas, unless the Base Station installation also contains dual band features, and/or a duplexer. The same would be applicable for mobile opoeration. Naturally, separate high-gain antennas are more reliable for long distance work, but the supplied dual-band helix certainly provides satisfactory communications in "line-of-sight" conditions on both bands.

A "fader" type of control allows you to monitor both primary and sub-channels at the same time, with the audio level for each band being able to be adjusted to your own personal listening level. Quite a neat innovation!!

On-Air Tests

The first on-air transmission turned out to be a dismal failure. There was a healthy carrier being transmitted, but it lacked audio modulation and deviation. This disturbed the reviewer somewhat, as transmission is fairly straight forward. He became concerned that he had inadvertently caused some damage to the unit. It was later discovered that the test unit contained an internal fault.

The transceiver was returned to the distributors, and it was discovered that a metal clip had been installed incorrectly, and was shorting out the audio circuitry. This was subsequently repaired and the test/review procedures were re-commenced. The frequency response of the received audio is of a very high quality. The internal speaker is well balanced, albeit quite small, and the audio output level was quite satisfactory to fill a normal room. It was not tested for noise comparison in a mobile situation, but from previous experiences in similar circumstances, the reviewer has no doubts that the received audio output in that situation would be able to cope quite admirably.

Transmission reports on both 2 metres

and 70 centimetres proved most satisfactory. A good level of deviation and microphone sensitivity was evident, and no distortion was apparent. The review transceiver was supplied with a 7.2 volt, 600 mAh nickel-cadium battery pack (Model FNB 10), and charger. This produced 2 watts of RF output on both bands.

Purchasers will be supplied with a heavier duty battery pack, (Model FNB 14) rated at 7.2 volts and 1000 mAh, and carrying case.

Conclusion

In general, the Yaesu FT470 is a most compact and sophisticated dual band amateur FM hand-held transceiver. For someone who has large fingers, its physical size does create a small level of difficulty in operating the controls and keypad, but in spite of this, the controls are well situated.

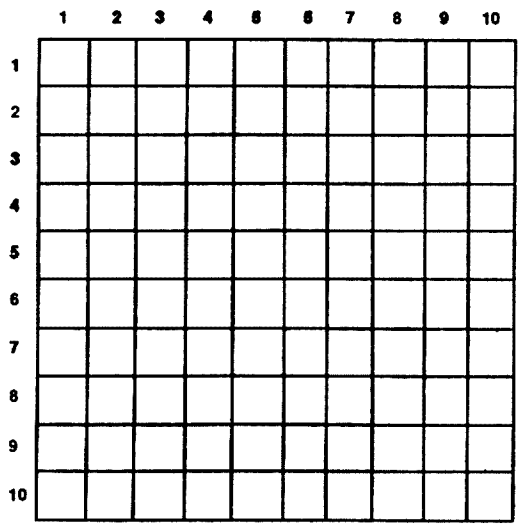
One may have a little difficulty in reading some of the information shown on the LCD, such as repeater offset indications, as the display itself is only one centimetre in height. Nevertheless, the LCD is quite readable in normal light conditions, and there is a facility to "back light" the display if need be. There are several options available, such as higher voltage (12 volts, 5 watts) battery packs and chargers, external speaker/microphone, earpiece/microphone, and mobile mounting hardware (the options were not supplied for the review).

For the amateur who is looking for a compact dual band 2 metre and 70 centimetre hand-held transceiver, with almost every conceivable operating facility available, the Yaesu FT470 is going to be hard to beat.

The review set was kindly supplied by Dick Smith Electronics, and supplies should be available shortly through their normal outlets as advertised in "Amateur Radio" magazine. ar

Morseword No. 29

SOLUTION PAGE 56



Clues

Across

1 Cut
2 Globule
3 Experienced
4 Rage
5 Scottish garment
6 Queensland town
7 Item of property
8 Santa's exclamation
9 Passive protest (3-2)
10 Hurries

Down

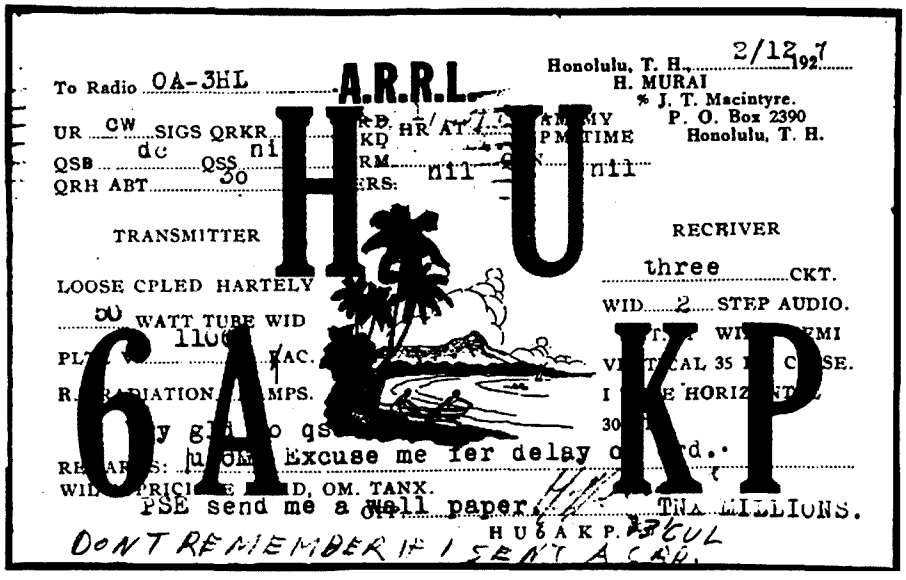
1 Attack
2 Podium
3 Nobleman
4 Chooks
5 Rips
6 Set of rooms
7 The _____ have it
8 Skin
9 Fat cat
10 Comet

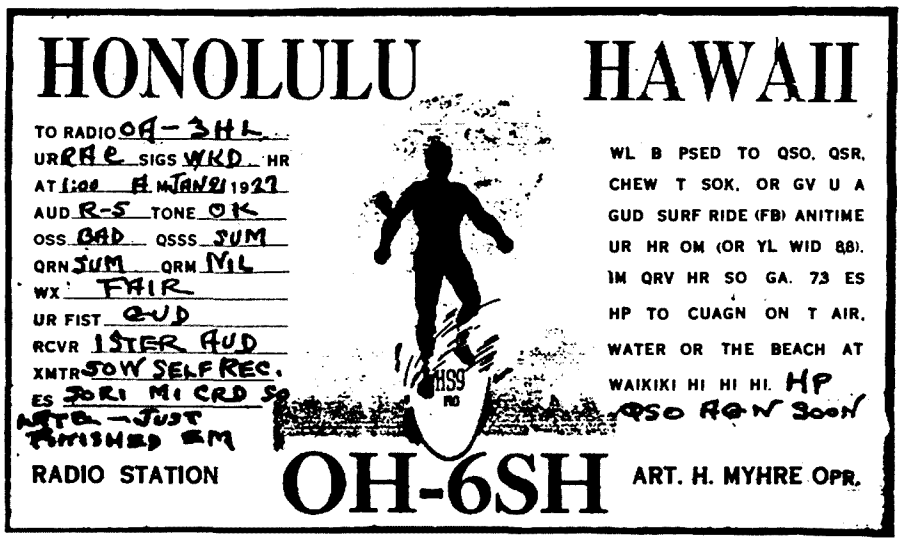
QSLS FROM THE WIA COLLECTION

Cards From Hawaii

Ken Matchett VK3TL
Honorary Curator
PO Box 1
Seville 3139

The three QSLs shown here are all from the Hawaiian Islands. These islands, discovered by Captain Cook and originally named by him the Sandwich Islands (after the Earl of Sandwich), have been given quite a range of call-sign prefixes over the years. These prefixes are interesting in that they show the developmental change in the system by which such prefixes have been allocated.





HU6AKP

It was in the early and mid-1920s that wireless experimenters used a system of prefixes that were, in the main, based upon the initial letters of the country represented. Thus, Brazil used the letters BZ, Palestine PE, Phillipines PI, Chile CH and so on. In the case of countries that seemed to be the most active on the bands, only one letter was used to indicate that country. Examples include: A = Australia, C = Canada, F = France, G = Great Britain, Z = New Zealand, U = USA. Official lists of call sign allocations for land and ship stations can be found as early as 1913 (for example in the Year Book of Wireless Telegraphy of that year), but after World War I they were not used by the experimenters of the day.

The HU6AKP QSL is dated 1927, the QTH being given as Honolulu TH, the "TH" referring to "Territory of Hawaii" (Hawaii did not become the 50th State of the USA until 1959.)

OH6SH

In early 1927, a new system of allocating call signs to experimental stations was introduced. This was the system of "intermediate" (see "Amateur Radio August 1988, p 38), which gradually led to what we know now as "prefixes". The "intermediates", joining two call signs, was a four letter combination, two being derived from the sending station, two from the receiving station. For example, O stood for stations in Oceania, E = European stations, A= Asian stations and so on. This letter was followed by a second letter that served to identify the country, e.g. OA = Australia, OZ = New Zealand, EG = England, AC= China, NU = USA. Thus, the Hawaiian Islands used the prefix OH. The vast majority of stations began using the new system from 1 February 1927, but a few like HU6AKP persisted using the old system. (His call should have been OH6AKP since the QSO occurred after that date).

The Q-code QSS given on the card is rather interesting. This signal, which today is related to calling on a particular frequency, was years ago used by experimenters to mean "Are my signals fading?" The Q-signal next to it, viz QSSS meant "Are my signals swinging?" Both signals are no longer used.

The QTH was the capital, Honolulu, lying not on the island of Hawaii, but on Oahu. It is here we find the famous Waikiki Beach, the biggest tourist attraction of all the islands of the Hawaiian group, a fact not lost by the operator of this station.

K6AJA

This QSL is, by comparison with the HU6AKP and OH6SH QSLs, a fairly modern one. It is dated April 1935. The W prefix was, at an early date, the only one issued to amateurs on the US mainland, the prefix K being allocated to US possessions. The prefix K6 was, before the war, shared with Guam, Midway Is, American Samoa, Wake Island and the American Phoenix Group (Canton and Jarvis Islands being represented by amateurs).

Acceding to a request in late 1938 by the ARRL, the licensing authority, the Federal Communications Committee (FCC) allocated the K6 prefix to the Hawaiian Islands, the other US possessions being given different identify-

ing prefixes. (History shows that the first list published by the FCC was substantially modified as far as prefixes were concerned, but K6 for Hawaii remained unchanged). It is interesting to note that it was first proposed to allocate the prefix KH6 to American Samoa. In fact, the station KH6SHS did operate cw on 20 metres out of Pago Pago in 1940 (America was not then at war). We know now that KH6 was to become, after World War 2, the official prefix for Hawaii.

If you would like to play a part in building up the WIA QSL collection and to save something for the future, would you please send a half-dozen (more if you can spare them) QSLs which you feel would really help the collection along.

All cards are appreciated, but we especially need commemorative QSL's, special event stations QSL's, specially assigned call QSL's (eg VK4RAN), pre-war QSL's, unusual prefixes, rare dx and pictorial QSL's of not so common countries. Could you help? Send to PO Box 1, Seville 3139, or phone (059) 643 721 for card pick-up or consignment arrangements for larger quantities of cards. Thanks.

The Wireless Institute would like to thank the following for their contribution of QSL cards towards its collection (Supplementary List) :-

Laurie	VK2AMB	Chas	VK4UC
Brian	VK4LV	Bruce	VK3SO
Kevin	VK3BKW	Rob	VK5RG
Robin	VK6LK	Ron	VK3APM
Keith	VK3AKB	Norman	VK4BHJ
Kevin	VK3CV	Barry	VK5BS
Elgar	VK5ED	Keith	VK4KS
Peter	VK3CAU	Eddie	VK3XX
Aubrey	VK2AXT		

Also the friends and families of the following "silent keys" (Supplementary List) :-

Jim Keenes	VK3KE
Ron Ride	VK3NH

If it is your sad duty to assist in the disposal of equipment for a family of a "silent key", would you kindly approach the family to see if they would like to donate QSL's to the WIA collection? Most are assigned to the tip, but maybe we can save a few for the future.

DX QSL Contributors' Ladder

Here is a further list of contributors or special call QSLs (Supplementary List) :-

Robin VK6LK (22 points)
Prefixes: CR3, EJ7, EL1, HW9, LZ7, PW2, YI1, SW1
Special Calls: GB0CSR, GB0SGD GB8RB, 4O1WCY, 8A0IT, 8J2HAM

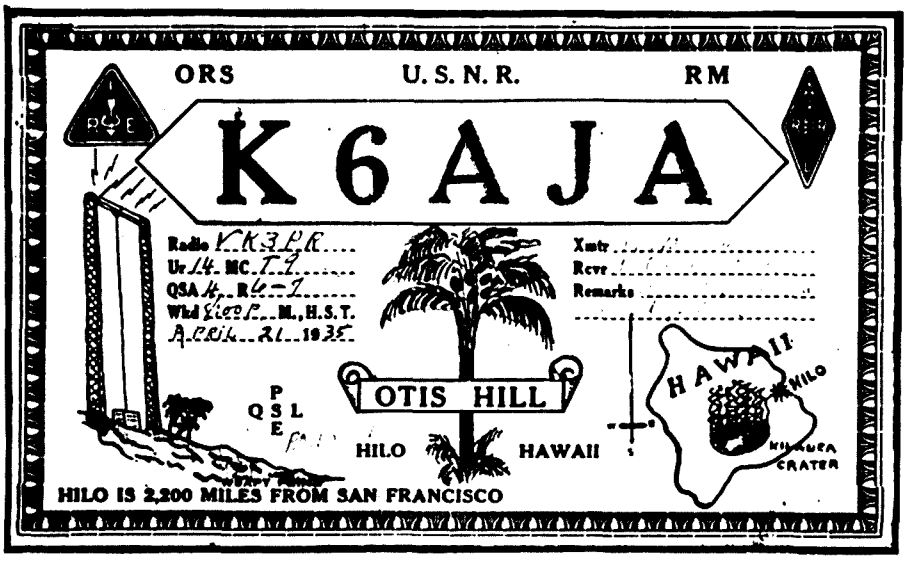
Barry VK5BS (20 points)
Prefixes: TJ2, TF7, T31, S0, HH5, 6O0, 911, IT0, TU4, HS6

Keith VK4KS (11 points)
Prefixes: TU20, OY8, 5A0, ZY3, XO7
Special Call: GB2RS

Brian VK4LV (9 points)
Prefixes: BV7, OG6, ZZ5
Special Calls: 9D5A, PJ0DX, AP2ARS

The first six places on the ladder are held by

VK3AHQ	91 points
VK4UC	56 points
VK8XX	52 points
VK5AGX	29 points
VK6LK	22 points
VK5BS	20 points



Our sincere thanks to these fb DX-ers and their generous contributions. Can a few more DX-ers help us?

Use Your QSL Collection

Through the generosity of many amateurs and the friends and families of "silent keys" all over Australia, the WIA has built up a fine collection of both modern and pre-war QSL's. Several of these are mounted on display boards. These can be borrowed by WIA members both in Victoria and interstate. Arrangements need to be made by contacting the Honorary Curator, Ken Matchett VK3TL on (059) 643 721 or by writing to PO Box 1, Seville 3139.

Readers who propose writing on any historical aspect of amateur radio should also make enquiries of the curator to see if any QSL's of the collection could be used in the article they are planning. Photostat copies of QSLs suitable for reproduction are available free of charge upon request. Display boards are also available upon loan for radio conventions and club meetings.

ar

SPOTLIGHT ON SWLING

Matilda's Short Waltz

Robin L Harwood
52 Connaught Crescent
West Launceston 7250

Recently, Radio Australia introduced a Bulletin Board (BBS) called "Matilda". Computer buffs were able to access it from throughout the World. Created to celebrate Radio Australia's 50th Anniversary by Robin Howells, who was the Sysop (system operator), "Matilda" generated considerable interest, with many shareware programmes, together with updates on RA programming. Also, Jerome Van Der Linden of the Southern Cross DX Club, and Peter Bunn or "OZ DX" provided files of updated DX information.

"Matilda" averaged 22 calls each day, the majority coming from within Australia. This has certainly proved that there is a need for a BBS. As you may know, there are several BBS within the States, devoted to SWL/DX activities. Yet, sadly, "Matilda" is no longer on stream. Due to internal funding cutbacks, RA could not fund it beyond 30 June. Also, the time expended in maintaining the files by the Sysop was proving too costly. During 61 days it operated, over 1400 check-ins were logged-on. As I personally am not into computers, I was unable to take advantage of what "Matilda" offered, but I am aware of many who did. VK4CRO in Belmont (Qld) wrote to tell me that his nephew in Singapore was able to access it without any hassles.

Another event in late June/early July was a test transmission from VNG, Australia's time and standard frequency station. It now is located at the CAA HF transmitting site at Llandino (NSW). For the past couple of months, VNG has been continuously operating on 5 MHz. Recently, the VNG Users' Consortium got permission to conduct experimental transmission on 10 and 15 MHz during local daylight hours. Signals here in Launceston were excellent. Five MHz is only good here in the evening hours. Their address is PO Box 1090, Canberra, ACT 2601.

Station KY0I in Saipan has gone off the air until late October, to install new antennas so that it can broadcast to SE Asia and Australia.

KENWOOD

TM-701A FM MOBILE

MIGHTY MIDGETS

TM-431A FM Mobile

Ultra compact size and low weight in a mobile transceiver.

The TM-701A and the TM-431A, (which share the same case), have a front panel measuring only 140mm wide x 40mm high and weigh less than 1.4kg. Yet they pack high power, rugged design and superior GaAs FET receivers into their compact interiors.

TM-701A 25W VHF/UHF Dual Bander

The TM-701A combines two radios in the one compact package. You get 25 watts on 2 metres and 70cm, 20 memory channels, Dual Band Scan, built-in digital VFOs, and a tone alert system. Full duplex cross-band operation permits telephone style communication at your fingertips.

TM-431A 35W UHF FM Mobile

Kenwood quality in an ultra compact 70cm transceiver. The TM-431A delivers high performance and punchy 35 watts output.

Features common to both models include:

- Multi-function microphone. Controls for Call channel, VFO, memory recall and programmable function key are built in.
- **Superior performance receiver.** Exclusive GaAs FET RF amplifier and advanced antenna switching for high sensitivity and wide dynamic range.
- **20 multi-function memory channels.** Storage of frequency, repeater offset, CTCSS frequency, frequency step and Tone On/Off status.
- **Built in Digital VFOs.** Features include step selection, powerful programming (including programmable tone frequencies). Transmit and receive frequencies can be stored independently for those receivers with non-standard offsets.
- **VFO Scan Modes.** Band scan — scan across the full band. Programmable band scan — scan between the limits set in memory. Memory scan plus programmable memory channel lock-out — scan only those channels in which frequency data has been stored. Scan stop modes — time operated and carrier operated scan.
- **Lock Functions.** Prevents accidental loss of selected operating frequency data. All controls are disabled except volume, squelch and power.

Optional Accessories

IF-20 interfaces up to 4 transceivers. RC-20 full function remote controller for the transceivers. Other accessories to suit your requirements.

KENWOOD ELECTRONICS AUSTRALIA PTY. LTD.
4E WOODCOCK PLACE LANE COVE SYDNEY, N.S.W. 2066.
Ph (02) 428 1455 Fax (02) 427 6869
Call now for further information and the name of your nearest authorised Kenwood dealer.

Please phone, or mail/fax for information
Name _____
Address _____
_____ Postcode _____
Publication _____ Issue _____
Model _____

The station, which is owned and operated by the Christian Science Publishing Company, is also dropping its music format to concentrate on the same programming as WSHE/WCSN. The organisation seems to have also cutback on its programming.

Incidentally, if you wish to update the current propagation forecasts, you may be interested in knowing that WWVH in Maui, Hawaii, has the same forecast as WWV, but at different times. WWV gives it at 18 minutes past the hour, while WWVH has theirs at 45 minutes past the hour. Also, the RA propagation forecast at 0225, 0827, 1227 and 1625 is now heard daily.

Radio Canada International is the latest station to commence using the 13 MHz broadcasting allocation. Primarily aiming at Central and South America, it can be heard on 13720 kHz between 0100 and 0300 UTC. It also transmits to Africa on 13680 kHz between 1800 and 2000 UTC. Radio Veritas in Manila is now on 15500 kHz in English between 0130 and 0200 UTC. This station is owned by the Catholic Church.

Well, that is all for this month. Until next time, all the best of DX!

ar

Ten Metre Repeater

The Melbourne Ten Metre FM Users' Group has advised AR magazine of a 29MHz repeater in Hungary.

Using the callsign HA3BME it receives on 29.585MHz and transmits 29.685 MHz.

Its output power is 70 watts into vertically polarised antennas, and has been worked by VKs when the band is open.

The Melbourne group says this repeater is cross-linked to a Hungarian 2 metre repeater allowing users to *talk to the world* using something as simple as a hand held transceiver.

ar

Special Singapore Call Sign

1989 is the 20th Anniversary year of the foundation of SARTS - the Singapore Amateur Radio Transmitting Society. The foundation date was 28 August 1969.

1989 is also the year for the 17th annual SEAnet Convention, and it will be held in Singapore from 17 to 19 November 1989.

To celebrate these two events, Singapore Telecoms has given permission for the optional use of the 9V0 prefix (for the period of 1 July through 30 November) in lieu of the usual 9V1 call.

During the SEAnet meeting, an official station 9V0SEA will operate on the HF bands whilst special 50 MHz tests will be again carried out using the call 9V0ES.

ar

VHF/UHF

An Expanding World

Eric Jamieson VK5LP
9 West Terrace
Meningie 5264

All times are Universal Time Co-ordinated indicated as UTC

Beacons

Advice has been received that the Perth beacons are off the air, pending a shift to a new location.

According to Japanese operators, during March and April many stations ran their rigs as beacons, mostly between 50.090 and 50.120. Stations listed were XX9KA, ZK1MQ, AL7FH, CX8BE, HC5K, K6MYC, LU1DMA, CE3BFZ, PY2DM, FO5DR, 9H1BT, A35IC, VK9NS and 5W1HS. No doubt there were many more.

Six Metres

As expected, the six metre band has been relatively quiet. There have been a number of Es winter-time openings to VK2 and VK4, with one of the better periods being on 25/6, when VK8GF and VK8ZLX were working VK3, VK5 and VK7 stations. The good conditions continued on 26/6 when at 0556, VK8GF was 5x9 on 50.110 at Meningie. I was alerted to the possibility of something happening by hearing and working Hugh VK5BC at 0544 at Berri. Although Hugh is always audible here, no matter in which direction he points his beam, when his signal became 5x9 with the antenna on Adelaide, an opening to somewhere via Es was possible. The opposite has been observed with F2; during the equinox, when Hugh's signal starts to weaken, I look to the north east for F2 signals.

Col VK5RO reported that during June he had worked all VK states and some ZL's on Es. On 2/7 at 0130, he was pleased to work N6USV/DU3 (formerly KB6FIQ/DU3) at S3. This brought his six metres tally of countries to over 40. Mick VK5ZDR also worked the DU3.

An item I missed earlier on 5/5 Col VK5RO worked W4EJW, located north of Palm Springs on the eastern portion of the Florida Peninsula. This would appear to be the most easterly US station worked from VK5 during Cycle 22.

The best contact for June would surely be to BY5RA in China. He was worked by Steve VK3OT and Arie VK3AMZ at 0105 on 3/6 with signals 559. Steve worked JA1VOK with an HL1 station on CW beneath him. After completing the contact, Steve called the HL1 and received no reply. On calling again, Steve was answered by BY5RA and from this the contact resulted. In the light of recent events in China, this must be seen as a very rare contact, so Steve's constant vigilance has paid off. I understand that BY4RB was worked in March/April first by Tom VK4DDG and then by Steve VK3OT.

Another rare one was the Japanese DXpedition to Malaysia with the callsign 9M2FMX. The group worked 930 stations, but only two in VK, namely Don VK6HK at 0105 and Steve VK3OT at 0145 on 10/6. This station was also heard by Graham VK6RO on 11/6 on 50.075. The same morning at 2330 VK3OT worked a new station in Fiji - 3D2EA who recently moved there from New Guinea.

Since moving from Byron Bay (VK2DDG) to Queensland, Tom VK4DDG has been making the most of the DX. There is not much left for him to work in the Pacific area, and more exotic contacts have included PJ9EE, 9Y4VU, TG9AWS, V31PC and, of course, BY4RB. Four stations appear to be vying for the position of most countries worked on six metres; VK4DGG, VK4ZJB, VK2BA and VK2QF. All appear to have tally of more than 50 countries. Reports indicate that JA4MBM and PY5ZBU may have top places in the world scene over 100 countries. It will be interesting to see who becomes the first amateur in the world to confirm having worked 100 countries on six metres. Many stations are in the 70 to 80 countries bracket.

Looking over the sheet of Neville VK2QF and its 52 countries, a question has been answered for VK5LP. On 18/4, at about 0123, I was trying to decipher an S3 station under the S9 plus signal of XF4L, and got P6JW. But the DXCC list does not contain a P6, so the signal remained a mystery. AT 0031 on 18/4 VK2QF worked 8P6JW in Barbados at 5x9, so that appears to have been the station I heard.

The May issue of the Japanese "ham radio" magazine, courtesy VK6RO, lists a few good contacts during March. They include, CX8BE, HC5K, F5QT, LU9EMT, CE3BFZ, G3XBY, XX9KA, PY2DM, BY4RB, 9H1BT, VK9YQS/VK0, SZ2DH, ZD8MB, 8Q7TT, 5H1HK, ZK1XH, plus a string of Pacific area countries.

Brunei

Andrew Davis, V85DA reports from Brunei that after leave in Canberra, there is much correspondence needing replies. He says that on 4/6 he heard 9M2FMX calling CO on 50.075 and working split frequency to 50.475, but missed a contact, as his TS600 cannot work split frequency.

On 11/6 Andrew worked 39 JA's between 0249 and 0330. At 0330 the VS6SIX beacon was steady but weak. At 1322 he worked YC0UVO with KB6FIQ/DU3 and VS6UP on the same frequency, but heard little of the others. To assist his signals, Andrew now has a HL66V amplifier, to lift his 10 watts to 60 watts.

Andrew usually checks each day 50.0 to 50.5 and 52.0 to 52.5 for activity or beacons, during his lunch break at 0430, and monitors 50.110 from 0900 to 1500. He is also after his HF DXCC, so spends some time on the HF bands. The only other station on Brunei with six metre capability is Malcolm V85AH, who has a TS680

FT-747GX BUDGET H.F. Transceiver

2 YEAR WARRANTY!

The FT-747GX is a compact SSB/CW/AM and (optional) FM transceiver providing 100 watts of PEP output on all 1.8-30MHz amateur bands, and general coverage reception from 100kHz to 30MHz. Convenience features include a front panel mounted speaker and unobstructed digital display, operator selectable tuning steps for each mode, dual VFO's for split frequency operation, and 20 memory channels (eighteen of which can store split Tx/Rx frequencies). Wideband 6kHz AM, and narrow 500Hz CW IF filters are also fitted as a standard feature. Includes bonus D-2105 or D-2110 hand microphone. See ARA Review - Vol II, Issue II.

D-2930

$1299

or **$1329** with heavy duty antenna base and choice of 1 H.F. mobile whip (80, 40, or 20m only)

DICK SMITH COMMUNICATIONS

FT-4700RH Dualband Transceiver

Continuing the tradition started by Yaesu with the FT-2700RH, the new FT-4700RH dualband 2M/70cm FM transceiver now provides higher levels of performance, while offering even better value for money!

Features include 50 watts output on 2 metres (144-148MHz), and 40 watts output on 70cm (430-450MHz), with an inbuilt cooling fan for long term reliability. True full-duplex crossband operation is supplemented by dual band simultaneous reception or auto-muting reception (with independant squelch and mixing balance), so you can listen for calls on both bands simultaneously, or work someone on one band while also listening on the other band. The optional YSK-4700 controller cable allows the main body of the transciever to be installed under a seat, while the front panel/controller mounts conveniently on the dashboard. On the control panel, the bright amber back-lit LCD shows both VHF and UHF frequencies and signal strengths, and all controls have back-lit labels for clear readability, with a dimmer switch for nightime viewing. A total of 20 memories and 5 selectable tuning steps make frequency selection easy, while the advanced scanning features allow quick detection of signals on either, or both bands. And all this is backed up by our exclusive 2 year warranty, the longest in the industry.

D-3300

Optional YSK-4700 (D3301) $49.95

$1295

Save $100

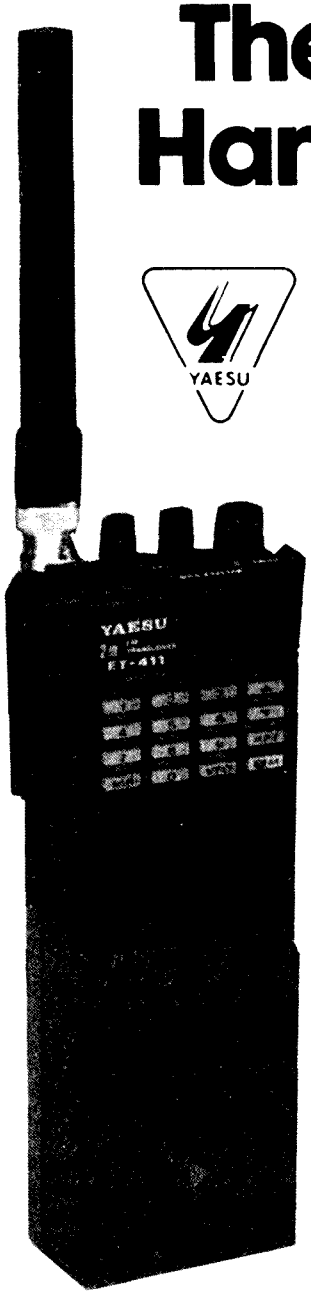
With Bonus

D-4207 2m 5/8λ antenna
D-4030 70cm Co-linear antenna

DICK SMITH COMMUNICATIONS

YAESU

The Ultimate 2 Metre Hand-held Transceiver



The FT-411 is a top-of-the-line ultra compact 2 metre handheld offering an incredible array of features without the size and weight of previous sets. Expanding on the microprocessor controlled features of previous models, the front panel multi-function back-lit keypad allows easy frequency entry, selection of the 49 tunable memories (which store repeater shifts, or separate Tx/Rx frequencies), setting of the programmable-interval 'power-saver' system, as well as a host of other convenience features. CPU control also offers 2 VFO's, rotary dial tuning with 5 selectable tuning steps, a multi-function back-lit 6 digit LCD screen with bargraph Signal/P.O. meter, and a range of scanning options. Even VOX (voice-activated transmit) circuitry is provided, allowing hands-free operation with the optional YH-2 headset.

Yaesu have also recognised that a hand-held radio must be ruggedly constructed, and yet be small enough and light enough to carry around all day. Through the extensive use of surface-mounted components, a heavy duty die-cast rear panel, rubber gasket seals around all external controls and connectors, and a carry case supplied as standard, the FT-411 will provide reliable operation even in dusty or humid environments while measuring only 55 (W) x 155 (H) x 32mm (D), and weighting less than 550 grams (including a high capacity 1000mAH FNB-14 NiCd battery giving 2.5W output). A range of inexpensive optional accessories are also available to provide flexibility for users differing requirements. See ARA review Vol 12 Issue 3.

Complete Package: FT-411, FNB-14 7.2V NiCd, Carry Case, Antenna, Approved AC Charger.

$499 D-3350

EXCLUSIVE 2 YEAR WARRANTY

Optional Accessories

PA-6	DC Adaptor/Charger suit FNB9/10/14	D-3498	$39.95
FNB-11	600mAH NiCd Battery (5W output)	D-3496	$99.00
MH-12A2B	Speaker/Microphone	D-2115	$49.95
YH-2	Mic/Earphone Headset	D-2200	$49.95

DICK SMITH ELECTRONICS

• NSW • Albury 21 8399 • Bankstown Square 707 4888 • Blacktown 671 7722 • Campbelltown (046)27 2199 • Chatswood Chase 411 1955 • Chullora 642 8922 • Gore Hill 439 5311 • Gosford 250 235 • Hornsby 477 8633 • Hurstville 580 6822 • Liverpool 600 9888 • Maitland 33 7866 • Miranda 525 2722 • Newcastle 61 1896 • North Ryde 88 3855 • Parramatta 689 2188 • Penrith (047)32 3400 • Railway Square 211 3777 • Sydney City 267 9111 • Tamworth 66 1711 • Wollongong (042)28 3800 • ACT • Fyshwick 80 4944 • VIC • Ballarat 31 5433 • Bendigo 43 0388 • Box Hill 890 0899 • Coburg (03)383 4455 • Dandenong 794 9377 • East Brighton 592 2388 • Essendon 379 7444 • Footscray 689 2055 • Frankston 783 9144 • Geelong 43 8804 • Melbourne City 326 6088 • Richmond 426 1614 • Ringwood 879 5338 • Springvale 547 0522 • QLD • Brisbane City 229 9377 • Burenda 391 6233 • Cairns 311 515 • Chermside 359 6255 • Redbank 288 5599 • Beckhampton 27 9844 • Southport 32 9863 • Toowoomba 38 4300 • Townsville 72 5722 • Underwood 341 0844 • SA • Adelaide City 232 1200 • Beverley 347 1900 • St. Marys 277 8977 • Elizabeth 255 6099 • Enfield 260 6088 • WA • Cannington 451 8606 • Fremantle 335 9733 • North Perth 326 6944 • Perth City 481 3281 • Midland 250 1460 • TAS • Hobart 31 0800 • NT • Stuart Park 81 1977

and a five element beam at 35 feet. He has worked JA, YB0 and some VK's. His QSL address is Box 471, Tutong 5004, Brunei.

A recent contact with Gordon KB6FIQ/DU3 (now N6USV/DU3) indicated that Gordon is very active on six metres, using a 150 watts Mirage amplifier to a six element beam. He has worked more than 1000 JA's, and he looks for contacts with VK each night. He missed the contacts to South America, but was very impressed with the big signal from KH6IJ and his four by eight element array.

Andrew said that he had his contact with FK8EB confirmed. Henri was running 10 watts to a whip on the roof of his car.

South East Radio Group

This Group of Amateurs at Mount Gambier held their 25th Anniversary Convention over the June holiday weekend. There was a very good attendance of amateurs and visitors, who could spend much time viewing and purchasing from a vast amount of equipment and trade displays staged by interested organisations.

The various events organised by the Group created much rivalry between the VK5s and the large contingent of amateurs from the North East Radio Group of Victoria. The latter were the outright winners of the coveted SERG Trophy, once again. It was not hard to see why - they played the game tough using sophisticated direction finding equipment, and obviously many days of hard work had been expended in the preparation of a variety of vehicles for the mobile tasks presented to them.

At last year's Convention, VK5LP issued a challenge for home constructors to build a two valve and rectifier regenerative AM band receiver, and provided a circuit and certain parameters to be met during construction. The response was better than expected, with 12 entries being tabled, with nine in working order. All the radios were well constructed, and those working, performed exceptionally well. The winner was Ivan VK5QV of Mount Gambier, for a very professional job built in the style of the late 1920s, and with authentic (in appearance) parts!

During the trophy presentation, Eric VK5LP congratulated Trevor VK5NC, for another outright win in the Ross Hull Contest. The trophy for which was on display, after having been rejuvenated, following a period of neglect. A joint appeal was made for more amateurs to support the Ross Hull Contest, and to send in their logs.

The SERG amateurs are to be congratulated on a well organised function, under the leadership of the Convention Organiser, David Edwards VK5FF and the President, Trevor Niven VK5NC. The proceedings concluded with the famous SERG Sunday evening gourmet meal, provided by the local ladies.

Peter VK8ZLX from Alice Springs was at the Convention, and his eyes were fairly bulging at the sign of so much equipment available for purchase. He paid a state visit to the VK5LP mansion on his way home.

Mount Gambier

I had wondered how much six metre DX had been worked from Mount Gambier - they being at a lower latitude. The May/June issue of the SERG magazine indicated that VK5NC and VK5DK were heavily involved and between them, during March/April, they worked many JA's from all districts: KG4SM, XE1MD, XE1GE, 3D2ER, P43AS, KP4A, W5UWB, VP5D, WA6BYA, T30DJ, K65DX, T20JT, XF4L, H44GP, ZL7TPY, ZL7TZ, KP4EIH, T20AA and ZLs. They certainly shared very well in the openings.

Use of Six Metres in Australia

It gives me much pleasure to report a successful conclusion to the WIA submission to DoTC, for the use of the six metre band in Australia. The operating conditions follow closely those requested by the WIA, and are the subject of a special report elsewhere in this issue of Amateur Radio; hence, I need not elaborate here. Except for those in prime Channel 0 viewing areas we will have the opportunity to initiate legal contacts with overseas stations on the 50 MHz section of the band.

In the past there have been criticisms levelled at the WIA and its seeming procrastination. However, from time to time, the WIA achieves end results which could never have been achieved by fragmented approaches from individuals. Perhaps the critics can send a bouquet on this occasion.

Also, DoTC is to be complimented on its commonsense approach to the matter of 50 MHz working by amateurs, who have demonstrated that operating without interference on that portion of the spectrum is possible. That situation should continue, if amateurs will continue to operate with care. Amateurs should be grateful that DoTC has expedited the matter, to the extent that the privileges will now be available for the next equinox, when prime F2 conditions will reappear.

The lesson to be learned from the whole of this exercise is that we became complacent following the good results obtained on 52 MHz during Cycle 21, when, due to much publicity, the world was aware that we could use 50 MHz. Certainly, we lost many good contacts through the lack of 50 MHz, and the inability of some stations to operate on 52 MHz, but in the main we did quite well.

However, we failed to keep the ball rolling in an effort to reduce 50 MHz operating restrictions prior to Cycle 22. But that is behind us now, so let us move forward, do the right thing by our neighbour, and thus, demonstrate our need for the use of the 50 MHz portion of the six metre band, without detriment to anyone else.

EME and All That

David, VK3AUU, has written to fill in the gaps since his last letter.

David reports that after many tests, on 21/1/89 he finally made contact with VK2DVZ in Taree on two metres. During these tests, he discovered he could fairly consistently hear the sound from Newcastle Channel 5A (143.775 MHz), a distance of 900 km.

The weekend contacts on 144.2 and 432.2 MHz between Sydney, Canberra and Melbourne continue with VK2ZAB, VK2DVZ, VK2ZRE, VK1VP, VK1BG, VK3UM, VK3AUG, VK3ZJC, VK3XRS and VK3AUU being the main participants. Gordon VK2ZAB has regular contacts with a group of Gold Coast stations, and VK4BRP is able to work Gordon on a fairly regular basis using 432 MHz.

VK3AUU has regular skeds with VK7MC, VK7ZIF, VK7RR and VK7ZIK. Autumn openings to Adelaide have been to VK5ZDR, VK5RO and VK5NY, occasionally to VK5AKM and VK5ZMK.

The auroral activity of 13 to 19 March brought contacts with many stations in VK2, 3, 5 and 7 on 52, 144 and 432 MHz.

Dave W5UN, who now operates with a 48 bay array with 30.5 dBd gain on 144.008, decided to attempt EME contacts with VK5NY and VK6HK. David VK3AUU telephone across the nation to try and find starters in each state.

On 29 April Dave W5UN started with a successful contact to ZL4DO and a failed contact with FK1TS before the moon rose in VK. AT 1410, Ross VK2DVZ, who had just completed his first EME contact with W4ZD, was poised to try for W5UN and this proved successful at 1426. Ross uses four 9 element yagis.

Next was Eddie VK1VP with a single yagi. At 1446 a successful contact was completed. W5UN struggled with Roger VK5NY for 26 minutes until he was able to send RO, but Roger was unable to complete the contact. (About two weeks later he did finally complete a two-way with W5UN.)

Peter VK8ZLX was next. The CW speed was slowed to accommodate Peter, and after some time an O report was sent, later lifted to RO and 73s. Mike VK3APW had a good contact with W5UN, finally exchanging 5x5 reports. David VK3AUU also reported strong signals from W5UN. At 1644 signals were sent between VK6HK and W5UN and at 1716 R reports were being sent.

On 30/4 W5UN was heard signing with Rod VK4BRP, but a valid contact was not made. However, Bill VK4LC, with four yagis, completed a contact. W5UN did not hear Mike VK7MC as he had an aiming problem and was about 20 degrees off the moon. Later W5UN tried again with VK5NY, but Roger was not completely happy with the contact. Finally, W5UN had a weak contact with Bill VK6ZFY.

Since those two good nights of EME operating, David W5UN has had contacts with VK5ZDR, VK5ZK, FK1TS, the latter after 16 attempts!

So far in 1989, David VK3AUU has worked I4BXN, LA8LF, KI3W, AA4FQ, OZ1EME, HG0HO, JA4BLC, KF0M, EA2LU, K2GAL, KD8SI, WB2DGR, N1BUG, WA4NJP, DK1KO, I1TXD, K9MRI, W7FN, PA0INE, OK1MS, WA6MGZ, K2TXB, SK3LH, K1HWS and W7HAH for a total of 61 stations in 21 countries with 13 USA call areas. David has also had two SSB contacts with W5UN.

David says that anyone interested in trying with W5UN will need at least a six metre long yagi, about 100 watts and a good pre-amplifier. Dave is on 14.345 MHz most week nights around 1100 UTC, with a group of US EME enthusiasts. He also listens on 28.885 around 0000. VK3AUU is prepared to assist in arranging a contact from a suitable station. Dave's signal has been copied on a 3 element yagi, and generally peaks at better than 15 db above the noise at VK3AUU,

on his 76 element array. If you can hear him, there is a good chance that he will hear you, as he worked ZD8MB who used 25 watts and a single yagi.

A programme of Moon Tracking and other utilities for an IBM compatible is available for $10.00 from VK3AUU QTHR. Included also will be a ten page set of operating instructions for two metre EME contacts.

50-54 MHz DX Standings

DXCC countries are based on information received up to 15 June 1989. Cross-band totals are those not duplicated by six metre two-way contacts. Credit has not been given in columns 1 and 2 for contacts made with stations when 50 MHz was not authorised.

Column 1: 52 MHz two-way confirmed
Column 2: 52 Mhz two-way worked
Column 3:Cross-band (52 to 28 MHz) confirmed
Column 4:Cross-band (52 to 28 Mhz) worked
Column 5: Countries heard on 50 MHz
Column 6: Countries heard on 52 MHz
Column 7:50 MHz two-way worked (temporary listing - see below.)

Call Sign	1	2	3	4	5	6	7
VK8GB	42	42			13		
VK4ZJB	32	32				4	
VK2BA	31	32					18
VK2VC	27	27					
VK2QF	25	27					25
VK2DDG	25	26		2	12	3	
VK3OT	25	26			10		
VK3XQ	24	26			1	1	
VK3AWY	22	22					
VK2KAY	21	23					
VK5LP	21	22			9	1	8
VK2BNN	20	21					
VK4ALM	20	20					
VK4TL	19	19					
VK7JG	18	20				2	
VK4ZAL	18	18					
VK3AMK	17	17					
VK9XT	17	21					
VK3AUI	17	21					
VK3NM	16	17					
VK4ZSH	15	16					
VK2ZRU	15	16			1	3	
VK3ZZX	12	13					
VK9YT	12	14					
VK6OX	10	10	1	1			
VK6RO	9	9	3	3	7	3	4
VK4KHZ	8	10					
VK6HK	8	13			3	2	
Overseas							
JA2TTO	48	48			6		

A new column (7) has been added as from this month. This lists those 50 MHz contacts which have been supplied to me, and no distinction is presently being made, regardless of the State from which they have been received. These listings are now due for review, in the light of the just-announced relaxation by DoTC of the 50 MHz conditions. In the meantime, the present separation between 50 and 52 MHz will assist me to make a decision at the appropriate time. All Standings information (from day one) is now stored in the computer, so that any adjustments should be relatively straightforward.

A minimum of five countries confirmed (including VK) is required for an operator to be listed.

The list position is determined by the number of confirmed contacts. Where two or more operators claim the same total, those first date-listed with that total can only be displaced by another having a greater number of confirmed contacts.

The next list will appear in February 1990, and entries will need to be on my desk no late than 15 December 1989. Claimants are reminded that full details of all contacts are required; viz: date of contact, time in UTC, call sign of station worked, country, frequency (50 or 52 Mhz), mode, report sent and received, QSL sent and whether received. Split frequency contacts should be indicated. Please add your own call sign, signature and date.

I reserve the right to request and examine any QSL cards, which may be needed to support an application for listing. To assist your claim, a useful idea is to include photocopies of the front and back of QSL cards.

Closure

Keep in mind that 50 MHz F2 contacts from various points in the world should return sometime during September to November, and those looking for contacts will need to rise reasonably early. Contacts can start as early as 2000 along the eastern coastline from areas in the USA, Mexico, Caribbean and possibly South American areas.

South Africa may be a possibility from 0700 onwards. JA's will probably predominate for the other times of the day, but don't forget there may be DU, HL and VS6 stations scattered amongst them.

Closing with two thoughts for the month: "Any astronomer can predict with absolute accuracy just where every star in the heavens will be at half-past eleven tonight. He can make no such prediction about his young daughter", and: "The smallest deed is better than the grandest intention". The Voice by the Lake.

ar

POUNDING BRASS

Black Box Operators?

Gilbert Griffith VK3CQ
7 Church Street, Bright 3741

Many readers of this column will have remembered my mentioning the CW Operators QRP Club, and quite a few will enjoy being members. Non-members missed a repeat article in the Club's journal "Lo-Key" for June, by Ian Pogson. If you have been considering joining, this is a good excuse, and as a member you will be able to get the issue of Lo-Key to build this project. It is many years now since it was available as a kit, but all the parts, including the board, are readily obtainable. The circuit is more complicated than a single chip keyer, but you can follow the logic involved, and learn a lot more about how keyers work by building the "accu" keyer. Have a go!

Every month I read numerous magazines, articles and books. Naturally, I subconsciously assume that most Morsiacs would be reading along similar lines, at least in the field of interest here. Anyhow, in case you don't read EA, Jim Rowe (the editor) had a go at Amateurs in his June "Forum" column. Judging by the replies this month, his ideas met with some agreement amongst Radio Amateurs, myself included. Rather than have me go into the articles in depth, I suggest you get hold of them and see for yourself. His main point, of course, is that (many) Amateurs are merely "black box" operators. Or if you want to be derogatory to another group, "glorified CB'ers". If you take the trouble to think about this, it is a slur on those CB'ers, because they are doing precisely what they want, ie using black boxes to talk to each other. From what I have seen, verbal (ie not CW) content is much the same, whether you listen to 10 or 11 metres these days, with maybe a little less profanity on 10 metres.

One of the reasons I have not been on air much (rarely in fact!) was the poor quality of conversation on Morse as well. It was difficult to find someone to chat with about homebrew, sig reports etc, and I suspected others of giving me unfair reports about my own homebrew gear. Good reports, that is, when I *knew* there was heaps of chirp. I even had to explain a couple of times what chirp was in order to get a decent report!

I felt that my own operating practices were degenerating (?) at the same time; they certainly were not improving! Hence the break.

Maybe this is why I personally reckon that membership of the WIA should be compulsory, and that *all* CW operators join the CW Ops QRP Club, not only for their own good, but for the good of the respective club, or in the case of the WIA, for the good of Amateur Radio in general.

Well, just who is right? Do we "not have enough time" for all our interests, or is it just that we can't be bothered? Do we hope that newcomers to the hobby will take up the challenge again, or do we extract our collective "keys" and put in that extra effort that the future of Amateur Radio needs.

Your letters would be appreciated. Please include a SAE if you want a personal reply. Please . . . please, do *not* whinge about costs of this and that membership etc etc ad nauseum. Any qualified Amateur should be able to earn a few extra quid if he/she really wants to, or is that another matter entirely?

73
Gil

Lunar Eclipse, Microsats

Maurie Hooper VK5EA
11 Richland Road
NEWTON 5074

National Coordinator
Graham Ratcliff VK5AGR
Information Nets
Amsat Australia
Control: VK5AGR
Amateur check in: 0945 UTC Sunday
Bulletin commences: 1000 UTC
Primary frequency: 3.685 MHz
Secondary frequency: 7.064 MHz
Amsat SW Pacific
2200 UTC Saturday, 14.282 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the Amsat Australia net. This information is also included on some WIA Divisional Broadcasts.

From UoSAT-OSCAR-11 Bulletin - 189 22 June 1989

AO-13 Lunar Eclipse

On June 3 1989 at 22:00 UTC, G3RUH was observing AO-13 PSK telemetry, when suddenly he saw the battery voltage was falling rapidly; then there was no spin rate. Normally the solar panels stay near 8 degrees C, but now they were at -10 degrees C! Since the satellite spin rate was calculated from data taken from a sun sensor, everything indicated that there was a solar eclipse - but there were no predicted eclipses until November. Upon checking the Astronautical Almanac, he found that AO-13 was being blocked by the Moon! After 20 minutes AO-13 came out of the lunar eclipse and the telemetry indicated that everything was back to normal. So in keeping with his "detective spirit," G3RUH has produced the following table. AO-13 users should keep this table posted in the ham shack, so as to be aware when these lunar eclipses will occur and AVOID operating during these times.

Date	UTC HH:MM	DUR min	Orbit No	MA/256 Start	MA/256 End	Max Obs %
1989 Aug 31 (Thu)	07:09	33	929	13	25	9
1990 Jan 26 (Fri)	15:00	26	1240	25	34	85
1990 Feb 25 (Sun)	06:36	25	1302	70	80	8
1990 Mar 26 (Mon)	22:15	33	1364	115	128	11

Please Note: "Max Obs %" means "maximum obscuration" in terms of area of the Sun's disc. O=no eclipse, 100=total.

From UoSAT-11 Bulletin - 190 30 June 1989

UoSAT D and E

The engineering model is now almost finished and some flight hardware is already being produced. As you may know, both spacecraft consist of a stack of eleven module boxes, with the solar panels mounted on the four sides, on the top a gravity gradient boom of about six metres (fully deployed) and on the bottom the VHF and UHF antennas. The spacecraft measures about 34.5 by 34.5 by 60 cm and the total weight is about 40 kg. The Department of Mechanical Engineering at the University is making the flight module-boxes and attach-fitting for both spacecraft. Most of the experiments are in their engineering test phase, after which a flight-PCB can be produced for final integration by the end of August. Solar cells are being laid-out on the panels, now that we have a reliable method of sticking kapton on the panels (an insulating layer between the cells and the aluminium panel). These Gallium-Arsenide cells have an efficiency of 18 per cent and are produced by different manufacturers. By mid August, we expect the panels to be back at the University, tested and ready for integration. On UoSAT-D two transmitters are flown, one switchable between 1 and 2 watts, the other between 5 and 10 watts. The low power transmitter is used for continuous operation, the high power transmitter for short burst transmissions. Over the last few days, the bench models of the transmitters and modulators have undergone extensive testing. The design of the transmitters is by G3YJO and G7DSY, construction by Mark Allery, G7DSY.

Part 5 of "The First Flock of Microsats"

Software

The flight computer is programmed in a language which compiles or assembles into an image executable under an MS-DOS-like system. Compilers are available for a number of high level languages, but C is favoured by most project programmers. Executable images are uploaded to the flight computer using the transparent mode of the AX.25 protocol or an equivalent, error free, binary transmission protocol. Application programs will perform the following functions:

Packet Radio

For LUSAT, PACSAT, and WEBERSAT, NRZ-I bitstreams from the HDLC decoders to the computer, and similar bitstreams to the HDLC encoders from the computer, will be managed in software to implement the AX.25 protocol, the amateur radio version of the X.25 packet switching protocol. Unconnected beacon packets will transmit telemetry, satellite information, and bulletins. User stations will be able to connect to the satellite to query operating status, and obtain additional telemetry outputs in varied formats. The satellite receivers gather signal strength, which can be made available to the user, and which can be used in maintaining connection.

A packet bulletin board message store-and-forward capability will be provided on LUSAT and PACSAT, so that users can connect to the satellite and upload messages for forwarding to users who do not share a mutual accessibility with the satellite on a temporal or geographic basis. It is also anticipated that ground based packet BBS networks will use the satellites for message forwarding.

All of these functions will be configurable and alterable from the ground or by flight computer command.

Experiment Module Applications

The DOVE will contain application software to operate the voice synthesizer rapidly enough to avoid breaks in speech.

The WEBERSAT will use application software to control the camera and store picture data. WEBERSAT is more experimental in nature than the others and it is intended that the satellite be used as a software test bed for various digital video experiments.

Power Subsystem Management

The BCR solar array set-point must be adjusted to obtain maximum power from the solar arrays. In addition, the power level of the transmitter must be adjusted so that the power budget is maintained slightly positive, as averaged over an orbit.

Watchdog

A hardware watchdog resets the CPU if the on-board software does not toggle a line approximately each half second. This starts the ROM-based boot loader. In this mode, the transmitter is only switched on

periodically, sending a short telemetry burst at its highest power level. The on-board software can then be reloaded. The capability to hard reset the flight computer from the ground is also provided. The watchdog timer guards against problems which could cause the spacecraft to "lock up", as occurred with UoSAT 1 (UoSAT-OSCAR-9).

Launch and Deployment

Man-Assisted Separation

Deployment of the MICROSAT spacecraft from a man-carrying satellite (as demonstrated in the Iskra 1 and 2 spacecraft) will be by means of a modified launcher plate. An astronaut will hold the launcher plate and manually release the MICROSAT, via a release latch mechanism, into the space environment. This technique will be designed to minimise the possibility of human error in the launching of the MICROSAT. (None of the four MICROSATS in the first launch group will be deployed in this way).

Automatic Separation

Deployment of the MICROSAT spacecraft from un-manned vehicles uses techniques that have been proven over the last twenty years. The spacecraft is locked to a launcher plate by means of a tie-bolt and locator pins. The tie-bolt is severed by a pyrotechnic bolt cutter device. The pyrotechnic device is rated at the following levels:

Will Not Fire: 1 amp, 1 watt
Positive Fire: 3 amp,
Nominal Fire: 5 amp.

A separation spring is located concentric to the tie bolt, and will provide a positive separation velocity of from 1.0 to 1.5 metres per second, once the tie-bolt is severed. Straight line deployment is assured by the locator pins. A separation switch on the spacecraft side of the interface will enable the satellite electronics, while a similar switch on the launcher side will indicate satellite separation via the launch vehicle telemetry system. The latter switch gives the launch vehicle team positive proof that the MICROSAT was deployed.

On-Orbit Operations

The MICROSAT spacecraft are designed for autonomous operation. It is anticipated that command stations will not be continuously available and that any power emergency on board the satellite can be looked after by the flight computer. Software changes or additions will be made by command stations.

Downlink Performance

The three MICROSATS, which are primarily used to transmit and relay educational information and amateur radio communications in the form of AX.25 packets, must have adequate system performance to simple receivers. A BPSK downlink signal with an Eb/No of 0.6 dB provides a bit error rate (BER) of one error in 100,000. An additional signal margin of 10 dB, i.e. a 19.6 dB Eb/No, ensures a usable bit error rate. This error rate is considered acceptable under the AX.25 protocol, which detects errors and automatically requests retransmission, in order to guarantee accurate data reception. The following table shows the downlink performance of the system:

Spacecraft Transmitter Power (4.0 watts):	+6.0 dBW
Spacecraft Transmission Losses:	-0.7 dB
Spacecraft Antenna Gain:	+2.0 dBiC
Downlink EIRP:	+7.3 dBW
Downlink Path Loss (437 MHz at 3340 km):	-155.7 dB
Polarization Loss:	-3.0 dB
Atmospheric and Ionospheric Losses:	-0.3 dB
Isotropic Signal Level at User Antenna:	-151.7 dBW
User Antenna Gain:	0.0 dBi
User System Noise Temperature:	450 K
User G/T:	-26.5 dB/K
User C/No:	+50.4 dB-Hz
User Eb/No at 1200 bps:	19.6 dB
User Eb/No at 4800 bps:	13.6 dB
Required Eb/No for 10E-5 BER:	9.6 dB
Link Margin, 1200 bps, max slant range:	10.0 dB
Link Margin, 4800 bps, max slant range:	4.0 dB

Maximum slant range occurs when the satellite is on the user horizon. At closest approach the satellite will frequently be at a range of 1000 km or less, at which point the user link margins improve to about 15 dB at 1200 bps and 9 dB at 4800 bps.

At 1200 bps, adequate margins exist. When 4800 bps is to be used, it will be necessary for the user to improve station receiving equipment. This can be done by upgrading to a good quality dipole or steerable beam antenna and a GaAsFET preamp. It will also be necessary to provide for precise receiver frequency tracking, due to the increased bandwidth of the downlink signal. Performance of the satellite is expected to meet nearly all of the requirements for reception by users with simple equipment. Clearly, better results will occur with more sophisticated user stations.

DOVE is primarily intended to transmit education information in the form of telemetry and various stored announcements and must have adequate system performance to even simple receivers. For an FM system using conventional NBFM techniques, the modulation index is between 4.5 and 5.5. The FM threshold for such a receiver requires an input signal-to-noise ratio to the discriminator of very nearly 10 dB. In order to get adequate signal quality, a margin of 6 dB should be attained. Thus, an input S/N of 16 dB is required. This will result in an output S/N of nearly 42 dB, theoretically. Further, a user terminal with a noise figure as poor as 7 dB (corresponding to a noise temperature of 1160 K) is assumed.

Adequate reception using hand-held or equivalent equipment with poor antennas in poor locations (such as the inside of buildings) is desired. The following table shows the link performance under these conditions:

Spacecraft Transmitter Power (4.0 watts):	+6.0 dBW
Spacecraft Transmission Losses:	-0.5 dB
Spacecraft Antenna Gain:	2.1 dBiC
Downlink EIRP:	+7.6 dBW
Downlink Path Loss (146 MHz at 3340 km):	-146.3 dB
Polarization Loss:	-3.0 dB
Atmospheric and Ionospheric Losses:	-1.5 dB
Isotropic Signal Level at User Antenna:	-143.1 dBW
User Antenna Gain (HT)	-2.0 dBi
User System Noise Temperature:	1160 K
User G/T:	-32.6 dB/K
User C/No:	+52.8 dB-Hz
User Signal Level (in 15 kHz bandwidth):	11.0 dB

While the desired S/N is not attained at maximum slant range (near AOS and LOS) the signal is still at the FM threshold, which gives an output S/N of about 36 dB. At closest approach, the satellite will frequently be at a range of 1000 km or less, where the input S/N will be as large as 18 dB.

Any improvements to the receiving station will significantly improve this situation.

(This article should conclude in the next issue - Maurie VK5EA).

Satellite Activity for March/April 1989

1. Launches

The following launching announcements have been received:

Int'l Number	Satellite	Date	Nation	Period min	Apg km	Prg km	Inc deg
1989 -							
024A	Cosmos 2007	Mar 23	USSR	89.1	300	190	64.8
025A to 025H	Cosmos 2008 to Cosmos 2015	Mar 24	USSR	115.2	1510	1445	74.0
026A	USA 36	Mar 24	USA	94.5	503	482	47.7
027A	Tele-X	Apr 02	Scand	1304.1	35817	30510	0.1
028A	Cosmos 2016	Apr 04	USSR	104.9	1026	973	82.9
029A	Cosmos 2017	Apr 06	USSR	89.7	284	244	62.8
030A	Raduga 23	Apr 14	USSR	24h34m	36523		1.4
031A	Cosmos 2018	Apr 20	USSR	89.7	350	194	62.8

2. Returns

During the period one hundred and thirty two objects decayed including the following satellites:

1967-102A	Cosmos 184	Apr 02
1979-013A	Sage	Apr 11
1981-095A	Cosmos 1310	Apr 03
1989-007A	Cosmos 1993	Mar 27
1989-022A	Cosmos 2006	Mar 31
1989-029A	Cosmos 2017	Apr 19

3. Notes

1989-027A Tele-X a Scandinavian telecommunications and television satellite was launched on April 9, 1989, from the Kourou Space Center, French Guiana.

Satellite Activity for April/May 1989

1. Launches

The following launching announcements have been received:

Int'l Number	Satellite	Date	Nation	Period min	Apg km	Prg km	Inc deg
1989 -							
032A	Foton 2	Apr 26	USSR	90.5	402	225	62.8
033A	STS 30	May 04	USA	90.8	331	297	28.9
033B	Magellan	May 04	USA				
034A	Cosmos 2019	May 05	USSR	89.5	268	247	62.9
035A	USA 37	May 10	USA				
036A	Cosmos 2020	May 17	USSR	89.7	365	180	64.8

2. Returns

During the period seventy seven objects decayed including the following satellites:

1969-019A	Cosmos 206	Apr 22
1983-034A	Cosmos 1453	May 08
1985-114A	USA 13	May 11
1988-104A	Soyuz TM-7	Apr 27
1989-019A	Cosmos 2005	Apr 25
1989-023A	Progress 41	Apr 25
1989-032A	Foton 2	May 11
1989-033A	STS 30	May 08
1989-034A	Cosmos 2019	May 18

3. Notes

1989-033A Magellan was deployed from the orbiting STS 30 on May 04 1989. The spacecraft is to obtain a global map of Venus by means of a radar mapping device.

1989-035A USA 37 was launched by the United States Dept. of Defence.

Bob Arnold VK3ZBB

Report on the Third AMSAT-UK Colloquium 1988

Graham Ratcliff VK5AGR
AMSAT-Australia National Coordinator
GPO Box 2141
Adelaide 5001

(The Editors apologise for the delay in publishing this report in AR. There were several reasons for this, but the main problem was simply lack of space.)

International Amateur Satellite Meeting - 28 July 1988

Godalming - near the University of Surrey, Guildford, UK.

As 1988 was the 75th Anniversary of the Radio Society of Great Britain (RSGB) with many international visitors in the UK, the RSGB held an International Satellite Meeting on 28 July, chaired by NZART President and Amateur Satellite enthusiast, Terry Carrell, ZI3QL.

The meeting was intended to attract IARU representatives attending the 75th Anniversary and acquaint them with the goals of the Amateur Satellite Service. Unfortunately, the meeting attracted very few IARU people (one exception being David Wardlaw, VK3ADW).

Nevertheless, it is imperative that all those interested in the Amateur Satellite Service must work with their national societies NOW to protect, finance and therefore, continue the Service well into the future.

Two areas of concern were the potential loss of Amateur Satellite frequency allocations to Commercial Land Mobile, and the financing of future Amateur Satellites. Once an Amateur Satellite could be built in a garage and launched for "free". Not now! Typically, a "piggyback" launch can currently cost $1,000,000 for the paperwork associated with integration costs alone. The cost of hardware for a Phase 3 type satellite (ie: OSCAR 13) would also exceed US1 million. Therefore, the support of national societies will be needed to finance future Satellites. Many societies see the need to attract new members from, for example, computer enthusiasts. The Amateur Satellite Service with computer tracking, packet radio and satellite telemetry capture can, and has already, attracted many to Amateur Radio. To progress into the next century, forward thinking national society administrators are needed to budget the finance for future Amateur Satellites.

Personally, I have argued at three WIA Federal Conventions that the IARU should be the body responsible for administrating such an International Amateur Satellite Fund. If the IARU component of your WIA membership was raised by as little as 50 cents per annum, sufficient funds could be raised over the next ten years to support the Amateur Satellite Service into the 21st century, provided that all member nations of IARU follow our example.

Amateur Satellite Engineer's Meeting - 29 July 1988

University of Surrey, Guildford, UK.

This meeting was chaired by Dr Martin Sweeting, G3YJO, of the University of Surrey to encourage groups who intend to build future Amateur Satellites to present their plans for coordination.

Karl Meinzer, DJ4ZC and Werner Haas, DK5KQ represented AMSAT-DL (Germany) with their proposed Phase III D project. An enhanced version of OSCAR 13 with a high-powered Mode L transponder.

Jan King, W3GEY and Bob McGwier, N4HY represented AMSAT-NA (North America) with their proposed Phase IV Geostationary Satellite and Microsat (PACSAT) projects.

Martin Sweeting, G3YJO represented the University of Surrey/AMSAT-UK with their proposed UoSAT C and UoSAT D & E projects.

One of the main topics for discussion at this meeting was foreseeable availability of launches. A significant point raised was that the Amateur Satellite Service is no longer alone in its quest for obtaining "free" or, at least, low cost launches. Many scientific (amateur and professional) groups world-wide are noting with envy the past achievements of the Amateur Satellite Service, and aim to compete for these same launch opportunities. This is a good reason for international co-ordination to strengthen our competition for these limited launch opportunities.

Each group then presented an overview of their proposed satellite project(s). The rest of the day was spent in open discussion on the technical challenges faced by each group in attempting to achieve their respective goals. The interaction between the various groups was a pleasure to watch as everyone added their expertise to the discussion, for the benefit of all.

The variety of challenges was quite formidable. Topics covered included methods of spin stabilisation, thermal design for a non-spinning geostationary satellite, heat pump designs, collapsible high-gain yagi antennas, high powered solar generators, and finding facilities suitable for constructing a satellite the size of Phase IV (as the completed spacecraft will not fit through most doorways or into most elevators). There was much discussion about availability of the various unique pieces of hardware required for these projects, preferably at the least cost (nil where possible). A proposal by AMSAT-DL was that they actually design and build a piece of hardware that would revolutionise spacecraft spin stabilisation. AMSAT-DL has in the past successfully carried out such development work in producing the separation mechanism used in the Ariane multi-payload separation sequencer.

The unfortunate side of this meeting was (as always) that it was too short. Much was achieved all the same. Although intended primarily for "builders" of satellites, no one was turned away if they wanted to attend. If you ever have the opportunity to attend such a meeting I suggest you take it. Not only will you find it extremely interesting, but it will open your eyes to the incredible effort behind the scenes by a dedicated few to design and build our often "taken for granted" and sometimes even criticised Amateur Satellites. Next time you say "why did they do that and not this?", I can assure you that the decision would not have been made lightly.

The Third AMSAT-UK Colloquium - 29 July 1988

University of Surrey

As in 1987, the whole Colloquium was very "professionally" run and organised by Ron Broadbent (G3AAJ), Dr Martin Sweeting (G3YJO) and their many volunteer helpers. This was reflected by the number of attendees, in particular the (increased) number from overseas. Approximately 160 (representing 22 countries) registered for the whole weekend and many more attended some of the sessions over the two days.

As you may remember from my report on the 1987 Colloquium, the major "issue" discussed was AMSAT-NA's "Phase IV-Geostationary Satellite" versus AMSAT-DL's "Phase III-Molniya Orbit Satellite" projects. This was not the case at the 1988 Colloquium, after Jan King, W3GEY presented the engineering aspects of the Phase IV project versus the "political aspects presented by Vern Riportella/WA2LQQ last year. The audience, although not totally in favour of the concept of the Phase IV Project, were very interested to hear Jan's presentation on the technologies involved in designing and building such a satellite. There was not one objection to the project, if AMSAT-NA could raise the funds to go ahead - this was in complete contrast to Rip's experience in 1987.

Also, because of the cost of these large Phase III & IV satellites, the audience was very pleased to hear what the University of Surrey group and AMSAT-NA had to offer in the early 1989 timeframe with the launch aboard an Ariane launch vehicle of six Low Earth Orbit Satellites, two UoSATs - UoSAT D & E (effectively the proposed UoSAT-C divided in two as this launch with NASA has been delayed possibly into the 1990's), plus four MicroSats designed and built by AMSAT-NA. Three out of the six are planned to carry "general access" Amateur Packet Radio Bulletin Boards using the AX.25 packet protocol. These satellites will be a much-enhanced version of Fuji-OSCAR 12 BBS Store-and-Forward concept needing lower uplink and downlink requirements.

It was interesting to note that all of the launch proposals involved Ariane, and no mention was made by the Americans of the possibility of a launch on the US TITAN or the Space Shuttle.

The Lecture Program - Saturday, 30 July 1988

For many attendees the star guest of the Colloquium was unquestionably Leonid Labutin, UA3CR, of the USSR, who was at last able to be in Guildford - a positive sign for Glasnost. In 1987, Leonid had to cancel his visit at the very last minute.

However, even though Leonid was a well-favoured speaker, I would have to say that Dr Geoff Perry of Kettering Boy's School fame, once again, stole the show with his most entertaining presentation on the Chinese Space Program. Once again, I recommend that if you ever have the opportunity of hearing Geoff (who is not an Amateur) - DO NOT MISS IT!!!

The main aim of the AMSAT-UK Colloquium is to have something for everyone, from the beginner to the more experienced satellite user. As you can see from the lecture program outlined below, this was again successfully achieved.

Supplementing the lecture program, there was ample opportunity during the Colloquium to meet informally, not only with other satellite users, but many of the satellite builders and Command Stations. Beginning with a social drink in the University bar on Friday night this meant that these individuals were kept extremely busy fielding questions. Nevertheless, the feedback received during these discussions was of great benefit to all who participated. Most left the Colloquium wiser and happier, having had their questions answered by people who should know. Also, the Command Stations and satellite builders had a much better appreciation of what the end-users wanted by way of Amateur Satellites in the future.

Welcome by Martin Sweeting

As the host at the University of Surrey, Martin Sweeting G3YJO, opened the Colloquium for 1988 and expressed his appreciation of the great interest that the meeting caused in all three IARU regions. Next, Dr Arthur Gee (GB2UK), Chairman of the AMSAT-UK, commented in his welcoming speech on questions of Amateur Radio via Satellite. He stressed that, in this area, Amateur Radio is again following its original form of technical experiments for self-study in the fields of electronics as well as wave propagation and antennas.

The Royal Observatory - Max White

The honor of the first speech was given to Max White who, despite not having an Amateur Radio licence, is thoroughly familiar with the species "radio amateur". Max spoke about the Royal Observatory in Greenwich and then moved on to describing the co-operation with radio amateurs in the observation and subsequent calculation of the orbits of artificial satellites. He comprehensively explained the measurement techniques using laser beams.

At this point, he could not resist making the comment that the observatory is located under the incoming flight path to an airport and that the high energy laser is perhaps not quite without complications.

He, therefore, closes his own eyes whenever he flies over the observatory. Better safe than sorry! Via certain secret channels, he allegedly learned of a wish to use his laser cannon to shoot down the COSMOS-1861 satellite, so that COSMOS-1862 would be launched earlier than planned. This replacement had the two new Amateur Radio transponders, now known as RS10/11!

Report on the IARU Meeting - Terry Carrell ZL3QL

Terry reported on the topic of co-operation between IARU and AMSAT organisations. A few days prior to the Colloquium, representatives of 35 national societies met with representatives of the various organisations and groups that are involved with the construction and operation of Amateur Radio Satellites.

First of all, ZL3QL indicated that the upcoming World Administrative Radio Conference (WARC) is scheduled for 1992. During this conference, the frequency needs of the individual services will be established until far into the next century. The danger, as seen by the fARU, lies mainly in the fact that the Amateur Radio Service will come under pressure in the range above 30 MHz, primarily the bands 70, 23 and 12 cm. ZL3QL advocates that the national societies should become more involved in the future with the Amateur Satellite Service than in the past. Preparatory meetings must occur so that the IARU can then speak with a collective voice on this important matter in the future. Following the possible loss of the above-mentioned bands, the Amateur Satellite Service would no longer have a future.

Karl Meinzer (DJ4ZC) suggested that the IARU should consider the possibility of each member of every Amateur Radio Society contributing a certain amount for the construction of satellites.

One major outcome of the meeting was the agreement that AMSAT-UK should co-ordinate all frequencies for the Amateur Satellite Service for all three regions.

In conclusion, ZL3QL pointed out that the IARU can less make decisions than express recommendations.

The Sputnik Shock - NORAD Spacetrack Network - Max White

Max again took the floor, and reported on the Space Command in the USA. This institution was founded shortly after the launch of Sputnik I in October 1957, after finding that no agencies in the USA were involved with the observation and measurement of artificial celestial bodies. Rapid development of observation stations began, not only in the USA, but also in Iran, Chile, Australia, India and several other countries. Viewing conditions were quite often unsatisfactory, so it appeared that optical observation and tracking would no longer suffice. Plans were soon developed to measure the satellites with the help of radar, initially using a 25 metre reflector in Massachusetts, soon followed by others. All were designed to track only a single object. If several targets needed to be tracked simultaneously, these reflectors were no longer adequate. This was the inception of an "electronic fence" to protect the entire USA from unpleasant surprises. In the beginning, the equipment radiated 800 kW on 217 MHz and was capable of tracking all flight objects in a near-earth orbit and of measuring their orbits. In the meanwhile, the equipment has not only been constantly improved, but has also moved very close to the 70cm amateur band. The radar equipment of the latest generation operates in the area of 422 MHz with a beam width of only 2.1 degrees!

Orbital Concepts - Jeff Ward G0/K8KA

Following this impressive NORAD information, the last address of the morning was concerned with simpler matters. Jeff very clearly explained such mysterious concepts as MA (mean anomaly), apside rotation, SMA (semi-major axis), etc. This was supported by several well-made overheads prepared by Craig Underwood. This presentation succeeded in explaining these rather abstract concepts very well. One question was the subject of much discussion over the weekend. The question was, "Why is the Mean Anomaly in the Keplerian Elements expressed in the range 0 to 360, when the Mean Anomaly in printouts from satellite tracking programs is expressed in the range 0 - to 255?" Do you know the answer?

JAS-1 Film - JA1HQG

Six reports were scheduled for the afternoon session, among others, a review of the two British UoSATs as well as the planned UoSAT-C and a film about the development and construction of JAS-1. During the presentation of this professionally produced 16mm film, comments were heard that it must have cost more than the entire JAS-1. The film gave the impression that the satellite was promoted, not by radio amateurs in private work, but rather by financially strong companies. This impression was reinforced even more when the various laboratory and measurement facilities came into view. It would probably look the same if ANT or MBB of West Germany were to build Phase 3D.

When the film claimed how effective the satellite JAS-1 was, the groans of several of the audience were hard to miss! The power budget for this satellite is unfortunately a cause for concern. If FUJI-Oscar-12 really was as good as claimed, the frequent suspension of operation due to power shortage would not have been necessary.

After much applause for the film, JA1HOG answered questions regarding the successor to JAS-1 which is to be an identical model, but with significantly improved batteries, as well as more effective GaAs solar cells. JA1HOG explained that these items were sinfully expensive and he comically demonstrated how JARL/JAMSAT were playing one commercial supplier off against the other to get the lowest possible price. The orbit will also differ slightly from that of JAS-1, but will basically offer the same sort of coverage.

Report on OSCAR-13

Returning from the Far East to Europe, Martin Sweeting introduced Karl Meinzer. There was appreciative applause from the audience, indicating that many had already experienced the recent successful beginning of operations on OSCAR-13. DJ4ZC explained to the international audience why OSCAR-13 could not be released for general operation immediately after launch, but nearly six weeks later. Using a 1:5 scale model he illustrated how OSCAR-13 had to be turned so that the antennas would

point towards the earth.

At the start of his presentation, he especially commended the control stations which had provided outstanding help in determining the orientation and performing the orbital manoeuvres, namely, Peter Geulzow DB2OS, Graham Ratcliff VK5AGR, Ian Ashley ZL1AOX, as well as James Miller G3RUH, and Stefan Eckart DL2MDL. VK5AGR and ZL1AOX had been particularly involved with the distance (ranging) measurements, to be enable DL2MDL and Phil Kam KA9Q to calculate the Keplerian elements based on the acquired data. Finally, James Miller provided the analysis of the orbit on which to base the operating schedules for the various transponders. With a special round of applause, the audience expressed its thanks to the above mentioned Command Stations for their contributions. Karl Meinzer said everything had gone so perfectly with OSCAR-13 so far that it raised doubt. Is 13 really an unlucky number?

Disappointment then set in when the RUDAK experiment could not be activated. In the meanwhile, attempts to get the experiment running were underway using some new software programs (this is still the case at the time of writing this article - so do not give up on RUDAK yet - remember it took months to activate UoSAT-OSCAR-11 and look how successful that has been ever since). The testing of RUDAK can be monitored on 435.677 MHz, since this beacon is quite audible even with small antennas.

Report on the UoSAT's - Jackie Radbone

As in the previous year, Jackie again gave a line overview of the satellite program of the University of Surrey. She especially concentrated on the UoSAT-C satellite presently under construction, which will have a significantly improved computer with more than ten times the memory of the first two UoSAT's. In addition to the other experiments, this will improve the picture transmission. Although a launch date for UoSAT-C was initially planned for the end of 1988, a two year delay is now expected, so that the earliest launch opportunity will be around 1990/91. However, as mentioned earlier UoSAT-C payloads are now being divided between UoSAT D & E to be launched aboard an Ariane launch vehicle in the June 1989 timeframe.

Project Hart

The program continued with a presentation by Dave Rowan on the British project called HART. This project involves "flying" a transponder on a balloon. Dave told the audience how the idea for this evolved during a RSGB dinner in Birmingham in March 1987. Together with Richard Limebear, he drew the initial concepts for the circuit on the back of a menu.

After many meetings, the basic concept was established - namely, an uplink on 435 MHz and downlink on 145.9 MHz, transponder bandwidth of 10 kHz with a power of 300 mW. The transmitting and receiving antennas were aligned for vertical polarization. So that even weak stations would have a chance, there was to be no AGC. The transponder was completed and ready to fly, but was still waiting for a licence. Recently it became known that no licence would be forthcoming in Great Britain, due to the overcrowded airspace. Should the entire work over several months be for naught? No, because in the interim, Nico Janssen PA0DLO, had offered to apply for permission to fly it in Netherlands.

The latest word suggested that it looked very positive for a balloon launch, probably in the autumn. Here history is being repeated: over 25 years ago Karl Meinzer wanted to launch his first transponder from Germany. In those days, the authorities also refused permission, therefore making it necessary to take the route through the Netherlands. Only after several launches were completed there, without incident, was it possible to perform more than 60 ARTOB launches from Heessel under the direction of Fritz Herbst DL3YBA. The South Africans also had problems launching balloons, as they described during the presentation of their BACAR project.

BACAR - A Family Outing

Using impressive slides, Hans van de Groendahl ZS6AKV, showed activities south of the equator. As with the ARTOB undertakings in the 60's, the difficulties being encountered now in South Africa are familiar. Namely, flights beyond the country's borders, inability to separate the transponder, too much output power from the emergency beacon during search operations, etc. All of this had happened about 25 years ago in Hanover and vicinity. Only one aspect distinguished South Africa from the heaths of Northern Germany, namely that people were all wearing light summer clothing. The ARTOB searches called for warmer clothing, along with a lightweight stepladder for climbing in over pasture fences. Hans explained that in the BACAR project (Balloon Carrying Amateur Radio), AMSAT-SA was guided by the following considerations :

Design, Development, Construction and Testing
Balloon Tracking similar to Satellite Tracking
Map Reading
Radio Navigation - Direction Finding
Encoding/Decoding of the Telemetry
FUN - with all the Family Involved

In the meanwhile, over 25 launches had occurred, of which 22 were very successful, ie: the transponder was recovered. One recovery turned out to be more difficult. The point of impact was readily determined and two teams set off to recover the transponder. As they approached and took another bearing, they discovered the bearing had altered. This was repeated several times until the solution to the puzzle was found. All transponders were clearly marked with a request that the equipment should be taken to the nearest police station. A farmer had found the transponder shortly after the landing and was bringing it to the police, his farm truck becoming the moving target.

During the past year a transponder from 29.390 to 144.340 MHz was put into action. In addition to two beacons in the 2 metre band, a beacon on 51.384 MHz is occasionally being flown. A mode-L transponder is also being considered for the future in order to gain experience with transmitters and antennas on 1269 MHz.

Chinese Space Programme

For many, Geoff Perry's presentation would have been the most entertaining of the whole Colloquium. Geoff, at this best, described how he and the group at Kettering Boy's School received and decoded the radio transmissions from the first two Chinese satellites. Believe it or not, the signals consisted of a one minute cycle of alternate music and telemetry. The first 40 seconds were devoted to a repetition of "Tung Fang Hung" - "The East is Red" - followed by an interval of five seconds, followed by ten seconds of telemetry and, after a further interval of five seconds, the complete sequence is repeated. If you are interested in this fascinating pastime, I have an audio tape of Geoff's presentation and an eight page article on the subject.

AMSAT-UK Annual General Meeting

The AGM was like most club or society AGM's, namely, reports from the various office bearers. It would be remiss of me not to mention the incredible amount of support AMSAT-UK with its 4000 plus members gives financially to the Amateur Satellite Programme. In 1988 they paid £10,000 sterling towards the transport costs of OSCAR-13 from Germany to the launch site of Kourou, French Guiana, plus continued financial support for the work carried out at the University of Surrey, in particular the UoSAT Command Station in 1987 and the general access Amateur Packet Radio Transponder to fly on the UoSAT-D spacecraft in 1989 (to the tune of £25,000 over two years). Also they have pledged further funds to the launch cost for Phase IIID. I suggest that if you have the opportunity to support AMSAT-UK by becoming a member you can rest assured that your donation will be put towards the enhancement of the Amateur Satellite Service. AMSAT-UK publishes an excellent bi-monthly publication called "OSCAR News" which is well worth the minimum annual donation of £16.75 which includes airmail postage. For a "membership package" send 4 IRC's to AMSAT-UK, 94 Herongate Road, Wanstead Park, London E12 5EQ England.

The Saturday Night Social Evening

The highlight of the social evening was an auction conducted by Ron Broadbent G3AAJ, the Honorary Secretary of AMSAT-UK (actually he IS AMSAT-UK if the truth be known!) This year some excellent Amateur Radio equipment had been donated by commercial suppliers and AMSAT-UK members and the skilful auctioneering of Ron saw many £'s collected towards offsetting the above mentioned commitments by AMSAT-UK. This evening alone would be another good reason why you should attend an AMSAT-UK Colloquium *if you ever* have the chance to be in the UK at the time.

The Lecture Program - Sunday 31 July 1988

This part of the program covered future

expectations, in addition to presentations by Ray Soifer W2RS, Leonid Labutin UA3CR, Michael Hodgart UoS Team. Ray spoke on the subject of "Low Power EME Communications", in other words, the practicalities of using an Amateur Satellite Station for QRP EME work - most interesting. Leonid, with the help of an interpreter, gave a most entertaining and sometimes humorous presentation on the Polar SkiTrek Expedition and the up and coming future Russian Amateur Satellites and Amateur Radio activities from the Russian Space Station "MIR" (which of course happened during November/December 1988). Michael's presentation on Spacecraft Attitude Control with reference to the UoSAT's, although relatively technical, gave many attendees an appreciation of the difficulties involved in maintaining the attitude of UoSAT type spacecraft using gravity gradient stabilisation.

Knut Brenndorfer/DF8CA had the unenviable task of presenting a paper on RUDAK which should have been quite exciting, but unfortunately the RUDAK team already had grave suspicions that this new Packet Radio experiment on OSCAR-13 was not performing as expected. Attempts to date had been unsuccessful in initialising RUDAK which had been very frustrating for the RUDAK team, as the module was functioning reliably up until launch from Kourou. An exact copy of RUDAK has also been operating flawlessly from a water tower in Munich, West Germany for over two years. This, combined with the many hundreds of hours spent on the development of RU DAK, made this failure even harder to bear. However, the RUDAK team had not entirely given up their attempts to activate RUDAK and maybe, given some time and patience, RUDAK will once again spring to life. There is a considerable amount of information available on RUDAK, but it has not been widely distributed as yet. As soon as RUDAK is confirmed to be operational, there will, I am sure, be a flood of information on RUDAK and the equipment required to use it.

Bob McGwier/N4HY, gave an excellent presentation on Digital Signal Processing (DSP) Demodulation and Modulation Techniques. The most fascinating concept of DSP is that with one - yes, just one - DSP Modem, Amateurs should be able to replace the myriad of Modems they currently use in shack for Packet Radio, Decoding PSK and AFSK Telemetry from Satellites etc. Simply, the heart of the DSP modem is an extremely fast chip which requires only software to be changed to handle all the different "standards" used in Amateur Radio with this "one" piece of hardware. Bob hopes that the Tucson Amateur Packet Radio (TAPR) will produce a DSP kit in the early part of 1989 once the major thrust is over of getting the AMSAT-NA's Microsats Project off the ground.

Bob and Jan King/W3GEY then continued to outline the future activities of AMSAT-NA which include the Low Earth Orbit Microsats (scheduled for launch June 1989) and the Geosynchronous Phase IV Satellite (proposed launch 1992). The Microsats are so named because of their relatively small size, a 9 inch (23cm) cube, weighing less than 10 kg. The major interest in the Microsats is that at least three will carry "general-access" packet radio transponders similar to those successfully flown on JAS-1 (FUJI-Oscar-12). These packet radio transponders will, at the outset, use exactly the same modulation and demodulation techniques used by JAS-1, so NO new equipment will be required if you have JAS-1 capabilities. If you would like more information on the Microsats and/or DSP project send an A5 size envelope and a 65 cent stamp to AMSAT-Australia, and I will send you a 22 page booklet on the Microsats and a seven page booklet on the DSP project.

Jan presented the Phase IV project. The audience was fascinated by the number of problems that such a large and specialised spacecraft presented to the designers and builders, and not the least, the costs involved to overcome these obstacles. As you have probably gathered, the Phase IV project has been reduced from the original proposal of three satellites to a single satellite, which means that it can only offer a coverage to, at best, one third of the globe. Financial support for this project may come from the Pacific Region which may mean that coverage will include parts of Australia, the Pacific basin and the bulk of the Unites States. Time will tell. I have audio tapes of these sessions if anyone is interested. Send me an SASE for details.

During this session, Karl Meinzer/DJ4ZC, presented the Phase IIID Project proposed by AMSAT-DL which, with the support of the European Community, seems certain to go ahead. Phase IIID is an enhanced version of Phase IIIC, particularly in the area of the Mode L transponder with a high power output, which hopes to offer realistic land mobile type operations. The other interesting aspect of the Phase IIID project is that the size of the spacecraft is large and therefore the power capability is also quite large, which means that a significant number of extra experiments could be carried aboard Phase IIID - so, if you have any ideas for a worthwhile experiment that could be flown aboard Phase IIID that could take advantage of a 57 degree inclination, highly elliptical Molniya type orbit, then do not hesitate to write to me with your proposal which I will pass on to AMSAT-DL for consideration.

Jacky Radbone, in her presentation, covered the future UoSAT-C Spacecraft which, as already mentioned, has been divided into UoSAT D and E, which is scheduled for launch with the four Microsats in June 1989. The significance of these two UoSAT satellites is that for the first time they will carry a "general access" packet radio transponder, as well as the more familiar UoSAT scientific payloads which this time will include quite a few new and enhanced experiments utilising the relatively new *family* of "Transputers", ie: high speed parallel processing computer chips.

As I have already said, the AMSAT-UK Colloquium in 1987 and 1988 were extremely worthwhile, so if you have the opportunity to attend - do not miss it. Finally, if you would like to hear the audio from any of the presentations at the 1988 Colloquium, send me a blank audio tape, plus a donation of $5 to AMSAT-Australia for each 90 minute tape. Please include a list of the presentations you would like on your tape(s). I also have copies of the AMSAT-UK 1988 Colloquium Papers which are available from AMSAT-Australia for a donation of $15.

AMSAT OSCAR-13 Command Station Seminar - 2-4 August 1988

Marburg, West Germany

The only reason that I had the opportunity of attending the AMSAT-UK Colloquium and associated activities in 1988 was due to the successful launch of AMSAT-OSCAR-13 on 15 June 1988 from Kourou, French Guiana, which meant I had to attend a post-launch Command Station Seminar which was organised to coincide with the AMSAT-UK Colloquium.

The Seminar was convened by AMSAT-DL in Marburg, West Germany and was chaired by Karl Meinzer DJ4ZC. Those attending the Seminar were Peter Guezlow DB2OS (Senior AO-13 Command Station), Stefan Eckart DL2MDL (RUDAK Team), Gerhart Metz DG2CO (RUDAK Team), Ian Ashley ZL1AOX, Phil Karn KA9Q, James Miller G3RUH and myself.

The agenda covered the following topics :-

1 The AO-13 Spacecraft
   a) Hardware
   b) Software
   c) Future Software Developments
2 Command Station Software
   a) Operations
   b) Weaknesses
   c) Revisions
   d) Attitude Determination by G3RUH
3 Spacecraft Operations for the Next Two Years
   a) Spacecraft Constraints
   b) Transponder Operations
   c) Beacon Operations
   d) Other Experiments - SERI Solar Cells
   e) Further Operational Automation
4 RUDAK & Mode S Operations
5 Open Discussions

As you can see from the above agenda, the three days were very intensive, to say the least. No decisions were taken lightly. Karl outlined in very concise terms what the constraints of the satellite hardware and software meant in terms of possible satellite orientations and subsequent operating schedules. Then, with the help of solar illumination charts prepared by James Miller G3RUH, the Command Stations collectively assessed the best compromise between satellite attitude and operating conditions for the next two years (subject to change as required).

Having decided the satellite transponder operating schedules, some time was then devoted to deciding what duties each Command Station would perform over the next two years. Peter was designated as the "Senior" Command Station and would be responsible for changing the attitude of the spacecraft when required to maintain sufficient solar illumination and altering the transponder operating schedules to suit. I was allocated the task of updating the RTTY messages transmitted on the beacon telemetry plus collecting the data from the experimental SERI solar cells. James was given the task of calibrating the Sun and Earth Sensors and developing software to automate the spacecraft attitude determination and I was

subsequently coopted by James to help in the data collection for this process.

Each Command Station who attended the Seminar was presented with a certificate with an endorsement which read "He is thus certified by AMSAT to be qualified as responsible AMSAT-OSCAR-13 controller, an operator without restriction". On the lighter side, each Command Station was presented with an AMSAT-DL umbrella to protect us from the inevitable "showers of criticisms" for making the wrong decisions as to satellite attitude and operating schedules.

The collection of telemetry data from OSCAR-13's PSK beacon telemetry and the preparation of RTTY and PSK messages for OSCAR-13's beacon has been the main reason for the delay in submitting this report to the Federal Office of the WIA for inclusion in "Amateur Radio". Ever since my return from Germany, I have been taking my lunch hour from work any time between 10 am and 3pm to come home and collect Sun and Earth Sensor data and upload new RTTY and PSK message blocks. As a result of my RTTY messages on OSCAR-13, I have received over 100 letters from Amateurs around the world who would like to learn more about what makes a satellite like OSCAR-13 work. Add to this another 550 letters that I have answered as the National Co-ordinator for AMSAT-Australia between 1 January and 31 December 1988, plus producing a monthly AMSAT-Australia Newsletter for almost 300 subscribers here in Australia and overseas, may help explain the delay in producing this report. (And then we couldn't find space to publish it until now! Sorry, Graham! Ed.)

However, I must say that I have never enjoyed my hobby as much as I have in 1988. Therefore, if I can ever be of any help to anyone interested in the Amateur Satellite Service then do not hesitate to write to me, c/- AMSAT-Australia, GPO Box 2141, Adelaide 5001. (Please include an SASE) or you can phone me between 6pm and 8pm any evening on (08) 297 5104 or contact me on the AMSAT-Australia Net every Sunday night at 1000 UTC on 7.064 MHz during the summer, or 3.685 MHz during the winter.

ar

VK0E : Pirate Operator

Have you worked this station? Many overseas operators have, (W's, JA's and Europeans) with QSL's arriving monthly. Operating on 14MHz, 0600-0800 UTC, CW exclusively. He has been heard occasionally 1200-1400 UTC by SWL's. Your help in tracing this operator would be appreciated. Any information to Federal QSL Manager, 2 Moss Court, Kingsley, WA, 6026. ar

ALARA

YLRL 50th Anniversary Convention

Joy Collis VK2EBX
PO Box 22
Yeoval NSW 2868

The YLRL 50th Anniversary Convention was held in Hawaii from 27-30 June. YL's from many countries attended, including New Zealand, Japan, Sweden, Germany, Italy, England, Mexico, Poland and the Netherlands. (I am currently unaware of any VK YLRL members attending.)

Besides the actual business of the Convention, tours were conducted of Fern Grotto, and Waimea Canyon WWVH-Missile Tracking Station. A YL-OM luncheon and various other functions and activities, including a luau, were held.

Each YL was presented with a 50th Anniversary souvenir pendant as a memento of the occasion.

The ladies got on-air, when time permitted, from the Kauai Amateur Radio Club shack, giving many people a chance to work them for the YLRL 50th Anniversary Award.

A great time was had by all.

ALARA's Anniversary gift to YLRL was a selection of gift spoons from each State of Australia, plus two key rings, a brooch and a scarf. A congratulatory certificate, with caligraphy done by Ann VK4ANN was included. Paper with an Aboriginal motif was used to wrap the parcel.

General Meetings

ALARA General Meetings are held on air on the fourth Monday of each month, except December. Time: 1030 UTC (1000 UTC during daylight saving time.) Frequency: 3,580 ± QRM.

This is the opportunity for members to have their say in the running of ALARA, and bring forward any matters they would like discussed.

Bits and Pieces

Fourteenth birthday luncheons were held by VK3 and VK5 ALARA members on 30 and 23 July respectively.

Kirsti operated from Svalbard in early June with the callsign VK9NL/JW, making many people happy with a first YL contact into that country. Hope the climate did not prove to forbidding, Kirsti.

Ivor Stafford VK3XB received an Award of Honour Certificate in recognition of his assistance to, and support of, ALARA over the past 14 years.

This year marked the tenth Anniversary of BYLARA (British Young Ladies Amateur Radio Association). Many activities were planned, including rallies at various locations around the country. Pink and grey souvenir scarves are available to mark the occasion. Cost: £3, plus 30 pence postage, or equivalent to: Iris Osborne G0FIW, "Alacoo" Tan Lake, Little Clacton, Clacton-on-Sea, Essex, CO16 9PS England.

Belated congratulations to Val VK4VR for gaining First VK-YL in the WARO Contest in April.

The ZM prefix is being used by New Zealanders for the remainder of the year to mark the Commonwealth Games.

Doreen EL2DK and OM Bill EL2WK have been frequent visitors on the YL Net on Mondays at 0600 UTC, 14.222 MHz. Another rare YL country. They operated with the 6Z prefix during July.

Melva ZL4IO talking to OM Ted ZL4AOI from the shack of Maria VK5BMT.

Maria VK5BMT was pleased to have a visit from Melva ZL4IO. Melva was able to call home to her OM Ted ZL4AOI while with Maria.

New Members

Welcome to DX member Audrey G0CTQ. Audrey is often on the "222" YL net on Mondays.

Change of callsign: Hallie, formerly VE6AUP is now VE6YW.

That's it for this month, 73/33,

Joy.

INTRUDER WATCH

Report for May 1989

Bill Horner VK4MWZ
26 Iron Street
Gympie 4570

UTC Freq (kHz)	Mode	Date	Time	Id	Comments
3645	p	26	0930-0932	.	"Put-put" pulse
3590-3620		27, 28, 29, 30	0850-1200+	.	OHR. Bureau of Mineral Resources Seismic Ship ????
7000-7002	mni	dly	1140-1205	.	T/C f1b. 2x LSB etc.
7002.5	a1a	dly	1200-1225	.	barely audible
7006.5	f1b	mni	0533-0840	.	
7008.5	f1b	24.04	0540	.	
7020	a3e	mni	1200 +	.	Asian BC stn.
7023.5	2x r7b	05	1010	.	
7041.5	?	22.04	2121-2134	.	3 kHz wide.
7047	?	28.04	2347	.	Teletype wheel
7068	f1b	03	1100	.	
7080	n0n	26.04	1206	.	foreign
7097	f1b	26.04	1215	.	fast dots
14002.5	f1b	01	0540	.	
14003.5	f1b	23.04	1140	.	
14006.5	f1b	07	0750	.	
14011.5	f1b	15	1115		
14023.5	f1b	dly	0358-1055	.	
14066-14069		dly	0439-1221	.	Teletype wheel.
14050	a1a	mni	1001-1008	PKJ	calling CPQ
14070	a1a	01	1030-1034	VBX	calling VPO
14070-14083		dly	0319-1222	.	Teletype wheel
14073 +-	a1a	dly	1355-1456	VRQ	calling CQ
14117-14124.6	f1b	dly	0306-1224	.	some FAX
14109	a1a	24	0935-0945	NZB	calling ZBK
14121-14123		mni	0530-1405	.	multi modes/channel
14125-14130	mni	mni	0220-1403	.	multi modes/channel
14140.5	a1a	25.04	1135	UMS	Moscow Naval Radio
14156	3xr7b	24.04	0837	.	
14180	a1a	23	0700-0710	RMIM & RMYL	Both called each other and made contact
14198.5	a1a	03	0858	VLQ	called VMO
14171	a1a	19	0645-0650	UMS	UUU UMS 24390 00508
14200	a1a	22	0900-0905	VMO	calling VLQ
14209.5-14218		mni	0820-1404	.	multi modes/channels
14215	a1a	mni	0958-1001	2TF	calling 4AL
14216	a1a	mni	0620-0635	M3S	calling XC4
			0635-0645	CR5	calling SW4
14231.5	mni	mni	0610-0900	.	T/C & Fax
14265	a1a	01	0700-0715	CZK	calling LDK
14266	a1a	mni	0545-0635	CZK	calling LDK
14274	a1a	mni	0955-0100	CQ5	calling CQ
14292	a1a	21	0340-0355	Y904	NJBI NJBI De Y904
14317	a1a	28.04	1015-1100	.	5 letter cyphers
Special Note					
14250	a3e	24.04	0040	VIT	Australian Radio
If we can't get rid of this intruder, what hope have we got to remove others from our bands. Are we just a dog chasing its tail?					
21000-21003	mni	23.04	0348	.	multi modes/channels
21007.5	f1b	24.04	0746	.	
21008.5	r7b	27.04	0900	.	
21011.5	r7b	28.04	0439	.	
21032	a1a/ f1b	mni	0200-0622	UMS	Moscow Naval Radio
21113	a1a	mni	0547-0611	CO5	calling CQ
21120	a1a	29.04	0325-0400	RMYL, RMIM, UAZK, RMWV	calling each other
21283.5	f1b	mni	0533-0838	.	
21283	a1a fsk	mni	0700-0710	XSC	XSC XSC XSC AR

21326	a1a	mni	0500-0510	WG6	calling PBU
21327	a1a	mni	0600-0615	5HL	calling CQ
21311	b9w	27.04	0010	.	
21325.5	a1a	06	0605	.	Asian v/poor CW
21355	f1b	mni	0732-1152	.	
21404	a3e	dly	0601-0617	.	music Russian
21450	a3e	dly	0600	.	music

Note. CQ5 is a Chinese Diplomatic Stn in Peking.
Comments. PON was heard on most bands on most days.
More than 4000 AM CB stations were logged for the month.
One CBer was:
GZ 09 FEK JL Waringin
IVN09
PO Box 13210
Jakarta Timor Sea
Indonesia
This is an address he gave when approached by an Australian amateur. He required a QSL card.
Reports were received from: VKs 2EYI, 3KKH, 3MBU, 3XB, 4BG, 4ADY, 4AKX, 4BHJ, 4BTW, 4BXC, 4VJT, 5GZ, 5TL, 6RO, 6XW, 6NHX, Tom Baines in VK7 and 8HA. Help was also received from VKs 6RO, 6NHX, Tom Baines in VK7, 6XW, 8HA, and from VK4KEL. Reports still need to be better quality and require more HARD CORE EVIDENCE.

HOW'S DX

Walvis Bay

by Patrick Kelly VK2RZ
PO Box 41
Ourimbah NSW 2258

This small outpost of the Republic of South Africa is located on the mid-North coast of Namibia and seems destined for DXCC status. Walvis Bay, with its population of 22,900 was isolated territorially from South Africa when Namibia was granted independence on 1 April this year. Elections are due to be held in Namibia in July, after which it will become self-governing.

Ian ZS1IS who lives in Walvis Bay told me that a lengthy joint submission to the ARRL by himself, KC1AG and F6HIZ is presently under consideration. This group have planned an operation from Ian's QTH, commencing on 27 or 28 August. By this time, it should be known whether Walvis Bay will count or not.

All this interest in Walvis Bay has turned Ian ZS1IS into a celebrity. He doesn't mind being wooed by all and sundry, but does admit to finding the Europeans a bit hard to take. I was lucky enough to bring Ian up on the ANZA net with help from ZS operators. He has continued to show up to give many DX'ers an early chance for a brand new country. QSL to Ian Sutherland, PO Box 2327, Walvis Bay, 9190, Republic of South Africa.

Cameroon

There was unexpected activity from TJ1MW and TJ1BW at the start of July. I know that the QSL route for TJ1BW is N4MUJ, but I'm not sure if it is good for both.

Look for IK1JLL as TJ1LL from 10-30 August. Some frequencies are 14.305, 21.305, 28.305 and 28.550 MHz.

South Yemen

On the most wanted DXCC countries list, this one is in the top five. An operation here by I1RBJ was scheduled to start on 18 or 19 July. The bands to be used were 10, 15 and 20 metres, using a vertical antenna. The callsign was to be 7O0A and the QSL to I1RB.

Angola D2

An operation planned for here later this year by co-operators is now off. Apparently there is concern for their safety, despite the 30,000 Cuban troops who have been in the country for several years supporting the Marxist regime.

Namibia

Three operators are making it very easy to work this one.

ZS3BI, Arnold, PO Box 1533, Swakopmund, Namibia, South West Africa and ZS3GB, Gerd Bruns, PO Box 1165, Tsumeb, 9000, Namibia. (Note, that he no longer has a manager.)

ZS3HL - Horst, via W3HNK.

Tuvalu

Peter T26LP and Ron T28RW (alias ZL1AMO) operated from here in mid-June. Ron was last heard as 3D2RW. All QSL's to ZL1AMO.

Lord Howe Island

Long time resident, Dick VK9LH is back on air and should have all his antennas up by now. QSL via callbook address.

South Sudan

John PA3CXC was active as PA3CXC/ST0 and has advised that he did not have a licence, so this did not count for DXCC. A later operation was planned for early July, but John cancelled this in light of political unrest there. There's been a coup.

A better prospect may be Marinus TZ6MG, who will be working near Juba and expects to be there for twelve months. He does not have a licence at this stage, but hopes to sort this out when he has settled in.

Syria

Manfred OE5GML/YK is still active, and has been on 15 metres around 0200Z. QSL to Manfred Gruberbaur, c/- Austrian UN Battalion, PO Box 5734, Damascus, Syria. YK1AO is usually on 14.250 at 0300Z with JY3ZH. QSL to Omar Shabsigh, Box 245, Damascus, Syria.

United Arab Emirates

Hamdan A61AC is a new operator, and is also with JY3ZH most days. QSL to PO Box 4221, Dubai, United Arab Emirates.

A61AB is also about. QSL via OE6EEG. Contacts for February/March 1988 go to F2CW.

Nepal

It appears that a lot of DX'ers need this one. Krishna 9N1MC has been helping out. Father Moran 9N1MM has been around for many years and Prabin 9N1RN, when active, can be found near 21.200 MHz around 0900Z. There are

Don't miss a single issue

IF YOU'RE THE KIND OF READER that can't wait to get the next copy of SILICON CHIP, then why not have the magazine delivered direct to your door? Each month, we'll bring you the best and brightest electronics magazine in the business, put together by Australia's most experienced team.

- ★ **Constructional Projects for the Enthusiast**
- ★ **Amateur Radio by Garry Cratt**
- ★ **The Serviceman's Log**
- ★ **The Way I See It**
- ★ **Hifi Features & Reviews**

Subscribe Today
by filling out and mailing this subscription coupon

FREEPOST* SUBSCRIPTION COUPON

☐ New subscription ☐ Renewal Start in_____

Name_____
(PLEASE PRINT)

Street_____

Suburb/town_____ Postcode_____

	1 year (12 issues)	2 years (24 issues)
Australia	☐ $A42	☐ $A84
NZ & PNG (airmail)	☐ $A65	☐ $A130
Overseas surface mail	☐ $A62	☐ $A130
Overseas airmail	☐ $A120	☐ $A240

Enclosed is my cheque/money order for $_____ or please debit my
☐ Bankcard ☐ Visa Card

Card No. | | | | | | | | | | | | | | | | |

Signature _____ Card expiry date____/____/____

Subscription Hotline
We can accept your subscription order by telephone. Just ring us on (02) 982 3935 and quote your Bankcard or Visa Card number and the expiry date.

Detach and mail to:
FREEPOST 25
SILICON CHIP PUBLICATIONS
PO BOX 139
COLLAROY BEACH
NSW 2097

***No postage stamp required in Australia.**

many reports of problems in getting cards directly from Nepal. This is very disconcerting, so maybe SASE via registered mail might help.

QSL Routes for Above

* 9N1MC - Krishna B Khatry, Chief Engineer, Ministry of Communication, Panchayat Plaza, Kathmandu, Nepal
* 9N1MM - N7EB (9N1MM/2 to OE2VLN).
* 9N1RN - Prabin, PO Box 634, Kathmandu, Nepal.

Bahamas

I worked Mike C6ANX, at 0622Z on 21.205 MHz. He does not usually operate as late as this unless he does not have to work the next day. QSL is OK via the bureau or to his callbook address. For C6ADC and C6ANI QSL via callbook.

Comoros

Tom 5H3TW has been operating as D68TW, QSL for both calls to K3ZO. Jean-Louis D68JL has been on most bands. Signals on the short path from Africa and the Indian Ocean on 10 metres continue to be good around 0600Z, even in mid-winter. QSL for D68JL to AK1E.

Macquarie Island

Graeme VK0GC is now half way through his fourth stay and enjoying every minute. He has been very active on all bands usually with good signals. QSL to VK9NS.

For those needing a CW contact, look for Robyn VK0DM. She has not been very easy to find, but you might try listening on 20 metres on Tuesdays around 0900Z when she has a sked with her manager VK2DEJ.

Egypt

Sig SU1EE was on 15 metres almost daily, before he left for Zaire, where he will be signing 9Q5EE. QSL to WA9INK.

Revilla Gigedo Island

As I reported some issues back, there is now an operator here. He is XF4F and is the commander of the Mexican garrison on the island. There is no QSL information at present.

Cocos Island

TI9TEB was active during June. QSL to Ted Evans, PO Box 2612, 1000 San Jose, Costa Rica. The same route is also good for TI1D, TI2D and TI2TEB.

Cano Island (Costa Rica)

I was attracted to this operation by the unusual callsign ØT8C. Contacts are also good for the IOTA Award. QSL is to TIØRC, the Costa Rican radio club.

Mongolia

Most activity in zone 23 comes from the Mongolian capital - Ulan Bator. JT1T is regularly about and is quite easily worked on most bands. Getting confirmation is the main problem with JT contacts. Anyone having difficulty should try sending to JT1KAA who has agreed to help. An SAE and greenstamp is required.

QSL for JT1T is to JT1KAA via the Central Radio Club Station, Box 639, Ulan Bator 13, Mongolia.

UA3PAM should be in Mongolia by now. RAØAD/JT is active now and you can QSL to RA9YD, Box 1, Barnaul, 656057, USSR.

San Marino

There has been a lot of activity from Paul T7T and Tony T77C. Signals on 15 and 20 metres have been very good here on the East coast from 0300Z on. QSLs for T77T are OK direct to his callbook address or via the bureau. T77C QSL to Tony Ceccoli, Via Delle Carrare 67, 47031, Murata, Republic of San Marino (via Italy).

Market Reef

Located off the south coast of Finland in the Baltic Sea, this was a new country for me. OH2AP/OHØM wasn't too hard to work on 15 and 20 metres, even though signals were down. QSL to Jarvenpaan Radioamatoorit, Box 90, SF-04401, Jarvenpaa, Finland.

Rare USSR Oblast

Several members of the Tajik DX Club operated from Oblast 042, high in the Pamir Mountains. They were there from 20-30 June and worked 80-10 metres SSB and CW. Callsigns were RJ7R/UJ8JCQ, RJ4R/UJ8JV and QSL to Alex UJ8JCQ, PO Box 1102, Dushanbe, 734032, Tajik, SSR, USSR.

Ceuta and Melilla

Spanish North Africa is fairly common, but if you are not around at the right time and place, as with all DX, you can miss out. Peter EA9IB, has been on 10 metres around 0200Z, and Charlie EC9JB was easily worked on 21.195 MHz at 0014Z. QSL for both to EA9IB via callbook.

QSL Information

ATØT:	W8XM
GM4WAB/P: (Shetland Islands)	G1SGB
GB4RIE:	Bureau
J88AQ:	W2MIG
JG2MWA/JD1: (Minami Torishima)	Bureau
PJ4CR:	Callbook
T5CT:	N4CT
T3ØAC:	AA6BB
TA3F:	1989 Callbook
TI9FAG:	Callbook
TK5EP:	F6ESH
TR8RLA:	NV7J
TV6ACO:	FF6KFI
TZ6BKY:	EA5CTP
VP2MC:	Callbook
VP2MHD:	Callbook
VP5S:	K1GAO
YS1MAE:	WN5K

A22AP: PO Box 250, Gabarone, Botswana

D44BS: Angelo Mendes, PO Box 101, Praia, Cape Verde Island.

FY4FM: Michel Kherzi, PO Box 6005, Cayenne, 97306, French Guiana.

SV1AHZ/9: PO Box 14245, Athens, 11510, Greece.

VP8BUY: K Morrison, 20 Silverdale Avenue, Coton, Cambridge, CB3 7PP, England.

ZD8MAC: Box 2, Georgetown, Ascencion Island.

ZB2CF: C McEwen, 12 Kings Bastion, Gibral-

tar.

7X2DS: Box 105, Rouiba City, 35300, Algeria.

8R1AH: A H Van Der Kooi, APT 203, 1020 Parker Street, White Rock, BC Canada, V4B 4R7 (note: Change of Info.)

8P6CC: PO Box W5, Christchurch, Barbados, West Indies.

9V1XI: PO Box 1151, Robinson, Singapore. 5B4WW: 5B4TI, 5N3BHF: OE6LA, 8SØITU: SKØCC, 9M2DW: Callbook.

Other News

OSL's for UJ/RJ can now be sent to the UJ/RJ QSL Service, PO Box 1102, Dushanbe, 734032, Tajik, SSR, USSR. If you would like any information on the Tajik DX Club, you can send SASE to the same address.

The many excellent DX Awards offered by CQ Magazine in the US are much sought after by DX'ers worldwide. VK5NVW is now authorised to scrutinize QSL's for these awards submitted by VK's. For further details about these awards send SASE to Bill Vogel, 16 Wandilla Street, Largs North, SA 5016.

If you worked ZA1AA (not very imaginative!) recently, hang on to your greenstamps. SM7DMN reckons he made 700 contacts from Albania on 5 June according to an unconfirmed report.

Bing VK2BCH appears to have recovered from the illness that laid him low in the South Cook's. At this time he is happily operating from Rotuma as 3D2XV, and is very active between meals.

There is some possibility of an expedition to Malpelo Island HKØ next year. Some Colombian amateurs are giving this idea a lot of thought. It used to be very difficult getting all the gear needed ashore and up to a safe spot to operate, which was the main reason for not going there on a regular basis. Now the Colombian Navy has a floating dock, and the army has a base there. HKØHEU Nel, hopes to be there with a group in November 1990.

Some good information has come to me directly from the USSR. It is from the Prometheus Amateur Association Inc (PAA) and was in hand written form so I will hold the very detailed QSL information over till next month. Though well written, it does need some decyphering.

The PAA was formed by the amalgamation of five clubs, as a result of lessons learned after the Armenian earthquake in December 1988. This broad base of amateur resources has been utilised in forming emergency networks that can be activated in times of future need.

Many awards and services are offered by the PAA. Anyone interested in further information on these, or who would like to apply for membership, can send a SASE (IRCs or greenstamp) to be Prometheus Amateur Association Inc, PO Box I, Enakiewo 29, 543820, USSR. Membership is by donation, they need IRCs and greenstamps, but anything is OK including equipment. A lot of USSR operators are using foreign made gear TS830S', TS940's and an FT707 are some I've come across.

Well that's it, I must go - many stations calling. Thanks to VK2HD, VK2PS, VK4NNX, VK5NVW, QRZ DX and W6GO/K6HHD List. Good DX! ar

CLUB CORNER

Report From VK3BML - Ballarat

Clarry Kitzelmann
VK3DMK
Publicity Officer
BARG

Ballarat Amateur Radio Group held their annual meeting on 30 June 1989. Along with a good attendance of members, there were five visitors - some from many K's away.

Gordon Cornell (VK3PUW) was elected President, Ian McDonald (VK3AXH) was elected Vice-President, and Jim Wright (VK3CFB) was once again elected Secretary. Finances remain in the custody of Harry Hekkema (VK3KGL).

The next Hamvention date was set at 29 October 1989, and precise details will be advised later.

Packet radio is having a strong resurgence, in addition to numerous new chums, in the area. The Club was fortunate having a TNC being provided by the AAPRA organisation. This TNC is currently in a test situation at the OTH of Murray Felstead (VK3AAI), who has the enviable location of just 70 metres below the peak of Mt Buninyong.

This link now serves packeteers from the Mount Gambier region, via Mt William digipeater (VK3RPG), through Ballarat (VK3RPC) to Melbourne. ar

VK3CRC - Colac Amateur Radio Club

D C Stalker
Secretary
PO Box 92 Colac 3250

Herewith names and addresses of Office Bearers and Committee of the above Club elected at their Annual Meeting held on June 7 last.

President: Mr T Evans, RSD Harris Road, Elliminyt 3249. Vice President: Mr G Alsop, 8 Douglas Street, Colac 3250. Secretary/Treasurer: Mr D C Stalker, PO Box 92, Colac 3250. Committee: Mr R Cooper, PO Box 231, Colac 3250. Mr C Maxwell, RMB 5070, Colac 3250. Mr D Paton, RMB 5044, Colac 3250. Mrs M Laquinto, Colanda PO Box 285, Colac 3250. Mr G Runciman, PO Box 76, Colac 3250. Mr B Cutler, RMB 8160, Colac 3250. Mr R Spalding, RMB 8575, Colac 3250. Mr K Reid, RMB 5855, Timboon 3268. ar

Australian Amateur Packet Radio Association

John Jeffreys VK2CPJ
Hon. Sec. AAPRA
59 Westbrook Avenue
Wahroonga 2076

AAPRA was formed in April 1985 with the object of promoting the use of Packet in Australia using the AX25 protocol. To this end it has supplied appropriate equipment and information.

The surplus from sales and subscriptions has been ploughed back into developing a Packet network, by assisting Radio Clubs establish Packet facilities for a token cost. The Association publishes a quarterly newsletter "Digipeat" which is circulated to members, and can supply an informative booklet, "Introduction to Packet Radio". AAPRA is an entirely voluntary, non-profit group and its operation depends on the hard work of relatively few enthusiasts, though they are supported by over 400 members from various parts of the globe, not just Australia.

The equipment currently available from AAPRA is described briefly below. A Price List appears separately in an Association advertisement on page 60.

Commercial TNCs

(Terminal Node Controllers)

These are manufactured by PAC-COMM in the USA, and are of two types - the TINY-2 TNC which operates on VHF only, and the TNC 220 which has dual port modem operating on VHF and HF. The TNC 220 has a tuning indicator for HF use. Both these TNCs (Release 1.1.6) now contain PMS (Personal Message Service), and will interface between any radio and a computer that has a terminal program, using either TTL or RS232. When used with IBM or compatibles, bionary files can be transferred using the YAPP software available in the public domain. The TINY-2 may incorporate the KISS system.

C=PAK

This package which includes hardware and software, was developed by AAPRA to provide a low cost method of operating Packet with the Commodore family of computers. No RS232 port is required.

The software (available on disc or EPROM) causes the Commodore to emulate a TNC in conjunction with a modem. The new modem has dual ports and crystal control, with a 7910 chip. There is no longer need to tune the tones, and stability is improved. It is powered by the computer.

BEEPAK

A recent development has enabled AAPRA to supply hardware and software for disc-based Microbee computers, including the CIAB. The external modem itself is similar to the C=PAK modem, but may require additional components to be added to the Microbee coreboard (SCC Serial Chip and Line Driver and Receiver) to interface with the BEEPAK modem. Provision has been made in disc-based Microbees for mounting these components, which are available from AAPRA, and the modification is comparatively simple.

It is also possible to use Packet with older ROM-based Microbees. However, in this case, the serial interface must be provided externally, and the software contained in an EPROM instead of on a disc. AAPRA considered the supply of a complete kit for these computers, but because of the extra cost of the PCB, EPROM, etc there is insufficient cost advantage as against the current price of a TINY-2 TNC.

For dedicated home-brewers, AAPRA can supply the circuit diagrams, the software EPROM and the IC's to permit construction of a suitable Packet modem for ROM-based Microbees.

Both the AAPRA modems have dual port facilities and some features not available in the TINY- 2 TNC, but lack PMS and KISS.

EPROM Updates

Packet operators who currently own a PACCOMM TINY-2, or TNC 2209 with 32K RAM, can either obtain a new EPROM which will contain the latest (1.1.6) version of the software including PMS, or have their old EPROM reprogrammed. AAPRA also has available suitable RAM chips to upgrade TNCs to 32K.

It is gratifying to see how rapidly the Packet network has developed in the short time since the mode took on. Without the assistance of AAPRA, this would have been haphazard and many country areas would have been neglected. The plans for relieving the strain on existing channels by running UHF and HF backbones have been frustrated by problems regarding DOTC's interpretations of regulations respecting Packet, and the consequent need to develop the ROSE networking software. There has been substantial work done by various country centres, and a complete and efficient Packet network all along the East Coast is not far off. The problems of heavy traffic on some channels, due to the need for Packet BBSs to forward data, will be eliminated when the system envisaged is put into place. The use of six metres and UHF are very appropriate directions in which to go. APLINK, the linking of Packet and AMTOR for better HF traffic, has already improved things in that area.

Packet is a mode with a great future, and AAPRA gets a lot of pleasure out of seeing it grow up without too many puberty blues.

CONTESTS

All Asian and HF Contest Results Rules for LZ DX, Scandinavian, 30th All Asian and SEANET Contests

Frank Beech VK7BC
Federal Contests Manager
37 Nobelius Drive
Legana 7277

Contests Calendar

August:
12-13 WIA Remembrance Day Contest (Rules July AR)
12-13 European DX contest CW section (Rules July AR)
19-20 SEANET World wide DX Contest, SSB section (Rules this issue)
26-27 30th All Asian DX Contest 1989 CW (Rules this issue)

September:
3 LZ Bulgarian DX Contest CW only (Rules this issue)
16-17 Scandinavian Activity Contest CW section (Rules this issue)
23-24 Scandinavian Activity Contest SSB section (Rules this issue)

October:
8 RSGB 21/28 MHz SSB Contest
7-8 VK/ZL Oceania DX Contest SSB section (Rules September AR)
9 RSGB 28 MHz Cumulative Contest
14-15 VK/ZL Oceania DX Contest CW section (Rules September AR)
15 RSGB 21MHz CW Contest

Results of the 29th (1988) All Asian DX Contest CW section - VK's :

VK4TT: 11194 points - certificate winner
VK4SF: 11180 points
VK2AYK: 7080 points - certificate winner
AX4XA: 29704 points - certificate winner
VK2CWS: 2414 points
AX8XX: 237360 points - certificate winner
VK2APK: 228284 multi op.
VK5AGXL: 78456
VK3DNC: 11520
VK2DID: 2576
VK9L: 1496 - certificate winner

Results of the Phone section - VK's :
VK2XT: 113102 points - certificate winner
VK2AYK: 40158 points
VK6NGG: 30510 points
VK2APK:45090 points - certificate winner - multi op.

Number of logs worldwide in the CW Section :

Africa:	9
Europe:	550
Oceania:	27
Nth America:	96
Sth America:	15
Asia:	441
Total:	1138

Number of logs in SSB Section :

Africa:	9
Europe:	278
Oceania:	30
Nth America:	49
Sth America:	16
Asia:	340
Total:	722

In the CW Section: 439 operated multi band, and 83 were multi operator stations.
In the SSB Section: 217 operated multi band, and 78 were multi operator stations.

HF Contest Championship - 1988

1988 HF Contest Championship

I am pleased to announce the contest championship ladder, and with a score of 30 from a possible 40, VK3AJU will receive a replica trophy duly inscribed.

Ian, VK5QX was runner up, with 29 points.

VK4NEF received 19 points.

VK3YH followed with 18, and was the last station to qualify for the Phone list.

In the CW Section, only VK3CQ, with wins in the John Moyle and Remembrance Day Contests, was eligible and gained 20 points.

I think that more publicity for this championship is called for, and to keep the requirements before you, I will print the rules for this championship at least twice a year in future.

Callsign	JMFD	RD	NOV	VK/ZL	Total
VK3AJU	10	10	10	0	30
VK5QX	10	10	9	0	29
VK4NEF	0	0	10	9	19
VK3YH	0	0	9	9	18
CW Section					
VK3CQ	10	10	0	0	20

Rules for the LZ DX Contest 1989

The Bulgarian Federation of Radio Amateurs has the honour to invite amateurs all over the world to participate in the "LZ DX Context".

1 Date & Period:
3rd September 1989, From: 0000 until 2400 UTC.

2 Bands & Mode:
80 40 20 15 10m according to region 1 band plan. CW only.

3 Categories:
(a) "A": Single op, multi band (SOMB)
(b) "B": Single op, single band (SOSB)
(c) "C": Multi op, multi band, single TX
(d) "D": SWL

4 Exchange:
RST plus ITU zone for transmitting station.
5 Points:
(a) 6 points - each confirmed QSO with LZ station
(b) 1 point - QSO with station on same continent
(c) 3 points - QSO with all other stations
6 SWL Points:
(a) 3 points - for two callsigns and two numbers
(b) 1 point - for two callsigns and one number
7 Multiplier:
The sum of number of ITU zones on each band.
8 Final Score:
The sum of QSO points multiplied by the final multiplier.
9 Logs:
In standard form. Separate log for each band is required. Summary sheet showing zones worked on each band and declaration are required.
10 Deadline:
30 Days after contest. Postal seal being decisive.
11 Awards:
(a) Category "B": First three scorers in the world on each band -Medals
(b) Category "A" & C": First three in the top - Cups and Medals. First three in the continent - Medals
(c) Category "D": First three in the world - Medals
(d) Logs may be accompanied by applications for the BFRA awards. "NRB", "W-100 LZ", "5 Band LZ". "W-28 Z" ITU, Black Sea and Sofia Awards.
12 To:
Bulgarian Federation of Radio Amateurs, Box 830, Sofia, Bulgaria.

The 30th All Asian DX Contest - 1989

Supported by the Ministry of Posts and Telecommunications of Japan

The purpose of this contest is to enhance the activity of radio amateurs in Asia and to establish as many contacts as possible during the contest periods between Asian and non-Asian stations.

1 Contest Period:
(a) Phone: 48 hours from 0000 UTC, the third Saturday of June to 2400 UTC next day (1989 : June 17-18)
(b) CW: 48 hours from 0000 UTC, the fourth Saturday of August to 2400 UTC next day (1989 : August 26-27)
2 Bands:
Amateurs bands under 30 MHz.
3 Entry Classifications:
(a) Single operator, 1.9 MHz band (CW only)
(b) Single operator, 3.5 MHz band (including 3.8 MHz band and so forth)
(c) Single operator, 7 MHz band
(d) Single operator, 14 MHz band
(e) Single operator, 21 MHz band
(f) Single operator, 28 MHz band
(g) Single operator, Multi band
(h) Multi operator, Multi band
4 Power, Type of Emission and Frequencies:
With the limits of own station license.
5 Contest Call:
(a) For Asian stations:
(1) Phone: "CQ contest"
(2) CW: "CQ test"
(b) For non-Asian stations:
(1) Phone: "CQ Asia"
(2) CW" "CQ AA"
6 Exchange:
(a) For OM stations: RS(T) report, plus two figures denoting operator's age.
(b) For YL stations: RS(T) report, plus two figures "00 (zero zero)"
7 Restrictions on the Contest:
(a) No contact on cross band
(b) For participants of single operator's entry: Transmitting two signals or more at the same time, including cases of different bands, is not permitted.
(c) For participants of multi operator's entry: Transmitting two signals or more at the same time within the same band, except in case of different bands, is not permitted.
8 Point and Multiplier:
(a) Contacts among Asian stations and among non-Asian stations will neither count as a point, nor a multiplier
(b) For Asian stations:
(1) Point: Perfect contact with non-Asian stations will be scored as follows:-
1.9 MHz band: 3 points
3.5 MHz band: 2 points
Other bands: 1 point
(2) Multiplier: The number of different countries in the world worked on each band. According to the DXCC countries list.
(c) For non-Asian stations:
(1) Point: Perfect contact with Asian stations (excluding US auxiliary military radio stations in the Far East, Japan) will be counted as follows :-
1.9 MHz band: 3 points
3.5 MHz band: 2 points
Other bands: 1 point
(2) Multiplier: The number of different Asian Prefixes worked on each band. According to the WPX Contest rules. Example: JS1ABC/7 will count for prefix JS7.
(d) JD1 stations:
(1) JD1 stations on Ogasawara (Bonin and Volcano) Islands belong to Asia.
(2) JD1 stations on Minamitori Shima (Marcus) Island belong to Oceania.
9 Scoring:
(The sum of the contact points on each band) x (The sum of the multipliers on each band)
10 Instructions on the Summary and Log Sheet:
(a) Summary Sheet: Write in your declaration and signature to give evidence of following the rules of the contest, together with your DXCC country, callsign, entry class, multiplier by band, point by band, and total score.
(b) Log Sheet:
(1) Use a separate sheet for each band
(2) Keep all times in UTC
(3) Fill in the blanks of "multiplier" by countries or prefixes, only the first time on each band.
11 Awards:
(a) For both phone and CW, certificates will be awarded to those having the highest score in each entry in proportion to the number of participants from each country and also those from each call area in the United States.
(1) The number of participants under 10 :-
Award only to the highest scorer
(2) From 11 - 20 :-
Award up to the runner-up
(3) From 21 to 30 :-
Award up to the top third
(4) From 31 or more :-
Award up to the top fifth
(b) The highest scorer in each Continent of the single operator multi band entry will receive a medal from JARL and certificate from the Minister of Posts and Telecommunications of Japan.
(c) The highest scorer of the multi operator multi band entry in each Continent will receive a medal from JARL.
12 Reporting:
(a) Submit a summary sheet and logs of only one classification.
(b) The log and summary should be postmarked by the following dates addressed to JARL, All Asia DX Contest, PO Box 377, Tokyo Central, Japan. Indicate Phone or CW on the envelope.
(1) Phone: July 30, 1989
(2) CW: September 30, 1989
13 Disqualification:
(a) Violation of the contest rules.
(b) False statement in the report.
(c) Taking points from duplicate contact on the same band in excess of 2% by the total.
14 Announcement of the Result:
(a) Phone: About February 1990
(b) CW: About April 1990
15 Countries List of Asia:

A4	UJ
A5	UL
A6	UM
A7	VS6
A9	VU
AP	VU (Andaman &
BV	Nicobar Is.)
BY	VU (Laccadive Is.)
EP	XU
HL	XW
HS	XX9
HZ	XZ
JA	YA
JD1 (Ogasawara Is.)	YI
JT	YK
JY	ZC4
OD	IS (Spratly Is.)
S2	3W,XV
TA2-8	4S
UA9,0	4W
UD	4X, 4Z
UF	5B
UG	7O
UH	8Q
UI	9K

9M2	9V
9N	J2/A (Abu Ail, Jabal at Tair)

* You may have contest results by enclosing one IRC and SAE with your log. * Dateline for submitting logs has been changed. Take note that it is not the arrival date, but that of postmark.

Condensed Rules for the Scandinavian Activity Contest

Non-Scandinavian Stations
For Details see the Complete Rules

1 Time:
(a) CW: 3rd full weekend in September
(b) Phone: 4th full weekend in September
(c) Start: 1500 UTC, Saturday, End: 1800 UTC Sunday

2 Bands:
3.5 - 7 - 14 - 21 - 28 MHz
Band/frequency limits according to the IARU plans.

3 Classes:
(a) Single Operator, single Tx
(b) Single Operator, single Tx/QRP
(c) Multi Operator, single Tx
(d) SWL
(No single band classes - multi band classes only)

4 QSO's:
Only non-Scandinavian stations with Scandi navian stations are valid.

5 Message Exchange:
RS(T) + Serial Number (001. . .)
The same station may be worked once on each band.
Only CW/CW and Phone/Phone QSO's are valid.

6 QSO Points:
(a) European Stations:-
(1) A valid QSO counts one point
(b) Non-European Stations:-
(1) A valid QSO on 14-21-28 MHz counts one point
(2) A valid QSO on 7-3.5 MHz counts three points

7 Multipliers:
(a) Scandinavian DXCC countries are: Norway (LA/LB/LG/LJ); Svalbard & Bear Is (JW); Jan Mayen (JX); Finland (OF/OG/OH/OI); Aland Is (OH0); Market Reef (OH0/OJ); Greenland (OX); Faroe Is (OY); Denmark (OZ); Sweden (SJ/SK/SL/SM); Iceland (TF).
(b) Each "call-area number" in each Scandinavian DXCC country gives one multiplier on each band (example: OZ1, OZ4, SM3, OH0 etc.)
(c) Visitors: LA/G3xxx counts as zero area, i.e. LA0.

8 Logs:
(a) Use separate logs for CW and Phone. On the top of each page: Station Call, Name, CW or Phone, Class, Page no.
(b) Make columns for: Date+UTC, Station Worked, Messages Sent and Received, Band, Multiplier, QSO points.

9 Multiplier Sheet and Duplicate Sheet:
(a) Is required for each band with more than 200 QSOs.
(b) Duplicates must also be shown (with zero points) in the log.

10 The Summary Sheet:
(a) Must contain:-
(1) Call of station (and operators if multi), Name and Address of Operator (or club), CW or Phone, Class.
(2) For each band: Number of valid QSOs, Number of duplicates, Number of multipliers, Number of QSO points.
(3) Claimed total score: (= Total sum of QSO points x Total sum of multipliers)
(4) Declaration and signature.

11 Last Date for Mailing:
October 31st, Address: 1989 NRRL; 1990 EDR; 1991 SRAL; 1992 SSA, etc.

12 Logs To:
Trondheim DX Club, LA7Q
Box 5357
N-7002 Trondheim
Norway.

SEANET World Wide DX Contest - 1989

1 Contest Dates and Times:
(a) CW Contest: 0000 UTC Saturday 15 July 1989 to 2400 UTC Sunday 16 July 1989.
(b) Fone Contest: 0000 UTC Saturday 19 August 1989 to 2400 UTC Sunday 20 August 1989.

2 Bands:
(a) 160 thru 10 Metres

3 Entry Classification:
(a) Single band, single operator
(b) Multi band, single operator
(c) Multi band, multi operator

4 Power Input:
(a) As stipulated in the regulations governing the licence of the operator.

5 Contest Call:
(a) "CO SEA" - for CW contest
(b) "CQ SEATEST" - for Fone contest

6 Reporting:
(a) RS/RST report plus serial numbers starting with 001 and increase by one for each successive contact. See also Rule 3 (d)

7 Scoring Rules:
(a) For stations outside SEANET area:-
(1) Contact with stations within SE ANET area of the following prefixes :- DU, HS, YB, 9M2, 9M6, 9M8, 9V1, V85: 20 points on 160 metres
10 points on 80 and 40 metres
4 points on 20, 15 and 10 metres
(2) Contacts with other stations within SEANET area not listed above in 1(a):
10 points on 160 metres
5 points on 80 and 40 metres
2 points on 20, 15 and 10 metres
(3) Contacts between stations outside SEANET area will not be counted.
(4) Multipliers will be 3 points for each country worked, i.e. for countries between SEANET areas only.
(b) For stations in the SEANET areas:-
(1) Contacts with stations outside SEANET areas:
10 points on 160 metres
5 points on 80 and 40 metres
2 points on 20, 15 and 10 metres
(2) Contacts between stations within SEANET areas:
6 points on 160 metres
3 points on 60 and 40 metres
1 point on 20, 15 and 10 metres
(3) Contacts between stations in own country will not be counted.
(4) Multipliers:
Contacts with countries within SEANET area - count 2 points for each country worked.
Contacts with countries outside SE ANET area - count 3 points for each country worked.
(c) The final score will be the sum of the points multiplied by the sum of the country multipliers.

8 List of SEANET Area Prefixes;

A4	V85
A5	VS6
A6	VS9K
A9	VU2
AP	XU
BV	XV5
CR9	XW8
C21	YB
DU	YJ8
EP	ZK
HL	ZL
HS	3B6/7
H44	3B8
JA/JE/JF/JG/JH/JI/JR etc	3D2
JD1	4S7
JY	FX
KA	5W1
KC6	5Z4
KG6/KH2	8Q7
KH6	9K2
KX6	9M2
P29	9M6/8
S79	9N1
VK	9V1
VQ9	

9 Restrictions
(a) Contacts on cross-modes or cross-bands or mixed CW/Fone logs will be disqualified.
(b) Operators are not allowed to transmit two or more signals at the same time.
(c) Only one contact per band with the same station will be counted.
(d) Contest numbers should begin with 001 on each different band.
(e) All entries in violation of the contest rules, incorrect statements int he submitted reports, taking points from duplicate contact and practices against the brotherhood of amateur radio will be disqualified.
(f) The decision of the SEANET Contest Committee shall be final.

10 Entries, Logs and Summary Sheets:
(a) All entries must be in the form of logs and summary sheets.
(b) All Times must be in UTC.
(c) Entries must be received by The Contest Manager, Yathe - 9V1JY and addressed to SARTS, Robinson Road, PO Box 272B, Singapore 9047, not later than 31 October 1989.

11 Results:
(a) Results will be announced at the SEANET Convention.
(b) If you require the results to be sent to you, please enclose IRC's together with your entry. 73's. ar

DIVISIONAL NOTES

VK3 Notes

Council Elections

The 1989-90 Divisional Council met on 6 July 1989 to conduct the business and policy matters of the WIA Victorian Division. The first duty of any new Council is to elect office bearers for the coming year. It was decided that those in office in the outgoing Council would be re-elected to their positions.

Jim Linton VK3PC was elected President for his second successive year. He had also held that office for a previous three year term from 1983-86 before taking a two year break. Jim also retains the office of Council Chairman, and is Public Relations Officer. Barry Wilton VK3XV remains as Divisional Secretary. The office of Treasurer is subject to election each December, which marks the end of the financial year. Rob Hailey VK3XLZ is continuing to perform this increasingly demanding task. The other councillors for 1989-90 are Peter Mill VK3ZPP (Federal Councillor), Steve Harrington VK3BYI, Bill Trigg VK3PTW (Broadcast Officer), and John White VK3KJW, (VK3AOM Liaison Officer and Minute Secretary).

New Inwards QSL Bureau

By now the 900 people who were registered with the old bureau should have received letters inviting them to register with the new bureau. Anyone who had deposits with the old bureau in excess of $1.00 were sent refund cheques. To use the bureau and receive inwards QSL cards you must first individually register. Members of the WIA Victorian Division can register free of charge. Non-members will have to pay for the service. An information sheet explaining the new bureau is available free by writing to the VK3 QSL Manager, PO Box 88, Bentleigh East 3165.

Membership Subscription Update

The Victorian Division Council is *currently* examining the implications of the 1990 financial federal budget and the decision to increase the federal fee component to $47 per member. The WIA Federal Executive had reviewed its 1990 financial budget and decided it needed $47 per head for every member of the Divisions.

The Victorian Division representatives at the con-jointly held Federal Executive and Federal Council meeting, voted against the increased Federal funding. The Victorian Division considered that justification for this rise has not been adequately supported to this date. Added to this $47 Federal component of subscriptions will be a $2 levy for international representation - this is a $16 total increase on the Federal component. Whilst the Division agrees that the rising costs are inevitable, an overall fee of $66 would meet the Federal requirement, but would allow for no increase in the Division component. Does the Federal Council feel that the Victorian Division should absorb rising costs as it did last year when the Federal component rose by $3 and the Division absorbed $2, by depleting our reserve obtained from the sale of the 412 Brunswick Street, Fitzroy property? The Federal Council at an extraordinary special Federal Convention, voted to accept the Federal Executive recommendations.

Before any fee rise is implemented for members of the WIA Victorian Division, a special general meeting will be held and members will be required to register their vote. In the meantime, your elected Divisional Council is considering all the implications of the fee rise, and will make an appropriate recommendation.

Jim Linton VK3PC

VK4 Notes

The North Queensland 1989 Convention will be held at Townsville on 22, 23 and 24 September. For further information, please contact Rob VK4RB on (079) 752118.

The Dalby and District Club hope to have their new 146.675 repeater working from the Bunya Mountains within the next month or so. This repeater will be utilised by many, as it will cover a huge area in South Queensland. Don't forget to let the Federal Office know if there are any changes (QTHR) for the 1990 callbook.

Bill Horner
VK4MWZ

"5/8 Wave"

Update on the Deceased Estates Committee

I am pleased to be able to announce some more volunteers for the Deceased Estates Committee. George Burgess VK5CGB has offered to help Steve VK5AIM and Ron VK5AAC in the Northern suburbs, and Peter Maddern VK5PRM and John McKellar VK5BJM have offered to help Don VK5KXX in the central area. We have also contacted the South Coast ARC asking if anyone would be willing to take on the Southern suburbs.

Clubs Confer Honorary Life Memberships

Adelaide Hills AR Society has bestowed its first Honorary Life Membership on Gordon Welsh VK5KGS, who is retiring to Yorke Peninsula to live. Gordon has been the Club Secretary since its inception up until this year, and I'm sure it is not exaggerating too much to say that he has been the "backbone" of the club. Also honored by his club is Trevor Niven VK5NC, who has been made the second Honorary Life Member of the South East Radio Group. The first was Eric Jamieson VK5LP, last year. I believe that SERG is still recovering from its recent, very successful 25th Convention. Also, we hope recovering by now, are Bevin and Barbara Boden (VK5TV and his XYL) who were foxhunting when their car got "entangled" with another car. You'd think after 25 years, the Mt Gambier natives would know how to stay off the roads at "foxhunting time"!

New Clubs

We are pleased to welcome into the VK5 Division, the Riverland ARC which centres around Renmark and the surrounding towns. Also, I believe the Moomba ARC VK5GAS is about to become affiliated.

Diary Dates

Tuesday 22 August: General Meeting (speaker not known), 7.45 pm

Tuesday 29 August: Buy and Sell Night, 7.30 pm (no ESC, QSL, etc.)

(Peter Maddern VK5PRM would like suggestions for speakers - Please.)

Jennifer Warrington
VK5ANW

AWARDS

CARIE and FAMPARC Awards

Ken Gott VK3AJU
Federal Awards Manager
38a Lansdown Road
St Kilda 3183

VK Awards Survey

In April I wrote to more than 70 managers of awards issued by VK divisions, zones, clubs and other groups seeking up-to-date information on their awards. The last listing of VK awards was in the 1985-86 Call Book and I'm hoping that a new listing can be included either in the 1990 edition or in the information supplement to AR next January.

The cut-off date for my survey was June 30 by which time I had received more than 40 responses. Most were from managers who reported that their awards were still being issued. A few wrote to say that the award in question was no longer operative for one reason or another. A handful of my questionnaires came back, "Not Known at this Address".

That still leaves a few of the questionnaires unaccounted for. I can only assume that in these cases my query was properly addressed, but never answered.

Next month I'll report further on what the survey revealed and name the awards I propose to include in the next WIA listing.

CARIE Award

CARIE is the acronym for Cercle des Amateurs Radio des Institutions Europeenes (translation: European Institutions Radio Amateurs Club).

CARIE is offering a special award for 1989 only to mark its own tenth anniversary, and the tenth anniversary of direct elections to the European Parliament.

The qualification for the award is a QSO with a station in each member state of the European Community (Belgium, Denmark, FR Germany, France, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain and the UK - a total of 12). A QSO with the CARIE station operating under the callsign LX10CE during 1989 can be substituted for a missing country.

QSO's must be confirmed, but cards need not be submitted. A list of cards, certified by two amateurs or by a club official will suffice. The list should follow this order: callsign, date, UTC, MHz, signal report and mode. Any bands and modes may be used.

The fee for the award is 10 IRCs, 200 Belgium francs, or five European Currency Units.

Applications should be accompanied by a gummed sticker bearing the applicant's address. Send to CARIE, LX10CE Award, PO Box 1776, L-1017 Luxembourg.

Hike in WIA Award Fees (but not for WIA members)

I am recommending an increase in the cost of WIA awards for overseas amateurs, while maintaining the principle that they remain free to WIA members. The awards in question are the WAVKCA, HAVKCA, DXCC, WAVKCA (VHF) etc, plus the new Antarctic Award.

For many years the price of our awards to overseas amateurs and SWL's has been unchanged at US$2.00, equivalent to about A$2.50. Award certificates need to be sent in sturdy mailing tubes. These cost at least 75 cents each, and when the stamps are added, there is not much change from US$2.00.

Before drafting my recommendation to the WIA Executive/Council I looked at what other amateur radio societies are charging for their awards. I found that with the exception of some of the ZL awards, our US$2.00 price was about the lowest in the world.

I was also intrigued by the value placed on the IRC by various amateur bodies and others operating awards. The RSGB's Commonwealth Century Club Award costs US$4.00 or 12 IRC's (which values an IRC at 33 cents) while the Worked All India Award costs US$8.00 or 16 IRC's (making an IRC worth 50 cents.)

CQ magazine asks US$10.00 for its awards, or 40 IRC's (making them worth 25 cents), while 73 monthly prices its certificates at US$5.00 or 12 IRC's (an equivalence of about 42 cents.)

However, the choicest anomaly was from the amateur body in Italy. It offers its Marco Polo Award for US$5.00 or 15 IRC's and its Islands Award for US$5.00 or 20 IRC's.

As mentioned in July AR, I'm offering IRC's to WIA members only at 80 cents each.

FAMPARC Awards

Among its members and friends the Frankston and Mornington Peninsula Amateur Radio Club is (mercifully!) usually referred to as FAMPARC.

FAMPARC offers two awards (pictured below.) Both the Coastal Towns 100 Award and the Port Phillip Bay Award are available to all amateurs worldwide, and to SWLs on a heard basis. Contacts after January 1, 1980 are valid and so are all modes and all bands. Cards need not be submitted - a log extract certified by two amateurs, one club official, or a notary public will suffice.

For the first award, the 100 QSO's with amateurs in coastal towns/cities must include stations located in five towns/cities in each of VK2, VK3, VK4, VK5 and VK7, and at least three QSO's with stations in VK6 coastal towns, plus one in VK8. Additionally there must be at least one contact with a FAMPARC member.

The rules above relating to verification, modes, etc also apply to the Port Phillip Bay Award. The qualification for VK stations is 50 contacts with stations anywhere around the Bay shore, and for overseas stations 20. Again, the 50 (or 20) must include one FAMPARC member.

Each award costs A$4.00 or equivalent and log extracts must contain: date, UTC, callsign, signal reports, band, mode, name and QTH of operator.

FAMPARC members can be found on the club net each Wednesday at 1000 UTC on 3.570 MHz +/ QRM. Applications and enquiries to: Awards Manager, PO Box 38, Frankston, 3199.

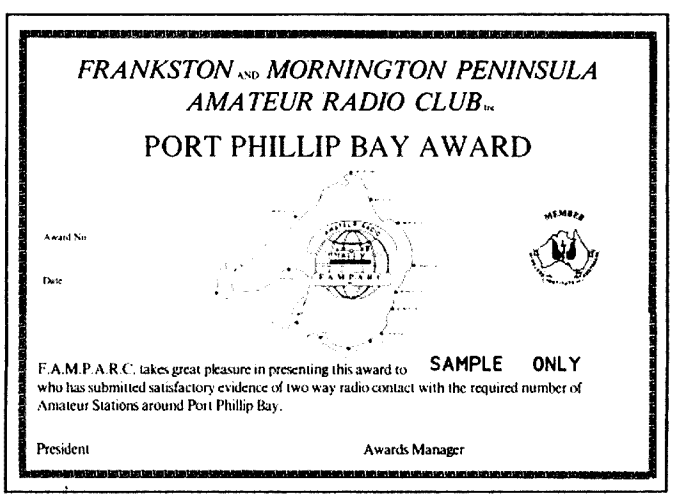
DXCC Updates

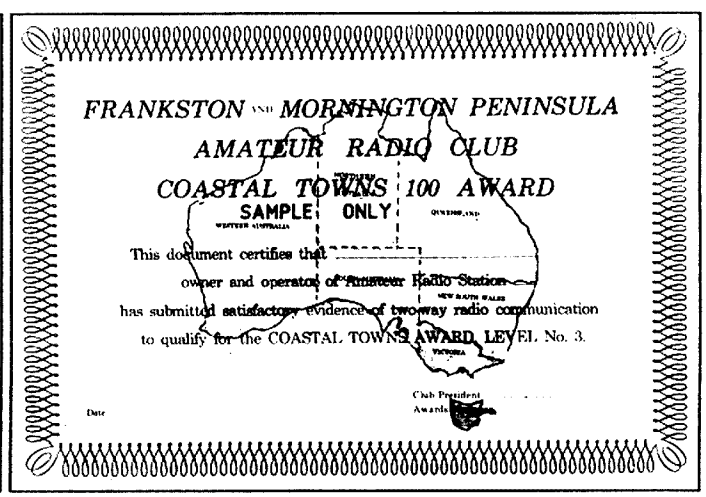
CW	Phone	Open
VK1ZL	284	
VK3OT	305/309	308/312
VK3YJ	305/306	
VK3AJU	150	
VK4DA	154	155
VK4KRP	153	
VK4FQW	136	
VK6LK	316/332	
VK6NE	309/319	
VK2EG (RTTY)		150

ar

Don't Forget

Amendments for the 1990 Call Book must be at the Executive Office by August 21 1989.



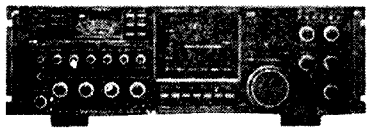


3 STORE BUYING POWER

ICOM **IC-765**

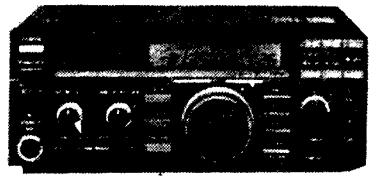
HF SUPERIOR GRADE TRANSCEIVER
FANTASTIC TRANSCEIVER
Price $4199

ICOM **IC-781**



HF ALL BAND TRANSCEIVER
THE ULTIMATE!
PRICE $8199

ICOM **IC-726**
incl 6 mtrs



100kHz to 30MHz General Cov. RX ALL MODES
100 WATTS HF 10 WATTS 6 Metres
Price $1699

ICOM **IC-735**

Latest in ICOM's Long Line of HF Transceivers
TERRIFIC MOBILE HF - ECONOMY RIG
Price $1579

ICOM **IC-7000**

25MHz - 1300MHz
THE PROFESSIONAL SCANNER
A must for monitoring your
VHF/UHF Transmissions
Price $1645

ICOM **IC-32AT**

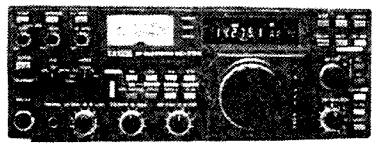
440 MHz, 2MTR
DUAL BAND

Price $735
- Full Duplex
- 5.5 VHF 5 WUHF
- 20 memories
- Power saver function

ICOM **IC-71A**

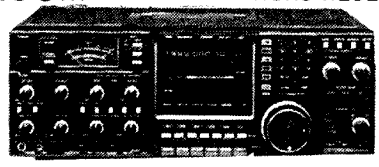
COMMUNICATIONS RECEIVER
• 100 kHz - 30MHz • 32 memories
Price $1450

ICOM **IC-751A**



HF ALL BRAND TRANSCEIVER
SUPERB VALUE
Price $2050

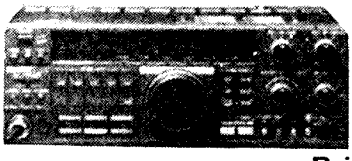
ICOM **R9000**
COMMUNICATIONS RECEIVER



- 100kHz - 2GHz Continuous Channels
- 1000 memory
- Multi Scan Functions *NEW*
- Direct Keyboard Entry

Price $6350

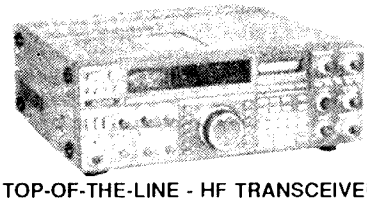
KENWOOD **TS-440S**
HF TRANSCEIVER



- 160m to 10m Amateur Band
- 100kHz to 30 MHz General
- Available with built-in Antenna Tuner

Price $2399

KENWOOD **TS-940S**



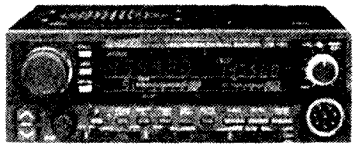
TOP-OF-THE-LINE - HF TRANSCEIVER
THE VERY BEST
Price $4250

KENWOOD

TH-25AT/45AT
2m 70cm

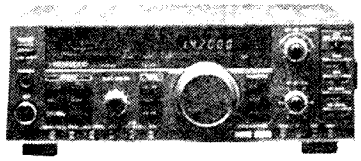
First pocket Hand-held Transceivers
with Automatic Power Control
GREAT PRICE
GREAT PRODUCT
Price $560

KENWOOD **TM-721A**
2mtr/70cm



Full Featured
Dual Bander
LOW PRICE $1040

KENWOOD **TS-680S**
160m to 6m



100kHz to 30MHz General
Cov. RZ ALL MODES
100 WATTS HF 10 WATTS 6 Metres
Price $1820

HOW TO GET COMPONENT SALE

ELECTROLYTIC CAPACITORS:

MALLORY - 1000 MFD, 450V DC	$20
MALLORY - 650 MFD, 450V DC	$15
BOSCH - 10 MF, 5000V DC	$90
280 PF 2000V CERAMIC	$50

variable capacitors with extended shaft for that unique ARRL TRANSMATCH YOU ALWAYS WANTED TO BUILD.
AVAILABLE SYDNEY STORE ONLY
LIMITED STOCK
92-94 Wentworth Ave., Sydney NSW, 2000
Telephone: 211 0988
Brisbane: 394 2555 Melbourne: 670 0330

EMTRONICS

SILENT KEYS

We regret to announce the recent passing of :-

Dr D A Grieve	VK2BLG
Mr J A (Bert) Cusick	VK3MQ
Mr Murray C Foot	VK5BE
Mr Lloyd Williams	VK4ALW
Mr Graham W Haughton	VK4LW
Mr William A McDevitt	VK4XM

Lloyd Williams VK4ALW

It is with great sadness that we advise the passing of Lloyd Owen Williams VK4ALW (ex (VK4OW) on April 19 last, at the age of 82 years, after a battle with cancer.

Lloyd was a lifelong experimenter. He worked as a radio engineer at station 4MK Mackay (which was founded by his Father) from the early 1930's until 1996. Lloyd then operated a TV service business until he retired.

Lloyd held both Broadcast Operators and Amateur Operators Certificates of Proficiency, which he obtained in the late 1930's.

Lloyd was a member of the WIA, RAOTC, AMSAT (US), AMSAT (Aust), Townsville Amateur Radio Club, and a Life Member of the Mackay Amateur Radio Club.

His enquiring mind, willingness to help others, and gentlemanly approach to all things, left all who met him the better for having known him.

To Lloyd's widow, Dorothy, sons Norris and Bruce, daughters Desley and Valerie, our deepest sympathy.

Mackay Amateur Radio Club
per Warwick Lake
VK4AP

Sydney Westerman VK2ESW

Syd Westerman passed away in the Nepean District Hospital on 26 April 1989 aged 80. He was born in England and educated in NSW. Leaving school at the age of thirteen he joined the NSW Railways at seventeen as a Junior Porter.

He saw 43 years service with the NSWGR, having worked in many places including Birriwa, Dunedoo, Casiono, Coopernook, Merrygoen, Binaway, Queanbeyan, Kingswood and Mount Druitt.

He passed the NAOCP when he was 74 years of age. He lived through the period of the greatest technological change ever known.

In addition to Radio, his other hobby was working with wood, making furniture and toys; his wife Muriel made sheets and pillows etc for toy cot.

Syd had not enjoyed good health for the last five years of his life, but was still active on-air until November 1988. It is felt that his interest in radio extended his life span, and he had many friends on the radio.

A large attendance at Penrith Uniting Church bore testimony to Syd's standing in the Church and Community.

Syd is survived by a younger brother Stan, and sister Vera, son Ken (VK5AGW) and wife, Jann, daughter, Joan and her husband, Peter, grandson Charles and his wife Julia, granddaughters Robyn, Annette and Helen and great-grand-daughter Kirili.

He will be missed by many.

Ken Westerman
VK5AGW

Graham W Haughton VK4LW

Graham, VK4LW passed away suddenly on 31 May 1989.

He obtained his licence in 1958, but did not become interested in HF DX until the later years. Not the twenty-second QSO type, he preferred to get to know the overseas operators of the stations he worked, and soon had many regular skeds and friends in the USA.

Active and generous by nature, VK4LW found great satisfaction in service to others and willingly did his bit: WIA Treasurer 1960, VK5WIA Station Manager for some years, and an RD Contest scrutineer.

Apart form AR activities, Graham was a member of the Organ Theatre Society of Queensland, and found time to act as a voluntary bus driver during Queensland's World EXPO Fair. A member of the Masonic Lodge, he was driving a bus load of Masons on a trip when he became fatally ill.

VK4LW was a man of self-discipline who considered priorities, and was conscious of the need for self-improvement. To this end, not satisfied with the AOCP qualifications, he was preparing to undertake a course in advanced electronics at TAFE when he became a SK - at the same time as his good friend, Bill McDevitt VK4XM.

Graham Haughton, a pharmacist by profession at Oxley, Brisbane is survived by his YF, Noela (also a pharmacist), sons Geoff and John, and daughters Jenny and Anne. He will be sadly missed by both the amateur and wider communities.

A Shawsmith
VK4SS

Murray Charles Foot VK5BE

I am writing on behalf of Mrs Sally Foot to advise, with regret, that Mr Murray Foot VK5BE of 30 Baker Street, Somerton Park, SA passed away on 16 January 1989 following a short illness.

Murray was very active in the post war years, having obtained his licence in 1949 and home-brewed many conversions of wartime radio equipment for amateur use. His special interest was the use of cathode modulation and early SSB.

He was also very involved in studio photographic techniques, and enjoyed listening to opera with his family at every opportunity.

Murray was a medical orderly in the Army during WW2 and served a long period in the New Guinea/Kokoda area. He returned to A G Healing in Adelaide and was well known for his expertise and precision in workshop practice.

In 1959 he had a change of environment, with sea going experience an worked with the Commonwealth Lighthouse Service in South Australia, until his retirement in 1986.

Before retirement, Murray was often heard portable from various Lighthouse stations around the South Australian coastline on 80 metres, or if possible, the two metre gear was at the ready for a contact from the remote sites around the coastline.

Sincere condolences to his wife Sally, and family.

Ron Coat
VK5RV

John Rankine VK5JF

The members of the Kangarudarimau Net have had a very sad loss. They lost their founder and net controller for the last twenty years. Every day at 10 GMT and on Sundays at 23.30 GMT, John Rankine VK5JF would be tuned up on 14.250 MHz calling for members to net on to his frequency, as he had very often moved a few kilohertz to avoid QRM.

John started the net to continue QSOs with the friends he made on his tours to South-east Asia. He had so many Indonesian friends that even the President of Garuda Airlines, Lumenta YB0BY would always make sure that he had a flight to visit his friends, and in Jakarta he would stay with Lumenta. He ooould even speak the lingo, and on the air he would never forget anybody's birthday, besides being there to greet us on the various festival days.

If he had to go on holiday, as he did in December 1980, the FT101B would be fitted to the car and the helical antenna at the back bumper would serve him to get on the air, regardless of where he was, to be on time for the net. On this trip from Adelaide to Melbourne, a leak in the radiator was quickly fixed with a self-tapping screw put into the hole and that screw stayed there until John sold the Falcon to buy a Mitsubishi Van.

He was a very talented man, and could do fault-finding with a screw driver. He ran Farr Electronics, where he would take on any repairs on electrical appliances, and his popularity saw him making many house calls. He was very good at editing 8mm films and video tapes that he had taken on this travels, and many members of the Kangarudarimau net have copies of these tapes. VK6NB Cyril, VK6DL Vic and VK6HT will vouch for this very good editing of video tapes, as they had similar interests, and he would share his experience with them.

Once John was asked if he would look at some very sophisticated equipment which was used to X-ray aircraft metal for cracks. It was very expensive and the experts from the country from which it was bought were finding it difficult to get working. John was asked if he could have

a look at it. He told the people concerned that he was not familiar with computers and the more advanced electronics, but he said he would have a look. He did so, and got a few million dollars worth of equipment working! His sharp eye saw a paper label preventing a switch from making proper contact. We wonder what was his reward?

The name of the net was firstly the Yellow Banana (YB) net, and then later called the Kangaruda (the Australian Kangaroo and the Indonesian Garuda put together.) The Harimau (tiger) was brought in when he, on his other trips to Southeast Asia, made many friends in the Malaysian, Singapore, Brunei area. Thus, the three put together became "Kangarudarimau". A logo was designed by John, who got an art teacher in Adelaide to touch it up, and it was sent to Mai 9M2MW to see if it would be acceptable and then printed. So in 1979, at the SEANET Convention In Penang, note pads with the crest of the net were distributed by John to the regular members of the net. A few rubber stamps were produced and distributed, so members could print the crest on their letters to each other.

John had great foresight; he saw how valuable the net would be to all who used it. On a few occasions John kept radio silence while rescue operations used the frequency to carry out search and rescue in response to "Mayday" calls made on the frequency. Net members, nearest the party requesting help, would do all they could to get the authorities of their country to respond. The longest time taken for such an emergency was that of a yacht called "The Whistler", which had a very sea-sick woman on board, had broken its propeller shaft, and there was no wind to sail to Penang. Twenty thousand pounds of aviation gas were used to locate the boat, as it was using old sun charts, and the Search and Rescue helicopters had to search many areas until, with the help of an American research ship in the Straits of Malacca, it was located.

One only had to mention a problem to John and he would respond very promptly. TVI was a common problem and Leong 9M2FZ from Penang remembers, with sadness, how even though he was not too well, John responded to his TVI problem by sending him information on how to build filters to prevent TVI. John was a valuable source for parts and components for any projects on which anyone was working, and he almost always had information on components that members of the net required.

Many visited him in Australia, and whether they were Hams or their friends, it did not prevent John from making sure they took back fond memories of Adelaide, if not Australia. He would be at the Adelaide airport to pick them up, and made sure that they had a comfortable room in which to stay while they were visiting. There was much fun and laughter when you visited John. Many will now miss, very much, the presence of this great friend from Downunder called "Pak John Adelaide", as there were other Johns on the net. Even Barbara, his lovely XYL, was known as "Ibu Ambarwati" because the Indonesians just loved them and wanted them to be a part of them.

John was a regular at the Seanet Conventions where he met many of the Kangarudarimau Net members. He would tie in his travels to meet as many of his friends as possible. The SEANET Convention in November 1989 in Singapore was to be his next Convention, and so many will miss him when they come to the Convention.

At least the Kangarudarimau Net will go on, and John will be remembered for all he did to share that great Australian spirit of friendship, to lend a helping hand when needed. Yes he was there when we needed a friend to share hour challenges. We said farewell to John on 21 May 1989. Yes, farewell mate, CUAGN soon.

Malcolm Westwood 9M2MW
via Jim Jones VK5AAO

National Scout Net

The Scout Association of Australia conducts a weekly net at approximately 0200 UTC on Sundays.

The schedule is :-
1st Sunday 14.190 MHz
2nd Sunday 21.190 MHz
3rd Sunday 14.190 Mhz
4th Sunday 28.590 MHz
5th Sunday unofficial sked on 14.190 MHz

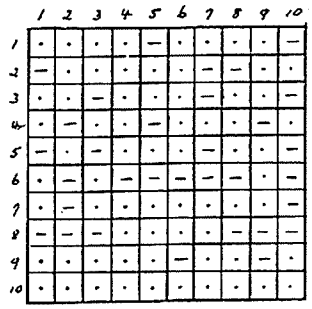
The National JOTA Coordinator, Peter Hughes VK6HU has taken out the callsign VK6SAN which stands for Scout Australian Net. Peter said he hoped other state branches of the Scout Association would also use SAN suffix callsigns.

The 32nd Jamboree-on-the-Air will be held on the weekend of October 21 and 22, 1989, and now is the time to start planning for your involvement. ar

Solution to Morseword No. 29

Across: 1 slit 2 bead 3 felt 4 rave 5 kilt 6 Roma 7 asset 8 Oho 9 sit-in 10 hies

Down: 1 raid 2 stage 3 earl 4 hens 5 tears 6 suite 7 ayes 8 rind 9 VIP 10 cone



OVER TO YOU

Morse Tapes Wanted

The article "Morse Forever" (page 46, Mar AR) was very interesting, and again illustrated the triumph of morse over later technology under adverse conditions. Particularly appreciated, was the news that all communications personnel in the (British) forces are now required to be CW operators at 20 WPM.

A note dated 31 October 1988 from Bruce GW4XXF addressed to me reads...."My only recording of me using CW at sea is sending a TR to VIS on 500kHz. With 500kHz and CW rapidly being phased out due to SATCOMS, SITOR, etc, many of the coast radio stations are being closed down. Here we have lost GNI, GLV, GIL, GND, GKZ, OSA, ZDL. In the states WSF, WSL have gone, VIM is closed and the writing is on the wall for many more. We are trying desperately to get 500kHz signals on tape all over the world, and recordings of stations going silent key - to build up an exchange library of historic call signs. Can you help in getting your area covered?..."

Perhaps readers who are interested in, and able to help Bruce with this project by providing information or tape recordings, could contact either Bruce or myself.

Max Pieremont VK2APD
11 Cotton Street
North Epping 2121

Clandestine Traffic?

The Bill Roper article in the May issue of AR and, in particular,, the comments that "There is no evidence that significant numbers of new amateur radio transceivers are now being used on commercial frequencies", may not stand up to close examination.

Advice on the conversion of amateur transceivers to full transmit coverage and other unsavoury actions, do take place on the amateur bands on an organised basis. Highly organised groups in VK/ZL operating on the 20m band around 14314 kHz offer a number of dubious services and advices to /MM stations. Further, during a period of listening on these frequencies, lasting only a few hours daily, for a few days I heard and recorded the following incidents :-

(a) Assuring vessels who required such assurance that no information on their movements, ownership, or number and names of people on board would be supplied to Australian Customs.

(b) Agreeing to a request from a /MM station for information to enable a TS430 to be converted to general coverage transmit.

(c) Organising a "One Ringer" - a system of utilising the international and national public telecommunications systems without cost.

(d) Relaying third party traffic from Pacific Island countries through New Zealand to Australia in contravention of the New Zealand no third party traffic privilege at that time and the absence of a VK/ZL third party traffic agreement.

(e) Contents of third party traffic - normal commercial transactions such as buying routing supplies from commercial houses and arranging payment over amateur radio. Such items in no way related to amateur radio and the purchaser was not an amateur, but a friend of a licensed operator.

(f) Soliciting for third party traffic.

(g) Advertising and recommending the commercial services provided by an amateur friendly to the organised groups.

Efforts by me to discuss some of these activities with the amateurs concerned resulted in an organised and concerted tirade of abuse and denigration - mostly based on errors and distortions, that only ceased when I advised the main perpetrator that I had briefed my solicitors and would commence legal action if the defamation continued.

As a concerned Australian, I cringe when I hear vessels being assured that information will not be given to Australian Customs. As a concerned amateur, and a concerned shareholder in a major Australian electronics company, I wonder at the damage done to my hobby and my investment by amateurs who freely advise yachts or others how to modify amateur gear for all band transmitting. As a concerned worker in the telecommunication industry, I am alarmed at the damage to my livelihood by the unrestricted third party traffic scene.

I would urge any Australian amateur or SWL who hears vessels asking for, or receiving assurances that their activities will not be conveyed to Customs, to note the details and supply the information to Customs, along with the notation that the vessel required such information to be kept confidential.

The pity of it all is that the net controllers freely state that many /MM stations utilise amateur radio for their own financial benefit, thus, the interest of amateur radio generally is of no consequence to them.

I wonder how SWL's and others, on hearing these activities, distinguish amateur ratio from CB, or do they?

Deane Laws VK4ALN
27 Awoonga Avenue
Burleigh Heads 4220

Cost of Membership

I think it is necessary to make a few comments about the new fee structure proposed by the Wireless Institute of Australia.

Firstly, I am, and intend remaining, a member of the WIA. As a pensioner, the increase in membership will be a proportionally larger percentage of my income than most members, even allowing for the rebate given by the WIA for pensioners.

As has been stated by the WIA Executive, this body is the only concerted voice that members of the amateur fraternity have available to present their case at Federal Government level. Individual representations by amateurs acting off their own bat, while perhaps laudable, can only lead to chaos when passed to the relevant Department from the responsible Minister's office. A number of individual letters reflecting differing viewpoints of individuals, each considering his own interests to be of greater importance than other users of the Amateur spectrum, can only lead to a strong desire to drop the whole thing by the Minister, and the policy determining members of DOTC. If these people take the view that amateurs cannot speak with a united and *reasoned* voice, who can blame them for deferring action or becoming less interested in our case in future.

This point highlights the need for the existence of the Institute - its ability to speak responsibly for ALL members of the Amateur Service *directly* to DOTC, and the organisation of the necessary infra-structure is quite complex and time consuming, not to mention the expenses involved.

As publicised, the needs for a fully professional approach to these and other needs within the organisation itself are quite apparent. Again, these needs can only be funded by revenue earned by the Institute.

It has been suggested to me that the money paid out as salary for full-time employees of the Institute could be better spent as smaller honorariums to a larger number of voluntary staff, with an increase in efficiency. Nothing could be further from the truth! It is this same dependence on voluntary staff that led the Institute very inefficiently down the drain, until it was foreseeable that the Institute would cease to exist in the VERY near future. I am not knocking or decrying the efforts of those members of the Institute who gave unstintingly of their time and energy in the past, and who are still doing so, but they were mainly untrained in the administrative field. It is a terrible indictment of modern life that very few people will undertake any voluntary effort on behalf of this, or any other, organisation. The membership prefers to leave these time consuming tasks to those already doing them, while reserving the right to criticise them for doing their best, without any lead from the members, who seem too apathetic to raise their voices with a "yea", or a "nay" on important matters.

The appointment of several full-time professional staff recently has already showed dividends in the improved production of the magazine - Amateur Radio - and in the increased advertising from a more vigorous pursuit of advertising revenue. The appointment of several members of the Federal Executive in the Canberra and near NSW country areas has provided greatly increased access to DOTC's Head Office, and reduced the need for travelling time and expense as existed when the Federal Executive was housed in Melbourne exclusively.

During the more laissez-faire years of administration in the past, the ability to keep abreast of inflation and rising costs was never fully carried out, and a policy of not raising fees and still trying to give the same service, resulted in the need for a heavy, but realistic, increase at the present time, BUT we are only to the same relative level of fee structure as we would have been had an annual increase, in line with inflation and rising costs, been charged earlier.

Concurrent with these increases in inflation and costs, another rather costly burden is placed

on the Institute and that is the necessity to be represented at WARC 1992 or 1993. This is to be held in Geneva, one of the most expensive venues in the world, and the costs of the *Australian* amateur representation is to be met out of the WIA revenue, not, let me hasten to point out, from the pocket of ALL Australian amateurs. For the information of less experienced readers, let me assure you that WARC stands for World Administrative Radio Conference and NOT World Amateur Radio Conference. No representation means to virtually give away our bands by default; so this is a very necessary expenditure on the part of the Institute. I am very sure the WIA would welcome any donations for this cause and I understand a trust account exists for WARC expenses, so donations would be funneled to the account you desire.

When the new fee of $70 is measured against present day reality in sporting costs (and amateur radio can be classed as a sport), this is by no means unrealistic or excessive. If your sport is shooting, this $1.35 per week is only the cost of a few rounds of ammunition. It is less than two pots of beer, if that is your sport, or less than one packet of smokes per week. Also, for this outlay, you receive a monthly magazine which is well presented, covering your hobby and other services such as QSL bureau, technical development and so on.

Ted Roberts VK4QI
38 Bernard Street
Rockhampton North 4701

The Role of AAPRA in Packet Radio

On behalf of AAPRA, I would like to address the readers of AR.

As you will be aware, there is, at present, discussion regarding the use that Packet should make of the radio spectrum. From remarks made on the Packet network, it appears that there are misconceptions of the role of AAPRA in these discussions, formal or informal.

First, let me emphasise that AAPRA does not, nor does it wish to, attempt to regulate the packet scene. AAPRA has a view of how the packet network should be built up, and it is doing what it can to provide that network, in collaboration with like-minded radio clubs and individuals. When the network has been developed, AAPRA will have done what it has set out to do, and it is quite likely that AAPRA will retire from the field, and let the network users keep it working.

In the meantime, we have nothing to say about what anyone else may wish to do. This is what free enterprise means. There would be no Packet at all if a great number of individuals had not invested time and trouble into getting onto the mode. All the BBSs around the country are the result of the hard work and expenditure of individuals. AAPRA has no specific connection with them, but we are glad they are there. The BBS operators usually work well together, and they are not only self-regulatory, but listen to suggestions about their operations as well! Naturally, they also fight and bicker occasionally, but I am writing this letter because some have been suggesting that AAPRA has been interfering in their arrangements, or alternatively, that AAPRA has not been doing enough. AAPRA does make policy regarding BBS operation.

But that has to be qualified. Barry White VK2AAB is chairman of the repeater committee of the WIA, and so is involved in the use of the spectrum. He is also a very active member of AAPRA's committee. When he recently asked for BBS operators to express their views on proposals that FTAC had made for the WIA to consider with regard to BBS operations, he got quite a lot of flak. He reacted to there being only one reply by saying, if operators took no part in decision making, they could hardly complain later if things did not suit them. We all know (don't we?) that whingers are rarely doers.

There was unwarranted criticism, not only of Barry who has spent a great deal of his *life* working for Amateur Radio, but of AAPRA. We would welcome it if all concerned would accept the fact that AAPRA does not make policy regarding BBS's, and that we, and probably the WIA too, would be only too pleased if the BBS operators would develop their systems in whatever way any sensible body of people would do.

That said, AAPRA is very grateful for the co-operation of all packet operators in developing the Australian network. When VHF channels are properly allocated, and UHF and HF links are developed, the causes of the present congestion will disappear. Unfortunately, such things don't come about without hard work on someone's part, and an input from those who feel improvements are needed would be welcome. Any funds AAPRA has are for material assistance of clubs prepared to put in the effort needed to develop the Packet network. It is the support we have had in the past that has made this growth possible, and it would be a pity if misguided attitudes regarding our role in amateur radio developed as the result of over active imaginations.

John Jefferys VK2CFJ
Hon Sec AAPRA
59 Westbrook Avenue
Wahroonga 2076

Contests Develop Skills?

During this year's John Moyle Field Day Contest, our club station (VK6ANC) was looking for contest contacts on all bands. On one occasion, on two metres, the station at the other end said, "I'll give you a number - 73!" Was this person trying to be smart and get a laugh? Perhaps he was just being rude, or maybe he wasn't sure what to do in a contest.

I spoke to the same gentleman a few days later, and he said, "Now, do you get the message that everyone hates contests?" I'm sure that this isn't really true. Those people who say that they don't like contests either have a fear of participating in them, or they want you to think that they are too wise and mature to bother with "that" sort of thing anymore. (The old "Been there, done that" line.)

Well, I feel sorry for these people. I can tell you that most contests are a whole lot of fun, and not just a "phase you go through, but soon grow out of". There really is nothing to fear.

Just look at the DX that you hear during world-wide contests. It's the best way I know to work a hundred or so prefixes in a single weekend. It's just the shot for DXCC hunters, especially since a lot of "rare DX" locations are usually only activated during a major contest.

Okay, I hear you say, "I'm not a really keen DX hunter". Well what about your operating skills? How good are you? How can you make yourself heard through that pile up, with just 100W and a dipole? Do you know how to handle a pile up trying to work you? (VK is rare DX in many parts of the world.) Can you read, write and talk, all at the same time? A contest will teach you all of these skills in a very short time.

Still not convinced? Well, what about your station? With the bands really boiling, (we may keep all our current allocations at the next WARC *if we use your* bands) there is no better way to test your receiver. All those extra knobs you never use during the rest of the week really come in handy now. It's also a great opportunity to check out that QUAD or YAGI. How is the gain, the front-to-back ratio, radiation angle, etc?

How much do you know about propagation? Listen on your favourite band during the week; you'll hear signals coming from places where people are normally awake. Try the same thing during a 24 hour word wide contest, and you'll probably say,. "WOW, I wish the bands were this good all the time." Well, they probably quite often are, but everybody is asleep on the other side of the world during the week, so you would never know.

Lastly, contests are exciting. Watching that clock go through that last minute before the start of the contest, pencils and wits nicely sharpened, transmitter and ears finely tuned, headphones on, heart beating a little faster. Tick, tick, tick.....3,2,1.....OK Go!

The band explodes into life and the adrenalin is pumping, and there's the world in front of you waiting to be worked.

What a buzz. See you in the RD.

Alex Petkovic VK6APK
26 Freeman Way
Marmion 6020

A Hobby for Professionals Only?

If you want to know what is wrong with Amateur Radio, you only have to look at the back cover of the May 1989 issue of AR. What (average) radio enthusiast, in his or her teens, or twenties, could afford such a "Rolls Royce"? Also, how many adult amateurs could make full use of the facilities included, or would even want to?

The hobby, which it once was, has become too professional. We only have to look at the English magazine "Wireless World", which announced a few years ago that it would become a "professional publication". I fear AR may go the same way. There is no scope in any magazine for impecunious students to construct "short wave" receivers and transmitters from discarded broadcast band receivers as my generation did.

Further erosion of the hobby with the advent of television. Apart from the time spent in being entertained, instead of being on the air, the

problem of TVI began to appear. This caused those of us whose enjoyment of the hobby was only marginal, to further limit their operating times.

The introduction of single side-band disqualified another body of would-be enthusiasts who would have built and operated Amplitude Modulated gear. Why is AM not more frequently used in the HF bands which are frequently only sparsely occupied? Let's start a "Back to AM Week". That way, school students and their elder brothers/sisters would be able to hear amateurs in action on the family "Dual Wave" receiver as once was the case, and their interest become aroused.

The exploitation of sophisticated techniques such as RTTY, computers, packet radio and whatever else further isolates the plain, ordinary amateur, who only aspires to use simple equipment to communicate with simple-minded people like himself.

The overall decline in the volume (not technique) of amateur activity is attributable (at least by me) to the above, plus a few more, such as contests, that I could mention.

The impressive contents of the Call Book compared with the on-air activity, clearly indicates that the licensees are speculative, rather than operative, amateurs. It would be interesting to know how many of the thousands listed, however active or inactive, could be on the air in two minutes or less in response to say, a phone-call. With so many licences on issue, and so readily available, the DOTC must be, literally, "laughing all the way to the bank."

This is a brief account of the contributing factors in the decline of Amateur Radio, and I hope that some possible remedies may suggest itself from these observations.

Mervyn Smith VK2ZD
(First licensed 1948)
1 Bridge Street
Lane Cove 2066

Emergency Radio?

I was interested in the comments of VK4NFL on emergency calls in AR (Vol 57, Nr 5).

I have always been committed to the use of radio for emergency cases, and I can imagine that there are times when such calls are made within our service. It is, therefore, right that we should have to know the Mayday, Pan and Securite calls.

However, it is also a fact that the amateur service has never been a service with a specific intent to handle emergency traffic. The Services have their own systems for this, so that the only people that we could help would be ourselves; but again, my point is that the Amateur Service is not geared for listening on specific frequencies for amateurs in trouble.

I admire the CBRS for introducing this concept early in its history, even though it is often abused.

Has the time come for a new emergency monitoring part of AR, or is it reasonable to expect amateurs to rely on the authorised systems within other services?

Ian Godsil VK3DID
PO Box 411
North Balwyn 3104

Packet Via AUSSAT

On page 31 of the April 89 issue of AR there is an interesting item regarding AUSSAT and JOTA.

It is always gratifying to see mention of developments in Packet, so Peter Hallgarten's remarks concerning attempts to link packet stations via AUSSAT drew my attention.

It is true that the path delays demand some different parameters in participating earth stations, and another opportunity to try these out this year will be most welcome.

But, the point of this letter is to report that Packet contacts were indeed accomplished last year between VK2 and VK6. Jo, VK2KAA with VK6AGC (Gil), VK6ZTN (Joe), VK6ADF (Phil), VK6ZLZ (Christine), VK6LZ (Cliff). The frequency used was 146.625 MHz, at 1200 Bauds. Ian, VK6DNJ also made contacts experimenting with both 300 and 1200 Bauds.

This was on 16 October 1988.

I hope this is of interest.

John Jefferys VK2CFJ
Hon Sec AAPRA
(Australian Amateur Packet
Radio Association)
59 Westbrook Avenue
Wahroonga 2076

Brotherhood of the Air

Before the war clamped down on his activities, and he received his call-up for naval service, Telegraphist FL was a "ham" - the name given to those enthusiasts who spent night and weekend vigils searching the ether for radio contacts in all parts of the world. Armed with a thermos-flask of hot coffee, chocolates and cigarettes to help them "while away the long hours", they coaxed their low power transmitters to give that "little extra", which meant another QSL card - the visiting card of the air.

So extensive were the activities of the "hams" that the WFSRA (World Friendship Society of Radio Amateurs) was started in America, and when war came, its membership ran into thousands.

On one occasion, a Jap "ham" with whom FL had been in frequent contact said, "Our countries go to war, Fred, you wear your call sign, me no kill you." Crudely expressed, that was the spirit of the WFSRA. Many of its members are now in the Services, but are looking forward to the day when they will again address all men, irrespective of nationality or colour, as friend. Like the ether which is their medium, they want all men to be free and in close contact. More power to them when they again go "on the air".

"Raffer."

From "HMAS Mk III"
Published for the Royal
Australian Navy
by Australian War Memorial
Canberra ACT 1944
Contributed by N G Imrie VK2NGI
15 Manor Road
Hornsby 2077

(Does anyone know if WFSRA still exists? - Ed.)

Use of Q Code

Having read Amateur Radio for some six months now, I am not at all surprised that the hobby is not attracting our youth. If Australian Amateurs have little better to argue about than whether universally accepted abbreviations are used, they should join a geriatric debating society and leave limited air space for those who can make better use of it.

I shall, of course, remember if I ever contact any of these anti-Q code-on-phone fanatics to request politely that "they send me confirmation of receipt" via the Confirmation of Receipt Card Bureau. I would hate to offend them by requesting they QSL!

Page III of Newnes Radio Amateur and Listener's Pocket Book 1987 by Steve Money G3FZX (ISBN Ø 91259 X) states, "The Q-code was introduced primarily for Telegraphy using Morse and consists of a series of three letter codes which have specific meanings and enable a relatively long message to be conveyed rapidly. Many of the Q-code groups are used by radio amateurs to save time and may be used both for telegraphy and telephony contacts."

Pse QLF OM it's got bells on it.

KWH Perry VK5AFF (ex G3GKP)
153 Sturt Road
Dover Gardens 5048

Radio Theory Handbook Errata Sheets

I refer to a paragraph in the Book Review, Page 58 of June 89 AR, regarding the Radio Theory Handbook.

Your advice that "it was believed all known purchasers of the book had already been supplied with an errata sheet" is incorrect.

As late as June 1989, Prentice Hall kindly advised me were they still endeavouring to locate the addresses of people who had purchased the book direct from them and nothing has changed up until this date.

Please print this up-to-date information in August AR - you have their number if you need to contact Prentice Hall. Yours faithfully,

G Honey VK7NGH
63 Mirramar Park
Blackmans Bay 7052

Second Society?

Though a Micawberish attitude pervades our family attitude to money, the fact is that our income is in the lowest bracket (thus, missing out completely on "the tax cuts"!), and cash flow needs to be watched carefully. Consequently, with the projected rise to about $70.00 in WIA fees (possibly justified too), I am not really any further interested, at that price, in subsidising those who choose not to be members, and who, therefore, make no contribution to the cost of maintaining the only recognised organisation officially representing Radio Amateurs.

It is time the matter was brought to a head. This is an opportunity for WIA members of similar mind and/or income level to take a stand when renewal falls due.

For those with time health and commitment

who are non or former WIA members, this is perhaps the opportunity for you to form a separate organisation to suit your needs. Hopefully, with some goodwill, say, along the lines of ARRL Handbook - Amateur's Code, it would support the WIA (and vice-versa) in most important matters, and achieve the necessary official status too.

Provided that such a new organisation is formed, Amateurs could consider joining one or the other at the reduced level of fees which should pertain if most Amateurs did contribute to the cost of some suitable organisation to represent them: especially when dealing with Government, and in matters concerning protection of our rights and spectrum assignments. A Radio Amateur is unlikely to be able to exert much cogent influence individually.

So far as the above matters are concerned, Mr Micawber's approach is highly unlikely to work too well in 1989, or in the foreseeable future. Here at home we are still waiting for "something to turn up" in the fiscal department at date of writing.

73

Angus Garland VK4QV
17 Beeby Street
Nundah 4012

(We agree with almost everything you say, Angus, except for one point. It is totally incredible that two organisations, with their inevitable duplication of at least some facilities, could operate as efficiently as one. Also, the IARU, as one of its cardinal policies, recognises only one society in each country. Your first paragraph identifies the real problem that those who remain in the WIA subsidise those who leave or never join. If all VK amateurs were WIA members, our subscriptions would be much lower than they are. Ed.)

Impedance Measurements

The article on RF Impedance Measurement by J Hodkinson VK2BHO (AR April 1989) shows errors in the published results.

By Pythagoras $Z^2 = R^2 + J^2$. Now $23.5^2 + 70.7^2 = 5551$, whereas $74.2^2 = 5506$. Also, $56.7^2 + 86.9^2 = 10767$, whereas $100^2 = 10,000$. The error appears to be the use of Tan to calculate J. Better to use the Sin function relative to Z.

Using a computer to do these calculations seems like using a sledgehammer to crack a walnut. By the time the program had been found and loaded, the thing could have been worked out on a pocket calculator.

The formula used is :

$$\frac{A^2 - B^2 - C^2}{2BC} = -\text{Cos}(A)$$

which gives the negative cosine of the angle between B & C. Now -Cos(A) = cos(180-A), so ignoring the sign it is also the Cos of the angle between Z & R. Now B/100 = C/Z. (B/100 if 100 ohm resistors are used.) $R = Z \cos(A)$, and $J^2 = Z^2 - R^2$. Inscribing the above formulae on the measuring head would seem the way to go.

I would assume that anyone with the knowledge to work out complex impedances would have a scientific calculator. My $30 cheapie can certainly run rings around my Commodore 128 when it comes to complex numbers.

I look forward to further thoughts from members on what is obviously a very desirable piece of equipment for anyone thinking of playing with aerials. In the case of a short circuit the Transmitter will still see an impedance of 50 ohms or 1:1 SWR. With an open circuit the Transmitter will see 100 ohms, still only a 2:1 SWR. This is a situation that most finals should handle at these low power levels.

Ray Hinks VK4LU
4 Plant Street
West End Townsville 4810

Fewer Braves?

We have all heard of the World's Greatest Treasurer, and now here in the WIA we have our own World's Greatest Optimist.

I refer to June AR Page 5, where Peter Gamble replies to a question from Jim Linton, who suggested that the WIA could lose up to 20% of its membership as a result of the increase in subscriptions.

Peter believes that the members will understand why the increase is necessary, and continue to support the WIA.

Now don't get me wrong, I am a staunch supporter of our organisation, and consider that the officials have done a great job under, sometimes very, frustrating circumstances, and I personally will renew at the higher rate, at least for the coming year.

But let's face it, how can any hobby organisation, which has battled for years to hold its membership numbers, increase the subscription by 40% and not expect a dramatic decrease in members. This is not just my own personal view, I have heard the matter discussed several times on 80 metres, and the majority quite candidly admit they will not renew.

I think the executive should, as a matter of urgency, review this decision, and seek ways of reducing costs, and other means of obtaining revenue, rather than increasing subscriptions, otherwise we may finish up with an organisation with quite a few chiefs, and very few indians.

Ian Alexander VK3DDL
7 Cambridge Drive
Glen Waverley 3150

Stolen Equipment

ICOM IC02A VHF hand-held transceiver, Serial 23186 with IC BP3 and IC BC25E rubber ducky aerial, Morse key HK707 Welz three in one SWR/PWR Meter, LP30 low-pass filter, Kenwood TS520S and Sony 2001D communication receiver stolen from 49 Richmond Street, Rockdale 2216 in early June. Contact owner B Dooley VK2KFI, Rockdale police, or your local police.

Tandy Presents Its New 10-Metre SSB/CW Mobile Transceiver

NEW!

499.95

- **Full 10-Metre Coverage, 28 to 29.6999 MHz**
- **10-Channel Memory**

The new **Realistic** HTX-100, a superb 10-metre mobile radio for the amateur. It's compact, only 6.2x18.3x20cm, yet is loaded with the most wanted features.

Push-button selectors on the mike permit safe and easy QSY while mobile and the easy to program memory stores 10 of your favourite frequencies. A front-panel frequency-lock switch prevents accidental changes.

You can fine-tune reception with ± 1.5 kHz RIT, (receiver incremental tuning) and select 25-watt or 5-watt output. Provides USB (upper sideband) voice operation and CW (code) with semi break-in keying and built-in CW sidetone.

The HTX-100 also has an easy to see backlit LCD display, hefty 3-watt audio output, built-in speaker and rear-panel jack for adding an external speaker. Bracket and DC cord included. The 10-metre fun is just beginning. Be a part of it with this affordable, top quality transceiver. 19 1101

Tandy
ELECTRONICS

Charge It! With a New Tandy Charge Card

Tandy for Technology to Amaze You, Value to Please You and Service You Will Appreciate!

Tandy Electronics — We Service What We Sell

*Trademark of Tandy Corp. InterTAN Australia Limited being a registered user.

HAMADS

TRADE ADS

RADFAX2: Hi-Res weather fax, morse & RTTY receive program for IBM PC/XT/AT, on 360K 5.25" floppy & full Doc. Need CGA, input port, SSB HF FSK/Tone decoder. Has re-align auto-start view save print. Also "RF2HERC" same as above but for hercules card, and "RF2EGA" for EGA card (640 x 350 mode). Programs are $35 each and $3 postage ONLY from M Delahunty, 42 Villiers St, New Farm 4005 QLD. PH: (07) 358 2785.

AMIDON FERROMAGNETIC CORES: For all receiver and transmitter applications. Send large SASE for data and price to RJ & US Imports, Box 157, Mortdale NSW 2223. Close during August. (No enquiries at office please . . . 11 Macken St, Oatley). Agencies at: Geoff Wood Electronics, Lane Cove; Webb Electronics, Albury; Electronic Components ACT; Truscott Electronics Vic; Willis Trading Co WA; Associated TV Service Hobart.

FOR SALE - ACT

ICOM IC 761 HF Transceiver with built in Pwr supply, Ant Tuner, RF Speech Processor, with extension speaker, desk mic and hand held mic. All manuals boxes etc, immac condition $3,450 ONO ICOM IC228H 2mx FM mobile still in box unused $650 ONO call Chris VK1DO (062) 863208 AH.

FOR SALE - NSW

VAC/VAR Caps 3KV 1000.3KV 500. 15KV 300.10KV 50 $100 each. Vac/fixed 5KV 100 $25 each. Air/var Tx type $50. Rot/Inductor app 25mh $60. Tube ex/an 8295 new & socket $150. Swan 500c new finals $350. Atu At 200 $250. Transformer 240-2KV 1A $200. Vz-200+disk drive monitor cass. Printer software 16k RTTY etc $500. Will neg all. Bill VK2CWG, phone: (044) 761589, Narooma.

YAESU FT101E HF TCVR in good working condition $500. Dave QTHR VK2BRA phone: (02) 4871840.

ICOM R71A Communications receiver. Great performer! Mint condition. $1000. Kirt VK2DOJ, (02) 4362618.

Sockets for 3-500Z and 4cX1000A, 4CX1500B sockets and chimneys SK800B, SK806, (02) 9183835.

HF Linear Amplifier runs 4CX1000A Ceramic tube, floor standing, B&W tank coil, Eimac tube and socket, vacuum caps. C Core transformer. (02) 9183835.

AKASHI Model T430 through-line watt meter dual meters dual freq, 2 mtr and 70cm, 3 ranges each band, 120/5W, 120/20W, 20/5W N Connectors, new $75 ONO. QTHR Art VK2AS (02) 4671784.

YAESU FT 225 RDM, 2 xtals fitted channels 5&6 all mode USB-LSB-CW-AM-FM, $700. VK2BYS (02) 7252515.

KENWOOD TL922 HF Linear Amplifier, excellent performer, excellent condition, new tubes fitted recently. Phone Don VK2WU QTHR (049) 596335.

YAESU FT709R/FNB4, 70cm hand-held (as new) $380; ATN 420-470 MHz 14 el Yagi (unused) $110; 70cm Gutter-mount antenna $40. (02) 4514902 VK2AMT QTHR.

KENWOOD MC50 mic $40; Kenwood speaker SP230 with filters $40, VK2ZM QTHR (063) 631789.

HY-GAIN Model 204BAS antenna 4 element 20M monobander. VK2BZM David (02) 4982259.

FOR SALE - VIC

Roller Inductor 2 inch dia Heavy Duty 18µH with turns counter. $80 Jim VK3CX QTHR (059) 753 139.

RTTY System - Modem, Siemens 100 Series 1 teleprinter & XT/AT compatible RTTY software. Modem extras include: audio monitor speaker, microphone input for normal PTT operation, remote switching & RS-232 port. The teleprinter extras include: tape-reader, tape performer and answer-back drum. All in excellent working order $150. John VK3CMO (03) 8083335 QTHR.

PRINTER for C64-CPA-80 VGC $290. Franz (03) 7267137 VK3DVD.

CICADIA.300 Dataphone Modem. $150 in VG cond - ONO. Radio Shack, DMP100 Dot Matrix printer with parallel interface, plus new ribbon and manual $200 ONO, Arthur VK3CUA QTHR, Ph: (054) 437425.

TRANSCEIVER Uniden 2020, excel cond $450 ONO, also matching speaker and ext VFO, also Dick Smith complete freq meter ham bands, Wandin (059) 643721 VK3TL.

YAESU FT-208R 2m hand held with ext mic and charger in VGC $250, Chas VK3BRZ (052) 823167 AH.

Communications receiver YAESU FRG7700 in excel cond $450 ONO, Ph: (053) 358083.

KENWOOD TS-120S Transceiver $500; Kenwood TS520S Transceiver $600, modified for novice power MC-50 manuals for both. VK3GWK (051) 743930.

4CX1000K VHF-UHF TX valve. Suits 6m or 2m kilowatt amp - Current retail $1320 - Sell for $800. SK820 socket to suit - Current retail $2160 - Sell $1200. Transformers to suit HV $100. Filament $30. Grid $30. Panel meters, 180deg 4" scales to suit amplifier $20 each. Other high voltage components to suit amplifier, negotiable. The whole lot for $2000. Steve VK3YMY (03) 5732266 (leave message).

FOR SALE - QLD

KENWOOD TS-940S excel cond with Kenwood MC-85 desk mike, details and price to Noel, Ph: (079) 722862 VK4VJ.

TOKYO HL-60V 3.50 watts 2m $150; FM80 52.525 MHz FM 25W $45, VHF Coms 13cm transceiver partially assembled & 4 2C39 tubes used but OK $150; Crushcraft 10 ele 2m yagi $50. SCR11 working, offers (07) 8142480 AH, (07) 3774286 Bus, VK4WA QTHR.

DISPOSALS gear for sale at auction North Queensland convention Townsville September 22-24th, PO Box 964 GPO Townsville 4810, for details.

ICOM 701 transceiver 200 PEP, ICOM 701PS power supply 20 amps, ICOM RM2 remote control for 701, excel cond $650 the lot. Keith VK4AKS (071) 472367.

YAESU FT227RA 2 metre mobile FM txcvr. Has mobile mount, mic and handbook. GC $300. VK4KDP QTHR (07) 288 4911.

KENPRO rotator KR400RC $395 near new hardly used. HF beam CA-42 10M-15M 8.5dB gain 25dB F/B brand new never used $200. Geoff VK4CET (077) 737179.

FOR SALE - SA

VIC20 Computer $100; RTTY-CW cartridge for VIC20 $70; FT200 transceiver with FP200 power supply $225; 160m & 6m-2m valve transvertor to suit FT200, offers. VK5NA QTHR PH: (085) 656238.

FOR SALE - TAS

AOR 2001 scanner comm receiver 25-550 MHz AM, NFM, WFM $500; TM221A Kenwood 2m FM mobile, as new 10WH 50 WH $525; MMB38 Yaesu mobile bracket, new suit FT7476X, FT757 $30; FR757 relay box suit FT7476X, FT757 $30. QTHR VK7AN (003) 317914.

WANTED - ACT

KENWOOD TS530S or late series Yaesu FT101ZD, please phone Stirling VK1EV (062) 588483.

WANTED - NSW

ICOM Model AH2 digitally controlled HF, all band antenna system. QTHR Art VK2AS (02) 4671784.

HEWLETT Packard counter, prefer with freq converter to 500 MEG with manual state model number, David Kidd, 8 Gosse Ave, Dubbo 2830, Ph: (068) 818906.

ANTENNA 3 element TR-bander yagi, hy-gain TH3JR or similar. VK2BZM David (02) 4982259.

WANTED - VIC

ICOM IC-751A. Must be in excel cond. QTHR or Phone Hans VK3DNS on (03) 5575789.

TS440S or IC751 HF Txvr only in VGC, Franz VK3DVD (03) 7267137.

INFO: FT620B modifications for 6mtr FM conversion. Rotator to suit HF beam, 70cm transvertor. Info 20cm transvertor. Info home brew type. S Osborne (03) 7255969.

SPARE parts, modules or components relating to the Wavetek 3000 series of signal generators. Required for servicing and repair. Roy VK3AOH QTHR (03) 4996462.

AUST Official Radio Service Manuals from Vol 6 (1947 Receivers) onwards, also Vol 3 (1939). Phillips "Miniwatt" Data Book (Valves) 1962 edition, or thereabouts. Ralph VK3CQK QTHR (058) 521372.

AR-7 Coil box band "C" $10, plus postage for Moorabbin Club. Ken VK3ZFI QTHR (03) 5805347.

TRS80 CC (6809E) EC basic programs for AR or any other types of programs, (d/drive) SAE and disk will be sent. Arthur VK3CUA QTHR or PH: (054) 437425.

WANTED - QLD

QLD type transmitter, must be GC. Ph: (07) 3543989 QTHR VK4BHJ.

TRIBANDER for 10, 15, and 20m bands. Henry (07) 8821193 VK4KF.

MAINTENANCE manual or copy thereof for Racal RA329 Military HF Communications Receiver which incorporates an RA217D Rx and an MA323 FSK terminal unit. VK4KDP QTHR (07) 2884911.

I WILL give a good home to your Surplus Military Radios, parts, handbooks, etc. Details to VK4KDP QTHR (07) 2884911.

ICOM 2KL RF Amplifier and IC2KLPS power supply. Keith VK4AKS (071) 472367.

WANTED - SA

XTAL filter approx 15 to 30 kHz band width, freq not critical, some were used in older two-way radios. Chris VK5MC QTHR (087) 359014.

Translator Not Accessible to Limited Licensees

The Ten Metre FM Users Group in Melbourne says it has received permission to operate what is believed to be Australia's first closed amateur translator station.

The Ten Metre repeater VK4RHF has an input of 29.540 MHz and an output of 29.640 Mhz. The repeater also now re-transmits its received signal on a frequency of 438.750 Mhz. But later this year, the group says VK3RHF will have an additional input frequency on 433.750 MHz. This means an FM signal appearing on 433.750 MHz will be re-transmitted on the VK4RHF Ten Metre repeater output frequency.

However, the Ten Metre FM Users Group says DOTC has told them that regulations prohibit Limited Licensees from using the 70cm input frequency and having their signal re-transmitted on Ten Metres. Thus, we will have a closed 70cm/Ten Metre translator, only accessible to AOCP licensees.

The 70cm uplink will be secured to prevent Limited Licensees inadvertently - or deliberately - having the transmission appear on Ten Metres. This is achieved by having the VK3RHF 70cm receiver fitted with a CTCSS (sub audible tone) decoder. The required access tone will only be made known to AOCP holders.

The upgrading of this repeater should enable AOCP licensees to "talk to the world" when Ten Metres is open to DX by simply using a 70cm hand-held or mobile.

ar

ADVERTISER'S INDEX

ATN Antennas 17
Aust. Amateur Packet Radio Ass. 60
Blamac Pty Ltd 15
Dick Smith Electronics ..... 32 & 33
Electronics Australia ..... IBC
Electronics Today International ..... IFC
Emtronics 54
FT Promotions 47
Ian J Truscott's Electronic World 10
Icom ..... OBC
Kenwood Electronics Australia P/L 30
Magpubs 27
Silcon Chip Publications 46
Stewart Electronic Components 37
TSM Ideal 56
Tandy 61
WIA NSW Division Novice Licence 56
Wilkie Trading Co 16

TRADE ADS
RJ & US Imports 62
M Delahunty 62

HAMADS

Please Note: If you are advertising items For Sale and Wanted please use a separate form for each. Include all details; eg Name, Address, Telephone Number (and STD code), on both forms. Please print copy for your Hamad as clearly as possible.

*Eight lines free to all WIA members, ninth line for name and address Commercial rates apply for non—members. Please enclosed a mailing label from this magazine with your Hamad.

*Deceased Estates: The full Hamad will appear in AR, even if the ad is not fully radio equipment.

*Copy typed or in block letters to PO Box 300, Caulfield South, Vic 3162, by the deadline as indicated on page 1 of each issue.

*QTHR means address is correct as set out in the WIA current Call Book.

*A courtesy note will be forwarded to acknowledge that the ad has been received.

Ordinary Hamads submitted from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re—sold for merchandising purposes.

Conditions for commercial advertising are as follows: $22.50 for four lines, plus $2.00 per line (or part thereof) Minimum charge — $22.50 pre—payable.

State: .....

☐ Miscellaneous
☐ For Sale
☐ Wanted

Name: .....

Call Sign: .....

Address: .....

.....

Radio Amateurs: Have you checked out EA lately?

No doubt most radio amateurs are aware that *Electronics Australia* is by far this country's largest-selling electronics magazine, as well as being its oldest (we began way back in 1922, as *Wireless Weekly*). But have you looked inside the magazine lately?

Remember Jim Rowe, VK2ZLO? Jim used to be Technical Editor, and then Editor – back in the late 1960's and 1970's. You may recall some of the amateur radio and test equipment projects he developed, which proved to be extremely popular. Well, Jim is back at the helm of the magazine, and has been busy giving it a new lease of life.

You'll now find lots of new 'departments' in the magazine, including Solid State Update (with news of new semiconductor devices), Silicon Valley Update (news from the USA) and What's New in Entertainment Electronics. Plus all of your old favourites like Forum, The Serviceman, Circuit and Design Ideas and so on. And of course plenty of 'meaty' technical articles and contruction projects.

FEATURES IN THE AUGUST ISSUE:

ADDING DATA TO NORMAL FM RADIO
Many of Europe's FM stations are now transmitting RDS – 'piggyback' digital data giving traffic information, weather reports, etc. It may be here soon, and here's how it works.

HAZARD LIGHT FLASHER FOR CAR ALARMS
Does your car alarm really attract enough attention when it goes off? Here's a project which makes it flash the hazard lights – and even pulse the horn as well, if you wish.

NEW AMATEUR NEWS, COMMS NEWS COLUMNS
In case you haven't noticed, we now have regular columns presenting both amateur radio news and communications news in general. Don't miss them!

What about *amateur radio* projects? Well, there still aren't too many, at present – Jim Rowe's been a bit too busy! But he's *very* interested in boosting the amateur radio content, so if YOU have developed an exciting amateur radio project, please contact Jim by writing to him at EA, 180 Bourke Road, Alexandria 2015 or phoning him on (02) 693 6620 – to discuss the possibility of publishing it as a contributed article.

Take a look at the new, rejuvenated *Electronics Australia* – on sale at your newsagent at the beginning of every month. Or subscribe now, by phoning (02) 693 9517 or 693 9515.

Electronics Australia

Australia's Top Selling Electronics Magazine

ICOM'S NEW HF TRANSCEIVER HAS MORE ARROWS THAN ANY OTHER HF TRANSCEIVER.

Frequency synthesis by Direct Digital Synthesizer which provides low noise floor and fast lock up.

Built in controller for automatic antenna tuning. Compatible with AH-3 HF automatic antenna tuner.

Twenty six memory channels. Channels 23 and 24 memorise both receive and transmit frequencies for split operation.

Semi break-in with adjustable delay timing and sidetone for CW operation.

Band stacking register (identical to that of IC-781).

105 dB dynamic range.

Three scans: programmed, memory and selected mode memory.

Automatic gain control (fast/slow).

20 dB receiver attenuator.

Switchable tuning steps, 20Hz, 50Hz, 1KHz and 1MHz.

And one highly advanced feature that no other brand of transceiver will ever have. Call Melbourne on (03) 529 7582 or interstate on (008) 338 915 for your nearest Icom stockist.

10 dB receiver preamplifier.

General coverage receiver 30KHz to 33MHz. (500 KHz to 30 MHz guaranteed.)

Built in CI-V system for computer control (CT-17 required) and transceive function.

100 watts output on USB, LSB and CW transmitting and receiving. 100 watts FM and 40 watts AM with optional unit.

Amateur Radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA
VOL 57, NO 9, SEPTEMBER 1989

• Tilt-over Mast • Pedal Wireless • Source and Load Impedances •

Amateur Radio

Cover

Amateur Radio's "Elder Statesman" Bill Gronow VK3WG, pictured at his rig. See text of his Remembrance Day Opening Address and autobiography on page 6. Photo - John Friend VK3ZAB.

Deadlines

	Editorial	Hamads
October	11/9/89	13/9/89
November	9/10/89	11/10/89
December	6/11/89	8/11/89

TYPESETTING : Redfords Media, 25 Glenferrie Rd, Malvern 3144, Tel: (03) 500 0377

PRINTING: Industrial Printing, Richmond

MAIL DISTRIBUTION: Polk Mailing Co., PO Box 140, Collingwood, Vic. 3066, Tel:(03) 417 5161

Special Features

Weather Satellites - Paul Hayden VK4ZBV 22
Fatal Distraction or is Amateur Radio a Health Hazard ? - Morris Odell VK3DOC.....34
JOTA - 1989 - Peter Hughes VK6HU 35
RD Opening Address and Autobiography 6

Technical Articles

The Unique Pedal Wireless - Mervyn Eunson VK4SO 7
Output Impedance, Source Impedance, Load Impedance - Lloyd Butler VK5BR 10
A Tilt-Over Wind-Up Antenna Mast - Leigh Baker VK5UO 16
Early Background of Our Telegraph Codes - Lloyd Butler VK5BR 24
The Coil-Winding Wisdom of Solomon-Commodore 64 Version - Rob Abel VK2ERA ..30

Regular Features

Advertisers' Index.....64
ALARA 52
AMSAT Australia.....49
AR Showcase 59
Awards, Fisher's Ghost, Tassie Trout 43
Club Corner.....58
Contests - Calendar, John Moyle Results.....41
- VK-ZL-Oceania Rules.....42
Data & Digital Communications.....45
Divisional Notes, VK4, 5/8th Wave, VK6 53
Editor's Comment 2
EMC Report 54
Hamads.....62
How's DX? 38
Intruder Watch 50
Morseword No. 30 20
Over to You - Members Opinions 60
Pounding Brass 44
QSL's of the WIA Collection 56
Silent Keys - Obituaries.....60
Spotlight on SWLing 54
Stolen Equipment 60
VHF-UHF : An Expanding World.....39
WIA Directory.....3
WIA News 4
WICEN 55

Amateur Radio

Published monthly as the Official Journal by the Wireless Institute of Australia, founded 1910. ISSN 0002 - 6859. Registered Office: 3/105 Hawthorn Road, Caulfield North, Vic 3161. Telephone: (03) 528 5962.

Inquiries and material to the Editor: PO Box 300, Caulfield South, VIC 3162.

Advertising: Ann McCurdy (03) 528 5962

Material should be sent direct to PO Box 300, Caulfield South, Vic. 3162, in accordance with the deadline date shown on page 1 of this issue.

Acknowledgement may not be made unless specifically requested. All important items should be sent by Certified Mail. The editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying a reason.

EDITOR'S COMMENT

Unity in Diversity

Just a short hop across the Timor Sea, Australia's near neighbour is the Republic of Indonesia. Its 180 million people are spread through more than 13,000 islands. They represent about 300 different ethnic groups and speak 250 different languages. The official language is the relatively new Bahasa Indonesia, but the motto on the Indonesian national crest is in the old Javanese language; "Bhinneka Tunggal Ika", which means "Unity in Diversity". Amateur Radio is alive and well in YB land, although it is only since the accession of President Suharto in 1965 that it has been permitted.

A longer hop across the Pacific brings us to the country which might be described as the home of amateur radio, the United States of America (even though our WIA predates the ARRL by four years). There are about 220 million Americans, and they belong to one of the most highly developed multi-racial societies on earth. But the American national motto is not in English, but in Latin; "E pluribus unum", which translates as "One from Many". A very similar meaning to the Indonesian motto.

The WIA does not have a motto, but if we did, I imagine the same theme would be appropriate. I am sure that the whole succession of our Federal Presidents since the position began have hoped to preside over a close amalgamation between our sometimes divergent State Divisions. As Peter Gamble reported on this page last month, we are getting closer to operating like a coherent national organisation. At the first of the newly introduced series of quarterly Executive/Federal Council meetings, all Divisions being represented, the trend towards better understanding of each other's requirements was plainly evident.

Nevertheless, there were obvious differences between the Divisions, particularly in regard to the Divisional component of annual subscriptions. While the originally proposed figure of $23 (later reduced to a recommended $16) was acceptable to the larger Divisions, others claimed to need much less to carry out their functions. Why the difference? Since few members, other than those who have served or are serving in a Federal position, are aware of the many differences between Divisions in their organisation and facilities, I though it might be informative to summarise them here.

The largest Division (VK2) is the only one to own its own office and meeting centre, although due to the wide decentralisation of membership into regional clubs, Division general meetings are seldom held. Administration, for over 2000 members, necessitates paid staff. The Division owns all the equipment used for its news broadcasts, and the station real estate. It also plays a large part in providing repeaters throughout the State. Similar conditions apply to VK3, also with over 2000 members, except that it has recently sold its meeting centre and invested the funds. As in VK2, Divisional meetings are rare, but there are many active clubs.

In VK4, with over 1200 members, the situation is quite different. The Division owns no property, and even the Sunday broadcasts are carried by privately-own equipment. All administration is by volunteers. There are active clubs throughout the very large State, and they play a large part in determining Divisional policy. VK5 also owns no property, but has a long-term lease on the modified Burley Griffin incinerator building at Thebarton (under National Trust protection), and this provides an excellent meeting centre which is regularly used, as it is centrally located for a large proportion of Adelaide amateurs (and Adelaide's population is more than three quarters that of the whole State of SA).

Moving on to the West, the VK6 situation is not unlike VK5. Each has less than 1000 members and the population outside Perth is (like Adelaide) much less than that of the capital. So again, we find that regularly Divisional meetings are well-attended, and the cost of volunteer administration is low. But there is a big difference from the other States, in that the provision of amateur repeaters is vested in a separate body, separately funded, the WA Repeater Group, so is not a Divisional responsibility.

In the two smallest Divisions the picture is different again. The VK7 membership is about 300, split between three Branches. But the size of Tasmania is such that distances are not a great problem, and administration is readily handled by volunteers. VK1 is even more centralised, and in effect, one club is also the Division, with less than 300 members and only required to cover the small area of the ACT. The only State capital smaller than Canberra is Hobart, so distances are of no significance.

So, there we have our Divisions, briefly outlined. Diversity indeed! Is it not to be expected that needs and procedures will differ considerably, as a result of different circumstances? But unity is also essential. In this context it is self-evident that "United we stand, divided we fall". It is for all of us essential that we work towards harnessing and harmonising our differences. At least we have in amateur radio an activity in which there are few problems of race or language, even on a world wide basis. Surely in Australia we ought to be able to "get our act together!"

Bill Rice VK3ABP
Executive Editor

WIA DIRECTORY

Federal Council

Kevin Olds	VK1OK	ACT Councillor
Peter Jeremy	VK2PJ	NSW Councillor
Peter Mill	VK3ZPP	Victorian Councillor
David Jerome	VK4YAN	Queensland Councillor
Bill Wardrop	VK5AWM	SA Councillor
Neil Penfold	VK6NE	WA Councillor
Joe Gelston	VK7JG	Tasmanian Councillor

Executive

Peter Gamble	VK3YRP	Federal President
Ron Henderson	VK1RH	Vice Chairman
Brenda Edmonds	VK3KT	Federal Education Officer
Bill Rice	VK3ABP	Editor Amateur Radio
George Brzostowski	VK1GB	Federal Executive
Kathy Gluyas	VK3XBA	Federal Treasurer
David Wardlaw	VK3ADW	Immediate Past Federal President

Federal Co—ordinators

Amsat	Graham Ratcliff	VK5AGR
Awards Mgr	Ken Gott	VK3AJU
Contest Mgr	Frank Beech	VK7BC
Education	Brenda Edmonds	VK3KT
EMC	Hans Ruckert	VK2AOU
Historian	John Edmonds	VK3AFU
Intruder Watch	Gordon Loveday	VK4KAL
Int'l Travel Host Exch	Ash Nallawalla	VK3CIT
QSL Mgr (VK9, VKØ)	Neil Penfold	VK6NE
Standards & FTAC	Rob Milliken	VK1KRM
Tapes (Federal News)	Bill Roper	VK3ARZ
	Ron Fisher	VK3OM
Videotape	John Ingham	VK5KG
WICEN	Bill Wardrop	VK5AWM

Executive Office

Bill Roper	VK3ARZ	General Manager & Secretary
Ross Burstal	VK3CRB	Deputy General Manager
Ann McCurdy		Advertising & Administration
Helen Wageningen		Membership & Circulation
June Fox		Accounts & EDP
Earl Russell	VK3BER	EDP Consultant
Ron Fisher	VK3OM	Librarian

DIVISIONS

VK1 — ACT Division, GPO Box 600, Canberra ACT 2601

Officers: President Ted Pearce VK1AOP; Secretary Jan Burrell VK1BR; Treasurer Ken Ray VK1KEN

Broadcasts: 3.570 MHz; 2m ch 6950; 70cm ch 8525; 2000 hrs Sun

Fees:

(City)	Full (F)	$44.00
	Assoc (A)	$44.00
(Country)	Full (C)	$44.00
	Assoc (T)	$44.00
	Pens. (G)	$33.00
	Stud. (S)	$31.00
	Family (X)	$25.00

VK2 — NSW Division, 109 Wigram St, Parramatta NSW 2124, (PO Box 1066 Parramatta), Phone (02) 689 2417

Officers: President Roger Henley VK2ZIG; Secretary Peter Balnaves VK2CZX; Treasurer David Horsfall VK2KFU

Broadcasts: (R Denotes repeater) Times 1100 and 1915 on Sun; 1.845 MHz AM, 3.595 AM/SSB, 7.146 AM (1100 only); 28.320 SSB, 52 120 SSB 52.525 FM; 147.000 FM(R) 438.525 FM(R); 584.750 (ATV Sound) Relays also conducted via many repeaters throughout NSW.

F	$41.50
A	$39.50
C	$41.50
T	$39.50
G	$34.50
S	$22.50
X	$24.50

VK3 — Victorian Division, 38 Taylor St, Ashburton Vic 3147, Phone (03) 259 9261

Officers: President Jim Linton VK3PC; Secretary Barry Wilton VK3XV; Treasurer Rob Hailey VK3XLZ

Broadcasts: 1.840 MHz AM, 3.615 SSB, 7.085 SSB, 147.250 FM(R) Mt Macedon; 147.225 FM(R) Mt Baw Baw; 146.800 FM(R) Mildura; 438.075 FM(R) Mt St Leonard 1030 hrs on Sun

F	$50.00
A	$45.00
G	$38.00
S	$27.00
X	$27.00

VK4 — Queensland Division, GPO Box 638, Brisbane Qld 4001, Phone (07) 284 9075

Officers: President David Jones VK4NLV; Secretary John Aarsse VK4QA; Treasurer Eric Fittock VK4NEF

Broadcasts: 3.605 MHz, 7.118, 14.342, 18.132, 21.175, 28.400, 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday; Repeated on 3.605 & 147.150 MHz, 1930 Mon

F	$45.00
A	$45.00
C	$45.00
T	$45.00
G	$36.00
S	$27.00
X	$27.00

VK5 — South Australian Division, Thebarton Rd, West Thebarton SA 5031, (GPO Box 1234 Adelaide SA 5001), Phone (08) 352 3428

Officers: President Don McDonald VK5ADD; Secretary Hans van der Zalm VK5KHZ; Treasurer Bill Wardrop VK5AWM

Broadcasts: 3.550 MHz, 14.175, 28.470, 53.100, 147.000 FM(R) Adelaide; 146.700 FM(R) Mid North; 146.900 FM(R) South East; ATV Ch 34 579.00 Adelaide; ATV 444.250 Mid North; (NT)3.555, 146.500, 0900 hrs Sun

F	$44.00
A	$44.00
C	$44.00
T	$44.00
G	$35.00
S	$26.00
X	$26.00

VK6 — West Australian Division, PO Box 10, West Perth WA 6005, Phone (09) 474 2626

Officers: President Alyn Maschette VK6KWN; Secretary Pending; Treasurer Bruce Hediand - Thomas VK6QO

Broadcasts: 146.700 FM(R) Perth, at 0930 hrs Sun, relayed on 3.560, 7.075, 14.115,14.175, 21.185, 28.345, 50.150, 438.525 MHz; Country relays 3582, 147.350(R) Busselton; 146.900(R) Mt William (Bunbury)147.225(R); 147.250 (R) Mt Saddleback 146.725(R); Albany 146.825(R) Mt Barker; Broadcast repeated on 3.560 at 1930 hrs.

F	$42.00
A	$42.00
C	$42.00
T	$42.00
G	$35.00
S	$22.00
X	$23.00

VK7 — Tasmanian Division, PO Box 1010, Launceston TAS 7250

Officers: President Mike Wilson VK7ZWW; Secretary Bob Richards VK7NRR; Treasurer Peter King VK7ZPK

Broadcasts: 146.700 MHz FM (VK7RHT) at 0930 hrs Sun relayed on 147.000 (VK7RAA), 146.750 (VK7RNW), 3.570, 7.090, 14.130, 52.100, 144.100 (Hobart) Repeated Tues 3.590 at 1930 hrs

F	$42.00
A	$42.00
C	$42.00
T	$42.00
G	$38.00
S	$24.00
X	$22.00

VK8 (Northern Territory) is part of the VK5 Division and relays broadcasts from VK5 as shown (received on 14 or 28 MHz).

Note: all times are local. All frequencies MHz.

WIA NEWS

Bill Roper VK3ARZ, General Manager & Secretary

WIA 80 AWARD

A special award will be offered to mark the 80th anniversary of the world's first and oldest national radio society, the Wireless Institute of Australia.

The award is open to all radio amateurs and shortwave listeners, and wil operate from November 1st, 1989, until December 31st, 1990.

To qualify for the award those living in Australia (except VK9 and VK0) need to contact (log) 80 members of the WIA.

All others need contact only eight WIA members.

Contacts through ground based repeaters are not permitted, although simplex contacts can be pre-arranged via repeaters.

Each WIA member worked on either the 30 metre, 17 metre and 12 metre bands will count as two contacts for the award.

For the contact to be valid, it must include the WIA membership number of the WIA member involved, and the number must be logged.

This number can either be the one which appears on the WIA membership certificate, or the six-digit number on the address label of the WIA journal, Amateur Radio magazine, sent each month to WIA members.

All station callsigns issued in the name of the WIA will share the number 80 as their membership number.

To claim the award as log extract must be submitted that includes the callsigns and membership numbers of the required number of WIA member contacts.

The cost is $A5.00 for claimants in VK, P29, ZL and Oceania. All others submit $US5.00, or eight IRCs.

Requests for awards to be endorsed for conventional modes will only be accepted if all contacts are made in two-way communications in that mode. Cross-mode contacts are not valid for endorsements.

Claims should be made to: WIA 80 Award Manager, Mr Ken Gott, VK3AJU, 38A Lansdowne Road, East St. Kilda, 3183, Victoria, Australia.

WARC NEWS

Radio amateurs throughout the world are very interested whenever a World Administrative Radio Conference, commonly known as a WARC, is to be held. Many rumours and suggestions have been circulating over the past 12 months or so.

At frequent intervals the International Telecommunications Union, which is the specialised agency of the United Nations dealing with telecommunications, issues press releases.

Careful perusal of these press releases has revealed the following information.

The recent ITU Plenipotentiary Conference, held in Nice during May and June 1989, decided that the first possibility of convening a WARC would be in 1992, probably in Spain.

The agenda for this 1992 Conference will be established by the Administrative Council, taking into consideration the resolutions and recommendations from WARC HFBC-87, WARC MOB-87, and WARC ORB-88. In addition, this Conference may consider defining new space services in frequency bands above 20GHz.

The Conference is expected to look at:

2 - 30MHz for additional allocations to the broadcasting service;

0.5 - 3.0GHz for allocation to the land mobile service, the mobile-satellite service, the direct broadcasting-satellite service, the space research service, and the space operations service; and

11.7 - 23.0GHz for allocation to the broadcasting satellite service for high definition television.

The following amateur bands will most likely be involved:

3.5MHz band which, in Region 2, has broadcasting footnoted into the top 50kHz. Broadcasting is also adjacent to the top of the band in Region 3;

7MHz band, which is the most critical as far as the amateur service is concerned due to the differences in regional allocations and the known desires of the broadcasters;

21MHz band because there is a broadcasting allocation on the immediate upper band edge; and 1260MHz.

The final agenda, the length of the Conference (possibly 4 weeks), and the venue wil be set by the ITU Administrative Council probably early in 1990.

Also of importance to the amateurs in Region 3 is a Regional Administrative Radio Conference to establish criteria for the shared use of the VHF and UHF bands allocated to Mobile, Broadcasting and Fixed Services; and, if necessary, planning for the Broadcasting Service in all or part of Region 3 and countries concerned in Region 1 (date and duration to be determined by the Administrative Council after consultation with members concerned).

The reason for the importance of this conference is because the amateur service shares many of its frequency allocations on VHF and UHF. The demands for access to frequencies in this part of the spectrum have also increased greatly since WARC79.

AMATEUR RADIO NOW THE PRIMARY SERVICE ON 2 OF THE WARC BANDS

Further to the news item on page 7 of June 1989 issue of Amateur Radio, the Department of Transport and Communications have advised the WIA that, as a result of band clearances which were agreed at the WARC in 1979, and which came into effect as from 1st July 1989, there has been a change in status of the Amateur Service from that of a secondary service to the primary service in the bands 18.068 - 18.168 MHz and 24.890 - 24.990 MHz.

This means that the footnotes to the bandplans for those frequencies, relating to avoidance of operation within +/- 4 kHz of 18.075, 18.105, 18.125, 18.130, 18.145, 18.147, 18.160, 24.900, and 24.9014 MHz, no longer apply.

INTRUDER WATCH REPORTS

The appointment of Gordon Loveday, VK4KAL, as the new Federal Intruder Watch Co-ordinator, was ratified at the meeting of the Executive of the WIA on Tuesday, 17th July 1989.

The Intruder Watch service, or as it is more commonly known overseas, the International Amateur Radio Union Monitoring Service (IARUMS), is a very important function of organised amateur radio in the fight for protection of our frequencies.

Intruder watching is not an activity for the "sprinter", but more for the "marathon runner". Monitoring the amateur bands for unauthorised intruders, which are those transmissions emanating from Governmental, Commercial or Military sources, is a time consuming and precise task.

If the Authorities are to be convinced that intruders are in fact causing harmful interference to the Amateur Service, then they are not going to be convinced by the occasional report.

The Australian Intruder Watch service needs a multitude of reports if we are going to have any success against the many intruders on the HF bands.

Individual intruder watchers should send their regular monthly reports to their Divisional Intruder Watch Co-ordinator.

Divisional Co-ordinators must send their monthly reports to reach the Federal Intruder Watch Co-ordinator during the first week of the following month. And these State reports should now be sent to Gordon Loveday, VK4KAL, "Aviemore", Rubyvale, Queensland, 4702.

STOLEN EQUIPMENT

The rash of stolen amateur radio equipment continues. The latest victim is VK5EZ, L E Hauber of Glengowrie, South Australia whose YAESU FT101E HF transceiver, serial number 7K301042 was stolen on the 8th of July this year.

This item has now been entered into the WIA Stolen Equipment register. It is of some concern to note the steadily increasing number of stolen items being added to this register, and the very few recoveries.

MUTIPLE CALL SIGNS

During recent discussions with DoTC in relation to obtaining callsign information for the 1990 Australian Radio Amateur Call Book, it came to my attention the number of amateurs who hold more than one station licence and callsign.

Apparently, for a variety of reasons, an increasing number of amateurs like to retain their Novice or Limited callsign when they upgrade their licence. DoTC told me they have no restrictions on the number of callsigns that an amateur may hold, provided the licence fee is paid for each station licence.

A quick check of our own records showed one amateur who currently holds no less than 8 separate station licences and callsigns!

CALLSIGNS OF DECEASED AMATEURS

Another point clarified with DoTC during my visit was that the policy of DoTC in relation to the re-issue of the callsign of a deceased amateur has not changed.

The callsign of a deceased amateur is not re-issued for a minimum period of 2 years after the date of death, unless under special circumstances such as the written permission of the next of kin to re-issue the callsign to a particular person.

Because of some difficulties with the SMIS computer system now used by the Licencing section of DoTC, the last Call Book included the names and callsigns of many deceased amateurs, but with the address being shown as the local DoTC office.

The callsign listings to be provided by DoTC for the 1990 Call Book should resolve this problem by excluding all deceased amateurs' callsigns.

WIA AWARDS CERTIFICATES

The Federal Awards manager recently advised the Executive that the cost of Award certificates to non-members of the WIA has remained at $US2.00 for at least the last 6 years. Ken pointed out that, because of inflation, that amount no longer covers the cost of post and packing overseas, let alone the cost of the certificate itself. At the Executive meeting on 18th July 1989, Executive ratified the Awards Manager's recommendations for new fees as follows: $US5.00 for those applicants outside Australia
$A5.00 for non-WIA member applicants within Australia; and
FREE to all WIA members.

BACK ISSUES OF AMATEUR RADIO MAGAZINE

The Executive Office is clearing out its stocks of back issues of Amateur Radio magazine. If you need to complete your files of AR, this may well be your last chance.

Our stocks range from the January 1969 issue through to the December 1987 issue, and most issues in that period are currently in stock. Back issues of your choice are available at $2.50 each, which includes packing and postage anywhere in Australia, or you can receive 10 back issues of our choice for $17.50, which also includes packing and postage.

These copies of Amateur Radio include articles on antennas, power supplies, equipment reviews, etc., and make excellent reading. This is a limited offer, so don't miss out. It may well be your last chance to obtain these magazines.

Write to Amateur Radio Back Issues, PO Box 300, Caulfield South, 3162, Victoria with your order and remittance.

ARRL 40 METRE DXCC AWARD

The ARRL has just announced the recipients of the first 20 certificates issued for the newly created 40 Metre DXCC Award. Congratulations are in order to VK6HK who shares certificate number 11 with JA8EAT and SM0AJU with a total of 301 countries confirmed.

NEW PREFIX IN THE PACIFIC

From a recent ARRL Newsletter we learn that the ITU has allocated the call prefix V6 to the Federated States of Micronesia which were formerly one of the users of the KC6 prefix. Amateur stations will use callsigns from V63AA to V63ZZ.

The call prefix V7 has been allocated to the Republic of the Marshall Islands (formerly KX6). Amateurs will use call signs from V73AA to V73ZZ.

CLUBS WIA MEMBERSHIP PERCENTAGE

My comments in July issue of Amateur Radio about the percentage of club members who are also members of the WIA has evoked some response. In the July edition of their Monthly Newsletter, the Westlakes Amateur Radio Club state that because they actively encourage club members to join the WIA, or perhaps because club members see first-hand a tangible benefit of belonging to the WIA through the operation of the VK2 QSL Bureau, their club WIA membership to non-WIA membership is 68%.

Peter, VK6BWI, also contacted us and advised that the CW Operators QRP Club, with a current membership of 130, has a WIA membership to non-WIA membership ratio of around 80%! As Peter states, this is a very high figure, especially so for a club which has yet to affiliate with the WIA.

Peter also made the interesting observation that 68% of the VK contacts entered in his log are WIA members. He believes that the WIA could claim to have two thirds of the active amateurs in Australia as members.

Continued on page 49

Opening Address

Remembrance Day Contest 1989

W R Gronow - VK3WG, RAAF (Retd)
ex Federal President WIA
ex State President Victorian Division WIA
President RAOTC

I count it a privilege to be given the opportunity of delivering the opening address to the Remembrance Day Contest, 1989, which is held to perpetuate those Australian Radio Amateurs who paid the supreme sacrifice in the service of their country.

During my years of service as a member of the Royal Australian Air Force, I had the opportunity to come into contact with many of my fellow Radio Amateurs who served in the Signals and Radar elements of the RAAF and allied Services.

These comrades won my appreciation for their devotion to duty and the self sacrifice they exhibited in the service of their country in time of war.

It would be fitting to remind you of the RAAF Wireless Reserve which was initiated by the Wireless Institute of Australia and whose members provided a most valuable addition to the Directorate of Signals of the RAAF. Similarly reservists in the Navy and Army provided a trained and readily available compliment of loyal and devoted executives, radio engineers, maintenance mechanics and operators for their respective branch of the Service.

The Radio Amateur is noted not only for his keen interest in the technical aspects of radio communications, but for his fraternal attitude to other Radio Amateurs throughout the world. This friendly attitude was demonstrated to a high degree in the Armed Services during World War 2, where radio amateurs and their service colleagues worked together so harmoniously.

Because of their devotion to, and interest in, radio, it is pleasing to note that many members of the services became licensed amateurs when hostilities ceased.

My wartime service brought me into contact with radio amateurs of all the armed services - Navy, Army and Air Force, and I remember the lasting friendships thus formed between the three groups as we worked together for a common purpose.

It is indeed fitting that we radio amateurs should remember with gratitude the sacrifice of those of our comrades who gave their lives and also those who were wounded as a result of their war service. Many of our comrades still suffer as casualties from their war injuries, and therefore deserve our appreciation and thanks for their devotion to duty. Of course we should also remember the tragic loss experienced by the widows and children of those who gave their lives on active service, for they too paid a heavy price. It is certain that we could do no less than remember with respect and affection, all such, especially those who gave their lives for the Commonwealth and whose loyalty and devotion to duty, we now celebrate in this the 1989 Remembrance Day Contest, which I now have pleasure in declaring open. ar

A Brief Autobiography

William Rees Gronow
VK3WG

About 1855 two young Welshmen came to Victoria to try their luck at the Ballarat goldfields. There they each met and married two young Welsh girls at the Welsh Church in Ballarat. Each family was eventually related, when my father and mother married in 1897 at Williamstown, where I was born on 30 March 1908. At the age of two years we came to live at South Melbourne, where I attended the local state school, later transferring to Scotch College at East Melbourne. On leaving school I joined the staff of Buckley & Nunn, the well-known Bourke Street drapers, where I gained a sound practical commercial training.

When I was about thirteen, I became interested in wireless communication and built a crystal receiver, to listen to ship shore and later phone transmissions from AWA's experimental station in Little Collins Street, Melbourne. Shortly after this period, I passed the required morse test, to obtain my official receiving license V574, which was issued in 1921. It was about this time that I built my first valve receiver and later in 1925, I obtained my AOCP - No 178.

When I was about twenty, we, as a family went abroad for an extended world tour and I then met many Canadian, American, English, and Continental Amateurs and these contacts furthered my knowledge of radio, and on the grinding of quartz crystals in which I became very interested. After leaving Buckley & Nunn, I joined my father as a director in several softgoods businesses, which he operated in the city of Melbourne.

I was an active member of the Council of the Victorian Division of the WIA and participated in the organising of the several annual exhibitions, which introduced radio to the general public. Also I was jointly instrumental in promoting the WIA journal Amateur Radio, and setting up the Disposal Equipment distribution of war time surplus equipment to WIA members.

During this period, I became Federal President and State President of the WIA several times and I am currently the President of the RAOTC and a life member of the WIA. I was also on the Council of the Royal Flying Doctor Service (Vic Div), and I became the convenor of its Federal Radio Committee.

When we returned from abroad, I set up my amateur station as A3WG at our home on St Kilda Road, opposite the Shrine of Remembrance. This call was later changed to OA3WG and was later transferred to Malvern as VK3WG, after I was married in 1934. It was during the depression years that I changed my occupation to the electrical engineering profession, when I joined Warburton Franki handling electrical products, General Radio and Weston Instruments.

I continued my WIA activities by setting up the WIA station at Essendon, in conjunction with the Aero Club and also I built and installed the radio equipment for the Mackay Central Australian aerial expedition for which Howard Love was the operator.

After leaving Warburton Franki, I enlisted in the RAAF in early 1940 and became an officer in the Directorate of Signals RAAF HQ, where I was engaged in the engineering design of automatic petrol and diesel engine power supplies, and the location and construction and transmitting, receiving and DF stations and their aerial systems. My service covered a period of

Continued on page 9

The Unique Pedal Wireless

Mervyn Eunson VK4SO
Box 1513 GPO
Brisbane 4001

Restoring Traeger radio sets of the Flying Doctor Service reveals that each design is that of a genius.

One on the bench is typical, a multi-channel 50w PEP sideband transceiver from the sixties. The 12-volt power supply is a solid-state toroid inverter for the QZ06/20 final, and all transistors in receiver and oscillator are of the one type, BF195. The built-in adjustable antenna loading coil resembles nothing so much as a large rotary potentiometer. Simplicity allied with efficiency is the keynote.

But the favourites always will be the older CW sets. Of these, the portable "pedal wireless" takes the prize as an improved version of the initial basic homestead set. This portable is a modified design for roadside use by the roving patrol padres of Flynn's ministry, who sixty years ago travelled the scattered outback on horse or camel.

The unit is in two wooden cases of solid timber, stoutly dovetailed for strength and rebated for dustproofing. Construction of the cases is a masterpiece of the cabinet-maker's art.

One of the cases contains the pedal generator to supply high-tension direct-current of 180v for the lone transmitter valve: other compartments held two large 1.5v dry cells for filament supply and 45v B-batteries for the receiver. The other case, of identical size, contains the radio, with both transmitter and receiver on the one chassis.

For operation, both boxes are stacked together, with a wire for an aerial thrown out and the morse key plugged in. The open lid made a convenient place to hang the hat, doffed to don earphones. Afterwards, a thick leather strap was strung through recessed brass handles, when the two cases became a balanced load slung across horse or camel for transport.

An end-fed quarter-wavelength wire, worked against earth, could form the aerial. But the poor conductivity of inland deserts often dictated the use of a counterpoise instead of an earth connection.

Delving into the compact innards is a treat. The single-stage transmitter is a modified Pierce oscillator having tuned output on 2020 kHz. The open slab crystal is protected in a handsome screw-in cylinder of brass. A Philips' PH-233 pentode valve

CW From A Gulf Outpost. While quality is poor, this is the most valuable historical print in existence - operator is padre "Skipper" Partridge 8XP in 1931.

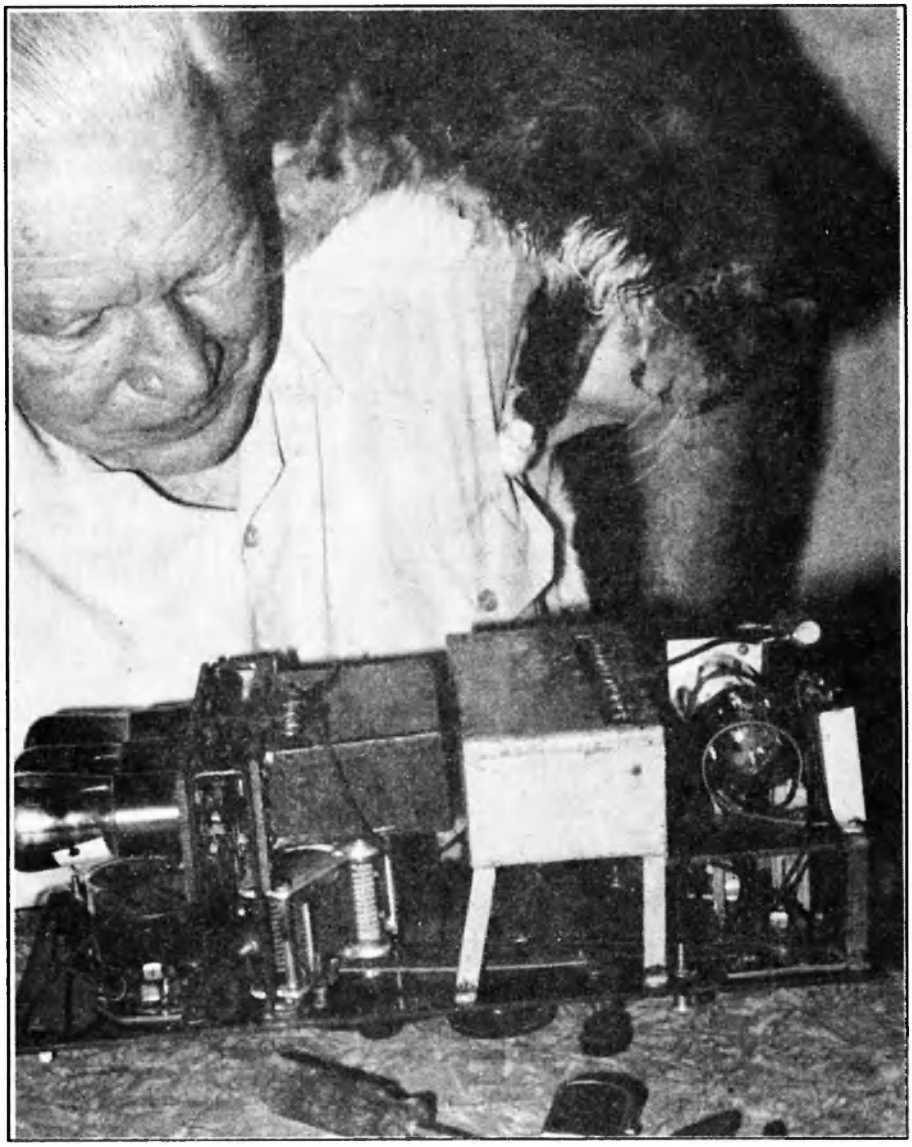
is used, with the feedback for oscillation adjusted by a "gimmick" capacitor - a 2 inch halo loop of wire coupled by proximity to the plate. The generator delivers 50 mA of current, sufficient to provide 20 mA for the plate and the requirements of screen and its own field coil without undue loading.

All tank circuit components are built into 4-inch plug-in former, fitting flush with the panel, including the exciter crystal and the tuning capacitor. There is also the output indicator, simply a torch globe in series with the rf coil (aerial current is less than 200 mA). And without any sidetone facility, the blinking of this lamp became the means of monitoring transmissions.

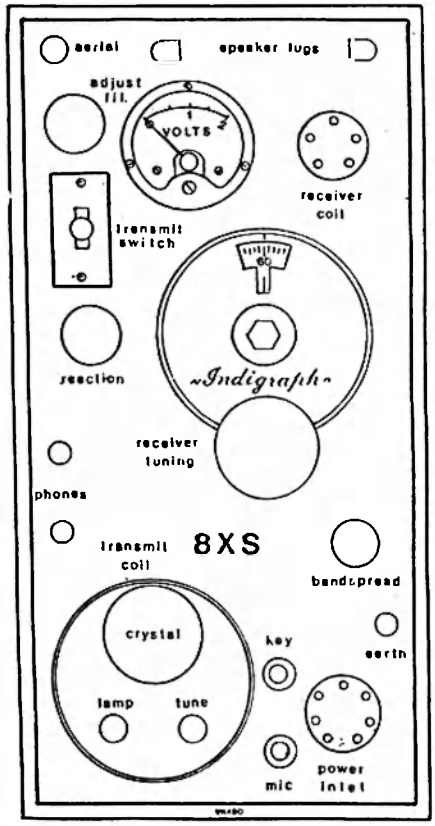
Output power of the oscillator/transmitter is less than 1.5 watts! And this proved adequate with the efficiency of CW. High-power boys may gasp, but upon this mere dribble (undeniably better than nothing) pioneer people staked their lives - notwithstanding the tropical QRN on 148 metres. Even vibrator-type models post-war boasted no greater than 3 watts of AM, stepped up to a heady 10 watts by the end of the modern fifties.

The receiver section of this model is equally stark, but superior to the little homestead 2-valve set that had 9v of high-tension. For here a 3-stage reaction circuit is employed with interstage coupling by means of 2:1 audio transformers. Three Philips A-109 triodes with 1.3v filaments are used, having a gain factor of 9. Evidently chosen for efficiency, plate current of each is a meagre 3 mA at 45v, which allowed over a hundred hours of operation from one set of B-batteries. Negative grid bias is obtained without C-type batteries by using cathode resistors.

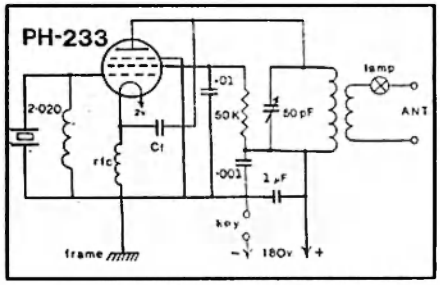
With large cylindrical No 9 size A-cells of 1.5v for heater current, a panel meter allows precise adjustment of filament voltage with a 1.5 ohm rheostat. This performs another function, for there is no volume control or af gain adjustment: in the event of excessive gain, the rheostat may be backed off to reduce emission. An uncommon problem perhaps, for the output stage



H'mm, a new catswhisker! An internal view of the works (That is a cat on Mervyn's shoulder)



Layout of the Panel



The Oscillator/Transmitter

develops 135 milliwatts of audio with full drive.

The receiver is fully tuneable with a variable capacitor attached to a 4:1 "Indigraph" reduction drive: a separate adjustable vane allows generous bandspread. The Marquis plug-in coil covers the upper portion of the broadcast band (for news and weather reports) and tunes up to 2020 kHz, the network frequency of VJI at Cloncurry Base. Due to the "slope detection" function of the regenerative stage, the set resolved outback CW as well as the AM of base and broadcast stations (it also resolves today's sideband transmissions).

High-impedance headphones match to the plate resistance of the output valve. As well, in the lid is a magnificent free-edge loudspeaker of 5000 ohms impedance with the cone mounted face down, seemingly upside about. Its driver, fitted underneath the cone, is a balanced armature inductor unit with a driving rod on which the cone is suspended (superior technology long since gone). Although found to work flawlessly, curiosity caused it to be compared to a modern speaker coupled via a 5K:15-ohm output transformer. The old warrior was found to yield not one jot in terms of sensitivity or fidelity!

While designed primarily for CW transmissions, a microphone socket is provided for limited AM operation. There is no modulator valve, for with this low level of power, it is feasible to modulate the plate directly with a transformer secondary inserted in the high-tension supply line: the primary is coupled to a carbon microphone.

Probing this marvellous set for restoration appeared daunting, for all coupling transformers and cathode resistors are sealed in metal containers filled with pitch for tropic-proofing. It might seem this would complicate servicing, but then apart from regular battery and valve replacements, none would have been necessary. The device was made to last, with all components rated generously, such as a 1500v oil-filled filter capacitor and a 10 watt "Radiokes Maxsome" screen resistor.

After restoration, the set functioned well on test into a non-radiating dummy load. As the fixed channel of 2020 kHz remains a Flying Doctor frequency for emergency

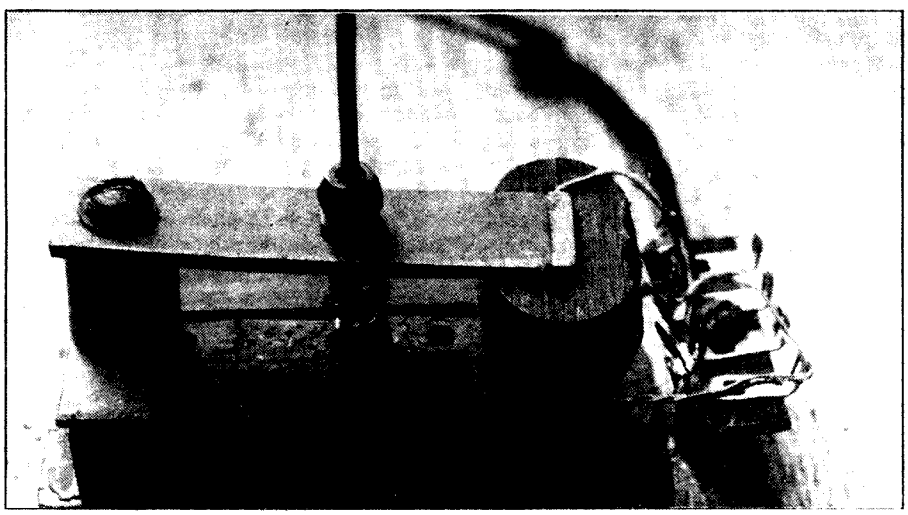
traffic, a modified plug-in coil was wound to suit a crystal on 3540 kHz: this enabled CW operation by working QRP on the amateur 80m band. A kitchen chair was found too high for consistent pedalling, solved by taking a case of essential anti-dehydration supplies from the galley. Then a little practice was required to co-ordinate pedalling the generator with keying the rig (the morse obtained a nice rhythm, reports said).

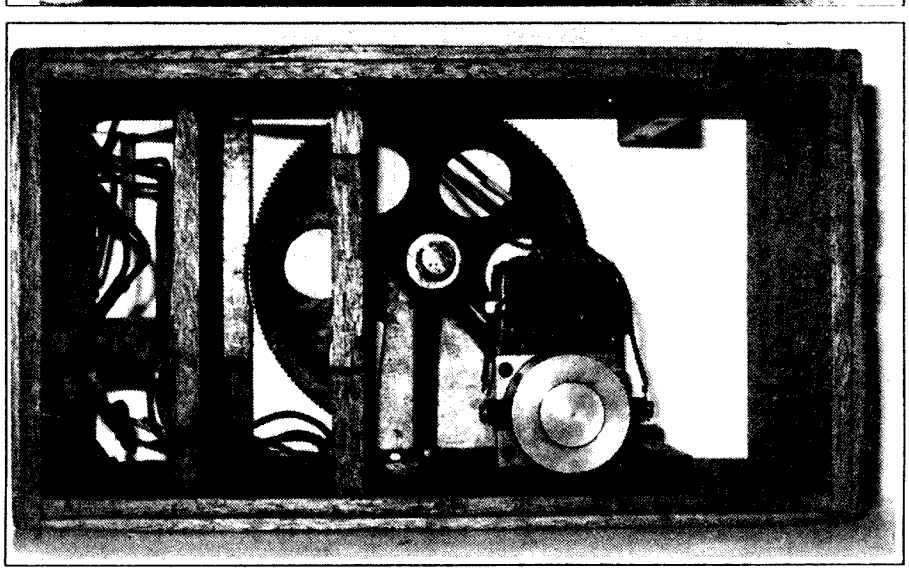
The individual history of this particular set shows that it was licensed in Adelaide late 1933 to the AIM or Australian Inland Mission (as the Flying Doctor Service then was known), and allotted the call-sign 8XS, for use by a patrol padre, the Rev Patterson. The prefix "8" shows that it was a portable station, and the "X" denotes an experimental licence.

One salutes the ingenuity of its amateur designer, Alfred Hermann Traeger, VK5AX. He confounded the experts, who decreed, "it just can't be done"! ar

Padre using phone and dipole. (Rev Fred McKay 1933)

(Below) Loud speaker driver





Interior of Powerpack

Continued from page 6.

A Brief Autobiography

William Rees Gronow
VK3WG

nearly six years and for the last two or three of the war, I was responsible for the installation and maintenance of Signals equipment in boats, vehicles and aircraft.

The final years of service found me in charge of technical development and production of Signals and Radar equipment in Australia, a great deal of my time being give to tropicalisation problems.

When I retired from the RAAF, I worked with several prominent firms in the Radio field, in engineering and sales promotion, eventually setting up my own business, as Zephyr Products with which company I am currently the Chairman of Directors.

I am happy to say that I am still maintaining my life long interest in Amateur Radio.

ar

Output Impedance - Source Impedance - Load Impedance

Lloyd Butler VK5BR
18 Ottawa Ave
Panorama 5041

The relationship between source resistance of an amplifier and its operational load resistance is often not well understood. Using valve and transistor characteristic curves, this relationship is examined.

Introduction

Output impedance is a term commonly used by manufacturers in the specification of the output circuit in electronic equipment such as amplifiers and transmitters. What they usually mean is that this is the load impedance into which the equipment is designed to operate. There seems to be a lot of confusion about the term output impedance as it is often taken to mean, and often meant to mean, the source impedance of the equipment. In precision test equipment, the design is such that the source impedance is made equal to the load impedance into which it is meant to operate. However, in other equipment, the source impedance is usually quite different from the load impedance used and it seems that this is not always appreciated.

In the following paragraphs, we will examine the characteristics which define source resistance and load resistance for valve and transistor power amplifiers. Hopefully, we might be able to clear up a few questions, often misrepresented concerning amplifier output circuits. In the discussion which follows, the word resistance will sometimes be substituted for impedance in the explanations which are given. For the purposes of the discussion, the impedances will be considered as resistive. To eliminate confusion, the term output impedance will also be avoided.

Matching

The idea of matching load impedance to source impedance stems from a principle shown in figure 1 in which a generator supplies power to its load (R1) via its own internal or source resistance (Rs). If we commence with R1 greater than Rs, more power will be dissipated in R1 than in Rs. As we decrease R1, the power in both R1 and Rs will increase up to the point where R1 = Rs and equal power will be dissipated in each. Decreasing R1 further increases the power lost in Rs but the power in R1 is decreased. Clearly, maximum possible power is dissipated in R1 when R1 - Rs.

The problem with this matching system of R1 = Rs is that half the power is lost in the source. Imagine a power supply authority tolerating a system in which half the power they generate is lost in their own generating machines. The best system, from their point of view, is one in which Rs is the lowest. In the valve or transistor amplifier, the problem is not quite the same and this will be discussed further on.

A concern with matching in amateur radio is the prevention of signal reflections on our transmission lines. Reflections occur on a transmission line if the line is not terminated in a resistance equal to its characteristic impedance, or if an impedance discontinuity occurs along the path of the line. Reflections on the line cause standing waves which increase line loss and in the case of pulse or video type signals, degrade the quality of the signals.

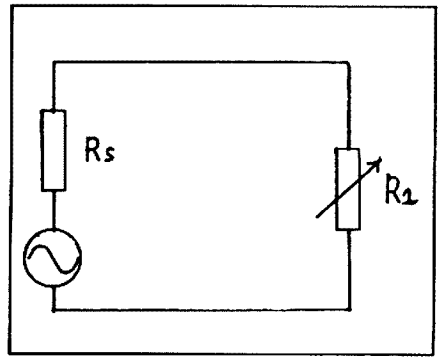


Fig 1. Impedance matching

Let us now consider the source impedance of the transmitter feeding the transmission line. If there are reflections on the line, the reflected signals are returned to the source. If the source impedance is equal to the line impedance, the reflected

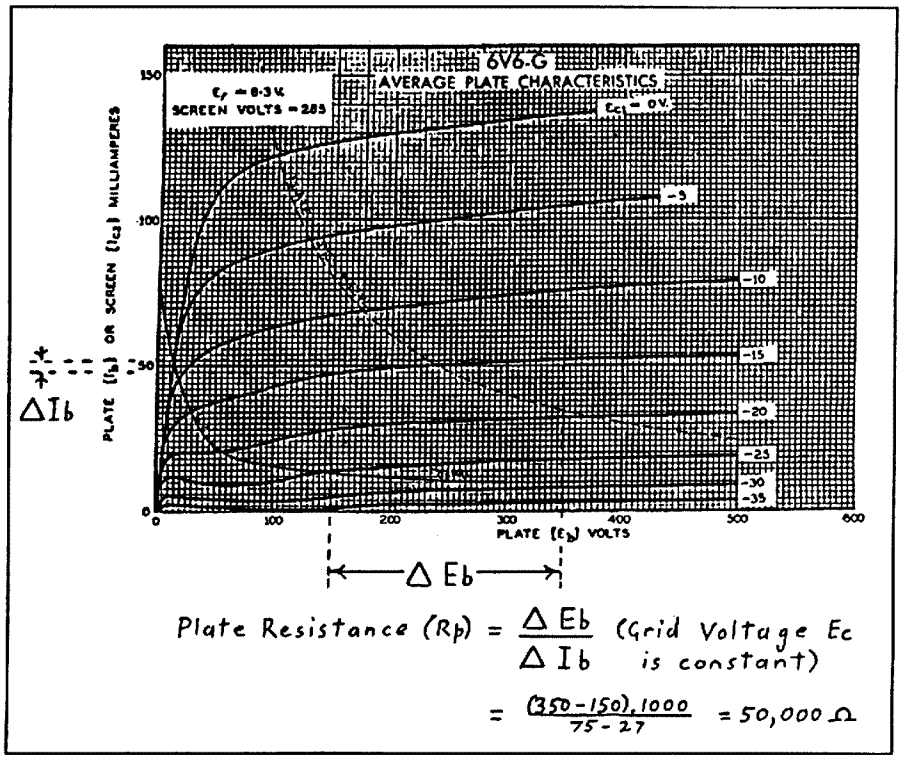


Fig 2. Ib versus Eb curves for a tetrode and the derivation of plate resistance

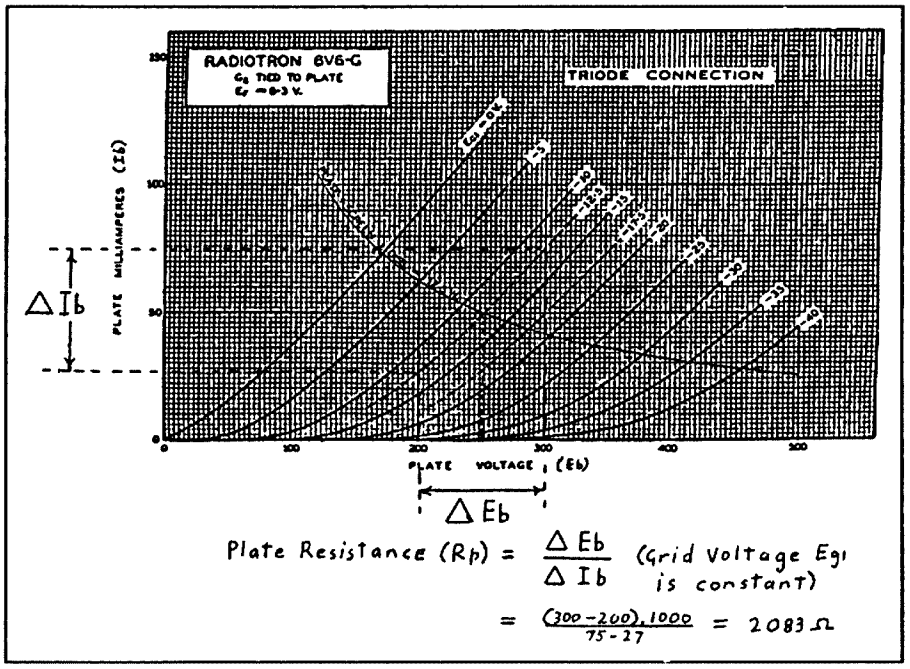


Fig 3. Ib versus Eb curves for a triode and the derivation of plate resistance

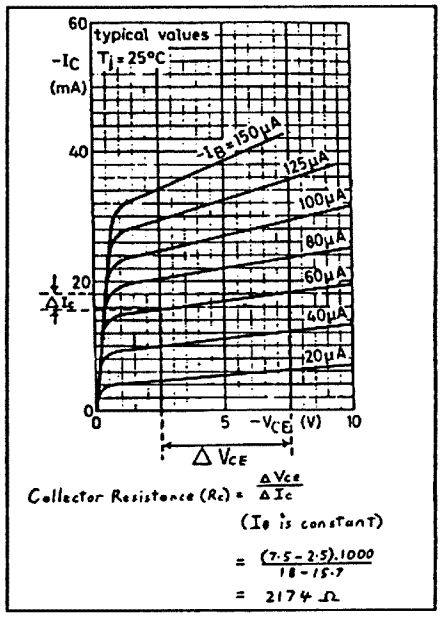


Fig 4. Ic versus VCe curves for a transistor and the derivation of collector resistance

signals will be absorbed by the source. On the other hand, if there is a mismatch here, the reflected signals will be further reflected back down the line to aggravate the standing wave condition. So here is a good reason for the source impedance to be matched to the transmission line impedance.

Suppose we have a transmission line which is correctly matched and has no reflections on the line, or alternatively, there are standing waves but these are made invisible to the transmitter by inserting a matching network or aerial tuner between the transmitter and the line. In this case, there is no reflected signal to be absorbed or re-reflected and as far as standing waves are concerned, it does not matter one iota what source impedance is seen in the transmitter. With this considered, perhaps the source impedance of the transmitter is not so important after all. Our main concern is that the specified load impedance (usually 50 ohms resistive) is reflected across the transmitter output from the transmission line load.

In the paragraphs which follow, source resistance and load resistance will be examined using valve and transistor characteristic curves to show how these two parameters are likely to be widely mismatched. To demonstrate the arguments which will be submitted, the amplifiers will be considered to operate essentially in Class A as this class of operation is more straight-forward to analyse than classes which utilise plate or collector current flow over less than the full AC cycle.

Source Resistance

Source resistance of an amplifier is equal to the AC plate resistance (or collector resistance in the case of the transistor) divided by the impedance ratio of the output coupling circuit. For simplification of the discussion, impedance ratio of the output circuit will be taken as 1:1.

The plate resistance (Rp), at a given grid voltage (Ec), is the reciprocal of the slope of the plate current (Ib) versus plate voltage (Eb) curve. On the curves of figures 2 and 3, it is derived by taking the ratio of a change in Ib to a change in Eb for a constant Ec. In the beam tetrode case of figure 2, grid voltage (Ec) is set at -15V and plate resistance is derived as 50,000 ohms. In the triode example of figure 3, grid voltage is set at -12.5V and plate resistance is derived as 2,083 ohms. Observe the difference in slope between the tetrode and triode curves and the resultant much higher plate resistance of the tetrode than that of the triode.

In the transistor example (figure 4), collector resistance (Rc) is the ratio of a change in collector/emitter voltage (Vce) to a change in collector curent (Ic) for a constant base current (Ib). For a base current of 60 micro-amps, Rc is derived as 2,174 ohms.

Load Resistance

The reflected load resistance (R1) to the valve amplifier can be represented by drawing a load line on the Ib versus Eb curves (refer figures 5 and 6). The load line represents the swing of plate voltage and plate current under operational or dynamic conditions. Its slope is equal to -1/R1, where R1 is the load resistance, or the ratio of a change in Eb to a change in Ib read along the load line in reversed sign.

The valve characteristic curves are far from perfect and the load line is set for a compromise which achieves as high as possible maximum power output consistent with an acceptable level of distortion. The load line must also lie within the limits of the maximum power dissipation curve. For the tetrode case shown in figure 5, the optimum load resistance is around 5,000 ohms.

Referring back to the derivation of plate resistance, we see that at 50,000 ohms, the plate resistance is ten times the load resistance. The plate resistance is seen by the load as the source resistance which, for the tetrode, is typically much higher than the load resistance.

Figure 6 shows a load line selected for the triode connected amplifier. In this case, the load resistance is 3,889 ohms and different from the tetrode, is higher than the plate resistance which was derived as 2,083 ohms. For the triode case, the source resistance at the amplifier output is typically lower than the load resistance.

Finally, figure 7 shows a load line drawn for the transistor. With the operating point set for a supply voltage (Vcc) = 5V and a base current (Ib) = 60 micro-amps, the line is drawn from the X axis, at a value of Vce equal to twice Vcc, through the operating point, to the Y axis scaled Ib. The load resistance is equal to the ratio of a change

in Vc to a change in Ic, read along the load line in reversed sign. The load resistance is derived as 294 ohms and much like the tetrode, is a much lower value of resistance than that derived for the collector resistance, or source resistance, of 2,174 ohms.

The examples illustrate the general relationship between source resistance and load resistance in valve and transistor power amplifiers. For tetrode valve and transistor amplifiers, the source resistance is very much higher than the load resistance. The pentode valve is also much the same as the tetrode in this respect.

The triode valve is different. For this amplifier, the source resistance is normally lower than the load resistance. For class A triode power amplifiers, the load resistance usually works out to be around two to three times the plate resistance.

Efficiency

The amplifier stage is often depicted using the analogy of figure 1, of an AC generator in series with its own plate or collector resistance, connected to the load. This is a very useful analogy to calculate such factors as stage gain, but if we use it to calculate efficiency, the analogy fails. When we apply it to the tetrode or pentode valve or the transistor amplifier, each of which have high AC source resistance compared to the load resistance used, we see a condition in which most of the power generated appears to be lost within the source resistance of the amplifier. This condition is not true.

It can be shown that, for an amplifier with ideal characteristic curves, maximum efficiency class A is 50% and maximum efficiency class B is 78%. The transistor efficiency closely approaches these values, limited essentially by the bends in the curves at low collector voltage and which are clearly seen in figures 4 and 7. To illustrate the class A case, we will pretend the bends in the curves are not there as shown in figure 8. DC power is given by the product of collector supply voltage (Vcc) and the average collector current (Icc), ie

Pdc = Vcc.Icc

Maximum AC voltage swing is twice Vcc and maximum AC current swing is twice Icc. To get RMS values we divide both of these by 2 root 2 and the product of the two results is AC power, ie

$$Pac = \frac{2Vcc.2Ic}{(2\sqrt{2}).(2\sqrt{2})} = (4Vcc.Icc)/8 = (Vcc.Icc)/2$$

The AC power is clearly half the DC power and the maximum efficiency is 50%. It should be observed that this calculation is unaffected by the slope of the Ic versus Vc curves, and hence, unaffected by the high

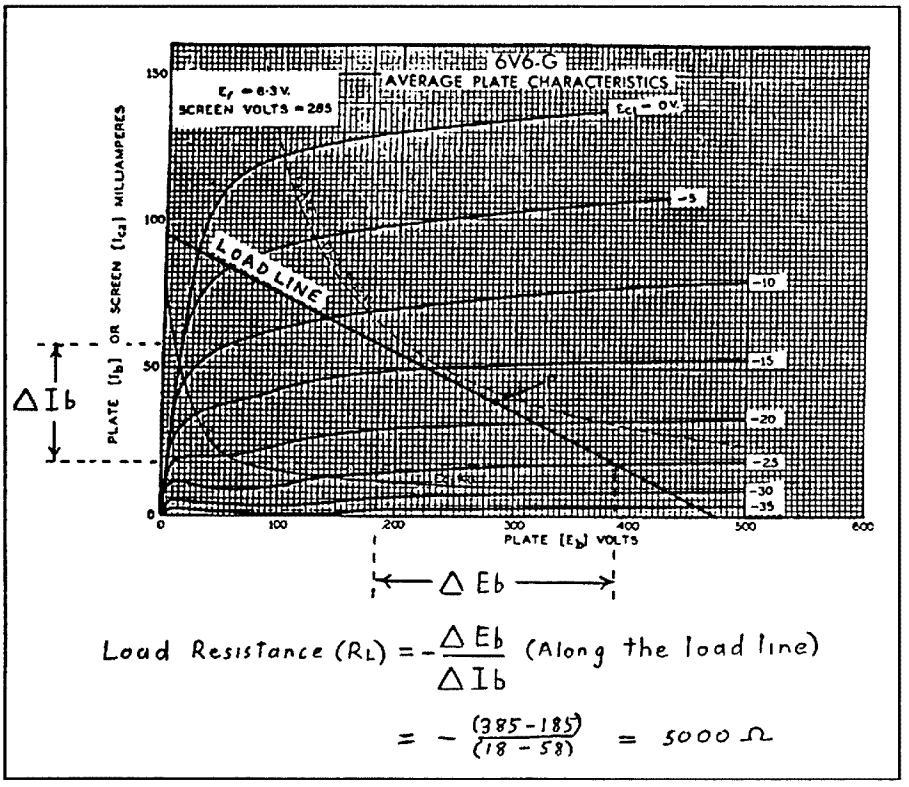


Fig 5. Load line and load resistance of a tetrode valve.

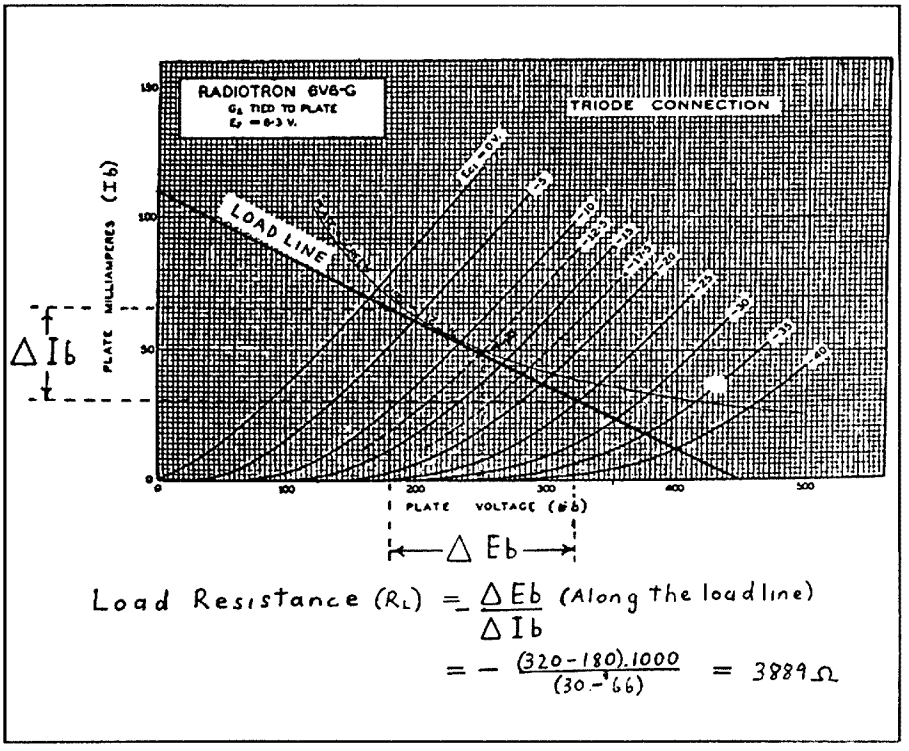


Fig 6. Load line and load resistance of a triode valve.

value of collector resistance. For our amplifier, the circuit analogy of figure 1 cannot be used to calculate efficiency of the stage.

It is interesting to observe that, when Vc is maximum, Ic is minimum and when Vc is minimum, Ic is maximum. In other words, the AC current swing is 180 degrees out of phase with the AC voltage swing. This is exactly opposite to power consumed in a resistance and hence we can consider the amplifier as a negative resistance or a generator of power.

Maximum Power Output & Power Sensitivity

At this point we will examine the optimum value of load resistance. Maximum power output is achievable when the load line intersects the Vc axis at twice Vcc, as shown in figure 8 and as curve A in figure 9. If the load resistance is reduced so that we get curve B in figure 9, the voltage swing is limited to that shown by XX. If the load resistance is increased so that we get curve C, the current swing is limited to that shown by YY. In either case, the maximum power output is less than that achievable with curve A. All this leads to the well known formula:

Load resistance (R1) = $\frac{Vcc^2}{2Po}$

Where theoretical maximum power (Po)
= Power input/2
= (Vcc.Icc)/2

Maximum power output should not be confused with power sensitivity which is the ratio of power output to the input signal power to the base. It is equal to:

$\frac{(\Delta Ic)^2.RL}{(\Delta Ib)^2}$ (along the load line)

or approximately $(Hfe)^2.RL$

where Hfe is the transistor current transfer ratio and collector resistance (Rc) is much greater than R1.

Power sensitivity is increased as R1 is increased but, of course, at the expense of lower maximum power output.

Although the amplifier generates AC power, it is not quite the same as an alternator source. It is really a direct current device in which the circuit DC resistance and hence the circuit current, is made to change by changing the input base current, or in a valve, the grid voltage. By feeding an AC signal to the input, an AC current component is superimposed on the direct current. The AC is separated from the summed result by capacitive or transformer coupling.

In other respects, the amplifier behaves like an AC source. The source resistance can be considered to be what a signal would see if fed backwards into the amplifier output. (For example, the reflected signal returned on a transmission line or the signal generated by resonance in a loudspeaker following an impulse or transient). In this case, the backwards signal voltage attempts to vary the amplifier current and in the transistor, the collector current tends to remain near constant resulting in a high reflected AC resistance.

As pointed out before, the analogy of figure 1 is not relevant to calculation of maximum power output or power efficiency but it certainly can be used in the derivation of stage gain and power sensitivity. An example of its use is the well known formula for stage gain in a triode valve amplifier:

Stage gain (A) = $\frac{\mu R1}{R1+Rp}$

where μ = amplification factor

Making use of figure 1, the generator voltage is equal to the AC input voltage multiplied by the amplification factor. Of course stage gain can also be directly read from curves such as those shown for the triode in figure 6. In this case, stage gain is

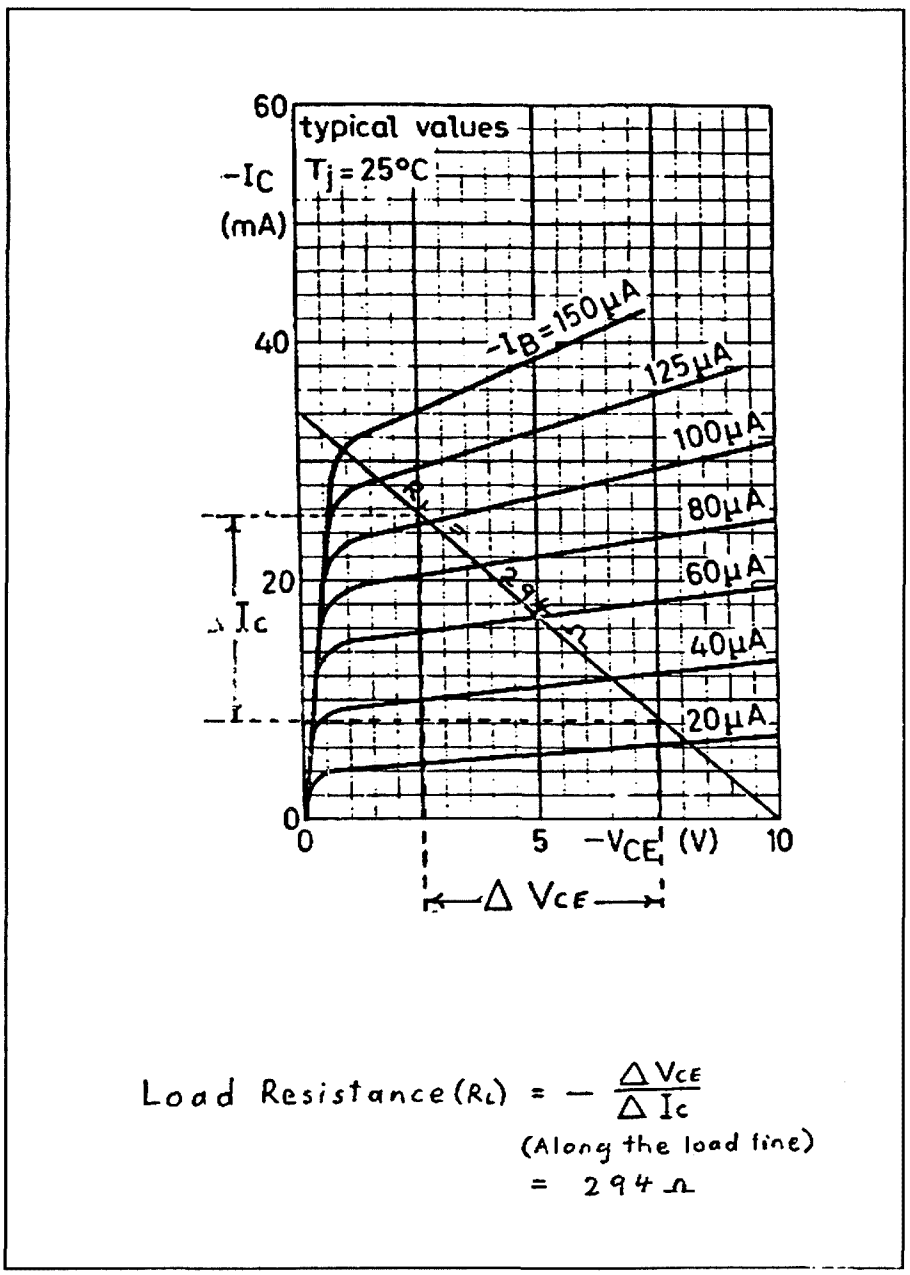


Fig 7. Load line and load resistance of a transistor

equal to the ratio of change in Eb to change in Ec read along the load line.

Negative Feedback

We have shown that source resistance in an amplifier can be quite different from the load resistance used, but often there is a need to change it so that it equals the load resistance or some other desired value. For example, in a moving coil loudspeaker there is a need for heavy damping to prevent the speaker cone resonating when a transient is delivered. This can be done, without loss of speaker efficiency, by feeding the speaker from a low resistance source which acts as an electrical load to damp out the resonance.

Negative feedback is commonly applied to amplifiers to reduce distortion and noise generated within the amplifier itself. It is also used to modify the amplifier source resistance. Negative feedback can be categorised into negative voltage feedback and negative current feedback.

Negative voltage feedback is defined as voltage fed back to the amplifier input in proportion to the voltage across the output load (refer figure 10). Negative current feedback is defined as voltage fed back to the amplifier input in proportion to the current through the output load (refer figure 11). Voltage feedback decreases the effective source resistance whilst current feedback increases it. By applying a controlled amount of voltage or current feedback (or a combination of both), the source resistance can be modified to a selected desired value.

Whilst negative feedback is common in audio frequency power amplifiers, it is difficult to apply where there are loads which become reactive at certain frequencies and cause sufficient phase shift to make the feedback positive and the amplifier unstable at these frequencies. Because of this, negative feedback is not a proposition in tuned RF amplifiers and in these, we must accept the inherent plate resistance or collector resistance to define source resistance.

Class B

Preceding examples of amplifiers have operated in class A, so we will extend the exercise to examine the relationship between source resistance and load resistance for class B. In class B operation, the amplifier is biased for near plate current or collector current cut off and current flows for half of the AC cycle of signal output. The other half cycle is provided by a second amplifier to make a push-pull circuit, or in a tuned RF amplifier, can be provided by the inertia or flywheel effect of the tuned tank circuit.

Class B operation is discussed with reference to the transistor curves of figure 12. For zero signal, the collector voltage is equal to the supply voltage (Vcc of 7.5V) and collector current (Ic) is near zero. Maximum current swing on load line A is limited to the point where the load line intersects minimum collector voltage on the Ic versus Vce curves.

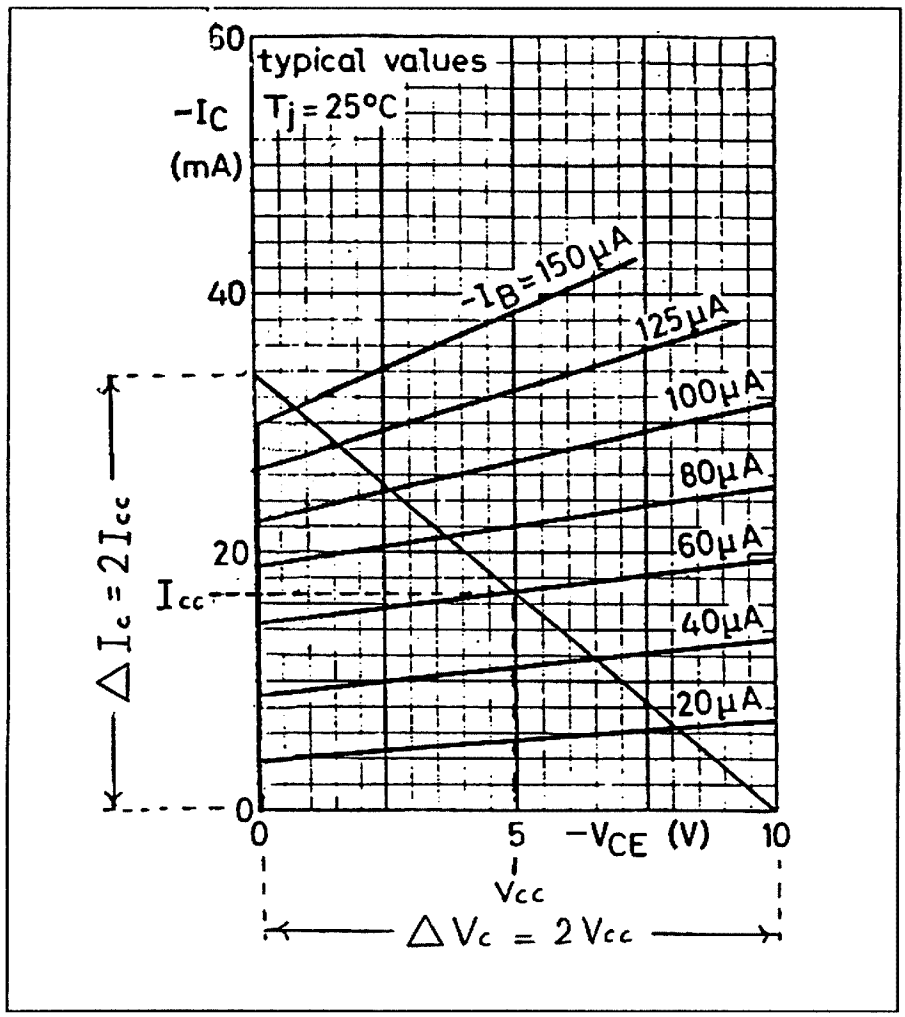


Fig 8. idealised transistor curves and maximum power output.

Maximum current swing and maximum power output can be increased by decreasing the value of load resistance (R1) as shown in load line B. Further decrease of load resistance (load line C) further increases the maximum current and maximum power output but the load line now crosses the maximum power dissipation curve set on the diagram for 100mW. Maximum power output is thus achieved with a load line which is drawn from a point at Vcc and Ic = 0 to just within the limits of the power dissipation curve.

As can be seen from the diagram, the absolute value of the negative going slope of a typical load line is much greater than the slope of the Ic versus Vce curves and hence, the value of load resistance is again much smaller than the value of collector resistance, probably even more so than for class A.

If two transistors are used in class B push-pull and their curves are assumed to be ideal with no bottoming voltage, at maximum power output, peak to peak voltage swing is 2Vcc and peak to peak current swing is 2Icmax. From this information, we can calculate maximum theoretical efficiency. Rms values are derived by dividing the peak to peak values by 2 root 2. Maximum power output is calculated from the RMS values as follows:

$$Po = \frac{(2Vcc).(2Icmax)}{(2\sqrt{2})^2}$$

$$= 0.5\ Vcc.Icmax$$

The DC current input to the stage looks like a full wave rectified signal and hence the average current is well known as 0.636 of the peak value so that DC input power is calculated as 0.636Ic.Vcc. Clearly, power efficiency is the ratio 0.5/0.636 which evaluates to 78%.

Once again, we see that our collector resistance or source resistance does not enter the calculation and the fact that source resistance is higher than load resistance is of no consequence to the power efficiency and maximum power output.

We could go on to discuss class C but the examples already presented should be sufficient to support the arguments presented. Field effect transistors have also not been discussed, but it is sufficient to say that their drain current versus drain to source voltage curves are much the same sort of shape as those of the bipolar transistor resulting in much the same high source resistance.

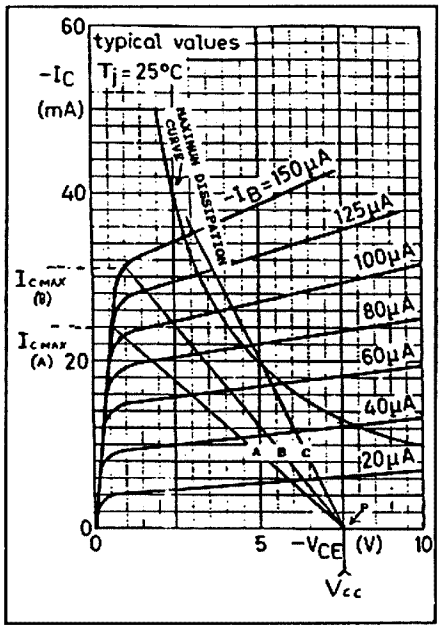


Fig 12. Class B Load lines

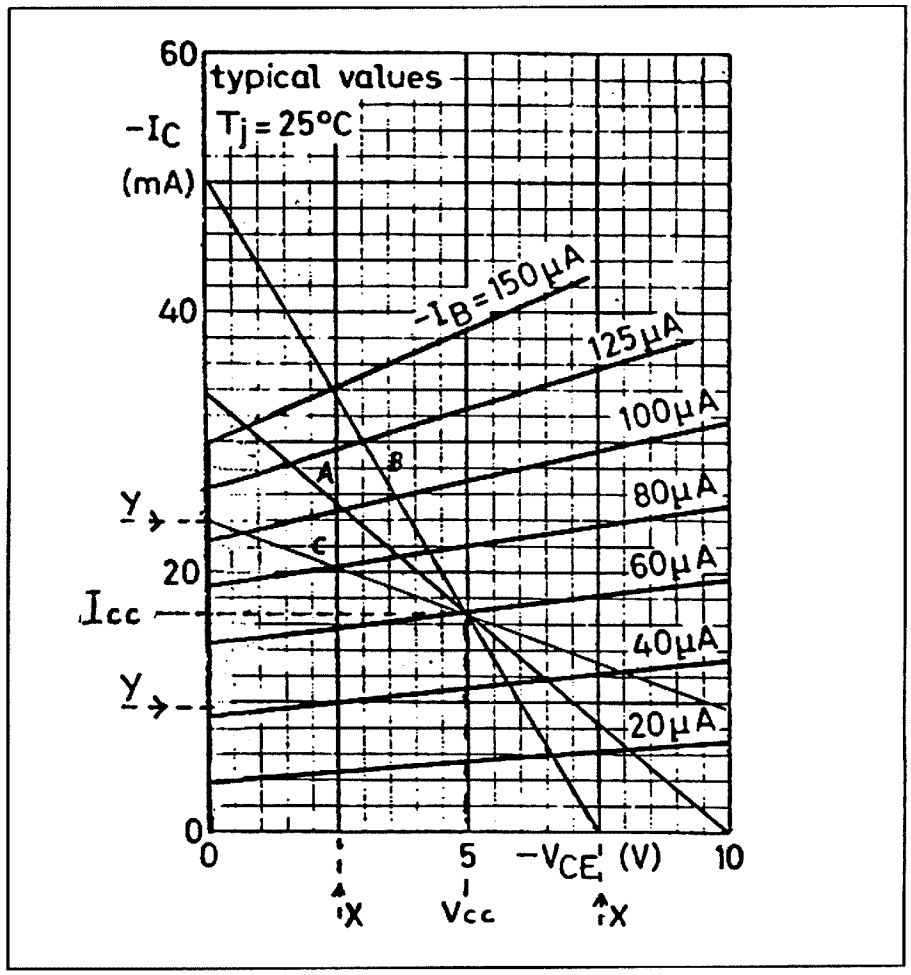


Fig 9. Effect of changing load resistance from optimum value.

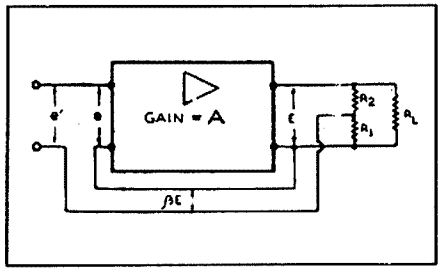


Fig 10. Negative voltage feedback

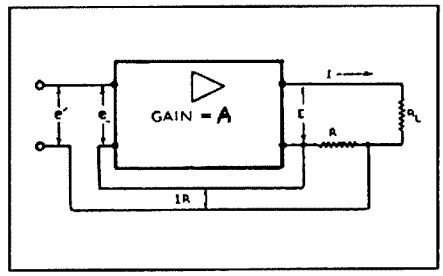


Fig 11. Negative current feedback

Summary

In setting out the arguments, the text has aimed at demonstrating the following:

(1) The term output impedance can mean source impedance or source resistance, but it is often mean to imply operational load impedance. In our discussion, we have avoided confusion by referring only to source resistance or load resistance.

(2) In tetrode and pentode power amplifiers and in transistor power amplifiers, the source resistance is normally much higher than the load resistance. In triode power amplifiers, the source resistance is lower than the load resistance.

(3) Because of the above, impedance match between the RF power amplifier source and the connected transmission line is most unlikely. Providing the transmission line load is matched for a low standing wave ratio at the transmitter output and it presents a resistive load to the transmitter equal to that for which the transmitter is designed, the mismatch of transmitter source resistance to its load is of little consequence.

(4) The fact that the transmitter source resistance is higher than the load resistance, as in the pentode, tetrode and transistor, does not limit power transfer efficiency or maximum power output as would occur if the high source resistance were inherent in a simple generator.

Although it was not the specific aim, the discussion has demonstrated some of the useful applications of amplifier static characteristic curves and load lines. Without these curves, it would have been difficult to justify the various points that have been made concerning source resistance and load resistance.

A Tilt-Over Wind-Up Antenna Mast

Leigh Baker VK5UO
1/31 Chute Street
Mt Gambier 5290

(No guys, one person operation)

Once upon a time, the author was blessed with a QTH having a large backyard with plenty of room for a tower and other antenna poles and masts. Then he moved to a small home unit, one of a group to which Strata Titles applied, and was faced with several problems. Obtaining permission to erect an antenna mast was difficult enough, but it was also required that it should have no guy wires, be no higher than 9.2 metres (30 feet), and occupy an almost impossibly small base area.

The antenna to be supported was a 10-15-20 metre triband Yagi, which it was thought should, at least for 20 metres, be able to be operated at a height of more than 10 metres. It seemed advisable then that it should be capable of winding up and down, up for best performance and down both to comply with the permit conditions and to reduce wind loading when not in use. (See comments at end of article regarding wind loading. Ed).

The author had had experience in the steel industry, and so had a number of ideas about mast construction which were discussed at length with Stuart VK5MS and others. The final construction was carried out in the engineering workshop of Trevor VK5NC, and involves three main components:

1) The winch-post and base-plate
2) The lower half-mast, which tilts over but is otherwise fixed
3) The upper half-mast, which not only tilts with 2), but is carried by guides so that it can slide up and down alongside 2).

Winch-Post and Base-Plate

The winch-post is of 100 x 100 x 4.9 mm RHS (4 inch square x 3/16 wall thickness rectangular hollow section), its total length being 2.4m (8 ft approx.) Rather more than half of this post is underground. The base-plate, which is 10mm thick and 280 x 330 mm (3/8 inch x 11 x 13 inches approx) has a 100mm square cutout in one of its shorter edges into which the post is welded. The plate is at ground level, and 1340 mm of the post is below it. Two diagonal 13 mm (1/2 inch) stays below the base-plate, brace it to the post, and scraps of 75 mm (3 inch) angle iron are welded to the post as well, the whole being set in approximately a cubic metre of concrete. The details are shown in Fig 1.

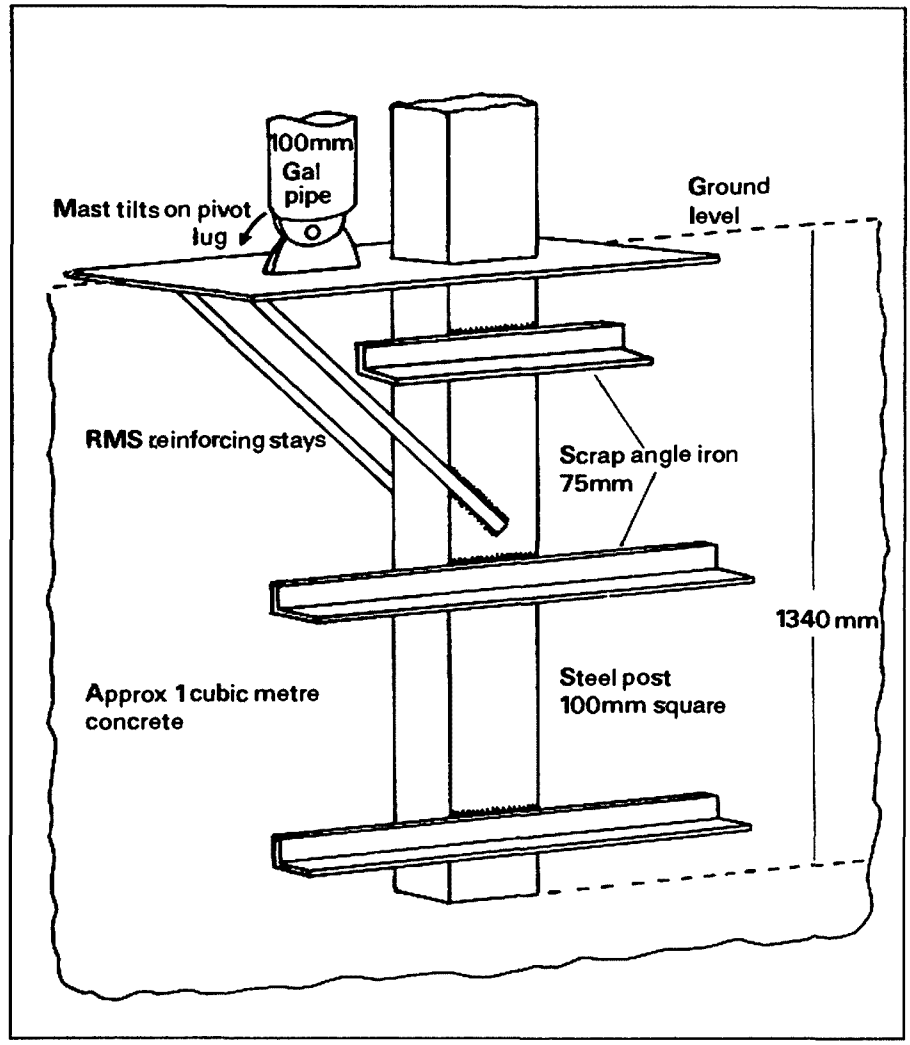


Fig1. Foundation

A substantial lug, approximately 100mm high, 75 mm wide and 20 mm thick (4 x 3 x 3/4 inches) is welded to the centre of the base-plate. The bearing hole on which the mast tilts is at the centre of the lug, about 35 mm from its top surface, and the top two corners of the lug are rounded off to about 40 mm radius from the hole, which should be at least 13 mm (1/2 inch) diameter and be a snug fit to the pivot pin. The latter may be either a clevis pin, retained by a split pin, or a plain shank bolt (and nut) about 75 mm long.

The winch is the type normally found on a medium-size boat trailer, and carries about 12 metres of 6 mm diameter wire cable. The base of the winch is securely welded to the top of the square post (but could be retained by bolts if desired, welded to a top plate). See Photo 1, for arrangement used.

Lower Half-Mast

A six metre (20 feet) length of 100 mm (4 inch) galvanised steel pipe forms the lower half of the mast. 100 NB (*nominal* bore) may be either 105.3 mm in medium

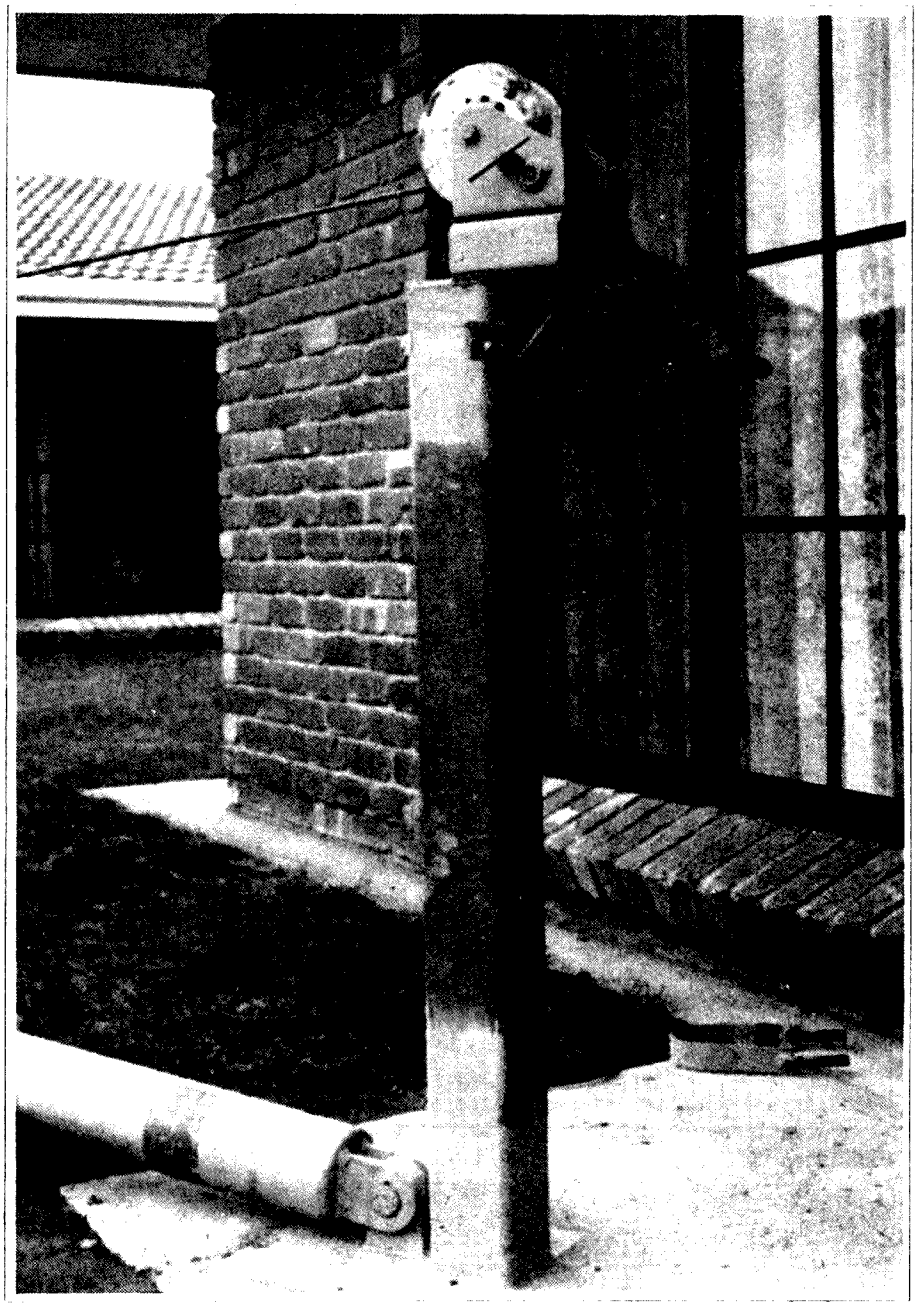


Photo 1. Winch

grade or 103.5 mm in heavy grade, the latter being preferable. In either case, the outside diameter is 114.3 mm (4.500 in). Metrication did not alter pipe sizes in Australia, merely the units in which they are designated. From the user's viewpoint, this means that the same dies are still used for pipe-threading, not that threading is required for this mast application.

The lower mast has several small fittings welded to it. At the bottom there are two lugs similar to that on the base-plate, but thinner (10 mm or 3/8 inch) and longer (150 mm or 6 inch). These are welded into the bottom of the mast with about half their length protruding to form the fork over the base lug, about which the mast can tilt. Photo 1 makes this clear. At the top end of the 100 mm pipe there is a cap fitting which incorporates two pulley sheaves (one 60 mm or 2 1/2 inch, the other 75 mm or 3 inch), and a bracket carrying a vertical guide sleeve for the upper mast. This sleeve is of 65 NB (2 1/2 inch) pipe to give a somewhat sloppy fit to the upper mast, the OD of which is 60.3 mm. The sloppiness of fit will depend on the 65 NB grade, the actual bore of which ranges from 69.7 mm (light grade) to 64.3 mm (extra heavy). The sleeve is about 115 mm (4 1/2 inch) long and is attached to the cap by a bracket cut from 6 mm (1/4 inch) plate. All of this is shown clearly in Photo 2, which also shows the guide tube for the winch-line. Not so clear is the top cover over the sheaves, to prevent the line from jumping out of their grooves, but this cover is plainly visible in Photo 3, which also shows clearly the cap bracket.

About 1.2 m (4 ft) below the top of the lower mast there is a second guide sleeve through which the upper mast can slide. It is simply a short piece of 65 mm (2 1/2 inch) pipe welded to distance pieces of scrap plate, which are in turn welded to the side of the lower mast. These two sleeves are positioned so as to place the upper mast immediately above the winch. The one remaining item attached to the lower mast is a stop lug (see Fig 2) about 1.5 m (5 ft) up from the bottom. It not only sets the lower limit of top-mast travel at some distance above the winch, but also permits locking it in this position prior to erection. By this means, the winch can be used to lift the whole assembly up from its rest position on the ground and tilt it up to an angle from which final erection to vertical is relatively easy. Once the assembly is vertical, it is retained in this position by a U-shaped belly strap as seen in Photo 4. The strap is made from steel 40 x 5 mm (1 1/2 x 3/16 inch) about 440 mm (18 in) long, to which are welded two 10 mm (3/8 inch) bolts, each 90 mm (3 1/2 inch) long. The bolts fit into holes in a 6 mm (1/4 inch) cross-piece welded to the post just under the winch. A packing piece of scrap steel is also welded to the post on the side nearest the mast, its thickness being chosen to ensure the mast will be vertical when it is clamped to the post.

Upper Half-Mast

Both upper and lower masts are the same length, 6 metres (20 ft), but the upper mast is only half the nominal bore of the lower, being 50 NB or 2 inch. As mentioned before, this has an outside diameter of 60.3 mm (2 3/8 or 2.375 inch), and may be obtained in four grades, with actual bores ranging from 54.5 mm to 49.5 mm (light and extra heavy grades respectively). For the present application, heavy grade (51.3 mm bore) is preferable if a large triband or 20 metre beam is to be supported, but lighter pipe should suffice for smaller antennas.

Fig 2 and Photo 4 both show the guide carriage for the top-mast. It is welded to the lower end of the top-mast, and is made from a similar bracket to that which carries the top guide sleeve, but with a larger diameter large hole to clear the lower mast by several millimetres. Three brackets are

spaced around this hole at 120 degree intervals, each carrying a 25 mm (1 inch) diameter x 13 mm (1/2 inch) thick plastic wheel or roller which bears against the surface of the lower mast. The wheel spindles are plain-shank 6 mm or 1/4 inch bolts. The wheels are cut from 25 mm (1 inch) round plastic stock. Nylon (R) is ideal, but polycarbonate or PTFE might also be acceptable.

The purpose of the guide carriage is threefold. First, it prevents the top-mast from rotating, so that it can be a fixed reference for the beam rotator at its top. Second, it supports the weight of the top-mast, rotator and antenna, all of which is taken by the winch cable attached to a substantial lug welded to the top surface of the carriage between the masts (see Photo 5). Third, by providing low rolling friction compared with another sleeve guide at this point, it prevents binding which might otherwise tend to occur because the lifting force of the cable is not applied directly underneath the top-mast, but to a point alongside it. The fact that it supports considerable weight is the reason for the two 13 mm (1/2 inch) struts between carriage and top-mast, without which the carriage might bend upwards and jam on to the lower mast.

One other item visible in Photo 5 is the lower stop lug welded to the lower mast. Note that this was an earlier and simpler version than that mentioned before, and shown in Fig 2, by which the top-mast can be locked against both up and down motion relative to the lower mast.

Rotator Mounting

Prominent in Photo 3 is the rotator and its method of mounting. The purpose of the cage around the rotator and the sleeve above it is to carry a top bearing which takes the weight of the antenna (and its side wind loading) off the rotator. Whether this is necessary will depend both on the size of the antenna and the structural design of the rotator. The more husky designs of rotators should be able to support smaller antennas, eg duoband or VHF, without structural assistance.

Assembly and Erection

The mast is assembled while horizontal, or nearly so, as in Photo 3, but supported by trestles or boxes to begin with. The initial assembly must take place before the stop lug is welded to the lower mast, or before welding on either guide sleeve. In the first case (no stop lug) the top-mast can be pushed upward into the sleeves, but only if the rotator mounting has yet to be attached to its top end. In the second case (rotator already attached) the sleeves must be slid on to the top-mast before the guide car-

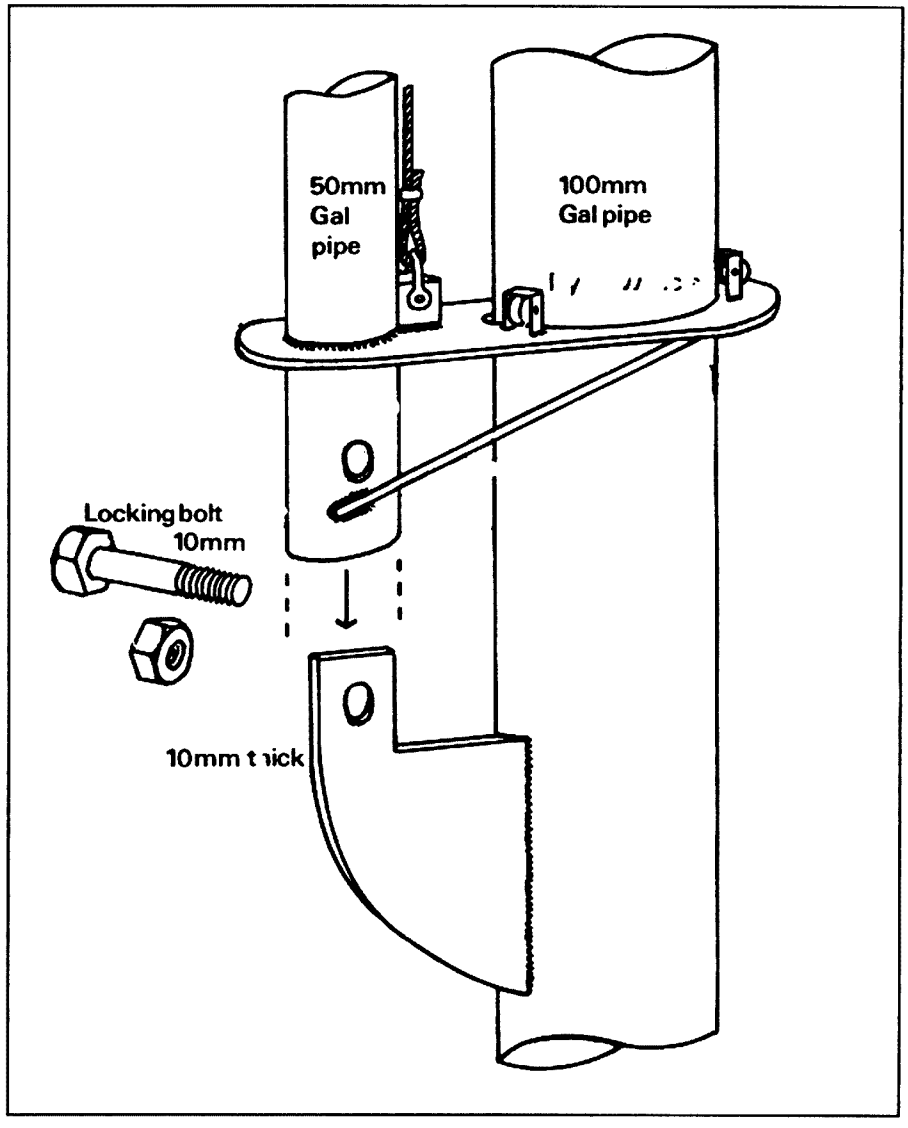


Fig 2. Stop lug and guide carriage

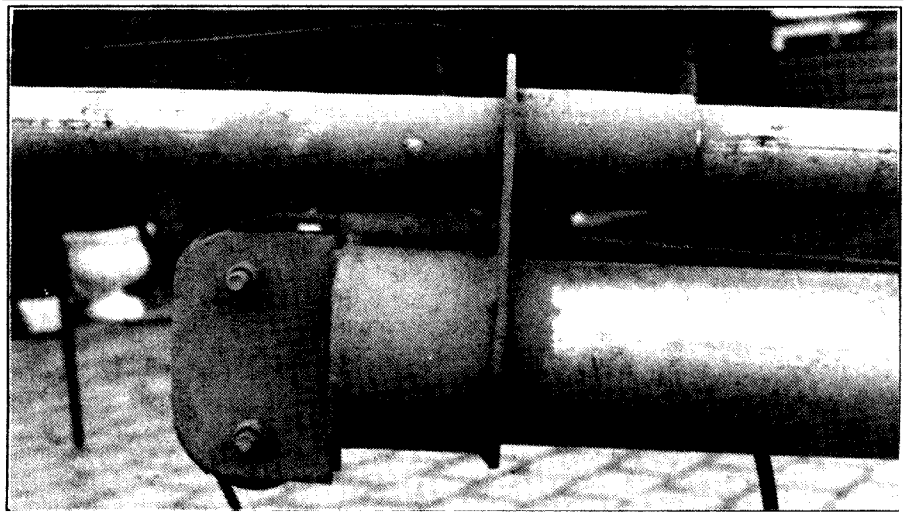


Photo 2. Sheave Cap

riage is attached. The carriage and top-mast is then pushed down from the top end of the lower mast until the sleeves can be located correctly and welded into place.

When the winch cable is fitted, it will be seen that it wraps around the mast from one side to the other as it passes down from the sheave cap to the winch. Other cables, the coax to the antenna and the rotator cable, can be taped to the top-mast, but only down as far as the sheave cap with the topmast bolted to the stop lug, ie in its lowest position. They must then be left unattached to the top-mast (to allow it to move upwards through its guide sleeves) down almost to the guide carriage. To avoid leaving so much cable (about 4.7 metres or 16 ft) unsupported and free to flap in the wind, it may be better to feed it down through the top-mast. An access hole will then be needed near the top of the topmast, or perhaps two, on opposite sides, each large enough to feed one cable through. Sharp edges on these holes should be removed with a round file, so as not to abrade the cables.

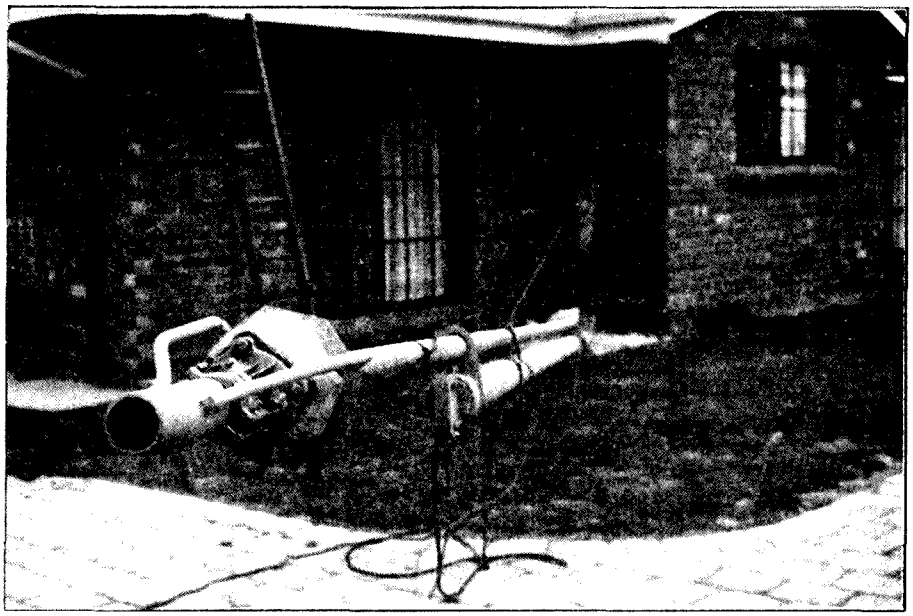


Photo 3. Top view both masts

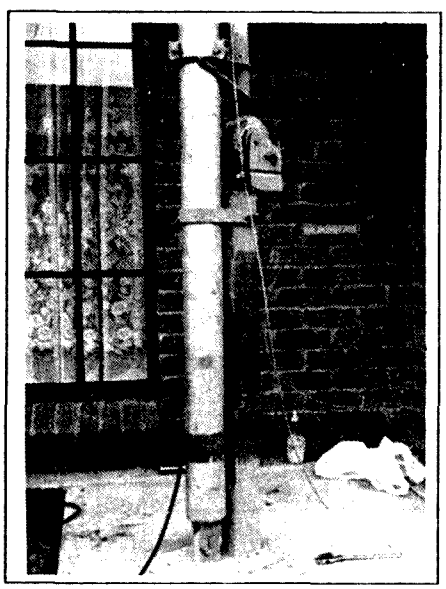


Photo 4. Base details

After fitting the base pivot pin, and the bolt locking the topmast to the stop lug, erection commences by winding up the winch until the cable takes the weight of the mast and antenna. At this stage, a rope loop may be put around both the winch cable and the mast, and progressively pulled lower as the mast is raised. Such a rope is visible in Photo 3. As the mast comes up closer to vertical, this rope may be more convenient than the winch to bring it up the last few degrees. At full elevation, the winch loses some of its control, since it is pulling almost straight down the length of the mast, whereas the rope may be carried back behind the winch at an angle much less than vertical.

As soon as the mast is vertical, the belly strap should be put in place and its nuts secured. The locking bolt may now be removed from the stop lug. Further operation of the winch will now raise the top-mast to the desired height. At minimum extension the top of the top-mast will be about 7.6 metres (25 feet) above ground level. Wound up until the guide carriage abuts the lower guide sleeve, this increases to about 10.6 metres (35 feet). Depending on the rotator mounting arrangement, the antenna may be a metre or so higher. With the tri-band antenna used by the author the mast does sway to some extent in breezy conditions at full height, so is normally only raised to the maximum when conditions demand it, which is seldom. On windy days it is left at minimum height.

Letting It Down

If work is needed on the antenna or rotator, or if stormy weather is forecast, the mast may be readily lowered by reversing the erection procedure. The first step is to fit the locking bolt to top-mast and stop lug, then to remove the belly strap. A gentle push on the mast as the winch is allowed to start unwinding should be sufficient to start the mast tilting. Control as it comes down MUST BE MAINTAINED by only allowing the winch to unwind slowly, being ready to drop the ratchet pawl into engagement before any problem can develop! The winch cable tension increases as the elevation is reduced, so if there is a "runaway" it may be difficult to stop. A step-ladder or similar stand will need to be positioned to take the weight of the mast before the antenna touches the ground.

The author has found this mast to be a very satisfactory solution to the problems imposed by the limited space Strata Title situation. It has permitted DX band activity where, otherwise, it would have been severely restricted or impossible. It is hoped that others in similar situations may also be able to build (or have built for them) a similar mast, and gain the same benefits.

Editorial Comments

Based on the data from the author, the Technical Editor has made a number of calculations on the structural viability of the mast described in this article. The WIA accepts no responsibility for the accuracy of these calculations, and if any doubts exist they should be resolved by an independent consulting engineer, or by the engineering department of the relevant council or other municipal authority.

Presuming that both the 100 NB and 50 NB pipes are of heavy grade (5.4 and 4.5 mm wall thickness respectively) they will weigh 87 and 37 kg respectively, total 124 kg. On their own, without antenna or rotator, this will cause the winch cable tension at zero elevation to be at least 250 kg. The winch line specified may be expected to break at not less than 2000 kg, so would seem safe. The winch specification and serviceability should be checked for adequacy, particularly if the antenna and rotator add more than say 20 kg to the total weight. An extra 25 kg here increases cable tension by about 100 kg!

It is estimated that the mast alone, at full

MAGPUBS

A Special Service of the Wireless Institute of Australia

The 1989 ARRL HANDBOOK
This much updated 66th edition is well worth having, it has 1200 pages of much new and updated material now in stock -ORDER NOW- **Hard Bound 1200 Pages #WIA160 $46.00**

SPECIAL — SPECIAL 1988 ARRL Handbook . . . . . **#WIAS002 $25.00**

ARRL ANTENNA BOOK
Only released in August 1988 this 15th edition has over 700 pages of essential antenna reference material . . . . . **#WIA161 $36.00**

The RADIO HANDBOOK William I. Orr, W6SAI The best ever the 26 edition of the "RADIO HANDBOOK" gives complete documentation in the HF,VHF and VHF spectruns
672 Pages 7½" x 10" Hard Bound Stock # WIA22424 $49.50

ANTENNA NOTEBOOK *Doug DeMaw W1FB*
Practical simple wire and vertical antenna's . . . . . **#WIA162 $16.00**

ANTENNA COMPENDIUM
Released in 1985 this book is full of new and useful information on Quads Yagis and associated topics . . . . . **Stock #WIA163 $22.00**

YAGI ANTENNA DESIGN
Over 210 pages of usefull theory and design information on HF Yagi's **#WIA164 $30.00**

TRANSMISSION LINE TRANSFORMERS
This useful 1987 book is rapidly becoming a best seller particulary amongst those interested in antenna's Covers baluns, use of ferrites and other aspects of antenna transmission line design and operation 128 Pages Hard Bound **Stock #WIA134 $20.00**

COMPUTER NETWORKING CONFERENCES (Packet Radio)#1 - 4
From 1981 to 1985 - pioneering papers on Packet Radio . . . . **Stock #WIA166 $36.00**

COMPUTER NETWORKING CONFERENCE #5- 1986 . . . . . **#WIA167 $20.00**

COMPUTER NETWORKING CONFERENCE #6- 1987
Held in Redondo Beach, California August, 1987 The latest concepts on networking high speed modems and other packet-radio technology are discussed in 30 papers that were prepared for the conference **174 Pages Stock #WIA166 $20.00**

COMPUTER NETWORKING CONFERENCE # 7 1988 Stock # WIA184 $25.00

YOUR GATEWAY TO PACKET RADIO
The Best introduction and how-to book for anyone curious about packet or wanting to get started . . . . . **Stock #WIA169 $20.00**

MASTERING PACKET RADIO The Hands On Guide
208 Pages . . . . . Stock # WIA22567 567 $22 00

AX25 PROTOCOL SPECIFICATION . . . . . **Stock # WIA178 $16.00**

QRP NOTEBOOK *Doug DeMaw W1FB*
This small book of 76 pages is packed full of useful and interesting information on QRP equipment and operation . . . . . **Stock #WIA170 $10.00**

SOLID STATE DESIGN FOR THE AMATEUR DeMaw W1FB - Wes Hayward
First published in 1977 and just reprinted by popular demand This book by Doug DeMaw and Wes Hayward has become the "bible" of many an avid home-brewer with good reason . . . . . **#WIA171 $24.00**

RF CIRCUIT DESIGN Chris Bowick — Published by Howard Sams. This book has been written for the person who has design experience who is an expert in the field of RF circuit design or is an engineer needing a good reference
167 Pages 8½" x 11" . . . . . **Stock # WIA21868 $39.38**

VHF/UHF/Microwave conference proceedings
The following volumes represent the first time that much of the most interesting material presented at the three of the largest VHF/UHF conferences in the English speaking world have been collected together. These are essential reading for anyone interested in operation above 70cm's

21st CENTRAL STATES VHF CONFERENCE proceedings 1987
held in Arlington Texas 23rd - 26 July, 1987 28 papers covering everything from use of TVRO dishes for moon-bounce to a solid state amplifier for 5 7GHz **Stock #WIA172 $20.00**

22nd CENTRAL STATES VHF CONFERENCE proceedings
Covers papers submitted for the 1988 Conference Includes topics on microwave EME, Predicting 144 MHz Es Openings Match vs Noise Figure Trade-Offs in Pre-Amps 902 MHz Transverter, Power Amplifier and Antennas How to Measure Your Own K Index and How to Build VHF UHF Preamps and much more **Stock #WIA173 $24.00**

MICROWAVE UPDATE 1987 CONFERENCE proceedings
Much information on construction of 2 3, 3 4 and 5 7 GHz gear **136 pages Stock #WIA174 $20.00 MICROWAVE UPDATE 1988 CONTERENCE Stock # WIA183 $25.00**

MID-ATLANTIC VHF CONFERENCE proceedings 1987
This conference was sponsored by the Mt Airy VHF Radio Club Oct 10 - 11 1987, 11 papers cover everything from mountain topping to trensceivers for 3400 and 5600 MHz bands **120 pages** . . . . . **Stock #WIA175 $20.00**

SATELLITE ANTHOLOGY ARRL a collection of the best of the Amateur Satelite News column and articles out of 31 issues of OST to beter document the era of **OSCAR** satellites
95 Pages 8½" x 11" . . . . . **Stock # WIA180 $11.00**

THE SATELLITE EXPERIMENTERS HANDBOOK Martin R Davidof ARRL Now under one cover here is the information you need to communicate through or pick-up the signals from the orbiting OSCAR satellites. **11" x 8" 207 Pages Stock # WIA177 $20.00**

AMSAT —NA 5th SPACE SYMPOSIUM . . . . . **Stock # WIA182 $25.00**

Now anyone can learn morse at home

MORSE TUTOR 5¼" IBM DISC GGTE
Morse learing made easy and fun Introducing the most Comprehensive and Easy-to-Use code course available today Suits IBM PC, AT and PS-2 compatibles * 1 - 100 word/code speeds * Standard or Farnsworth modes * Adjustable code frequency * Over 1 Billion possible QSO's * Letter, number and punct mark coverage * Self calibrating menu design * Display text — while listening or after copying * Ideal to learn or up-grade CW
5¼" IBM compatible Disc . . . . . **Stock # WIA187 $29.95**

All the above books and many more are available from your state WIA office SPECIAL NOTE a discount of 10% may be deducted by FINANCIAL MEMBERS from all listed prices

TECHNICAL INFORMATION

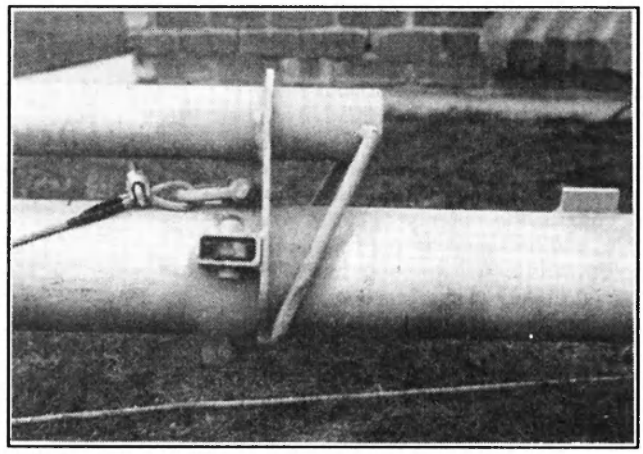


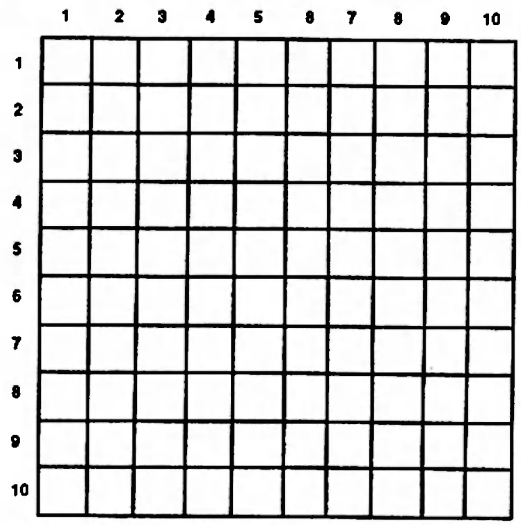
Photo 5 . Cable attachment

height, should survive a wind of velocity 215 km/h (135 mph or 115 knots). With a full size, 20 metre beam antenna fitted, these figures reduce to 125 km/h (80mph or 70 knots). By lowering the same antenna to minimum height the figures improve to 145 km/h (90 mph or 80 knots). If storms are forecast, it is strongly recommended that the antenna be tilted over to near the ground, and that the mast be supported independently of the winch.

ar

Morseword No. 30

SOLUTION PAGE 30



Clues

Across		Down	
1	Take the cream off	1	Gala events
2	Second-hand	2	Begin
3	Wait	3	Fissure
4	Got up	4	Give medicine to
5	Boast	5	Conceited
6	Mouth	6	Spots
7	Large rabbit	7	Flower
8	At some time	8	Be partial to
9	Turn inside out	9	Silly
10	Fruit	10	Plunge

Radio Amateurs: Have you checked out EA lately?

No doubt most radio amateurs are aware that *Electronics Australia* is by far this country's largest-selling electronics magazine, as well as being its oldest (we began way back in 1922, as *Wireless Weekly*). But have you looked inside the magazine lately?

Remember Jim Rowe, VK2ZLO? Jim used to be Technical Editor, and then Editor – back in the late 1960's and 1970's. You may recall some of the amateur radio and test equipment projects he developed, which proved to be extremely popular. Well, Jim is back at the helm of the magazine, and has been busy giving it a new lease of life.

You'll now find lots of new 'departments' in the magazine, including Solid State Update (with news of new semiconductor devices), Silicon Valley Update (news from the USA) and What's New in Entertainment Electronics. Plus all of your old favourites like Forum, The Serviceman, Circuit and Design Ideas and so on. And of course plenty of 'meaty' technical articles and contruction projects.

FEATURES IN THE SEPTEMBER ISSUE:

ELECTRONIC 'SUN' BURSTS INTO LIFE

Tom King, VK2ATJ looks at the radio and navigation gear on the *Royal Viking Sun*, a plush new cruise ship. Very impressive!

HAM TALK

First of an occasional series of articles discussing amateur radio topics. This one looks at the achievements of Dick Norman, VK2BDN.

EXPERIMENTAL HAM RADIO: MORE READER COMMENTS

Jim Rowe did stir up something of a hornet's nest with his claim in April that experimental ham radio has died. Here are more of the reader responses...

What about *amateur radio* projects? Well, there still aren't too many, at present – Jim Rowe's been a bit too busy! But he's *very* interested in boosting the amateur radio content, so if YOU have developed an exciting amateur radio project, please contact Jim by writing to him at EA, 180 Bourke Road, Alexandria 2015 or phoning him on (02) 693 6620 – to discuss the possibility of publishing it as a contributed article.

Take a look at the new, rejuvenated *Electronics Australia* – on sale at your newsagent at the beginning of every month. Or subscribe now, by phoning (02) 693 9517 or 693 9515.

Electronics Australia

Australia's Top Selling Electronics Magazine

Weather Satellites

This is the first instalment of a comprehensive collection of data on Weather Satellites compiled by Paul Hayden VK4ZBV. It has been available on the Brisbane Bulletin Board for some time, but deserves even wider distribution. We thank Brian Beamish VK4AHD for bringing it to our notice. Ed

General Information

This is intended as a general introduction to the subject of weather satellites and the reception and display of the data they transmit.

One of the first applications for space satellites was Meteorology, the science of the weather.

Prior to the satellite age which began with Sputnik-1 launched on 4 October 1957, weather forecasting was based on a large number of observations being made by many people, at many diverse places around the earth, collected and sent to a number of processing centres for interpretation.

Here the weather systems were plotted and an overall picture was built up bit by bit in an effort then to predict the future movements and their effects.

When humans ventured above the clouds and into space, they were able to see whole weather systems at a glance and a new perspective on Meteorology was born.

In the words of John Glenn from Friendship Seven during the first American manned orbital space flight: "the view is tremendous" (29 Feb 1962).

From satellites in earth orbit it soon became possible to gather information from every part of the earth and quickly assemble a global picture of the world's weather systems.

There are two common types of orbits used by weather satellites.

The first satellites were limited by launch vehicle performance to low altitudes (800-1000kms).

A near-circular polar orbit fixed in space, with the earth turning inside it, provides a ground station with either two or three useful daytime passes and a similar number of night passes every 24 hours (approx 3,000kms range about station).

If you live at the north or south pole you can receive a pass every orbit (approx 104 minutes apart).

The geostationary earth orbit became possible as launch vehicle and satellite technology improved. (Arthur Clarke 1948) (Syncom-3 1964).

A geostationary satellite is in a high circular equatorial orbit. When the altitude is around 36,000kms, the orbital period of the satellite is 1440 minutes (24 hours). Seen from a ground station the satellite remains fixed above the equator as the earth and the satellite rotate together, (a single satellite coves more than one third of the earth's surface).

American Polar Orbiting Satellites

Tiros 1, launched in 1960, was the first meteorological satellite to be equipped with television cameras. It recorded its cloud pictures on a video-tape recorder for replay when it came within range of a ground command in the USA.

Automatic picture transmission or APT was introduced with the launch of Tiros 8 in December 1963.

This system of real time picture transmission allowed a ground station equipped with relatively simple equipment to receive pictures of their area whenever the satellite was within range of the receiving station.

Nimbus I - 8 (1964): The second generation of weather satellites, tested the hardware used in later satellite systems for both meteorological and earth and ocean resource sensing (Landsat and Seasat).

Essa 1 - 9 (1966): The third generation of weather satellites equipped with a new advanced vidicon camera system provided the mainstay systems for the Americans for the next ten years. Essa 8 was turned off in 1976 after seven years of pictures, bringing to an end an era that began with Tiros 8 and the first APT pictures.

ITOS/NOAA: Tests of the Improved Tiros Operational System (ITOS) began in 1970. The satellites were renamed NOAA when safely in orbit after their sponsor the National Oceanic and Atmospheric Administration.

NOAA 1 - 11: The current spacecraft of this series feature an advanced very high resolution radiometer (VHRR), from Nimbus. This scanner replaces the video camera with a rotating mirror and five channel multi spectral sensor covering the visible to infrared part of the spectrum. (2 vis 3 ir detectors).

The satellite can now see the visible picture by daylight, and by means of the infra-red sensors obtain a thermal picture both by day and by night.

The NOAA satellites produce a pair of pictures side by side a visible and an infrared picture of the same area, allowing a comparison which enhances the information available. (time division multiplexing) (Cloud height, land water boundaries).

NOAA transmits a high resolution digitally encoded signal on the 1.7 GHz band and a low resolution APT signal on the 137 MHz band.

Russian Polar Orbiting Satellites

The Soviet Union started its METEOR weather satellite program in 1966 with modified COSMOS photo reconnaissance satellites.

Meteor: Satellites are cylindrical, 5 metres long, 1.5 metres diameter, and over 2,000 kg in weight, with 2 TV cameras, one (visible light) for day, one (infrared) for night.

Starting with Meteor 1.10 in 1971 these satellites began transmitting APT format pictures, on the 137MHz band. By 1980, 30 Meteor 1 series satellites had been identified.

Meteor 2: The current series weather satellites started in 1975, with improved picture quality and with three satellites in similar polar orbits spaced 120 degrees apart around the equator providing passes every few hours, day or night.

Meteor 2 series satellites transmit a single picture visible by day, infrared by night. (Unlike the US NOAA series with its side by side pix).

They are also switched on and off automatically on certain orbits.

Due to the picture format and the sync waveform, the Meteor 2's have a distinctive honk, honk, sound compared to the NOAA's faster tick tock tick tock sound.

Meteor 3 series satellites produce normal or high resolution APT pictures. The picture format changes seem to indicate that they are similar to the American Nimbus experimental spacecraft and are used to test equipment developments for future spacecraft.

They are commanded on and off more often than Meteor 2 satellites and are often not heard for months at a time.

Cosmos #: A number of Cosmos satellites have been found producing pictures in the 137 MHz band. (Cosmos devices are of military origin.)

There have been several unidentified satellite signals that produce pictures on the 137 MHz band. It is likely that these are of Soviet origin.

Geostationary Satellite Systems

The first geostationary satellite, a telecommunications transponder, Syncom 3, was able to relay telephone and TV signals between Japan and the USA. It was launched in August 1964.

ATS 1: The first Applications Technology Satellite was placed in orbit over the Pacific Ocean at a height of 35,817 km in December 1966.

The ATS satellites were built to test telecom systems, satellite control systems, station keeping methods, navigation and meteorology experiments.

ATS 1 was able to relay signals over an area from the east coast of Australia to the east coast of the USA. The VHF transponder was still working when the satellite was removed rom geostationary orbit in the mid 1980s after almost twenty years. (The transponder input was 149.22 MHz and output 135.6 MHz.)

SMS 1: The Synchronous Meteorological Satellite was the first American geostationary weather satellite; it was launched in 1974.

Later satellites in the series were called Geostationary Operational Environmental satellites or GOES for short.

They are spin-stabilised to keep their axis in line with the earth's axis and provide the horizontal scanning movement for the visible infrared spin scan radiometer or VISSR, a telescope with two sensors looking out the side of the spinning body. It takes 20 minutes to scan the entire hemisphere facing the satellite by gently precessing the axis of the satellite to provide the vertical scan motion (N-S).

The full disk picture of over 4,000 lines is transmitted to main frame computers at the earth station control centre. Here the images are stored, processed, gridded to show lat/long and land outlines, before retransmission back to the satellite transponder for distribution as weather facsimile (wefax) pictures.

The satellite also acts as a data collection platform receiving signals from remote stations and re-transmitting them to the control station (range 4,000 km).

GMS 1 - 3: The Japan meteorological agency satellite launched in mid 1977 is stationed over New Guinea at 140 degrees E longitude.

Meteorsat 1 - 2: Is the European Space Agency version of the geostationary satellite. It was launched late in 1977 and took up station over West Africa on the zero meridian.

Both GMS and Meteorsat are similar in features to the GOES system despite the differences in the hardware and software.

The Soviet Union's geostationary satellite GOMS, beaten to the Indian ocean by GOES is still a ten year old rumour.

ar

To be continued.

Early Background of Our Telegraph Codes

Lloyd Butler
VK5BR
18 Ottawa Avenue
Panorama 5041

The most common codes used in amateur radio telegraphy are well known as the Morse code and the Baudot machine code. However, our Morse code is not the same code as that first introduced by Samuel F B Morse and our Baudot code is not the same as that introduced by Jean Maurice Baudot.

Introduction

This article discusses the telegraph codes which were first developed and which have led up to the codes used in amateur radio today. In tracing their background, we are briefly introduced to some of those famous pioneers of telegraphy such as Morse, Wheatstone, Baudot and Murray. For the benefit of those amateurs who have yet to be introduced to the realms of RTTY and other forms of automatic serial data transmission, detail on the format of the various codes is included in tables and figures.

Morse Code

Samuel F B Morse developed the first successful telegraph in the United States of America over some years up to 1837. This was coincident with work carried out in England leading to a patent taken out for the telegraph, jointly by Sir Charles Wheatstone and William F Cooke, in 1837. (All of us are familiar with the Wheatstone Bridge which bears the name of Sir Charles. Although the bridge was originally devised by S H Christie, Wheatstone introduced it as a practical device.)

Samuel F B Morse, inventor of the electric telegraph

The Morse telegraph receiver incorporated an electromagnet which attracted an armature connected to mark the received signal on a band of paper, moved by clockwork. Morse's assistant, Alfred Vail, later redesigned the telegraph to include an electromagnetic sounder as the receiving instrument. Morse took out a patent for his telegraph in 1840.

The Morse telegraph was different from the Wheatstone/Cooke telegraph which appears to have been a type of analogue system in which an electric current controlled the strength of an electromagnetic field to determine the degree of deflection of a magnetic needle. The needle was arranged to point at a specific alphabetic letter as determined by the controlling current. Morse used a two state (either mark or space) telegraph system as is still in use today.

With Government support, Morse built his first practical telegraph line between Washington D C and Baltimore Maryland (a distance of 64 km) in 1843. The first message was sent over the line on May 24, 1844.

For use on his telegraph, Morse developed a code for the various alphabetic letters, numeric figures and other characters, made up of combinations of short, long and very long mark elements called dots, dashes and long dashes respectively. A dash had a time period equal to two dots,

A •–	B –•••	C –•–•	D –••	E •	F ••–•	G ––••
H ••••	I ••	J •–––	K –•–	L •–••	M ––	N –•
O –––	P •––•	Q ––•–	R •–•	S •••	T –	U ••–
V •••–	W •––	X –••–	Y –•––	Z ––••	& ••••	
1 •––––	2 ••–––	3 •••––	4 ••••–	PERIOD •–•–•–	INTERROGATION ••––••	
5 •••••	6 –••••	7 ––•••	8 –––••	COMMA ––••––	EXCLAMATION –•–•––	
9 ––––•	0 –––––					

Table 1. The original Morse code

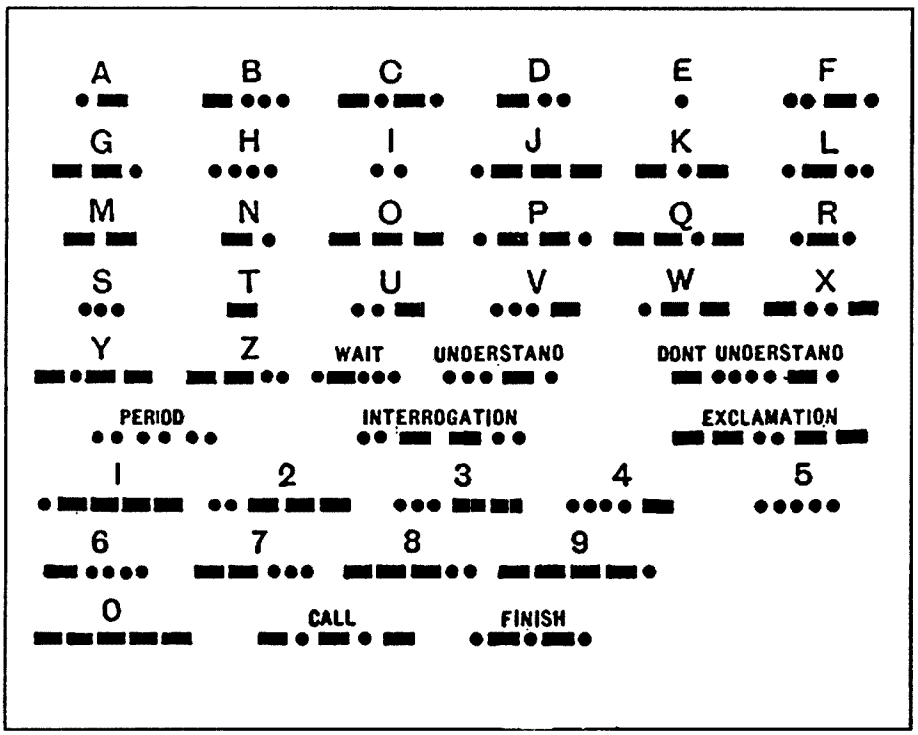


Table 2. The Continental or International code (Ref. 1.)

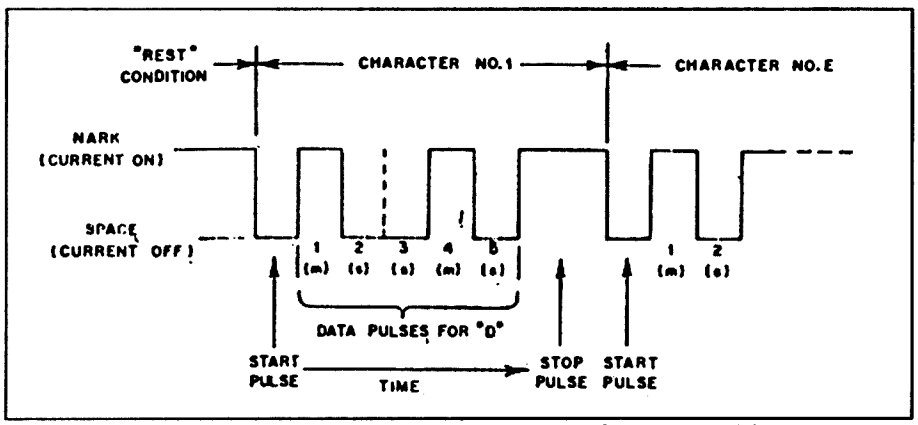


Fig 1. Time sequence of a typical Baudot character, the letter D. (Ref.6)

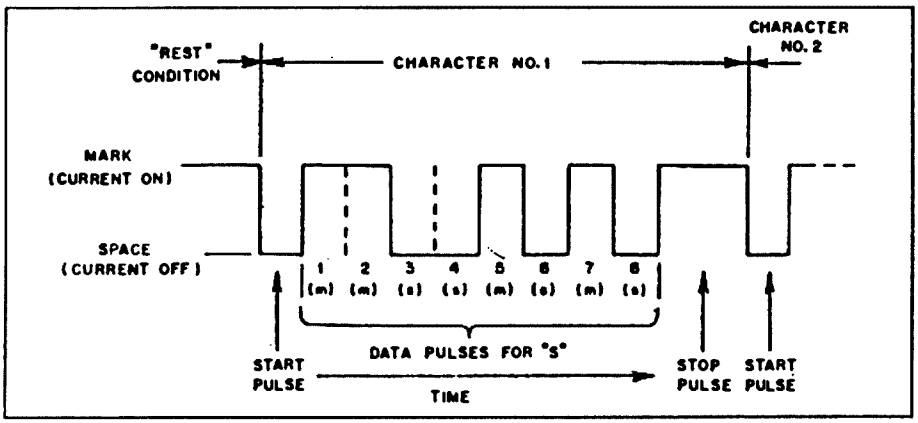


Fig 2. Time sequence of a typical ASCII character, the letter S. The eighth or parity bit may be set for any of four conditions:(1) always mark, (2) always space, (3) odd parity or (4) even parity. All four choices are in common usage.

a long dash had a time period equal to four dots and the time space between dots was equal to one dot. The format of the code, somewhat different from that which we use to day, is shown in table 1.

Morse actually introduced two versions of his Morse code. The code he used in 1837 had the same symbol for some of the phonetically similar letters. A new version, as shown in table 1 with unique symbols for each letter, was introduced around 1844 and became known as the American Morse code. An article by Tony Smith G4FAI (Ref 11) discussed this in more detail.

In 1851, the Morse code was simplified, by International Convention, to that shown in table 2. This International or Continental code is the one we all use today, although at one time both codes were apparently in use. According to a handbook by Victor H Laughter, published in 1909 (Ref 1), Morse code was used for overland service and Continental code was used between ships of the Navy and shore stations.

The timing format for our international code has been standardised as follows : A dash has a time equal to three dots. Time space between elements of a character is equal to one dot. The time space between letters of a word is equal to three dots. The time space between words was previously equal to five dots, but this was changed by international agreement in 1949 to seven dots.

Table 3, originating from the G4FAI article, compares the symbols used for alphabetic letters in the three versions of the code.

Machine Telegraph Codes

Other codes have been introduced with the development of keyboard operation and machine telegraphy. Codes were developed by Jean Maurice Baudot and Donald Murray using five elements of mark or space in serial form for each character symbol. Five elements are insufficient to define separately all letters of the alphabet, numeric figures and punctuation and hence two character symbols were allocated to shift between letters and figures or punctuation, so that each other character symbol performed two functions. Added to each five element symbol were also two additional elements to define the start and stop of the symbol for synchronisation.

The five element codes are still in use today in the communications services, including amateur radio, but these codes are quite different from the first code introduced by Baudot. The Baudot code was designed to suit manual operation from a pianoforte type keyboard of five keys, one for each element in a symbol. This original code is also knows as the CCITT No 1 code and this is shown in table 4. (CCITT is an

	1837 code	American Morse (1844)	International Morse (1851)
A	···	·–	·–
B	····	–···	–···
C	···	···	–·–·
D	····	–··	–··
E	·	·	·
F	····	··–	··–·
G	···	––·	––·
H	····	····	····
I	·–	··	··
J	···	–·–·	·–––
K	–·–	–·–	–·–
L	——	——	·–··
M	–··	––	––
N	–·	–·	–·
O	··	··	–––
P	·····	·····	·––··
Q	··–·	··–·	––·–
R	··	···	·–·
S	·–·	···	···
T	––·	–	–
U	·––	··–	··–
V	–	···–	···–
W	··–	·––	·––
X	––	·–··	–··–
Y	·–	····	–·––
Z	·–·	····	––··

Table 3. Changes in Morse over the years

abbreviation for Consultative Committee for International Telegraph and Telephone.)

The code used today has been based on automatic telegraph systems in which the operator is relieved of the burden of setting up individual code elements. Instead, the operator has only a single key of a typewriter keyboard for each character. This code, which is accredited to Murray, has been defined as the CCITT No 2 code. United States amateur radio operators have generally adopted a version of a "Military Standard" code which has a few minor symbol and punctuation changes to that of the Murray or CCITT No 2 code. The reason for the US amateur choice is largely associated with the ready availability of military surplus machines in the post-1945 years. Other amateurs, particularly in Europe, have standardised on the CCITT No 2 code. The code is shown in table 5, with variations to suit particular services. One limitation of the five element codes is that there is no provision for both upper and lower case alphabetic letters.

In Australia, in line with a United States trend, we refer to the code we use for amateur radio teletype (RTTY) as the Baudot code, when in fact, it would be more appropriate to call it the Murray code. According to George Henry K9GWT (Ref 6), it is actually called the Murray code in some countries.

CCITT CODE NO. 1

Sl. No. of combination	Lower Case	Upper Case	Code elements 1	2	3	4	5
1	A	1	1	0	0	0	0
2	B	8	0	0	1	1	0
3	C	9	1	0	1	1	0
4	D	0	1	1	1	1	0
5	E	2	0	1	0	0	0
6	F	*	0	1	1	1	0
7	G	7	0	1	0	1	0
8	H	+	1	1	0	1	0
9	I	*	0	1	1	0	0
10	J	6	1	0	0	1	0
11	K	(	1	0	0	1	1
12	L	=	1	1	0	1	1
13	M	)	0	1	0	1	1
14	N	*	0	1	1	1	1
15	O	5	1	1	1	0	0
16	P	%	1	1	1	1	1
17	Q	/	1	0	1	1	1
18	R	—	0	0	1	1	1
19	S	.	0	0	1	0	1
20	T	*	1	0	1	0	1
21	U	4	1	0	1	0	0
22	V	!	1	1	1	0	1
23	W	?	0	1	1	0	1
24	X	,	0	1	0	0	1
25	Y	3	0	0	1	0	0
26	Z	:	1	1	0	0	1
27	Carriage Return		1	1	0	0	0
28	Line Feed		1	0	0	0	1
29	Letter shift (space)		0	0	0	0	1
30	Figure shift (space)		0	0	0	1	0
31	Error		0	0	0	1	1
32	Instrument Idle		0	0	0	0	0

0 indicates space=positive current in a Baudot multiplex.
1 indicates Mark=negative current in a Baudot multiplex.
* indicates Free for internal use by a country or administration.

Table 4. The Baudot or CCITT Code No.1 (Ref.5)

The code used for many years in teleprinter and teletype service by the old PMG's Department (now Telecom Aust) is similar to the CCITT No 2 code. A copy of Telegraphy II (Ref 9), issued around 1940 and part of the PMG Course of Technical Instruction, specifically deals with teleprinter and teletype machines and systems of that day. This publication gives no specific name to the code and refers to it simply as the five unit code.

The ASCII Code

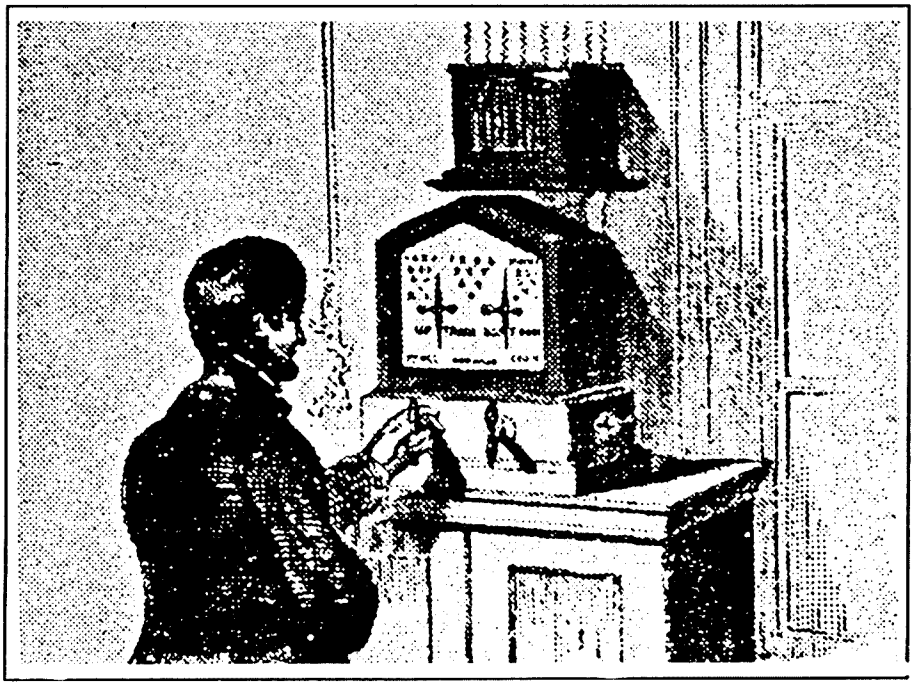
With the development of computers and high speed data exchange, ASCII has become a common serial data code and this code uses seven mark or space elements or bits to define each character. ASCII is an abbreviation for American Standard Code for Information Interchange and was adopted by the American National Standards Institute in 1968. The code actually utilises an eight bit byte with the eighth bit often used for parity error check on the other bits. Additional start and stop bits are also included when operated in the non-synchronous mode as used in the teletype service. With seven bits available, all letters (including upper and lower case), all numerals and all punctuation characters are allocated a unique character symbol or byte. The arrangement of the first seven bits, for each of the characters, is shown in table 6.

The ASCII code is much more versatile than the five element codes, with one bit state difference between upper and lower case letters and additional symbols for control and printing operations, particularly suited for use with computers.

Bit Numbers 5	4	3	2	1	Letters Case: International Alphabet #2	Figures Case: International Alphabet #2	US Alphabets: Military Btd	Weather	TWX	Telex
0	0	0	0	0	Blank*	Blank*	Blank*	—	Blank*	Blank*
0	0	0	0	1	E	3	3	3	3	3
0	0	0	1	0	Line Feed	Line Feed	Line Feed	Line Feed	Line Feed	Line Feed
0	0	0	1	1	A	—	—	↑	—	—
0	0	1	0	0	Space	Space	Space	Space	Space	Space
0	0	1	0	1	S	(Apos) '	Bell	Bell	Bell	(Apos) '
0	0	1	1	0	I	8	8	8	8	8
0	0	1	1	1	U	7	7	7	7	7
0	1	0	0	0	Car. Ret	Car. Ret	Car. Ret	Car. Ret	Car. Ret	Car. Ret
0	1	0	0	1	D	WRU	$	$	$	WRU
0	1	0	1	0	R	4	4	4	4	4
0	1	0	1	1	J	Aud Sig	(Apos) '	'	(Comma) ,	Bell
0	1	1	0	0	N	(Comma) ,	(Comma) ,	,		(Comma) ,
0	1	1	0	1	F	↑	!	!	½	$
0	1	1	1	0	C	:	:	:	WRU	:
0	1	1	1	1	K	(	(	(	½	(
1	0	0	0	0	T	5	5	5	5	5
1	0	0	0	1	Z	+	"	"	"	"
1	0	0	1	0	L	)	)	)	¼	)
1	0	0	1	1	W	2	2	2	2	2
1	0	1	0	0	H	↑	Stop			#
1	0	1	0	1	Y	6	6	6	6	6
1	0	1	1	0	P	0	0	0	0	0
1	0	1	1	1	Q	1	1	1	1	1
1	1	0	0	0	O	9	9	9	9	9
1	1	0	0	1	B	?	?	?	¼	?
1	1	0	1	0	G	↑	&	&	&	&
1	1	0	1	1	Figures	Figures	Figures	Figures	Figures	Figures
1	1	1	0	0	M	.	.	.	.	.
1	1	1	0	1	X	/	/	/	/	/
1	1	1	1	0	V	=	;	;	¼	;
1	1	1	1	1	Letters	Letters	Letters	Letters	Letters	Letters

Notes: Transmission Order: Bit 1→Bit 5.
* "Blank" in US; "No Action" in International Alphabet #2.
(↑) Unassigned (domestic variation, not used internationally).

Table 5. The Murray or CCITT Code No 2 with variations. (Ref 8)



Cooke & Wheatstone telegraph used on the Croydon Railway 1845 (Ref. 10)

Start and Stop Bits

The five element codes and the ASCII code use similar start and stop elements or bits. The start bit is a zero or space signal equal in duration to a single character bit. The stop bit is a one or mark signal with a minimum duration between that of one and two character bits, depending on the system. The maximum stop period is as long as desired as the stop mark condition remains until the next character is initiated by the start space pulse.

Typical timing formats for a character train in the five unit and ASCII codes are shown in figures 1 and 2, respectively.

Summary

In conclusion, we see that the manual code we use today and call Morse is really a development of the original Morse code called the International or Continental code. The teletype code we use today and call Baudot is really the Murray or CCITT No 2 code. Some things we manage to get right

as the code we call ASCII is really ASCII.

Without doubt, the manual code we use will always be known as Morse and in Australia, the five unit code will continue to be called Baudot by the radio amateur. Notwithstanding this, it is interesting to examine the background of these codes, an important part of our communications history.

References :

1 *Operators Wireless Telegraph & Telephone Handbook, Victor H Laughter, 1909.*
1 *New Age Encyclopedia, 1965.*
3 *The World Book Encyclopedia.*
4 *Telegraphy, J W Freebody, 1958.*
5 *Principles of Telegraphy, N N Biswas, 1964.*
6 *ASCII, Baudot and the Radio Amateur, George W Henry Jr K9GWT, OST September 1980.*
7 *Radioteletype, Tom Moffat VK7TM, ETI October 1984.*
8 *Reference Data for Radio Engineers, ITT, 5th Edition 1968, Section 30.*
9 *Telegraphy II, Course of Technical Instruction, PMG Dept. (1940 era).*
10 *Names From the Past - Sir Charles Wheatstone by Tony Smith G4FAI - Practical Wireless, October 1984.*
11 *The Origins of Morse - Tony Smith G4FAI - Practical Wireless February 1986.*

	7	0	0	0	0	1	1	1	1
	6	0	0	1	1	0	0	1	1
	5	0	1	0	1	0	1	0	1
4321									
0000		NUL	OLE	SPC	0	@	P		p
0001		SOH	DC1	!	1	A	Q	a	q
0010		STX	DC2	"	2	B	R	b	r
00011		ETX	DC3	#	3	C	S	c	s
0100		EOT	DC4	$	4	D	T	d	t
0101		ENQ	NAK	%	5	E	U	e	u
0110		ACK	SYN	&	6	F	V	f	v
0111		BEL	ETB	'	7	G	W	g	w
1000		BS	CAN	(	8	H	X	h	x
1001		HT	EM	)	9	I	Y	i	y
1010		LF	SUB	*	:	J	Z	j	z
1011		VT	ESC	+	;	K	[	k	{
1100		FF	FS	,	<	L	\	l	|
1101		CR	GS	-	=	M	]	m	}
1110		SO	RS	.	>	N	^	n	~
1111		SI	US	/	?	O	_	o	DEL

ACK = acknowledge
BEL = signal bell
BS = backspace (←)
CAN = cancel
CR = carriage return
DC1 = device control 1
DC2 = device control 2
DC3 = device control 3
DC4 = device control 4
DEL = (delete)
OLE = data link escape
ENQ = enquiry (WRU)
EM = end of medium
EOT = end of trans.
ESC = escape
ETB = end of block
ETX = end of text

FF = form feed (home)
FS = file separator
GS = group separator
HT = horizontal tab (→)
LF = line feed (↓)
NAK = not acknowledge
NUL = null
RS = record separator
SI = shift in
SO = shift out
SOH = start of heading
SPC = space
STX = start of text
SUB = substitute
SYN = synchronous idle
US = unit separator
VT = vertical tab (↑)

Note: "1" = mark = hole in punched tape

Table 6. The ASCII code (Ref 6)

Addendum

Since submitting the article, the writer has received a copy of the Hawkins Electrical Guide No 8 from Trevor Howard (VK5BWF) of Port Lincoln. This book, published in 1917, describes a number of further versions of Morse code, the Navy code, the Bain code and the Phillips code (Refer Table 7).

According to the supporting text, the Navy code was used up to November 1912 when the Navy replaced it with Morse. The Hawkins book is an American publication and they are assumed to be referring to the USA Navy.

The Bain code was stated to be obsolete at the time of publication but had been previously used in parts of America and Europe with the Bain Chemical Telegraph System. No further detail was given.

The Phillips code was used for press work in the United States. The letters and numerals of this code are the same as in Morse, but there are differences in some of the punctuations and other symbols. The publication further states that, at that time, there were three codes in general use. The Morse code was used exclusively in the United States and Canada. The Continen-

LETTERS

Morse	Continental	†Navy	*Bain
A •—	A •—	A ——	A •—
B —•••	B —•••	B —••—	B •—•
C •• •	C —•—•	C •—•	C •••
D —••	D —••	D ———	D ••—
E •	E •	E •—	E •
F •—•	F ••—•	F ———•	F •———
G ——•	G ——•	G ——••	G •—••
H ••••	H ••••	H •——	H •——
I ••	I ••	I •	I ••
J —•—•	J •———	J •——	J •••—
K —•—	K —•—	K —•—•	K •——•
L —	L •—••	L ——•	L ••••
M ——	M ——	M •——•	M •— •—
N —•	N —•	N ••	N ••——
O • •	O ———	O —•	O —
P •••••	P •——•	P •—•—	P —•—
Q ••—•	Q ——•—	Q •—••	Q —•—•
R • ••	R •—•	R —••	R ——•
S •••	S •••	S —•—	S —••
T —	T —	T —	T —•••
U ••—	U ••—	U ••—	U —•
V •••—	V •••—	V •————	V ———•
W •——	W •——	W ••—•	W ——••
X •—••	X —••—	X —••—	X —••—
Y •• ••	Y —•——	Y •••	Y ——
Z ••• •	Z ——••	Z —————	Z ———
& • •••	&	&	& ————

NUMBERS

Morse	Continental	†Navy	*Bain
1 •——•	1 •————	1 ••••	1 •————
2 ••—••	2 ••———	2 ——•—	2 ••———
3 •••—•	3 •••——	3 ••••—	3 •••——
4 ••••—	4 ••••—	4 ———•	4 ••••—
5 ———	5 •••••	5 ••——	5 •••••
6 ••••••	6 —••••	6 ——••	6 ————•
7 ——••	7 ——•••	7 •———	7 ———••
8 —••••	8 ———••	8 —•••	8 ——•••
9 —••—	9 ————•	9 •——•	9 —••••
0 ——	0 —————	0 —••—	0 ——•——

PUNCTUATION MARKS

	Morse	Continental	Phillips
Period	••——••	•• •• ••	••——••
Colon	—•— • •	———•••	—•— • •
Colon Dash	—•— •—••	—•— —•	—•— •—••
Semi-colon	••• ••	—•—•—•	••• ••
Comma	•—•—	•—•—•—	•—•—
Interrogation	—••—•	••——••	—••—•
Exclamation	———•	——••——	———•
Fraction Line	•	——	•
Dash	—•• •—••	—•• —•—	—•• •—••
Hyphen	•••• •—••	—••••—	•••• •—••
Apostrophe	••—• •—••	•————•	••—• •—••
Dollar Mark	••• •—••	••• —••—	••• •—••
Pound Sterling	••••• •—••	—•—••	••••• •—••
Shilling Mark	••— —	—•• —•	••——
Pence Mark	•••••	—••	—••
Capital Letter	•• • •—••	—•—• —••—	•• • •—••
Colon Followed by Quotation	—•— ••—•	—•— —••—	—•— ••—•
Cents	• • •	—•—•	•• •
Decimal Point	—•• • • —	•——•	—•——
Paragraph	————	•—•—••	————
Italics or Underline	••— •—••	••———•—	••— •—••
Parenthesis	••••• —•	—•— —•—	•••••—• ••••••—•
Brackets	—••• •—••	—••• —••—	—••• •—•• —••• •—••
Quotation	••—• —•	•—•—•—•—	••—• —• ••—• —•
Quotation in Quotation	••—• •—••	•—••—•	••—• •—•• ••—• •—••
Per Cent	——•——	———•••———	——••——

Table 7. Early codes including The Navy Code, The Bain Code and The Phillips Code

tal code was used in all European and other countries and for all submarine telegraphy by international agreement. The third code was the Phillips, referred to in the previous paragraph. The book discusses further the understandable confusion which existed in the early days of wireless telegraphy at sea, and when both Morse code and Continental code were in use before the Continental code was standardised. The transatlantic ships carried Continental code operators and the United States coastal steamers carried Morse code operators.

All in all, we have now accounted for six different versions of the Morse, or near similar, type code :-

Early Morse 1837
American Morse 1844
International or Continental code 1851
The Navy code
The Bain code
The Phillips code
Surprising, isn't it!

ar

Radio Infringement Notices

On-the-spot fines similar to those used for road traffic offences are now being issued for offences against the Radiocommunications Act. Until recently DOTC could only prosecute offenders through the courts. This was a costly exercise and could take months before cases were heard and decided. However, Departmental officers can now issue a "Radio Infringement Notice" to offenders.

A person served with a notice will have to pay the fine within 14 days or have the matter dealt with by a court. The notices will be used for most offences against the Act, including operating an unlicensed CB radio, possession of an unlicensed transmitter for the purposes of operating it, or for behaving in an antisocial manner on the air. DOTC intends to prosecute the more serious cases through the courts.

The Coil-Winding Wisdom of Solomon

Rob Abel VK2ERA
6 Laurel Street
Kootingal 2352

Commodore 64 Version.

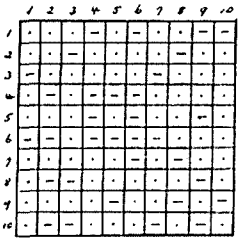
Following the article "Coil Design Made Easy" by Arthur Solomon VK3LJ (AR Nov 1988), a version suitable for Commodore 64 is printed below. I found it to be an extremely useful program and considered it well worth the time and effort to do the conversion for my Commodore 64.

If anyone interested should send me a disk and a suitable SASE, I am willing to provide a copy of the program. ar

```
10 POKE53280,2:POKE53281,6
100 REM *** THE COIL MAKER ***
110 REM A PROGRAMME TO DESIGN AIR-CORED COILS FOR RADIO
120 REM PURPOSES.IT WILL CALCULATE ,GIVEN THE NECESSARY
130 REM PARAMETERS, THE REACTANCE,INDUCTANCE,NUMBER OF
140 REM TURNS AND LENGTH OF WIRE USED IN THE MAKING OF
150 REM SINGLE LAYER AIR-CORED INDUCTORS.
160 REM #### WRITTEN BY ARTHUR SOLOMON,MILBURN,VICTORIA.,1988 ####
170 REM ########## THE COIL-MAKER PROGRAMME ##########
180 PRINT"■"
190 PRINT TAB(6)"### COIL-MAKER PROGRAMME ###"
200 PRINT TAB(6)"========================="
204 PRINT:PRINT
210 PRINT TAB(8)"SELECT YOUR REQUIREMENT:"
211 PRINT TAB(8)"======================="
212 PRINT:PRINT
220 PRINT TAB(4)"1.CALCULATION OF INDUCTANCE FROM"
222 PRINT TAB(6)"THE REACTANCE"
230 PRINT TAB(4)"2.CALCULATION OF INDUCTANCE FROM"
232 PRINT TAB(6)"PHYSICAL PARAMETERS"
240 PRINT TAB(4)"3.CALCULATION OF REACTANCE FROM"
242 PRINT TAB(6)"THE INDUCTANCE"
250 PRINTTAB(4)"4.CALCULATION OF NUMBER OF TURNS"
260 PRINT TAB(4)"5.CALCULATION OF LENGTH OF WIRE"
262 PRINT TAB(6)"NEEDED"
270 PRINT TAB(4)"6.EXIT FROM PROGRAMME."
271 A0$="CHOICE"
275 PRINT:PRINTTAB(6):INPUT"WHAT IS YOUR CHOICE";A0$
290 IF A0$="1" THEN GOTO 360
300 IF A0$="2" THEN GOTO 490
310 IF A0$="3" THEN GOTO 590
320 IF A0$="4" THEN GOTO 680
330 IF A0$="5" THEN GOTO 820
340 IF A0$="6" THEN PRINT"■":POKE53280,14:POKE53281,6:END
360 PRINT"■"
370 PRINT:PRINTTAB(4)"CALCULATION OF INDUCTANCE"
372 PRINT TAB(4)"========================="
374 PRINT TAB(4)"FROM THE REACTANCE"
376 PRINT TAB(4)"=================="
390 PRINT:PRINT TAB(4):INPUT"WHAT IS THE REACTANCE IN OHMS";R1
400 PRINT:PRINT TAB(4):INPUT"WHAT IS THE FREQUENCY IN MHZ";F1
410 U1=2*π*F1:L2=R1/U1
420 PRINT:PRINT TAB(6)"THE INDUCTANCE IS";R1/U1;
422 PRINT:PRINT TAB(6)"MICROHENRIES."
440 PRINT:PRINTTAB(6)"DO YOU REQUIRE FURTHER"
442 PRINTTAB(6):INPUT"CALCULATIONS (Y/N)";A0$
450 A0$="X":IF A0$="" THEN GOTO450
460 IF "X"="Y" THEN GOTO 480
470 IF "X"="N"THEN END
480 GOTO 180
482 PRINT"■"
490 PRINT"■":PRINT:PRINTTAB(4)"CALCULATE OF INDUCTANCE"
492 PRINTTAB(4)"========================="
495 PRINT:PRINT TAB(4)"FROM PHYSICAL PARAMETERS"
496 PRINT TAB(4)"========================="
510 PRINT:PRINTTAB(6)"WHAT IS DIAMETER"
512 PRINTTAB(6):INPUT"OF COIL IN INCHES";D1
520 PRINT:PRINT TAB(6):INPUT"WHAT IS THE NUMBER OF TURNS";T1
530 PRINT:PRINT TAB(6):INPUT"GIVE THE TURNS PER INCH";P1
531 PRINT TAB(6)"OF THE WINDING"
540 A1=D1/2:X1=T1/P1
550 PRINT:PRINTTAB(6)"THEN INDUCTANCE OF YOUR"
552 PRINTTAB(6)"COIL IS";(A1*T1)↑2/(9*A1+10*X1)"MICROHENRIES"
580 GOTO 440
590 PRINT"■"
```

Solution to Morseword No. 30

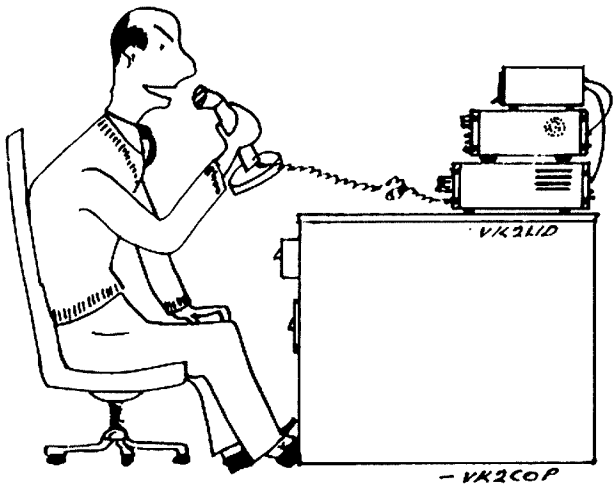
Across:	Down:
1 skim;	1 fetes;
2 used;	2 start;
3 bide;	3 rift;
4 rose;	4 does;
5 skite;	5 vain;
6 gob;	6 dots;
7 hare;	7 ixia;
8 when;	8 like;
9 evert;	9 daft ;
10 pear	10 dive.



```
590 PRINT"□"
600 PRINT:PRINTTAB(4)"CALCULATION OF REACTANCE:"
610 PRINTTAB(4)"========================"
620 PRINT:PRINTTAB(6)"WHAT IS THE INDUCTANCE"
622 PRINTTAB(6):INPUT"IN MICROHENRIES";L2
630 PRINT:PRINTTAB(6)"WHAT IS THE FREQUENCY"
632 PRINTTAB(6):INPUT"IN MHZ";F1
640 X1=2*π*F1*L2
650 PRINT:PRINTTAB(6)"THE REACTANCE OF THE"
652 PRINTTAB(6)"COIL IS";2*π*F1*L2 "OHMS"
670 GOTO 440
680 PRINT"□"
690 PRINT:PRINTTAB(6)"TO CALCULATE NUMBER OF TURNS"
691 PRINTTAB(6)"============================"
692 PRINT:PRINTTAB(6)" TO OBTAIN GIVEN INDUCTANCE:"
693 PRINTTAB(6)"============================"
710 PRINT:PRINTTAB(6)"REQUIRED INDUCTANCE"
712 PRINTTAB(6):INPUT"IN MICROHENRIES";L2
720 PRINT:PRINTTAB(6):INPUT"DIAMETER OF FORMER IN INCHES";DO
730 PRINT:PRINTTAB(6):INPUT"TURNS PER INCH OF THE WINDING";T1
740 D1=DO/2:B1=(10*L2)/T1:B2=(10*L2/T1)↑2:C2=3.6*D1↑3*L2:C3=2*D1↑2
750 R2=SQR(B2+C2)
760 IF R2<B1 THEN GOTO 790
770 N1=(B1+R2)/C3
780 GOTO 800
790 N1=(B1-R2)/C3
800 PRINT:PRINTTAB(6)"THE NUMBER OF TURNS";(B1+R2)/C3
810 GOTO 440
820 PRINT"□"
830 PRINT:PRINTTAB(6)"CALCULATION OF LENGTH OF"
832 PRINTTAB(6)"======================="
834 PRINT:PRINTTAB(6)"WIRE NEEDED FOR THE COIL"
836 PRINTTAB(6)"======================="
850 PRINT:PRINTTAB(6):INPUT"DIAMETER OF COIL IN INCHES";D1
860 PRINT:PRINTTAB(6):INPUT"NUMBER OF TURNS";T1
870 PRINT:PRINTTAB(6):INPUT"TURNS PER INCH";X1:B1=T1/X1
880 L1=π*D1*T1:L3=L1/12:L4=L3/3.28
890 PRINT:PRINTTAB(6)"COIL REQUIRES";π*D1*T1/12
892 PRINT TAB(6)"FEET OF WIRE"
900 PRINT:PRINTTAB(6)"NOTE:ADD EXTRA LENGTH TO ALLOW"
902 PRINTTAB(6)"FOR WASTAGE AND INNACCURACY"
904 PRINTTAB(6)"OF MEASUREMENT"
920 GOTO 440
930 END

READY.
```

"IF I GIVE YOU 5 AND 9, WILL YOU SEND ME A QSL CARD?!"



Polarised Plugs . . . The Simple Way

Are you looking for simple, readily available, low-voltage connectors for DC equipment?

Here's a handy suggestion, so obvious that you may not have considered the possibility . . . the conventional 3 pin AC mains plug and socket!

Over the years, I've had a regular need for polarised plugs and sockets in vehicles to operate various pieces of 12V equipment - HF and VHF rigs, lamps, soldering irons, fridges etc.

Where cigarette lighter sockets were fitted, they were OK, but these sockets and plugs were not easy to find when I needed to install compatible connectors on the test bench, or to add more temporary equipment during field use. Hence my use of the widely available, low-cost 240V plug and socket.

I achieve a standard polarity system for my equipment by using the earth pin for negative and neutral for positive. Because of the risk that equipment wired with these plugs could be connected by mistake to the power mains, I also jumper the neutral pin to the active in the plug with heavy wire, so that the fuse or breaker will operate if the relevant power outlet is switched on with the DC-style plug inserted. As an extra warning, I mark the plug boldly with a "12 V ONLY" sign.

These plugs and sockets work well, particularly when you wish to draw reasonable current - the paralleling of active and neutral pins gives a minor improvement here, and another advantage of using these connectors is the ease of quick, temporary increased outlets . . . merely plug in a double adaptor!

To give flexible access to various sources of 12 volts in the field, it's worthwhile making up a few different harnesses. They should all terminate in the normal 3 pin socket, but have a variety of input connectors such as heavy duty crocodile clips, accumulator clamps, cigarette lighter plugs (but don't overlook the occasional vehicle with positive grounding) . . . for WICEN members, this is a handy system for going across a range of 12V supplies.

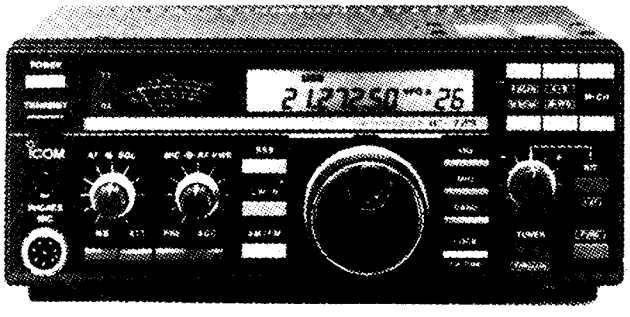
Ian Nance VK2BIN
22 Truscott Street
North Ryde 2113
ar

THE GEORGE BUSH, MA
MIKHAIL GORBACHE

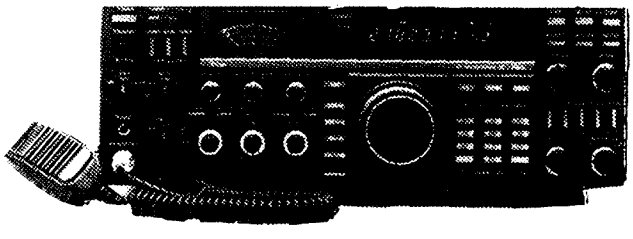
What has made Icom's range of transceivers world leaders in their class? Could it be the uncompromising standards of a George Bush? Is it the durability of a Maggie (Iron Lady) Thatcher? Or the innovative thinking of a Mikhail Gorbachev?

It is, in fact, a combination of all three.

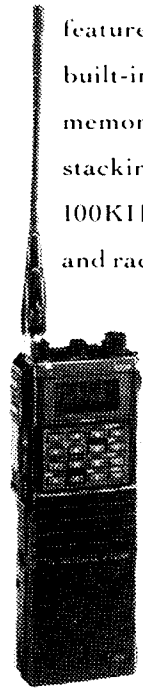
Which has led millions of radio users around the world to choose Icom. Their vote has made Icom the world leader of transceivers.



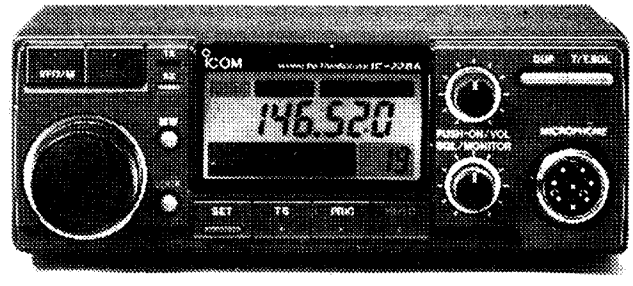
The Icom IC-725 HF mobile 500KHz-30MHz transceiver is complete with DDS synthesiser, 26 memories (two memories for duplex frequencies), switchable pre-amphlier, scanning, CI-V system for PC control, built in antenna tuner controller and band stacking register.



The Icom IC-765 HF transceiver features DDS synthesiser, high speed auto tuner, built-in AC power supply, 99 programmable memories, keyboard frequency entry, band stacking register, general coverage receiver 100KHz-30MHz, CI-V system for PC control and rack mounting dimensions.

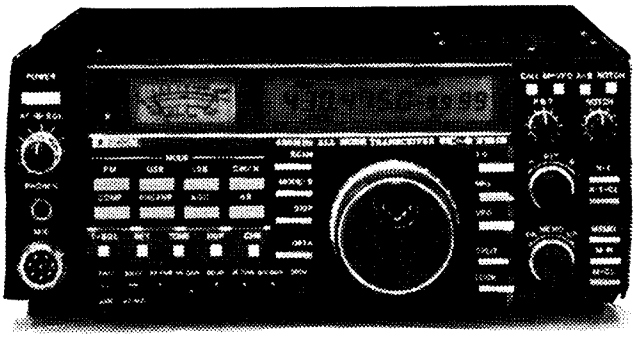


The Icom IC-32AT dual band FM transceiver outputs 5.5W and has a full duplex crossband operation, on/off switchable power saver and 20 double-spaced memory channels that can store two frequencies. The programmed scan function scans all frequencies between two programmable frequencies. And Priority Watch monitors the Call Channel, a memory channel or all the memory channels in succession, every five seconds.



The Icom IC-228A (25W) and IC-228H (45W) mobile FM 144MHz transceivers are compact and easy to operate with 20 memory channels, multi-colour LCD programmed and memory scans, variable tuning steps, priority watch, main controls lit for night operation.

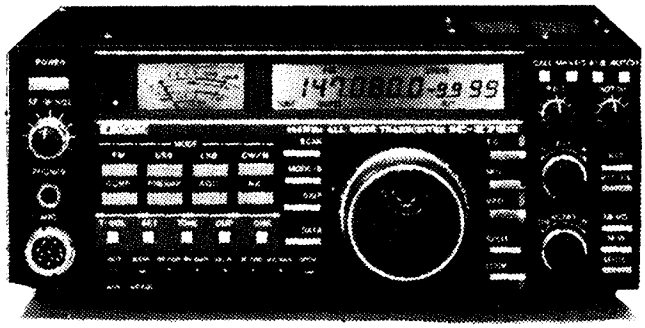
RGARET THATCHER AND V OF TRANSCEIVERS.



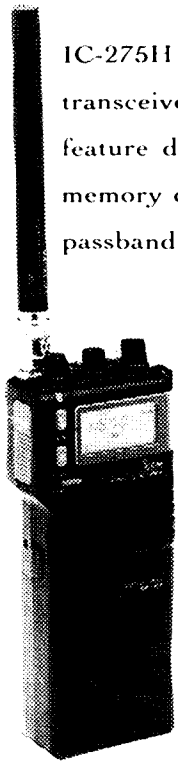
The Icom IC-475A (25W) and IC-475H (75W) 430 MHz All Mode transceivers are designed for packet mode with direct digital synthesizer (DDS), 99 memory channels, USB, LSB, CW, FM, passband tuning and adjustable IF notch filter.

The Icom IC-575A (10W) and IC-575H (100W) 28/50 MHz All Mode transceivers have a receiver coverage of 26-56 MHz and are equipped with direct digital synthesizer (DDS), 99 memory channels, and passband tuning.

The UHF FM Icom IC-4 GAT with 6 watt output has digital touch step for frequency selection, programmable call channel, LCD readout, optional pager function, programmed and memory scans, automatic power save and 20 memory channels.



The Icom IC-275A (25W) and IC-275H (100W) All Mode 144MHz transceivers are designed for packet mode and feature direct digital synthesizer (DDS), 99 memory channels, USB, LSB, CW, FM, and passband tuning.



The palm size Icom-2SA, 144 MHz FM transceiver has 5 watts output with optional BP-85, 48 memory channels and an automatic power saver, LCD readout, operation from battery or external 12V DC supply. A PTT lockout switch is provided to prevent accidental transmissions. Options include: paging, code squelch functions and beep tone on/off control.

Call Melbourne on (03) 529 7582 or interstate on (008) 338 915 for your nearest Icom stockist.

ICOM

ICO 0047

Fatal Distraction

or, Is Amateur Radio a Health Hazard??

Morris Odell
VK3DOC

Most of us will be familiar with the more obvious difficulties associated with our hobby, such as its expense, and demands on time that may not be compatible with other social commitments. In recent years, another concern has become apparent, that of a possible link between exposure to non-ionizing electromagnetic fields and an increased incidence of disease such as cancer and leukaemia.

In writing this article, I have relied partly on material supplied to the WIA by W Ross Adey K6UI, formerly of VK5 who is a prominent research scientist in the biomedical field. I am not concerned here with "acute" effects of RF induction of headaches or personality changes (all of which have been reported at one time or another) but in long term effects, possibly leading to diseases such as cancer.

Before discussing the current state of understanding on this large and complicated subject, it will be necessary to explain some of the terms used, as well as the method by which results are obtained.

The nature of the effects under investigation is such that there is no simple experiment that can be done in order to definitely settle the matter. One cannot put a person in a field under laboratory conditions, and the results from animal experiments of these type are not necessarily applicable to the human condition. This is not to say that experimentation is worthless, but its main use can only be to help interpret results observed in the field.

For "bottom line" information then, we must look at epidemiological studies which is a fancy way of describing studies that look at people exposed to suspected dangers and statistically comparing their rates of disease and death with that of the general population. This is not as simple a task as may seem, since people are exposed to a wide range of environmental influences and separating the effect of each one statistically takes a lot of work and needs a large number of people to be studied, especially if the effect you are looking for is very weak.

It is also necessary to know what we are talking about when we mention "non-ionizing radiation". We know from physics that electromagnetic waves carry energy in proportion to their frequency. Above a certain frequency (approximately in the ultraviolet region) the energy carried is sufficient to ionize atoms and thus cause direct damage to chemical substances within the living cell. This extends up through the spectrum and is responsible for the well-known biological effects of X-Rays, Gamma Rays and the like. What we are concerned with here is radiation in the very low frequency, radio and microwave part of the spectrum where the effects on living tissue are much more subtle, being due to local heating or interference with electric fields in cell membranes rather than direct molecular damage.

Finally, we also need to understand a little about theories of carcinogenesis or how environmental factors bring about cancer. Carcinogenic influences may be initiators or promoters. Initiators cause the process of malignant change to begin in previously normal tissues, although the end result may not be apparent for years after the exposure. Good examples of initiators are asbestos dust and ionizing radiation. Promoters act on tissue that has previously been initiated or undergone pre-malignant change, and speed up the progression to cancerous growth. Many natural and human made substances act as either initiators or promoters of carcinogenesis, and some, such as tobacco smoke, are thought to have a mixed action.

In any population exposed to a promoter, it would be expected that the incidence of cancer would increase with age as we all accumulate subtle damage to our cells from natural sources such as cosmic rays as well as the effects of ageing on the accuracy of genetic transfer in dividing cells. A complete discussion of how this takes place is beyond the scope of an article such as this, but it can briefly be described as a breakdown in the biochemical systems that control cell growth, both from within the cell and by chemical messages from other cells.

Another way in which cancer can be promoted is by effects on the immune system of the body, one of whose functions is to "patrol" for early cancers and eradicate them. Some test tube studies have shown an effect of RF fields on the function of lymphocytes (the cells of the immune system), but this is very difficult to test in the living body. Moreover, the cancers that have been observed in the epidemiological studies described here are not the same as those that appear in other deficiencies of the immune system such as AIDS.

Epidemiological Studies

A number of epidemiological studies have examined people exposed to non-ionizing radiation, both at RF and power line frequencies and although there have been difficulties with getting a "pure" sample, it seems that RF exposure may act as a weak promoter of some types of cancer.

A study that aroused some concern amongst the amateur community was one done on a sample of American radio amateurs. This was done by correlating the FCC file of known amateurs with death certificate statistics regarding cause of death. It was found that, while radio amateurs had a low death rate for their age (as would be expected from their higher level of education and social class), there was a significant increase in the incidence of a particular form of leukaemia known as AML and of all types of lymphoma (cancer of the lymphatic system). A possible confounding factor, however, was that 31% of the amateurs had occupational exposure to electromagnetic fields as well.

These results lead us to look at studies of people involved in the electronics industry or exposed to such radiation in the course of their work. One such study looked at occupations given on death certificates which "intuitively" involved exposure to non-ionizing electromagnetic fields, and correlated them with causes of death. (By "intuitively" they mean that the investigators thought there was a likelihood of exposure rather than directly measuring it). Occupations included radio and electronics workers as well as power station workers, projectionists, welders and people involved in the aluminium refining industry. This study also found an increase in AML and some types of lymphoma, but qualified the results because of the impossibility determining such variables as duration of exposure, field strength and type, and most importantly, the presence of other substances such as welding

fumes, ozone, aluminium fumes and polycyclic carbon compounds from burning carbon electrodes (which are also known to be one of the main carcinogenic components of tobacco smoke).

A study of brain tumour mortality found an increased risk (relative risk of 2.3 times compared to the general population) in RF-exposed men involved in the design, manufacture, repair or installation of electronic equipment, but RF-exposed men in other industries had normal risk. The risk was later also found to be increased in workers in the industry not exposed to RF fields. The risk increased by a factor of 10 after 20 years of exposure, and raises the possibility of carcinogenic effects from solder fumes, solvents and other chemicals involved in the industry.

Conclusion

What does all this mean? It should be realised that the risks we are talking about here are very small compared to other significant dangers that exist in our society, such as dying in motor accident or of heart disease. They have also to be seen in the context of an ageing amateur population (average age in Australia is 51 years) many of whom have been employed in technical occupations for 30 years or more and involving exposure to many other possible carcinogens. For the typical "ham" who spends a few hours a week on the air or fiddling with equipment, living in an environment which includes electromagnetic fields from domestic appliances and power wiring and exposed to the ever increasing chemical pollution of our society, the chance of dying as a result of his relatively innocent pastime is miniscule. So don't throw away the transceiver or the soldering iron just yet. Enjoy the pleasures of our magnificent hobby without worrying whether it will kill you!

JOTA - 1989

Peter Hughes VK6HU
58 Preston Street
Como 6152

This information may be useful to operators new to JOTA and perhaps as a look-up for those previously involved.

What?

The 32nd Jamboree-on-the-Air is a weekend during which Radio Amateurs invite Scouts and Guides to talk "on air" to other Scouts and Guides. It may be to overseas, across Australia, or just over the back fence.

When?

From 0001 hrs Local Time Saturday October 21st, to 2359 hrs Sunday October 22nd - for any period(s) to suit the operator. An explanation that this means that all JOTA stations could be on air together for 24 hours (and only 24) is quite interesting.

How?

Operation can be from the shack, a Scout or Guide Hall, at a District or Area Field Day or (for the very keen) enjoying the great *fun* at a camp.

Any mode or frequency within the operator's licence may be employed and Scouts and Guides are allowed to speak directly on the mike. It is useful to explain that this privilege has been available to our young people since the inception of JOTA, by courtesy of DOTC, but it is not so in all countries.

Regulations require that all "Club" stations keep a Log, and this practice is wise for special event stations anyway. A simplified Scout or Guide Log (which they bring with them) is required from them for statistics for the World Report. Some assistance with this, and a signature on completion, would be appreciated.

Your visitors are expected to assist with carrying equipment, erection of antennae if needed, victualling and their own supervision for discipline. They may assist with your Log keeping if you so desire. You may use your own QSL Cards or some which they may make themselves or purchase from some headquarters.

A copy of the list of Phonetics and a "translation" of the Q Code has been published for their use, as has the following, but these may not be brought with them.

Frequencies:

To facilitate contacts, the following have been agreed as:

WORLD SCOUT CALLING FREQUENCIES

Band	DX CW	DX Phone	VK Phone
80 metres	3.590 MHz	3.740 MHz	3.590 MHz
40 metres	7.030 MHz	7.090 MHz	7.090 MHz
20 metres	14.070 MHz	14.290 MHz	14.190 MHz
15 metres	21.140 MHz	21.360 MHz	21.190 MHz
10 metres	28.190 MHz	28.990 MHz	*28.590 MHz

(* recently changed)

World Bureau recommendation is for stations to call "CQ Jamboree" or answer such a call on one to those frequencies then QSY to maintain the contact and free the calling spot. In practice, however, the contact is easily lost in the shift so it has been found better to "edge" the QRM to call and answer without any need to QSY.

National Broadcast

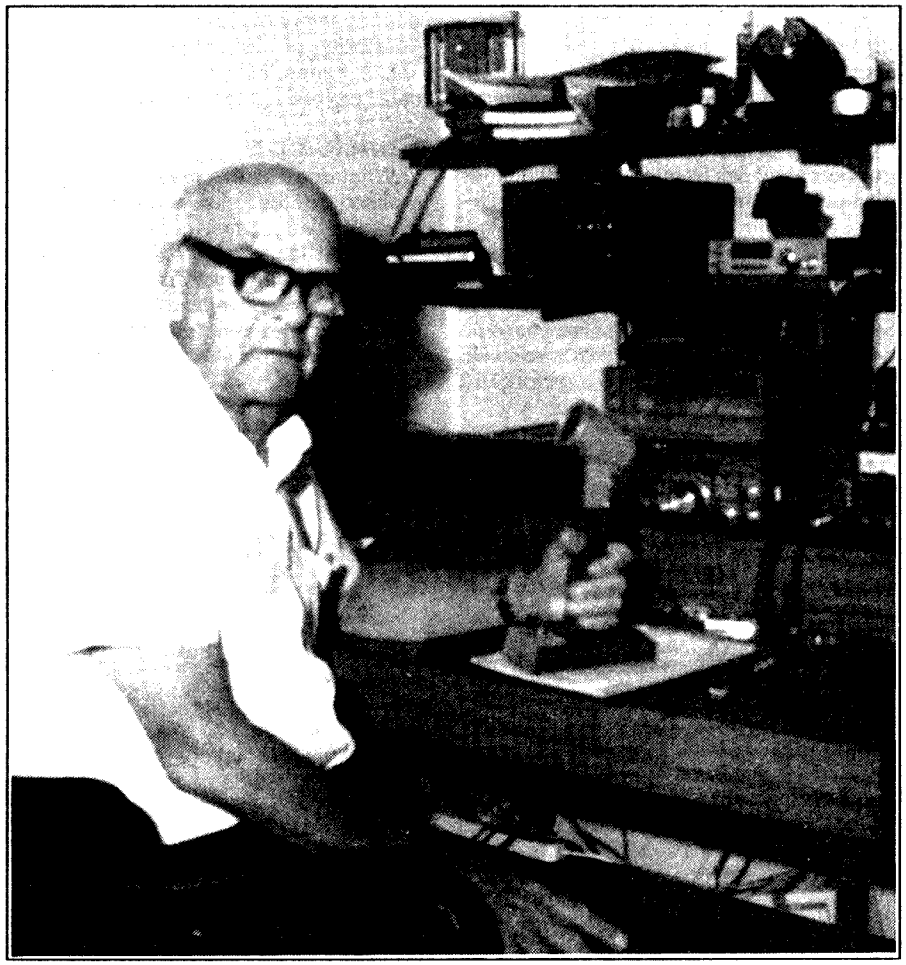
At the time of preparing this article, it is expected that I will again perform the traditional National JOTA Opening Broadcast, but details of site and personalities to be involved are yet unknown. I hope to have later information on WIA News Broadcasts, but the following should be enough:

The National JOTA Opening Ceremony will broadcast on 7.090 MHz, 14.190 MHz and 21.190 MHz at 0400Z on Saturday October 21st 1989. Tests for propagation conditions will occur periodically as antennas and gear are set up, and generally commence solidly about 0330Z. A callback will be taken on the frequencies in turn after the official speeches and, depending on response, bands will be accessed more than once, as announced. It has been our practice in recent years to keep all transmissions active, to allow those just listening to hear callbacks on the other bands.

It would be appreciated if all these frequencies could be left clear during the test, broadcast and callback. It is especially important that supervision eliminates incessant calling of "CQ" at this time - or at any other time for that matter!

Your State may also have an official broadcast which may be advised in the WIA News, so the same conditions will apply to that broadcast as above.

The logo, shown at the start of this article, is a design by Jeroen Lindeboom, of the Netherlands and is in recognition of the participation of Guides in JOTA for so many years. It shows a Guide on a rope-ladder attached to a simple tower with a transmitter ar



Claude Singleton VK4UX

Cyclone Tracy TV Drama Gets It Wrong

Jim Linton
VK3PC

The TV dramatisation of the Cyclone Tracy disaster failed to give radio amateurs the recognition they deserved. That is the firm view of Claude Singleton VK4UX who was involved in the emergency communications the day after Tracy devastated Darwin on Christmas Day, 1974. Virtually the only communications for many hours with Darwin after the cyclone was via a radio amateur in the ruins, Slim Jones VK8JT and Ken McLachlan VK3AH in Melbourne. The story of Cyclone Tracy was published in AR magazine to mark the disaster's 10th Anniversary.

Claude said that he helped relay some traffic when transmissions between VK8JT and VK3AH became difficult. He said that the TV dramatisation of the disaster which is still being seen around Australia did not sufficiently recognise the role played by amateur radio. "I'm a bit bitter about the lack of publicity amateurs get after every disaster," Claude said.

"Although the TV series gave radio amateurs the credit for keeping communications open, it under-played the difficulties experienced by Slim Jones," he said.

The viewing public saw a radio amateur transmitting in an office protected from the wind and rain. But what actually happened was that Slim operated from a bathroom, the only room left of his demolished home, Claude said.

"They didn't have it deliberately wrong and apart from that it was an accurate series; it's just we always get so little publicity for the work we do," he said.

ar

HOW'S DX?

People's Democratic Republic of Yemen

Patrick Kelly VK2RZ
PO Box 41
Ourimbah 2258

This was going to be my big DX story for this month. Unfortunately 7O did not eventuate and because it is about number three on the most wanted DXCC countries list, this expedition was being eagerly awaited.

Now the lead up to this started in early July. Paul I1RBJ announced his intention to operate as either I1RBJ/7O or 7O1A from July 22-26. Then, just a day or so before Paul was due to leave for South Yemen there were reports that he had received threatening letters and telephone calls putting the trip in doubt.

July 22 came and went, 7O was cancelled. An unconfirmed report said that Paul had gone to Somalia, but was refused permission to travel to Aden. Rumour has it that the same to two Middle East Amateurs who did their nasty work on Hans 4W0PA, were again involved.

Yet another unconfirmed report was about a certain OE operator having said on air that Paul would be put in jail immediately if he did go to 7O. This same operator is said to have had inside information concerning the arrest of Hans 4W0PA in North Yemen and has been accused by some of having set it up.

Just what we are supposed to make of all this is beyond me.

Bouvet Island

Einar LA1EE has announced a DXpedition to 3Y to start around next Christmas. This is definitely rare DX so what better gift could you give a DXer? More details about this will emerge over the coming months - this is just a warning! Right in the middle of the school holidays too which could present a problem for some.

Frederick Reef

An international group of DXers including Harry VK2BJL plan to operate as VK9FR in October. The reef is located 200 miles south-west of Mellish Reef and almost due east of MacKay Queensland. An appreciation for DXCC status has been sent to the ARRL for consideration.

La Blanquilla Island

I worked YY5LB on ten metres on the last day of operation by the Venezuelan Navy. The occasion was to celebrate Navy Day, and there are special awards for the first five stations to work them on three bands. Certificates are also available for anyone else who worked them on three bands. Activity was from July 19-22 on 160-10 metres, CW, SSB and RTTY. For I0 TA awards this one is SA37. QSL to Radio Club Venezolans, Box 2285, Caracas 101-A, Venezuela. Via the bureau is OK.

Conway Reef

Pekka OH1RY, Vili OH2BAZ, OH2BGD and OH2VB will operate as 3D2RY from November 3-13. It is not unusual to hear Pekka and Vlli each year around this time from several Pacific islands. I'm not sure where they will be for the CQWW contest, possibly YJ and 3D2.

Liberia

While looking for TJ1MW I had the pleasure of meeting up with Bill, 6Z2WK (EL2WK) and his XYL Doreen 6Z2DK (EL2DK) on 28.596 MHz at 0750Z. They also checked in regularly on 14.222 MHz at 0530Z, and it was nice to hear them both giving reports for each contact. The QSL route is via G3OCA. This is different to what I had previously been given, as all 6Z QSLs were supposed to go to Robert F Wynhoff, 12915 Memorial Drive, Houston, TX 77079 USA.

The 6Z is a special prefix that was used during July to celebrate the 142nd anniversary of the independence of the Republic of Liberia. An award is available for Amateurs and SWLs who have worked or heard five separate stations with the 6Z prefix. A certified log extract by two licensed Amateurs is all that is required. Cost of the award is US$5.00 or ten IRCs. Send to the LRAA Awards Manager, PO Box 10-0987, 1000 Monrovia 10, Liberia, West Africa.

Kure Island

KH6LW/KH7 has been active recently and Rick KH6JEB/KH7 is a regular here. Most operations are fairly brief, sometimes amounting to just a few hours on each visit. Low band operation is not possible due to a Loran station situated there. QSLs for both to KH6JEB.

Guantanamo Bay

Peter KG4UN was here for two weeks. QSL to K8UNP.

Sovereign Military Order of Malta

1A0KM is operated by the International Committee of Radio Amateurs for Unicef. This is the only callsign for SMOM and there have been reports of pirate operations recently using a different call. I worked 1A0KM on the 1st of October 1988, and apparently there has not been any official operation since.

Founded in 1099 AD the SMOM was recognised by Pope Paschall II in 1113. From 1310 to 1522 the Order maintained sovereignty on the island of Rhodes and from 1530 to 1798 on the island of Malta. Then, in 1834 the Order made its final move to Italy where it now holds several sovereign territories in Rome.

The SMOM is ruled over by the Prince and Grand Master of the Order and its members are known as the Knights of Rhodes and Malta. Under international law, the Order maintains diplomatic relations with many countries, as well as with the main international organisations. With a glorious history, the SMOM continues its ancient tradition in providing medical, financial and social aid.

A beautiful photograph of an ancient four storey building with palm trees and high manicured hedges in the foreground adorns the QSL card of 1A0KM. Incongruously, a three element tri-bander flanks a small rooftop tower, from which a red flag with its white Maltese Cross proudly flies from a pole against a perfect sky.

The QSL route for CW is to I0JX, SSB to I0IJ and for RTTY to I0AOF.

United Nations

I regularly come across 4U1UN on the higher frequencies. The station is in the United Nations Building in New York and may be operated by visiting amateurs. QSL to NA2K.

ITU Geneva

Another DXCC country in a logbook is 4U1ITU. I worked Paul I1RBJ on July 7 on 20 metres, just two weeks before his 7O operation was to start. Paul asked for QSLs to his homecall. Usually QSLs are via the bureau only, but it is OK to send to individual operators.

Amsterdam Island

Michel FT4ZE is now active from this desolate island in the Southern Indian Ocean. QSL to F2CW.

YLs in 3D2 and FW

Alice N4DDK, MaryLou NM7N, Audrey N7HAT and Mary KA0OMX signed FW/ from July 6-13. All except N7HAT then operated with their own 3D2 calls from July 13-21. They worked 40-10 metres CW and SSB and I only managed one contact on 15 metres with MaryLou as 3D2MB. QSLs for both locations are being handled by Elizabeth, VE7YL.

Mongolia

More activity here in Zone 23. This time from JT9C and JT1BJ/JT9 which is the first time I have heard this call area activated, wherever it is! The operation was from July 18-28 on 80-10 metres. QSL to PO Box 124, Ulan Bator 51, Mongolia.

USSR News

- From April 1 to Jun 29 UZ9AWD operated/ UH1A/UH1W/UI1Z and /UL1I. QSL to UA9AQN, Box 49, Magnitogorsk, 455044, USSR.
- RB8M is a contest callsign and will be used for WPX, IARU and CQWW contests. QSL to Box 59, Lisichensk, 349900, USSR.
- RT4UM/RG1G was active during March and April. QSL to Box 55, Kiev 91, 252091, USSR.
- UA1POL/1 on Waigach Is has been active since March 10. QSL to Box 49, Arkhangelsk,

163040, USSR.
- From February 23 to March 4, the following were all active. UZ9WWA/UD9D/UH1A/UH1H and /UH1E. UV9WN/UD4D/UH2A/UH3H and /UH4E. RW9WA/RH2A/RH3H and/RH4E. QSLs to RW9WA and UZ9WWA, Box 7056, UFA 75, 4550075, USSR. For UV9WN to Box 139, UFA 38, 450038, USSR.
- UA0UBG/UA8V will be active to October 1, on all bands CW/SSB. QSL to UA0UBE, Box 308, Chita 5, 672005, USSR.
- 4K0AAD QSL to UA3DAP, Box 17, Podolsk 17, 142117, USSR.
- EU2AR to Box 33, Minsk, 220013, USSR.
- EU2HZ to Box 80, Minsk, 83220083, USSR.
- RA3YF/RJ0K to Box 27, Bryansk, 241000, USSR.
- UB4MM/RY0K to Box 73, Lisichensk, 349918, USSR.
- UZ9MWJ/UZ0K to Box 1353, Omsk, 644093, USSR.
- EV7DN to RB51J, Box 1, Enakiewo 29, 343820, USSR.

All the above information was supplied by the Prometheus Amateur Association Inc.

QSL Information

FH5EF - F6ESV
IM0AEQ - IS0AEQ
(Rossa Is)
KC4AAA - NC6J
(McMurdo Station)
KX6HE - K2CL
LX1RQ - SP5SJD
T30DK - GM4CKM
TK/PA3EBT - PA1OW
TR8CA - W6BF
TV7E - F6HUJ
UG6GAW - C/B or Bureau
UH8EA - C/B or Bureau
UI8ZAA - C/B or Bureau
UM8MDX - C/B or Bureau
UY9ILK - UY5EG
XE2PBA - KB7HUG
XF4F - WA3HUP
4M5A - YV5AJ
9J2BO - W6ORD
D68CY - Box 85, Moroni, Comoros Is, Indian Ocean.
T30MT - Mote Terukaio, Box 72, Bairiki, Tarawa, Republic of Kiribati
TR8RF - Box 5487, Libreville, Gabon, West Africa
UC20AV - Box 49, Gomel, 246049, USSR
UH9WWA - Box 104, Penza, 440600, USSR

Other Bits and Pieces

▼ One station I omitted from my report on Antarctica was Ted VK0IC, who was also active during 1988. I remember working Ted on fifteen metres one Sunday afternoon. He is now back home as VK1BL and would like all those waiting for QSL to know that he has started to clear the backlog. The QSL address is Ted Garnett, GPO Box 1164, Canberra, ACT 2601.

▼ As from June 24, Burma XZ became officially known as Myanmar and the capital Rangoon became Yangon. I'm devastated!

▼ It is almost certain that the logs for 3V8AZ and 3V8VA were lost in the plane crash that claimed the lives of Marcel F2SA and Henri F1HJW who were the operators.

▼ By now the prefixes for both KC6 call areas should have changed to V63. The KX6 prefix was also due to change to V73.

▼ T30 stations were preceding their suffixes with "X" in July to celebrate ten years of independence.

▼ From July 1 to November 30, 9V1 stations will be signing 9V0 to mark the 1989 Seanet Convention.

My thanks for their information to VK2's HD, HF, PS, FR and to VK4AIX.
See you in the pile ups.
Good DX!

ar

VHF/UHF

An Expanding World

Eric Jamieson VK5LP
9 West Terrace
Meningie 5264

All times are universal Time Coordinated indicated as UTC

Beacons on Six Metres

Freq.	Call sign	Location	Grid square
50.000	GB3BUX	England	IO73
50.005	H44HIR	Honiara	QI00
50.005	ZS2SIX	South Africa	KF25
50.011	JA2IGY	Japan	PM84
50.015	SZ2DH	Greece	KM18
50.017	JA6ZIH	Japan	PM51
50.020	GB3SIX	England	IO73
50.020	CS1CCC	Uraguay	
50.025	6Y5RC	Jamaica	FK17
50.028	JA7ZMA	Japan	QM07
50.029	CT0WW	Portugal	IN61
50.032	ZD8VHF	Ascension Island	II22
50.035	ZB2VHF	Gibraltar	IM76
50.035	ZS3VHF	South Africa	JG87
50.039	FY7THF	French Guyana	GJ35
50.045	OX3VHF	Greenland	GP60
50.048	TF4BFK	Guatemala	
50.050	GB3NHQ	England	IO91
50.050	ZS6DN	South Africa	KG44
50.056	VK8VF	Darwin	PH57
50.057	TF3SIX	Iceland	HP94
50.062	PY2AA	Brazil	GG66
50.064	WD7Z	Arizona	EL59
50.065	GJ4HXJ	England	IN89
50.065	NB3O/1	Rhode Island	FN41
50.066	VK6RPR	Perth	OF78
50.063	KH6HI	Hawaii	BL01
50.075	VS6SIX	Hong Kong	OL72
50.078	TI2NA	Costa Rica	EK70
50.080	KH6JJK	Hawaii	BL11
50.080	HC8SIX	Galapagos Is	EI59
50.085	9H1SIX	Malta	JM75
50.086	VP2MO	Montserrat	FK86
50.088	VE1SIX	Canada	FN65
50.090	KJ6BZ	Johnston Is	AK56
50.092	W5GTP	Louisiana USA	EM40
50.099	KP4EKG	Puerto Rico	FK68
50.100	HC2FG	Ecuador	FI07
50.100	5H1HK	Tanzania	
50.110	KG6DX	Guam	QK23
50.110	A61XL	United Arab Emir	LL74
50.120	4S7EA	Sri Lanka	MJ97
50.321	ZS5SIX	South Africa	KG50
50.490	JG1ZGW	Tokyo	PM95
50.499	5B4CY	Cyprus	KM54
52.100	ZK2SIX	Niue	AH50
52.200	VK8VF	Darwin	PH57
52.310	ZL3MHF	Christchurch	RE66
52.320	VK6RTT	Wickham	OG89
52.325	VK2RHV	Newcastle	QF57
52.330	VK3RGG	Geelong	QF21
52.345	VK4ABP	Longreach	QG26
52.370	VK7RST	Hobart	QE37
52.420	VK2RSY	Sydney	QF56
52.425	VK2RGB	Gunnedah	QF59
52.435	VK3RMV	Hamilton	QF12
52.440	VK4RTL	Townsville	QG30
52.445	VK4RIK	Cairns	QH23
52.450	VK5VF	Mount Lofty	PF95
52.460	VK6RPH	Perth	OF78
52.465	VK6RTW	Albany	OF84
52.470	VK7RNT	Launceston	QE38
52.485	VK8RAS	Alice Springs	PG66
52.510	ZL2MHF	Mount Climie	RE78

There are no changes to the six metre beacon list since it was last published in June.

Six Metres

The band has been very quiet during the past month. There were a few Es openings with one of the best possibly oh 8/7, when contacts were made to VK2, 4 and 6. At 0620 Peter VK6KXW was 5x9 and with the beam on the west, Lance VK4ZAZ broke in with an S5 signal, so the band was in good shape. VK2 and 4 were in again on 15/7 and no doubt there have been others between the various States.

The Japanese "CQ ham radio" magazine (courtesy VK6RO) includes a list of the following six metre stations, which were worked from that country between 20/3 and 20/4 and it makes interesting reading. They include: BY4RB, ZK1XH, 5W1HS, VK6ZLX, VK4FNQ, ZL2KT, PY21AX, ZD8MB, VK9NS, VK5NY, FK1KT, VK30T, KX6DS, P29PL, H44GR, KH6HI, XX9KA, VS6XRC, YC0UVO, V65DA, VK6ZRT, HL1ES, KG6DX, VQ9QM, 4SNMR,5H1HK, 9H1BT, ZS6WB, SV1AB, CX4HS, VK2QF, 3D2ER, FO5DR, KP4EOR, S79M, T3ODJ, HC2FG, K6STI, HP3SUH, LU8MBL, CE3BFZ, KB6FIQ/DU3, 4F3BAA, TI2KD, OA8ABT, PP5WL, VK1RX, AH9AC, OE3OK, 4GIA/3, T20JT, ZL7TPY, and VK7LZ.

All Australian and New Zealand call areas were worked, and apart from these the above list shows only one call sign from each country. Obviously many more stations from those areas were worked; in fact, there are three 4S7s listed and several more from ZS6 from a list of 300 contacts, so the Japanese signals have encompassed large areas of the globe. However, it would appear they have not been so successful as VK when it comes to working stations in the Caribbean area, despite the above list representing 46 countries.

There are a few rather interesting contacts in the above list, one being S79M, which appears to have been a DXpedition by JR4PMX between 19/3 and 29/3, and was a CW contact from the Seychelles to JR6HI and probably others.

The Six Metre Beacons

In due course, some thought will need to be given to the operating frequencies of the six metre beacons. At present, most are located on 52 MHz, where they continue to serve a purpose, but perhaps not so usefully as before the availability of the 50 MHz segment of the band.

Any changes in frequency need to take into account that the eastern States are limited to between 50.050 and 50.200, and with radius restrictions. Therefore, they cannot be simply brought down in frequency by 2 MHz, as some have suggested, as they would be above the 50.200 limitation.

If our beacons were located in a segment, say between 50.050 and 50.070, at times they may be a nuisance to overseas beacons, although I am not sure how many of those that may be monitored lead to contacts, as most surveillance seems to take place on 50.110 or thereabouts. However, that aspect must be considered as it also works in reverse, our beacons may not be heard overseas if they are mixed with their beacons.

Perhaps they would be best situated in a 20 kHz segment between 50.150 and 50.200 MHz. I am suggesting a 20 kHz space as at present, and with some care in planning, mutual interference could be kept to a minimum, except for perhaps days of intense Es, when the whole of Australia is open anyway. The USA beacons seem to exist with about 20 kHz, except for those who choose to randomly operate in other sections of the band.

I would be pleased to receive some feedback from those with an interest in beacons. You might consider looking at the current Australian six metre list, and suggesting how the portion of the band you nominate may accommodate the beacons, and what frequencies you would assign to which beacon, having regard for their present locations and the possibility of mutual interference to other beacons at a time of enhanced propagation. I think it is possible that the time has gone when we can continue to place the beacons in readily identified frequency segments; each beacon will need to be placed according to what effect it has on those near it in frequency under all conditions. Please write!

QSL Information

AH9AC: I8YCP, Cristina Pellechia, S Giacomo d Capri 63, 1-80131 Napoli, Italy.
A35IC: via JJ2ICA
C21RK: via JJ1TZK
CE3BFZ: Pedora Barrosa Vivaldi, Pint Magdalene Mire 7763, Las Condes, Chile.
CE3XK: Renato C Carvajal Reeves, Jose Zapiola 7693, G. La Reina, Chile.
CX1DDO: Amador Tannino, Columbia y San Francisco, Shangria, Canelones, Uruguay.
FO4NK: Alain Salic, SP91381, F 75998, Paris Armees, France
FO5DR: Rene Delamare, Box 11078, Mahina, Tahiti.
P29PL: VK9NS, J B Smith, Box 90, Norfolk Island, 2899.
SV1AB: Giorgos Vernardakis, Markoy Botsari 72, GR-14561 Kifisia, Greece.
T20AA: N4FJL Thomas G Schreckengost, 8W Pine Tree Avenue, Lake Worth Florida 33463, USA.
T20JT/T30DJ: W6JKV, James G Treybig, 27200 Altamont Rd, Los Altos Hills, CA94022, USA.
VK9YQS/0: VK3OT, Stephen R Gregory, PO Box 622, Hamilton, Victoria, 3300.
VQ9QM: W4QM, Harmon D Strieter, 928 Trinadad, Cocoa Beach, Florida 32931, USA.
XX9KA: KC9V, Betty L Collins, Box 263, State Line, Indiana, 47982, USA.
ZD8MB: Box 1, Ascension Is, via UK.
ZK1XH: via JR1FYS.
ZK1WL: Warwick Latham, Penrhyn I, Cook Island, New Zealand.
ZL7TPY: ZL2TPY, K W Mundell, 6 Alberta Road, New Plymouth, 4601, New Zealand.
3D2AG: Box 184, Suva, Fiji Is.
4G1A: via JF2IIZ
4F3BAA: via JG2PUW
5H1HK: via JH4RHF
5W1GW: via JA8IYK via Buro
5W1HQ: via JJ3IMX
8Q7TT: via JF2KOZ
The above courtesy of "CQ ham radio".
P43AS: Juan Nogueroa, PO Box 2380, Rooi Koochi 56-D, Aruba, Dutch Caribbean.
ZF1RC: Roger Corbin, PO Box 1549, Cayman Is, West Indies.

A card from OY7ML of the Faroe Islands says that at present no six metre operating is permitted in that country. OY9JD has made some crossband 10 to 6 metre contacts, and has applied for a six metre licence, but may be unable to commence operating before September/October 1989.

Two Metres and Above

Perhaps other areas have been more active but the VK5 scene has been rather dismal for some time on these bands. On two occasions at around 1100 I was surprised to hear the 432.535 beacon VK3RMB with slow QSB, but with signals peaking to S3 on occasions.

On 144.550 VK5RSE from Mount Gambier is consistently around S5 and dropping down under extremely poor conditions. During the winter months, I have been surprised how many times the repeaters are available from Naracoorte in our South East and from Mount William in Victoria. For FM I use a stacked Ringo type antenna, with a gain of about 5 dB fed with ET13M 75 ohm coax, and obviously the system is working well. It may be helped by the fact that the top of the antenna is 95 feet above ground!

Apart from the above, there is little else to write about. Perhaps this saving of space will be placed to my credit for use when six metres opens up in September!

Closure

Closing with two thoughts for the month: "Worry is the traitor in our camp that dampens our powder and weakens our aim", and "The most important thing a father can do for his children is to love their mother. "73

The Voice by the Lake

ar

CONTESTS

Calendar, John Moyle Results VK-ZL-Oceania Rules

Federal Contest Manager
Frank Beech VK7BC
37 Nobelius Dr
Legana TAS 7277

Contest Calendar

September
3rd LZ Bulgarian DX SW contest
16-17 Scandinavian CW contest
23-24 Scandinavian SSB contest.
Rules for above 3 contests in Aug "AR".
October
7-8th VK/ZL Oceania DX Contest SSB Section (Rules this issue)
8th RSGB 21/28 MHz SSB contest
9th RSGB 28 MHz contest
14-15th VK/ZL Oceania DX Contest CW Section (Rules this issue)
15th RSGB 21 MHz CW Contest

1988 Ross Hull Memorial Contest

After checking my copy of the results of this last contest against a copy of "AR" it became apparent that the score obtained by John VK3ZJC was missing. In the contest John was in fourth place with 1591 points from 191 contacts, congratulations on a very good score.

Whilst dealing with our Mr Murphy, in the results of the 1988 Remembrance day contest the score of VK6HU was omitted from the HF phone results. Please insert VK6HU 98 points in the HF phone section.

John Moyle Memorial Field Day Contest 1989 Results

Entries have been scrutinised, and all sections apart from "G" and "J" received support. With one exception all entries complied fully with the rules as laid down, and the standard of logs submitted was very high, which has made the work of the FCM relatively painless. Thank you. Certificates will be issued in the near future, as will the trophy for the best CW soore/effort.

1989 Australian Novice Contest Results

Section "A"

VK5NOD	815 points.		cert
VK4WIH	805	"	
VK1PJ	794	"	cert
ZL1BVK	751	"	cert
VK1NEB	707	"	cert
VK4VMP	698	"	cert
VK3PTB	622	"	cert
VK5NVW	596	"	cert
VK4NEF	559	"	
VK2PSD	474	"	cert
VK3AJU	431	"	
VK5QX	427	"	
VK6ANC	421	"	
VK5NPF/3	411	"	
VK3BMU	403	"	
VK4BB	397	"	
VK2CKW	319	"	
VK2ZL	261	"	
ZM3KR	243	"	
VK7HX	231	"	
VK4NFE	206	"	
ZM1IM	183	"	
VK5UE	178	"	
VK7NBO	172	"	cert
VK8NCH	143	"	cert
VK1BBA	113	"	
VK6JMP/p	73	"	cert

Section "B" CW

VK5NOD	46 points		
VK5AGX	38	"	

Certificates for the winning stations will be distributed at an early date, the standard of logs received was very good and no problems with presentations occured. It was disappointing to see such a poor support for the CW mode, and the lack of support by the Australian novices for even the phone section is deplorable. Maybe they are all studying for the full call, or perhaps are all on 2 metres FM!

John Moyle Memorial National Field Day Contest 1989 Results

DIVISION "A" 24 HOUR

Section "A" Portable field station single op.

VK3AJU	9069 points	
VK6NTJ	8662	"

Section "B" Portable TX CW, 8 op.

VK3CFI	696 points	10 watts input wind power.

Section "C" Portable TX Open, 8 op.

VK4EV	363 points	

Section "D" Portable TX phone, multiple op.

VK4IZ	12323 points		Redcliffe Radio Club.
VK6ANC	11582	"	Northern Corridor Radio Group.
VK3ANR	7726	"	Geelong Radio & Electronics Society.
VK1WI	5930	"	WIA Act Div.
VK5SR	5864	"	Southeast Radio Group.
VK5AH	5237	"	
VK4WIE	4723	"	City of Brisbane ARC.
VK3BCG	4143	"	Camberwell Grammer School RC.
VK2CAM	3911	"	
VK4WIT	3079	"	The Townsville ARC.
VK4WIC	2758	"	Dalby & District ARC.

Section "E" Portable TX Open, M op.

VK3CNE	14672 points		
VK2WG	8058	"	Wagga Wagga ARC.
VK3SCD/p	6446	"	Cheltenham Radio & Elec. in Scouting Club.
VK2FFG	5072	"	Fishers Ghost ARC.
VK5ARC	4882	"	South Coast ARC.
VK8AR/p	4621	"	Alice Springs ARC. disqualified ≠
VK3ER	1761	"	Eastern & Mountain Districts RC.
VK4HM	1458	"	Cairns ARC.

Section "F" Portable TX VHF, 8 op.

VK2XEX	1186 points	
VK2XGX	996	"

Section "I" Home TX Mains Pwr.

VK3ZI	555 points		
VK3XB	425	"	CW.
VK4PJ	132	"	
VK3KS	94	"	CW.

Check log from VK4IY. Tks Ross.

VK8AR/P. Not complying with section 19 of the contest rules as printed on page 18 of the February issue of "AR". Not providing the operators signatures on the front sheet of the original entry, nor upon a second front sheet after the omission of the operators signatures, and list of equipment used as pointed out to the ASRC. In accordance with rule 22 of the contest the FCM has disqualified the entry from the Alice Springs amateur radio club.

DIVISION "B" 6 HOURS

Section "A" Port, TX Ph, 8 op.

VK5QX	1759 points	
VK5DI/p	1282	"
VK5GN/p	1274	"
VK4AIZ	1202	"
VK5KXX	991	"
VK3MI	710	"
VK4IY	487	"

Section "C" Portable TX Open, 8 op.

VK5ABS	2027 points	
VK2EL	598	"

Section "D" Portable TX Ph, M op.

VK4YX	2614 points.		3 ops.
VK3SOL	1220	"	Shepparton ARC. 3 ops.
VK5BRC	1078	"	Barossa Valley RC Inc. 4 ops.

Section "E" Portable TX Open, M op.

VK4WIN	2715 points		Brisbane North RC. 5 ops
VK5BAR	2200	"	Adelaide Hills ARC. 7 ops

Section "F" Portable TX VHF, 8 op.

VK4WIZ/2	6988 points		Radio amateurs group. 203 Ph, 77CW.
VK3XRS	750	"	
VK4ZXZ	445	"	
VK4VR	370	"	
VK4ANN	340	"	YL.
VK3BBB	195	"	

Section "H" Home TX emergy pwr.

VK3CBT	1278 points	
VK5AGX	712	"

VK2EVD	477	"
VK6AXB	255	"
VK2JM	12	"

Section "I" Home TX main pwr.

VK2ENU	529	points
VK1RH	330	"
VK2KPF	254	"
VK1BEB	157	"

The Presidents Cup Trophy (copy of) has been won by VK4YPB operating VK4WIZ/p with a CW score of 3080 points. Congratulations on a good VHF CW Score.

Rules of the 1989 VK-ZL-Oceania DX Contest

SSB October 7-8 1989
CW October 14-15 1989
FOR OVERSEAS ENTRANTS.

1 SSB: Within a 24 hour period, from 0100 UTC Saturday 7 October, to 1000 UTC Sunday 8 October 1989. Operate for a MAXIMUM of 12 hours. Take your operating periods in one hour blocks, based on "even hour to even hour" in UTC, eg 1000 to 1100 UTC or 1300 to 1500 UTC etc, with MINIMUM periods of one hour.

1a CW: Within a 24 hour period, from 1000 UTC Saturday 14 October to 1000 UTC Sunday 15 October. Operate for a MAXIMUM of 12 hours. Take your operating periods in one hour blocks, based on "even hour to even hour' in UTC, eg 1000 to 1100 UTC or 1300 to 1500 UTC etc, with MINIMUM periods of one hour.

RECEIVING
SSB and CW combined in the above times. (Maximum total of 24 hours).

2 Only one contact per mode per band is permitted. All bands may be used except WARC bands.

3 Scoring.
For stations operating outside Oceania, score TWO points for each contact with VK, ZL, or Oceania Stations. Oceania stations score TWO points for all contacts.
NB: Oceania stations are those which qualify as Oceania for WAC.

4 Final Score.
Multiply the total QSO points by the sum of all VK/ZL/O prefixes worked on ALL bands. (The same VK/ZL/O prefix worked on a different band counts as a different unit).

5 Cyphers.
Exchange a five or six figure digit composed of RS(T) report, plus a three digit sequence number beginning at 001, and increasing by one for each QSO on that band.

6 Logs.
(a) Separate logs for each band please, and for SSB and CW.
(b) Show date, time UTC, Call of station contacted, cyphers sent and received.
(c) Indicate clearly each new VK/ZL/O prefix worked. (Underline, highlight or show in a separate column, as in CQ WPX).
(d) State QSO points claimed for each band.
(e) State VK/ZL/O prefixes claimed for each band.
(f) Summary sheet to show:
Call sign, name and address.
Total QSO points claimed on all bands.
Total VK/ZL/O prefixes contacted on all bands.
Total points claimed.
Declaration that the rules were observed.

POST LOGS TO. WIA VK/ZL Oceania Contest Manager VK7BC, Frank Beech, 37 Nobelius Drive, Legana, Tasmania 7277, Australia, to arrive by 15 February 1990.

7 SWLs
A VK, ZL or Oceania station must be heard in a contest QSO-Logs to be set out as for transmitting section.

8 Awards
Separate awards for SSB and CW.
(a) Special coloured certificate to the top scorer in each continental area.
(b) Special coloured certificate to the top scorer in each country.
(c) Participation certificates to all others on request (two IRC for postage please).
Copy or relevant results available on request (one IRC please).

FOR VK AND ZL STATIONS.
Check with overseas rules.
Rules 1, 2, 5, 6 as for Overseas stations EXCEPT....in rule 6 (deadline)

3 Scoring
Different points for contacts on different bands are as follows:

160m	20 points
80m	10 points
40m	5 points
20m	1 point
15m	2 points
10m	2 points

Total Score will be the total QSO points multiplied by the total number of prefixes worked. The same prefix worked on a different band is counted. Note: K1, W1, AA1, N1 etc are all different prefixes. W1AAA/6 would count as W6, NOT W1.
VK and ZL stations are permitted to contact each other ONLY on 160 and 80m. VK/VK; ZL/ZL, and ZL/VK contacts are permitted on these two bands.

6 Change - Logs to arrive by December 11th 1989.

7 SWL Section
As for overseas BUT...
VKs must hear and log ZL or other stations (No VK stations).
ZLs must hear and log VK or other stations (No ZL stations).

8 Awards
Separate awards for SSB and CW.
(a) Special certificates to top scorers in each prefix area.
(b) Special certificates to top scorers on each band.
(c) Participation certificates to all entrants on request (Two IRC for postage please).

The WIA/ZL/Oceania Contest Manager, VK7BC Frank Beech, 37 Nobelius Drive, Legana, Tasmania 727. ar

AWARDS

New Award from Fisher's Ghost ARC

Ken Gott VK3AJU
Federal Awards Manager
38A Lansdown Road
St. Kilda 3183

The Fisher's Ghost Award is alive and well and its sponsor - the Fisher's Ghost ARC, located in Camden, NSW - is now offering another certificate, the Macarthur Award, named for the founder of the merino wool industry.

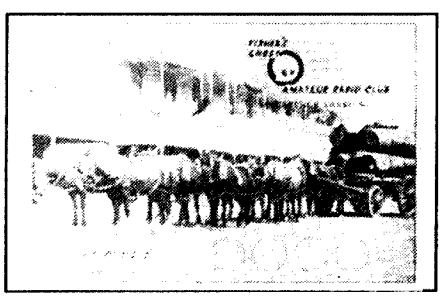
The certificate (see below) shows a sepia tone scene of a bullock team and wagon in Camden's main street, around 1910, with award details overprinted in black.

The new award is based on contacts with stations in 98 localities in and around the historic Macarthur district, each counting one point, plus a contact with the VK2FFG, the club station, worth two points.

The basic award is obtained by contacts with FGARC members in five locations, with upgrade stickers for scores of 25, 50, 75, and 100 points.

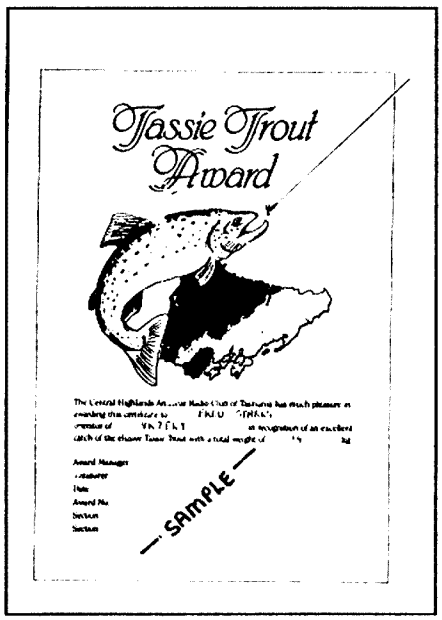
Log extracts are not necessary, but the Macarthur Award checksheet must be used when applying for the basic award or any later upgrades. The checksheet, listing the 98 eligible localities, can be obtained by sending a 9 x 4 cm SSAE to Awards Manager, PO Box 249, Camden, NSW 2570. The award is won by listing QSO data on the checksheet and returning it with $5 to the Awards Manager. After checking, the checksheet is returned to the sender for further use in applying for upgrades.

The Macarthur Award commenced on 7/7/89 and those interested can pick up points on its net on 3.580 MHz at 1000 UTC each Friday night. Net control will give details of mobile excursions which will enable various locations on the list to be worked.



Tassie Trout Award

The Tassie Trout Award (shown below) has been established by the Central Highlands Amateur Radio Club of Tasmania. Applicants must "catch" 14 kg of trout from May 25 1989, the "weight" being earned as follows: Club station VK7CHT 3 kg, President VK7KZ 2 kg, Treasurer VK7NDO 2 kg, Vice-President VK7NBF 2 kg, and all other members 1 kg. However, if a member is located portable in the Central Highlands, the QSO is worth 2 kg. Members are: VK7s AY, DY, GT, JH, HX, KB, KBA, KBG, KV, NIM, NRR, NWR, NXA, RM, VV,



XA, YW, YAF, ZMF, and VK3CWJ, VK4PCL and VK5NEH.

QSOs may be on any band, using any mode, but repeater contacts are not eligible. Only a log extract is needed (ie it need not be certified by other amateurs), plus $4 by cheque, money order or stamps (no IRCs please).

Send to: Awards Manager, Central Highlands ARC, c/- 28 Hamilton St, West Hobart 7000.

My listening suggests that tuning to the Tasmanian Devil Net run by Bob VK7NBF each Tuesday at 1000UTC on 3.590 MHz could be fruitful in snaring QSOs for the Trout Award, as well as the better-known Devil Certificate.

Survey of VK Awards

The results of my recent survey of awards believed to be on issue by various VK divisions, clubs, zones and other groups, were due to be published in this issue of AR.

Unfortunately, the fickle finger of fate intervened, causing me to spend the latter half of July in hospital.

I expect to have things back on track fairly soon and to publish the conclusions of the survey in next month's AR.

In the meantime, my thanks to the dozens of award managers who returned the questionnaires to me.

Bargain IRCs

The hundreds of IRCs which I offered to WIA members at 80 cents each were cleared fairly rapidly. Demand exceeded supply and I have had to return cheques and other remittances to some members whose orders arrived too late. Sorry chaps.

ARRL DXCC Honor Roll

I'm grateful to Austin VK5WC for monitoring QST monthly and sending me the latest VK listings on the ARRL DXCC Honor Roll. The listings are valid as of 31/3/89 and appeared in the July issue of QST.

Phone

318: VK6RU/365, VK5MS/362
315: VK4QM/349, VK6HD/333, VK6LK/331
311: VK5WO/337

Mixed

316: VK4QM/364, VK6HD/335
315: VK3YL/351
314: VK5WO/343

I understand that the phone listing for VK5WO will be corrected to 314/340 in the September issue of QST. (I suppose it is comforting to learn that even QST suffers from printers errors, since the DXCC Updates in the August issue of AR were messed up. The list, as it was intended to appear, is set out below). The total ARRL country list stood at 320 on 31/3/89. No VKs were listed on the ARRL CW Honor Roll.

DXCC Updates.

	CW	Phone	Open
VK1ZL		284	
VK3OT		305/309	308/312
VK3YJ		305/306	
VK3AJU		150	
VK4DA	154		155
VL4KRP		153	
VK4FQW		136	
VK6LK		316/332	
VK6NE		309/319	
VK2EG(RTTY)		150	ar

HMCS Protector Award

Errata from July issue. P52 should have read as follows: All bands and modes are acceptable, with appropriate endorsements available. Cost is A$4 or five IRCs. RNARS members commonly use these frequencies:-

On Mondays:3.615 MHz, 1000-1130Z, and 3.620 MHz, 1100-1200Z.

On Tuesdays:3.521 MHz, 0930-1030Z and 3.527 MHz, 1030-1130Z.

On Wednesdays:21.133 MHz 0930-1020Z.

Daily on 14.052 MHz, 0500-0900Z.

Other frequencies used by members are: 7090 kHz, 14.335, 21.360 and 28.410 MHz (SSB), and 3.520, 3.527, 7.020, 14.052 and 28.052 MHz (CW).

South Australian group members active include VK5s AF, HH, RA, RM, VG, WE, YC, YT, AFB, AFP, CGB and NDX.

Review Article: CM Howes Communications CVF80 VFO

Gil Griffith VK3CQ

(Courtesy Dick Smith Electronics)

Gidday Morsiacs, I hope to begin my return to spending some more time on Amateur Radio with this review of the VFO which matches the CTX80 transmitter that I reviewed in December 1988 Pounding Brass. Following this will be the DcRx80 receiver, which should be up and running in short order.

The CVF80 features a stable FET oscillator, dual buffered outputs, onboard voltage regulation, 11-15 V DC operation, and gives transceive operation with the DcRx and CTX80. It also has an IRT control, which is, receive incremental tuning or RIT.

The kit comes with all the components, circuit board and wound inductor, but not the tuning capacitor. The instructions are 6 pages, which are not only easy to follow, but include a list of resistors and capacitors, with columns to mark when you have fitted and tested each component. It even gives the colour code for every resistor! Unnecessary for Amateurs but great for raw beginners, who can learn a lot before going for their ticket, just by building a few kits of this type.

Assembly is dead simple, as *everything* is marked on the component side of the board, with outlines of the transistors (there are 9!), and diode polarity markings etc. It took me about 2 hours, but I like to check each resistor with the meter before installing, just to make sure. I also like to bend component leads over before soldering as this makes for less dry joints 10 years down the track.

I was pondering overnight whether to put the VFO straight into an aluminium box, but decided to run a few tests with the board laid out on the bench first. I hope to incorporate all the kits in one box at a later date, but the transmitter is already mounted in its own box, and I don't know which other kits I will be using in the final transceiver. Hopefully it will include the transmitter, receiver, VFO, electronic keyer, audio filter, and maybe a tuner if it will fit!

Back to the bench, where I connected a lead to the tuning capacitor, a tiny (30 by 35 by 50) three turn dual ganged unit I picked up at a field day, using the smaller gang, which looks about 300pF. A lead to my frequency meter and another to the 12 volt supply, and everything is ready for some testing. A funny thing occurred to me shortly after switching on, and that was that I fully expected the VFO to work first time, and neglected to watch for smoke escaping from the little black things where it is stored.

There are two places provided for connecting the tuning capacitor, with different amounts of spread on each. Also screwing the slug of the inductor in or out gives a lot of frequency control. It will depend on what you decide to use for a tuning capacitor, but with mine I got the following results:

	Wideband	Narrow Band
Slug in	1.720 - 2.780	3.540 - 4.030
Slug out	2.475 - 3.965	3.835 - 4.225

As I am looking for about 3.5-3.6 MHz, I fitted a 150pF poly capacitor in series with the tuning capacitor, connecting it to the narrow band input to give a final result of 3.500 to 3.580 MHz. The IRT (RIT) gives about 4 kHz spread in its wide mode, and about 1 kHz in its narrow mode, simply a matter of where you install the wire link. It is a pleasure to know that you can get any sort of bandspread you like, even right down to the 160 metre band, a nice bonus. It shouldn't be too difficult to arrange a switch to give both bands.

What else can I say? I'm not at all surprised that the unit worked first time, and provided you work systematically and with a little care, you should have no problems at all with this kit. I am looking forward to building the receiver and getting everything on air within a short time.

You can get yours at Dick Smith Electronics.

ar

"..... I said, CW is on its way out - O-U-T dahdahdah ditditdah dah ..... did you get that? ..... dahditdah ....."

Radio ZS Dec 1988

DATA & DIGITAL COMMUNICATIONS

AMTOR and PACKET

Brian Beamish VK4AHD
Asia Net Co-Ordinator
Sys Op VK4BBS PBBS
35 Chester Road
Eight Mile Plains 4113

Well, here we are again after missing a couple of months from AR. This month I have two articles. One is from Peter Martinez G3PLX. Peter is recognised as one of the world leaders not only in Amateur Radio but also Commercial in the field of Amtor/Sitor and was the first person to introduce Amtor to our hobby.

The second article is from John Bews VK4KJB, president of the Queensland Digital Group, and I am sure will answer some of the fears of those considering packet radio.

ANARTS have also promised me a suitable article. With a little luck I hope to have it for you in the very near future.

The GB7PLX AMTOR Gateway Mailbox

Peter Martinez
G3PLX

On 11th May 1989, GB7PLX was licensed, and became operational as an AMTOR mailbox, and gateway to the UK packet network, the culmination of a great deal of experimental work, discussion, and negotiation. This short article describes the set-up at GB7PLX, how it works, and how it can be used by both packet and AMTOR operators.

The equipment at GB7PLX, which is operated by the author from his home station, consists of an HF transceiver, (Kenwood TS930S) and associated antennas, covering 3.5, 7, 10, 14, 21 and 28 MHz, connected to an AMTOR terminal (ICS Electronics AMT-2), and from there to a computer (home-brew). The computer can also control the radio to select any of 16 channels on any of the HF bands and switch the antennas. Also connected to the computer is a packet TNC, to which is connected a 2m transceiver and antenna. In the standby condition, the HF radio is scanning all bands, with the AMT-2 set to detect the GPLX selcal code, and the TNC is open for packet connects, with the radio on the local mailbox net.

If a call is detected on HF, the AMT-2 responds, the scan stops, and the calling station can then, after identifying himself, enter messages into the mailbox for collection by another station, or for forwarding onwards, either on AMTOR or on packet. The calling station can also extract messages for himself, or read various other files, in a way which will be familiar to most packet operators. The calling station could be another AMTOR mailbox. Periodically, the mailbox may break off from scanning, and call one of several other AMTOR mailboxes worldwide, on the appropriate channel, and forward any outstanding messages.

On the packet side, the mailbox may receive connects from one of the local UK packet mailboxes (but not from individual packet stations), with messages for forwarding to international destinations. The GB8PLX mailbox may periodically connect to one of the local packet mailboxes, and pass messages to them for forwarding around the UK.

Let's suppose that you are any AMTOR operator wishing to use the mailbox. How do you go about it? Firstly, decide on the best band to use, and listen on one or more of the channels which appear in Appendix 1. Remember that you will probable need to offset your radio dial one way or the other by an amount which will depend on the configuration of your radio and AMTOR terminal. Check that the channel is not in use, and remember that the GB7PLX mailbox (or any other for that matter) has no priority over any other activity on any channel, so if all the channels are occupied, you will just have to wait patiently! Having chosen the channel, start an ARQ call to GPLX. If GB7PLX is not busy, and there is a path, then the scanner will find you within 10 secs. There is therefore little point in calling for much longer than this. Best to make frequent short calls, rather than sitting on the channel. When the link is established, type:

"GB7PLX DE (your callsign) +?"

The mailbox will reply with:

"(your callsign) DE GB7PLX MAILBOX"

If it comes back with QRZ or a garbled version of your callsign, then start again. After the response, the mailbox will then tell you if there is any traffic for you, and you can then enter one of several commands, the first of which is HELP, which tells you about all the others. The most used commands are QTC, which reads out any messages for you, in the same way as the RN command familiar to packet mailbox users, and the SP command, which is used in a similar way to that of packet mailboxes, except that, since AMTOR cannot transmit the "@" symbol used in the packet version of the SP command, the word "AT" is used instead.

The method by which the mailbox routes messages to their correct destinations, may need some explanation, as it used the new "Hierarchical addressing" format, which is fairly new to the packet world. In this format, the "address", namely that part of the SP commandline after the "AT", may consist of several parts, or "tokens" separated by dots. The first of these will normally be the destination mailbox callsign, and the second and subsequent tokens will be the names of regions, countries, continents, and so on, to help with the routing. In any mailbox, a list of known mailbox callsigns, region names, country names, and continent names, is kept, together with the best routing for each one. When a message is received, the mailbox looks to see if it recognises the first token in its list. If so, it passes the message along the corresponding route. If it doesn't recognise the first token, then it looks at the second, and so on. In this way a mailbox can route messages to destinations in other regions, countries (or networks), without having to know routes for each destination individually. In the GB7PLX mailbox, the address list currently contains (a) a selection of worldwide AMTOR mailboxes, (b) three-letter country codes representing those countries to which it is possible to forward messages for the national packet network. The list is quite small at the moment, but will grow rapidly as more AMTOR mailboxes become operational.

Here are some examples of SP commands which are possible at the moment:

SP G9ZZZ+? This is simply a message for G9ZZZ to collect next time he calls into GB7PLX.

SP HB9XX AT HB9AK This is a message to be forwarded to the HB9AK mailbox for HB9XX.

SP WØRLI AT WØRLI USA This one will get forwarded to USA on AMTOR, then via packet to the WØRLI mailbox.

In order to guarantee that the message can never go astray, even if there is the odd garbled character in the commandline, a technique slightly different to that used to enter SP commands to packet mailboxes, has been devised for use at GB7PLX. First enter the SP command-line, ending with the usual +? If the command has been received correctly and can be forwarded, the mailbox will read it back. Is it was garbled, either in transmission or read-back, then enter it again. If the read-back is good, then enter the commandword TEXT, followed by a short title line, followed by the message itself, ending with +? The mailbox will respond with TEXT STORED OK. If the mailbox got your TEXT transmission garbled and responded with an error message, or you receive the response garbled so that you are not sure if the mailbox got it, then you can again repeat the TEXT transmission. If the mailbox did, in fact, get it first time, then it will respond TEXT IGNORED the second time. Either way, if you receive a response starting with TEXT, you can be sure it got it OK.

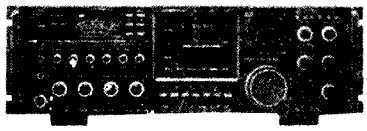
This procedure has been carefully devised to be completely foolproof, and, like the callsign exchange in the sign-on procedure, can be very easily implemented automatically, for example, in another AMTOR mailbox forwarding mes-

3 STORE BUYING POWER

ICOM **IC-765**

HF SUPERIOR GRADE TRANSCEIVER
FANTASTIC TRANSCEIVER
Price $4199

ICOM **IC-781**



HF ALL BAND TRANSCEIVER
THE ULTIMATE!
PRICE $8199

ICOM **IC-726** incl 6 mtrs

100kHz to 30MHz General Cov. RX ALL MODES
100 WATTS HF 10 WATTS 6 Metres
Price $1699

ICOM **IC-735**

Latest in ICOM's Long Line of HF Transceivers
TERRIFIC MOBILE HF - ECONOMY RIG
Price $1579

ICOM **IC-7000**

25MHz - 1300MHz
THE PROFESSIONAL SCANNER
A must for monitoring your
VHF/UHF Transmissions
Price $1645

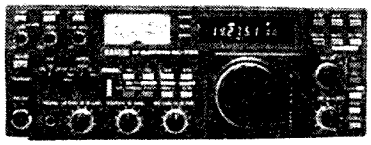
ICOM **IC-32AT**

440 MHz, 2MTR DUAL BAND
Price $735
- Full Duplex
- 5.5 VHF 5 WUHF
- 20 memories
- Power saver function

ICOM **IC-71A**

COMMUNICATIONS RECEIVER
• 100 kHz - 30MHz • 32 memories
Price $1450

ICOM **IC-751A**



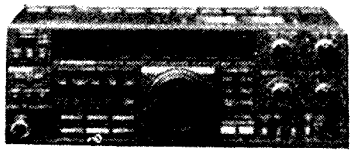
HF ALL BRAND TRANSCEIVER
SUPERB VALUE
Price $2050

ICOM **R9000** COMMUNICATIONS RECEIVER

- 100kHz - 2GHz Continuous Channels
- 1000 memory
- Multi Scan Functions *NEW*
- Direct Keyboard Entry

Price $6350

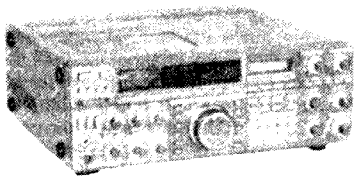
KENWOOD **TS-440S** HF TRANSCEIVER



- 160m to 10m Amateur Band
- 100kHz to 30 MHz General
- Available with built-in Antenna Tuner

Price $2399

KENWOOD **TS-940S**



TOP-OF-THE-LINE - HF TRANSCEIVER
THE VERY BEST
Price $4250

KENWOOD

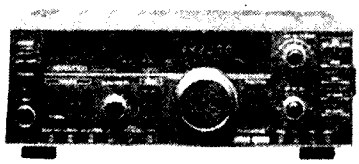
TH-25AT/45AT
2m 70cm

First pocket Hand-held Transceivers
with Automatic Power Control
GREAT PRICE
GREAT PRODUCT
Price $560

KENWOOD **TM-721A** 2mtr/70cm

Full Featured Dual Bander
LOW PRICE $1040

KENWOOD **TS-680S** 160m to 6m



100kHz to 30MHz General
Cov. RZ ALL MODES
100 WATTS HF 10 WATTS 6 Metres
Price $1820

HOW TO GET COMPONENT SALE

ELECTROLYTIC CAPACITORS:
MALLORY - 1000 MFD, 450V DC $20
MALLORY - 650 MFD, 450V DC $15
BOSCH - 10 MF, 5000V DC $90
280 PF 2000V CERAMIC $50
variable capacitors with extended shaft for that unique ARRL TRANSMATCH YOU ALWAYS WANTED TO BUILD.
AVAILABLE SYDNEY STORE ONLY
LIMITED STOCK
92-94 Wentworth Ave., Sydney NSW, 2000
Telephone: 211 0988
Brisbane: 394 2555 Melbourne: 670 0330

EMTRONICS

sages. The only difference in a forwarded SP message from another mailbox, is the addition, after the "AT (address)" information, of "FROM (originator)", being equivalent to the "<" field in forwarded packet messages. To sign-off, just close down the ARQ link in the usual way.

From the point of view of the packet user, he does not need to know any of the above procedures. He will just enter messages in the normal way to his home mailbox, but a wider choice of destinations will be made available to him by the packet network. In the UK, the packet network recognises the address "AMTOR" as meaning "the nearest AMTOR gateway", which, for the moment, means "GB7PLX", but could, if other gateways become operational, be interpreted differently in different parts of the country. Thus, for example, a packet operator in the UK can enter into his home mailbox:

SP VK4AHD @ VK4BBS.AUS.AMTOR

This will be routed to the nearest AMTOR gateway, from there to Australia on AMTOR, and from there to VK4BBS by whatever medium is appropriate.

It is worth mentioning that, unlike packet, which can transmit the full ASCII character set, AMTOR is restricted to upper-case letters, figures 0-9, and a relatively small set of punctuation marks. At GB7PLX, incoming packet messages are converted from lower-case to upper-case, and any punctuation marks which cannot be transmitted, are simply ignored. Incoming AMTOR messages are passed to packet as received, that is, in upper case only. Also, since AMTOR is rather slower than packet, messages should be kept short. GB7PLX will not handle bulletins.

This, then, has been a brief description of the GB7PLX mailbox. It is hoped that this will be the start of the development of a worldwide network of AMTOR mailboxes, each with gateways into national packet networks. Much work needs to be done to optimise and standardise the procedures in use, and we need many more compatible AMTOR gateways worldwide.

Appendix 1

GB7PLX HF frequencies

3.5 MHz	3587.5	3588.0	3588.5	3589.0
7 MHz	7035.0	7036.0		
10 MHz	10140	10146		
14 MHz	14075	14076	14077	14078
21 MHz	21080	21081		
28 MHz	28075			

Note that, initially, the GB7PLX licence only applies to 7, 10, and 14 MHz, but the mailbox will respond to the same GPLX selcal on the other bands, signing G3PLX, but only when the station is attended.

Appendix 2

Forwarding list

(a) AMTOR mailboxes
- GB7PLX
- SM6GXQ
- SK7CS
- KS5V Texas
- WA8DRZ California
- KB1PJ Ohio
- VK2AGE Sydney
- HB9AK
- PA0RYS
- LA9OK

(b) Country Codes
- AUS Australia
- GBR United Kingdom
- IRL Republic of Ireland
- SWE Sweden
- NOR Norway
- USA United States

J P Martinez G3PLX
13 May 1989

Why I'm Not Scared of Packet Radio

John Bews VK4KJB - President Qld Digital Group

What is packet? This is a question asked by many people interested in Packet Radio. The answer that they get may be enough to scare them away from a very interesting facet of Amateur Radio for a long time. This article attempts to explain how the basic concepts used in Packet Radio evolved.

It is my belief that if basic concepts are understood then the so-called technical concepts follow much more easily.Basic concepts always start with a bit of history. This then is my attempt at explaining why Packet Radio came into being.

Morse code is the original form of digital communications. It consists of a series of short and long signals (call dots and dashes)that represent the letters of the alphabet. There are short spaces between the dots and dashes in a character, longer spaces between words. The basis for this code is that commonly used characters are short and less frequently used characters are longer. This is convenient when sending morse code by hand and receiving morse code by ear. If we want to send the message more quickly, we could use a machine. The variable size of the characters, an advantage for hand sending, is not so convenient now. The mechanical machines have difficulty handling the different lengths of the characters.

The need to send messages more quickly was important, so a method of getting around the problems with the variable length characters of morse code was found. This solution was a fixed length code called the Baudot code. This code uses a fixed length combination of five bits for all characters and punctuation in the alphabet. It has no spaces between characters, instead a start bit and a stop bit mark the beginning and end of the character. This is called asynchronous data. With this code, machines could send much faster and more reliably than could be done by hand. The Baudot code is the code used by amateurs for RTTY. Unfortunately with Baudot, if an error occurred in a character there was no method of knowing, or correcting it.

The need to add error checking facilities to the code, as well as the need for more characters in the code, led to the development of the ASCII code. This code uses seven bits of information and a parity bit to give an eight bit character. The parity bit is used to find out if a single bit in the seven bit of information is in error. The code still uses a start and a stop bit to mark the beginning and end of the character. The ASCII code is used by most computers nowadays. Although the ASCII code can detect an error, it cannot correct it.

The need to add error checking and correcting facilities to the ASCII code led to the development of protocols such as Christensen Protocol and Kermit. These protocols are used in computer modem programs such as XMODEM, YAM, PROCOMM and KERMIT. These protocols package a block of data up into a packet. They add some header characters to the front of the packet and a Frame Check Sequence (FCS) to the end of the packet. The header characters mark the start of the packet, its sequence number and how long it is. While the data is being sent a checksum is calculated by adding up all the data bytes. The result of this sum is placed in the Frame Check Sequence at the end of the packet and sent.

The receiving computer detects the start of the packet and notes the sequence number and length of the packet. As the data is received, it calculates the checksum by adding up all the bytes. It then compares the calculated checksum with the checksum sent to it in the FCS. If they agree then the receiving computer acknowledges the correct receipt of that packet by returning a short acknowledge packet to the sending computer. If the checksums disagree then a negative acknowledge packet is sent and the sending computer re-sends the packet.

With this sequence, there is no need for the parity bit in the ASCII code. It is checked for errors at the packet level. So if the parity bit is used along with the seven information bits then a byte of data (eight bits in all) can be sent. This means that protocols such as Christensen Protocol can be used to transfer programs as well as ASCII.

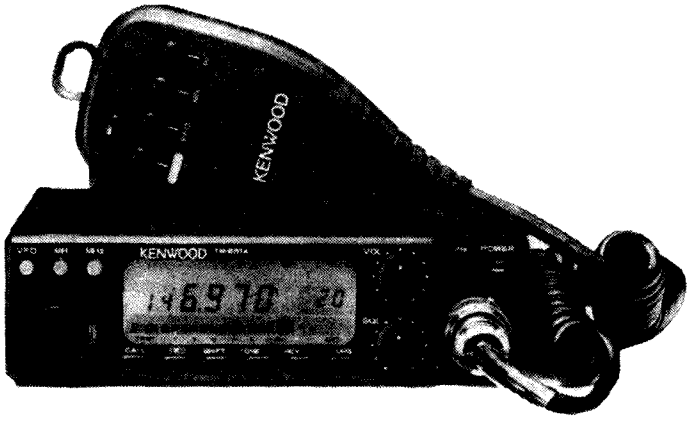
It should be noted that every character in the packet is sent with a start and stop bit, marking the beginning and end of every character. This means, that for every character we are sending ten bits of information, when only eight bits are being used. This is quite wasteful. The solution is not to send start and stop bits. All timing is done using a clock. This is called synchronous data because the data is in synchronism with the clock.

It should also be noted that if the packet is sent out via radio, then every station listening can receive the packet. If a number of stations received the packet with errors, then they would all try to send a negative acknowledge at the same time. Obviously this would not work. The solution is to send the packet to a single station at a time. This means that the packet header must contain an address identifying the destination station.

These concepts of fast, efficient and reliable data communications are the basis for the AX.25 protocol used in Packet Radio. The packet uses a header consisting of FLAGS, ADDRESS, CONTROL and PROTOCOL ID information. The FLAGS mark the start of the packet. The ADDRESS contains the callsigns of the destina-

KENWOOD

NEW!



TS-790A

ALL-MODE TRIBAND TRANSCEIVER

Work all the upper bands and gain access to the latest communications techniques with the all-new Kenwood TS-790A. This transceiver gives you access to the exotic world of VHF and UHF communications, including Satellite, Moonbounce, Grid-square DX and VUCC. All with legendary Kenwood ease and reliability.

Features include: All-mode Triband coverage: 144-148MHz, 430-450MHz, 1240-1300MHz, USB, LSB, CW, CW(N) and FM • 45 watts output (VHF) • Very high performance GaAs FET RF amplifier for high sensitivity and wide dynamic range • Dual watch function across bands • Band selection/ exchange function • Satellite communication frequency correction for uplink/downlink operation • Auto-mode and auto repeater offset • 59 multi-function memories • Call channel function • Repeater Reverse • Memory scroll and shift • Multi-scan functions and much more!!

TM-231A

2M FM MOBILE TRANSCEIVER

This compact mobile transceiver delivers 50 watts of power with the controls at your fingertips.

Features include: • Multi-function microphone with Call, VFO, Memory Recall, and a Programmable key • Large amber display plus illuminated keys • 50/10/5 watts switchable power output • Sensitivity 12dB SINAD/less than 0.16uV • 20 multi-function memories • Programmable call channel • Selectable CTCSS encoder built in • Tone Alert system • Multi-mode scanning (band, programmable band, memory plus programmable band) • Options include remote control and digital recording.

KENWOOD ELECTRONICS AUSTRALIA PTY. LTD.
4E WOODCOCK PLACE, LANE COVE, SYDNEY, N.S.W., 2066.
Ph..(02) 428 1455 Fax: (02) 427 6869.
Call now for further information and the name of your nearest authorised Kenwood dealer.

Please phone, or mail/fax for information
Name
Address
Postcode
Publication Issue

tion station, the source station and any digipeaters (intermediate stations) used in the link. The CONTROL contains information about the type of packet (acknowledge or negative acknowledge, etc.). The PROTOCOL ID or PID defines the type of protocol in use (AX.25 or others). The data is sent next. This can be up to 256 bytes of information. The simple checksum is not used in AX.25 to calculate the Frame Check Sequence. Instead, a better error checking method called the Cyclic Redundancy Check (CRC) is used. The packet is closed by sending more FLAGS.

This then is how Packet Radio, a very interesting aspect of the Amateur Radio hobby, evolved. Most of the concepts evolved as a result in the short-comings of the previous generation of communication systems. It should be noted that there are short-comings in the current AX.25 protocol, particularly in the area of digipeating, so we can expect new systems to come along that will get around the problems. We should not be scared of these new systems but should evaluate them carefully and embrace them if they show promise.

This understanding of where packet has come from, where it is at, and possibly where it is going is why I'M NOT SCARED OF PACKET RADIO.

ar

Continued from page 5

DX EDITOR

It is with regret that we have accepted the resignation of Pat Kelly, VK2RZ, as DX Editor for Amateur Radio. Readers will know that for quite some time we did not have a regular DX Editor for our magazine and then, commencing with the April 1989 issue, Pat took over and has produced a very interesting and informative column since then.

Unfortunately, Pat recently suffered a further health set back and has had to reluctantly relinquish his task. On behalf of all our readers, Pat, thank you for your excellent contribution over the past six issues. We all wish you the very best for the future.

Amateur Radio is in the market again for a DX Editor. Any offers?

FEDERAL AWARDS MANAGER

Ken Gott, VK3AJU, the energetic and bustling Federal Awards Manager gave everyone, including himself, quite a scare recently when he suffered a heart attack.

Ken spent quite some time in intensive care in hospital, then came home for a couple of weeks, but has now returned to hospital. We wish him a speedy recovery.

To page 53

AMSAT

Eclipses, Microsats

Maurie Hooper VK5EA
11 Richland Road
Newton SA 5074

National Coordinator
Graham Ratcliff VK5AGR
Information Nets
AMSAT Australia
Control: VK5AGR
Amateur check in: 0945 UTC Sunday
Primary frequency: 3.685 MHz
Secondary frequency: 7.064 MHz
AMSAT SW Pacific
2200 UTC Saturday, 14.282 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT Australia net. This information is also included on some WIA Divisional Broadcasts.

AMSAT Australia Newsletter and Computer Software

The excellent AMSAT Australia Newsletter is published monthly by Graham VK5AGR on behalf of AMSAT Australia and now has about 300 subscribers. Should you also wish to subscribe, send a cheque for $20 payable to AMSAT Australia addressed as follows:

AMSAT Australia, GPO Box 2141, Adelaide 5001.

The Newsletter provides the latest news items on all satellite activities and is a "must" for all those seriously interested in amateur satellites.

Graham also provides a Software Service in respect to general satellite programs made available to him from various sources. To make use of this service, send Graham a blank formatted disk and a nominal donation of $10 per item to AMSAT Australia together with sufficient funds to cover return postage. To obtain details of the programs available and other AMSAT Australia services send a SAE to Graham.

AO-13 Solar Eclipses by the Moon

James Miller, G3RUH

Date	UTC HHMM	DUR min	Orbit No.	MA/256 Start	MA/256 End	Max % Obsc
1988 Jul 14 (Thu)	0258	40	62	181	174	81
1988 Aug 13 (Sat)	0040	58	125	82	103	79
1988 Sep 11 (Sun)	1156	39	187	35	48	85
1989 Feb 06 (Mon)	0830	14	497	8	12	84
1989 Mar 07 (Tue)	1109	36	556	61	72	79
1989 Jun 03 (Sat)	2211	35	743	188	200	67
1989 Aug 31 (Thu)	0709	33	929	13	25	9
1990 Jan 26 (Fri)	1500	26	1240	25	34	85
1990 Feb 25 (Sun)	0636	25	1302	70	80	8
1990 Mar 26 (Mon)	2215	33	1364	115	126	11

The table shows all past and some future eclipses of AO-13 by the moon. If anyone has records of these events, please send data to one of the command stations (ie G3RUH, VK5AGR, ZL1AOX or DB2OS).

The series "The First Flock of Microsats" concludes this issue

Uplink Performance

It is assumed that user uplink equipment for LUSAT and PACSAT will be comparable to the equipment used for the downlink with the exception that FSK modulation is employed rather than BPSK. For a bit error rate of one part in 100,000 an uplink Eb/No of 13.8 dB is required. Modest uplink power (10 watts) and simple circularly polarized antenna are assumed.

Uplink performance is as follows:

User TX Power Output (10.0 Watts):	+10.0 dBW
User Station Losses:	-1.0 dB
User Station Antenna Gain:	+2.0 dBiC
User Station EIRP:	+11.0 dBW
Uplink Path Loss (146 MHz at 1000 km):	-146.3 dB
Polarization Loss:	-3.0 dB
Atmospheric and Ionospheric Losses:	-1.0 dB
Isotropic Signal Level at Spacecraft:	-139.3 dBW
Spacecraft Uplink Antenna Gain:	0.0 dBi
Spacecraft Receiver System Noise Temperature: 100 K	
Spacecraft G/T:	-30.0 dB/K
Spacecraft C/No:	+59.3 dB-Hz
Spacecraft Eb/No at 1200 bps:	+28.5 dB
Spacecraft Eb/No at 4800 bps:	+22.5 dB
Required Eb/No for 10E-5 BER:	13.8 dB
Link Margin, 1200 bps, max slant range:	14.7 dB
Link Margin, 4800 bps, max slant range:	8.7 dB

Margins are adequate at both uplink speeds for a modest transmitting station, although, as with the high speed receiver, it will be necessary to add frequency tracking to a transmitter to be used at 4800 bps.

Performance on the uplink is expected to be adequate to meet all mission requirements.

The L band ATV uplink requires much more performance from a ground station.

User TX Power Output (100.0 Watts):	+20.0 dBW
User Station Losses:	-2.0 dB
User Station Antenna Gain (32 foot dish):	+39.0 dBiC
User Station EIRP:	+57.0 dBW
Uplink Path Loss (1265 MHz at 1000 km):	-154.5 dB
Polarization Loss:	-3.0 dB
Atmospheric and Ionospheric Losses:	-1.0 dB
Isotropic Signal Level at Spacecraft:	-101.6 dBW
Spacecraft Uplink Antenna Gain:	0.0 dBi
Spacecraft Receiver System Noise Temperature: 100 K	
Spacecraft G/T:	-20.0 dB/K
Spacecraft C/No:	+107.0 dB-Hz
Spacecraft Signal Level (in 10 MHz bandwidth):	37.0 dB

This is marginally acceptable, since a 35 dB signal to noise ratio is considered adequate for P4 or P5 picture quality.

Unlike the other link margins, this calculation is done for a 1000 km range. It is assumed that video uplink will not be attempted at the horizon, but rather during "good" (high elevation) passes.

This transmit signal level represents a siz-

able ground station. Fortunately, it will not be necessary to track the satellite with the 32 foot dish as it moves rapidly across the sky, but only to point the dish where the satellite will be at some instant in the pass, then start transmitting video. Although it will only be within the narrow beamwidth of the dish for a few seconds, it will only take the satellite 1/30 of a second to capture a single frame, once synchronization is established.

MICROSAT Costs

The MICROSAT spacecraft is a new satellite concept and must undergo the development engineering associated with such a project. In a business environment, this non-recurring engineering is a major portion of the cost of the first programs to use the new satellite. In this case, however, volunteers are providing much of the non-recurring engineering. In order to share this burden, AMSAT-NA is trying a unique approach to cost sharing. For the first time AMSAT will launch four satellites on a single mission. All of them will be of the MICROSAT design. The six organisations participating in the activity will be TAPR, AMSAT-NA, AMSAT-LU, BRAMSAT, Weber State College, and the ARRL. In this way, the non-recurring engineering can be shared over all four MICROSATS and several organisations.

The TAPR and AMSAT-NA organisations will be involved heavily in the development of the satellite system. Volunteers from both organisations are providing engineering effort to offset the cost of the development.

Project Status and Milestones

Informal MICROSAT proposals were initially made in November 1987. A Preliminary Design Review was held in Boulder, Colorado on June 2nd to 4th, 1988 and a software group meeting was held on September 17th and 18th, 1988 in Washington, DC. A Final Design Review will be scheduled soon; integration and testing will begin early in 1989 in order to meet a launch date later in the spring.

A prototype flight computer has been completed and is being used for software development. Prototype transmitters and receivers are nearing readiness for testing as are AART boards. A mechanical assembly has been constructed and shake tested very successfully. CAST volunteers have been testing a low resolution camera of the model intended for flight.

Weekly or bi-weekly reports that follow will contain information about individual team members and their progress on their parts of the project. Ground station equipment and project utility will also be treated.

Glossary

AART	Addressable Asynchronous Receiver Transmitter
AMSAT	The Amateur Radio Satellite Corporation
AMSAT-LU	AMSAT of Argentina
AMSAT-NA	AMSAT of North America (US and Canada)
ARRL	The American Radio Relay League
BCR	Battery Charge Regulator
BER	Bit Error Rate, a ratio
BPSK	Binary Phase Shift Keying
BRAMSAT	AMSAT of Brazil
Canted Turnstile	Turnstile antenna where the elements do not all lie in the same plane but are symmetrically bent out of it
C/No	Carrier to Noise power density ratio in a one Hz bandwidth
DOVE	Digital Orbiting Voice Encoder, Peacetalker, the MICROSAT of BRAMSAT
Eb/No	Energy per bit, noise power density
EDAC	Error Detection and Correction
FM	Frequency Modulation
FSK	Frequency Shift Keying
G/T	Gain per noise temperature (often referred to as the "Figure of Merit")
HDLC	High-level Data Link Control procedures
HT	"Handi-Talkie", amateur jargon for hand-held transceiver
IF	Intermediate Frequency
ITU	International Telecommunications Union
LEO	Low Earth Orbit, generally, circular orbits up to 2000 km above the surface
LNA	Low Noise Amplifier
LUSAT	AMSAT-LU MICROSAT, an orbiting mailbox
MICROSAT	New AMSAT-NA satellite bus concept
MS-DOS	Microsoft (c) Disk Operating System for personal computers
NiCd	Nickel-Cadmium, a battery cell type
NRZ-I	Non Return to Zero - change on one (Inverted)
NRZ-L	Non Return to Zero - Level (digital data)
NTSC	National Television Standards Committee
OSCAR	Orbiting Satellite Carrying Amateur Radio
Packet Radio	Digital radio communications using the AX.25 protocol
PACSAT	Packet Radio OSCAR of AMSAT-NA, specialising in electronic mailbox services
PC	Personal Computer
Quadron	Quadron Service Corporation, Santa Barbara, CA.
RAM	Random Access Memory, generally read/write
RFI	Radio Frequency Interference
ROM	Read Only Memory
S/N	Signal to Noise Ratio, also known as SNR, a measure of signal quality
TAPR	Tucson Amateur Packet Radio Association
TBA	To Be Announced
WEBERSAT	MICROSAT of CAST at Weber State College, Ogden, Utah

ar

INTRUDER WATCH

REPORT FOR JUNE 1989

Gordon Loveday VK4KAL
Federal Intruder Watch Co-ordinator
"Aviemore"
Rubyvale 4702

On this, my first summary of events for June, I am not going to "become a new broom", they never have much effect and if used vigorously, soon wear out! I hope to carry on the job as Federal Co-ordinator, as ably as the first Federal Co-ordinator, back in 1967. I will also remain VK4 Co-ordinator.

For the month of June, I received logs from VK's 2COP, 2EYI, 3KH, 3XB, 4BG, 4OD, 4AEM, 4AKX, 4ANL, 4BHJ, 4BTW, 4BXC, 4EKA, 4NJQ, 4VJT, 5GZ, 5TL, 6XW, 6RO, 6NHX. To these "up with it" amateurs I say Thanks. For the rest of the call holders, not listed, how about joining us?

On looking through the logs, I find a few which need more work on the part of observers. .the concentration of listening coupled to "dial twiddling" to ascertain the frequency shift of RTTY stations. . .this can give fair accuracy as to identifying the operator. I think also MORE time could be given to persisting with Broadcast Stations to get their CALL SIGNS, THIS IS MOST IMPORTANT, otherwise that logging has little value. I want call signs as well as frequency.

One old pest seems to have joined us again. . .FISHING BOATS. . .on 80m band, although these are at S9 most times and jump all over the band. . there is little we can do about it UNLESS we in VK can PROVE BEYOND DOUBT that they are OPERATING within our territorial waters. As far as Japanese boats are concerned, they were asked (directed if you like) by their authorities some years ago to desist from 80m use. To date I have not heard any Japanese boats. . . but this does not say they are not operating again.

So. I close this month, with a challenge to the "unenlightened" Australian amateur to join the IARUMS and defeat the efforts of ILLEGAL intruders. . .show them WE WILL NOT BE WALKED OVER. 73 'til next month.

Intruders reported for June 1989

Freq	Mode	Date	UTC	ID	Comments
7007.2	mxd	mni	1155+		Possibly "Mars" Net
7002.5	A1A	"	1215+		Possibly Beacon in USSR
7005	A3E	16589	0700		B/C Station P/L Japanese
7015	R7B	mni	1025		4-5kHz wide cont
7041.5	.	09689	2237	?	Could be AMTOR???
7047	?	16689	0334	?	As above
14001	A3	mni	1527+	4XZ	Weather (wx) FAX Daily basis
14002	A1A	40689	1203		VVVVVVV Continuous
14004		09689	0910		Spill over from 13 mhz
14007.5	B9W	mni	0850+		
14011	A1A	30589	1300+		Hi-speed telegraphy
14017}	R7B	90689	0703+		Voice freq telegraphy
14023}					guard carriers
14023.5	F1B	mni	1125+	UMS	USSR Naval Station
14038	R7B	19689	1206		
14045	A3E	mni	0530+	?	Pacific Radio Telephone System
14050	A1A	20689	1000	PKJ	CPQ de PKJ QSV K zan QSV
14055	Non	mni	1212	VRQ	
14057	A1A	30689	1030	QXT	Calling "(MFK"
14058.2	?	6589	1051		Series Dashes with some traffic
14070	A1A	10689	1030	VBX	VPO de VBX K R MSG?
14070	Non	mni	1200	VRQ	5 letter groups
14074	A1A	mni	0700	VRQ	CQ de VRQ AS
14075	A1A	mni	0705	VPC	BFQ de VPC
14079	A1A	20689	0132	KFB	CO de KFB Traffic out
14079.5	F1B	30589	0943	?	RTTY Idling
14100	A1A	10689	0928+	NZB	ZBK de NZB
1401.6	A7A	15589	1046		
14116	A1A	02689	0403+	DVHT	CQ de DVHT-OU8R de DVHT
14120	F1B	14589	1403		RTTY idling 1000 Hz shift
14121/23	mni	22589	0837+		Multi-mode Multi-channel
14137	PO	90689	0630/40		"Motor-bike"
14140	R7B	10689	0320+		
14150	F1B	15689	1406		RTTY 5 kHz wide
14160.5	F1B	02689	0927+		RTTY 1000 Hz traffic
14170	PO	16689	0519+		"Motor-bike"
14170.5	A1A	mni	mni	UMS	USSR Naval Radio (also F1B) 5 fig Trf.
14184.5	F1B	03689	0766+		RTTY 500Hz Traffic
14200	A1A	15689	0900+	VMO	VLQ de VMO
14202	FSK	15689	1010	8X10	RZWF de 8X10. . .repeated
14206	A1A	06589	1045+		Coded letters and figures
14210	Multi	31589	0930		Multi-mode transmission
14212	F1B	16689	0927+		RTTY 1000 HZ Traffic
14217.1	FSK	27589	0024		
14218	F1B	15689	0927		RTTY 500 Hz idling
14250	A3E	mni	mni		Russian B/cast Station
14297	A2	8589	0436	ZOR	ZOR K
14302.3	F1B	30589	0957		2 Carriers 300 Hz shift
14316	F1B	22589	0503+		RTTY
21000-2	mni	09689	0410		Radio Telephone. .? French origin??
21120	A1A	29589	0310/15	A6L	CQ de A6L UI 38K
21127.4	FSK	09589	0351+		
21150	A1A	Daily	0355	CQ5	Chinese Diplomatic Station Beijing
21161	A1A	26589	0530+		"Piccolo"
21310	A3E	8689	0604	???	Foreign Language B/caster
21326	A1A	mni	0500+	WG6	PBU de WG6
21327	A1A	mni	0500+	HDE	PVE de HDE Traf out
21341.5	OHR	8689	0420		Pulse
21345	R7B	29589	0607		3kHz wide
21348	A3C	21689	0554+		Syncro pulse
21380	F1B	31589	0552		Teletype wheel??? Cud be AMTOR
21391.5	F1B	31589	1015+		RTTY 3kHz. . . continuous
21449.5	A3E	mni	mni	Moscow	Radio Broadcast Station USSR
28229	A3	5589	1055+		VIT NUKDT
28573	A3E	28589	0950+		Broadcaster possibly USSR????
28000					

Finale with Thanks

May I say thanks to all of you who've helped me with IW. Last month was my last Column and the new co-ordinator is VK4KAL Gordon Loveday, "Aviemore", Rubyvale, 4702 Qld. Please be sure to give Gordon your continued support.

I hope the IW service becomes better equipped and trust that you will ALL help to keep the bands clear.

A special thank to the VK6 clan who've made lots of equiries, and are once again supporting this service to the fullest.

I've had to resign this portfolio because of the lack of time I have to dedicate to it. I leave you all in goods hands.

73's Yours in AR
VK4MWZ-FIWC retired
Bill Horner

ALARA Birthday Activities

Joy Collis
VK2EBX
PO Box 22
Yeoval 2868

Activities held to mark ALARA's 14th birthday (26th July) included the Birthday Activity Day, 22nd July, Birthday Net and general meeting 24th July, and VK3, VK5 and VK6 luncheons to mark the event. Far from being a type of run down ladies' auxiliary (as suggested in another Amateur Radio Magazine recently), ALARA's membership continues to increase steadily, and its members are involved in every facet of amateur radio activity.

This does not detract from the great work done in various organisations by ladies' auxiliaries, without which many of those organisations would be unable to function, but that is not the role of ALARA.

Forthcoming YL Contests

JLRS 18th Party Contest:

Phone: Sept 23rd, 0300 UTC to Sept 24th, 0300 UTC

CW: Sept 30th, 0300 UTC to Oct 1st, 0300 UTC

Exchange: OMs, RS, or RST, & QSO number starting at 001. YLs, RS or RST & QSO number starting at 2001.

Separate numbers for CW and Phone Contests.

Entry limited to either class A, more than 4 bands, or class B, more than 3 bands.

Log postmarked no later than 20th October 1989 to:

The Contest Custodian, Nobuko Wakabayashi JG1QGQ, 5-21-7 Meguro-honcho Meguro-Ku, Tokyo 152 Japan.

YLRL Howdy Days:

Wednesday 6th September, 1400 UTC to Friday 8th September, 0200 UTC

YLRL Anniversary Party:

CW: Wednesday 11th October, 1400 UTC to Friday 13th October, 0200 UTC.

SSB: Wednesday 25th October, 1400 UTC to Friday 27th October, 0200 UTC.

Logs: to Carol Schrader WI4K,
4744 Thoroughgood Drive
Virginia Beach, VA 23455, USA.

ALARAMEET, September 29/30 1990

The 1990 ALARAMEET will be held in Dubbo, NSW, a city with many attractions, including the Western Plains Zoo, Old Dubbo Jail, excellent accommodation and restaurant facilities, parks and gardens. Within reasonable driving distance are the Warrumbungles, Wellington Caves and Burrendong Dam.

Anyone interested in what promises to be a most enjoyable weekend please contact Maria McLeod VK5BMT, 1 Hawkins Avenue, Flinders Park, South Australia 5025, for further information.

JOTA with a Difference

Many people are hesitant to participate in Jamboree of the Air because they are unsure how best to handle the situation, and maintain the interest of the scouts and guides with who they are working. Maria VK5BMT has come up with a slightly different approach to JOTA which may be worth considering:

"I have been licensed for three years and have participated in JOTA since my first year. My attitude is that those girls visiting our house for JOTA are not simply handed a microphone to talk, but they should first gain a little knowledge about amateur radio which helps most of them obtain their special badge. Each year I have groups of 6-8 brownies and guides, aged between 7 and 12 years, seated on our garden benches placed strategically in our hallway where my radio station is set up. Last year (1988) we had 21 visitors in three sessions of about one and a half hours each.

First we discussed my callsign, explaining how the "VK" part belongs to all Australian amateurs and then how each State is identified by a number. Then came the phonetic alphabet, each girl wrote her name vertically down the page and as I recited the entire alphabet they had to fill in the relevant letters. Next they read it back to me to become familiar with the sounds.

Last year I also introduced them to the Morse Code Key. One or two of them had some idea of the international distress call, and after I explained the letters "CW" and let them hear the short and long sounds, they all sent 3 short, 3 long and 3 short bursts to make up SOS. Still captivated, I then sent each letter of the alphabet in CW, while they all sorted out the dots and dashes that made up each letter, and filled them in alongside their name. All of them then had a turn at sending their own name, and some of them had a particularly clever touch! We then went onto the Morse Code numbers, and the older girls soon worked out what number 3 was, after I had sent numbers 1 and 2 - so they got to number 5, and when I explained 6 to 10 were the reverse of numbers 1 to 5, most of them immediately wrote them down. Everyone sent a number, and when we had worked out what to do about numbers such as 11, 20, 35 etc, there was no stopping them. The youngest sent me a '500'.

After that we found someone to talk to on the radio, but we had spent so much time with all the other things that each group made only one or two calls. However, each girl was very happy with everything, and I hope to see many of them back again in our house, where we will once again skip through all we have done so far.

They are a very attentive lot, and it is a pleasure to be able to have them here for JOTA, so all you other ladies who have been hesitant to do JOTA in case the youngsters become restless or bored, I would recommend a different approach and see what fun it is. Who else is going to join JOTA activities this year?"

Bits and Pieces

Operating from Wallis Island (FW) early in July were Alice N4DDK, Audrey N7HAT, Mary KA0OMX and Mary-Lou NM7N. This was a new YL country for many. If you worked them, QSL via VE7YL.

Congratulations to Joyce VK2MI and Clarrie VK3UE, both of whom have notched up 40 years as amateur radio operators.

Josie VK4VG has a Queensland net on Tuesdays at 0930 UTC on 3.570 +/- and would welcome YLs.

Bev VK6DE and OM Brian VK6AI "went bush" on another 4WD trip during July, and saw a little more of outback Australia.

Silent Keys

It is with deep regret we announce that Liz Zandonini W3CDQ has become a silent key. Liz was an amateur radio operator for 67 years, surely something of a record, and had many friends around the world. She was active in numerous amateur radio organisations, and regularly welcomed overseas visitors to her home. (Amateur Radio April 1987)

We were saddened to hear of the death in July of Brian VK5CA, husband of Marlene VK5QO. Our sympathy to Marlene, family and friends.

Errata

The gremlins have been busy once again! The following corrections should be noted:

ALARA Column, June AR: "Our Mavis"

Para 2, line 2: "Rupanyup" should replace "Minyip".

Para 10, line 6: "Continents" should replace "Countries".

ALARA Membership List, July AR:

VK4BET Betsy (not Betty)
VK6DJL Jan (not VK6PYL)
ZL2BOV Anne (not ZL2BOX)
To be added to membership list: VK5FK.

Apologies to all concerned.

Membership Fees

The cost of living has finally caught up with us, and it has been necessary to raise the membership fees, which have been static for several years.

The 1990 membership fee will be:

Australian member	$8.00
Overseas airmail	$6.50. Seamail $4.00

Award Update

No	Date	Recipient's Name	Callsign	Stickers
148	7/4/89	Peter Kenyon	L30037	
149	13/4/89	Lois Gulshall	VK3FYI/WB3EFQ	
142	25/4/89	Rita Judd	G0EIX	5
150	1/5/89	Maria McLeod	VK5BMT	4

DIVISIONAL NOTES

"5/8 Wave"

Jennifer Warrington
VK5ANW

Deceased Estates Committee

Further to last months list, I am pleased to announce that Bob Clifton VK5QJ has offered to help, particularly in the Eastern suburbs, and the South Coast ARC has offered to take on the Southern suburbs. We are very grateful for both these offers.

Bankcard and Visacard

You will be please to hear that these facilities are now available to members who wish to purchase goods from the Equipment Supply Committee, the Publications Officer, or for intending members wishing to pay their membership fees by this method. I suspect that there will be a minimum purchase amount, check the next Journal, or ask John or Ian for details.

Thanks to Channel 10

We have had two good reasons to say thank you to Channel 10 Adelaide recently. "Makin's Adelaide" apparently ran a very good segment on the Elizabeth ARC starring that "dynamic duo" Trevor Lowe VK5ZTJ and Tony Hunt VK5AH - congratulations to you both, I believe that it was one of the best pieces of PR that amateur radio has had for some time.

Our second reason was also Trevor's suggestion. That was, that John Harvey Channel 10's Special Projects Manager, gave us a talk and demonstration on Teletext, the result was a very informative and entertaining evening.

Silent Key

Friends of Marlene VK5QO and Brian Austin VK5CA, were shocked to hear of Brian's untimely death on 22nd July. It was appropriate that many amateurs, including a number of ALARA members, were present at his funeral to show, not only what he had done for the WIA (having held every council office except that of Fed Councillor and Treasurer, and being made Hon Life Member for his eight years as Journal Editor), but also for what he had done for ALARA, having been our Auditor for many years, and also for his invaluable assistance in helping us form our Constitution. A warm and friendly man, always ready with his sharp wit, "one of nature's Gentlemen", who will be sadly missed.

Diary Dates

Tuesday September 26
Display of Members' Equipment - 7.45 p.m.

Bring along your Homebrew gear and be prepared to talk about it, and you could win yourself a cash prize or voucher. Our thanks to Merv Millar who donates the Millar Award for the best "newcomer" to homebrew, (or to encourage and "Old Timer" who tries his hand in new technology). Our thanks also go to John Moffat VK5MG from International Communication Systems, who donates a voucher for the best overall winner. ESC Vouchers are also presented.

VK6 Bulletin

John Howlett VK6ATA
27 Periwinkle Road,
Mullaloo 6025

The recent revival of the VK6 Bulletin by John VK6JX was most welcome, and no doubt his style was enjoyed by all. However, just as he was blowing the dust and cobwebs off the VK6 scene, another career opportunity came along, so John with family left the Perth suburbs for a leafy, greener side of life close to Bunbury, some 180km south of Perth.

When established in his new home, no doubt a decent mast and beams will spring up, and John will be heard working plenty of "Doggey Xray" mainly by those who have learnt morse. His move also means the Northern Corridor Radio Group has not only lost their secretary, but one of its hardest working members.

Two Perth Clubs held their AGMs in July, The Northern Corridor Radio Group elected Phil VK6ZPP as President, Alan VK6AE as Secretary, and Alex VK6APK was again trusted with the Club Treasure. Meanwhile up in them there hills, the Hills Amateur Radio Group chose Merv VK6APM as President and Secretary, Fred VK6UR Treasurer, Richard VK6BMW Vice President, and a committee of Norm VK6UV, Milan VK6ZH, and Ted VK6VL to lead them through the next year of activities.

The group has changed Club rooms and now meets in the Girl Guides Hall, Cnr Brady Road and Sanderson Road, Lesmurdie. The Guide Association is interested in amateur radio and it is possible that some of the guides will take up the hobby. A spokesman for the group suggested that it would be nice to have a couple of YLs in the Club by the end of the year!

Hamfest '89 will be held on October 8 at Carine College of TAFE. This was a good event last year, and promises to be even better this year.

Besides trade displays, raffles, junk sales, WIA bookshop, demonstrations of all kinds, food stalls and home brew contests, it will be a meeting place for amateurs from all over the state.

Don't miss out this year. If you need help with accommodation, a place to part the caravan, or what do do with XYL and harmonics whilst you enjoy yourself, get in touch with the members of the Northern Corridor Radio Group, and they will help.

Callback to the 40mts Sunday broadcast, ring Phil VK6ZPP (09) 409 1156 or Bryce (09) 3349 9489. Letters sent tot he NCRG, PO Box 244, North Beach 6020, WA will be answered promptly.

Many didn't know about this premier event last year, so make sure your friends know - tell them next time you meet. Don't miss out this year.

VK4 Notes

Bill Horner VK2MWZ

The Jack Files Contest has been and gone for another year. I was very pleased to be able to partake and help to give some of you a few new shires. Some feedback already shows that there were a lack of stations operating in VK4. Perhaps you may be able to assist next year.

Shires . . . Can you help?

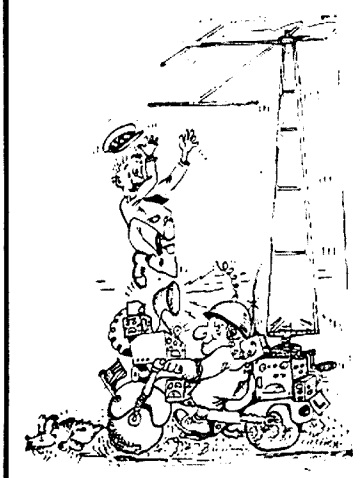
Every Thursday evening a Old net is held on 3.605 MHz starting at 10.00 UTC. Although you mightn't be interested in chasing this award, others are, and hence if you're able to give a little time on this net it will be appreciated. Some real rare one's are: Aramac, Belyando, Blackal, Douglas, Mirani and more.

If any travellers grace us with your presence, could you let me know a few weeks earlier. I'm sure we can get enough people to work you for the shire that you intend travelling in.

Continued from page 49

Deputy General Manager

Ross Burstal, VK3CRB, has been absent from the Executive Office on sick leave since the middle of June, but I am happy to report that Ross is well on the road to recovery. With Ross's enforced absence, the Executive Office has been operating with the General Manager plus three part time employees. ar



SPOTLIGHT ON SWLING

Sunspot Maximum Soon ?

Robin L Harwood
VK7RH
52 Connaught Crescent
West Launceston 7250

Well, we are now into a new season, and already I have been noting propagational changes. On Sunday September 3rd, the S89a period commences at 0100 UTC, although Sunday September 24th is when the real alterations commence - that is when Europe goes off daylight saving. Most transmissions directed to northern hemisphere areas will be heard one hour later. There were a number of alterations in the J89 period, when broadcastings scrambled to utilize higher frequencies, taking advantage of the rapid rise in sunspots.

Incidentally, the latest prediction I have heard for the maximum is now December of this year to March next. Conditions on the higher frequencies, particularly on 21 MHz have been phenomenal to say the least. I have been able to work Europeans from as early as 0200 UTC, using a simple half-wave dipole. The broadcasting portion is also excellent, with signals coming in on both the long and short path simultaneously, judging by the multi-path echo. Yet sadly, it looks as if there has been a tacit agreement by broadcasters to avoid using the 11 metre broadcasting allocation (25600 to 26100 kHz). Although there are some using it, now including Radio Moscow World Service, there is still only a handful of broadcasters there. The main reason behind this is primarily that many sw receivers in the developing world don't have the 11 metre band fitted.

There is one good signal on 25670 and 25900 kHz in Arabic from Abu Dhabi in the United Arab Emirates. Listen around 0400 UTC. Radio Moscow World Service is on 25780 kHz to Africa. The BBC World Service was on 25750 but isn't as strong as it used to be during the last peak in 1979. The VOA also seems to have abandoned this band.

Jamming of Chinese language transmissions still continues. Both the VOA and BBC are still experiencing severe jamming of their transmissions in Mandarin. Taiwan also is heavily jammed, but this has always been the case since 1949. The authorities reportedly have made it illegal to listen to foreign broadcasters in Chinese, since the Tienanmen Square Massacre on June 4th. Contrast this with the situation today in the USSR, where the response from listeners to foreign broadcasters has dramatically escalated in the past twelve months, since jamming was removed late in 1987.

Radio Canada International has been heard here at 0515 and 0545 on 15255 kHz in English to Africa with excellent signals. At 0400, they utilize Radio Austria International senders on 15270 kHz to the Middle East in English. The hours will change from the 24th of this month. Radio Berlin International provides an excellent signal on 13610 kHz at 0230 in English to the Caribbean, with a relay of their African Service, which they think is of more interest than the North American Service, which is on from 0300 UTC on 11785 kHz. Incidentally RBI does have a very good DX session every fortnight, with regional editions in the other week. It is on Mondays towards the end of their transmissions. The North American Service of Radio Moscow also has a DX show on Tuesdays at 0250 UTC on 9765 kHz.

Incidentally you can hear a USB feeder of Radio Moscow World Service in Russian on 9180 and 9250 kHz around 0200 UTC. This includes Radiostansia Rodina ("Voice of the Homeland").

A friend recently resurrected one of the first receivers with which I seriously commenced short-wave listening. It is a National R3000 and was from 150 kHz to around 30 MHz. The set has no BFO or any accurate frequency readout. As well, its selectivity leaves a lot to be desired. I have had fun tuning around with it, after more than a ten year absence. I do notice, using it, how more crowded the broadcasting allocations have become. The only plus I can find is the wider audio response, particularly on strong signals.

Well, that is all for this month. Hope that you do have fun listening around. Until next time, the very best of 73! ar

Electro-Magnetic Compatibility Report

Hans F Ruckert
VK2AOU
EMC-Reporter
25 Berrille Road
Beverly Hills 2209

Overseas EMC - Problems & Actions

1. VE3BBM writes about the Jack Ravenscroft VE3SR case:

"This lawsuit continued for almost four years at a cost to the Amateur Fraternity world-wide of $75,000. The estimated cost to the Department of Communications (Comment: Tax Payer) has been $500,000. This latter figure is a verbal estimate, but considered realistic."

The EMC problems were solved when competent radio amateurs were permitted to do the work in their own time. The cost of required filters and ferrite chokes was less than $150.00. This case shows how inept and unsuitable the legal system can be in dealing with EMC collision cases, when the law is many years behind the times and the rapid technical developments.

2. The "CQ-DL" magazine now publishes a monthly paper on EMC cases. Hans Joachim Brandt, DJ1ZB is the contributing editor (Lohenstein Str. 7b, 8000 Muenchen). The first 2 page report dealt with an XYL who was only allowed to have an under-the-roof dipole antenna. This resulted in several EMC collision cases, affecting mainly VCRs in the four storey block of units. Amateurs of the "Distrikt Sued Bayern" were able to solve all cases with filters and chokes. In the most severe case, the owner replaced his bad VCR with a better product which was immune. The other neighbours withdrew their "disturbance report" with the Post Office. Some team members are : DJ4CT, DJ9MF, DK1EB. The title cover page of the March 1989 "CQ-DL" magazine shows a suitcase containing over 30 items (filters, chokes etc), to deal with disturbances affecting susceptible appliances. Professional fieldstrength measuring equipment is also available.

(This writer has sent a copy of the titles of all EMC Reports published in "AR" since January 1982 by VK3QQ, and later by VK2AOU, to the DL-EMC team co-ordinator DJ1ZB).

3. "Amateur Radio and Common Market"

The DARC invited to Dusseldorf (West Germany) representatives of the ten Common Market countries, and Switzerland as observer, on the 18th and 19th of February 1989, to organise a common front of the 200,000 radio amateurs of the E G area to deal with EMC questions and other matter of common interest. It is feared that the common market business organisations will try to water down the reasonable and effective German EMC Standards established by VDE and DIN bodies during the last 15 years. New standards would then become EG-Standards (Europaeishche Gemeinschaft) causing many EMC collisions. It was decided to have a permanent international team at Brussels to support the Amateur Radio interests. ar

WICEN

Briefings

Trevor Connell VK8CO
PO Box 40441
Casuarina 0811

Introduction

1. This is a suggested format for a briefing. Items not applicable should be ignored. A comprehensive briefing is essential for two reasons. Firstly it forces the organiser to think out all aspects and make all necessary arrangements. Secondly, it gives all the necessary information to the WICEN operators in a logical sequence.

Sequence

2. Briefings and orders should always be given in the same sequence. These are:
   - A. Welcome and introductions.
   - B. Situation
     - a. General outline of event.
     - b. Any other communications support.
   - C. Task
     - a. A statement indicating what is required.
   - D. Execution
     - a. General outline of how it will be achieved.
     - b. How many are participating.
     - c. Time out and estimated time of return.
     - d. Movement
       - (1) Method.
       - (2) Assembly area.
       - (3) Frequencies.
     - e. Maps to be used.
     - f. Type of traffic expected.
     - g. Individual tasks.
     - h. Other agencies involved.
     - i. Who's who in those agencies.
     - j. Action on vehicle break-down.
     - k. Action for vehicle recovery.
     - l. Action on radio break-down.
     - m. Action if lost.
     - n. Rehearsals.
     - o. Debrief.

     Any questions
   - E. Administration and Logistics
     - a. Rations.
       - (1) Type and number of days.
       - (2) Resupply.
       - (3) Cooking.
       - (4) Water.
       - (5) Refreshments available.
     - b. Dress and Equipment
       - (1) Clothing.
       - (2) Type of shelter available.
       - (3) Maps, compasses.
       - (4) Insect repellent.
       - (5) Mosquito nets.
       - (6) Radio equipment.
       - (7) Battery requirements.
       - (8) Battery resupply.
       - (9) Battery recharging facilities.
       - (10) Petrol resupply.
     - c. Medical.
       - (1) Location of first aid kit.
       - (2) Casualty evacuation.
     - d. Debrief.
       - a. Time and place.
     - e. Special equipment.
       - a. Test equipment.
       - b. Portable repeater.
       - c. RTTY.
       - d. Generators.
     - f. Inspection.
       - a. Time and place for check of all equipment for serviceability.
   - F. Any questions?
   - G. Command and Signals
     - a. Location of Control/NCS.
     - b. Opening times for:
       - (1) Movement to area.
       - (2) Commencement of event.
     - c. Frequencies:
       - (1) HF
       - (2) VHF
     - d. Callsigns.
     - e. Radio Net Diagrams.
       - (1) Operations and Administration Nets
     - f. Use of working frequencies.
     - g. Use of repeaters.
     - h. Use of telephone.
     - i. Security.
     - j. Any special instructions.
     - k. Lost communications procedure.
   - H. Any questions?
   - I. Thank operators for their attendance.

Footnote: The above lists assumes a warm climate. For those unfortunates who live in the southern regions, cold weather equipment would have to be considered.

Wicen Activities - November to December 1988

This is not an official report - it expresses some of my thoughts and observations concerning the Bike Ride - Melbourne to Sydney, over 1120km in 15 days, and the WICEN involvement.

Firstly, I would highly praise Dennis Furtong VK3XP, and Ian Stowe VK3FOX who both performed a major task in organising the WICEN participation, by surveying the route and initiating large volumes of paper work involving the daily rosters, measuring and pin-pointing the geographical positions for check points, evening briefings, arranging start and finish control stations,and allocating jobs to the large team of operators and helpers involved.

Col Pomroy VK3BLE and Peter Mill VK3ZPP as the VTAC (technical maintenance chaps) spent a lot of time and hill climbing, checking the 2m coverage over the route, afterwards ensuring all the portable and fixed repeaters were favourably located and doing their job.

Organising now completed, the whole team went into action. Because of the ride duration of 15 days, only just enough operators were available to fully man all start, finish and check-point stations. A lot of work was done by so many, it's difficult to name each individual who contributed, large and small, but the whole involvement was successful and a credit to all concerned.

It produced valuable experience plus the nice feeling of being part of a busy team operating very well indeed.

Lessons and experience learned, was how we were capable of performing in a serious situation. The part I rate highly was the close association we enhanced working with the St. John Ambulance team. Both our comms systems were smoothly integrated. St. John Ambulance base station in Melbourne with call sign VK3DX and VK3SJB were operational all day and night for the duration of the ride.

Corp Supt Harry Van-der-Stocp was in charge of the St John Ambulance team, and he used VK3SJA to link our systems when necessary. It was an excellent exercise working side by side with this very important service.

There was some concern about shortage of operators over the border, but working behind the scenes, VK1 and VK2 produced a team to join VK3, and this solved any operator shortage problem. It was great working with people from two states and the Capital Territory. We integrated well and continued happily on as an efficient team.

About 2200 riders left Melbourne - most finished the ride. 500 odd male and female cyclists from USA, Canada and other countries added to the interest - theirs and ours. We had lots of fun pulling each others' legs (men only) all of which added to the interest and enjoyment of the event.

There were riders, both women and men, up to 78 years of age. I yarned to some and noted most, if not all, arrived in Sydney in good condition. (There's a subtle plug for myself!) Also, 30 or so variously handicapped men and women, young and older, completed the ride. They showed wonderful courage and determination to succeed as they did.

One small young mother, from America I think, towed all the way, a two wheel cart containing her bright little daughter aged perhaps three years. Up hill and dale she continued on. During rain, which fell at least nine of the days, the little one snuggled beneath a plastic sheet while mum rode on.

Another man who has ridden the annual ride for five years, rode his penny farthing bike. Plenty of good food was served, although some of us got a little tired seeing exactly the same cut lunch every day - no complaints though, the catering was good.

We had free days in Orbost, Cooma and Canberra. It seemed everyone looked over Parliament House which really is magnificent. The Science Museum is a must, should you go there.

I recommend anyone to take part in any similar event - don't be shy - you will fit in, young or old, female or male.

Will finish with a few words about our annual task since 1972, providing comms along the 250 mile (400 kilometre), five day Red Cross Murray Canoe Marathon - December 27 to January 1 each year.

As usual a sizeable team of all ages and sexes did the job Yarrawonga to Swan Hill. This too is a valuable experience working in a controlled net alongside Red Cross personnel and the Victorian Land Rover Club who also do a major job setting up four check points each year, transporting the first aid team into check points, plus equipment and boat (safety boats) fuel, surveying the daily route on land for the canoe back up parties, WICEN and others, and also marking all the turns and directions through the maze of tracks along the river.

Close relations have developed with these other organisations and WICEN, so that should we be called upon in a serious situation, the routines and experience we have acquired would ensure smooth success.

Again, don't be shy - if you feel like joining any WICEN exercise or involvement, you will be welcome and will enjoy yourself.

Finally, although these comments deal mostly with the Bike Ride and Canoe Marathon, your attention is draw to Leigh Baker VK3CDP the State Co-ordinator, and his assistants, all of them, for several years doing a very big job in finally moulding WICEN (Victorian Division) into a smooth working team and efficient network, organised and documented, and recognised as such by the Police Department and other emergency services. K V Scott VK3SS

ar

QSLs FROM THE WIA COLLECTION(17)

The WAZ Award

Ken Matchett VK3TL
Honorary Curator
PO Box 1 Seville Vic 3139

Three years ago, the "CQ" magazine celebrated the fiftieth year of its Worked All Zones (WAZ) award by offering a special certificate by working all 40 zones during the one year (1986).

The original idea of a "Worked All Zones" award was suggested in the now discontinued magazine "R/9" in November 1934. The magazine "Radio" (Radio Ltd, Los Angeles) that absorbed "R/9" proposed a slightly different scheme in its February 1936 edition (re-published in the January 1937 edition) together with a modified world zone map. It is this map that has remained virtually unchanged to this day. The magazine "The Radio Amateur CQ" which commenced publication in 1945 took over the earlier WAZ award, with the exception that the CQ award is valid only for contacts dating from 15th November 1945.

In the original introduction to the award we read (in "Radio" Feb 1936) under the title "WAZ, a DX yardstick", "Radio herewith presents a DX scheme believed to be much superior to any mere list of countries or continents worked. It not only provides an ultimate goal, which is all the more desirable because few will probably achieve it, but more important for the average DX station it provides a means whereby the progress of different stations towards that goal may be easily compared and concisely stated". The WAZ was for many a far greater challenge than the WAC award. This magazine states in the same article: "WAC once the goal of every ham who was either mildly or enthusiastically interested in DX, has been "made" by such a large number of hams that it is no longer a badge of special distinction except in a few localities". It is interesting to note that the same thought may have been at the back of the CQ awards manager's mind when a 5 Band WAZ was announced by CQ in 1983 for confirmed QSOs with all the 40 zones effective from 1st January 1979 for each of the five HF bands.

In its March 1937 edition, the magazine "Radio" made the following announcement "Some time ago we heard that ON4AU had worked all of the 40 zones, and just the other day we received complete confirmation from him on all 40. We want to congratulate Mr Mahieu for this great achievement, as being the first ham in the world to contact the 40 zones and have them confirmed to our satisfaction".

The WIA QSL collection is indeed fortunate in possessing one of Mr Mahieu's QSLs which is reproduced here. It may interest readers to know a few of the countries in difficult zones (in those days) that were contacted by ON4AU. Zone 2 VO6D (Newfoundland), Zone 16 U2NE, Zone 17 U9AV (Western Siberia) Zone 23 AC4YN (Tibet), Zone 26 FI8AC (French Indo-China), Zone 35 ZD2H (Nigeria), Zone 36 OQ5AA (Belgian Congo), Zone 37 17AA (Italian Somaliland), Zone 40 OY2C (Faeroes).

This remarkable man had many successes with his DX activities. His was the first station in Europe to contact Nigeria, Gold Coast, Guam, Bolivia and Hawaii (Hawaii on fone), and on 10 metres the first in Europe to work South America and Oceania (VK4 and VK6). A photo of the shack of ON4AU appeared in the April 1935 issue of QST. The QSL reproduced here was for a QSO in September 1937 with VK3NW on 20 metres CW.

The WIA QSL collection also holds several QSLs of the pre-war VK3NW operator He was KF "Mac" McTaggart of Ormond, Victoria.

B-K44

This QSL dated November 1926 is one of the very first Belgian call-signs issued. On the top right hand corner of the card may be read QRK R - which is still maintained as a Q-code, as are QRM and QRN. The QSS as explained in an earlier article is no longer used. It meant "Are my signals fading?". The Q code QSB which has replaced QSS meant in early days "Is my tone

bad?" or "Is my spark bad?".

We note also the top right corner of the QSL: DC, RAC (rectified AC) and AC referring to the power supply used and the Q-symbol QRH. Today this symbol means "Does my frequency vary?", but in earlier days it meant "What is your wavelength in metres?" which accounts for the small letter "m" after QRH.

EB4AC

The new system of "intermediates" (see earlier articles for a full explanation) was introduced in early 1927.

The Belgian QSL reproduced here is undated, but would probably date from the late 1920s. In fact, it was quite common in the early days of QSL-ing not to mention the year of the QSO, the month and day generally being given.

This was particularly so in the case of short-wave listener reports. This QSL confirmed the reception of a report forwarded by an Australian SWL, with the call-sign OA-2084. In those days during which radio propagation experimentation by the average amateur was considerably more common than nowadays, a SWL report was very much appreciated by the majority of experimenters.

In the early and middle 1920s it must have been a most satisfying experience indeed to know that one's signal was actually being heard thousands of miles away on the other side of the world.

If you would like to play a part in building up the WIA QSL collection and to save something for the future would you please send a half-dozen (more if you can spare them) QSLs which you feel would really help the collection along.

All cards are appreciated but we especially need commemorative QSLs, special event station QSLs, especially assigned call QSLs (eg VK3SIG), pre-war QSLs, unusual prefixes, rare DX and pictorial QSLs of not so common countries. Could you help? Send to PO Box 1, Seville 3139 or phone (059) 643721 for card pick-up or consignment arrangements for larger quantities of cards.

ar

Why Bother Keeping a Station Log?

Once it was mandatory under the regulations governing amateur stations in Australia to keep an accurate log of all transmissions including tests and even unanswered CQ calls.

Some years ago, Australia followed a deregulatory trend which appeared to start in the United States and lifted the requirement to enter all transmissions in a log. However, it was recommended to have a logbook in the shack to enter available detail of any emergency or distress communications heard.

No doubt many radio amateurs have discontinued to enter all general transmissions, while there would be a percentage who avidly keep a first class record of their contacts. Those who don't bother can be missing out on many benefits of keeping a log.

It will contain information on your station's ability to work into rare or difficult areas. And details of contacts with various countries, states, zones or continents worked. Of course, a separate tally list is often kept. By having dates on the list it's easy to track contacts back to the log.

Using a log to record changes in equipment, or licence upgrades, will add to making it a volume of enjoyment to look back on your development and accomplishments as a radio amateur.

Logsheet Alibi or Diagnostic Tool

Another value of keeping an up-to-date log is the matter of TVI and RFI.

Complaints from neighbours can be rationally dealt with by checking back to see if you were actually on air at the time the neighbour alleges interference. Without a log it can be difficult to remember whether you were on air at that exact time. The log may also detail whether there is a pattern to the interference or lack of immunity problem. Does the alleged problem occur only when you operate on 10 metres, or one or more other bands?

Some radio amateurs prefer to keep a computerised log, either making entries in real time, or keeping a handwritten log and transferring it into a computer daily or weekly.

Logbooks can be made up by ruling an exercise book in columns or a bookkeeper ledger. Better still, buy the WIA Logbook for radiocommunication available from WIA Divisional Bookshops.

Your log should be accurate, should contain all the information you require, and be simple and quick enough that you use it with ease. At a minimum you should include date, time, frequency, mode, station worked, signal reports, QTH and handle, and a check for QSLs sent and received. A log entry also has a comments section for noting any particulars of a contact.

If you don't keep a log, why not start today? It isn't too much bother and you'll appreciate your logbook in years to come.

(Adapted from "Keeping a Station Log", OST March 1989)

CLUB CORNER

Gippsland Gate Radio Electronics Club White Elephant Sale

On the evening of Friday 15th of September the Gippsland Gate Radio & Electronics Club shall be conducting their annual White Elephant Sale. The doors will open for stall holders at 7.30 p.m. and at 8.00 p.m. for buyers. Strictly no sales before 8.00 p.m.

The sale is conducted at the Oakwood Park Scout hall in Heyington Crescent, Noble Park North (Melway Map: 81 A-12).

A few tables are available on-site for stall holders with only some goods to sell. The club will accept a ten percent contribution of all goods sold. (With a maximum of $20 on individual items).

For further information contact the Secretary, Ian VK3BUF on 789 7339.

Now in its tenth year, the GGREC Annual White Elephant Sale is one of the Melbourne's most important Club events - Don't miss it!

Six Metre Repeater

The GGREC has recently commissioned a Six metre repeater in the Dandenong area. Designed for FM voice operation, it serves the local needs of the South Eastern Suburbs. Input is on 52.575 MHz and output on 53.575 MHz, antennas are vertically polarized and the call-sign VK3RDD (Dandenong District) is used.

Hardware is two modified RT-80 transceivers and a 6802 microprocessor controller built for the task. Its range and user facilities will be enhanced over the next twelve to eighteen months. The Repeater is wholly owned and maintained by the Club. Enquiries or comments concerning the repeater should be directed to GGREC, PO Box 98, Dandenong 3175.

Ian Jackson
Secretary

Brisbane North Radio Club - Amateur Radio Tutorials

Subject to sufficient interest by potential Ham Radio Operators, the above Club will run tutorials for people studying for the Novice Amateur Operator's Certificate of Proficiency, during the latter quarter of 1989 and the first quarter 1990.

This year, students will proceed in their own time to study the course from the bock: "Radio Theory for Amateur Operators", by Swainston, which costs about $40. The monthly tutorials will provide a suggested study plan, and are then designed to enable students to get assistance with problems they encounter, rather than being a full set of lectures. Tutors can of course be contacted in between times.

There will be nine tutorials, held on Thursdays, approximately month, excluding the Christmas break.

The dates will be Thursday 10 August, 12 September, 12 October, 9 November, 7 December 1989, and tentatively 4 January, 6 February, 2 March, and 23 March 1990. They will be held at the Hooper Education Centre, in the grounds of the Wavell Heights State School. Entry is at the top of the hill in Kuran Street, Wavell Heights, from 7 pm until 10 pm. The cost of the tutorials will be $20, and this covers membership for one year in the Brisbane North Radio Club. If you are already a member you are welcome to attend without additional payment.

For further information ring either the Secretary Bill VK4BIL on 263 2630, or the Education Officer Trevor VK4ATS on 265 4974.

VK4 Disabled Persons' Radio Club News

The VK4 Disabled Persons' Radio Club (VK4BTB) was formed in 1983 following the death of Tony Burge VK4BAC. His family donated his equipment to the Help Handicapped Enter Life Project (HHELP) in Toowoomba, with the express wish that Tony's name be perpetuated in some way. As his father says, "radio gave him something to look forward to each day."

As a result, the "Tony Burge Memorial Award" is available to amateurs and SWLs who acquire the necessary points. Details will be in next month's AR.

The main aim of the Club is to introduce people with disabilities to amateur radio, and where possible encourage and support them in their endeavours. The Club urges fellow amateurs to support these aims. One way of doing this would be by letting us know you are willing to help any disabled in your locality should the need arise.

If you are not able to help, but know of a disabled person who is either interested or could benefit from being shown the service/hobby, please let us know.

This way we hope to create a reference library that could help someone anywhere in Australia or for that matter, overseas. We realise this could be a big undertaking and would appreciate offers from anyone who could assist in making and maintaining the library.

We can be contacted on Friday nights on our net on 3.590 MHz starting at 0900 UTC, or by writing to Box 3126, Town Hall, Toowoomba, Qld 4350, or by ringing Station Manager Roley Norgaard (VK4AOR), on (076) 96 7587, or Graeme Whitehead (VK4NYE) on (076) 30 8323.

RAOTC VK5 Luncheon

Years seem to go very quickly, and once again our annual get-together of old timers and their friends is going to take place.

We hope you will make your presence available on:

Tuesday 31st October 1989

at the Marion Hotel, Marion Road, Marion at approximately 12 noon for lunch at 1 p.m. A good day is assured.

As we do need verification of your attendance to facilitate catering arrangements, we would appreciate advice of your attendance before 1st October. This year you pay as you go - $9.00 approx. for main course.

With your attendance it will be another successful get-together.

Please notify:

George Luxon VK5RX, 203 Belair Road, Torrens Park, SA 5062 or Ray Deane VK5RK 271 5401, or John Allen VK5UL on 344 7465.

For those who wish to travel by STA bus, catch the 243 bus, Stop A3, King William Road (in front of Government House) 11.20 am to Stop No. 24, arriving at 11.58 am.

On the same day and time the ladies are having a luncheon, and any wives/daughters/friends who wish to attend should contact George as above. The ladies' luncheon proved quite popular last year.

Shepparton & District Amateur Radio Club Inc.

1989 Communications Day

The Shepparton & District Radio Club is holding its 6th Annual Communications Day on Sunday the 17 September 1989.

The venue will be the Shepparton Showgrounds which has proven to be a great location for Amateurs, Disabled Amateurs and families alike. The Showgrounds are located at the eastern end of High Street (Midland Highway). Doors will open at 10 a.m.

This venue is located in the City area and only a short walk from the Shepparton Railway station. A return train operates between Melbourne and Shepparton so you can leave the car at home and enjoy V-Line's comfortable country service.

A large range of the latest amateur equipment will be on display with ICOM Australia, Measure Tech Support (Kenwood), Peter O'Keefe Electronics (Solar Cells/Computers) and a local communication company indicating their intentions of attending. Those who like to purchase hard-to-get bits and pieces for home brew gear have not been forgotten, as traders of these goods will be in attendance. A trade table

will operate, so bring along those bits and pieces you have been meaning to sell.

Shepparton offers a large assortment of Motels, so why not stay a night in our beautiful city, take in some of the other activities of the area at the same time and attend the Communications Day on the Sunday. There is plenty of room for a family BBQ to be set up at the venue. Tea and coffee is free, and lunch will be available for a nominal charge.

Talk-in frequency Channel 1 repeater on 146.650 MHz throughout the day in case you get lost. Give VK3SOL a call on the way to the site. The event has been well attended in the past, and draws Amateurs and enthusiasts from throughout Victoria and Southern NSW.

A lucky door prize will be awarded on the day. The Shepparton & District Amateur Radio Club Communications Day at the Shepparton Showgrounds on Sunday the 17 of September. Contact the Club at PO Box 692, Shepparton, 3630 or Ross Taylor VK3KUF on (058) 21 9074 AH.

Laurie Gleeson
VK3KL
(058) 29 2334

The Western and Northern Suburbs Amateur Radio Club Inc.

The Western and Northern Suburbs Amateur Radio Club will be holding a Hamfest on Saturday 7 October 1989. This event will take place at our Club Rooms at Edwardes Lake Park in Seaver Grove, Reservoir, Melway Map: 18, Ref D4, between 10 am and 4 pm.

As well as the Club Rooms, there will be a Marquee so that all activities can be undercover, in the case of inclement weather.

There has been a good response from major suppliers of communications and electronics equipment, who have indicated they will be presenting displays of their products. Here is a chance to see wide range of the latest ham gear available.

If you have a small quantity of goods for sale, these can be sold on the Club tables, but those with larger quantities of components, surplus gear or reclaimed parts can arrange the hire of trestles from the Club.

Our catering section will have tea, coffee and soft drinks available all day, and of course our renowned barbecued hamburgers and sausages at reasonable prices, which if the weather is favourable, can be enjoyed at the tables and chairs under the trees overlooking the lake.

During the afternoon, the ladies can take part in the popular (with the XYL's) Annual "Radio Throwing" event.

For further information or booking trestle space, contact the Secretary Tom Page VK3AGH at the Club, PO Box 336 Reservoir 3073, or phone (03) 379 3315. ar

SHOWCASE

Nonmetallic Tower Guys - "Phillystran"

The effective alternative to troublesome steel guys

- Completely isolates a tower-guy system from the antenna field.
- Improves signal coverage by eliminating distortion caused by re-radiated signals.
- Provides quick, easy, maintenance-free tower installations.
- Assures a neater tower appearance with no more corroded steel guys, no troublesome ceramic insulators and no more worries about hidden damage caused by white-noise arcing.

With electrically transparent Phillystran....

You don't have to compute guy lengths that cause resonance! You don't have to install insulators and cable clamps! You don't have to worry about the stretching or aging problems of conventional synthetic ropes! And you will never again be bothered by zapping, snapping and crackling across porcelain insulators!

Phillystran HPTG assures....

EFFECTIVE INSTALLATIONS, designed to improve signal coverage because the nonmetallic guys cannot absorb or re-radiate your radio signals.

MAINTENANCE-FREE INSTALLTIONS because Phillystran HPTG provides tension-once and walkaway guying systems that aren't subject to extreme corrosion or to the hidden damage caused by white-noise arcing across insulators.

Phillystran is performance proven....

These insulator-free guys are protecting towers for knowledgeable amateur radio operators. Since its introduction in 1973, Phillystran has been installed on more than a thousand commercial broadcast towers.

Phillystran tower guys are protected by an extruded olefin copolymer jacket which provides excellent resistance to weather and abrasion. To prevent damage by a brush fire or by vandals, short lengths of steel cable should be used in the lower portion of each guy assembly.

Full details from: ATN Antennas
PO Box 80
Birchip Vic 3483
Telephone (054) 92 2224
Fax (054) 92 2666

Diamond Antenna Power/SWR Meters

The Diamond Antenna Precision Meter series covers the 1.8 - 1300 MHz spectrum with 5% typical accuracy. No competitive meter equals their quality and performance.

The large meter scale is calibrated for Forward and Reverse Power, and Standing Wave Ratio (SWR). Switch Selectable Average (RMS) and Peak Envelope Power (PEP).

The Diamond SX-600 is unique, as it has two directional couplers, each measuring a set of inputs. Selection is by a rear panel switch. Band 1 is 1.6 - 160 MHz, and Band 2 is 140 - 525 Mhz. Typical accuracy 5% (10% Maximum). The SX-1000 combines features of the SX-600 with inclusion of the 903 MHz and 1240 Mhz bands.

Provision for optional meter lighting is through a jack on the rear panel. (12V required, or use our AC adapter Model AC ADAP.)

SX-100 PWR Meter F&R/SWR 3KW 1.6-60 MHz $170.00
SX-200 PWR Meter F&R/SWR 200W1.6-200 MHz $129.00
SX-400 PWR Meter F&R/SWR 200W140-525 MHz $149.00
SX-600 PWR Meter F&R/SWR 200W1.6-160 MHz &140-525 MHz $239.00
SX-1000 PWR Meter F&R/SWR 200W1.8-160 MHz &430-1300 MHz $319.00

Enquiries to: ATN Antennas
PO Box 80
Birchip 3483
Phone: (054) 92 2224
Fax: (054) 92 2666

Surface Mount Timing Crystal

Much of the Electronic Industry depends upon the "Watch Crystal" or "Tuning Fork Crystal" at a frequency of 32.768 kHz to provide correct time in a watch, clock, calendar, programme or electronic control system.

Fox is now offering this timing crystal in a surface mount package. This high reliability part is available on tape or reel and built to withstand high temperature soldering techniques such as vapour phase and infra-red. The frequency tolerance is ±20PPM at 25 c.

Full details and technical specifications can be obtained from Clarke & Severn Electronics, PO Box 129, St Leonards NSW 2065. ar

SILENT KEYS

We regret to announce the recent passing of:
Canon Monty Nell VK2JQ
Mr Dick Purdie VK2ARP
Mr F N Young VK2YMN
Mr O G Price VK3DQC
Mr Ken O'Farrell VK4OF
Mr J Giroud L40201
Mr R G Hooper VK5NL

Monty Nell VK2JQ

One of Australia's oldest licences became QRT when Monty Nell VK2JQ passed away in mid July. Monty was 88 years of age, and had held the same call sign since 1926.

Monty was a Canon of the Anglican church and during his life time of service lived at Quirindi, Moruya, Binba, Crookwell, Goulburn and Canberra. He operated as an amateur in each of these towns. He was a very keen CW operator, and continued to use this mode until quite recent times. Monty was Patron of Goulburn Amateur Radio Society for some years and, until his health deteriorated a few years ago, he operated his FT101E and some two metre equipment. He was always on look out for any of his old acquaintances and he spoke frequently of the net known as "home to lunch club", with which he was associated for many years.

Although retired as an active Priest for many years, Monty was always available to help out with church matters, relief of other Priests etc. He regularly visited the sick in Goulburn hospitals, and was a great source of comfort and a very sincere friend to many people.

He is survived by two daughters and three sons, his wife and one son having pre-deceased him.

I know how many friends Monty had made in the Amateur fraternity, most of whom have now also passed away.

He was a true pioneer of our hobby and few of his "school" are still with us. I doubt if any of us will be able to reproduce the enthusiasm and spirit which Monty and his friends brought to our hobby.

David Thompson VK2BDT
On behalf of Goulburn Amateur
Radio Society Inc.

Stolen Equipment

Yaesu FT 101E transceiver, serial no. 7K/301042. Stolen from the home : VK5EZ, LE Hauber, 12 Moselle Ave, Glengowrie SA 5044, on 8/9 July 1989, Ph: (08) 295 6881.

OVER TO YOU

Key Clicks

The wordy battle on key-clicks has been interesting and I would like to join in. These are radiated signals and can start anywhere in the chain of circuits and amplifiers after the key, particularly in the antenna circuit.

It is all governed by the basic fact the the Resonant frequency of any tuned circuit is decided by the L and C in it, but the Free Oscillatory frequency of the same circuit is dependent on the L, C & R in it. It has two modes and more if coupled to other circuits.

The act of transferring AC power into an oscillatory circuit is a progressive build-up, depending on the Q, together with a free oscillation excited by the first $^1/_4$ cycle of rf energy. The first reaches a steady state in a a time dependent on Q. The free oscillation will die away in a time dependent on Q - a damped wave - a type B signal! The energy in this signal will depend on the amplitude of that $^1/_4$ cycle of rf! A similar effect takes place on removing drive from the circuit, the energy in the circuit dissipates at the free oscillation frequency. Decay rate depends on Q and any resistive loading by the rf source. In the case of pentodes and VFET's, this is negligible, but triodes and transistors act as damper diodes and absorb part of this energy.

If you key an early stage, these transient signals will pass through the following amplifiers, be they Class A, AB, B, or C. The interstage coupling will determine their production and linear amplifiers will ensure their faithful reproduction, for delivery to the antennal Catch 22, tuned interstage couplings are potential producers and also act as filters! Broad band circuits give no filtering and transfer clicks perfectly! The message is clear - minimum circuits after the key and turn it on smoothly, spread it over 10 cycles at 7 MHz, and you wipe out a micro-second on the leading edge of your dot. Your Rx wouldn't have enough band width to know the difference! SSB is subject to all these problems, so watch your VOX. Use a wide-band mode, AM, on your Rx to hunt for clicks; a Ge transistor as an "anode" bend detector and a pair of phones is a pin-point outfit.

References on circuits are many, but I like the "Admiralty Handbook", 1931. Pages 377-379 tell the story, but it is easier if you start at page 364. "Wireless" by Turner is good, especially on coupled circuits, but that is another story. It does take more than a SWR meter to get a clean CW signal.

Technical topics - March is fine for a poorly compensated line circuit, an under dampened undulator or galvanometric recorder. In radio you deal with closed and open oscillatory circuits. As a post detector analysis it is fine. It is fortunate that our audio level discrimination is poor so that the "rounding" of dots by our tuning and filtering allows us to copy happily what are nearly half sine wave pulses.

Bob McGregor VK3XZ
2 Wiltshire Drive
Somerville 3912

Tough Present - Grim Future?

Times are tough at the moment, as stated by VK3YWV (AR July 1989). It is a luxury to operate amateur radio. So, we talk about it, discuss it at meetings, gripe about it *on air*, but what do we really do about it? WIA membership fee of $50 for 1989 gives a member a QSL outlet - a lot cheaper than postage, plus technical information, Hamads and many other items.

But some still wish to gripe. Look at it this way. What about the coming years? You now start to think, "I won't be able to afford it; equipment getting beyond our means; what will I do?" Well, I think it would be better to say, "What will we do?"

Has it ever been suggested that the WIA could apply for a Government subsidy? After all, it is in the best interest of our Government not to let the WIA, or any well established radio club, fold.

Many times amateur operators have come to the fore, and held communications together in National disasters. This should carry a lot of weight. If WICEN had not been around what would have happened in the case of Cyclone Tracy, or bushfires in the Dandenongs, or individual operators hearing distress calls? A lower tax rate on equipment would help to keep a few heads above water.

According to the Regulations, the Government can, and will, commandeer your station, and you if necessary, in the case of a National disaster. Price rises will end our Clubs and our hobby. Then what happens to our bands? You guessed it, there is already pressure being applied to take from us what has been fought for.

I think certain members don't realise what goes on behind the curtain. If they did, they would get a jolt back to reality in finding what is involved in running a successful Club.

The time is not far off where, unless we tackle this problem, there will be a loss of members. It is now that we need unity.

I also work for a living and am trying to make ends meet. So, please don't desert an Institute that is doing its best to give you what you can't do by yourself. If Amateur Radio is going to survive, so must the WIA, but only by a combined voice. Help it, don't fight it.

Alan Williams VK3GAW
PO Box 137
Forest Hill 3131
ar

OVER TO YOU

Compulsory Co-Operation

I read with interest (page 16, App B, Par 25, s 1, in the DOTC booklet Doc 71 of March 89) that under an emergency situation an Amateur and Station are subject to a direction by a member of the Commonwealth Police or Services, State Police, an SES member and others some such.

I believe we once had the pleasure and privilege of "offering" ourselves and our equipment for the alleviation of distress and discomfort.

Now, that such "co-operation" is a matter of compulsory compellable compliance, it would seem advantageous for a Shire to ENCOURAGE in its bailiwick the construction of useful masts and towers. Furthermore, perhaps grants may be sought from Councils to assist in the establishment of adequate aerial systems.

M G Suter (Rev) VK6SA
Box 261 Mandurah 6210
ar

More Members Needed

The case for raising the WIA fees to $70 per annum has been well documented, beautifully stated and presented to the members with all the pomp and self-righteousness that goes with it. The case for limiting the fee structure to a reasonable level has conveniently been pushed aside and put in the "too hard" basket. Most of the people concerned with these decisions must be in high income brackets, or are able to absorb such fee increases through their business interests.

The largest portion of members are in fixed income brackets. These incomes have not, over the past ten years, kept up with the CPI increases. The rise in housing rates and taxes, water and sewerage rates, electricity, etc are good examples of "real" loss of income. Taking into consideration the ever rising amount of the essential weekly grocery bill, the fixed income earner finds him or herself hard hit with even a small increase in fees. There is also the ever increasing fear of redundancy in the workplace, through companies tightening the belt due to the high interest rates on their overdrafts.

All this makes a good case for NOT increasing the WIA fees. Most members of the Institute are also involved with associated groups, such as local amateur radio clubs, computer or packet radio groups, building and maintaining repeaters, and the list just goes on and on. Many amateurs are involved with service and sport clubs. Add up all that the individual is paying out or putting money toward, and you will see why the WIA creeps to the bottom of the list when it comes to membership fees.

Seventy dollars WIA membership, $30 station licence, $25 local club members, $20 computer or packet group. Add to that the donations to club projects, such as repeater building and maintenance, Club activities and field days etc, and you find the average amateur shelling out $500 a year. All this before he can think of any project or improvement to his own equipment.

Now, take a look at NON members. They have all the benefits of the WIA as well as of the local clubs without paying a cent. Does that not suggest the obvious answer?

A campaign to attract all amateurs should be commenced immediately. The lurks and perks, now enjoyed by Non members, should be cut out to show that our finances just cannot support freeloaders. We should have a minimum of 95% membership, which would make a membership fee of $50 a practical amount, and hold fees stable for quite a few years with careful management of finances.

I have been a member of the WIA since the early 70s and have always supported the Institute, but even I will be looking closely at my finances to see if I can afford $70 a year for the WIA. I can go on enjoying my hobby, whether I pay it or not. The Wireless Institute will lose members and consequently, the fees will go up again.

In the end, only those in the upper income bracket will be able to pay them. Perhaps now is the time to ask ourselves: "Will there still be a hobby called 'amateur radio' in ten years time, or will it be denigrated to becoming a toy for the idle rich?"

HWM Kop VK5KUJ
Box 582
Port Lincoln 5606
ar

SM7PKK Pacific Tour 2 - 1989/90

Here is some information about my next DX-pedition to the Pacific. In comparison with the first trip, I can't give as much detailed information. That is because I want to be as flexible as possible. A group in EU are planning one or two major DX-peditions which I might join. But, if they are not to take place, I shall visit these places instead:

3D2KK	Fiji
T30	West Kiribati
5W1HK	Western Samoa
ZK3 (KK)	Tokelau Islands (Atafu Atoll)
KS6/SM7PKK	Am. Samoa (will change prefix this time)
ZK1	South Cook Islands

Should there be any money left after that, then I will include more Islands until I am broke! I will leave Sweden October 16 and arrive in Fiji October 19; that is the only date which won't change HII Since I will stay away for between four to six months, things might change, depending on what other DX-peditions are activating in the Pacific.

Frequencies

CW: I will transmit 5kc above the band edge and listen at least 5 up. Then I will QSY up to 25kc above the band edge for US-stations.

SSB: Just look around the usual DX-frequencies. There is no point in giving any QRG here, since too many other DX-peditions will take the same anyway.

Sponsors

For this DX-pedidition I am sponsored by:
EUDX-Foundation
Naval Electronics AB
Swedish Radio Supply
(Including a 1 kW PA so you should hear me.)

QSL-Info

Cards should be sent to my homecall. Please SASE and don't mix QSLs for different Operations!! I have different managers. In return we will send you QSLs for all contacts you've had with me from the operation you worked, even if you just send QSL for one QSO - fair enough?

My Address
Mats Persson
Betesv 22
S-240 10 Dalby
Sweden

73 de Mats SM7PKK

PS: While being QRV at home, people have asked me if I was a son of a millionaire since I will travel again so soon Hi! That is not the case (could have been perfect!) I work hard for my money, still live in my parents house and love our hobby! ar

Repeater Co-Ordination

Are you, as a repeater builder or part of a repeater club, poorly informed about the Regulations, policy making and vital issues?

The West Australian Repeater Group (Inc) in VK6 have felt for many years that there is insufficient accurate information about all aspects of repeaters throughout the nation. Differences in interpreting regulations from state to state constantly occur. Endeavouring to find out what the facts are is a slow, tedious, frustrating process. Some way must be found to overcome these problems.

The WARG (Inc) is founding a national repeater group to provide a focal point for information about all aspects of voice and digital repeaters - the primary means of doing this is packet radio.

It is not intended to usurp the role the WIA plays in repeater management. The role of a national repeater group would be providing information on technical matters, licensing regulations etc, and to provide discussion on future directions. It will take some time to build up a strong national body but it can and must be done.

Already Packet bulletins have been sent out around the nation from the WARG (Inc) in VK6 and the response has been high. (Ten enquiries in just two weeks).

If you would like to be a part of this national repeater group, contact VK6CC or VK6UU at VK6BBS, or if you do not have packet facilities write to the Secretary, Jill Weaver VK6YL, 47 Belvedaire Way, Lynwood WA 6155.

It will take time to make this idea work, so let's get talking on Packet now if you want to further develop repeater systems.

Will McGhie VK6UU
Technical Officer WARG
21 Waterloo Cr Lesmurdie 6076

HAMADS

TRADE ADS

SATFAX: Weather satellite picture receiving program for IBM XT/AT. Displays in 64 colours. Needs EGA colour monitor & card, AM demodulator & ADC interface. $45 + $3 postage.
RADFAX2: HF weather fax, morse & RTTY receiving program for IBM XT/AT. Needs CGA, SSBHF, FSK/Tone decoder. Also "RF2HERC" & "RF2EGA", same as RADFAX2 but suitable for Hercules & EGA cards respectively. $35 + $3 postage. All programs are on 5.25", 360K floppy + full documentation. Only from M Delahunty, 42 Villiers St, New Farm 4005, Old, Ph: (07) 358 2785.

AMIDON FERROMAGNETIC CORES: For all receiver and transmitter applications. Send large SASE for data and price to RJ & US Imports, Box 157, Mortdale NSW 2223. Closed during August. (No enquiries at office please . . . 11 Macken St, Oatley). Agencies at: Geoff Wood Electronics, Lane Cove; Webb Electronics, Albury; Electronic Components ACT; Truscott Electronics Vic; Willis Trading Co WA; Associated TV Service Hobart.

FOR SALE - NSW

YAESU FL2100Z linear $1100, new condition, original carton, with manual. Few hours use only. Dave VK2CDB (02) 543 4137, (02) 522 4852 QTHR.

---

2 METRE 100W linear amplifier unassembled kit DSE K6313 in original packing $200. Unused boxed WW2 valves 12SK7 6H6 $2 each or $40 hundred. Ian VK2ZIO (02) 680 2112 QTHR.

TL922 Kenwood HF linear amplifier excellent condition, great performer $2600. Scanner, Realistic PR02004 300CH 26-1300MHz $575. Don VK2WU QTHR (049) 59 6335.

MFJ 1224 RTTY CW ASCII Amtor computer interface with leads and program, suit C64, as new $160 plus postage, Brett VK2DOM (02) 570 7609.

YAESU FTV700 70cm transverter, 14 el ATN 70cm yagi $400. Yaesu FT2FB 12 channel xtal 2 metre mobile $150. 2 x 6 el KLM 70cm yagis $30 each. Kenpro KR500 elevation rotator $350 ONO. Steve VK2ZSC QTHR (02) 674 2104.

ANTENNA TH6 DXX Thunderbird Tri-bander 14, 21, 28m purchaser to pay freight $300 - Rej VK2BMQ/VK1MP (062) 47 9223 AH.

SIX Metre IC505 10 watt Digital SSB/CW TCVR, swap/sell for Kenwood RZ1 RX. Nev VK2QF (063) 73 8624 AH.

YAESU FT-7B HF transceiver owners manual, good cond $500. Chirnsdie CE-42 15-10 metre DVO-band beam $150. Kevin VK2FUO QTHR (060) 21 6845.

LINEAR amplifier HF bands runs 4CX1000A passive grid, B & W tank vacuum capacitors C-Core transformers floor standing, VK2DTR (02) 918 3835.

SOCKETS for 3-500Z, 4CX1000A or 4CX1500B (SK800B) + chimneys, VK2DTR (02) 918 3835.

DECEASED estates - Yaesu FT101E transceiver $450; FL2100B linear $900; FT207R SM portable, PA2 adaptor $180; Lunar 2M4-40P amplifier $120; Helray peak power meter $50; Asahi 10-15-20-40-80m mobile antenna $90; Tono 7000E computer $400; DSE GP100 printer $150; Robot 400 SSTV $400; Hamvision SSTV & Camera $250; 13.8V, 2A regulated supply $20; Phillips PM2410 multimeter 30VA, spare movement $70; Sony TC100A cassette recorder $15; Ralmar door intercome $40; Pioneer PAX30F 12", 25W coaxial speakers $50 pair; 110V muffin fans $6; FSK/AM/CW exciter 15W, 1-75 MHz $60; Telefunken FK446 colour camera $450; IEI 500MHz movement detector $60; Roller inductor & counter $100; Sony Helical scan tapes $5 - Bob VK2CAN (02) 416 3727.

OREGON mast 12 metres, 2 piece lower half 70 mm sq, upper half 50mm sq $75. Nev Shaw VK2FJ, 16 Hynes Place, Camden East (046) 55 1577.

KENWOOD 520S External VFO CW filter, spare finals VGC $500 - (065) 62 5755 VK2CVR QTHR.

FOR SALE - VIC

YAESU FT-221, all mode 2m transceiver, complete with Mutek RF Front End Board, YC-221 Digital Display and Handbooks $500; Kenwood TM-421A 35W cm FM transceiver $500; Kenwood 2m 10W FM transceiver type TR-7200G $125 - Roy VK3ARY QTHR (03) 807 4798.

VALVES, Moorabbin Radio Club "Valve Bank" thousands of new and used receiving and transmitting valves at reasnable prices. Ken VK3ZFI, QTHR (03) 580 5347.

FREE; Teleype Mod15 page printer and teletype Mod14 typing reperforator. Working condition - Les VK3KD (03) 895 1405.

HF Linear SSB all band/10-160 10W input, 120W output pair 807's suit FT7 with spares $200 ONO; Oskerblock 2 metre SWR 145 metre $80; Frequency counter 20 MHz - 200 MHz dual range $75; 2-S2001 or 6146B's new cond $30 ea; QRP rig drew diamond 1986 project 80 mx Rx & Tx 5W, excel cond, complete $95 ONO - Ray VK3CDR QTHR (03) 726 9222.

DECEASED estate: IC271/A 2m all mode base station 25W 32 memories fitted with AG-20 pre-amp and w/shop manual $675; IC471/A 70cm all mode base station 25W 32 memories & IC-Agl masthead pre-amp $1100; FT 680R 6m all mode mobile 20W PEP $225; FT 200 HF transceiver 3.5 - 28 MHz with p/supply $225; Transceiver homebrew "G2DAF" type 3.5 - 28 MHz & p/supply $50; Eddystone 680 Rx 15 tube 0.5 30 MHz var sel xtal filter $110; AWA Rx AMR 101 9 tubes 480 kHz 26 MHz using 6 plug in coil boxes (similar to HRO) $50; "Reception Set" R107 9 tubes 3 bands 1.2 17.5 MHz $25; Hygain TH6-DXX 6 elem 3 bands + 40 ft tower, + rotator (buyer to dismantle) $450; 60ft 3 leg tower (dismantled) $60; Beam 2m 11 elem $20; Beam Helical 70 cm 15 elem $20; Beam 6m (W/Wolf) 7 elem 25ft boom $100; Parabola's (3) 4ft diam $40 ea; Rack 6ft x 19" contains 100W 2m Am Tx 120W Modulator with all necesary p/supplies $60; Power supply contains "A & R" 1000-750-500V a side 400 mA transformer + filter chockes fil transformers etc $25; Sig Gen Marconi TF 144G 85 kHz 25MHz 8 bans $20; Imped Bridge Marconi TF 373D $20; Freq Counter homebrew 8 digit 30 MHz $45; FV-107 remote VFO for FT107 $60; Freq meter (Bendix) SCR 211 AK $20; Bench mike Yaesu YD844D $40; All items buyer to collect - VK3ATW (03) 579 1226 or Pat (03) 598 4806.

KENWOOD TS440S transceiver all amateur bands plus general coverage receive built in automatic ATU, had very little use, with mic and manual $1975; Icom IC2A 2m FM hand held with extra battery pack, charger etc EC $275 - VK3ARZ QTHR (03) 584 9512.

KENWOOD 1.8kHz narrow SSB filter suit TS430/440/130 etc $75 - VK3ARZ QTHR (03) 584 9212.

RECEIVERS FRG7 Yaesu communications receivers 500 kHz to 30 MHz excel order with manual $225; Eddystone 888A amateur band receiver in very good order manual $150 - VK3OM not QTHR (059) 44 3019.

TET HB443DX four band four element Yagi covers 40, 20, 15 & 10M in very good order $375 - VK3OM not QTHR (059) 44 3019.

KENWOOD TS120Y orig packing $475; Microwave modules 432 MHz transverter 28 MHz IF suitable for Oscar $225; Icom 502 6m transceiver $180 - Roger VK3XRS QTHR (051) 56 8291.

FOR SALE - QLD

DISPOSALS gear for sale at auction North Old convention Townsville Sept 22-23-24, PO Box 964, GPO Townsville 4810 for details.

AEA Pakratt PK64 Modem with HFM64, packet RTTY, Amtor CW ASCII HF VHF suit C64 C128, software incl cost $700, sell $500 - VK4AI (07) 284 5688.

FOR SALE - SA

Telcon semi air spaced twin coax cable, 2 kW to 2m, transmitter 6V6G osc 6V6 dblr 807 buffer 829B PA, 160 to 6m, transmitting tubes 4-65A, 4E27(813), Grundig reel-to-reel recorder (valves), 2 sets tubes for KW2000, Post-war tubes, receiving & TV, Admiralty Handbook of Wireless Telegraphy 1931 - VK5LC QTHR (08) 271 6841.

ANTENNA four element cubical quad for 10m and 15m $150 ONO - VK5KBE (08) 250 7259.

KENWOOD TM401B 70cm FM 25W handbook, circuits in excel oond $475 - Peter VK5AWP (085) 63 2782.

FOR SALE - WA

AMIGA users amateur radio group, send for details, if on packet give @BBS model - Larry VK6CP PO Box 46 Guildford WA 6055.

MOBILE shack consisting of 11ft caravan fitted with benches cupboards and single bunk, licensed, good tyres $990 - VK6EE (09) 459 9714.

FOR SALE - TAS

ICOM 720A HF all band transceiver $1000 neg; PCM Electronics MTU 100 Antenna tuner $400 neg - Peter (002) 23 1009.

WANTED - AUST WIDE

Information and/or identification of illegal operators on amateur bands, WARC could trim more kilohertzs, fight back, join IARUMS Reward, more space on our bands.

WANTED - ACT

VINTAGE valves types 57, 58 and 2A5 for pensioners' RX's, reasonable emission, all costs paid, please help - Jock VK1LF QTHR (062) 86 6920.

WANTED - NSW

2 1/4" Square (6x6) slide projector blower cooled, any cond, reasonable price, suitable for video to ATV - (068) 28 1542 BH, 28 1261 AH, Ron VK2FLG QTHR, Ron Pearson Box 47 Walgett 2832.

TWO 572B tubes for FL2100B Yaesu amplifier - Ron VK2BKN QTHR (069) 72 2021.

AR88 receiver, 22 or 122 transceiver, circuit diagram handbook for AR17 VHF receiver, MN52 loop box for radio compass MN26 - Ian VK2ZIO (02) 680 2112 QTHR.

YAESU FT-680R 6 metre all mode transceiver, good cond - Chris VK2YMW (02) 489 2818 QTHR.

VALVE tester with manual and/or manual for Palec VCT-2 valve tester - Andrew Kay (02) 555 1408.

WANTED - VIC

DELTAHET receiver any cond, working or not, or Racal RA17L - (052) 48 1410 AH.

COUNTER measures receiving equip from the RAAF Neptune aircraft, switch assemply unit SA/146/ALR8, remote control units, TYpe C 426/APR9 and C654/APR9; Also primary and secondary tuning gang covers and overall covers to suit the AR88 HF Comm Rx - W Babb VK3AQB (03) 337 4902.

KENWOOD R2000 receiver prefer with VHF converter, also valve type transceiver prefer Heathkit SB100/101/102 with power supply, details to VK3OM not QTHR - (059) 44 3019.

WANTED - QLD

GENERAL coverage HF receiver, eg R600 R1000 R2000 even Realistic DX300 etc, good cond only - Aub VK4AFO (070) 96 5962 or Fax (070) 96 6151, PO Box 102 Malanpa 4885.

WANTED - WA

CIRCUIT diagrams for Icom 280 and AWA 220 100W SSB, will pay all copying and mailing costs - Roo VK6JBW/3JBW (099) 811107.

CRYSTALS for 20M CW segment, any size prefer HC6U - VK6BWI QTHR.

HANDBOOK or circuit diag for Yaesu DX401,

external VFO spkr for FT200/FLDX2000 - Maurice VK6NST QTHR (09) 419 2951 reverse charges.

WANTED - TAS

TRANSFORMER prim 230/240V sec 700V CT (2x350V) at 500mA, please write to Frank VK7ZFM QTHR.

AEM Subscriptions

Subscribers to Australian Electronics Monthly who still had issues owing to them at the time the magazine ceased publication were to receive an offer on their subscriptions from another publisher, as detailed in a release published in the April issue of AR.

Details of this offer were finalised in July and despatch of letters setting out the offer to all subscribers commenced in late July. If any AEM subscribers have not received such a letter, then they should contact: Val Harrison at the Apogee Group, who is handling the situation,

Locked Bag 888 Rozelle NSW 2039
Phone: (02) 555 1646

Outstanding AEM Listening Post Orders

Australian Electronics Monthly was handling software for this very popular FAX/RTTY/CW decoder until it ceased publication earlier this year. At that time, a number of orders were being held and a release in the April issue of AR indicated that outstanding orders would be fulfilled. Well, finally, after some delay, the situation regarding these orders has been resolved. The firm FT Promotions is now handling marketing of this software, among other products, and the outstanding orders have been passed on to them. These AEM customers are having their original orders returned along with a letter from FT Promotions offering to fulfil their requirements.

If you had an order "caught up" in this situation, and haven't yet received a letter from FT Promotions, contact them at
PO Box 547
Rozelle NSW 2039
Phone: (02) 818 4838

ADVERTISER'S INDEX

ATN Antennas 40
Blamac Pty Ltd 36
Dick Smith Electronics ..... IBC
Electronics Australia 21
Electronics Today International ..... IFC
Emtronics 46
Ian J Truscott's Electronic World 42
Icom ..... OBC, 32,33
Kenwood Electronics Aust. Pty Ltd 48
Magpubs 20
QD Electronics 44
Silcon Chip Publications 37
Stewart Electronic Components 23
WIA NSW Division Novice Licence 44
Wilkie Trading Co 28

TRADE ADS
RJ & US Imports 62
M Delahunty 62

HAMADS

Please Note: If you are advertising items For Sale and Wanted please use a separate form for each. Include all details; eg Name, Address, Telephone Number (and STD code), on both forms. Please print copy for your Hamad as clearly as possible.

*Eight lines free to all WIA members, ninth line for name and address Commercial rates apply for non—members. Please enclosed a mailing label from this magazine with your Hamad.

*Deceased Estates: The full Hamad will appear in AR, even if the ad is not fully radio equipment.

*Copy typed or in block letters to PO Box 300,
Caulfield South, Vic 3162, by the deadline as indicated on page 1 of each issue.

*QTHR means address is correct as set out in the WIA current Call Book.

*A courtesy note will be forwarded to acknowledge that the ad has been received.

Ordinary Hamads submitted from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re—sold for merchandising purposes.

Conditions for commercial advertising are as follows: $22.50 for four lines, plus $2.00 per line (or part thereof) Minimum charge — $22.50 pre—payable.

State: .....

❑ Miscellaneous
❑ For Sale
❑ Wanted

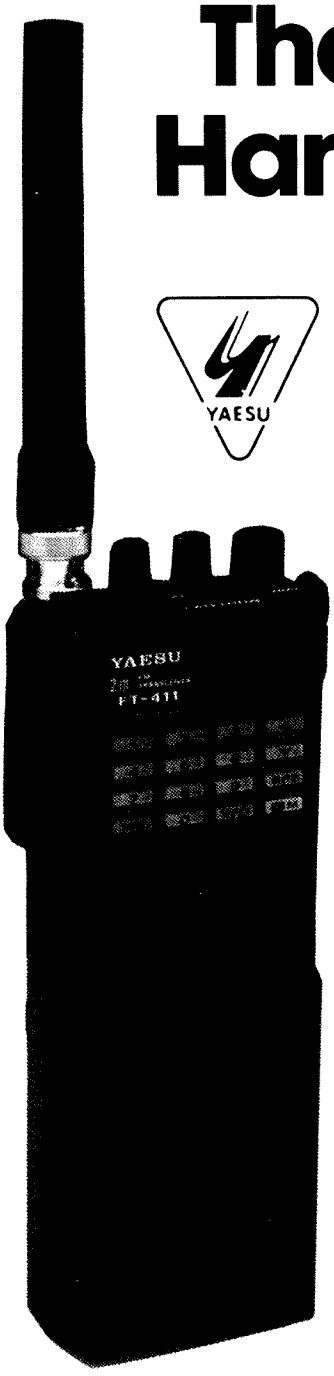
Name: .....

Call Sign: .....

Address: .....

.....

The Ultimate 2 Metre Hand-held Transceiver



The FT-411 is a top-of-the-line ultra compact 2 metre handheld offering an incredible array of features without the size and weight of previous sets. Expanding on the microprocessor controlled features of previous models, the front panel multi-function back-lit keypad allows easy frequency entry, selection of the 49 tunable memories (which store repeater shifts, or separate Tx/Rx frequencies), setting of the programmable-interval 'power-saver' system, as well as a host of other convenience features. CPU control also offers 2 VFO's, rotary dial tuning with 5 selectable tuning steps, a multi-function back-lit 6 digit LCD screen with bargraph Signal/P.O. meter, and a range of scanning options. Even VOX (voice-activated transmit) circuitry is provided, allowing hands-free operation with the optional YH-2 headset.

Yaesu have also recognised that a hand-held radio must be ruggedly constructed, and yet be small enough and light enough to carry around all day. Through the extensive use of surface-mounted components, a heavy duty die-cast rear panel, rubber gasket seals around all external controls and connectors, and a carry case supplied as standard, the FT-411 will provide reliable operation even in dusty or humid environments while measuring only 55 (W) x 155 (H) x 32mm (D), and weighting less than 550 grams (including a high capacity 1000mAH FNB-14 NiCd battery giving 2.5W output). A range of inexpensive optional accessories are also available to provide flexibility for users differing requirements. See ARA review Vol 12 Issue 3.

Complete Package: FT-411, FNB-14 7.2V NiCd, Carry Case, Antenna, Approved AC Charger.

$499

D-3350

EXCLUSIVE 2 YEAR WARRANTY

Optional Accessories

PA-6	DC Adaptor/Charger suit FNB9/10/14	D-3498	$39.95
FNB-11	600mAH NiCd Battery (5W output)	D-3496	$99.00
MH-12A2B	Speaker/Microphone	D-2115	$49.95
YH-2	Mic/Earphone Headset	D-2200	$49.95

DICK SMITH ELECTRONICS

• NSW • Albury 21 8399 • Bankstown Square 707 4888 • Blacktown 671 7722 • Campbelltown (046)27 2199 • Chatswood Chase 411 1955 • Chullora 642 8922 • Gore Hill 439 5311 • Gosford 25 0235 • Hornsby 477 6633 • Hurstville 580 8622 • Liverpool 600 9888 • Maitland 33 7866 • Miranda 525 2722 • Newcastle 61 1896 • North Ryde 88 3855 • Parramatta 689 2188 • Penrith (047)32 3400 • Railway Square 211 3777 • Sydney City 267 9111 • Tamworth 66 1711 • Warringah Mall 905 0441 • Wollongong 28 3800 • ACT • Fyshwick 80 4944 • VIC • Ballarat 31 5433 • Bendigo 43 0388 • Box Hill 890 0699 • Coburg (03) 383 4455 • Dandenong 794 9377 • East Brighton 592 2366 • Essendon 379 7444 • Footscray 689 2055 • Frankston 783 9144 • Geelong 43 8804 • Melbourne City 326 6088 • Richmond 428 1614 • Ringwood 879 5338 • Springvale 547 0522 • QLD • Brisbane City 229 9377 • Buranda 391 6233 • Cairns 31 1515 • Chermside 359 6255 • Redbank 288 5599 • Rockhampton 27 9644 • Southport 32 9863 • Toowoomba 38 4300 • Townsville 72 5722 • Underwood 341 0844 • SA • Adelaide City 232 1200 • Beverley 347 1900 • St. Marys 277 8977 • Elizabeth 255 6099 • Enfield 260 6088 • WA • Cannington 451 8666 • Fremantle 335 9733 • North Perth 328 6944 • Perth City 481 3261 • Midland 250 1460 • TAS • Hobart 31 0800 • NT • Stuart Park 81 1977

THIS SCREEN CAN TELL YOU AS MUCH ABOUT THE IC-781 AS WE CAN.

The huge CRT display on this new HF transceiver will show at a glance all the functions we're about to describe here.

That's because it has a built in spectra scope for the first time, for programmable, multi-functional central monitoring.

Plus there's a VFO, A/B contents, memory contents, two menu screens, band scope, and 15 operational screens.

It also has a sub display, and its DDS system offers a lock-up time of just five milliseconds. So it's ideal for data communications systems like PACKET and AMTOR.

The dual watch function is a huge advantage on DX-peditions or when chasing DX-stations. And its computer-controlled twin PBT with high efficiency IF filter eliminates interference.

Maximum frequency stability is achieved at ±15Hz (0-50°C), which is more efficient than other transceivers on the market.

Also, the delay control noise blanker system is adjustable by up to 15 milliseconds.

There's a full and semi break-in function that can output up to 100 words per minute. And a p.a. unit that outputs 150W of power.

However, just because the IC-781 has so many state-of-the-art features, don't think ICOM haven't made it simple to use.

There is a built in 10-keyboard for easy operation. Or you can use the built in remote control communication interface-V system.

This lets you control your transceiver via a personal computer or other compatible equipment. Plus you have a 2 way sleep timer, and 5 separate automatic weekly timers.

For your nearest ICOM stockist, just call (008) 33 8915. And they'll tell you everything you need to know about the IC-781. Then once you've got one, the CRT display will tell you everything you need to know about what it's doing.

ICOM

Amateur Radio

JOURNAL OF THE WIRELESS INSTITUTE
OF AUSTRALIA
VOL 57, NO 10, OCTOBER 1989

Radio Amateurs: Have you checked out EA lately?

No doubt most radio amateurs are aware that *Electronics Australia* is by far this country's largest-selling electronics magazine, as well as being its oldest (we began way back in 1922, as *Wireless Weekly*). But have you looked inside the magazine lately?

Remember Jim Rowe, VK2ZLO? Jim used to be Technical Editor, and then Editor – back in the late 1960's and 1970's. You may recall some of the amateur radio and test equipment projects he developed, which proved to be extremely popular. Well, Jim is back at the helm of the magazine, and has been busy giving it a new lease of life.

You'll now find lots of new 'departments' in the magazine, including Solid State Update (with news of new semiconductor devices), Silicon Valley Update (news from the USA) and What's New in Entertainment Electronics. Plus all of your old favourites like Forum, The Serviceman, Circuit and Design Ideas and so on. And of course plenty of 'meaty' technical articles and contruction projects.

FEATURES IN THE OCTOBER ISSUE:

RADIO CONTROLLED MODEL HELICOPTER

The Uni of Tasmania is using a seven-channel radio control system on 36MHz to control a model helicopter for aerial surveying. It isn't easy to fly, though, as Tom Moffat discovered!

CSIRO BREAKTHROUGH IN MILLIMETRE-WAVE TRANSISTORS

Australia's own CSIRO has produced gallium-arsenide HEMT transistors with cutoff frequencies well beyond 100GHz. Find out how they work, and how they're made.

TV-DERIVED TIME & FREQUENCY STANDARD

The second article on this new unit, which can give you reference signals with an accuracy very close to a Rubidium standard. Designed by Ian Pogson, VK2AZN.

What about *amateur radio* projects? Well, there still aren't too many, at present – Jim Rowe's been a bit too busy! But he's *very* interested in boosting the amateur radio content, so if YOU have developed an exciting amateur radio project, please contact Jim by writing to him at EA, 180 Bourke Road, Alexandria 2015 or phoning him on (02) 693 6620 – to discuss the possibility of publishing it as a contributed article.

Take a look at the new, rejuvenated *Electronics Australia* – on sale at your newsagent at the beginning of every month. Or subscribe now, by phoning (02) 693 9517 or 693 9515.

Electronics Australia

Australia's Top Selling Electronics Magazine

Amateur Radio

Vol 59 No 10 ISSN 0002-6859 October 1989

Amateur Radio is published by the Wireless Institute of Australia, as its Official Journal on the last Friday of the previous month.

EXECUTIVE EDITOR

Bill Rice VK3ABP

MANAGING EDITOR

Graham Thornton VK3IY

NEWS EDITOR

Jim Linton VK3PC

SENIOR TECHNICAL EDITOR

Peter Gibson VK3AZL

TECHNICAL EDITORS

David Brownsey	VK4AFA
Don Graham	VK6HK
Evan Jarman	VK3ANI
Peter O'Connor	VK4KIP
Gil Sones	VK3AUI
Phil Steen	VK4APA

DRAFTING

Vicki Griffin VK3BNK

ADVERTISING

Ann McCurdy

All contributions and correspondence concerning the content of Amateur Radio should be forwarded to: -

The Editor
Amateur Radio
PO Box 300
Caulfield South
VIC 3162

Registered Office

3/105 Hawthorn Road
Caulfield North VIC 3161

Telephone: (03) 528 5962
(03) 523 8191

Fax: (03) 523 8191
(Non dedicated line)

Deadlines

	Editorial	Hamads
November	9/10/89	11/10/89
December	6/11/89	8/11/89
January	4/12/89	6/12/89

CONTENTS

Technical

Broadside on 10 - Richard Burdon VK6FKP 30
How to use a Dummy Load (or ten) - Graham Rogers VK6RO 28
Introduction to Synchro Torque Transmitters and Indicators
- Dean Probert VK5LB 14
'Lambda Diode' Regenerative Receiver - Larry Osborne VK3ZSZ 29
Resistor Selector Program - Bruce Bathols VK3UV 27
Simple Non-mathematical Treatment of Transmission Lines
- Dr Godfrey Lucas VK2CJL 5
Transmission Lines - Measurement of their Characteristics
- Lloyd Butler VK5BR 20

General

Dove to Bear Down on Planet Earth - Jim Linton VK3PC 34
Magazine Review - Roy Hartkopf VK3AOH 30
Weather Satellites (Continued) - Paul Hayden VK4ZVB 26

Operating

Awards - Questionaire Response, USSR Awards - Ken Gott VK3AJU 42
Contests - Frank Beech VK7BC
Calendar, ALARA Rules 40
OK-DX Rules 41

Columns

Advertisers Index 64
ALARA - Joy Collis VK2EBX 51
AMSAT Australia
- Maurie Hooper VK5EA 44
AR Showcase 56
Club corner 55
Divisional Notes
VK2, VK3, 5/8 Wave, ... 52
VK6 53
Education Notes
- Brenda Edmonds VK3KT 49
Editors Comment 2
EMC Report - Hans Ruckert VK2AOU ... 49
Hamads 62
How's DX - Stephen Pall VK2PS 35
Intruder Watch
- Gordon Loveday VK4KAL 48
Morseword No 31 - Audrey Ryan 46
Over To You - Members Opinions 58
Pounding Brass
- Gilbert Griffith VK3CQ 43
QSLs from the WIA Collection
- Ken Matchett VK3TL 54
Silent Keys - Obituaries 57
Spotlight on SWLing
- Robin Harwood VK7RH 53
Stolen Equipment 36
VHF/UHF - An Expanding World
- Eric Jamieson VK5LP 36
WIA Directory 2,3
WIA News - Bill Roper VK3ARZ 3

Cover

Our first look at the new Kenwood HF transceiver, TS950SD, which is the new flagship of the extensive Kenwood fleet of amateur radio transceivers.

No Free Lunches

This month I would like to follow up last month's comments on cost of member services in the various Divisions by talking more about the situation here in the Executive Office. Some people, in response to rising fees, have suggested that the WIA (and particularly the Executive Office) is becoming too professional and, therefore, too expensive. Only someone close to the Federal scene can put this into its right perspective. The essential question is, "Do we have cheap volunteers or paid specialists?" As mentioned last month, the two largest Divisions (VK2 and VK3), each with more than 2,000 members, have found it necessary to employ secretarial and managerial staff. This is even more so in the Federal case, with responsibility for all seven Divisions, all national and international negotiations affecting amateur radio in Australia, and the production of this magazine.

Here I can speak as a volunteer of many years involvement with the WIA. Even though I retired two years ago from a regular daily job, the sheer volume of work needed to edit the magazine required more time than I was willing to lose from other activities (particularly home-brew construction, on-air operating, and a bit of sailing!) Fortunately, the use by our new typesetters (as from February) of more time-efficient computerised layout techniques saved enough money (compared with older "paste-up" procedures) to pay for Graham Thornton to become Managing Editor. Improved efficiency pays for a professional, who in turn further improves efficiency. Now I can catch up on a backlog of letters, some of which have needed my reply for over a year!

But all of these correspondents have already received a brief acknowledging reply, so at least they know their letter has been delivered to us! Until Bill Roper became General Manager and Secretary, this wasn't so! One of Bill's first innovations was to introduce new computers and streamlined computerised procedures to the Office, so that all correspondence is now handled far more efficiently, and file management greatly improved. The WIA financial situation is all on computer, updated as often as necessary; and Executive now knows, without guess work, which way to proceed. Of course, all this costs money, not only in hardware and software, but Bill's salary as well. Again, the professional increases efficiency, in this case not only helping to pay his salary, but enabling us to provide services that otherwise would be impossible. Incidentally, I think it is only fair to mention that Bill's management expertise could command twice the salary elsewhere! Only his devotion to amateur radio impels him to work inordinately long hours for relatively little money!

Salt Lakes

Changing the theme, it may be that by the time you read this we may be maritime-mobile on one of the flooded South Australian salt lakes. We are still not 100 percent sure of when and where, but hopefully towards the end of September at least on Lakes Torrens and Eyre South. More soon on the Divisional news broadcasts. Talk to you from the boat, on one band or another. 73 till then.

Bill Rice VK3ABP
Executive Editor

PS: I was wrong in the September Comment as regards ownership of repeaters in VK2. Only VK2RWI at Dural is owned by VK2 Division.

WIA NEWS

Bill Roper VK3ARZ, General Manager & Secretary

HF Contest Championship

Contests are an important and exciting part of the activity of amateur radio, and have been so since the earliest days of organised amateur radio communication.

The WIA sponsors four major HF contests each year:

John Moyle Memorial Field Day Contest
Remembrance Day Contest
VK Novice Contest
VK/ZL/Oceania Contest.

In 1984 an HF Contest Championship competition was introduced on an annual basis. To be eligible for this competition entrants must participate in at least three of the four HF contests sponsored by the WIA. Points are allocated for the top 10 scorers in each State in each of the contests, with 10 points being for the highest score, down to one point for the tenth position. Points are allocated on a State basis to overcome any unfairness due to geographic or propagation advantages which may exist.

There are a number of other rules, some of which overcome the problem where only one 'token' entry appears for a particular category or section from any State.

In the 1986 and 1987 HF Contest Championships, the outright winners in both years were Ian, VK5QX, in the Phone section, and Gil, VK3CGG/VK3CQ, in the CW section.

On page 49 of August 1989 issue of Amateur Radio the winners of the 1988 HF Contest Championship were announced. Gil, VK3CQ, had won the CW section for the third year in a row, but there was a new winner in the Phone section, Ken, VK3AJU.

However, late in August I received a call from Ian, VK5QX, telephoning from Alaska where he was holidaying. Ian's August issue of Amateur Radio had just reached him, and he was concerned that his scores in the HF Contest Championship were not correct.

Panic stations in the Executive Office! A quick grab for the results of the relevant contests as published in various issues of Amateur Radio showed that none of the published scores for the HF Contest Championship were correct! An urgent call was made to the Federal Contest Manager. He eventually agreed with our

WIA DIVISIONS

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually their residential State or Territory, and each Division looks after amateur radio affairs within their State.

Division	Address	Officers			Weekly News Broadcasts
VK1	ACT Division GPO Box 600 Canberra ACT 2601	President Secretary Treasurer	Ted Pearce Jan Burrell Ken Ray	VK1AOP VK1BR VK1KEN	3.570 MHz 2m ch 6950 70cm ch 8525 2000 hrs Sun
VK2	NSW Division 109 Wigram St Parramatta NSW 2124 (PO Box 1066 Parramatta) Phone (02) 689 2417	President Secretary Treasurer	Roger Henley Peter Balnaves David Horsfall	VK2ZIG VK2CZX VK2KFU	(R Denotes repeater) Times 1100 and 1915 on Sunday 1.845 MHz AM, 3.595 AM/SSB , 7.146 AM (1100 only) 28.320 SSB, 52 120 SSB 52.525 FM 147.000 FM(R) 438.525 FM(R) 584.750 (ATV Sound) Relays also conducted via many repeaters throughout NSW.
VK3	Victorian Division 38 Taylor St Ashburton Vic 3147 Phone (03) 885 9261	President Secretary Treasurer	Jim Linton Barry Wilton Rob Hailey	VK3PC VK3XV VK3XLZ	1.840 MHz AM, 3.615 SSB, 7.085 SSB, 147.250 FM(R) Mt Macedon, 147.225 FM(R) Mt Baw Baw 146.800 FM(R) Mildura, 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday
VK4	Queensland Division GPO Box 638 Brisbane Qld 4001 Phone (07) 284 9075	President Secretary Treasurer	David Jones John Aarsse Eric Fittock	VK4NLV VK4QA VK4NEF	3.605 MHz, 7.118, 14.342, 18.132, 21.175, 28.400, 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday Repeated on 3.605 & 147.150 MHz, 1930 Monday
VK5	South Australian Division Thebarton Rd West Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Secretary Treasurer	Don McDonald Hans van der Zalm Bill Wardrop	VK5ADD VK5KHZ VK5AWM	3.550 MHz, 14.175, 28.470, 53.100, 147.000 FM(R) Adelaide, 146.700 FM(R) Mid North, 146.900 FM(R) South East, ATV Ch 34 579.00 Adelaide, ATV 444.250 Mid North (NT)3.555, 146.500, 0900 hrs Sunday
VK6	West Australian Division PO Box 10 West Perth WA 6005 Phone (09) 474 2626	President Secretary Treasurer	Alyn Maschette Pending Bruce Hedland - Thomas	VK6KWN VK6OO	146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 3.560, 7.075, 14.115,14.175, 21.185, 28.345, 50.150, 438.525 MHz Country relays 3582, 147.350(R) Busselton 146.900(R) Mt William (Bunbury)147.225(R) 147.250 (R) Mt Saddleback 146.725(R) Albany 146.825(R) Mt Barker Broadcast repeated on 3.560 at 1930 hrs.
VK7	Tasmanian Division PO Box 1010 Launceston TAS 7250	President Secretary Treasurer	Mike Wilson Bob Richards Peter King	VK7ZWW VK7NRR VK7ZPK	146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.750 (VK7RNW), 3.570, 7.090, 14.130, 52.100, 144.100 (Hobart) Repeated Tues 3.590 at 1930 hrs
VK8	(Northern Territory) is part of the VK5 Division and relays broadcasts from VK5 as shown (received on 14 or 28 MHz).				

Note: All times are local. All frequencies MHz.

findings, could not understand what had happened, and did not even have a computer to blame. A frantic call was then made to the trophy manufacturer to ensure that the trophies will be correctly engraved - yes, the outstanding contest trophies are currently being manufactured and engraved! - and the staff of the Executive Office relax a little and wait for the next crisis.

The end result of all this is that the results of the 1988 HF Contest Championship as published in August 1989 Amateur Radio magazine were incorrect.

Gil, VK3CQ, remains the winner of the CW section, but with a score of 30 out of a possible 40.

And, for the first time in the history of the HF Contest Championship, there was a tie for first place in the Phone section. Ken, VK3AJU, with a score of 39 out of a possible 40, and Ian, VK5QX, also with a score of 39 out of a possible 40, are the joint winners.

Operation by Licensed Amateurs Visiting New Zealand

The New Zealand Radio Frequency Service, which is the New Zealand equivalent of the Australian Department of Transport and Communications (DoTC), has just issued a policy statement concerning short-term amateur visitors to New Zealand.

Effective immediately:-

1. Licensed visitors to New Zealand may use VHF/UHF hand-held transceivers on frequencies of 144 MHz and above.
2. Operation is for a period of not more than 4 weeks.
3. No application need be made to NZRFS and no fee is payable.
4. The visiting amateur must be the holder of a current licence issued by their own administration.
5. A copy of their current licence must be carried while operating and be available for inspection.
6. Usage of the transceiver must conform with the requirements of the New Zealand Radio Regulations 1987 and the general terms and conditions shown on the amateur licence schedule.
7. The visiting amateur must use their home callsign suffixed by ZL 1, 2, 3, or 4 as appropriate.

That is great news for amateur visitors to the land of the long white cloud, and I believe it is a world first.

Initial approaches to DoTC for a similar facility for amateur visitors to Australia met with a negative response. Apparently DoTC feel that the conditions prescribed in the Australian Radiocommunications Act 1983 would not enable DoTC to approve of such a concession. However, the WIA will keep trying.

Incidentally, further word from across the Tasman would seem to indicate that the NZRFS has suddenly produced a great burst of activity aimed at substantial deregulation of amateur radio in New Zealand.

20 Year Index for Amateur Radio Magazine

Because of the incredible amount of time it takes searching through annual and five year indexes of Amateur Radio when we receive a request from a member for advice as to which issue of our magazine contained an article on a particular item, we have just finished compiling a 20 year, 2059 articles, index of Amateur Radio.

It has taken many months because of the enormity of the task, and the fact that, because of the lack of human resources in the Executive Office, it had to be treated as a background task.

Although this index was compiled for the convenience and improved efficiency of the Executive Office, it has been decided to also make it available to interested members on an IBM format 51/4 inch floppy disk. The database can be supplied either in a dBase III Plus .DBF file, or in an ASCII format which can be imported into virtually any database or word processor program.

The cost of this index on disk will be $10.00, which includes the floppy disk and packing and postage. When ordering, please indicate which of the .DBF or ASCII formats you require.

Perhaps some enthusiastic member may care to extend the database back even further for us, say to 30 years, or even more?

For those members who would like a copy of the index, but do not have an IBM compatible computer, a photocopy of the 36 page hardcopy printout of the database will be available for $5.00, which will also include packing and postage.

As recently advised to members in Amateur Radio magazine and the WIA news broadcasts, the Executive Office is currently clearing out stocks of back issues of Amateur Radio. This index may be just what you need to decide which particular back issues of Amateur Radio you require.

If you want to order a copy of the 20 year index to Amateur Radio magazine, please forward your remittance to:

Amateur Radio Index, PO Box 300, Caulfield South 3162 VICTORIA.

Intruder Watch

As has been said on many occasions before, the Intruder Watch service is vital to the protection of our amateur bands, and the future of amateur radio as we know it.

Some of our intruder watchers have asked what happens to their reports. Does the government do anything about the reports?

In response to a query to DoTC, I received a letter dated 10th August 1989 from Bill May, the Acting Manager Regulatory in Canberra, which clearly explains the importance of intruder watch reports from the amateur service.

Bill wrote:

"I refer to the regular reports of intrusion into the amateur bands by non amateur stations, provided to the Department by the WIA.

I would like to say that DoTC is appreciative of the efforts by WIA members in providing the information. As you are aware, DoTC monitoring staff has been drastically reduced over the years and

continued on page 13

Notice

Attention is drawn to the article on page 31 of the September issue of Amateur Radio magazine concerning the use of 3 pin plugs in 12 volt harnesses.

The WIA is concerned that such an article was published, despite the warnings contained therein and, without being critical of the author, who took pains to emphasise the need for care, wishes to announce that editorial procedures have been changed to avoid a similar incident.

Neither the Executive, nor any organ of the WIA, would knowingly allow such an item to be published. However, the fact remains that it has been published, and morally there is an element of corporate responsibility. Accordingly, the Executive apologises for the appearance of the article.

It goes without saying that the WIA warns of the possible danger of using standard 3 pin connectors in 12 volt applications. This danger would be increased if the suggested labelling was not applied, or if the wiring harness came into the hands of illiterate persons or children.

It is strongly suggested that members mark their copies of the article appropriately. ar

A Simple Non-Mathematical Treatment of Transmission Lines

Dr J G Lucas VK2CJL
Air Navigation
Research Group
University of Sydney

Most books and explanations of transmission lines are, in my view, incredibly complicated and overly mathematical in their treatment of the subject! The tendency is to emphasise mathematical approaches which often hide the simple understanding of transmission line operation.

There are essentially two problems (see Figure 1) associated with using transmission lines. The first problem is effects caused by a load when it is not a perfect "match" (which is fairly typical of most amateur antennas), and the second is caused by an incorrect source impedance at the sending end of the line. We will concentrate here on the effects of the load impedance and summarise the effects of the source at the end.

All of the following comments apply to transmission lines whether they are balanced (eg parallel wire lines) or unbalanced (eg coaxial cable) or even a waveguide.

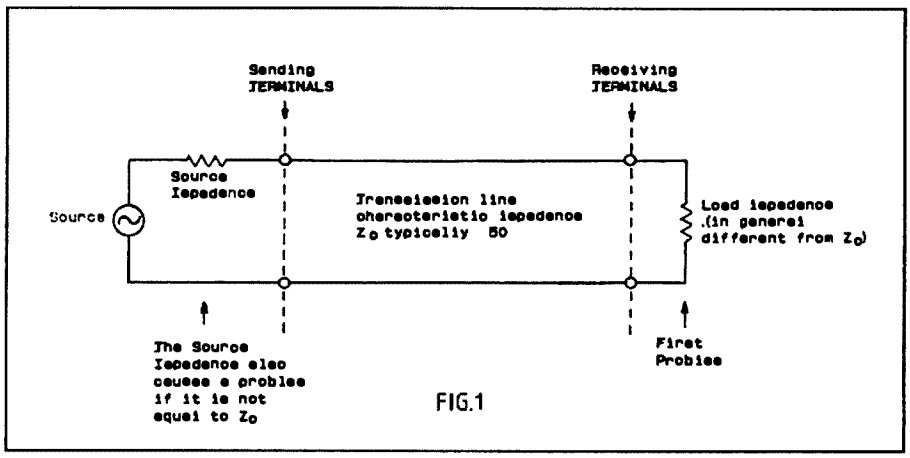


FIG.1

Characteristic Impedance

The concept of the "characteristic impedance" of a transmission line must be well understood to begin with. Referring to Figure 2 the "characteristic impedance" is defined as the impedance Z_o that we could measure (ie applied voltage divided by resultant current) looking into the input terminals of the line when it is INFINITELY long. It follows, that if we terminate a finite piece of transmission line having a characteristic impedance Z_o with this same impedance Z_o, then this is equivalent to connecting an infinite line onto the end of the finite line so that the input impedance is still equal to Z_o. At typical amateur frequencies (say up to 150 MHz) commonly used transmission lines can be accurately assumed to have a purely real (ie Resistive) characteristic impedance. 50Ω, 70Ω and 300Ω are commonly used values. For the remainder of this note it will be implicitly assumed that the characteristic impedance is purely resistive.

The Idea of "Switching On" the Transmission Line

It is helpful to visualise the sequence of events which takes place when we first switch ON a source (at one particular frequency) at the sending end of the line. Since the characteristic impedance is purely resistive then the first "wave" of voltage and current which starts off down the line must have its voltage and current in phase and the ratio Vi/Ii shown in Figure 3 will equal Z_o. One of the commonest values of Z_o which is used is 50Ω and that is the value which we shall assume exclusively here. As this voltage and current wave travels down the line the phase of the progressive wave will change with respect to the phase of the wave at the input terminals - other words, it does take a very small but FINITE time (at the velocity[1] of the wave of on the line) to travel down the line. Figure 2 shows the way we depict this and particularly the direction of rotation of the vectors for leading and lagging phase as we move down the line in the direction of the load.

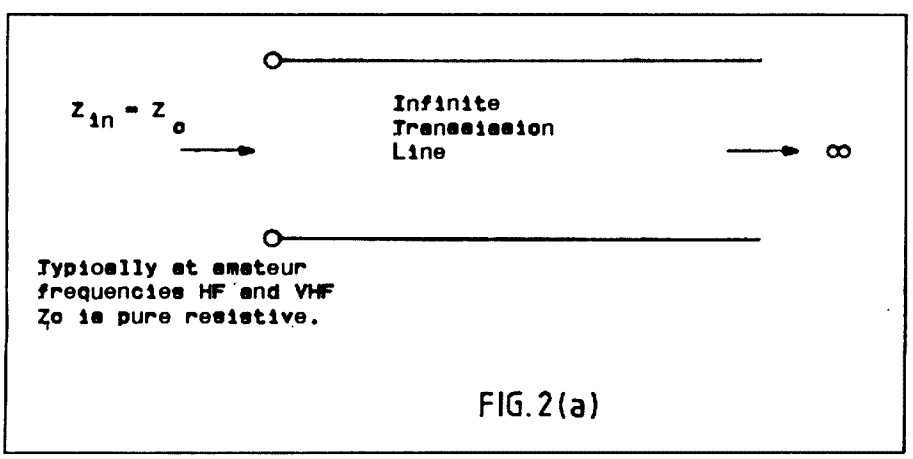


FIG.2(a)

This first wave travelling down the line will think it is travelling down an infinite transmission line until it encounters a termination at a finite distance. As shown in Figure 3, this incident wave will proceed into the load and if Z_{load} is equal to the characteristic impedance (say 50Ω) the wave will be completely absorbed by the load. For ANY other value of load impedance different from 50Ω a REFLECTED wave will occur and this reflected wave will travel BACK from the load towards the generator.

Total Reflection Situations

To start off with, let's consider some different examples where the total incident wave is reflected back down the line towards the sending end.

1. Total Reflection by an Open Circuit at the end of the Transmission Line.
   The open circuit situation is shown in Figure 4. None of this power in the incident wave can be absorbed so it will all be reflected back down the line towards the generator. We would expect to measure a different open circuit voltage and no current at the load terminals. The reflected current must, therefore, exactly cancel the incident current. The reflected wave is travelling on a 50Ω line so there will be an associated voltage with the reflected current such that |Vref/Iref| = 50Ω. The vertical bars denote the magnitude of the quantity inside. We can deduce that the only possible arrangement of incident and reflected waves which gives the required result is that shown in Figure 4. The shape of the reflected wave has current and voltage exactly opposed to each other, but the MAGNITUDE of the ratio Vref/Iref must still equal 50Ω. This gives a voltage of 2Vinc.
2. Total Reflection by a Short Circuit at the end of the Transmission Line:
   This situation is shown in Figure 5. Using the same logic as in the open circuit case, we would expect zero voltage and a doubling of current at the load terminals. It is clear again, that the arrangement of the reflected voltage and current wave has exactly the same shape as in the open circuit case. It is only the orientation of the reflected wave with respect to the incident wave which is different in the two cases!
3. Total Reflection due to any Pure Reactance Load at the end of the Transmission Line:
   The situation is now shown in Figure 6.

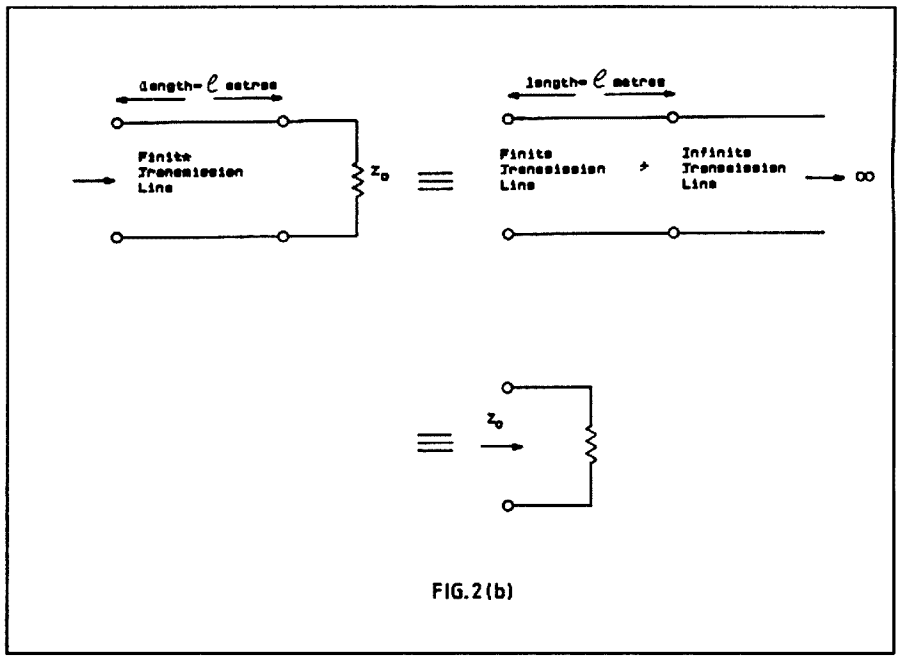


FIG. 2 (b)

This is, again, a total reflection situation but the incident and reflected vectors are no longer in line. When the (vector) resultants of voltage and current are found, it is clear the V lags I, so this particular load is capacitive. Any value of capacitance can be obtained simply by rotating the position of the reflected voltage vector in the right half plane. For inductive loads the reflected voltage vector is simply on the left hand plane.

Now let us move on to some simple Partial Reflection Situations:

(1) Load = purely resistive = $^1/_2$ the characteristic impedance (say 25Ω).

This situation is shown in Figure 7. The reflected wave is now needed to reduce the TOTAL voltage and increase the TOTAL current such that the ratio Vtotal/Itotal = 25Ω. The necessary arrangement to achieve this is also shown in Figure 7 and it can be seen that the magnitudes of the reflected wave are smaller than the incident but still obey the ratio of magnitudes:

$$\left|\frac{\text{Vreflected}}{\text{Ireflected}}\right| = 50\Omega$$

Here, again, the vertical bars denote the magnitude of the quantity inside.

To find the size of the reflected wave let:

Vreflected = X * Vincident Where X must be a fraction between 0 and 1!

It follows that:

Ireflected = X * Iincident

From Figure 7 we can thus deduce:

$$\frac{\text{Vtotal}}{\text{Itotal}} = \frac{\text{Vinc-X Vinc}}{\text{Iinc+X Iinc}} = \frac{\text{Vinc(1-X)}}{\text{Iinc(1+X)}}$$

And this must equal 25Ω.

$$50\ \frac{(1-X)}{(1+X)} = 25$$

Therefore, $X = {}^1/_3$

The complete multiplier that gives the reflected wave from the incident wave is called Voltage Reflection Coefficient and it also includes the angle between the incident and reflected waves.

Let's call this complete multiplier *K*. For the case we have just considered it should be clear that $K = -{}^1/_3$

Or alternatively $K = {}^1/_3$ at 180°

So we can see that the "Reflection Coefficient" contains both the magnitude AND the phase modifier needed to transform the incident voltage to the reflected voltage!

(2) Consider another partial reflection situation where the terminating load is purely resistive and equal to twice the characteristic impedance, ie 100Ω.

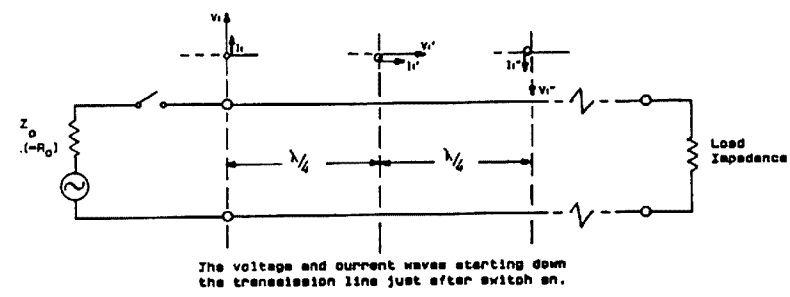


FIG. 2 (c)

CHRISTMAS COMES EARLY TO EMTRONICS

Look at these prices! They cannot last

ICOM

Limited Quantity

Super Special
IC2 GAT
- 7 watts output at 13.8V
- 20 memories
- Digital Touchstep tuning
- Band & memory scan
- Progammable call channel

Normally $660 - Only $399

TRANSCEIVERS

* IC-781 HF	$8175
* IC-765PRO HF	$4185
* IC-751A HF	$1990
* IC-735 HF mobile	$1575
* IC-725 HF mobile	$1195
* IC-275A 2mtr base	$1495
* IC-275H 2mtr base	$1585
* IC-28A 2mtr mobile	$549
* IC-28H 2mtr mobile	$585
* IC-228A 2mtr mobile	$675
* IC-02AT 2mtr h/h	$386
* IC-U2AT 2mtr h/h	$385
* IC-2SAT 2mtr h/h	$495
* IC-475A 70cm base	$1675
* IC-475H 70cm base	$1795
* IC-48A 70cm mobile	$599
* IC-04AT 70cm h/h	$440
* IC-4AT 70cm h/h	$445
* IC-3210 Dual Band mobile	$785
* IC-32AT Dual Band h/h	$699
* IC-726 HF plus 6mtrs	$1675

RECEIVERS

* R71A 100kHz-30MHz	$1450
* R7000 25MHz-2GHz	$1645
* R9000 100kHz-2GHz	$6350

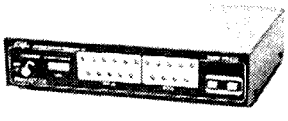
Sorry no credit cards at these prices on Icom products.

JOIN PACKET

New PK-232 Breakthrough
A new software enhancement makes the AEA PK-232 the only amateur data controller to offer six transmit/receive modes in a single unit.

• Morse Code • BAUDOT (RTTY) • ASCII • AMTOR • Packet • Weather FAX

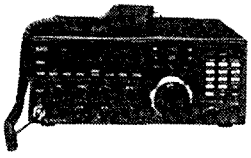
PRICE $640 with FAX



• PK88 VHF modem $350

JRC

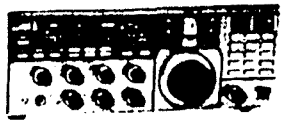
NOW IN STOCK - NEW



JST 135-150 watts

• The ultimate HF Transceiver
Price $3199

• Built by the professional for the connoisseur.

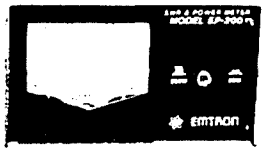


NRD 525 Receiver

* Superb performance
* Quality manufacture
* 200 memories
* VHF/UHF option avail.
* RS 232 option avail.

Price $2599

EMTRON PRODUCTS
EMTRON'S PRECISION CROSS-NEEDLE SWR AND POWER METER



EP2000

Yes, this new from EMTRON, highly accurate CROSS-NEEDLE SWR and POWER meter, model EP-200 with a frequency range from 1.8 MHz to 60 MHz and 3 power ranges 20, 200, 2kw gives instantaneous readings of forward/reverse power and SWR. **PRICE $110**

* EAT 300 Antenna Tuner	$259
* EAT 300A Antenna Tuner	$369
* EAA 230 Active Antenna	$199
* EPI SWR Meter	$59
* ENB2 Noise Bridge	$129
* EDMI Dip Meter	$99

KENWOOD

TM 231A

* 2 metre mobile 50 watts 20 memories
PRICE $598

TRANSCEIVERS

* TS-940 HF base	$4250
* TS-440 HF mobile	$2399
* TS-680 HF + 6 metres	$1820
* TS-790 3 band allmode	$3799
* TR-751A 2mtr all mode	$1090
* TM-721A dual band	$1040
* TM-701A dual band economy	$985
* TH-215A 2mtr h/h	$500
* TH-25A 2mtr h/h	$560
* TH-415 70cm h/h	$520
* TH-45 70cm h/h	$587

RECEIVERS

* R5000 100kHz-30MHz	$1550

AMPLIFIERS

* TL922 2kw WO tubes	$2500

POWER SUPPLIES

* PS50 20 amp	$549

VHF CONVERTER

* VC20	$270

NEW FROM A.E.A.

MM3 Morse Machine

Featuring:
* 2-99 WPM speed selection
* 20 memory channels
* 8000 character storage
* RS232 compatible
* Programmable auto beacon
* Random word generator
* QSO simulator
* Fully featured keyer

ONLY $425

MAIL ORDERS WELCOME

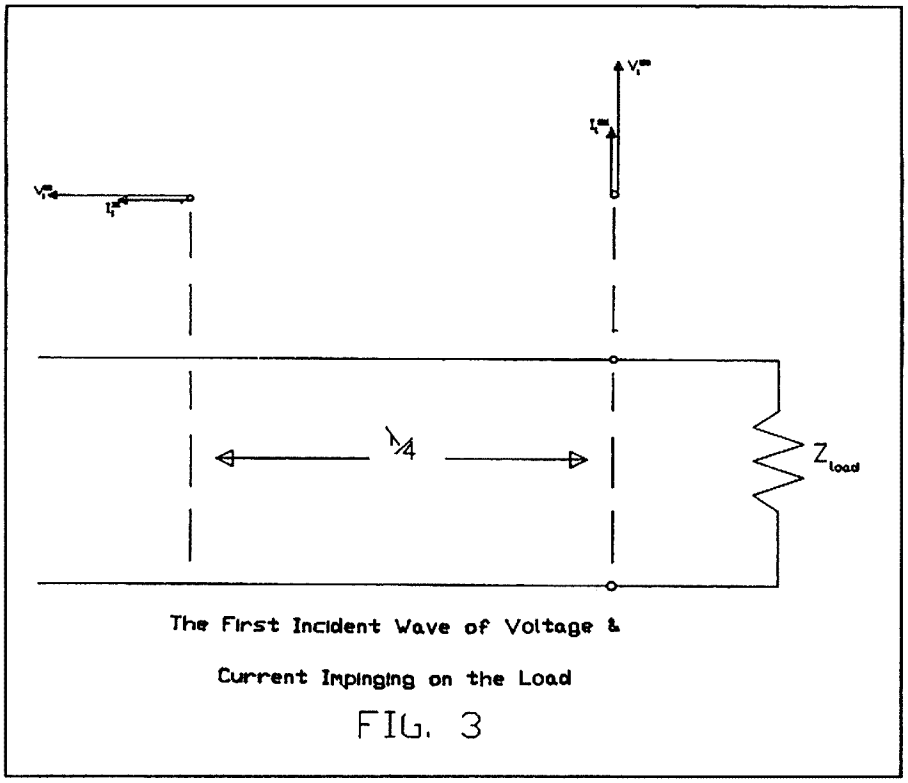
BANKCARD MASTERCARD & VISA WELCOME

EMTRONICS

NSW & HEAD OFFICE:
92-94 Wentworth Ave, Sydney
NSW, 2000. TLX: AA73990
PO Box K21, Haymarket, NSW, 2000
Ph: (02) 211 0988 Fax: (02) 281 1508

VICTORIA:
288-294 Queen St, Melbourne Vic, 3000
Entrance from Lt. Lonsdale St.
Ph: (03) 670 0330 Fax: (03) 670 0671

QUEENSLAND:
416 Logan Road, Stones Corner, Qld, 4120.
Ph: (07) 394 2555 Fax: (07) 394 4316



The First Incident Wave of Voltage & Current Impinging on the Load

FIG. 3

The receiving end situation is then shown in Figure 8.

In this case the Reflection Coefficient $K = +{}^{1}/_{3}$ or ${}^{1}/_{3}$ at 0°

The Behaviour of the Reflected Wave Back Down the Line

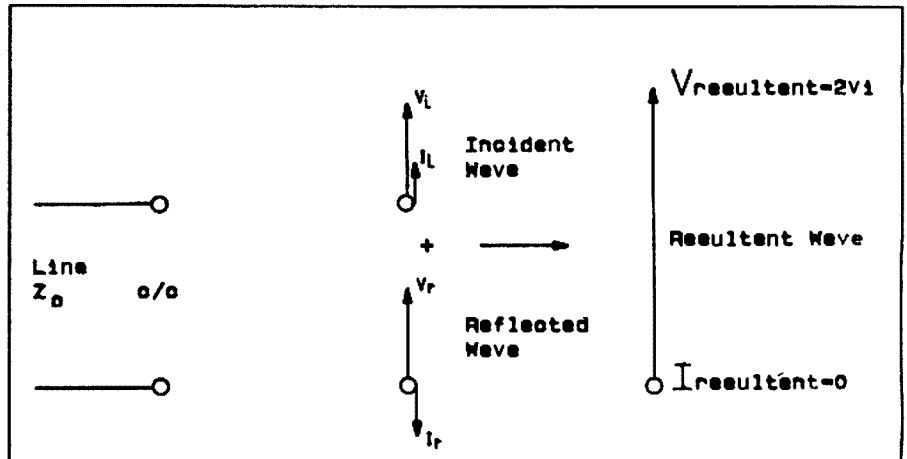
We shall use the 100Ω load example shown in Figure 9 to follow the reflected wave as it moves away from the load. In this Figure the progressive INCIDENT wave is depicted above the drawing of the transmission line while the progressive REFLECTED wave is shown below. It should be clear that this incident wave lags (rotates in a clockwise direction) with respect to the sending end phase as it approaches the load. Alternatively, this is equivalent to the incident vector leading in phase with respect to the load terminals as we move away from the load termination back towards the generator.

Now the Reflected wave caused by the mismatched load actually starts at the load terminals so that it must LAG in phase with respect to the load terminals as you move back towards the generator end. The phase rotation of this reflected vector must, therefore, be exactly the opposite way to that of the incident vector as we move away from the load. At a point one eight of a wavelength back from the receiving terminals the wave vectors will have the positions shown in Figure 9 and will continue to rotate as shown by the arrows as we move further back down the line towards the generator.

At any point on the line the incident and reflected components of voltage can be vectorially added (current vectors similarly) and the effective impedance which exists at that point on the line could be evaluated, by evaluating the ratio of the resultant voltage vector and resultant current vector and taking due account of phase. It is important to see that this impedance is changing continuously as we move along the line. It will pass through points where the voltages add in phase (and the currents subtract) which have a maximum pure resistance value and also throughpoints where the currents add in phase (and the voltages subtract) which have a minimum pure resistance. In other words, we are simply describing the Voltage Standing Wave pattern (often referred to as the VSWR) which exists on the transmission line when it has a mismatched load!

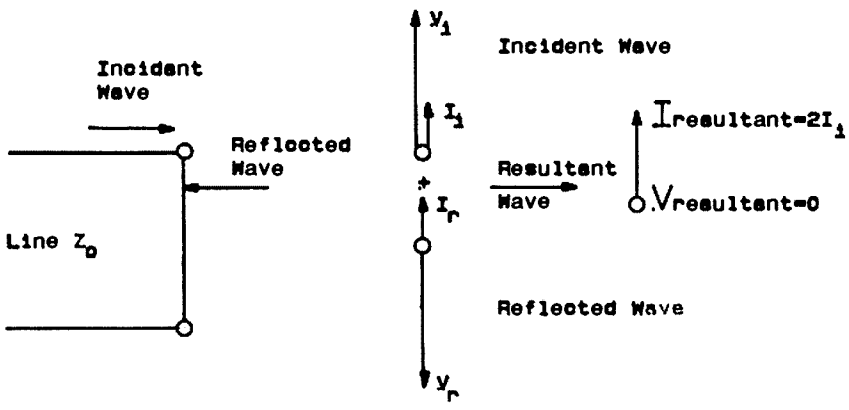
This all sounds like a lot to have to remember! However, there is a classically simple graphical aid called the SMITH chart which does ALL the hard work for you. The beautiful simplicity of the Smith chart is often thoroughly obscured in its mathematical development! That development is completely unnecessary! You ONLY need to know that it is a chart of REFLECTION COEFFICIENT! The Smith chart ALWAYS normalises the incident Voltage wave vector to be the radius AB in Figure 10 and this lets you simply plot the reflected voltage vector just as we have done up to now.

Let's take an example of a transmission line which has a 50Ω characteristic impedance and is terminated with a load of (100 - j100)Ω - this is physically equivalent to a resistance and a capacitance in series. The first step is to "normalise" this load to the characteristic impedance so that:



Total Reflection Situation - Open Circuit

FIG.4



Total Reflection Situation - Short Circuit

FIG.5

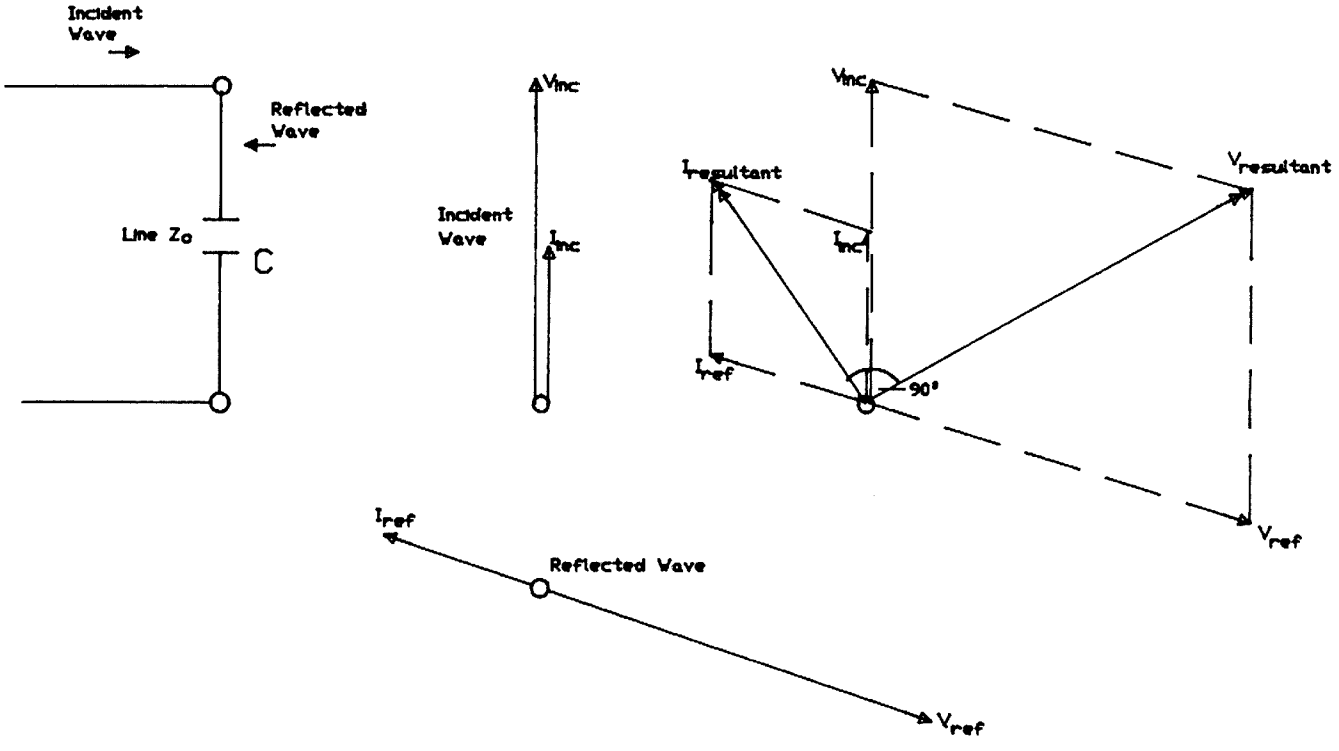
Z loadnormalised

$$= \frac{R}{Zo} + j\frac{X}{Zo} = \frac{100}{50} - j\frac{100}{50}$$

$$= (2 - j2) \text{ "normalised" Ohms}$$

We plot this value on the Smith Chart in Figure 10 by finding the intersection of the $-j2.0$ arc (ie 2.0 on the "capacitor reactance component" edge of the chart) with the 2.0 arc (through 2.0 "resistive component" on the horizontal scale across the diameter of the chart.)

We immediately have the arrangement of incident and reflected voltage wave vectors at the load terminals! Now as we move back down the transmission line (which we shall assume to be lossless) the reflected vector rotates on a circular arc. Because the incident vector has been frozen to always lie along AB it is clear that this reflected vector has to rotate twice as fast to maintain the expected result. The distance scales around the circumference of the Smith chart take care of it all for us in any event!



Total Reflection Situation - Pure Capacitive Reactance

FIG. 6

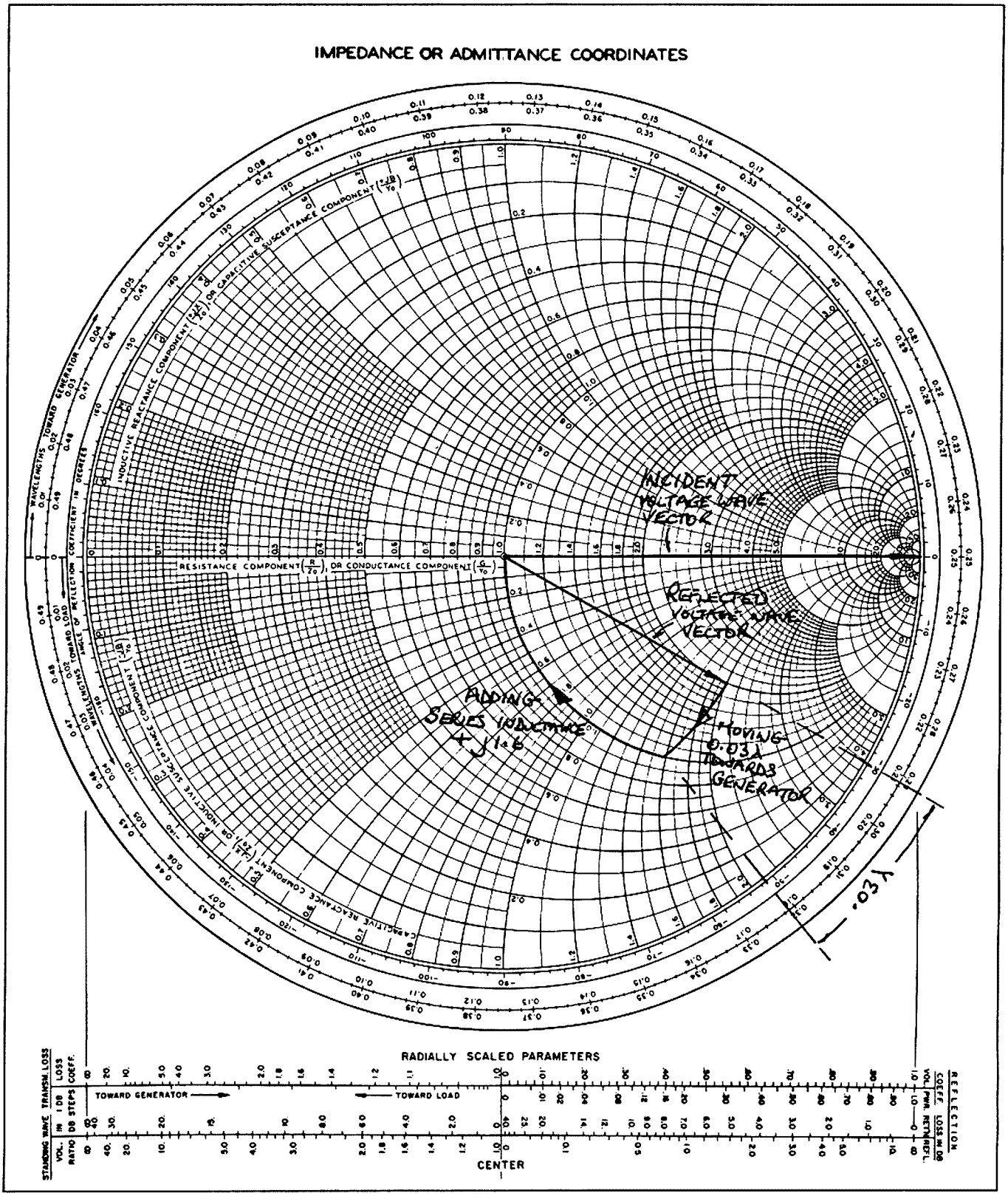


Figure 10. Smith Chart

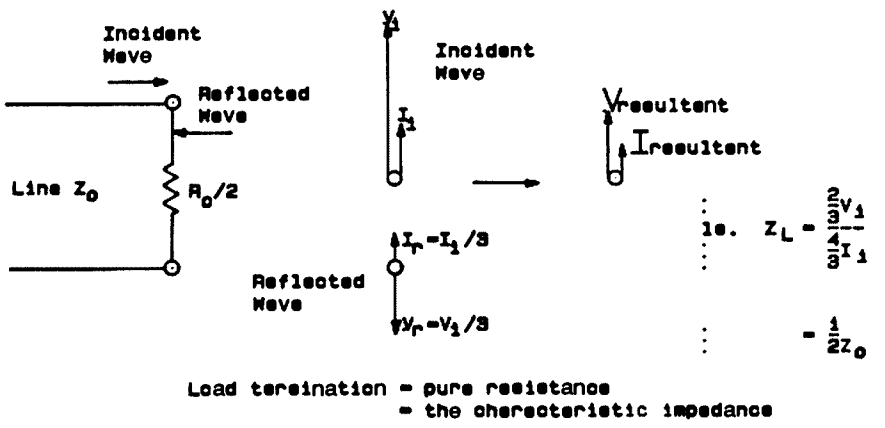


FIG.7

For any of our practical operations we simply want to remove the reflected wave completely and then the line will be perfectly matched. For the mismatched load example in Figure 10 we can completely eliminate the reflected wave by moving down the transmission line (away from the load) towards the generator (ie on a concentric arc on the Smith Chart) to the point C which lies on the 1.0 resistor component circle and there insert a series inductance of value $+j$ 1.6. This will take us to the centre of the Smith Chart eliminating the reflected wave and giving a perfectly matched transmission line.

The Problem with a Mismatched Source

At the beginning it was mentioned that the source generator should also be matched. This important step is often overlooked, but it should be quite clear that if a line has a mismatched load then any reflections which arrive back at the source generator will be reflected back towards the load if the generator does not present a good match to the line. Such a source reflection really complicates the operation of a transmission line and should be avoided wherever possible!

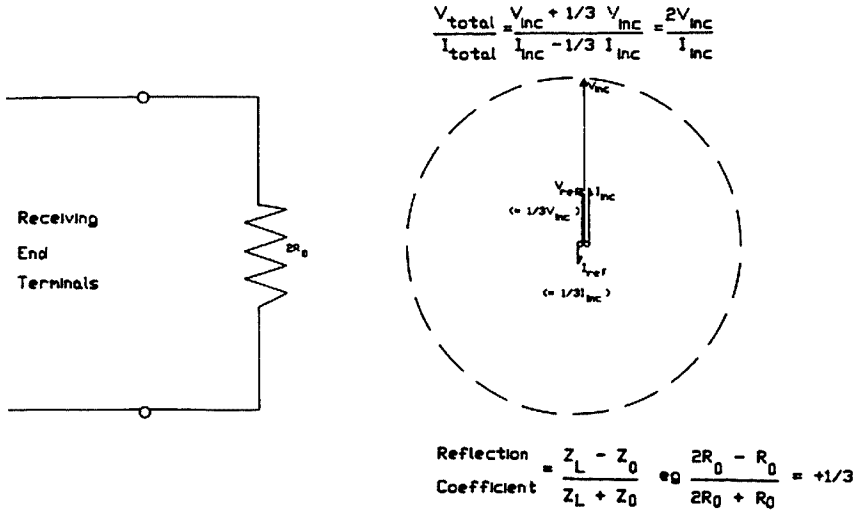
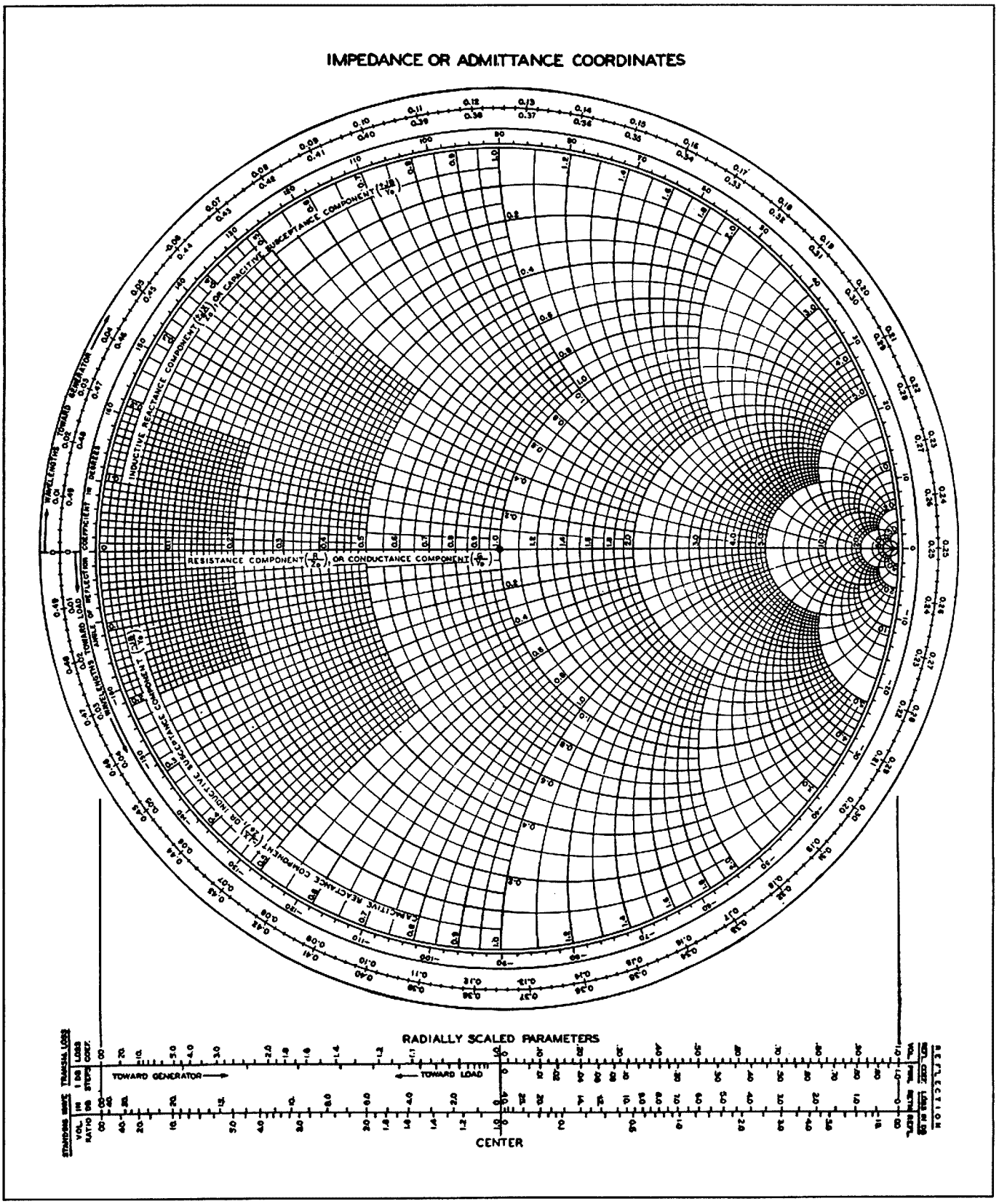


FIG. 8



Blank Smith Chart for Reader's use.

Conclusion

On getting to this point you might ask:

1. Can we really understand and cope with transmission lines without ANY mathematics AT ALL? The simple answer is yes. The mathematics really do not add any further understanding (but you do need some mathematics to properly analyse the mismatched source situation.)
2. Do we get enough accuracy reading quantities off the Smith chart compare with the four places of decimals that a computer or calculator will give us? In practice, the precision of the Smith chart reading is generally as accurate as you can cut a transmission line (or know its dielectric constant etc!).

Once transmission line ideas are mastered, you will find that Scattering Parameters are a straightforward extension of these ideas. They are important because they are the only parameter set which can be accurately measured at frequencies above a few MHz.

[1] This is the velocity of light, "c" in an air spaced line - less than c in dielectric filled coax or a waveguide.

Acknowledgements

I am indebted to Frank Butler VK2ZRB for doing such an excellent job of reproducing the Figures for this article from very rough sketches. I would also like to thank John Gibling VK2EKG for his thoroughly constructive criticisms of the final draft.

Short Profile on Dr J Godfrey Lucas

Godfrey Lucas came to Australia (from Northern Ireland) Christmas 1968. He leads the Air Navigation Research Group in Sydney University which works on the Landing Systems, En-route navigational aids, Primary and Secondary radar and Satellite systems with recent special interests at L-band. He got his amateur licence about three years ago but hasn't been able to find much time to go to air! ar

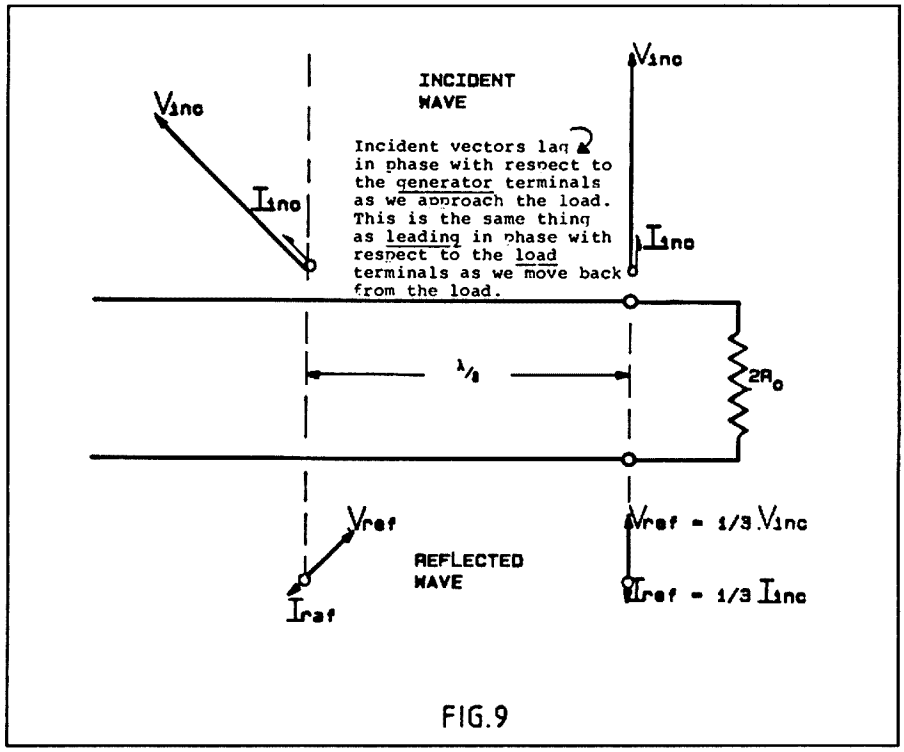


FIG.9

WIA NEWS *continued from page 4*

we are faced with the task of having to make the hard decisions of where to allocate the resources in the most effective way. I can assure you that you are certainly providing a valuable service in that part of the spectrum which is regarded as being self regulating.

With regards to the Intruder Watch reports, DoTC actions all instances where the intruder is identified as an Australian station. A recent report mentioned Townsville Radio (VIT) as an intruder. OTC was contacted and although a thorough investigation was undertaken, no explanation could be given.

Any intrusion by overseas stations is difficult to curtail. Although it may be reported to the country concerned, it is up to that country to take corrective action. In many instances, they have acknowledged that because of resource constraints they are unable to do anything. The intruders from Indonesia, China and Russia are still occurring despite repeated approaches. However, DoTC is still continuing its' efforts in regard to these matters.

It would be of immense value to DoTC in tracking down any intruders if the "comments" of the intruder report could include

continued on page 18

An Introduction to Synchro Torque Transmitters and Indicators

(Selsyns to you and me)

Dean Probert VK5LB
RMD Verrall Road
Hope Forest 5172

Part One

Introduction

Recently an advertisement published in AR for the author, who wanted a pair of selsyns, brought a varied amount of interest in the subject to light. The author had a large number of responses to the advertisement from people both wanting to sell selsyns and those wanting information about them.

The author obtained two transmitters and two receivers fro $5.00 each making a total of $20.00 outlay. That is the going price for good selsyns in South Australia at the moment. Numerous interstate telephone calls were received also. Some had selsyns to sell but the majority wanted information, on every imaginable subject concerning selsyns. The author had, as it happened, obtained a large amount of information concerning them prior to placing the advertisement. The following may be of use to those persons who need a means of indicating beam headings or similar functions.

What is a Synchro?

A simple synchro system is easily understood if it is thought of as an electrical equivalent of a long shaft or cable which transmits motion from one point to another. If a shaft has a pointer at both ends then, when the shaft is rotated 180 degrees, the pointer at one end will be in the same position as the other, provided they were the same when you began.

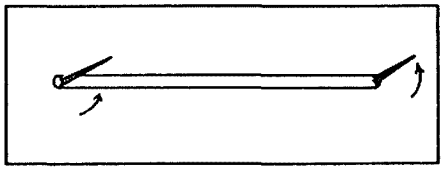


Figure 1

It is not practical to have either a shaft or a flexible cable running from a beam on a tower down to the shack to indicated beam headings. To overcome this problem of transmitting dial readings over a long distance a synchro transmitter and suitable receiver can be used. When two synchros are connected together, and to a source of AC voltage, they form a synchro system.

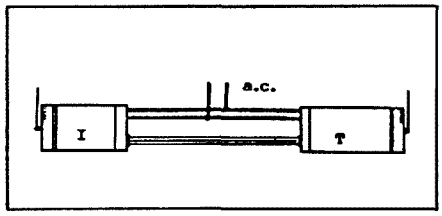


Figure 2

A simple synchro system can be used to turn light loads such as dials and pointers. If more torque is required to turn a heavier load, then additional components will be required. For beam headings, a transmitter at the beam and an indicator in the shack will be sufficient. In such a system, when the shaft of the transmitter is tuned by the rotator on the tower, an electrical signal is generated and transmitted to the indicator. This signal acts upon the indicator rotor causing its shaft to rotate exactly the same number of degrees as the transmitter shaft.

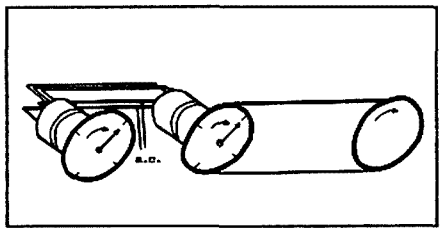
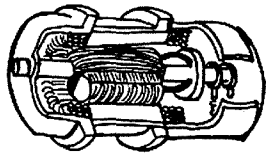


Figure 3

Synchro Torque Transmitter Construction

The synchro is very similar in construction to an ordinary motor or generator. It has two main parts, a stator and a rotor. The stator winding is actually three separate windings spaced 120 degrees apart. Three leads, one from each of the windings, are connected together to form a common connection. The remaining three leads are brought out to external connections marked 1, 2 and 3 on the back of the unit. Each connection is wired to a similar numbered connection on the corresponding synchro. The AC leads are marked X and Y and the same applies.

Figure 4



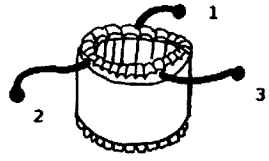
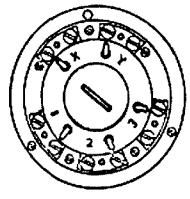


Figure 5

These three windings are connected in what is called a star connection. The diagram shows the schematic symbol representing the stator windings.

Figure 6



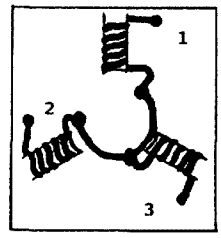
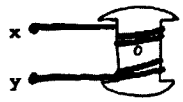


Figure 7

The rotor is made up of two coils connected in series forming a continuous winding. These coils are wound on a laminated, bobbin shaped iron core to form the com-

plete rotor assembly. Bearings support the rotor at each end and the electrical connections are made by means of two slip rings on the rotor shaft. Two brushes bear against the slip rings. When the rotor is fitted inside the shell containing the three star windings, 1, 2 and 3, it is free to turn. Current is supplied to the rotor windings by the leads marked X and Y. This current is from an AC voltage source. The complete torque transmitter schematic is illustrated in Figure 9.

Figure 8



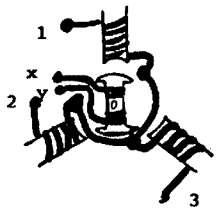


Figure 9

Synchro Torque Indicator

The synchro indicator (or receiver) is similar to the synchro transmitter both in construction and electrical operation. The stators are exactly alike. The rotors are also alike, except that the rotor of the indicator has a heavy metal flywheel, called a damper, mounted on one end of the shaft. The purpose of the damper is to prevent the shaft of the indicator from oscillating or spinning at high speed. Without the flywheel, this would happen when the shaft was turned suddenly or when the power was first turned on.

There are a couple of different methods of using the flywheel effect. The flywheel may be mounted on the shaft so that it turns for 45 degrees independently of the shaft but then is stopped by a keyway. The shaft to flywheel fitting has a friction disc fitted in such a way as that it turns on the shaft with a certain amount of friction. When the shaft turns suddenly the inertia of the flywheel tends to resist the the turning movement. The keyed bushing, hitting against the flywheel acts as a brake and, thus, the shaft never gets going fast enough to start oscillating or spinning.

Another form of flywheel is the L shaped soft iron rotor which is balanced so that its equilibrium position is independent of gravity. The stator winding is a three phase winding as previously described. To obtain self alignment without an energised rotor, a fixed polarizing coil is connected to the same AC supply used to energise the transmitter rotor. In effect, magnetic slip rings are used instead of electrical slip rings. The vane rotor is effectively an AC magnet having a definite polarity in relation to the AC supply and, therefore, aligns itself with the stator field.

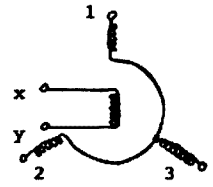
There is no reason why a synchro torque transmission system cannot be set up using two transmitters for beam indication purposes. The beams are generally rotated at about one rpm and so sudden start-up or stops are not of concern.

The needle movement of a transmitter which is used as an indicator is not as sharp or swift as the transmitter and indicator combination. They "chug" a bit when rotating but do still work, and they have plenty of torque.

The author could not get two indicators to work when connected as transmitter and indicator.

Figure 10 shows the schematic symbol of both the transmitter and receiver synchros but drawn in a different interpretation to Figure 9. They are essentially the same though. From describing how synchros are constructed, we may now move on and discuss how they work.

Figure 10



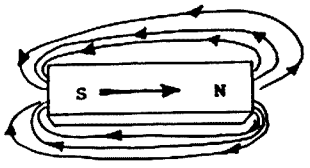


Figure 11

Magnetic Fields

Looking at Figure 11 probably brings back some theory half forgotten. Magnetic lines of force flow from the South pole to the North pole within the magnet.

Now, consider two bar magnets, one of which is permanently fixed in place and the other which is free to rotate about a central pivot. If the free bar magnet is rotated until its north pole is facing the north pole of the other magnet, a strong force of repulsion is set up. Like poles repel each other.

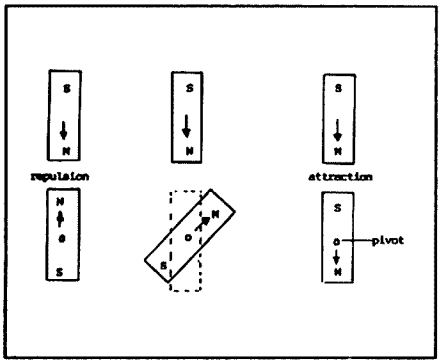


Figure 12

So, when the magnetic fields are in opposition (repulsion) a strong force exists between the two fields. Similarly when the fields are aiding each other (attraction) a strong force, attracting this time, exists.

Suppose we have three magnets as in Figure 13, of equal strength spaced 120 degrees apart, with all being pivoted so as to be free to swing. The individual magnetic fields of the three outer magnets act on the inner magnet so that the combined fields of the outer magnets form one resultant magnetic force field.

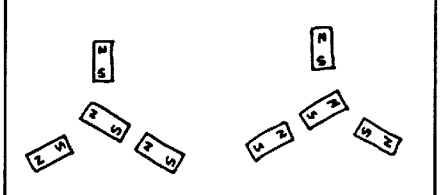


Figure 13 *Figure 14*

If the bottom two magnets are reversed so their fields are reversed then the combined magnetic fields of the three outer magnets act on the inner magnet as in Figure 14.

Simple Transformer Theory

Looking at Figure 15, one cannot help but see four windings on magnetic cores. These windings make up the stator and rotor of the synchro as described. If an AC voltage is applied to the rotor of a synchro transmitter, an alternating magnetic field will be built up about the rotor winding. This alternating magnetic field will cut through the turns of the three stator windings and, by transformer action will induce a voltage in them. The rotor and the stator windings of a synchro act just like the primary and

secondary of an ordinary transformer. If we apply AC voltage to the rotor in Figure 15 a magnetic field is induced. Now Lenz's law states that whenever a magnetic field cuts through a coil and induces a voltage in the coil which causes current to flow, that current will, in turn, generate its own magnetic field, and this field will oppose the original inducing magnetic field. That is, if a load is connected to the secondary winding. In other words, the magnetic field generated in the secondary will act in exactly the opposite direction to the primary magnetic field.

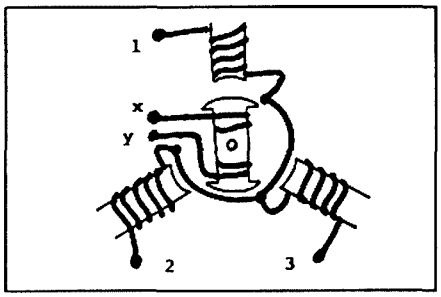


Figure 15

The direction of the primary field in Figure 16 is upward but the direction of the secondary magnetic field is downward because the current flowing in the secondary has been caused by the cutting action of the primary magnetic field.

How the Synchro Transmitter-Indicator Team Works

If we connect as a load across the three stator windings of a transmitter the stator windings of a synchro indicator the magnetic field generated by the current in the transmitter rotor will induce a voltage in each of the stator windings by transformer action and will cause currents to flow. These flowing current in the three windings will combine to form one resultant field as in the case of the three bar magnets.

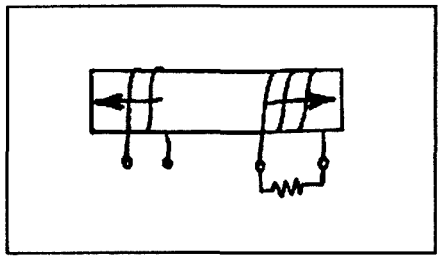


Figure 16

Notice that this resultant magnetic field is in the opposite direction to the original magnetic field of the transmitter rotor. This is correct according to Lenz's law which states that the resultant magnetic field must always oppose the inducing magnetic field of the rotor. If the rotor of the transmitter is turned to any angle, the resultant magnetic field of the stator will always oppose the magnetic field of the rotor.

Note that in Figure 19 the rotor has turned 60 degrees clockwise. So the magnetic fields which exists on the stator and the rotor of the transmitter at this time are opposed to each other. Looking at Figure 18 you will see that currents flowing in the stator windings of the transmitter are also flowing in the stator windings of the indicator.

If you turn the rotor 30 degrees clockwise, its magnetic field will be at an angle of 30 degrees to the top winding. According to Lenz's law, the resultant magnetic field of the stator must oppose the rotor magnetic field. The stator magnetic field will, therefore, also "rotate" 30 degrees so that it still opposes the rotor magnetic field.

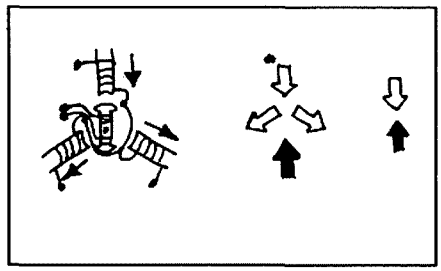


Figure 17

Since the currents flowing in the indicator stator are equal, but opposite in direction, to the currents flowing in the transmitter stator, the resulting magnetic field generated in the indicator stator will oppose the transmitter stator field, and will line up with the transmitter rotor field. If we know that the indicator stator field and the transmitter rotor field always line up with one another, we can be sure of knowing the direction of the indicator stator field once we know the direction of the transmitter rotor field.

If we now place the indicator rotor in its place and the rotors of both transmitter and indicator are connected in parallel as shown in Figure 21, the magnetic fields of both rotors will be in phase - that is, the fields will always be in the same direction.

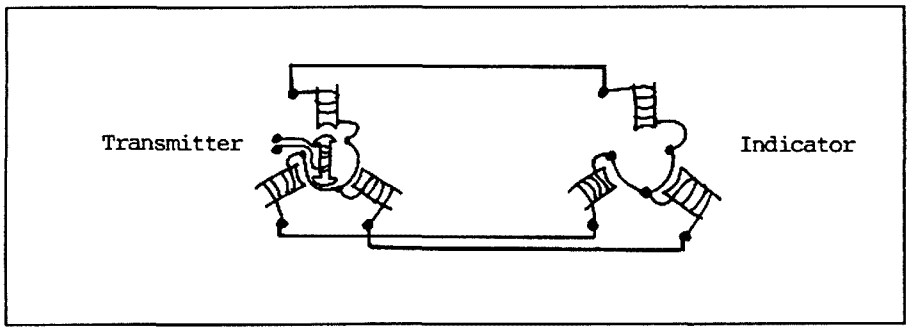


Figure 18

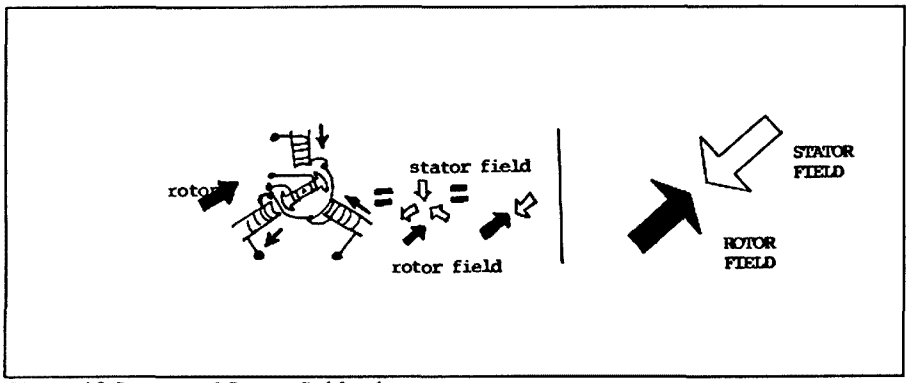


Figure 19 Rotor and Stator fields always oppose

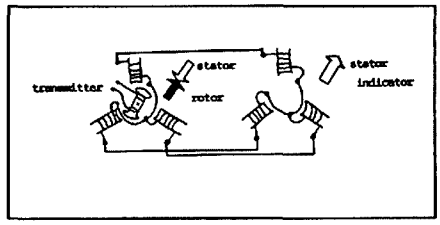


Figure 20

If the rotor of the transmitter is suddenly turned 30 degrees clockwise, the first result will be that the stator field of the indicator is suddenly "displaced" 30 degrees from

KENWOOD

This is DX-clusive

Kenwood engineering pushes the outer edge of the high technology envelope of digital techniques. Digital Signal Processor, high-voltage power amplifiers, and advanced receiver design allows the all-new competition-class TS-950SD HF transceiver to deliver DX-clusive performance second to none.

The TS-950SD is designed for critical applications in SSB, CW, AM, FM, and FSK on all HF Amateur bands, including the new bands.

Features

- Dual Frequency Receive Function
- Built-in Digital Signal Processor
- Outstanding Receive and Transmit Performance
- 150W High Power and Heavy-Duty Cycle Design
- Built-In Automatic Antenna Tuner
- Superior Interference Reduction

KENWOOD ELECTRONICS AUSTRALIA PTY. LTD.

4E WOODCOCK PLACE, LANE COVE, SYDNEY, N.S.W. 2066
Ph. (02) 428 4222, (02) 428 1455. Fax (02) 427 6869
Call now for further information and the name of your nearest authorised Kenwood dealer

Please phone, mail or fax for information

Name _____

Address _____

_____ Postcode _____

Publication _____ Issue _____

Model _____

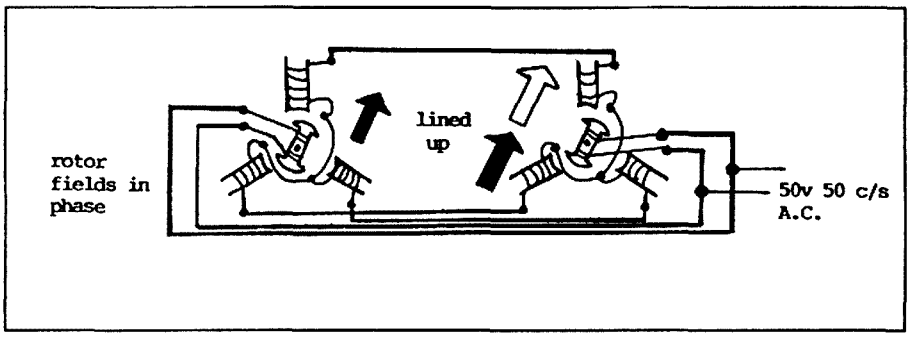


Figure 21

its rotor field. Since the two magnetic fields in the indicator will then be out of line, a strong force of attraction will exist which will tend to bring the magnetic fields back into line, with the *rotor of* the indicator turning until the stator and the rotor fields again line up. We now can see that to whatever position the transmitter rotor is turned, to that position the indicator rotor will quickly follow.

Summary

When a torque synchro system is used to transmit a signal, a movement in the transmitter rotor causes a corresponding movement of the rotor in the synchro indicator. The rotor of the synchro indicator will always duplicate the position of the rotor in the synchro transmitter. What actually happens is that the movement of the transmitter rotor changes the current flowing in the transmitter stator windings, and therefore changes the direction of the stator field. The stator windings of the indicator carry the same current as the stator windings of the transmitter; so movement of the transmitter rotor field also changes the stator currents of the indicator, and therefore the direction of the stator field. The indicator rotor (which is energised from the same source as is the transmitter rotor) then aligns itself with the indicator stator field. The result is that the rotor of the indicator will always turn with the rotor of the transmitter. The author apologises for the rough drawings, but he is no draughtsman. The explanation is a little long winded but worth the effort.

Part Two will contain a review of the author's fun and games setting the transmitter and indicator up to operate and the method of obtaining the correct voltages and phasing.

Also included will be a list of serial numbers which are stamped on the case of selsyn torque transmitters and indicators. There are many different types of selsyns which are not suitable for beam indication purposes and a run-down of these will also be provided. In the meantime, remember that it is not impossible to obtain a pair of selsyns, nor is it difficult to set them up for beam indicating purposes. Prices may vary in different states. The author was offered some new units which may attract a higher price, but that is up to the horse-trader in you. All the author did to obtain his units was to place a WANTED ad in Amateur Radio, so don't say that you don't get value for your yearly subscription. The author does and that is why he can be bothered writing articles for AR, which, incidentally, take quite a lot of time. ar

WIA NEWS *Continued from page 13*

more information. Also, if another column could be added to indicate how long the intruder was present. As you can appreciate, it is impractical to investigate a single occurrence of short duration as it can consume valuable resources with no results. It is best to concentrate on those instances that are continuous or occur regularly.

A strategy which the WIA might consider is to have groups responsible for particular segments of the band. This would share the load and provide the additional information required.

Next year, DoTC will be in a better position to identify and locate the difficult intruders like the RTTY stations etc as we are purchasing a number of high frequency direction finding systems. These will be strategically located around Australia and should enable us to pinpoint intruders."

As you can see from that letter from DoTC, the Department does take intruder watch reports seriously. The suggestions made by Bill May for possible expansion of our reporting are currently being considered by the WIA Federal Intruder Watch Co-ordinator, Gordon Loveday, VK4KAL.

Experimental Atmospheric Sounding Radar in the Darwin Area

Recently the DoTC issued an experimental licence to the Bureau of Meteorology for operation of a VHF atmospheric radar installation in Darwin. This radar station forms part of an international collaborative program of meteorological research for remote sensing of the upper atmosphere, other stations having been established at Christmas Island, Alaska and Pohnpei, with further installations planned for Indonesia and Peru.

The matter of concern to the amateur service is the fact that the radar transmissions will be on a centre frequency of 49.92 MHz, with an RF bandwidth of 0.5 MHz, an average power of 2 kW, and a peak power of 80 kW.

The WIA has been advised that an important parameter of this international program is the operating frequency, which needs to be in the order of 50 MHz to match the scale of the atmospheric disturbances being observed.

The antenna for the radar comprises a phased array which is flat against the ground and gives a narrow beam which points vertically, with the least possible radiation horizontally.

In advising the WIA of this experimental radar station, DoTC informed us that they have requested the Bureau of Meteorology not to continue with this experiment any longer than necessary.

DoTC have obviously taken note of the concerns of local amateurs about the operation of this radar installation, even though the amateur service is the secondary service in the 50 to 52 MHz band. A condition of the licence issued to the Bureau of Meteorology is that there is no protection from interference, and in this regard no amateur need be concerned about any of their transmissions causing interference to the radar installation.

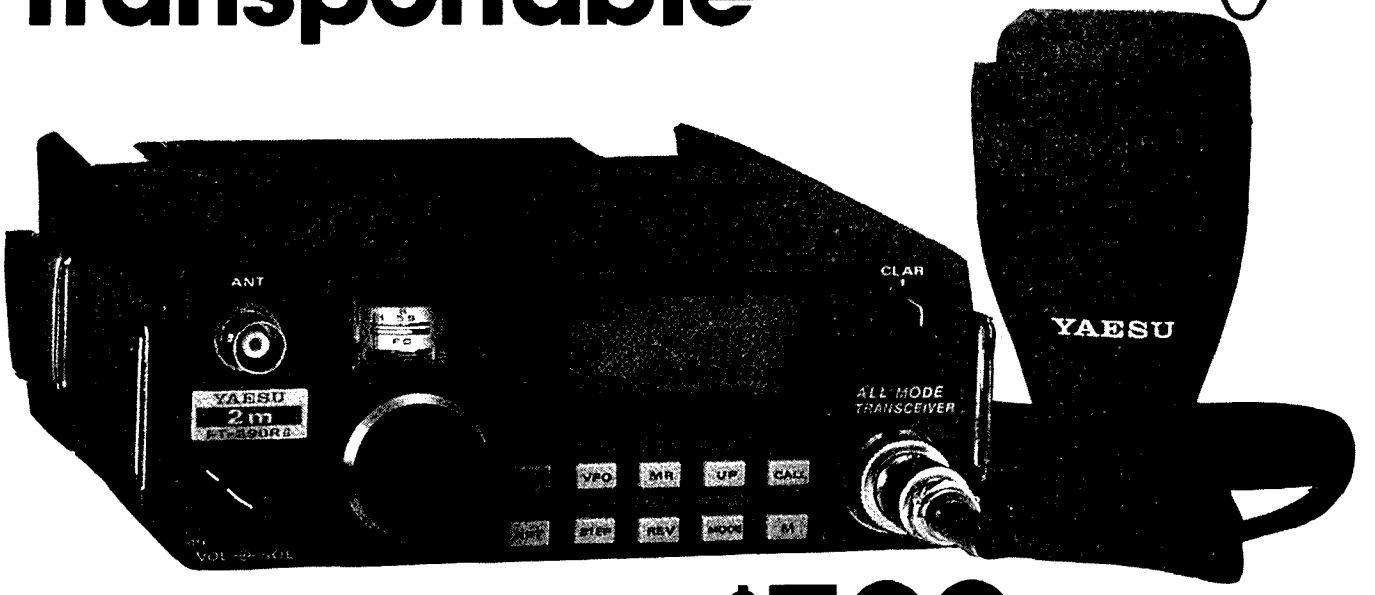
If operation of the radar service causes interference to the amateur service, then DoTC would like to make a value judgement about it before taking any action.

Both the WIA and DoTC would appreci-

Continued Page 28

FT-690RII - Extra High Performance 6M Transportable

YAESU



2 YEAR WARRANTY!

$799

Don't miss out on the best 6 metre DX you are likely to hear for years to come - the 89/90 summer season should be spectacular! The FT-690RII offers an ideal entry point, with all-mode operation (LSB, USB, CW and FM), 10 memories that store mode and repeater offset, 2 independant VFO's (set one on DX segment, the other on the FM segment), all-mode squelch, noise blanker on SSB/CW, 4 tuning steps per mode (25/100/2500Hz/100kHz on SSB/CW, and 5/10/20kHz/1MHz on FM), and selectable 250mW/2.5W output. Unit is supplied with hand microphone and telescopic antenna, with an optional FBA-8 9 x 'C' battery holder available for shoulder-carried portable operation.

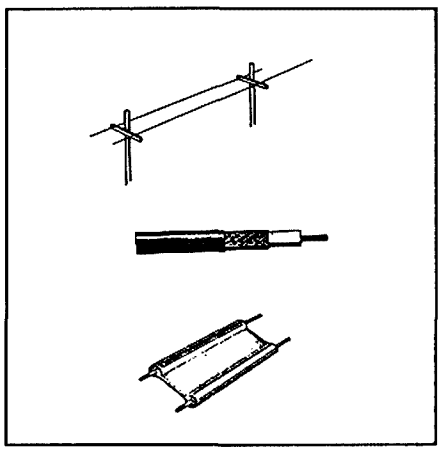
D-2874
Optional FBA-8 Battery Holder D-2876 **$49.95**
(Unit illustrated is 2 metre version with optional amplifier)

• NSW • Albury 21 8399 • Bankstown Square 707 4888 • Blacktown 671 7722 • Campbelltown (046)27 2199 • Chatswood Chase 411 1955 • Chullora 642 8922 • Gore Hill 439 5311 • Gosford 25 0235 • Hornsby 477 6633 • Hurstville 580 8622 • Liverpool 600 9888 • Maitland 33 7866 • Miranda 525 2722 • Newcastle 61 1896 • North Ryde 88 3855 • Parramatta 689 2188 • Penrith (047)32 3400 • Railway Square 211 3777 • Sydney City 267 9111 • Tamworth 66 1711 • Warringah Mall 905 0441 • Wollongong 28 3800 • ACT • Fyshwick 80 4944 • VIC • Ballarat 31 5433 • Bendigo 43 0388 • Box Hill 890 0699 • Coburg (03)383 4455 • Dandenong 794 9377 • East Brighton 592 2366 • Essendon 379 7444 • Footscray 689 2055 • Frankston 783 9144 • Geelong 43 8804 • Melbourne City 326 6088 • Richmond 428 1614 • Ringwood 879 5338 • Springvale 547 0522 • QLD • Brisbane City 229 9377 • Buranda 391 6233 • Cairns 31 1515 • Chermside 359 6255 • Redbank 288 5599 • Rockhampton 27 9644 • Southport 32 9863 • Toowoomba 38 4300 • Townsville 72 5722 • Underwood 341 0844 • SA • Adelaide City 232 1200 • Beverley 347 1900 • St. Marys 277 8977 • Elizabeth 255 8099 • Enfield 260 6088 • WA • Cannington 451 8666 • Fremantle 335 9733 • North Perth 328 6944 • Perth City 481 3281 • Midland 250 1460 • TAS • Hobart 31 0800 • NT • Stuart Park 81 1977

YAESU STOCKS NOT HELD AT ALL STORES. PLEASE CONTACT YOUR LOCAL STORE FOR STOCK AVAILABILITY, OR ORDER BY PHONE...
TOLL FREE (008) 22 6610 FOR 24 HOUR DESPATCH

Transmission Lines - Measurement of Their Characteristics

Lloyd Butler VK5BR
18 Ottawa Ave
Panorama 5041



Transmission lines have many applications in the fields of radio and telecommunications. In amateur radio, their most common application is in the coupling of energy between antenna and transmitter or receiver. Their performance is defined by various electrical characteristics and this article discusses the measurement of some of these characteristics.

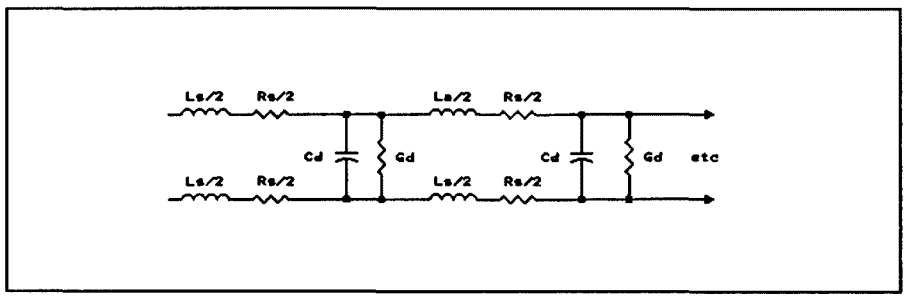


Figure 1 Transmission Line - Electrical line constants

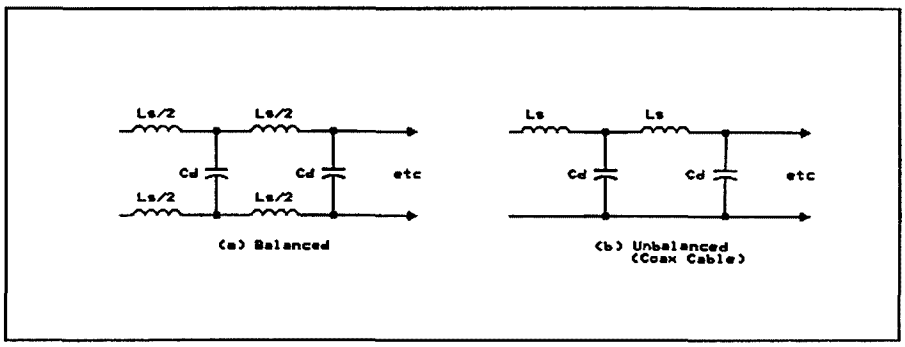


Figure 2 Transmission Line - Electrical constants at high frequencies (Rs & Gd can be ignored)

Introduction

The theory of transmission lines is introduced in most amateur radio handbooks and it is not proposed to iterate on all that theory here. For our purposes, it is sufficient to introduce some of the most important constants and characteristics such as the electrical line constants, characteristic impedance attenuation per unit length and velocity factor with an aim to discuss how these constants and characteristics can be measure.

Transmission lines can be balanced (eg: open wire lines) or unbalanced (eg: coaxial cable). The constants, characteristics and measurements discussed in the following text apply to both types of lines.

Of most interest to the radio amateur are short transmission lines which connect a transmitter or a receiver to an antenna. The need to determine characteristic impedance often arises with that length of unknown coaxial cable bought at the amateur radio buy and sell mart. Velocity factor is needed when cutting that matching stub or phasing those driven elements on that antenna array. The need to measure attenuation arises when that length of coax is getting old and deterioration of its performance is suspected.

Characteristic Impedance

Characteristic impedance of a transmission line is the value of impedance presented at its input when it is an infinite length. For a finite length of line, the same impedance is presented at its input if its output is terminated in an impedance equal to the characteristic impedance. When terminated in that impedance, all the energy sent down the line is absorbed by the terminal load and no energy is reflected.

The transmission line can be considered to be made up of four electrical constants:

Ls = series inductance per unit length
Rs = series resistance per unit length
Cd = shunt capacitance per unit length
Gd = shunt conductance per unit length

An electrical representation is shown in figure 1. Constant Rs results from the AC resistance of the conductors. Gd is the reciprocal of the loss resistance in the dielectric between the conductors.

Characteristic impedance (Zo) is calculated from the line constants as follows:

$$Zo = \sqrt{\frac{(Rs + jwLs)}{(Gd + jwCd)}} \qquad \text{(Formula 1)}$$

where $w = 2 \pi \times$ Frequency

The term jwLs is the series inductive reactance per unit length (Xs) and the term jwCd is the reciprocal of the shunt capacitive reactance (or susceptance) per unit length (Bd). At low frequencies, variation in the relative values of these terms to Rs and Gd results in Zo becoming larger as the frequency is decreased.

At high frequencies, jwLs is large compared to Rs and jwCd is large compared to Gd. Hence, at high frequencies, calculation of characteristic impedance is simplified to the following:

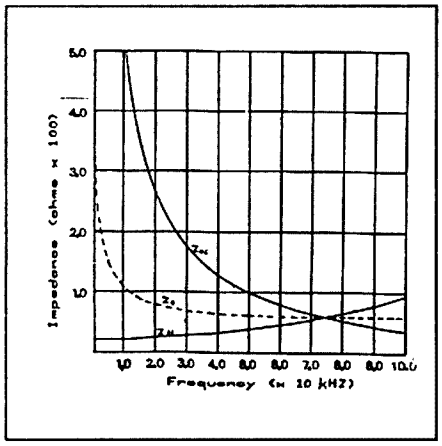


Figure 3 Impedance measurements RG122/U cable 1 kHz to 100 kHz

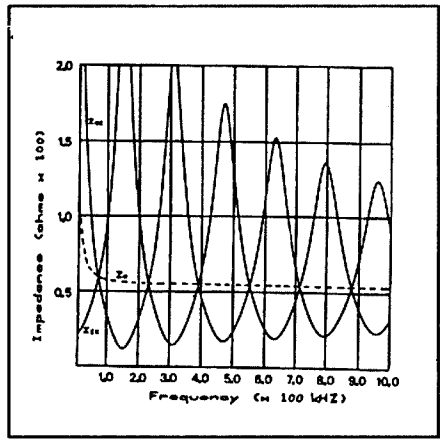


Figure 4 Impedance measurements RG122/U cable 10 kHz to 1 MHz

$$Zo = \sqrt{\frac{(jwLs)}{(jwCd)}} = \sqrt{\frac{(Ls)}{(Cd)}} \quad \text{(Formula 2)}$$

This formula is the one commonly found in radio handbooks. The simplified electrical representation in this form is shown in figure 2. Because the values of inductance (Ls) and capacitance (Cd) are independent of frequency, Zo is constant at high frequencies.

Characteristic impedance of a finite length of line at a given frequency can be derived by taking two impedance measurements, one with the end open circuit and the other with the end short circuited. From these, Zo is calculated as follows:

$$Zo = \sqrt{(Zoc.Zsc)} \quad \text{(Formula 3)}$$

where Zoc = impedance open circuit
Zsc - impedance short circuit

Figure 3 shows open circuit and short circuit impedance measurements carried out on 300 metres of RG122/U 50 ohm coaxial cable over a frequency range of 1 kHz to 100 kHz. The calculated Zo has been added and this illustrates the rise in the value of Zo at low frequencies and the near constant value of Zo, just above 50 ohms, at high frequencies. Figure 4 shows the same cable plotted from 10 kHz to 1 MHz. Observe how the Zo line can be drawn through all the intersection points of Zoc and Zsc. Figure 5 extends the frequency even further with a plot from 100 kHz to 10 MHz. It can be seen that as the frequency is made higher, the excursion of Zoc and Zsc from the value of Zo becomes less, approaching nearer to the condition of an infinite line. The effect would be the same if the frequency were held constant and the length of line gradually increased.

In figure 6, the same type of measurements have been carried out on a one Kilometre length of telecommunications type twisted pair, over a frequency range of 100 Hz to 10 kHz. For this length of line, Zsc can be seen to be fairly constant at low frequencies, defined essentially by the DC resistance of the cable. On the other hand, Zoc rises rapidly as the frequency is decreased and the reactance of Cd rises. The characteristic impedance of this type of cable is nominally around 130 ohms at high frequencies, but in the voice frequency range, its impedance is in the region of 500 to 1000 ohms. This explains why a twisted pair is considered as a 600 ohm circuit in our voice frequency telephone system.

The open circuit and short circuit measurements can be made with a direct reading impedance analyser, or if the instrument gives a result in terms of reactance (X) and resistance (R), impedance (Z) is derived from:

$$Z = \sqrt{(R^2 + X^2)} \quad \text{(Formula 4)}$$

Most impedance measuring devices are unbalanced and difficulties can arise in measuring long balanced lines with these instruments. Figure 7 shows a measurement made on our one kilometre length of twisted pair using an unbalanced instrument and plotting over a frequency range of 10 kHz to 1 MHz. The high frequency impedance stabilises around 130 ohms but there are perturbations shown in the curve. These were caused by interference to the measuring device from unbalanced signal components picked up from local broadcast stations and aircraft homer beacons. The interference can be eliminated by using a coupling transformer between the instrument and the line but the characteristics of the transformer must be taken into account in interpreting the results of the measurement.

A simple method to measure open circuit and short circuit impedance is shown in figure 8. A signal generator is fed via resistance Rs into the line load or substitution resistor Rx, as selected by switch Sw. Rs is made high to simulate a constant current source. Assuming constant current, voltage across the line or resistor load is directly proportional to the impedance of the load. Sw is first selected to connect the cable with its end open circuit. Voltage fed to line is measured using a cathode ray oscilloscope (CRO) or a vacuum tube volt meter (VTVM) coupled through a high impedance probe. The switch is then operated to connect variable resistor Rx which is adjusted to obtain the same voltage. The resistance value of Rx is now equal to the open circuit impedance and if Rx is uncalibrated, its value can be measured using a multimeter or resistance bridge. The procedure is then repeated with the end of the cable short circuited to obtain short circuit impedance.

To achieve good accuracy in measurement, source resistance Rs should be made as high as possible and at least several kilohms. However, if made too high, there

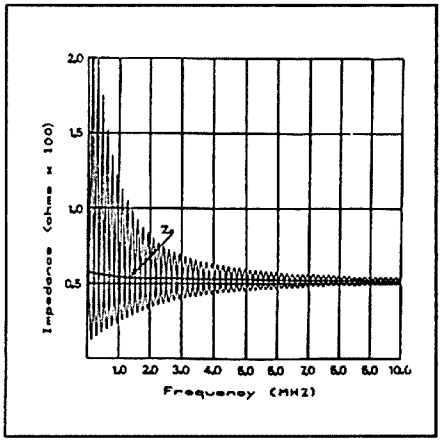


Figure 5 Impedance measurements RG122/U cable 100 kHz to 10 MHz

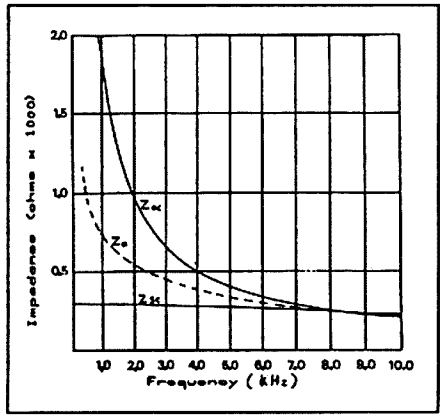


Figure 6 Impedance measurements twisted pair communication cable 500 Hz to 10 kHz

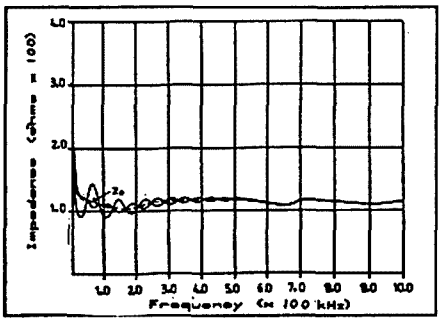
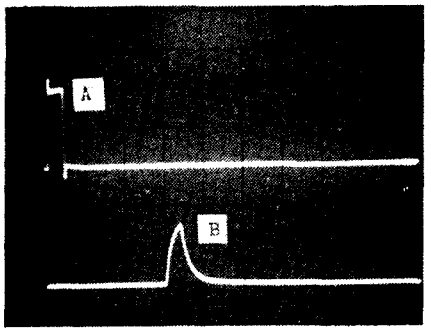
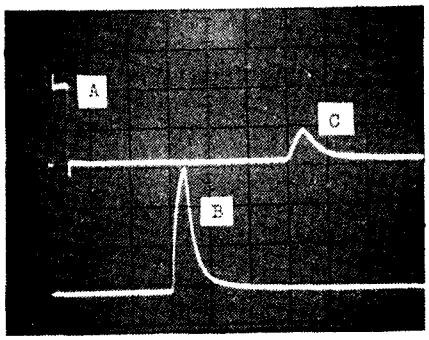


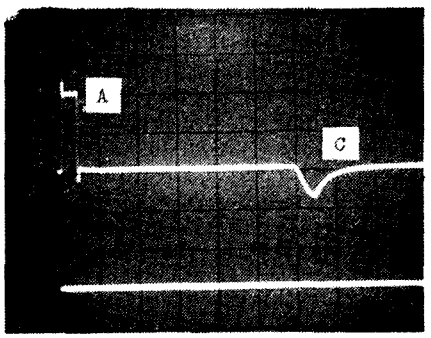
Figure 7 Impedance measurement twisted pair communications cable - 10 kHz to 1 MHz



(a) Cable terminated in 50 ohms



(b) Cable end open circuit



(c) Cable end short circuit

Figure 9 Time domain pulse tests on 300 metres of RG122/U 50 ohm cable. A = incident pulse; B = received pulse; C = pulse reflected back to input. Time scale is 500 nanoseconds/division.

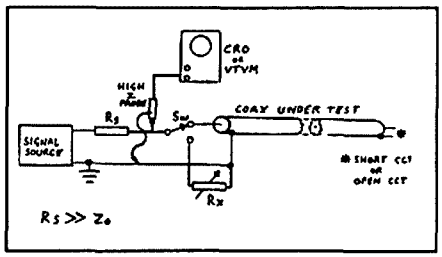


Figure 8 Impedance measurement of cable by substition

could be some difficulty in getting enough voltage for a workable reading on the CRO or VTVM. Using equipment in the writer's radio shack, a value of 2.2 k ohms was as high as could be tolerated for a suitable CRO reading. With this value of Rs, characteristic impedance of three cables, believed to be 50, 75 and 95 ohms respectively, measured 54, 78 and 99 ohms. These measurements were a little high but near enough to identify which cable was which.

In measuring the high frequency characteristic impedance by this substitution method, a precise value of measurement frequency is not important. However, a frequency as low as 1 or 2 MHz is suggested so that the capacitance and inductance of the high impedance probe and connecting earth lead, have little effect on the measurement accuracy.

Use of the Line Constants

Another method of determining characteristic impedance is to measure the line constants and calculate impedance from these. To measure the constants, a length of cable must be cut no greater than one eighth of a wavelength at the frequency of measurement or, if the cable length is fixed, the frequency of measurement must be lowered until this criterion is achieved. With the cable end short circuited, values of series inductance (Ls) and series resistance (Rs) are measured. With the cable end open circuit, values of shunt capacitance (Cd) and shunt conductance (Gd) are measured. In practical cables, shunt resistance is high and Gd can generally be ignored and considered as equal to zero. Using the values measured, the characteristic impedance can be calculated either from formula (1) or, for high frequencies, from formula (2). There is one factor to be considered when making use of the series resistance constant (Rs). Due to skin effect, the series resistance increases with frequency and hence the value of Rs can only be considered valid if measured near the frequency at which the impedance calculation is made. At high frequencies, formula (2) is used and variation in the value of Rs is of no consequence.

As a practical example, the 300 metre length of RG122/U was measured using this method. To satisfy the less than one eighth wavelength criterion, the constants were measured at 20 kHz. Results were as follows:

Short circuit	Ls = 87.8 microhenries (Xs = 11.3 Ohms) Rs = 21.5 Ohms
Open circuit	Cd = 29.53 nanofarad (Bd = 3.7 millimhos) Gd = 0.097 millimhos

At high frequencies, the square root of Ls/Cd calculates to 54.5 ohms and close to that derived in the curve of figure 4. At the measuring frequency of 20 kHz, the complex quantities calculate to give Zo = 80.7 ohms. For those unfamiliar with complex numbers and "j" notation, where you see a term such as "R + jX" simply calculate impedance (or admittance) using the square root of the sum of the squares, as in Formula 4.

Any instrument which can separately measure resistive and reactive components can be used to measure the line constants. A Q meter can be used but measurement must be carried out at frequencies in the megahertz region with a much shorter length of cable than that of the previous example. If the cable length were reduced by an order of 300 to 1 metre, the line constants could be expected to be changed by the same order and Ls would equal 0.3 microhenry and Cd would equal 98 picofarad. The Q meter could comfortably handle these values. Increasing frequency by the same order would give a suitable measuring frequency of 6 MHz.

The line constants can also be used to calculate other characteristics of the cable such as attenuation, phase velocity and dielectric constant. Attenuation is frequency dependent because of the variation in series resistance (Rs) and shunt conductance (Cd), both of which increase in value as the frequency is increased. Phase velocity and dielectric constant are only dependent on inductance (Ls) and capacitance (Cd) and hence their values are constant, independent of frequency. More detail on how to calculate the value of these characteristics from the line constants is given in the appendix at the end of the article.

Time Domain Reflectometry

One way to determine the time taken for a signal to pass down a length of transmission line is to feed, into the line, short duration pulses separated in time by a value greater than the expected transmission time. The time taken for a pulse to get to the end of the line, or to be returned after

reflection, is measured using the calibrated time base and graticule of a cathode ray oscilloscope (CRO).

Figure 9 is a record of some tests carried out on the 300 metres of RG122/U ohm cable to determine transmission time over its length and hence its velocity factor. In figure 9 (a), the 250 nanosecond pulse A on the top trace is fed down the cable which is terminated in 50 ohms at the other end. Pulse B on the second trace is the signal received at the terminated end and displaced in time by 1.5 microseconds. The transmission time for 300 metres of cable is therefore 1.5 microseconds.

In figure 9 (b), the termination is removed so that the end is open circuit. The signal is now reflected back to the input and is shown as pulse C displaced 3 microseconds from the initiating pulse A. The pulse amplitude of B at the open end has noticeably increased in level but there is no need to consider this pulse at all as it is only necessary to halve the time between C and A to obtain the cable transmission time.

In figure 9 (c), a short circuit is placed across the cable end. Again, the pulse is reflected back to the input 3 microseconds later. It can be seen that the reflected pulse C is now inverted and this is because a reflection from a short circuit, or a lower resistance than Zo, produces a phase reversal. If "t" is the time recorded between pulses C and A and "S" is the length of the cable, velocity factor (V), or the ratio of phase velocity in the cable to that in space, is calculated as follows:

V = S/(150t)
= 300/(150 x 3) = 0.67

In figure 10, we set out on a different tack to measure the unknown length of a roll of RG58 cable which we know has a velocity factor of 0.66. In this case, we have used a pulse width of 200 nanoseconds and the time measured between incident pulse (A) and reflected pulse (B) is recorded as 0.65 microsecond. The length (S) is calculated as follows:

S = 150tV
= 150 x 0.65 x 0.66 = 64.4 metres

The time domain measuring technique can also be used to locate faults in a transmission line. Any discontinuity in the impedance of a line will cause a reflection of signal. If the line develops a fault part way down the line, the location of the fault can be easily worked out in terms of distance to the fault by measuring time between the incident pulse and the pulse returned from the fault. The phase of the returned pulse also gives a lead to whether the fault might be an open circuit or a short circuit.

Time domain tests, such as those discussed, can easily be carried out using a simple pulse generator and a CRO with calibrated time base. The pulse duration is not critical but should be small compared to the transmission time measured. The higher the pulse repetition frequency, the easier it is to get a satisfactory CRO trace, but the time between pulses must be greater than twice the transmission time taken by a signal to pass down the line. In the tests recorded in figures 9 and 10, pulse spacing used was 5 microseconds.

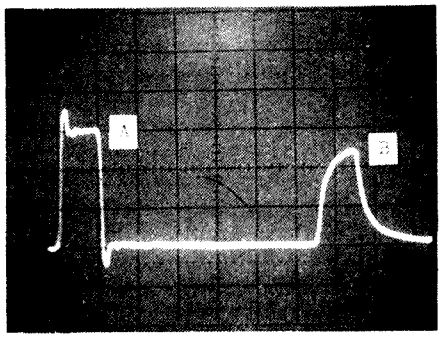
As can be seen in figures 9 and 10, transmission within the cable degrades the rise time of the reflected pulse and to maintain accuracy of measurement, time should be measured between the leading edges of the initiating and reflected pulses.

The reflected pulse can be further used to determine characteristic impedance. The procedure is simply to substitute different values of terminating resistance until a value is found which returns no reflected signal. This value is equal to Zo. The direction to increment or decrement the resistance value is indicated by whether the pulse is inverted or otherwise. A wide initiating pulse is recommended for this purpose as this gives a higher level of reflected pulse making it easier to obtain fine resolution of the precise resistance. Of course, the same substitution method of measuring Zo can be applied using a transmitter to feed a carrier into the line via an SWR meter to indicate lowest reflected power. in this case, one must be careful to minimise transmitter power to prevent burning out the substitution resistors.

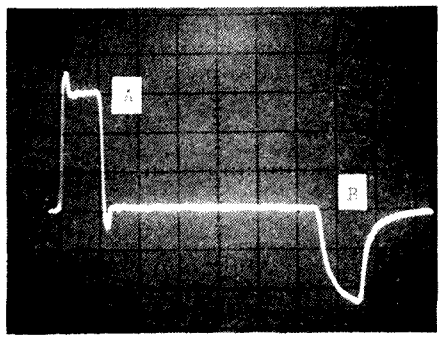
A Simple Pulse Generator

A simple pulse generator for time domain measurements can easily be made using readily available integrated circuit packages. An example of such a generator, experimented with by the writer, is shown in figure 11. This is based on an idea found in one of the ETI circuit books and submitted to ETI by Philip Dennis. The pulse is generated by a monostable multivibrator N1 with pulse width controlled by the values of C2, R3 and RV1. The circuit is arranged to re-trigger itself at a pulse repetition time set by the values of C1, R2 and RV2. Using the circuit values shown, pulse width is adjustable between 50 and 500 nanoseconds and pulse repetition time is adjustable between 0.5 and 10 microseconds. A non locking start switch or button SW1 was found to be a necessary inclusion in the circuit as the pulse train did not always start itself on power up. Emitter Follower V1 provides a low source resistance to feed the test cable.

The Q bar negative going pulse output is used as this gives a better shaped output waveform than the positive going output which is loaded by the pulse repetition timing circuit. For the purposes of the transmission line tests, it does not matter whether the pulse is positive going or negative going but if desired, the whole circuit could be inverted by reversing the connections on the input AND gate, reversing the diode and reversing the Q and Q bar connections. Another alternative would be to add an inverter gate between the Q bar output and the follower stage.



(a) Cable end open circuit



(b) Cable end short circuit (Note phase reversal of reflected pulse)
Figure 10 Time domain pulse tests on an unknown length of RG58 cable. A = incident pulse; B = reflected pulse. Time scale is 100 nanoseconds/division and length is calculated from velocity factor of 0.66 to be 64 metres.

Measurement Using Current Nodes

If the end of a transmission line is short circuited, a current node occurs at a half wavelength (and any subsequent half wavelengths) from the shorted end. This can be used to measure the velocity factor of a line or cable as shown in figure 12. For this test, a signal generator is fed via a resistor to one end of the cable and the other end is a short circuit. A high impedance probe from a VTVM or a CRO is

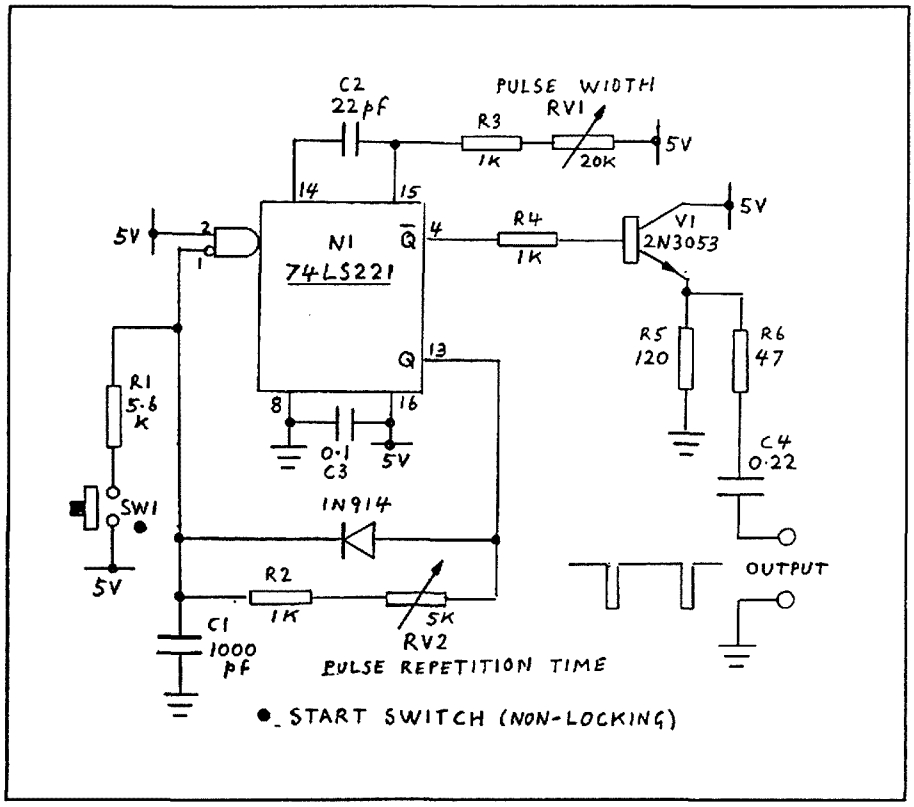


Figure 11 Simple pulse generator for time domain measurements

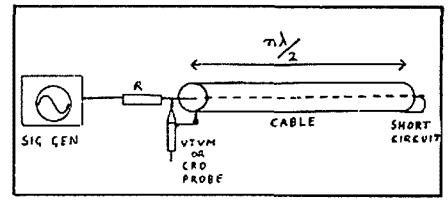


Figure 12 Measurement of velocity factor using current nodes

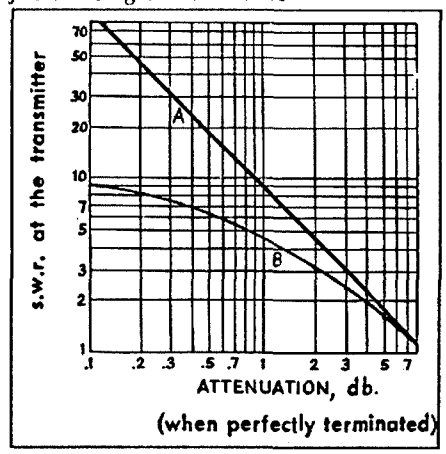


Figure 13 SWR at the transmitter VS matched line attenuation Curve A - short circuit at end of cable
Curve B - end of cable loaded to give SWR = 10

connected right at the signal source end. The frequency of the signal generator is adjusted for a dip in voltage reading on the VTVM or CRO indicating a current node. Using this frequency in the calculation, velocity factor is derived as follows:

$$\text{Velocity factor (V)} = \frac{Sf}{150n}$$

Where S = length of cable in metres
f = frequency (MHz)
n = number of half wavelengths
("n" is any integer which gives a value of V between 0.5 and 1.)

Attenuation

Attenuation of a transmission line can be measured by a number of methods. If the line is correctly terminated in a resistance equal to its characteristic impedance, a signal can be sent down the line and the voltage across its termination can be compared with the voltage fed into the cable. The signal source can be a signal generator or a transmitter and the voltage can be monitored on a VTVM or a CRO via a high impedance probe. Attenuation in dB is equal to 20 times the logarithm of the voltage ratio. Test probes normally have a capacitance of 10 pF and this capacitance, together with the inductance of the probe tip and earthing conductor, will upset the matching at VHF frequencies. Hence, this method of measurement is not recommended above 25 MHz.

Most radio amateurs have a coaxial line swr/power meter and this can be used to compare power at each end of the cable. The cable is again terminated in a resistance equal to its characteristic impedance, the usual dummy load. The meter is first inserted at the transmitter end and the transmitter power, or the meter adjustment, is set for a full scale reading of power (say 10 on the meter scale). Being careful not to alter the transmitter and meter adjustments, transfer the meter to the load end and read off relative power. For example, if the scale reads 7, the power ratio is 7/10 = 0.7 and the cable attenuation is 10 times the logarithm of this value. Attenuation per unit length is calculated by multiplying the measured attenuation by the ratio of unit length to length measured.

A method of checking the attenuation of coaxial cable, using a SWR meter at one end, has been described in some issues of the ARRL antenna handbook, and was also described in Novice Notes, AR December 1978. In this method, a short circuit is connected at the load end of the cable and SWR is measured at the transmitter or source end. The greater the attenuation, the lower the level of reflected signal and hence the lower the SWR reading. The decibel ratio of power returned to forward power, is a measure of cable attenuation times two, however the attenuation is greater than it would be if the cable were correctly matched. With the high SWR, higher current at current antinodes causes greater dielectric loss. Hence, a correction has to be made to derive expected attenuation when the cable is correctly matched. For further reading, Ron Cook VK3AFW has discussed this effect in Novice Notes, AR November 1981.

Curve A of figure 13, taken from the ARRL antenna handbook, shows the relationship between SWR at the transmitter and corrected attenuation for a cable when properly matched. This can be used to derive attenuation using the method described above with the cable end short circuited. However, there are problems in the practical application of curve A. First of all, most SWR meters are only calibrated up to an SWR of 3 and even if they were calibrated higher, the upper scale graduation would somewhat compressed. Using curve A, this somewhat limits attenuation measurements to 3 dB and above.

To obtain higher SWR measurements, the ratio of reflected power to forward power can be directly measured. If your SWR meter does not have means to separately

measure reflected power, what you can do is reverse the input and output connections to the meter and what is read as forward power will actually be reversed power. SWR is then calculated from the following:

$$SWR = \frac{1 + \sqrt{K}}{1 - \sqrt{K}}$$

Where K is the ratio of reflected power to forward power.

A further suggestion is offered by the writer to resolve lower values of attenuation. To achieve this, we create a lower finite value of SWR at the load end of the cable. Curve B of figure 13 attenuation when the SWR at the load is lowered to 10. This SWR can be achieved by terminating the cable in a resistance equal to one tenth of Zo. For example, use a 5 ohm termination for a 50 ohm cable. If the transmitter power is kept low, a number of carbon resistors in parallel can provide the termination. Applying curve B, low values of attenuation can be derived from lower and more readable, values of SWR than those obtainable using a short circuited cable.

Test Equipment

The extent to which the measurements discussed can be carried out in the radio shack depends on what test equipment is available. Some measurements can be carried out with the usual shack equipment of an SWR/Power meter. Time domain reflectometry requires the use of a CRO

Appendix

Calculation of Transmission Line Constants

In the following expressions, the quantity S is the physical length of the line in metres. The characteristic impedance of the line is given by

$$Z_0 = \sqrt{\frac{R_s + j\omega L_s}{G_d + j\omega C_d}} \simeq \sqrt{\frac{L_s}{C_d}} \quad \ldots\ldots\ldots$$

The attenuation of the line is given by

$$A = \frac{1}{2S} \cdot \frac{G_d Z_0 + \frac{R_s}{Z_0}}{1 + \omega^2 L_s C_d} \text{ nepers/metre} \quad \ldots\ldots\ldots$$

$$\simeq \frac{1}{2S} \left\{ G_d Z_0 + \frac{R_s}{Z_0} \right\} \text{ nepers/metre when } S < \lambda/60$$

$$= \frac{4{\cdot}34}{S} \cdot \left\{ G_d Z_0 + \frac{R_s}{Z_0} \right\} \text{ dB/metre}$$

The phase velocity of the line is given by

$$v = \frac{\omega S}{\tan^{-1} \omega \sqrt{L_s C_d}} \text{ metres/second} \quad \ldots\ldots\ldots$$

$$\simeq \frac{S}{\sqrt{L_s C_d}} \text{ metres/second when } S < \lambda/30$$

The dielectric constant of the line is given by

$$k = \left\{ \frac{0{\cdot}31 L_s}{Z_0 S} \right\}^2 \quad \ldots\ldots\ldots$$

with calibrated time base and the use of a suitable pulse generator. If the CRO is uncalibrated, the time scale can be referenced against the signal waveform of a calibrated signal generator. If the generator is not accurately calibrated, this can be further referenced to a frequency counter, a Bendix type frequency meter, or a crystal marker generator. A pulse generator is hardly likely to be found in the shack but, as shown in figure 10, a simple one can easily be constructed.

Summary

A range of ideas have been presented on techniques which can be applied to the measurement of transmission lines. If suitable test equipment is available, an interesting day can be spent trying out some of these ideas and finding out all one can about those coax lines or other cables installed or stored away in the shack.

To finalise discussion, we repeat some of the salient points which have been presented:

The transmission line can be represented by four electrical line constants which, if measured, can be used to calculate characteristic impedance, attenuation, velocity factor and other characteristics.

Characteristic impedance is constant at high frequencies but rises inversely with frequency at very low frequencies.

Characteristic impedance can be derived by measuring separately the short circuit impedance and the open circuit impedance and calculating the square root of the product of these two measurements.

A pulse generator and calibrated CRO can be used to measure time between an incident pulse fed down the line and the reflected pulse returned from its end to derive either velocity factor or cable length when only one of these is known. The system can also be used to find the precise location of a cable fault and derive characteristic impedance using a load resistance substitution process.

Attenuation of a correctly matched line can be measured by direct comparison of voltage or power between the output and input of the line. It can also be derived by measuring SWR at the input of the line when the output is short circuited or terminated to give a known SWR at the load.

ar

Have you advised DoTC of your new address?

Weather Satellites (Cont'd)

Paul Hayden
VK4ZBV
38 Lutzow St
Ekibin 4121

Automatic Picture Transmission (APT)

Video format: the visible light sensor on weather satellites converts the light reflected from the earth, sea, and clouds, into an electrical signal. The more reflected light, the larger the video (picture) signal voltage resulting.

The infrared sensor is sensitive to the temperature of the scanned objects. This can vary from land at +50 deg C, to cloud tops in the tropics at -70 deg C. The lower the temperature (high altitude clouds), the higher the video output.

The mirror of the scanning radiometer rotates at 120, 240 or 360 rpm. Each scanned line covers about 1000 kms either side of the satellite's ground track. As the satellite is moving quite rapidly through space, the width of the scanned line is about 2 kms on the ground.

The video output of the scanning radiometer, and the picture sync signal are used to amplitude modulate an audio subcarrier of 2,400 Hz. This is the distinctive tone we hear from our receiver. Clouds produce large subcarrier amplitudes, black objects (no reflected light) produce a minimum subcarrier (not zero).

Due to the variations in picture information along each line, and the rate of rotation of the scanner, the signal produced has a bandwidth of about 1,600 Hz. When modulated onto the 2,400 Hz the result extends from 800 Hz to 4,000 Hz. It is able to be recorded on a good quality stereo tape recorder. (The second track records a 2,400 Hz reference clock track for picture sync on future replay.)

The scanner in the NOAA series is driven by a quartz crystal clock which also provides the audio subcarrier of 2,400 Hz. This allows the receiving station to synchronize its detection and display circuits to those of the satellite.

The METEOR satellites may not have the subcarrier locked to the scanning drive, this complicates the detection and display circuitry slightly.

When the receiving station has an accurate source of 2,400 Hz (xtal clock) available to record on the second track of the tape, the system can then be synchronized to the local clock instead.

The first advantage of this is that when a satellite first comes over the horizon, or is about to disappear below the horizon, or fades in signal strength due to Faraday rotation in the ionosphere, the poor signal to noise ratio of the received subcarrier can cause loss of synch and tearing of the received picture if the incoming subcarrier is used for sync.

With a local clock sync the only requirement is to slide the picture sideways to line it up on the display device. Loss of incoming signal will not cause tearing or loss of sync.

When the display device is synchronized to a clock recorded along with the satellite picture signal, it can track out any speed variations in the tape recorder (wow and flutter), so they have no effect on the reproduced picture.

A xtal clock is necessary to display a stable picture if the subcarrier is not locked to the scanner rotation (some METEOR). The output from a scanning reflectometer has only line sync, the lines are transmitted continuously in real time. The picture starts on AOS (acquisition of signal) and ends at LOS (loss of signal).

The METEOR 2 series satellites run 120 rpm APT with a single visible light picture. This gives a better image resolution (detail) than the NOAA series which compress two images into the same time / bandwidth format.

The line phasing or sync signal between each line of picture is used to identify the satellite and scan/sensor combination in the METEOR satellite series. METEOR 2-16 has 14 white bars on a black background, and MET 2-17 has 16. METEOR 3-2 has 15 white on vis light and 9 black on ir pix.

The NOAA satellites identify each line of pix with tones as the line sync or phasing signal, 1040 Hz vis / 832 Hz ir, (only 7 cycles of each tone per line.) Both NOAA and METEOR also transmit step grey scales and telemetry signals including one minute markers beside the line sync pulses.

The NOAA satellites derive their low resolution APT pictures from the high resolution pictures produced by the 360 rpm AVHRR (advanced very high resolution radiometer) by transmitting only every third line of the picture.

To be continued

ar

Resistor Selector Program

Bruce Bathols VK3UV
6 Ann Court
Aspendale 3195

A computer program is described to produce a resistance to within a specified tolerance, using combinations of the standard E12 values.

It is not a new program, and was originally published in the Microbee Users Group Monthly magazine "The Catcher", January 1989. I have adapted it for use of IBM XT/ZT and Compatibles, and it will run under GWBASIC. With some modifications, it will be able to be run on most other computers, eg: Apple, Commodore, Microbee, Tandy. It is most useful if you are building a project, and have a junk box full of resistors, and want to find all of the possible combinations available, without having to get out the old faithful calculator.

You can also use the computer to prove to the XYL that your investment in computers can be justified, as it will do other things as well as playing games.

The program is too long to publish here in full, but if you have an IBM XT/AT or Compatible, then I can supply a compiled version (under Microsoft Quick Basic 4.0) which will run direct from MSDOS, together with the source code for GWBASIC.

Send me a cheque for the princely sum of $10 to cover disk, mailing container, and postage, and I will send you the disk by Airmail within a few days. Kindly specify disk type - 13cm (5.25") 360K, or 9cm (3.5") 720K.

Sample Screen Dumps

This program finds possible combinations of resistors of the E12 series that will produce a resistance to within a specified tolerance.

Have you advised the WIA Executive Office of your new callsign? Use the form on the reverse of the AR address flysheet.

Required Resistance (OHMS) = 5000
Maximum Tolerance Allowed (%) = 5
Acceptable range for 5.00 KILOHMS at 5% Tolerance:

Minimum = 4.75 KILOHMS
Maximum = 5.25 KILOHMS

Using One Resistor:

(None within 5% Tolerance)
Using Two Resistors in Series:

2.20 KILOHMS + 2.70 KILOHMS	=	4.90 KILOHMS	(-2.00% ERROR)
1.50 KILOHMS + 3.30 KILOHMS	=	4.80 KILOHMS	(-4.00% ERROR)

Press <ENTER> to continue screen display.

Required Resistance in OHMS = 5000

Maximum % Tolerance = 5
Using Two Resistors in Series:

1.80 KILOHMS + 3.30 KILOHMS	=	5.10 KILOHMS	(2.00% ERROR)
1.00 KILOHM + 3.90 KILOHMS	=	4.90 KILOHMS	(-2.00% ERROR)
1.20 KILOHMS + 3.90 KILOHMS	=	5.10 KILOHMS	(2.00% ERROR)
56.00 OHMS + 4.70 KILOHMS	=	4.76 KILOHMS	(-4.88% ERROR)
68.00 OHMS + 4.70 KILOHMS	=	4.77 KILOHMS	(-4.64% ERROR)
82.00 OHMS + 4.70 KILOHMS	=	4.78 KILOHMS	(-4.36% ERROR)
100.00 OHMS + 4.70 KILOHMS	=	4.80 KILOHMS	(-4.00% ERROR)
120.00 OHMS + 4.70 KILOHMS	=	4.82 KILOHMS	(-3.60% ERROR)
150.00 OHMS + 4.70 KILOHMS	=	4.85 KILOHMS	(-3.00% ERROR)
180.00 OHMS + 4.70 KILOHMS	=	4.88 KILOHMS	(-2.40% ERROR)
220.00 OHMS + 4.70 KILOHMS	=	4.92 KILOHMS	(-1.60% ERROR)
270.00 OHMS + 4.70 KILOHMS	=	4.97 KILOHMS	(-.060% ERROR)
330.00 OHMS + 4.70 KILOHMS	=	5.03 KILOHMS	(0.60% ERROR)
390.00 OHMS + 4.70 KILOHMS	=	5.09 KILOHMS	(1.80% ERROR)
470.00 OHMS + 4.70 KILOHMS	=	5.17 KILOHMS	(3.40% ERROR)

Press <ENTER> to continue screen display.

Required Resistance in OHMS = 5000

Maximum % Tolerance is 5
Using Two Resistors in Series:
Using Two Resistors in Parallel:

5.60 KILOHMS // 33.00 KILOHMS	=	4.79 KILOHMS	(-4.25% ERROR)
5.60 KILOHMS // 39.00 KILOHMS	=	4.90 KILOHMS	(-2.06% ERROR)
5.60 KILOHMS // 47.00 KILOHMS	=	5.00 KILOHMS	(0.08% ERROR)
5.60 KILOHMS // 56.00 KILOHMS	=	5.09 KILOHMS	(1.82% ERROR)
5.60 KILOHMS // 68.00 KILOHMS	=	5.17 KILOHMS	(3.48% ERROR)
5.60 KILOHMS // 82.00 KILOHMS	=	5.24 KILOHMS	(4.84% ERROR)
6.80 KILOHMS // 18.00 KILOHMS	=	4.94 KILOHMS	(-1.29% ERROR)
6.80 KILOHMS // 22.00 KILOHMS	=	5.19 KILOHMS	(3.89% ERROR)
8.20 KILOHMS // 12.00 KILOHMS	=	4.87 KILOHMS	(-2.57 ERROR)
10.00 KILOHMS // 10.00 KILOHMS	=	5.00 KILOHMS	(-0.00 ERROR)

DISPLAY NOW COMPLETED - PRESS <ENTER> TO FINISH?

(A statistician might disagree with the claimed percentage errors, as the tolerance of the E12 ingredient resistors is ten percent - Ed.) ar

How to Use a Dummy Load (or 10 of them)

The common dummy load known to amateurs is a very useful tool in our hobby of amateur radio.

Every amateur should have a dummy load. I have a total of 10 dummy loads: three being home brew and seven purchased over the years. One even has a fan operated from 12 volts built in to keep it cool! I use one dummy load on the respective socket on each of my two antenna tuners in the shack, another in my car, one in my portable tool kit, and one very leaky dummy load I have used to work DX, along with a few spares! The perfect dummy load should be 50 Ohms, purely resistive. All dummy loads are not perfect, however. I have measured a commercial job made in the USA at 42 Ohms. If the wire leads on resistors on home brew dummy loads are too long, the added inductance will alter the impedance at VHF and UHF so keep the leads short.

Below you will find some uses for our friend the dummy load:

1. Check the output of your rig into a dummy load through an accurate power meter. Do not rely upon readings obtained into an antenna.
2. If the rig appears to have a fault on transmit, check it into a dummy load. The fault may be the antenna, feedline or connectors.
3. Check the input SWR of your external power amplifier with a dummy load on the output and an SWR meter before the PA. You may find it is not 50 Ohms input.
4. Check the accuracy of your SWR meter at VHF into a dummy load. If not designed for VHF, the meter may be unreliable.
5. The accuracy of a power meter can be checked against a known accurate meter, into a dummy load.
6. Some low pass filters have an unacceptable input SWR - check into a dummy load.
7. To measure the power loss in a piece of coax, use a power meter and dummy load at the end of the coax, then move it to the input of the coax and note the difference. You may be surprised, especially at VHF and UHF.
8. Tune a valve final rig into a dummy load.

And on a lighter note . . .

Work QRP DX on an exposed or very leaky dummy load! I have used home brew, open construction purely resistive dummy load in the shack, with 50 metres of wire clipped to the load at a position where maximum leakage occurs. Last night a JA gave me a 469 report on 40 metre CW using the dummy load and 50 metres of wire. I estimate the radiated power to have been approximately 1 watt. The JA was 559. I have measured 1 watt power through a power meter attached to a dummy load via a short piece of coax, it does vary on different positions on the load. (100 watts input).

You could install an exposed or leaky dummy load at the top of your tower, attach a length of wire down to the back fence and work the world! The rig sees 50 Ohms, the feedline sees the 50 Ohm load and the wire radiates whatever it can! I recently received a USA station at readability 5 on a dummy load on the floor of the shack. He was 59+30dB on my antenna designed for 40 metres, though!

By the way, I collect unusual dummy loads, so if you have one I may be interested in, let me know. If you don't have one, get one and start experimenting, as we amateurs are supposed to do, and good luck!

ar

WIA NEWS *continued from page 18*

ate receiving reports of any interference to amateurs in the 50 MHz band from this experimental atmospheric sounding radar in Darwin.

WIA 80 Logo Competition Winner

As all members know, the WIA, the world's first and oldest national radio society, is celebrating its 80th Anniversary during 1990. An important part of this anniversary is the selection of a distinctive logo which will feature on the WIA 80 Award certificates (incidentally, rules for this Award appeared on page 4 of September 1989 issue of Amateur Radio, and eligible contacts for this Award start as from 1st November 1989), the cover of the 1990 WIA 80th Anniversary Australian Radio Amateur Call Book, Amateur Radio magazine, OSL cards, etc., etc..

On page 6 of August 1989 edition of Amateur Radio magazine, we published details of a competition for a design for the WIA 80 logo.

The closing date for entries was the 14th August, but entries kept arriving in the Executive Office until well after that date. The judging panel had a difficult task indeed in selecting a winner for the competition.

Eventually J A Wyatt, VK4ZDJ, who submitted two entries of high standard, was judged as the winner. Even though the official WIA 80 logo, which will become very familiar to members over the next 15 months, is different from the winning entry submitted by VK4ZDJ, most of the design points come from his entry.

Although no prize was announced for the winner of the logo competition, we have sent VK4ZDJ a cheque for an amount equivalent to his current membership subscription fee as a small thank you for his contribution to WIA 80.

WIA 80th Anniversary Australian Radio Amateur Call Book

The WIA 1990 Australian Radio Amateur Call Book is now on sale, bigger and better than before. In addition to containing listings for a total of 18,064 current

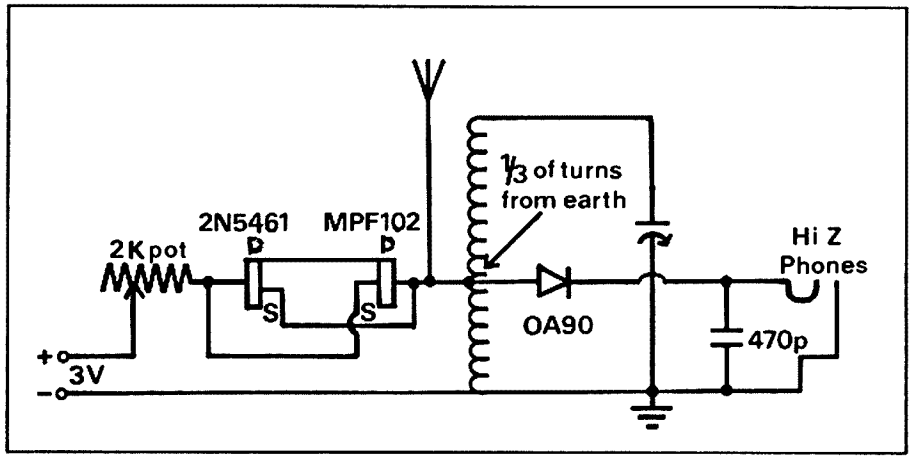
Continued page 31

'Lambda Diode' Regenerative Receiver

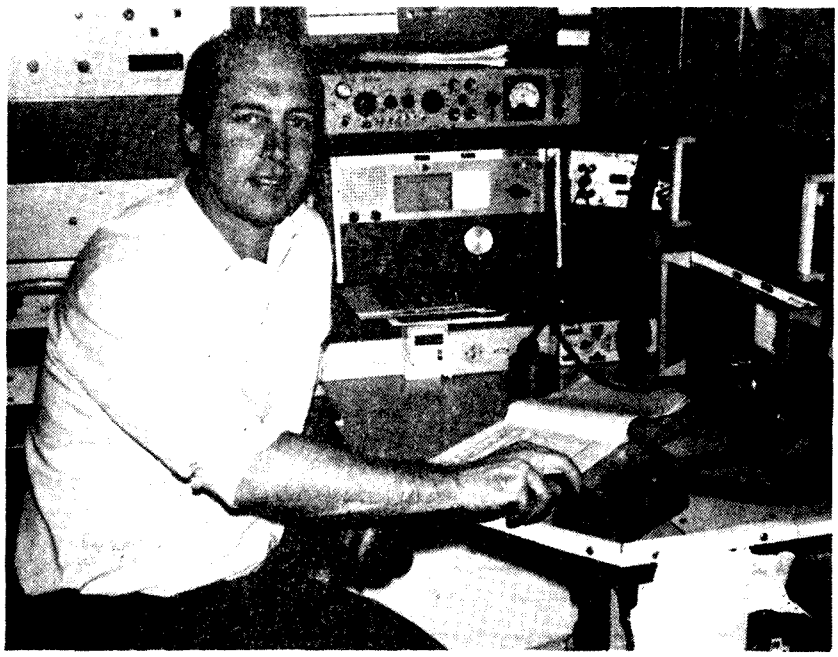
Larry Osborn VK3ZSZ
Stoneycroft
Nar Nar Goon 3812

In April 1989 Amateur Radio, in the article on page 14 about the crystal set built by Don Law, I note that Don had an accident with his soldering iron (it happens to all of us at some time) and ruined his tunnel diode. Several years ago, I read an article in a magazine on the "Lambda Diode" which consists of a P channel FET and a N channel FET with the drains connected together, but to nothing else; their sources and gates are cross connected - that is, the gate of one to the source of the other. Positive is applied to the source of the N channel FET, the source of the P channel going to negative. With a MPF102 and a 2N5461 placed across a tuned circuit with the supply varied between 1.5 and 3 Volts, oscillation was obtained up to 60 MHz. Current was approximately 1.0 mA, decreasing with increased voltage.

I connected a MPF102 and a 2N4360 to a very simple crystal circuit shown below. I found that a 2k pot in series with the diode



controlled regeneration, and gave an increase in sensitivity of over 40 dB at 1.6 MHz using a series resistance of 350 Ohms; a current of 2 mA was drawn from a 3 Volt supply. As you will see from the circuit, I made no attempt to optimise the coil tap, doing so would probably have resulted in much better results, I only wanted to prove it would work. I hope this may be of help to someone. ar



MV Doulous. One of the best kept secrets on board the motor vessel, Doulos is Kevin VK7AAS (Home call ZL2BSU) who has similar interests to Manfred VK7AAT (Home call is DL8SBB) his fellow radio operator.

In addition to CW and telephony working, investigations are being made to expand the amateur radio station to include RTTY/Weather Fax/Amtor/Packet Radio/HF Bulletin Board Working.

David Brownsey
VK4AFA

Magazine Review

Roy Hartkopf VK3AOH

(G) General (C) Constructional (P) Practical without detailed constructional information (T) Theoretical (N) Of particular interest to the Novice (X) Computer program

Radio Communication Jan 1989: Simple two metre receiver (C) Peak envelope power sideband indicator (P)

QST Feb 1989: Low cost frequency counter (C) QRP EME on 144 MHz (G) Transistor radios as Ham receivers (C)

QST March 1989: Simple 80 metre converter (C) Power dissipation in parasitic suppressor resistors (T)

QST April 1989: Coaxial resonator match and the broadband dipole (C) Power FET switches as RF amplifiers (C)

QST May 1989: Spread spectrum link (P) Time domain reflectometer (C) Low noise microwave preamplifier (C)

VHF Communications 4/1988: Introduction to moonbounce (G) Hybrid parabolic dish antenna (P). ar

Broadside on 10

Richard Burden VK6FKB
PO Box 1164
Booragoon 6154

Here is a simple two element broadside array for ten meters. It has a bi-directional pattern with a gain of nearly 4dB over a dipole. I found it ideal for communicating in a fixed direction when a compromise antennae with a wide bandwidth was necessary. It can be scaled for use on different frequencies, but I would not want a 160 meter version in my backyard!

This aerial consists of two half-wavelength vertical elements spaced one half-wavelength apart. The two vertical elements are end fed via quarter-wave series matching sections producing a bi-directional pattern due to the two elements being in phase. The theoretical free space gain is 3.8 dB. Note that the series matching section is constructed from open-wire feeder, not 300 ohm ribbon or coax. This ensures that the electrical length of the transmission line between the two elements is one half wavelength.

The main transmission line is connected as shown in Fig 1. By adjusting the spacing S of the matching sections, the impedance of the matching sections can be altered to transform the terminating impedances to the 50 Ohms required at the feedpoint.

I mounted each vertical element on a wooden post with the coax supported at the feed point by another post. I initially set the spacing by screwing to each post one solder lug 40mm below the end of the element, and soldering the bottom wire to each of these lugs. I had already drilled holes ready to accommodate different settings but 40mm gave me a SWR of 1.1 to 1 at the transceiver when I checked it. So I put the tools away and started talking.

ar

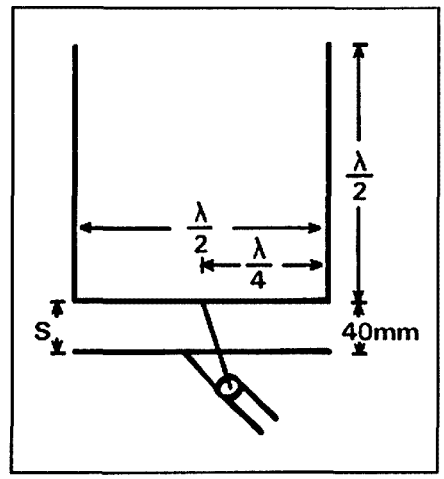


Fig 1 Antenna System

WIA NEWS *continued from page 28*

Australian amateur station licences, and 732 WIA Shortwave Listeners, this Call Book incorporates that reference data most needed for your operating enjoyment.

Included are a listing of all Australian duplex repeaters, from the 29 MHz to the 1296 MHz bands, listed in frequency order within each call area; a map of Australia showing where most repeaters are located; a list of Australian simplex packet repeaters; amateur TV repeaters; Australian beacons on 50 MHz and above; foreign 50 MHz beacons; Australian and foreign 28 MHz beacons; 14 MHz beacons; the current ARRL DXCC countries list, which is the list used for the Australian DXCC and the Australian band plans (including the proposed new 1296 MHz band plan).

We expect this 1990 Call Book to be a big seller. Executive Office stocks of the last Call Book sold out in just 6 weeks, so make sure that you order your copy of the lastest, 1990 Call Book now.

The cover price is the same as last year, $9.90, plus postage and packing if applicable.

However, financial members of the WIA can obtain a copy from their Divisional Bookshop for the discount price of $8.50, plus postage and packing if applicable.

WIA/DoTC Joint Meeting

Although the WIA is in constant communication with DoTC in Canberra by telephone, Fax, and the mail, regular face to face meetings are held between DoTC and WIA personnel. Sometimes these meetings take place in Canberra, but generally the DoTC representatives from the Regulatory Section come to Melbourne.

At the most recent Joint Meeting, many matters of interest and concern to both the WIA and DoTC were discussed in and a full and frank manner.

Just some of the topics discussed included reciprocal licensing with Italy, exemptions for non-qualified amateurs operating in Antarctica, alternate frequencies for ATV, random allocation of VK9 callsigns, the agenda for the 1992 WARC, issuing of callsigns to visitors to Australia, third party traffic bi-lateral agreements, 28 MHz beacons, crossband repeater linking, fees for DoTC investigation of interference complaints, devolvement of amateur examinations, and the 23 cm band plan. Many of these items are ongoing and have been publicised by the WIA on previous occasions.

Something new of interest to amateurs is that DoTC are currently exploring proposals for licence fee payment at Post Offices. At present there is a trial running in Western Australia involving the CBRS licence applications and certain classes of renewals. If the trials are successful, the facility will be expanded to the rest of Australia.

Hopefully, the next step will be to include the amateur service in this convenient method of paying licence renewals.

Mobile Amateur Radio Operation

Have you had the experience of installing your mobile equipment in a new car (assuming you could find space for it in the newer design of motor carl) and finding all sorts of funnies happening to the car electrics when you press the microphone button? Direction indicators, the electronic ignition, on-board computers, etc. behaving strangely? And the dealer not really knowing what you are talking about?

Well, there seems to be some hope that car manufacturers are finally realising this is a problem which will not go away, and needs to be addressed. From the latest ARRL Newsletter comes news that the General Motors Corporation in the USA has just released a brochure entitled "Radio Telephone/Mobile Radio Installation Guidelines".

continued on page 56

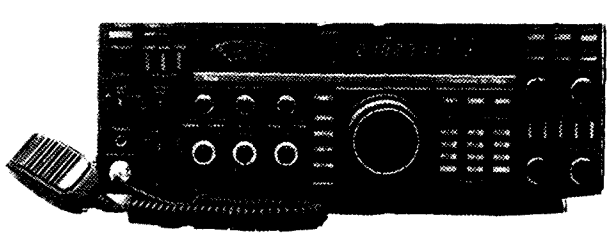
THE GEORGE BUSH, MA
MIKHAIL GORBACHE

What has made Icom's range of transceivers world leaders in their class? Could it be the uncompromising standards of a George Bush? Is it the durability of a Maggie (Iron Lady) Thatcher? Or the innovative thinking of a Mikhail Gorbachev?

It is, in fact, a combination of all three.

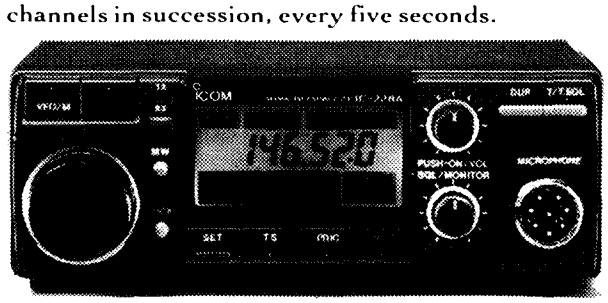
Which has led millions of radio users around the world to choose Icom. Their vote has made Icom the world leader of transceivers.

The Icom IC-725 HF mobile 500KHz-30MHz transceiver is complete with DDS synthesiser, 26 memories (two memories for duplex frequencies), switchable pre-amplifier, scanning, CI-V system for PC control, built in antenna tuner controller and band stacking register.



The Icom IC-765 HF transceiver features DDS synthesiser, high speed auto tuner, built-in AC power supply, 99 programmable memories, keyboard frequency entry, band stacking register, general coverage receiver 100KHz-30MHz, CI-V system for PC control and rack mounting dimensions.

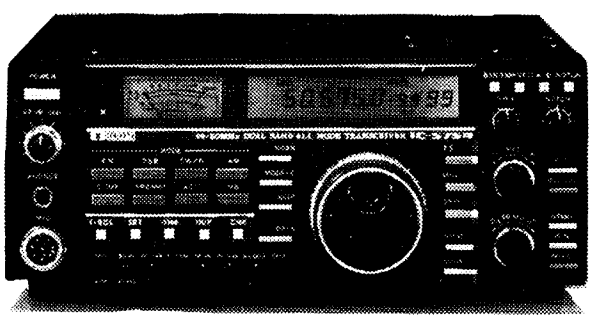
The Icom IC-32AT dual band FM transceiver outputs 5.5W and has a full duplex crossband operation, on/off switchable power saver and 20 double-spaced memory channels that can store two frequencies. The programmed scan function scans all frequencies between two programmable frequencies. And Priority Watch monitors the Call Channel, a memory channel or all the memory channels in succession, every five seconds.



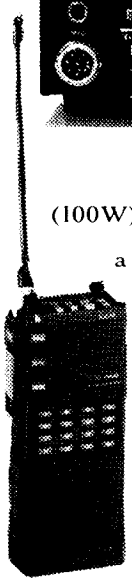
The Icom IC-228A (25W) and IC-228H (45W) mobile FM 144MHz transceivers are compact and easy to operate with 20 memory channels, multi-colour LCD programmed and memory scans, variable tuning steps, priority watch, main controls lit for night operation.

RGARET THATCHER AND V OF TRANSCEIVERS.

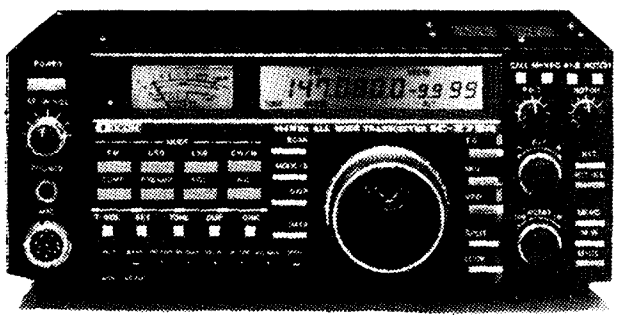
The Icom IC-475A (25W) and IC-475H (75W) 430 MHz All Mode transceivers are designed for packet mode with direct digital synthesizer (DDS), 99 memory channels, USB, LSB, CW, FM, passband tuning and adjustable IF notch filter.



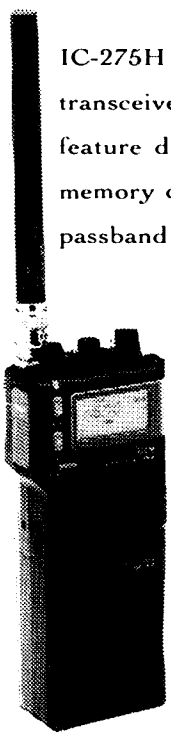
The Icom IC-575A (10W) and IC-575H (100W) 28/50 MHz All Mode transceivers have a receiver coverage of 26-56 MHz and are equipped with direct digital synthesizer (DDS), 99 memory channels, and passband tuning.



The UHF FM Icom IC-4 GAT with 6 watt output has digital touch step for frequency selection, programmable call channel, LCD readout, optional pager function, programmed and memory scans, automatic power save and 20 memory channels.



The Icom IC-275A (25W) and IC-275H (100W) All Mode 144MHz transceivers are designed for packet mode and feature direct digital synthesizer (DDS), 99 memory channels, USB, LSB, CW, FM, and passband tuning.



The palm size Icom-2SA, 144 MHz FM transceiver has 5 watts output with optional BP-85, 48 memory channels and an automatic power saver, LCD readout, operation from battery or external 12V DC supply. A PTT lockout switch is provided to prevent accidental transmissions. Options include: paging, code squelch functions and beep tone on/off control.

Call Melbourne on (03) 529 7582 or interstate on (008) 338 915 for your nearest Icom stockist. ICOM

ICO 0047

Dove to Beam Down on Planet Earth

Jim Linton VK3PC

"Au dessus du monde c'est aussi avec la paiz comme il serait sur la terre"

The Digital Orbiting Voice Encoder — DOVE — a microsatellite sponsored by the Brazilian branch of AMSAT, the amateur radio satellite organisation, will be launched soon.

As it orbits the earth, DOVE will transmit digitised voice messages, interspersed with spacecraft engineering data, using narrow band frequency modulation on a frequency of 145.825 MHz. Here's a sample of what you might expect to hear in a typical 10 minutes plus pass:

Voice DOVE ID:	10 seconds
Voice LAP 1 Message:	20 seconds
Voice Telemetry:	1 minute
Packet Bulletin:	30 seconds
Voice LAP 1 Message:	20 seconds
Voice Bulletin:	1 minute

Repeat of above . . . . .

DOVE will provide a creative vehicle for students around the world to express their thoughts about the need for peace on the planet earth. This aspect is called the Language Arts Project 1 or abbreviated as LAP 1. It will include messages in at least 11 languages (with English translations) being transmitted. Tape recorded messages are being encouraged from schools throughout the world for use by DOVE.

An example of a LAP 1 message appears at the top of this article and translated into English, it says: "Above the world it is as peaceful as it could be down here on earth." This message was provided by Michael Shidler, aged 12, of Fort Wayne, Indiana. His message and many others will be uploaded to the microsat computer in a digitised form.

Peace messages must consist of 40 words or less and will be broadcast in groups of up to five on each orbit and changed at least twice a week. Any school intending to supply such recordings should carefully read requirements for the contents of message, to avoid unsuitable topics and matters which could be considered as propaganda. Different uses by school children of DOVE's digitised voice message facility are being considered for later in its life, and particularly during activities of the International Space Year 1992.

The other objective of DOVE is to act as a scientific and technological teaching tool in orbit. DOVE's downlink using four watts of RF will be easily received by a simple receiver, with modest antennas, or by amateur radio equipment tuned to the two metre band. Most schools should be able to receive the signal clearly in the schoolyard or classroom, as the satellite is expected to provide usable orbit passes lasting ten minutes.

It is planned to launch DOVE into a Sun Synchronous orbit at a height above the Earth of approximately 850 km. In this type of orbit the satellite will pass in optimal range of ground stations at any point on earth at approximately the same local standard time twice each day. DOVE should be heard at about 1030 am and 1030 pm plus or minus the time of one orbit - 101 minutes. The satellite will also be heard on other orbits on either side of the optimal pass.

Once DOVE is launched, a teachers' guide will be available to help them take advantage of the unique opportunity to use amateur radio and satellite communications as a teaching tool.

DOVE's transmission can be used in classrooms in a variety of ways. Physics, astronomy, electronics, computer, geography and language studies can all make creative use of the signals being beamed from space. The satellite can be tracked via graphical aids or by a program ready to run on school computers. If required, some assistance can be given to correctly locate the satellite.

If DOVE lives up to expectations, it will provide plenty of opportunities to achieve excellent publicity for our hobby if sufficient radio amateurs, whether they be teachers or parents, act now and get involved. A free information kit is available for those interested in helping DOVE activate a school by writing to:

Project DOVE, WIA Victorian Division, 38 Taylor Street, Ashburton Victoria 3147.

A Special Report from Brazil

DOVE first began in the mind of Dr Junior Torres de Castro, a prominent Brazilian geologist and radio amateur. His strong interest in amateur radio satellites led to his becoming founder and President of BRAMSAT, the Brazilian Radio Amateur Satellite Organization. Having nine children of his own, led him naturally toward the educational uses in schools of satellites. Junior is also Scientific and Technical Director of the Capricorn Observatory near Sao Paulo, a sophisticated astronomical installation with a strong educational mission. His vision of DOVE as a symbol of peace and learning, combined with the financial resources to make it a reality, have brought DOVE into existence. The compact MicroSat design of AMSAT-NA was chosen by Dr de Castro as the basis for DOVE. AMSAT-NA's team, under Chief of Engineering Jan King, is building DOVE and the other birds in the MicroSat "flock" at the AMSAT-NA Lab in Boulder, Colorado.

The frequency is now 145.825 MHz, the same frequency that the two University of Surrey UoSAT satellites use. Both UoSAT OSCAR 9 and 11 are in polar orbits, several hundred kilometres below DOVE's planned orbit. The UoSAT's are veterans in polar orbit and pioneering educational/scientific satellites. UoSAT OSCAR 9's orbit is decaying rapidly due to atmospheric drag and it is quite likely that it will die a fiery death in the atmosphere a few weeks before DOVE's launch date. So, DOVE and UoSAT OSCAR 11 will hold forth on 145.825 MHz.

Inside DOVE

DOVE is divided into five equal 1.5 inch high modules. Module 1 contains a special receiver for experimental communications work. Model 2 contains DOVE's computer. Module 3 is DOVE's power module with battery charge regulator (BCR) and Ni-Cad batteries. The batteries are charged by DOVE's highly efficient solar cells, which almost totally cover its outer surface. Module 4 is DOVE's speech digitizer/synthesizer. DOVE's 2 meter transmitter is located on the bottom in Compartment 5 and attached to DOVE's antenna system.

ar

HOW'S DX?

All Bands Busy

Stephen Pall VK2PS
PO Box 93 Dural 2158

In the absence of a permanent DX news editor, here is some information which will keep this column alive and hopefully will be of some help to the DX enthusiasts. Pat VK2RZ has done an excellent job as the editor of this column, and we are all sorry that he had to give up the dissemination of DX News.

CN6Ø Morocco

I worked this interesting prefix on 15 July. The special prefix was in use only for a few days, celebrating the 60th birthday of Hassan II, the King of Morocco. Within a short period I worked CN6ØCV Mohamed, CN6ØAC L'Habid, CN6ØMA Ben, and CN6ØMC the Club station of the Moroccan Amateur Radio Society. Working the club station and six additional Moroccan stations with the special prefix, would have entitled me to receive a special award and an entry into a special lottery among the DX stations, where the first prize is a gold medallion, second prize a silver one, and the third prize bronze. QSL to the Association of Moroccan Amateur Radio Clubs, PO Box 299, RABAT Morocco, Africa.

F89/France

A number of French stations were worked, F89/F6BVB, F89/FK8FG Bernard. The special prefix is used by some of the French amateurs, celebrating the 200th Anniversary of the French Revolution.

3D2 Conway Reef

This was a surprise. It just appeared on the bands. A number of Western German amateurs under the leadership of the well-known DX-er Baldur DJ6SI, landed on the reef on 28 July and was very active on several bands in SSB and CW for a few days. Several call signs were used. Worked 3D2WV Karl on 21 MHz, SSB. QSL to DK2WV, 3D2VT operated in the CW mode on 7 MHz. QSL to: DK2WV.

DX-peditions in the Pacific

Bing VK2BCH spent many weeks on Rotuma Island, which is now officially recognized as a "new" DX country. Shortly after Bing left, Roly ZL1BQD, the well known ZL DXer has appeared on the Island under the calisign 3D2RJ. He was assisted by Andrew OZ1XJ who operated under the callsign 3D2AH. QSL for both call signs to ZL1BQD.

However, others also had the urge to operate under a Pacific call sign. 3D2AK Alice on her way back to the Northern hemisphere operated from Apia. QSL to VE7YL. H44/VK3ERD was active on Guadalcanal. QSL to VK3CAX. T32I0 Richard on Christmas Island - QSL to AH6IO, T32PO John also on Christmas Island - QSL to NH6PO, 5W1IK Taka in Apia - QSL to JA3RCT, A35SA Arch in Tonga - QSL to KB7QC. 5W1IF Ved in Apia - QSL to JA3RCT, KH8/P/JA4RED in American Samoa - QSL to home call. KA3HMS/KH3 Bill on Johnston Island - QSL to KA3HMS. 5W1IE Kio in Apia - QSL to JA3RCT.

And here is the list of some other interesting DX QSOs.

YJ8RG	Ron is active again in Vanuatu. 21 MHz, SSB - QSL to VK4BRG.
CQ4/CM2ED	This was a 24 hours DX-pedition on the Isle of Pines - QSL to CO4RCB. It is interesting to note that the number of active CO/CM stations has increased in the past few months.
FR4FD	Pat on Reunion Island, 21 MHz, SSB - QSL to F6FYA
HI3JK	Julio, Dominica Republic - QSL to F6FNU, 14 MHz SSB
CQ2HQ	Ray in Havana, 14 MHz SSB - QSL to XE1XF
VP2EXX	Paul on Anguilla, has new QSL Mgr KC8JH
C6AAA	Don on Bahamas, 14 MHz SSB - QSL to callbook address
7X4BL	Boucif in Algeria, 21 Mhz SSB - QSL to DF9EP
9X5KP	Colin in Rwanda, 14 MHz SSB - QSL to W4IEN
S92LB	Louiz, on the Sao Tome Island, Africa - QSL to Call Book address.
GD4WBY	Mike on the Isle of Man, 14 MHZ SSB
V47RF	Reg on Nevis Island (Caribbean) - QSL to WA2SPL, 21 MHz SSB
J88AQ	Bill on ST Vincent, 3B9FR Robert on Rodriguez Island - QSL to F6FNU
FY5AN	Chris in French Guiana - QSL to Call Book address, 14 MHz SSB
FM5EB	Dominique on Martinez Island - QSL to Call Book address
OH2BH/P/EA8	Martii, the well known Finnish DXer, holidaying on the Canary Island - QSL to home call
4LØX	QSL to UAØIAP
ZS8MI	Peter on Marion Island 21 MHz SSB - QSL to ZS6PT
CT3AB	Henrique on Madeira Island, 14 MHz SSB
TL8WD	Dieter in Central African Republic - QSL to DL8CM
HG8EAC	Special prefix commemorating the European Air Championships in Hungary. The call sign was on air in August - QSL to HA8IB
KHØAC	Len on Saipan, 14 MHz SSB - QSL to W7ZA
HC8JG	Iama on Galapagos Island - QSL to WA6ZEF
CYØDXX	Special prefix in connection with a 24 hours DXpedition on Sable Island, a small speck of island off the East Coast of Canada - QSL to VE1AL, 14 MHz SSB
SV9ADO	Kosta on the Island of Crete, 14 MHz SSB - QSL to PO Box 2270, Iraklion, Crete, Greece
WB3KBZ/VP9	Frank on Bermuda - QSL to home call, 14 MHz SSB
CM2ED	El in Havana, 28 MHz SSB - QSL to Box 34043, Havana, Cuba
IX1BGJ	In the North West part of Italy, Aosta Region, quite a rare prefix.
S79MX	Kurt, holidaying on Sechelles, 21 MHz SSB - QSL to HB9MX
TA1E/P2	Aziz - QSL to callbook address
SØ1A	Western Sahara Democratic Republic - QSL to EA2JG
ZF2NZ	Grand Caymen Island - QSL to KA2UHS
LX9CFL	Emil in Petange, Luxembourg, Club Station of FIRAC Railway enthusiasts
OH2AQ/OHØ	Pekka on Aland Island, 14 MHz SSB - QSL to OH2NRV
FF1OSB	Jackie, the well know French DXer, operating the Club Station of the French DX Foundation
XX9SW	Macau - QSL to KU9C
V85NR	14 MHz SSB - QSL to Huw Roberts, PO Box 572 Kuala Belait, Brunei
CR8LN	Paul with special prefix - QSL to CT1LN
J52US	Dave in Guinea Bissau - QSL to WA8JOC, 14 MHz SSB
P4ØMA	Bill on Aruba Island - 14 MHz SSB - QSL to WJ7X
CT3EU	Dick in Funchal, Madeira on holiday - QSL to G3PFS
KNØE/KH3	Peter on Johnson Island, 14 MHz SSB - QSL to K9UIY

Africa and the ANZA Net

This net has been established for over twenty years, and is operating every day at 0500 UTC on 21205 MHz. The present Net controller is Percy VK4CPA. If you are interested in working African and other exotic stations, join the net.

The following stations show up on the net from time to time:

FR4FD, ZS6P, ZS5OV, ZSZRW, VKØGC, TL8WD, 5Z4BH, FR5ZD, 7X4BL, TU2UI, ZS8MI, Z21BP, ZS6LUX, Z21DB, ZS3GB, ZB2AZ, ZS5K, ZS6BGJ, 9M2HB, A92BE. Incidentally, the name ANZA stands for: Australia, New Zealand, Africa Net.

80 Metres

I was fortunate to work KNØE/KH3 on this band in the CW mode. The DX "window" on this band is quite active. A small group of VK2, VK3, and VK5 amateurs have regular contacts now with the west coast US stations, around 1000 UTC.

News From Here and There

T3ØXAC - QSL Mgr is AA6BB/P7 (The VU2 QSL Bureau does not operate).

4L1NV - QSL to UB5IMD (QSL direct or to managers)

FT4ZE - Michelle on Amsterdam Island - QSL to F2CW.

H44JL - QSL to PO Box 63, Honiara.

ZL2VS "Dusty" - will be on Chatham Island from 15 January 1990 to 29 January 1990. He will operate mainly on CW under the call ZM7VS.

Z21BA - QSL to N5FTR

Micronesia prefix has been changed from KC6 to V6.

Marshall Islands have a new prefix - V7.

VP8BQE - on Adelaide Islands Antarctica, was active on SSB 80 metres, and had QSOs with VK and W6 stations.

CY9SPI - was active on St Pauls Island for 24 hours - QSL to VE1YX

P29CG - QSL to WB9SVK.

HL9FN - QSL to WD4IFN.

QSL Cards

If you sometimes wonder whether you will successfully receive the QSL card from that rare DX station, here is a list of cards received, (mostly direct). So, do not give up hope, your card could be in the mail:

3WØA, T3ØRA, TPØCE, SMOIG/YN, KV4AD/PJ6, HL88ASS, VP2MC, 3DAØAU, J6LMA, HR1KAS, 3B9FR, TR8SA, TL8WD, VP8BWL, VE8CB, ZF2NV/ZF8, XF4F, ZS1IS, ZP1XCP, VP2EXX, VP47NXX ,3D2XV, H44/VK3ERD, 8P6CC, VO2AC

73, and good DX-ing

Stolen Equipment

Stolen 1st August from the home of Phill VK2XPU : 1 Yaesu FRG7700 receiver serial no 3M260983, an electric winder, Olympus OM4 and associated lenses and equipment, a Fuji KCA 60 Box, and a Canon PC10 copier. Phill had been helping with the Amateur Radio lecture run by the Gladesville Amateur Radio Club and discovered the robbery on his return home.

If you are offered any of these items, please contact your local Police station.

VHF/UHF

An Expanding World

Eric Jamieson VK5LP
9 West Terrace
Meningie 5264

All times are Universal Time Co-ordinated indicated as UTC

Australian Amateur Bands Beacons

Freq.	Call Sign	Location	Grid Square
50.056	VK8VF	Darwin	PH57
50.066	VK6RPH	Perth	OF78
52.200	VK8VF	Darwin	PH57
52.320	VK6RTT	Wickham	OG89
52.325	VK2RHV	Newcastle	QF57
52.330	VK4RGG	Geelong	QF21
52.345	VK4ABP	Longreach	QG26
52.370	VK7RST	Hobart	QE37
52.420	VK2RSY	Sydney	QF56
52.425	VK2RGB	Gunnedah	QF59
52.435	VK4RMV	Hamilton	QF12
52.440	VK4RTL	Townsville	QH30
52.445	VK4RIK	Cairns	QH23
52.450	VK5VF	Mount Lofty	PF95
52.460	VK6RPH	Perth	OF78
52.465	VK6RTW?	Albany	OF84
52.470	VK7RNT	Launceston	QE38
52.485	VK8RAS	Alice Springs	PG66
144.022	VK6RBS	Busselton	OF76
144.400	VK5RTT	Mount Mowbullan	QG62
144.410	VK1RCC	Canberra	QF44
144.420	VK2RSY	Sydney	QF56
144.430	VK3RTG	Glen Waverly	QF22
144.445	VK4RIK	Cairns	QH23
144.445	VK4RTL	Townsville	QH30
144.465	VK4RTW	Albany	OF84
144.470	VK7RMC	Launceston	QE38
144.480	VK8VF	Darwin	PH57
144.485	VK8RAS	Alice Springs	PG66
144.530	VK3RGG	Geelong	QF22
144.550	VK5RSE	Mount Gambier	QF02
144.600	VK6RTT	Wickham	OG89
144.800	VK5VF	Mount Lofty	PF95
432.066	VK6RBS	Busselton	OF76
432.160	VK6RPR*	Nedlands	OF78
432.410	VK1RBC	Canberra	QF44
432.420	VK2RSY	Sydney	QF56
432.440	VK4RSD	Brisbane	QG62
432.445	VK4RIK	Cairns	QH23
432.445	VK4RTL	Townsville	QH30
432.450	VK3RAI	MacLeod	QF22
432.535	VK3RMB	Mount Buninyong	QF12
432.540	VK4RAR	Rockhampton	OG56
1296.198	VK6RBS	Busselton	OF76
1296.410	VK1RBC	Canberra	QF44
1296.420	VK2RSY	Sydney	QF56
1296.440	VK3RSD	Brisbane	OG62
1296.445	VK4RIK	Cairns	QG23
1296.480	VK6RPR*	Nedlands	OF78
2304.445	VK4RIK	Cairns	OH23
2306.440	VK4RSD	Brisbane	OG62
10445.00	VK4RIK	Cairns	QH23

? Operation Doubtful

* Note: With the exception of the six metre beacons, it appears the Perth beacons are in a state of limbo at the moment pending relocation. Although still listed you are advised they may not be available in the short term.

Six Metres

For most of the month the six metre band has been relatively quiet. Personally, I have observed about 5 openings to VK4 with the better signals received from northern Queensland. My old friend Wally VK4DO at Airlie Beach was very strong on a couple of occasions, but I was too busy with important matters to allow myself to become involved!

Phill Hardstaff FK1TS has written to say that he is now back ion Australia, and now signs VK3XGK form Lower Plenty. While in Noumea Phill made more than 3000 contacts in twelve months. He received his QSL from BY4RB which was a pleasant surprise and also one from Warwick ZK1WL who thought that their contact was probably the first six metre contact out of the North Cooks Islands. Does anyone know of another?

Before leaving Noumea, he managed the first FK to anywhere EME contact on two metres with W5UN. Phill used an IC290H without preamp and an 8 element Jaybeam Quad antenna. Transmitter power was 150 watts and he was really excited about the contact. Good work.

The Japanese magazine "CQ ham radio", courtesy VK6RO indicates a number of interesting contacts for the period 18/4 to 24/5 with stations worked including ZL7TPY, PP5WL, KX6DS, FK1TS, VS6AK, FOØAQ, T2ØJT, 5W1GW, 4F3BAA, KG6DX, 5H1HK, HL4MC, 3D2ER, KC6IN, DU1GF, YB1CHG, ZS3AAU, ZS2AGI, ZL3NE, H44GR, VQ9LW, YJØAMI,BY5RA, T33JS, P29PL, LU, KH6, W and VK. That represents a rather imposing list, and I have only extracted one call sign from each area, so there are many more. It seems odd that the JAs do not appear to work into the Caribbean area in the same way that VK stations have achieved; it is obvious the JAs can work Africa more easily than VK, so perhaps someone is sharing the contacts around!

Further QSL Information

CX8BE:	Gorge de Castro Box 71, 11000 Montevideo, Uraguay.
FO4NK:	Alain Salic, SP 91381, F-75998, Paris Zarmees, France.
FOØAQ:	Box 11397 Mahina, Tahiti.
KC6IN:	Isao Nishimura, Box 296, Ponape, EC1 TT 96941
KC6TY:	via JG1RVN

New column on computer hardware

SUBSCRIBE SUBSCRIBE SUBSCRIBE

Police radar: it's not always right
Intelligent charger for 12V gel batteries

Have SILICON CHIP delivered direct to your door at no additional cost.

Each month, we'll bring you the best and brightest electronics magazine, put together by Australia's most experienced team.

- **CONSTRUCTIONAL PROJECTS**
- **AMATEUR RADIO**
- **VINTAGE RADIO**
- **COMPUTER BITS**
- **THE WAY I SEE IT**
- **INFORMATIVE ELECTRONIC STORIES**

COMPLETE THIS COUPON

24 Hour Fax Service
(02) 982 9553
Send the coupon with your Credit Card details.
24 Hours, 7 Days a week.

Subscription Hotline
Telephone (02) 982 3935
9am-5pm Mon-Fri
and quote your Bankcard, Visa Card or MasterCard No. and expiry date.

Detach Coupon and Mail to:
FREEPOST 25
SILICON CHIP PUBLICATIONS
PO BOX 139
COLLAROY BEACH
NSW 2097

***No postage stamp required in Australia.**

FREEPOST* SUBSCRIPTION COUPON

☐ New subscription ☐ Renewal Start in_____

Name_____
(PLEASE PRINT)

Street_____

Suburb/town_____ Postcode_____

	1 year (12 issues)	2 years (24 issues)
Australia	☐ $A42	☐ $A84
NZ & PNG (airmail)	☐ $A65	☐ $A130
Overseas surface mail	☐ $A62	☐ $A130
Overseas airmail	☐ $A120	☐ $A240

Enclosed is my cheque/money order for $_____ or please debit my
☐ Bankcard ☐ Visa Card ☐ MasterCard

Card No. | | | | | | | | | | | | | | | | |

Signature _____ Card expiry date____/____/____

KX6DW:	via KX6BU
PP5WL:	Adolfo Adao Thiede Ruatiradentes 402 Box 39 89160 Rio do sui SC Brazil.
T33JS:	via JA1BK
VQ9LW:	via WA2ALY
YJØAMI:	via JL1RUC
YJØATH:	via JH8FAJ
YJØAYT:	via JG1UZD
ZS1EK:	W J Dewey, 39 2nd Ave, da Gamer Park, Simonstown 7995, South Africa.
ZS4AAB:	R V R Handfield Jones, 19 Gazelle Ave, Lime Acres 8410, South Africa.
3D2ER:	Raj Singh, Box 184 Suva Fiji Island.
4F3BAA:	via JG2PUW
5W1HC:	via JH4IFF

The Melbourne Scene

John VK3ZJC has written a letter covering a number of areas.

Several new 1296 MHz stations have appeared and there are now 31 VK3s. Those believed to be using SSB include VK3BH, 3ATW, 3AUI, 3BBU, 3KAJ, 3KAQ, 3KKW, 3KZZ, 3XRS, 3YTV, 3ZAT, 3ZGJ, 3ZJC and 3ZPW. Others on the band are 3WH, 3AHJ, 3AIY, 3AMZ, 3AUX, 3KJN, 3YJM, 3YLH, 3YLV, 3YMP, 3YNB, 3ZBJ, 3ZHP, 3ZNE, and 3ZYN. The country stations are 3KZZ and 3YLV at Horsham, 3XRS Bairnsdale, 3YJM Carisbrook and 3YNB Ballarat.

John makes several points which are worth passing along. Two local amateurs recently purchased 1296 MHz FM gear and received copies of the WIA band plan. After making many calls on the FM calling frequency in the band plan (1252.5 MHz) and receiving no replies they have now migrated to 1296.1 and found stations to work.

John sees a potential problem here. With new stations coming on 1296, mostly on FM, they will naturally gravitate to any frequency which has some use. The only active frequency for many years has been 1296.1 and some stations use FM on it, but in fact, it is the SSB/CW DX calling frequency. Its use would be severely compromised if any number of new FM operators appeared and turned it into an FM net.

It seems very desirable that more publicity should be given for the FM nets between 1252 and 1253 MHz, especially the primary calling frequency of 1252.5 MHz. In this way, mutual interference between the modes can be avoided before the use of the frequency becomes firmly established.

Also, despite being shown in repeater listings, there appear to be no 23 cm repeaters in operation, unless that shown in Brisbane on 1281.65 input and 1293.65 output is actually in operation. However, these frequencies clash with existing ATV operating practice. The band plan shows ATV channels on 1246.25 and 1287.25 but no-one appears to use these frequencies! There is little ATV on 1296 but what there is has always been on 1290.25, which corresponds to a Channel 5A IF for a 1296-144 MHz transceiver or converter. John, therefore, believes it would be logical to enshrine it in the band plan - no-one will follow band plans if they don't take into account existing practice.

23 cm Band Planning

John VK3ZJC also says that the 23 cm band plan bears little resemblance to reality - the 1296.1 calling frequency is about the only part of it that agrees in actual practice.

It appears that at present repeaters are not permitted in the band despite a change from 20 MHz offset to 12 MHz for the specific purpose of fitting around the radar guard band and the satellite band. If they are not acceptable between 1240 and 1260 MHz then where will they be acceptable? Then again, do we need repeaters on 23 cm, after all? It is probably the lowest band where there is any genuine experimentation taking place.

Contests

Last year the Federal Contest Manager instituted a VHF-UHF Field Day Contest which received a reasonable degree of support. I understand from John VK3ZJC that there is not likely to be one this year, as the FCM said there had been no confirmation of approval from the Federal Convention where the matter was raised. Should this be so, it seems a pity that the Contest should fall by the wayside due to any formalities which may have been overlooked.

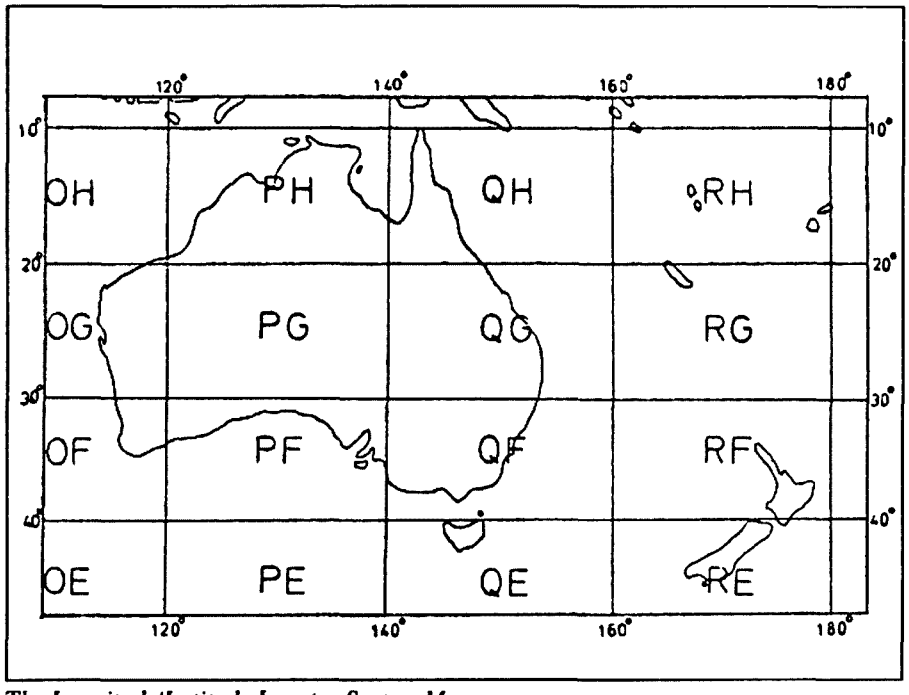
The July issue of AR carried advance notice that the Ross Hull Memorial Contest would be staged again this summer, and for a projected period of three weeks. While the fine print has not yet appeared, the forward notice says that the frequencies which may be used are all authorised amateur bands above 30 MHz.

Maidenhead Locator Squares

During the Ross Hull Contest last year there was a general reluctance on the part of many operators to swap Locator Square numbers. This may have been due in part to many not knowing in which square they lived. The subject of the locator system was outlined in November 1983 AR. However, there were some errors made during the transposing process from the northern to southern hemispheres, so that corrected tables were published in February 1984 AR, but the large square map in the November issue was correct and will be required for use with the tables of the February issue. The relevant information is repeated in this issue and this should enable you to work out your square, providing you know your latitude and longitude.

I have a Concise Family World Atlas for Australia and New Zealand published by George Philp & Son Ltd and obtained it from Time Life Books. (A similar publication by the same people is known as the Golden Concise World Atlas and may be more readily available.) Both have a large part of Australia in divisions of 1 x 1 degrees and I have drawn lines to the required 2 x 1 degrees on the appropriate maps using see-thru marker pens, so that I now have quite an accurate read-out of locator squares to four places for the whole of Australia and New Zealand. If the full six places of the system are required then, to use the appropriate tables, you must know precisely what your position is on the earth.

In return for a stamped self-addressed envelope I am prepared to advise anyone of their locator square to four places, provided the following information is enclosed: the name of your town and the longitude and latitude if known. If a small settlement or town - the distance and direction to the nearest large centre, so that I can have some idea where you live, in case your place is not marked on my map. For those people who live close to the 2 and 1 degree



The Longitude/Latitude Locator System Map

borderlines, there is a possibility of error if you cannot supply longitude and latitude. Once in possession of the first four parts, you should be able to work out the final two from the tables in AR.

I am currently considering producing a chart which would list the locator squares for every 2 x 1 degree segment of Australia and New Zealand. This would allow the majority of people to know their position to four places. Those on or near the borders of the segments would need to know their longitude and latitude to ensure they can accurately define their position. More on this later.

Closure

As these notes were closed off on 23 August, the amount of available news has been reduced. The need for the early closure is the necessity for surgery on my back, in an effort to keep me walking. Hopefully, I can be back on deck again from about mid-September to be around when the 50 MHz DX becomes available!

Closing with two thoughts for the month: "Opinions should be formed with great caution - and changed with greater", and "Few things are harder to do secretly than to stub your bare toe on the bedpost!" 73, from the Voice by the Lake.

Locator Squares Details

The first two letters: These are found from the map.

The third character: This is determined by your longitude in degrees east as follows:

Longitude degrees east	Third character	Longitude degrees east	Third character
110-111	5	146-147	3
112-113	6	148-149	4
114-115	7	150-151	5
116-117	8	152-153	6
118-119	9	154-155	7
120-121	0	156-157	8
122-123	1	158-159	9
124-125	2	160-161	0
126-127	3	162-163	1
128-129	4	164-165	2
130-131	5	166-167	3
132-133	6	168-169	4
134-135	7	170-171	5
136-137	8	172-173	6
138-139	9	174-175	7
140-141	0	176-177	8
142-143	1	178-179	9
144-145	2	180-181	0

The fourth character:
This is determined from your latitude in degrees south as follows:

Longitude degrees south	Fourth character	Longitude degrees south	Fourth character
10	9	30	9
11	8	31	8
12	7	32	7
13	6	33	6
14	56	34	5
15	4	35	4
16	3	36	3
17	2	37	2
18	1	38	1
19	0	39	0
20	9	40	9
21	8	41	8
22	7	42	7
23	6	43	6
24	5	44	5
25	4	45	4
26	3	46	3
27	2	47	2
28	1	48	1
29	0	49	0

The fifth character:
This is determined by your minutes of east longitudes as follows:

Minutes of Longitude east	Even minutes	Odd minutes
0-5	A	M
5-10	B	N
10-15	C	O
15-20	D	P
20-25	E	Q
25-30	F	R
30-35	G	S
35-40	H	T
40-45	I	U
45-50	J	V
50-55	K	W
55-60	L	X

The sixth character:
This is determined by minutes of latitude south as follows:

Minutes of Latitude south	Sixth character	Minutes of Latitude south	Sixth character
0-2.5	X	30.0-32.5	L
2.5-5.0	W	32.5-35.0	K
5.0-7.5	V	35.0-37.5	J
7.5-10.0	U	37.5-40.0	I
10.0-12.5	T	40.0-42.5	H
12.5-15.0	S	42.5-45.0	G
15.0-17.5	R	45.0-47.5	F
17.5-20.0	Q	47.5-50.0	E
20.0-22.5	P	50.0-52.5	D
22.5-25.0	O	52.5-55.0	C
25.0-27.5	N	55.0-57.5	B
27.5-30.0	M	57.5-60.0	A

Example

The former VK5LP location at Forreston was longitude 138 deg 54' 21.2" east, latitude 34 deg 47' 39.3" south. Thus, for the original map the first two characters are PF.

The third character is determined from the 136 degrees of longitude and from Table 3 becomes 9.

The fourth character is determined by the degrees of south latitude and being 34 becomes a 5 from Table 4.

The fifth character is determined by the minutes of longitude east and being 54 becomes K from Table 5. (Had the figure been 55 then the 21.2 seconds would put the figure ABOVE 55, so it would have been L.) The sixth character is determined by the 47 minutes of south latitude.

At first on reference to Table 6 one might say the sixth character is F.

But the 39.3 seconds indicates over the half minute (30 seconds), so the 47 needs to be read in the section 47.5 to 50.0 which is E. So my location using the tables was PF 95 KE.

ar

COLUMNS

Plea to Senders of QSL Cards

Where a manager does the work of answering QSLs on behalf of an operator, PLEASE mark or highlight his callsign on the card. So many Bureaux take the easy way out and send the card to the other bureau. And many managers have not made any arrangements to receive cards from the bureau. For example, only three operators in the last seven years have notified the Federal QSL Bureau of where to send their cards, and have included postage to cover their delivery. Before you write asking what happens to all the other cards, here is the answer.

VKØ cards, where the home call of the operator is unknown, are sent to ANARE in Tasmania. DOTC refuse to tell the WIA their home call! VK9 cards are despatched to the operators home call at WIA expense. So far, with help from many sources, these have all been found. In the case of VKØ callsigns, many do not have an Amateur Callsign before, and sometimes after, returning to Australia. So, if you have a contact with a VK9 or VKØ, find out his/her home callsign and write it on the card please.

Good DXing

Neil VK6NE
Federal QSL Manager

China Color TV Standards

Color TV receivers made in China must be able to operate at least 15,000 hours before breaking down under new standards issued by the government. This was among a number of standards covering reliability, sound and picture quality, and electronics design, announced by the vice minister of machinery and electronics industry, Zhang Xudong. China claims to be the world's third-biggest maker of color TV sets after the United States and Japan. It produced 10.27 million sets last year with most of them exported and sold under non-Chinese brand names. ar

Computer Hackers Challenged

Nippon Telegraph and Telephone (NTT) of Japan has offered a one million-yen prize to any hacker who can beat its coded communications system within two years. An NTT spokesperson said he does not think anyone can decipher the FEAL-8 system and that the prize money was not designed to provoke hackers. However, computer buffs were free to try and in the extremely unlikely event of them being successful their efforts would point out any system defects. ar

CONTESTS

Calendar, Rules ALARA, OK-DX Contests

Frank Beech VK7BC
Federal Contest Manager
37 Nobelius Drive
Legana 7277

Contest Calendar

October:
7-8 VK/ZL Oceania DX contest SSB section
8 RSGB 21/28 MHz SSB contest
9 RSGB 28 MHz contest
14-15 VK/ZL Oceania DX contest CW section (rules for both in Sept "AR")
15 RSGB 21 MHz CW contest
November:
11 ALARA annual contest (Rules this issue)
11-12 Czechoslovakian DX contest (Rules this issue)

The SSA has sent me the full results of the 1988 Scandinavian activity contest, these results make up a booklet of some 33 pages! In the non-Scandinavian sections the plaque winners are, by continent, CW: Africa EA5BS/EA8, Asia UZ9AWZ, Europe RB5IM, North America K3ZO, Oceania YB2CTW, South America HK1BAU, and in the phone section, again by continent: Africa DJØMW/CR3, Asia UA9TS, Europe LZ2PO, North America VO1SA, Oceania YB2CTW, South America YW1A. In our corner of the pond in the CW section the scores are: AX2BQQ 4312, VK4TT 945, AX4XA 874, VK2DID 153, Indonesia: YB2CTW 9333, YB2FEA 7980, YB3ASQ 48, No Kiwis on CW.

In the phone section: AX1RJ 276, VK3DHV/2 90, YB2CTW 3910, YB3ASQ 240, ZL1AAS 19080.

I could not find any entries from around these parts mentioned in the QRP section. By the time these notes are being read by our membership, 1989 contest will have been run, so please do send in your log and let's try and get one of the plaques into VK next year.

I have received one or two letters from amateurs who have seen their callsigns mentioned in this column as winners in some of the various contests run by overseas societies. To answer these queries I must state that I do not distribute certificates for any overseas societies, nor do I receive the results, but occasionally do receive such information from various sources. When I do, I will publish them. The majority of overseas societies will send the certificates to contest winners by surface mail in due course, so a lot of patience is required.

Please note that in the rules for the forthcoming ALARA contest, the scheduled time for this event to commence is 0002 UTC on Saturday 11 November 1989. This time allows two minutes silence to commemorate Armistice day. The 11th hour of the 11th month 1918.

ALARA Contest

Eligibility

All licensed operators throughout the world are invited to participate. Also open to SWLs.

Object

Participation. YL works everyone, OM works YLs only. One contest (combined phone and CW) run over 24 hours.

Starts: Saturday 11 November 1989 at 0002 hours UTC

Ends: Saturday 11 November 1989 at 2359 hours UTC

Suggested Frequencies:

Bands to be used are 3.5, 7, 14, 21 and 28 MHz only. The following are suggested frequencies for easier location of contacts:

28.100 to 28.350 : 28.500 to 28.600
21.100 to 21.200 : 21.350 to 21.370
14.060 to 14.235
7.100 to 7.120
3.525 to 3.590

Operation:

Phone and CW operation. Each station may be counted twice on each band for credit - once on phone and once on CW. All contacts must be made in accordance with operator and station licence regulations. No net or list operation, no crossmode.

Procedure:

Phone: Call "CQ ALARA CONTEST"
CW: YLs call "CQ TEST ALARA"
OMs call "CO YL"

Exchanges:

ALARA Member: RS or RST, serial no

starting at 001, ALARA member name.

YL non-member or OM: RS or RST, serial no starting at 001, name.

Scoring:

Phone: 5 points for ALARA member contacted
4 points for YL non-member contacted
3 points for OM contacted

CW: Double all points for CW contacts

SWL: 5 points for ALARA member logged
4 points for YL non-member logged

Logs: Single log entry (but Australian YL novices entering for the Mrs Florence McKenzie CW trophy should indicate their CW score separately also). Logs must show date/time UTC, band, mode, callsign worked, report and serial number sent, report and serial number received, name of operator of station worked, and points claimed.

Sample Log:

Date/Time UTC	Band Mode	Callsign	RS(T) & Serial No Sent	RS(T) & Serial No Sent	Name	Points
14/11 0135	28 SSB	VK3EBX	59001	58028	Joy	5
14/11 0141	21 CW	VK3KS	599002	599045	Mavis	10
14/11 0600	14 SSB	FK8FA	59025	59011	Aimee	5

Logs Must Be Signed:

Logs also to show full name, callsign and address of operator, and show final score (points claimed.) Logs must be legible. No carbon copies. No logs will be returned. Decision of the Contest Manager will be final. Logs must be received by the Contest Manager by 31 December 1989.

Contest Manager:
Mrs Marilyn Syme VK3DMS
PO Box 91
Irymple 3498
Vic Australia

Mrs Florence McKenzie CW Trophy:

This will be awarded to the Australian YL novice operator with the highest CW score (not necessarily an ALARA member). Minimum score 50 points. The actual trophy, because of the size and weight, will not be forwarded to the winner, but a certificate bearing a photo depicting the trophy will be sent to the winner each year.

Certificates:

Will be awarded for the following:

Top score overall
Top score phone only
Top score Australian YL novice CW (Mrs F McKenzie Cert)
Top score ALARA member in each country and VK call area
Top score YL non-member in each continent
Top score OM in each continent
Top score SWL in each continent
Top score VK novice
Top score overseas YL novice CW

(Mrs Florence Violet McKenzie, 1892-1982, was the first woman in Australia to take out a transmitting licence in 1921. She passed the Amateur Operator's Certificate of Proficiency in 1925 and obtained the callsign 2GA (later VK2FV). Mrs Mac taught Morse code to thousands of people, particularly service personnel during the 1939-45 war years. In 1984 the Townsville Amateur Radio Club kindly donated a trophy in her memory.)

OK-DX-Contest

The Czechoslovakian Central Radio Club has the honour to invite amateurs all over the world to participate in the annual OK-DX-Contest.

1 : Contest Periods

Every second full weekend in November
1988 - 12/13 November
1989 - 11/12 November
1200 UTC Saturday to 1200 UTC Sunday

2 : Mode

CW and Phone

3: Bands

1,8 - 3,5 - 7 - 14 - 21 - 28 MHz

4: Categories

A - single operator all bands
B - single operator single band
C - multi operator all bands (club stations)
D - SWL

Any station operated by a single person, obtaining assistance such as keeping the log, monitoring other bands, tuning the transmitter etc, is considered as a multi operator station.

Club station may compete in category C only. Only one transmitter and one band is permitted during the same time period (defined as 10 minutes rule). That means a station can change the band after ten minutes of operation on it.

5 : Contest Exchange

Signal report (RS or RST) and number of ITU zone.

6 : Scoring

A station may be worked once per band regardless of the mode. Crossmode and crossband contacts are not valid.

1 point for a complete contact with other DXCC country,

3 points for a complete contact with OK/OL station (OK4/MM counts 1 point for everyone)

0 point for a complete contact with own DXCC country (counts only as a multiplier)

7 : Multipliers

Sum of different ITU zones worked on each band.

8 : Final Score

Total QSO points from all band times sum of the multipliers.

9 : Log Instructions

a) All times must be in UTC.
b) Indicate zone multiplier only the first time it is worked on each band.
c) Logs must be checked for duplicate contacts, correct QSO points and multipliers.
d) For each duplicate contact or multiplier that will be removed from a log by the committee, a penalty of three additional contacts of the same points will be exacted.
e) Use a separate sheet for each band.
f) Each entry must be accompanied by a summary sheet showing all scoring information, category, contestant's name and address and a signed declaration that all contest rules and regulations for amateur radio in the country of operation have been observed.
g) All entrants are encouraged to submit crosscheck sheets for each band on which 200 or more QSOs were made.

10 : Awards

First place certificates will be awarded in each category for TOP scoring station in each DXCC country. All scores will be published.

The "100 OK", "OK SSB" and "SLOVENSKO" awards may be issued upon a separate application (no QSL cards are required for contacts made during OK-DX-Contest.)

11 : Disqualification

Violation of amateur radio regulations in the country of contestant or the rules of the contest, operation in an unsportsmanlike manner, manipulating scores or times to achieve a score advantage, unverifiable contacts and multipliers are grounds for disqualification. Decisions of the Contest committee are final.

12 : Deadline

All entries must be postmarked no later than December 15, and should be mailed to The Central Radio Club, PO Box 69, 11327 PRAHA 1, Czechoslovakia.

We do hope to meet you in the OK-DX-Contest next year again and please kindly inform your friends about the rules of the contest. Any picture from the contestants will be appreciated. Many thanks for your log and participation. Contest Manager is OK2FD.

From E J Mulholland VK4AEM
Queensland Contest Manager

Sunshine State Jack Files Memorial Contest 1989

Results

Section 3 : Stations Within VK4

a) Tx All Bands:

VK4VR	883	VK4ANN	139
VK4PJ	281	VK4GUY	132
VK4BAW	152	VK4AHO	99

b) Tx HF Phone:

VK4NLV/M	1737	VK4SSB	793
VK4KEL	1132	VK4DRM	617
VK4YB	942	VK4NFE	398
VK4BB/M	906	VK8AV/4	335
VK4ADD	842	VK4OD	240

Check Log, VK4AOE, VK4IY

c) Tx HF CW:

VK4VXX	122	VK8AV/4	20

d) Tx V/UHF Only:

VK4RX	76	VK4ZXZ	38

e) Club Stations:

VK4WIE/M	2779	VK4WIX	630
VK4RC	1011	VK4WIM	522
VK4BPA	775	VK4WIZ	196
VK4WIC	717		

Section 4 : Stations Outside VK4

a) Tx All Band Phone:

ZM3KR	758	VK2BQS	150
VK2DJJ	508	ZL3TX	136
VK1BEB	238		

Comments:

There was greater participation than the number of logs indicates. Most participants offered helpful comments, and these will be considered. I am grateful to those who took the time to pen their thoughts.

The standard of logs was very high, one or two qualify for the accolade "outstanding". ar

AWARDS

Questionnaire Response, USSR Awards

Ken Gott VK3AJU
Federal Awards Manager
38A Lansdowne Rd
St Kilda
3183

Results of Survey of VK Awards

Last April I wrote to more than 70 managers of awards issued by VK divisions, zones, clubs and special interest groups, asking for up-to-date information on their awards.

The only comprehensive list of VK awards I had at the time was the one published in the WIA 1985-86 Callbook. It was then three years old and I suspected that some of the addresses were out of date and that some of the awards had collapsed. Letters from overseas amateurs complaining of non-acknowledgment of enquiries or applications concerning various VK awards confirmed my belief that an awards up-dating was needed.

So, in April I sent forms to the managers of all the awards listed in the WIA 1985-86 Callbook and to clubs, etc with awards subsequently notified to AR and reported in this column.

I must thank all who responded to my letters. The majority reported that the award in question was still up and running and most gave details of nets or broadcasts useful to those seeking to qualify for the award.

In some cases, respondents reported that their award was no longer available for one reason or another. That information is also useful since these dead awards can now be cleared not only from the WIA list, but also from worldwide directories of awards published in the USA, UK and elsewhere.

Some of my letters came back marked "return to sender", while others vanished into the void, drawing no response. (In all case, I sent a SASE for the enquiry form to be returned to me.)

The only awards that I have listed below as no longer being issued are ones for which I have been specifically advised that such is the case. Where my letters were returned unopened, or no response was forthcoming, I have listed the award as "missing, presumed killed."

Unless I hear from their managers by December 7, these awards will not be included in the listing which will appear in the February 1990 Special Information issue of Amateur Radio.

I will also advise editors of overseas guides to awards of the situation regarding these "missing, presumed killed" awards.

My questionnaires asked managers for the number of award certificates they had issued and for figures or estimates of how many of these had been sent overseas.

The highest tally reported was from the Redcliffe City ARC which has issued 718 certificates since its award was established in 1972. Almost 250 of these have gone overseas. The club obviously keeps good records, since it supplied a list of the 34 DX countries to which certificates had been sent and the number going to each country.

After that, the next high-flyer was the humorous DX Widows Award which requires no contacts, but merely your callsign and XYLs name, plus $2.00. Its custodian Maurie Batt VK3XEX says that 705 certificates have been issued since the award's inception in 1981 and that at least 50 of these have gone overseas to 28 different countries.

The next biggest tally was 470 for the Southern Cross Award set up in the 1970s by the Eastern and Mountain Districts RC in VK3. Close behind was the Tasmanian Devil Award, another certificate calling for serious effort. Since launching in 1980, 442 certificates have been issued, plus 82 upgrades. Both managers reported that numbers of certificates had been sent abroad.

The Festival City and VIPM (10/10) Award set up in 1979 has issued 405 certificates. This award is administered by Bill Vogel VK4NVW and as indicated a 10/10 award. (Perhaps an explanation of that is needed, but it will have to wait for a future column.) More than 300 of these awards have gone overseas.

A very high proportion of managers who responded to my enquiries gave details of nets associated with their awards, usually on 80 metres. I plan to include details of these nets in the awards listing in the February 1990 issue of this magazine.

Defunct Awards

Peacock
Australian Railways Charter
Whistle Stop (all VK3)
Maris
Blue Mountains Lagoon (all VK2)
Gun Valley and VIP (VK5)

Missing, Presumed Killed

Ace
Commonwealth Electorates
St George
Worked Indian Ocean (all VK2)
Major Mitchell
National Parks
Natural History
Power Valley (10/10)
Wombat
Black Marlin
Brisbane ARC
Coral Sea
Gold Coast
Gold Coast Repeater 100
Gun Valley and VIP (10/10)
Pioneer Shire
SEQ Teletype Operators
White Bull
Worked North Queensland
Worked Rockhampton (all VK4)
Blue Lake
Elizabethan
VK5 Whisky Charlie (all VK5)
WA Police
Western Keyboard Bashers
North-West (all VK6)
Rev John Flynn
Worked Darwin
Worked VK8 (all VK8)

New USSR Awards

Earlier this year I mentioned some effects of Glastnost and Perestroika on amateur radio in the USSR (AR, May issue). I've now learned that several radio clubs are now issuing their own awards.

From time immemorial, the only USSR awards available came from Box 88, Moscow, but the ice was broken a few months ago when the Western Siberia DX Club announced an award series. I'm trying to obtain details of these awards, but in the meantime, some other new USSR awards have come to my attention.

One is the Trophy Ukraine for which the qualification is to contact each of the 27 Ukrainian oblasts on any two bands since 1 January 1988. That's a total of 54 QSOs and all modes are acceptable.

Ukrainian oblasts are: 057-060, 062-082, and 186-187.

Cards should not be submitted, merely a certified list. The fee is $3 or 60 IRCs, which is very high. However, I'm told that the award is in the form of a handsome wooden plaque. Applications should go to Victor Tkachenko RB7GG, PO Box 73, Kherson 325000 USSR.

ar

Have you advised the WIA Executive Office of your new callsign? Use the form on the reverse of the AR address fiysheet.

POUNDING BRASS

Direct Conversion Receivers

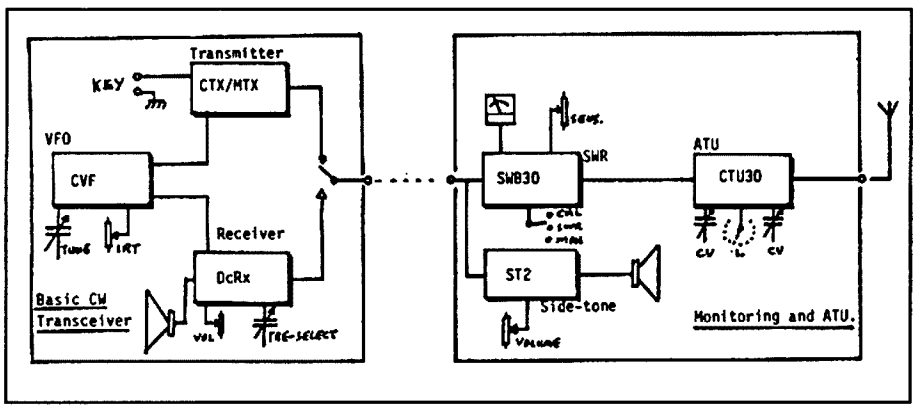
Gilbert Griffith
VK3CQ
7 Church St
Bright 3741

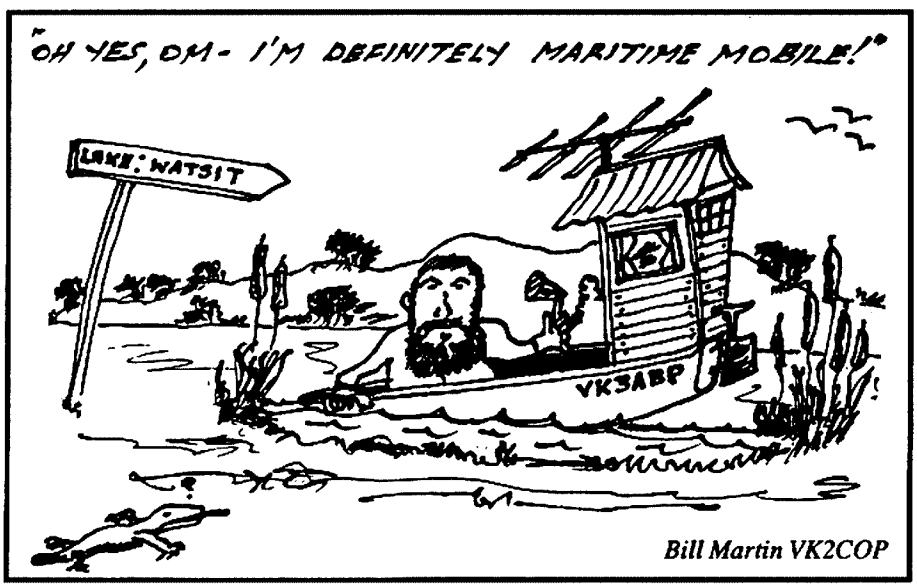
I have had a few enquiries over the last month more more info on the CW Operators QRP Club. Kevin Zietz VK5AKZ (43) is the man to contact and his address is 41 Tobruk Avenue, St. Mary's, SA, 5032.

Going back to last month and the Howes CVF80 VFO, you will be pleased to hear that the unit is still working, (I haven't blown it up yet!) and rock steady. Now, thanks to the short days and changeable weather, I can give you a short report on the matching receiver kit. The DcRx80 Howes Kit (courtesy DSE) is up and running and I have been listening!

For those of you who have no experience with direct conversion receivers, this is a very simple kit to build. OK I know you all know about the theory behind superheterodynes and long words like that, and we all have our tickets so we know all about how BFOs work, how to detect SSB etc etc - don't' we? But actually playing about with one of these things on air will probably have you confused at first. Mainly because of the number of signals you will hear, and the way you can hear them on either side of the beat frequency.

The theory goes like this: Your local oscillator is tuned to the frequency that you want to listen to, this is then mixed with the input from the antenna to give absolutely nothing. If, however, you tune the local oscillator slightly off the frequency you wish to hear, the difference in the two frequencies can be detected and amplified. The sum is usually removed by filtering, so if we tune the LO 1 kHz either side of the signal frequency we will hear a 1 kHz tone. Keep this point in mind as it can be quite convenient to be able to tune on one side or the other if there is a nearby station.





Back to the kit. The circuit board is smaller than the board for the VFO mentioned last month, and everything is supplied except the tuning capacitors, one for the preselector and one for the main oscillator. I used the same type as I used in the VFO, that being a three gang BC type of about 300 pF. The preselector capacitance is a bit on the high side but is great if you want to tune greater distances across the band. The main tuning can be adjusted from 1400 kHz to over 4.3 MHz using the pre-wound coils and their tuning slugs without any further modification, but I added the same 150 pF poly capacitor in series with the tuning capacitor to give exactly the same tuning as the separate VFOs, and by using the external one I can tune for zero beat, and then use the RIT for the best tone on either side of the transmit frequency. The main tuning can then be used for split operation.

My other DC receiver is the Drew Diamond DC86 (AR October 1986) and at this stage it has the edge over the DcRx80 but only because of its audio filter section, and only temporarily because Howes Communication have just sent me their ASL5 audio filter kit for review, so that will be in the next article. Let's face it, there is not much you can do to make DC circuitry differently, and the add-ons, like meters, filters and amplifiers are really only bells and whistles.

Coupling together of the CTX80 transmitter, CVF80 VFO, DcRx80 receiver and ASL5 filter should provided a reliable transceiver for QRP work on 80 metres, and more importantly, assembling the kits will provide a working knowledge of radio principles that will be hard to forget. Further compatible kits are available, such as S meter, SWR/power meter, ATU, Xtal calibrator etc, so your transceiver could have all the features of a commercially built unit should you so desire.

Kits, some will say, are not real homebrewing. This may be true. But they are an easy way of learning, especially about homebrewing, and provide experience which will benefit your own design ideas, without the hassle of chasing parts all over the country and fabricating your own circuit boards. Even if you do not feel competent using a soldering iron, you could still attempt these kits with assurance and then go on to better things having mastered the basics.

Before I close this month, I want to ask you a question. Do you lend your copy of Amateur Radio to non-members? Think about whether you are doing the right thing by yourself if you do. I personally don't like the idea of spending my time writing for AR, as well as paying my WIA membership fee, if non-members are going to reap the benefits as well. ar

Publications, Oscar 13, MICROSATS

Maurie Hooper VK5EA
11 Richland Road
Newton SA 5074

National Co-ordinator
Graham Ratcliff VK5AGR

information Nets

AMSAT Australia
Control: VK5AGR
Amateur Check In: 0945 UTC Sunday
Bulletin Commences: 1000 UTC
Primary Frequency: 3.685 MHz
Secondary Frequency: 7.064 MHz

AMSAT SW Pacific
2200 UTC Saturday, 14,282 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT Australia net. This information is also included on some WIA Divisional Broadcasts.

AMSAT Australia Newsletter and Computer Software

The excellent AMSAT Australia Newsletter is published monthly by Graham VK5AGR on behalf of AMSAT Australia and now has about 300 subscribers. Should you also wish to subscribe, send a cheque for $20 payable to AMSAT Australia addressed as follows:

AMSAT Australia, GPO Box 2141, Adelaide 5001

The Newsletter provides the latest news items on all satellite activities and is a "must" for all those seriously interested in amateur satellites.

Graham also provides a Software Service in respect to general satellite programs made available to him from various sources. To make use of this service, send Graham a blank formatted disk and a nominal donation of $10 per item to AMSAT Australia together with sufficient funds to cover return postage. To obtain details of the programs available and other AMSAT Australia services send a SASE to Graham.

AMSAT-UK Publications Etc

Graham VK5AGR will not be importing publications etc from AMSAT-UK now Visa and Mastercard facilities are available. You are requested to send your orders direct to Ron Broadbent G3AAJ at AMSAT-UK. Graham will still be happy to supply you with a current catalogue of available items. Also, Ron has kindly agreed to supply goods to subscribers of the AMSAT Australia newsletter at the same prices applying to members of AMSAT-UK - all you need to do is include your latest newsletter address label with your order to establish your bona fides. For further information, please contact Graham.

Oscar 13 News

Smoothed Keplerian Element Set

James Miller G3RUH has supplied a new set of smoothed elements for AO-13.

Epoch (1989)	212.26363100
Drag	0
Inclination	57.2900
RAAN	197.4804
Eccentricity	0.6682000
Arg. of Perigee	208.5085
Mean Anomaly	0
Mean Motion	2.09699346
Orbit No.	864

Latest AO-13 Schedule
16 August 1989 until 16 November 1989
BLON/BLAT 210/0

Mode B:	MA 003 to MA 160
Mode JL:	MA 160 to MA 200
Mode B:	MA 200 to MA 240
Off:	MA 240 to MA 003
Mode S:	MA 201 to MA 204 (beacon)
Mode S:	MA 204 to MA 217 (transponder)

On 18 August, Graham VK5AGR completed the magnetorquing to change the spacecraft attitude, and James G3RUH determined the new orientation. ON 18 August (day 230) the attitude estimates were:

BLON 209.1 deg, with a drift rate of +0.018 deg/day

BLAT 1.4 deg, with a drift rate of -0.064 deg/day

Mode S Operation Status

The following item is from AMSAT-NA Bulletin 232.01 of 20 August:

Strong AO-13 Mode S Signals Heard with "Normal" Mode B Uplink Power Levels

As reported last week in a AMSAT News Service (ANS-224.01) bulletin, Peter Guelzow DB2OS with the assistance of ON6UG, G2BFO and DF5DP, was able to figure out a way to shut down the Mode S beacon on OSCAR-13 during normal pass - band communications on the Mode S transponder. From the very beginning, the Mode S transponder's beacon was designed to shut off when the transponder operations commenced. However, until recently this would not occur and those who wanted to use Mode S had to "push" their signals past the beacon using enormous amounts RF output power on 70cm. But with Peter's reprogramming of the Integrated Housekeeping Unit (IHU) to now turn off the beacon automatically, Bill McCaa (KORZ) reports that with normal Mode B uplink power levels it is now possible to bring down an excellent signal on the Mode S transponder. Bill points out that in his testing he had excellent signals using 300-500 watts EIRP using his own Mode B uplink capability. On the downlink his signals were 10 to 15 dB above the noise floor using a 4 foot diameter dish and 1 dB NF pre-amplifier. Bill would also like to remind OSCAR-13 users of the passband limits on the Mode S transponder. The uplink for Mode S extends from 435.471 MHz to 435.507 MHz. The corresponding downlink on Mod S starts at 2400.711 MHz to 2400.747 MHz. AMSAT salutes the efforts of all those who were involved in getting the Mode S transponder working properly. AMSAT encourages all OSCAR-13 users to take advantage of this new "resource".

MICROSAT News

The following is from AMSAT-NA Bulletin 232.02:

MICROSAT Lab Ground Test Station

Two Complete Ground Test Stations Installed at the MICROSAT Lab

On Sunday August 10, two complete PSK packet stations were installed in the AMSAT-NA MICROSAT Lab located in Boulder, Colorado. The task of integrating the transceivers, computers, and building and testing the TAPR PSK demodulators, fell on the shoulders of AMSAT-NA Area Coordinator for Colorado, Jim White WDØE. These two complete stations will be used for testing the MICROSATs while they are in the Lab and also during thermal vacuum testing. Later, the two stations will be taken by the AMSAT-NA Launch Preparation Team to Kourou, French Guiana in October and will be used to check out the spacecraft and make any last minute software updates. Since four spacecraft are being built in parallel and because redundancy is needed at the launch site, Jim felt that it was necessary to have two complete stations.

The stations consist of a pair of 2m/70cm multi-mode Kenwood 711/811 transceivers, MFJ 1270 TNC-2, TAPR PSK modems, two XT class computers with monitors, and an assortment of "rubber duck" antennas, dummy loads, miscellaneous cabling, and power supplies. Also, Jim had to modify the TNCs to allow for a direct connection to the MICROSAT flight computers, so software uploading and testing can be accomplished without having to use the transceivers. Many of the visitors to the MICROSAT Lab in Boulder, Colorado are immediately impressed with the ground station assembled by Jim. After the launch, this equipment will be used by AMSAT ground-command stations to monitor telemetry and perform daily "housekeeping" chores.

AMSAT-NA would like to express its appreciation to Kenwood for donating their fine tran-

sceiver pair to the MICROSAT program. Thanks are also in order to Heathkit/Zenith Data Systems who donated a pair of the XT-class computers. Other equipment donations came from MFJ with their TNC-2's (MFJ-1270's), TAPR for the PSK demodulators, and an assortment of "odds and ends" from Gateway Electronics of Denver. Without these generous donations of essential equipment to the amateur satellite program, AMSAT-NA would have to focus its scarce resources to procuring this equipment instead of concentrating on building spacecraft. Once again, AMSAT-NA wants to acknowledge the excellent job Jim White has done in putting these stations together, and the many fine manufacturers who have helped to make the MICROSAT ground test/command stations possible.

To allow you to "see" the proposed orbit for UoSAT-D, these elements were taken from UO-11 Bulletin 196:

** UoSAT-D Elements **

Here is a provisional set for UoSAT-D at the point of injection into orbit as calculated by Craig G1WTW:

Satellite Name:	UoSAT-D
09/11/89 - 01:55:34 UTC	
Epoch Orbit Number:	1
Epoch Year:	1989
Epoch Time (Days):	313.080254463
Epoch RAN (Deg):	24.3439
Mean Motion (rev/day):	14.23617560
Epoch Arg.Per. (Deg):	167.3130
Mean Anomaly (Deg):	240.6300
Inclination (Deg):	98.7300
Eccentricity (0..1):	0.001362
Semi-Major Axis (km):	7187.6900
Apogee Height (km):	826.4796
Beacon Freq. (MHz):	435.070
Perigee Height (km):	806.9004
Decay Rate (rv/day/day):	1.00000E-006

Vale Oscar 9?

At the time of writing, the fate of Oscar 9 was not known. Predictions earlier in the year had put the re-entry date close to its 6th birthday (October 6th). 73s from Maurie VK5EA.

Satellite Activity for May/June 1989

1. Launches

The following launching announcements have been received:

Int'l No.	Satellite	Date	Nation	Period min	Apg km	Prg km	Inc deg
1989-							
037A	COSMOS 2021	May 24	USSR	89.3	302	204	70.0
038A	RESURS-F	May 25	USSR	88.7	263	188	82.3
039A	COSMOS 2022	May 31	USSR	676.0	19158	19133	64.8
039B	COSMOS 2023	May 31	USSR	664.5	19140	19582	64.8
039C	COSMOS 2024	May 31	USSR	675.4	19155	19118	64.8
040A	COSMOS 2025	Jun 01	USSR	89.6	275	252	62.8
041A	SUPERBIRD A	Jun 05	Japan	1433.1	35831	35628	0.1
041B	DFS 1	Jun 05	Germany	1434.8	358.78	35646	0.2
042A	COSMOS 2026	Jun 07	USSR	104.8	1022	969	82.9
043A	MOLNIYA 3-35	Jun 08	USSR	12h17m	40696	631	62.9
044A	USA 38	Jun 10	USA	781.1	20276	20094	54.6
045A	COSMOS 2027	Jun 14	USSR	94.06	522	484	65.9
046A	USA 39	Jun 14	USA				
047A	COSMOS 2028	Jun 16	USSR	89.5	314	217	70.0
048A	RADUGA 1-1	Jun 21	USSR	24h32m	36538		1.5

2. Returns

During the period seventy four objects decayed including the following satellites:

1983-101A	COSMOS 1501	May 26
1989-031A	COSMOS 2018	Jun 19
1989-038A	RESURS-F	Jun 17
1989-040A	COSMOS 2025	Jun 15

3. Notes

1989-041A SUPERBIRD A and 1989-041B DFS 1 were launched by an ARIANE 4 rocket, version 44L, from Kourou Space Centre, French Guiana.

Bob Arnold VK3ZBB

Repeaters - addition, deletions, alterations. Have you advised the WIA Executive Office of changes to the repeater list?

New Brochures for the Amateur Radio Service

The Department of Transport and Communications has now produced three brochures to replace the old Amateur Operators Handbook - or the regulations book as it was commonly known. The first brochure numbered DOC 71 covering the Licence Conditions and Regulations applicable to the Amateur Service was released in March and reviewed in AR magazine.

It is recommended that every radio amateur, or prospective radio amateur obtain a copy of DOC 71 for it covers the regulations which govern the use of amateur stations, and its two companion brochures DOC 70 and DOC 72. The brochures are available from DOTC, and some WIA Divisions will also have limited stocks once they're available.

DOC 70 "Information for Prospective Amateur Operators", and DOC 72 "Amateur Service - Operating Procedures" are in the hands of the Government Printer and should be available soon. Copies have been made available to the WIA for review. DOC 70 is an introductory guide for those who wish to qualify and operate an amateur station.

It details the requirements for certificates of proficiency examinations, including exam devolvement which starts after February 1990, exemption from exams for persons who hold certain other qualifications, how to apply for a licence, and reciprocal and visitors' licences. The bulk of this brochure is appendices on qualification exemptions, a table of reciprocal licensing agreements, examination formats, and complete theory and telegraphy exam syllabuses.

DOC 72 outlines the operating procedures and practices for amateur stations. This includes calling procedures, identification of mobile or portable operation, distress and urgency communications and the obligation to accept distress traffic, notification of an appropriate authority on receipt of a distress message, the Q-code, a transmission emission designations, ITU phonetic alphabet, and callsign prefixes and suffixes. Whether you're already a radio amateur, or one studying for the regulations examination, you should read the three brochures - which are available free.

ar

Satellite Activity for June/July 1989

1. Launches

The following launching announcements have been received:

Int'l No.	Satellite	Date	Nation	Period min	Apg km	Prg km	Inc deg
1989-							
049A	RESURS-F2	Jun 27	USSR	88.7	262	195	82.6
050A	NADEZHDA	Jul 04	USSR	104.9	1026	979	83.0
051A	COSMOS 2029	Jul 05	USSR	88.8	270	193	82.3
052A	GORIZONT 18	Jul 05	USSR	23h21m	35100		1.5
053A	OLYMPUS	Jul 12	Europe	1381.4	36113	33304	0.2
054A	COSMOS 2030	Jul 12	USSR	89.7	373	177	67.2
055A	RESURS-F3	Jul 18	USSR	88.6	253	195	82.6
056A	COSMOS 2031	Jul 18	USSR	89.0	283	200	50.5
057A	COSMOS 2032	Jul 20	USSR	88.8	275	193	82.3
058A	COSMOS 2033	Jul 24	USSR	92.3	436	410	65.0

2. Returns

During the period eighty five objects decayed, including the following satellites:

1984-015A	OHZORA	Jul 19
1989-036A	COSMOS 2020	Jul 15
1989-037A	COSMOS 2021	Jul 06
1989-047A	COSMOS 2028	Jul 06
1989-049A	RESERS-F2	Jul 11
1989-051A	COSMOS 2029	Jul 19

3. Notes

The following satellites are visible in Australia from time to time during a period prior to twilight during morning passes and after twilight during evening passes:

Designation	Name	Mag	Period
1964-053A	COSMOS 44	4	98.9
1965-098C	EXPLORER 31 Frag't	2	119.5
1967-104B	COSMOS 104 Rocket	4	96.7
1968-110B	OAO-A2 Rocket	4	99.7
1970-086B	COSMOS 372 Rocket	2	100.4
1972-065B	OAO-A3 Rocket	4	99.0
1975-072B	COS-B Rocket	3	126.3
1978-004B	COSMOS 975 Rocket	2	96.6
1978-056J	COSMOS 1013 Rocket	4	117.9
1978-064A	SEASET	4	100.4
1978-094B	COSMOS 1043 Rocket	4	96.2
1979-026B	COSMOS 1089 Rocket	4	104.7
1979-067B	COSMOS 1116 Rocket	4	96.1
1980-030A	COSMOS 1174	2	104.1
1982-033A	SALYUT 7	4	93.3
1982-116A	METEOR 2-9	3	101.9
1983-109A	METEOR 2-10	2	101.2
1984-072A	METEOR 2-11	4	104.1
1985-013A	METEOR 2-12	4	104.0
1985-100A	METEOR 3-1	4	109.4
1985-119A	METEOR 2-13	4	104.0
1986-017A	MIR	2	92.4
1986-061A	GEODE	4	115.7

de Bob VK3ZBB

Morseword No. 31

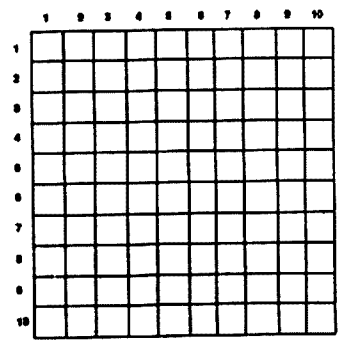
Clues

Across

1 Stalks
2 Part of the eye
3 Regretted
4 The actors
5 Wager
6 Dog's skin disease
7 Be ready for
8 Chinese sauce
9 Poke
10 Twist

Down

1 Huge
2 Forgery
3 Scene
4 Animal park
5 Former Hindu practice
6 Part of speech
7 Sound of derision
8 Small boy
9 Spoken
10 T-bone for example



Solutions page 52

60 Years Ham Radio Licenses in The Netherlands

In August 1989, it is precisely 60 years ago that the first exams took place in The Netherlands, and the first licence was issued to PAØBZ.

To honour this event, the Dutch amateur organisation, VERON member of the IARU region 1, decided to draw world wide attention to this fact.

Thanks to they co-operation of the Dutch PTT administration, they managed to obtain a special prefix for a period of 60 days, starting on 1 October, and ending on 29 November 1989.

The special prefixes will be:

PAØ becomes:	PA6Ø
PA1 becomes:	PA61
PA2 becomes:	PA62
PA3 becomes:	PA63
PA6 becomes:	PA66
PI4 becomes:	PI64
PBØ becomes:	PB6Ø
PDØ becomes:	PD6Ø
PEØ becomes:	PE6Ø
PE1 becomes:	PE61

Another reason for choosing this time is that a number of contests will take place during this period of 60 days. These are:

October 7/8:	IARU/VERON contest VHF/UHF/SHF
October 15:	VERON Autumn contest
October 28/29:	CQ-WW contest, (SSB)
November 4/5:	IARU/VERON VHF/UHF/SHF - CW
November 11/12:	VERON-PA-cup contest
November 25/26:	CQ-WW contest CW

To stimulate the radio amateurs all over the world to take part in this event, VERON will issue a special Certificate, which can be obtained by all radio amateurs, including SWLs.

The rules to receive this certificate are as follows:

a) It includes all bands, HF-VHF-UHF-SHF and modes.
   Dutch stations: 60 special prefixes
   European stations: 30 special prefixes
   DX-stations: 15 special prefixes
   SWL-stations: On the basis of "heard"
b) The "Standard" certificate is for mixed modes, regardless of the band on which the QSO has been made.
c) Special endorsement for:
   Only HF
   Only VHF/UHF/SHF
   Only CW
   Only SSB
   Only SWL
d) QSL cards are not demanded. An extract from your log is sufficient, signed by two other radio amateurs. Send to PAØBN, through the normal QSL channels. The closing date for demanding your certificate is 31 March 1990.
e) As an additional feature, the HF Traffic section of VERON will start, in this same period, a "promoting" action on the "WARC-bands".

ar

INTRUDER WATCH

Call to Action!

Gordon Loveday VK4KAL
Federal Intruder Watch Co-ordinator
"Aviemore" Rubyvale 4702

The cooler weather has not been kind to observers "braving" their cold shacks during July. Some fall-off in logs has been the result in all states. The station operating on 14.048 MHz is causing a lot of interference with its 24 hour telephone traffic. It can be partly resolved, if one is prepared to swap side-bands and modes - it is definitely NOT amateur. Information required is call-sign or other ID and bearing - some text would be handy.

Daylight saving in other states may bring better condx on 80mx, the IW net is held each Friday on 3595 +/- QRM at 0700 UTC - call in if free.

I ask ALL amateurs to just think for a few minutes, of what their hobby is going to be like, when our bands are over-run by illegal operators . . . yest I said "when" - because as sure as the sun rises each day, that is the inevitable end of amateur radio, UNLESS WE get off our backside and populate the bands, as we do at Contest time.

Report ALL intrusions by illegal users, don't just complain to the person you are in contact with, as I've often heard. Your IW Co-ord is the person who wants to hear about it, so send him a log, or to me.

Let me make it clear, it will make NO difference what mode of operation we follow, even as I write Governments and others are considering the buying of band space; THIS WE JUST CANNOT ALLOW IN REGION 3. Don't let the ITALIAN experience of 40mx have any place in our Radio Spectrum. Look to the FUTURE and don't be COMPLACENT about the PRESENT. LET'S HAVE ACTION NOW. DOTC will not act on our behalf if WE DON'T supply them with information - POSITIVE INFO. If you come across carriers sit with them as they OFTEN give a callsign, and that is what we want. REMEMBER, frequencies, modes are of little use WITHOUT their "finger print". . . their call-sign.

(Remember never move for an intruder.)

Logs were received in July from following VKs 2PS, 3IS, 3XB, 4AKX, 4ANL, 4BHJ, 4BTW, 4BXC, 4MWZ, 5GZ, 5TL, 6RO, 6XW and 8JF.

CB'ers from Asia and Indonesia were reported from all states in ever increasing numbers. ar

Summary of Intruders for July 1989

Freq.	Mode	Date Time	UTC	ID	Comments
7001	F1a	6/7	1050+		FM Morse, odd letters, short groups
7004.6	A1a	28/6	1148	—	
7020	NØN	28/6	1149	—	Strong carrier no audio
7023.5	R7b	11/7	1020+	—	Continuous
7035	R7b	25/7	0920	- -	
7080	A3e	24/7	0900		Radio Bangladesh
				B'desh	Radio Bangladesh Broadcaster
14000	PØN	mni	mni	-	Woodpecker
	NØN	mni	mni	)-	0700/1300 hrs breaks to USB & French voices
14001.5	B9w	25/6	0930		
14002	NØN	16/6	1139		
14003/5	F1b	17/6	1050+	ULH	Hi speed RTTY
14008	NØN	14/7	1115	-	Continuous carrier S7
14016.5	B9w	28/6	1105	-	Continuous DIT
14023.5	B9w	mni	mni	UMS	Also F1b. . USSR Naval/3rd Cyrillic shift
14024	F1b	Dly	mni	-	135deg RTTY cont 400hz sh/dly since 1987
14046.5	F1b	mni	mni	-	RTTY pos 3rd Cyr sh USSR/dif resolve
14048	NØN	mni	mni	-	Uses NØN when No traffic
14048+	A3e	mni	mni	-	Radio telephone female operator
14049	A1a	11/7	0635/50	PKJ	CPQ de PKJ zan QRX next VA
14049.5	F1b	11/7	0900+	-	RTTY poss 3rd Cyrillic shift reg user
14056/7	A2a	21/7	1037	KHACHS	Possibly callsign???
14070	A1a	04/7	1030+	VBX	VPO de VBX 5 figure traffic
1407/5	A1a	mni	mni	VRQ	Bearing 350 Albany +/- 5 kHz wide
14075.5	A1a	16/7	1330	VCN	5 letter groups
14075.1	A1a	9/5+	1203	EURQ	Cq de EURQ QTC 70 CPU
14076	A1a	mni	0700/10	VPC	BFQ de VPC QSV K R MSG? QTC ZNN
14080	NØN	09/7	0410	-	Continuous .- no ID S9
	A1a	4/7	0130/33	KFB	CQ de KFB AS DKA QSV K RXQ - traffic out
14085	A1a	9/7	1027/35	NPO	CPQ de NPO HR zan PSE QSY A3
14095	A1a	15/7	0100+	KPO	CQ de KPO QSV K AS - traffic out
14100	A1a	01/7	0932/3	NZB	ZBK de NZB QSV R 474 CY RU/ 318 AR
14101	B9w	16/7	0930	-	
14111	FSK	30/6	1110+	-	BT 508023, letter & figure groups
14114	F1b	24/6	mni	-	Letter & figure groups
14121	3x B9w	mni	mni	-	
1424/6	F1b	mni	mni	-	A3C & F1b Signals on same frequency
14130.7	A3e	28/6	1157	-	Foreign broacaster, male announcer
14140.5	F1b	mni	mni	UMS	RTTY 3rd shift register USSR
14141	A1a	mni	0403/25	UPC8	UN R70 de UPC8 QSV K traffic out
14143/6	2x R7b	5/7	1120	-	
14159.5	FSK,F1b	17/7	0300	-	Traffic
14170.5	A1a,F1b	mni	mni	UMS	Also 14171mhz/5 fig groups, RTTY Z code zan
14172.45	A1a		0550	76VC	Bearing 140 deg cld KRW de 76CV
14186	A1a	30/6	0915/45	FR2R??	FR2R. . Also on RTTY taking traffic
14187	R7b	mni	0245	-	
14200	A1a	10/7	0905+	VMO	VLQ de VMO QSV KRGA Traffic out
14215	A1a	4/7	1000+	RX3	R2V de RX3 Traffic out
14216/7	NØN	mni	0518+	-	
14242	F1a	20/7	0950+	-	FSK 3kHz Letters & Figures "K" occurring
14244	mxd	mni	0530+	-	R1b,A3c,A1a used "QSA" repeated, also NØN
2100/2	NØN	mni	mni	-	Various. . Mars net/French in Pacific, spill over from 20999kHz
21022	A1a	29/6	0600	F	F beacon, norm on 29.995 mhz
21032	F1b	20/7	1205	???	Possibly UMS (more listening needed)
21115	A1a	mni	mni	CQ5	CQ de CQ5 QRU
21215	J3E?	2/8	0614+	-	Russian plain language groups of 5 letters
21246	A1a	22/7	0625+	GVS	Only call given QSY 16420 QSA
21250	R7b	mni	mni	-	4-6 kHz wide
21320.5	"x2"	16/7	1152	-	
21328	A1a	19/7	530/540	ZNH	1PD de ZNH or ZNV? QSA? QSV
21350.5	2x B9w	26/6	0855	-	Possibly 3rd shift reg . . . not confirmed
21355.5	F1cw	11/7	0750	-	Freq mxd cypher Russian text, no ID
21370	A1a	mni	0600/07	R9B,X5N	Group using irregular C/S traffic
Late observations as follows:					
21060	A1a	21/6	0505+	ADL	RMD de ADL HW/ADL de RMD QRK?
21317	A1a	22/7	0644+	-	News items/already sending traffic when heard
28560	A3e	mni	mni	-	Broadcast station 340 deg . . . VK6RO
28575	A3e	mni	mni	-	Broacaster bearing 360 deg . . . VK6RO
28919	A3e	21/5	0701	-	Radio Beijing Chinese anthem & news

EDUCATION NOTES

Devolvement Update

Brenda Edmonds VK3KT
Federal Education Officer
12 Pinewood Drive
Mt Waverley 3149

Those members who responded to the original devolvement package and expressed interest in becoming examiners should by now have received the latest handout from DOTC. This comprised the revised Novice question bank, both in printed form and on diskette, with instructions, a final copy of "DOC71" and drafts of "DOCs 70 and 72". Most of the amendments requested by our Working Party have been incorporated into the bank, and the diagrams have been greatly improved.

We have been advised that the next mailing will probably be the instructions for preparation and conduct of examinations. The AOCP bank will follow as soon as possible, but the "examination generation" program will be a while yet. Several interested members are working on program development, and I am sure DOTC will be happy to accept their co-operation.

The Examinations Officer has requested that we refrain from submitting papers for accreditation for a little longer - until all the resource material has been finalised - as he is the only one working on the devolvement and that only for part of his time. The current situation is still that DOTC will run the November and February exams, and after that will only examine in special cases.

I am concerned that some of the comments reaching me indicate that some amateurs are still unaware of the facts behind the devolvement. It is many years since the WIA first raised with DOTC the possibility of examinations by other bodies. At that time, our concern was to provide a better service to candidates by making exams available more often or more conveniently. Many schemes were proposed at various times by DOTC, the WIA and others. The eventual triggering factor was the move towards cost efficiency and the "user pays" system which would have raised examination fees to a totally unacceptable level. At that stage, DOTC had recently devolved the responsibility for both Broadcast Operators and Maritime licences, so the amateurs were about all that was left. When we saw that devolvement was inevitable, we urged that the Department retain control by continuing to produce the actual examination materials, leaving only the administration of the exams to external bodies. This suggestion, however, was not accepted.

There has not at any time been any move by the WIA to use the devolvement to lower the entry standard to the hobby, and it is not anticipated that any lowering will in fact occur. The present Novice standard is such that most candidates can pass fairly easily if they are prepared to make the effort. In recent examinations, the pass rate has several times exceed 50 percent. In our evaluation of the question banks, the standard we had in mind for the Novice level was that of enthusiastic Year 9 student, say 14-15 years.

The suggestion has been made that once the question banks are released it will only be necessary to learn the answers. Thee will, of course, always be some who try for short cuts, but for most people, rote learning of 500 ()or 1000 for AOCP) questions would be a fairly painful way of ensuring a pass. It would inevitably cause the candidate to learn a considerable amount of radio theory in the process. (It cannot be assumed that the alternatives will be presented in the same order on all papers, so there will not be any point in learning "Q 1.51, answer d, Q 1.52, answer c, etc.)

What we will be achieving from the devolvement will be that which we sought when the ideas were first raised - the improved service to prospective amateurs which will come from the possibility of the exams going to the candidates, at a time to suit them, under less threatening or uncomfortable conditions than some of us have experienced. Under these less stressful conditions the pass rates may well rise. As I have said previously, we hope that all examiners will maintain adequate records and be prepared to share information so that the best possible system can be developed.

Thank you to all those who sent their good wishes for my relocation. The move has been completed and all systems are now operational except the HF. My new address will be in the new Call Book.

ar

EMC REPORT

EMC - Problems Worldwide

Hans F Ruckert VK2AOU
EMC Reporter
25 Berrille Road
Beverley Hills 2209

1 : It has been reported from West Germany . . .

. . . that a fighter plane crashed without its pilot being on board. The pilot did a low level training flight. When he turned on the contour-following radar, some stray rf got into the ejector seat circuit and triggered the ejection of the seat with the pilot. This was a costly EMC mishap. It is not surprising that the "University of the Wehrmacht (Bundeswehr)", near Munich, conducts a lot of EMC research. EMC problems on ships of any navy are also very serious, and often difficult to solve.

2 : A Welcome EMC Lesson from South Korea

DL1BU (hon Technical Officer of the DARC) reports that the recently established TV manufacturer - Goldmark - of South Korea offers the best colour TV set as far as the EMC Cell-Test is concerned. The Jacky test with 50 V/m field strength did not affect this TV receiver over a very wide frequency range. The DARC did ask for a test with 10 V/m, whilst the FTZ (=DOC) demanded 3 V/m, and the Common Market experts want only about 2 V/m. Conventional manufacturers fight for every volt of field strength, claiming that it costs too much to be any better. We can only hope that they obtain Goldmark sets to learn how excellent EMC has been achieved, and at very low cost too. The model CBS-441, without remote control, costs DM350 (about $241), screen size 36cm. The TV set CBT-4442 with remote control costs about

DM450 (about $310). DL1BU will continue the Jacky tests with even higher field strength to determine the limit. He recommends that the Post Office (FTZ Radio Inspectors) use these TVs to demonstrate to owners of other TV types the low immunity of their set, compared to a correctly designed receiver. Add-on EMC improvements are only an emergency method. Experts have always stated that EMC capability has to be achieved at the design stage of electronic equipment. DL1BU is preparing a more detailed report.

3 : Instant TVI

The writer wished to improve the signal strength of the Channel 28 station. A preamplifier type Arista made in Taiwan was obtained. This very small amplifier does, as promised, amplify every rf signal - wanted as well as unwanted types - from 5 to 900 MHz. Having no selectivity whatsoever, overloading of the TV front end stage must occur, if a relatively strong rf signal is picked up by the TV antenna, even when the unwanted legal signal is many MHz away from the wanted TV channel. This is the reason why this type of preamplifier is illegal in West Germany. There, the Radio Inspector has to check all masthead preamplifier installations to see that the equipment has adequate selectivity, and contains rf filters to pass and amplify only TV channel signals. With the Arista unit installed, the TV set showed on all channels only 3-4 cm wide black and white horizontal bars as soon as I operated my transmitter on 14.3 MHz. The interference stopped after placing a highpass filter (see AR December 1987, page 50) between the antenna feeder and the preamplifier. Amplifiers of this type (any make or model) should only be used with an effective highpass filter to avoid EMC problems. Several manufacturers in DL produce amplifiers, which contain the necessary tuned circuits forming highpass filters.

4 : The Garage Door Mystery

QST Reports: A neighbour of a radio amateur was puzzled when he noticed that his garage door opened at odd times without him operating the electronic remote control. The radio amateur next door, who had heard about similar cases, offered to investigate and help. He found that the supply cable to the opener acted as an antenna when he was transmitting, and doing what was supposed to be done with the remote control of the garage owner. A small bypass capacitor of 125pF, across the switch contacts at the garage, solved the problem. The radio amateur informed the manufacturer who was grateful for the hint, now intends to put a capacitor in every new unit.

5 : Heavy Duty Trucks and Amateur Radio

General Motors USA asks radio amateurs who operate heavy trucks etc to write to them describing the frequency bands, power level and antenna locations of their gear installed in the trucks. The letters may be sent to the EMC department. How about trucks in Australia?

6 : Interference from TV Line-Frequency Generators

Whilst the stray field from these generators usually peters out at 3m distance, when one tests with a receiver tuned to the 14 MHz band, not all TV sets sold in USA or Australia behave so well. A mains line-filter with the case grounded and antenna highpass filter is needed in some cases. The harmonics from these generators can, in some very bad cases be heard all about the house from any radio receiver. If the affected radio amateur complains to the manufacturer of the TV set, he may not even get a reply, or he is told that all TV sets do the same, which is not true at all. In cases where the TV set and HiFi-Radio are installed in close proximity interfering generator harmonics will only disappear if radio is tuned to a strong station, when the agc action reduces the radio's sensitivity and gain.

7 : TV Signal Strength and Immunity

Better immunity against unwanted signals can sometimes be obtained by removing baluns and splitters, accepting any mismatch, when the balun and/or splitter is causing too much signal strength loss.

8 : EMC (RFI) Problem Reporting Forms

The ARRL, as well as the DARC, have now EMC-Problem Report forms available for their members. The reporting, in a standard form, makes it easier for EMC-Committees and radio inspectors to judge the case prior to visitir.g the location. The evaluation and computer compilation of the reports can be used in discussions with manufacturers. They can also help the defendant in court cases.

9 : Ralph Cameron, VE3BBM writes . . .

"You may be aware that the appliance dealers in Canada have complained that for many years they could not adopt immunity standards because they wanted to "harmonize" with the USA. It is somewhat significant that European Economic Community have been dissatisfied with the progress made by CISPR, and so have decided to implement immunity standards beginning in 1991-92. Many Canadian manufacturers are apprehensive, because they now will have to adopt some standards in order to comply with a European standard - if they wish to sell their electronic equipment there."

10 : Video Recorder and EMC

DJ1ZB describes in CQ-DL 6/1989 how he managed to solve the susceptibility of his VCR. Mains line chokes with ferrite rings and similar chokes for the other cables could only improve the unwanted susceptibility. Only 2 watt output on 80m, 40m and even 10m was enough for the VCR to turn itself off. The last resort was - as recommended by DL1BU - to construct a metal case which closes all sides of the VCR except the front. The cable braid has contact with the aluminium box. The lesson learned: Don't buy a VCR which has no internal or external shielding.

11: Using the Right Name

There are still many people, including some who should know better, who mix up the term Citizen-Radio and Amateur-Radio. It is even more important to teach the public the difference between "interference" and "disturbance (lack of selectivity or too much susceptibility.)" Interference can only be caused by an illegal transmitter transmitting on the allotted frequency of a legal transmitter. Disturbance is caused by design deficiencies of an appliance, resulting in susceptibility of unwanted signals which are not transmitted on the operating frequency or channel used by the appliance. Disturbances can also be caused by susceptibility of electronic equipment which should never receive signals from legal transmitters, or be affected by them. By using the technically correct term, we state clearly who is responsible for an undesirable situation. This is vital if the legal profession wishes to administer justice. ar

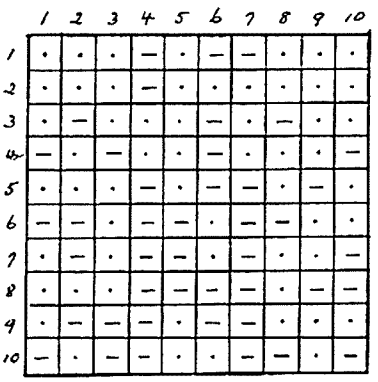
Solution to Morseword No. 31

Across:

1 stems;
2 iris;
3 rued;
4 cast;
5 stake;
6 mange;
7 await;
8 soy;
9 jab;
10 tweak

Down:

1 vast;
2 fake;
3 view;
4 zoo;
5 suttee;
6 noun;
7 boo;
8 inlet;
9 said;
10 steak



ALARA

Contest and More

Joy Collis VK2EBX
PO Box 22
Yeoval 2868

ALARA Contest

The ALARA Contest is fast approaching, and hopefully with improving propagation there will be a high level of participation this year.

Date: 11 November 1989
Time: 0002 UTC to 2359 UTC

(As the contest falls on Armistice Day this year, two minutes silence to be observed at the start as a mark of respect.)

All licensed operators throughout the world are invited to participate, also SWLs.

Hope you can join us for an enjoyable 24 hours.

Florence McKenzie CW Trophy

This prestigious Trophy is awarded annually to the novice YL operator (not necessarily an ALARA member) with the highest CW score in the Contest. Minimum score - 50 points.

Response in 1988 to this integral part of the Contest was disappointing, but as all points are doubled for CW contacts, only five ALARA members, seven YL non-members or nine OM contacts (or a mixture) are required to qualify - not an impossible task.

Novice/Limited operators ("J" and "K" calls) are eligible to compete for this trophy, a fact which may not be generally realised.

Well, how about it his year? You don't have to be a CW "whizz kid" to enter, and even if the CW is a little bit rusty and slow, you will still get plenty of encouragement. Trying it is the only way to improve and gain confidence, and maybe win this Trophy!

(The actual Trophy, because of size and weight, is not sent to the successful contestant. It is housed on display at the Burley Griffin Building, headquarters of the SA Division of the WIA. An attractive certificate bearing a photograph of the Trophy is sent to the winner instead.)

DX-YL News

Forthcoming YLRL Contests

YL Anniversary Contest:
CW: 11/10/89 - 1400 UTC to 13/10/89 - 0200 UTC
SSB: 25/10/89 - 1400 UTC to 27/0/89 - 0200 UTC
Logs: Must be POSTMARKED by November 10 1989 and RECEIVED by December 1 1989.

Looking Ahead

YL-OM Contest:
Phone: 10/2/90 - 1400 UTC to 12/2/90 - 0200 UTC
CW: 24/2/90 - 1400 UTC to 26/2/90 - 0200 UTC

East Meets West SSB Contest:
17 March 1990 - 1800 to 2200 UTC

DX-YL to North American YL Contest:
CW: 11/4/90 - 1400 UTC to 13/4/90 - 0200 UTC
SSB: 18/4/90 - 1400 UTC to 20/4/90 - 0200 UTC

BYLARA celebrated their 10th Anniversary this year, the highlight of the festivities being a Rally at Drayton Manor Park (Staffordshire) on 14 May.

Members attended from all parts of the United Kingdom, and greetings were received from DX-YL organisations. The day was fine, and a good time was had by all, with plenty of food, including a magnificent birthday cake provided by Margaret GW4SUE. Plenty of photographs were taken, and it is hoped to produce a souvenir booklet later in the year as a memento of a very happy occasion.

WARO now have a Certificate of Merit which will be presented this year for the first time, and will provide a means of official recognition for many and varied deserving activities.

The first recipients are Ruth ZL3PL for long service as South Island representative and net controller over a period of 12 years, and Anne ZL3VR for their efforts in fostering interest in amateur radio, especially among ZL3 area YLs.

Here and There

The VK3 Birthday Luncheon held at the home of Ray and Raedie Fowler on 30 July proved most enjoyable. Nine YL members and four OMs attended. There was plenty of stimulating conversation, and presents were exchanged. Ray proved an ever helpful host, and a very pleasant time was had by all.

Margaret VK3MCZ was the prime organiser of a luncheon to celebrate the 10th Anniversary of the Southern Peninsula Amateur Radio Club in August. The club has only two YL members, the other being Bron VK3DYF, (ALARA Newsletter Editor).

Congratulations to Carol VK8NCA, recently appointed President of the Darwin Amateur Radio Club.

Nancy VK2NPG called in on the ALARA Net in August after a long absence. She and OM Dale are now on a round-Australia trip.

Wendy VK4BSQ, OM and family, who have been sailing the Pacific, are in Japan at the time of writing. Wendy attended the JLRS Conference on 29 July.

Congratulations to Vicki VK5FK on the birth of a daughter.

Congratulations also to Val VK4VR who became a proud grandmother for the first time.

There has been a good response so far to the ALARAMEET survey form circulated among members recently. Hopefully Dubbo will prove a popular venue for the 1990 get-together.

Don't forget - JOTA, 21/22nd October. An opportunity to introduce amateur radio to some of our young people, and assist in a very worthwhile activity.

YL Nets

In reply to enquiries received:

The official ALARA Net is held Mondays at 10.30 UTC (1000 UTC during daylight saving time) on 3.580 +/- QRM.

YL Activity Day is held 6th of each month. Listen on the hour UTC.

Frequencies:

Phone: 3.588; 14.288; 21.188; 21.388; 28.588; 28.688.

CW: 3.530; 14.058; 21.058; 21.133; 28.088; 28.133.

YL "222" DX Net: Mondays 0600 UTC, 14.222.

Queensland Net: Tuesdays 0930 UTC, 3.570 +/- QRM

VK6 ALARA/YL Net: Mondays 1200 UTC, 3.580 (After the official ALARA Net).

VE/VK/ZL Net: Fridays 0500 UTC, 14.148.

Silent Key

It is with regret that we announce the passing of Joan VK3NLO in late August. Our sympathy to her family and friends.

New Members

A warm welcome to:

Coral VK8NCH and Diane ZS5DC who have recently joined us.

That's it for this month,

73/33

ar

Remember to leave a three second break between overs when using a repeater.

DIVISIONAL NOTES

VK2 Notes

October Activities

Early in the month, closing date for agenda items for next Conference of Clubs. It will be hosted by the Central Coast on Saturday 11 November . . . JOTA weekend 21/22 October. The JOTA committee will be including details on the broadcasts. Towards the end of the month it is expected that the VK2RWI 23 cm repeater will be commissioned. The equipment was a donation from Dick Smith Electronics. Listen to the VK2WI broadcasts for details and dates. The Wagga ARC Field Day, first weekend in November. WICEN (NSW) Inc will be taking part in the annual Hawkesbury Canoe Classic over the weekend 14/15 October. If you are able to assist, advise the office during the normal times, 11 am to 2 pm Monday to Friday on (02) 689 2417 or Wednesday 7 pm to 9 pm. Other WICEN information or membership applications may also be obtained from the office.

A reminder that times and frequencies of the two Sunday broadcasts from the VK2 Division may be found on page 3 in the WIA Directory. Both broadcasts are proceeded by a 1/2 hour technical segment. If you miss the news times then headlines may be obtained by phone on (02) 651 1489. Much of the broadcast text is available on the Division's BBS, VK2RWI on 4850 and in turn relayed to other BBS's.

Council Club Visits

A visit was made to the Central West at the invitation of the Orange ARC on Saturday 22 July. Affiliated Clubs Officer, Reg VK2AI has been in touch with most of the clubs via his monthly posting and other visits are being arranged.

Satellite Seminar

This most successful weekend last May was sponsored and funded by the NSW Division. Graham VK5AGR, National Co-ordinator for AMSAT - Australia, presented three sessions. These were video taped and there is about 8 hours available in the VHS format. Affiliated clubs and members may borrow these tapes. Contacts the office for details and bookings. Graham supplied a set of notes for the Seminar. The Division photocopied the notes for those who attended. Arrangements are now being made to print off a further run. There are 126 pages. These will be available from the Divisional Bookshop at $15 posted.

New Members

The following joined the NSW Division during July.

D A Brogan	Assoc	Adamstown Heights
B A Carter	Assoc	Melbourne
W D Chadwick	VK2XWC	St Clair
J D Coffey	Assoc	Wellington
J B Dodds	Assoc	Marsfield
I J Forbes-Smith	VK2NFS	Northbridge
D N Harding	VK2DUR	Macksville
D J Hawksworth	VK2BDJ	Vincenita
J K Jackson	VK2FYD	Emu Heights
G Kaster	Assoc	Marayong
B R Lesslie	VK2MHD	Springwood
P J Perry	Assoc	Werris Creek
K W Purves	Assoc	Richmond
J B Scott	VK2FSP	Picton
J Sigley	VK2FSJ	Caniaba
S P Truscott	Assoc	Elermore Vale

During August, the following new members joined the VK2 Division:

E R Babicca	Assoc	Ashfield
D J Bloodworth	Assoc	Turramurra
R W Boyd	VK2KLC	Rooty Hill
K E J Burridge	Assoc	Padstow
J C Cowell	Assoc	Mt Prichard
M Cvetanovski	VK2EAN	Shortland
J W Daniel	VK2BKZ	Rooty Hill
W J Dowling	VK2DEF	Kingswood
L M Doyle	VK2VOE	Wiley Park
C S Ferguson	VK2ZR	Maroubra
C G Gardiner	Assoc	Dundas
C Hall	VK2FDX	Bellevue Hill
N B Hough	Assoc	Potts Point
B P Mills	Assoc	West Pennant Hills
A W H Poon	Assoc	Castle Hill
M G Willis	Assoc	Eagle Vale

The following joined the NSW Division during September:

H G Braak	Assoc	Lavington
R J Duck	Assoc	Tamworth
R A Fitzgerald	VK2FRX	Bateau Bay
A T Grimm (Ms)	VK2MHJ	Wollstonecraft
J P Kelly	Assoc	Bourke
W J Lawrence	Assoc	Singleton Heights
J A MacCallum	VK2PVN	Merrylands
E O Mahoney	Assoc	Auburn
T P Mortlock	Assoc	Bidwell
B R Rochfort	Assoc	Maclean
R PSidney	Assoc	Yagoona
A B Stewart	VK2EJR	Bega
P W Turner	VK2XPU	Kingsgrove
H V J Virtanen	VK2FNK	Lightning Ridge
P J Wait	VK2DKN	Artarmon
T R Walmsley	VK2FKH	Merrylands
P W Woof	VK2FWI	Killara

A warm welcome is extended to the above recent new members of the NSW Division.

VK3 Notes

Members are notified that a General Meeting of the Wireless Institute of Australia (Victorian Division) will be held at 8pm on Thursday, October 26, 1989, at the Combined Clubrooms located in the Turner Road Reserve, Turner Road, Highett, Victoria.

AGENDA ITEMS are as follows:

1. Report by Council on the current financial status of the Division, and the effect of the increase in the Federal component of the annual subscription for 1990.
2. To set the Divisional component of the annual subscription for 1990 in accord with Article 43 of the Articles of Association.
3. To discuss the operation of the new Inwards QSL Bureau.
4. General Business (time permitting).

The meeting will close not later than 10.30 pm.

Barry Wilton
Secretary

(Please note new phone number for VK3 on page 3 - Ed.)

"5/8 Wave"

Photographs of Past Presidents

One of the sad ironies of Brian Austin VK5CA's untimely death, was that in the previous week he had given me a photo of himself (at the time he as President of the Division) to put on the wall in the BGB. I am pleased to say that by the time you are reading this, he should join the photographs of Tom Laidler VK5TL, Phil Williams VK5NN and Warwick "Pansy" Parsons VK5PS, hopefully all framed and on display. I must thank Geoff Taylor VK5TY for donating the lovely photo of "Pansy", and please, keep looking for those suitable photos of yourself, or someone else during the years as President.

News From VK8

Greetings to all our friends in the Top End & the Red Centre. Its good to pass on some news from the Darwin ARC, this month. They have had a change of Committee and are pleased to announce the following:

President: Coral Haworth VK8NCH
Vice President: Bill "Spud" Murphy VK8ZWM
Treasurer: Graham Anderson
Secretary: Henry Newland VK8HN
Station Manger: Trevor Hine VK8TA

Congratulations to you all, and I hope you'll keep us advised of any happenings, up there (the '8' in "5/8 Wave" does stand for NT you know!)

Clubs Convention

By now, your Club Secretary should have received Minutes of last year's Convention, and information on next year's which will be held at Ridgehaven Primary School, from 16 to 18 March 1990. Please start thinking about your Agenda Items NOW!

Diary Dates

Tuesday 24 October General Meeting 7:45 p.m.

Tuesday 31 October Buy and Sell Night 7:30 p.m.

Jennifer Warrington
VK5ANW

VK6 Notes

Fees

VK6 Council have set next year's WIA fees at $56.00. Rates for other grades of membership will be announced in the near future. This is a considerable saving on the $70.00 plus talked about on air, often by non-members. The increase seems reasonable for the services available. However, should you have reason to complain, contact one of your council and discuss the matter - its the best way to resolve any complaint.

Morse Workshop

Congratulations to all students who passed the recent morse test, and have realised their ambition to become a radio amateur. Many owe their success to the morse workshop run by Mal VK6LC and a dedicated group of helpers. The methods employed by the workshop, have now turned many who thought they couldn't do it into success stories, and has a lot of merit. No doubt, some of the students will, in turn, offer Mal some help in the future, and perpetuate the workshop idea.

Events NCRG

"Hamfest 89" is on October 8th, and it may be too late for you to attend this year. If you missed out, why not visit the Hills Amateur Radio Group at Kalamunda Festival on October 28th their display will be directed to the general public as a PR exercise for AR. Why not take the family and meet the group in person. The Peel Radio Group at Mandurah have been running practice sessions for JOTA. No doubt this has been a great help to the boys and girls and should help them get more out of the exercise.

QSL Bureau

Jim VK6RU reports that many cards remain uncollected and are causing him a few problems. Do you bit and collect them before the writing fades, or send a SAE and they will be sent by post. Some clubs act as QSL agents. If there is one near you, a club could be a convenient send-and-receive point. Check it out.

Indians

Very little news filters through from the country. However, there is a rumour that a "Pow Wow" is being set up in the South West. Let's hope more fuel is put on the fire before it goes out. We are certainly looking for the smoke signals here in Perth.

John Howlett
VK6ATA

SPOTLIGHT ON SWLING

Changing Audience Patterns

Robin L Harwood VK7RH
52 Connaught Crescent
West Launceston 7250

Well, the season has changed and there already has been a marked change in patterns. Now, as the days lengthen, I am finding that propagation is staying in later in the evenings, with the higher frequencies staying in later. There has been an interesting prediction that the Maxima of Cycle 22 will be between August and December, yet as this is only determined retrospectively by the Brussels Observatory, we will probably not know until six months after it has happened.

In the winter months I was very surprised to see how the 21 MHz amateur and broadcasting allocations came alive during the daylight hours. I was pleased to work many Europeans around our local midday on SSB, receiving respectable reports, despite my modest set-up. I expect that I will be able to work many more during the late evening hours over summer. Yet I have been disappointed that many broadcasters have deliberately chosen to ignore the 11 meter allocation between 25600 and 26100 kHz. Deutsche Welle pointed out that many of the portable receivers that cater for the vast audiences in the developing areas of the world don't have this allocation fitted, and because of the economics of power versus audience size, it is rational that they concentrate on where the majority of the audience listens.

It does make me think that exactly 50 years ago, during the Second World War, the majority of the shortwave audience was in Europe and North America, while today the audience profile is predominantly from Africa and Asia, where TV is not so prevalent. However, broadcasting organisations have found that their mail from Eastern Europe and the USSR, in particular, has increased by 300% since "Glasnost". DX clubs are springing up throughout that vast nation, particularly in the Baltic region and around Moscow. The demise of jammers has made it much easier to receive western broadcasters, and mail restrictions have also been abolished.

Although this openness has, in itself, exacerbated regional and ethnic rivalries, and Soviet authorities claim that western broadcasters are inflaming the delicate situation, - yet, I don't believe that jamming will be re-introduced. Only China and Iraq are the nations that do employ jamming of foreign broadcasts.

It has been reported in Japan that a "pro-Democracy" station, broadcasting in Chinese, has been heard on 7.125 kHz from 0945 UTC with a 15 minute programme that is repeated at irregular intervals throughout the day. Location is supposedly in Taiwan. I cannot confirm it, but I do know that there was on station on 15.0837 in Chinese at 1030 UTC which was behaving suspiciously and could be this station. The 7 MHz frequency is too close to both Radio Australia in Chinese and another Taiwan station - "the Voice of Free China". This clandestine operation would hop around the allocations, presumably getting close to a domestic Chinese shortwave frequency and hope to accidentally attract audiences.

The Australian Time and Frequency Station, VNG in Llandilo NSW, continues on 10 and 15 MHz with their experimental transmissions, while 4 MHz is on continuously. Ten and 15 MHz are on between 2000 and 0700 UTC, that is during local daylight hours. NZ users of WWV and WWVH have complained that VNG is blocking out voice announcements. The RAN *Time* and Frequency Station is continuing on 6448 and 12882 kHz but has been relocated to the Northern Territory to service tropical areas and the Indian Ocean. I do expect that once VNG is permanently operational, that this temporary facility could cease.

In conclusion, if you are looking for an African catch, try 4904.7 where there is a station broadcasting in French. The station is in Nd-jamena, Chad and had disco music around 2145. Signal strength was reasonable. Another DX session can be heard at good levels. It is "DX Asiawave" and is compiled by Bob Padula of ARDXC in Melbourne and is heard over KSDA - Adventist World Radio - Asia on 13720 kHz at 1030 UTC Mondays.

Well, that is all for October. All the best and 73.

ar

QSLs From the WIA Collection (18)

Ken Matchett VK3TL
Hon Curator
WIA QSL Collection
PO Box 1 Seville Vic 3139
Phone (059) 64 3721

Willis Island - VK4KR

This QSL, dated September 1933, is one of very few of the period before World War II from Willis Island. It was sent to Oscar (Ock) Alder VK4JB, and old-timer who obtained his AOCP in 1929, and who was one of the pioneers of radio in VK4. (He is mentioned along with many others in Alan Shawsmith's excellent book "Halcyon Days" - The story of Amateur Radio in VK4, Queensland Australia.")

The Willis Islets consist of three small islands which rise from a bank 21 kms long and 13 kms wide lying some 400 kms from the north-eastern coast of Australia. These were originally called North Cay, Mid Islet and South Islet. The last island is the largest and is today known as Willis Island. It is the only one occupied.

It is surprising to note that no record has apparently been found of any formal annexation of the islands, and in the absence of such it must be assumed that none has taken place. The islands were discovered in the year 1853 by Captain Pearson of the ship "Cashmere", who named them the Willis Islands after the owners of his vessel. The history of the establishment of this weather station is particularly interesting. The reader may find the reading of the book "Willis Island - A Storm Warning Station in the Coral Sea" by John King Davis worthwhile. The book, published by Critchley Parker of Melbourne in 1923, was in effect, the diary of the famous Antarctic explorer (after whom Davis Base was named) when he set up the first meteorological station on the island. It is also interesting to reflect that it was another famous antarctic explorer, Mawson, who set up the wireless station on another island - Maoquarie Island, but that is another story. (See "QSLs of the WIA Collection." AR May 1989).

A destructive hurricane had occurred in January 1918, with a considerable loss of life and property. This led to the decision to establish the station as a cyclone-warning base, but the move was delayed due in part to the anxiety for the safety of any personnel left on the island during the cyclone season. However, on the 13th October 1921 at 3 am (records Davis), the steamer "Innisfail" set sail for Willis Island from Townsville, with 15 men and provisions aboard. The wireless equipment included one "complete standard ship's set, 1 1/2 kW; effective range, daylight 300 miles, night 1,000 miles." The first radio signal from the Island was sent on 1st November after the erection of station buildings and wireless masts, the first met message being sent one week later.

Willis Island itself is approximately 520 metres long by 130 metres wide and is only 7 metres above sea level at low tide, and has remained a Commonwealth Bureau of Meteorology station to the present day.

VK9ZC

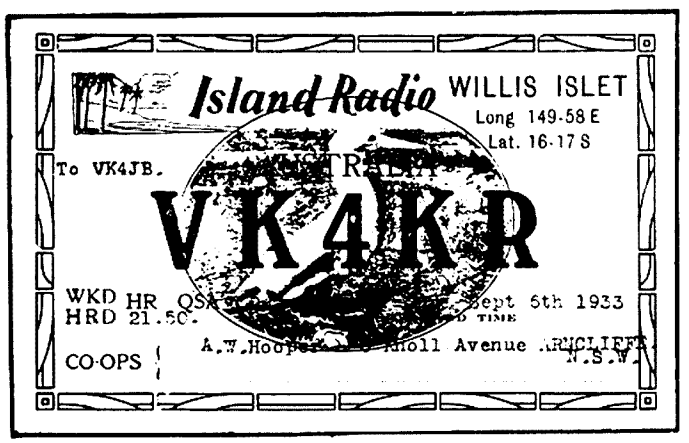
Willis Island first appeared in the DXCC countries list in 1960, by virtue of point 2 of the ARRL DXCC countries criteria. (This deals with islands not having their own governments, but being geographically separated from the mainland by open water). Credits were given on the 1st March 1960 for contacts on or after 15 November 1945. The VK4 prefix was used by the first stations on the island, although the DXCC countries lists of the time showed the Willis Island entry as simply VK. In 1969 the call VK9 together with the identifying suffix Z was used, the prefix allocation being VK9ZA-VK9ZZ (Territories other than Norfolk, Christmas and Cocos Islands.)

There have been several amateur radio operators transmitting from the island. An account of many of these, together with radio station details, are to be found in Ken McLachlan's comprehensive article "Willis Island is a DXers' Paradise" which appeared in "Amateur Radio" in September 1982. It is interesting to note that Australia's first authorised amateur radio phone-patch was made with Willis Island (on 7 September 1981 between Jim Linton VK3PC and VK9ZG).

The VK9ZC QSL is one of the modern QSLs. It was sent by a met officer, Kevin Collins, ex-VK4TU. Kevin has written an account of the setting up and operation of the island station, and this appeared in "Amateur Radio" of August 1974. Along with its cubical quad, dipole antenna, an occasional palm tree, and sea birds (there is a large bird population on the island), the QSL artist has made a point about Willis Island being a desolate location. Little wonder that the tour of duty of the met officers is limited to six months, the only contact with the mainland being by HF radio and the occasional emergency air-drop.

If you would like to play a part in building up the WIA QSL collection and to save something for the future, would you please send a half-dozen (more if you can spare them) QSLs which you feel would really help the collection along.

All cards are appreciated, but we especially need commemorative QSLs, special event stations QSLs, especially assigned call QSLs (eg VK4RAN), pre-war QSLs, unusual prefixes, rare dx and pictorial QSLs of not so common countries. Could you help? Send to PO Box 1, Seville 3139, or phone (059) 643 721 for card pick-up or consignment arrangements for larger quantities of cards.



Thanks

The WIA would like to thank the following for the kind donation of QSL cards (Supplementary List):

Barry 3XV
Lionel 3NM
Arthur 2AV
Dick 3SV
Robin 6LK
Julian 3KJF (ex-VK4DJ)
Addison SWL WIA 31160
Ossie 3AHK

Also our thanks to the friends and families of the following "silent keys" (Supplementary List):

Jim Marsland VK3NY
Bill McDivitt VK4XM
Alan Herald VK2AHR (ex-VK3AJP)
Ken Kelly VK2MJ
Frank Shiells VK3CAK

DX QSL Contributors' Ladder

(See "Amateur Radio" March 1989, page 55 for details.)

Contributions (Supplementary List):

Robin VK6LK: 3Y2GV ()Peter 1st Island) and 4JIFS (Malyj Vysotskij Is). Two new countries for us.

Prefixes: WD2ØØ, 4X3, 5N5, WY4, W87, CYØ, CU4, BT4.

Special calls: A2BTF, 9M2SEA, KS6SFA.

Barry VK3XV: (26 points)

Prefixes: 4X75, ND3, WJ7, WU5, IO8, NS8, UG7, KM3, WJ8, KZ2, CUØ, CU1, EU3.

Current State of the Ladder

(10 points and above):

Robin	VK6LK	141
Henry	VK3AHQ	91
Chas	VK4UC	56
Eddie	VK8XX	52
Vic	VK5AGX	29
Barry	VK3XV	26
Barry	VK5BS	20
Keith	VK4KS	11
Steve	VK3OT	10

Congratulations

A very fine effort. Can we get a few more top Dxers to part with a few QSLs?

ar

CLUB CORNER

Astronomical Society of Victoria Inc

Amateur Radio Station VK3EKH is now on the air. This is the club station of the Astronomical Society of Victoria Inc, a group of some 600 Amateur Astronomers, whose interests cover all aspects of astronomy. Their interests range from casual star gazing through to serious semi-professional celestial observations and computations to radio astronomy.

The purpose of the Society's radio station is to provide information on current astronomical phenomena to ASV members, and other interested parties via the medium of Amateur Radio. Also to establish National and International contacts with other radio amateurs with an interest in Astronomy.

Information of interest to the amateur radio service will include Sunspot information, meteor showers and aural displays. Radio Amateurs with an interest in astronomy are invited to join the ASV's net and enter into discussions of matters celestial.

The ASV's news broadcast will be mode AM 3540 kHz or nearby depending on QRM, at 1200 UTC Fridays. A callback for radio amateurs will be conducted immediately after the news broadcast, on the same frequency, mode SSB. Information on signal strength, quality etc, will be appreciated. Interested SWLs should contact VK3DDF, PO Box 155, Heathcote, Vic, 3523.

The President
K Harrison
GPO Box 1059J Melbourne
Victoria 3001

Riverland Amateur Radio Club

In May this year, a new club for Radio Amateurs was formed in the Riverland of SA. Called "The Riverland Amateur Radio Club". It is open to all licensed Amateurs and interested persons wishing to take up Amateur Radio as a very interesting and rewarding hobby.

The Club is at present meeting on the 4th Sunday of every month at 2 pm. The membership at present is not large, but the number of licensed amateurs in the Riverland is quite numerous, so it is hoped the Club will gain in strength.

At the inaugural meeting John Rushton VK5ARK was elected President, Kingsley Brauer VK5NOU as Vice President, and Doug Tamblyn VK5PDT as Secretary/Treasurer.

For further information contact Doug Tamblyn VK5PDT, Box 646, Renmark 5341.

Doug Tamblyn
VK5PDT RARC.

VK4 Disabled Persons' Radio Club News

The Club extends congratulations to Lindsay Arndt (VK4LMA), a white stick operator, on achieving his Novice Licence and warmly welcomes him into the amateur service/hobby.

He was ably assisted with his studies by Club Members Ray Beutel VK4AKZ - theory and set up, and Mick Johnston VK4JI - CW & regs, and Peter Breed VK4PB - set up, and in getting set up on two metres and HF.

As stated in last month's Club notes, here are the conditions for the "Tony Burge" Memorial Award.

Section 1

An Amateur operator who adequately demonstrates an operational Amateur Station to a disabled person or persons will qualify for the Award.

Notes:

(1) Applications for this section should include Name, Callsign, Address, date of demonstration, and brief outline of demonstration and award fee.
(ii) The Awards Manager shall exercise his discretion as to the merit of the demonstration as a qualification for the Award.
(iii) Demonstrations on, or after, 0001Z on 15 June, 1983 shall be eligible.

Section 2

An Amateur operator or Club who accumulates 10 points.

Points may be obtained as follows:

(a) Contacting the Club Station VK4BTB - 4 points
(b) Contacting a member of the VK4 Disabled Persons Radio Club (either licensed or operating under supervision) - 1 point

Notes:

(i) For (a) and (b) only 1 (one) contact per band per 24 hour period can be counted.
(ii) Applications for this section should include Name, Callsign, Address, log extract countersigned by another person, and the award fee.
(iii) Contacts on or after 0001Z on 15 June, 1983 shall score points.

Section 3

An SWL who hears and records contacts as per Section 2. Details and points applying to Section 2 apply to this Section.

Successful applicants for the Award will automatically be eligible to be granted membership of the "VK4 Disabled Persons' Radio Club" and can allocate points as per the conditions of the Award.

Applications for the Award and the fee of $2.00 should be sent to: The Awards Manager, PO Box 3126, Town Hall, Toowoomba, 4350.

Club Net is on Friday nights at 0900 UTC on 3.590 MHz. Club call is VK4BTB. Station Manager Roley Norgaard VK4AOR (076) 968587, or Graeme Whitehead VK4NYE (076) 308323.

ar

Ballarat Hamvention

The Ballarat Amateur Radio Group will again hold its annual Hamvention on Sunday 29 October 1989.

The venue will be at the Sebastopol Football Club Rooms at the Marty Busch Recreation Reserve, 7 kms south of Ballarat on the road to Colac.

This year's event will be similar to previous successful functions, with something for everyone. Also a lucky registration prize of $50.

The usual trade display will again attract many exhibitors, along with a number of events in the afternoon, also a home brew competition.

A VHF antenna competition will be run to find out who has the best home brew two metre or 70 cm antenna. Start tuning up your antennas now and bring them along to the Ballarat Hamvention, you may win a prize or find out how bad it really performs.

The usual barbecue lunch will be provided along with afternoon tea, free coffee will be on tap all day.

Admission for the day is $8 per person, children under 16 are free. Repeater Channel 3 and 3.600 MHz will be monitored during the day.

The Ballarat Hamvention is a great day out for Hams and their families.

Amateurs or stall holders wishing to obtain more details may contact Kevin Hughes VK3WN on (053) 355011. ar

AUSSAT Moving Ahead With MOBILESAT

Australians on the move should be able to communicate by directly using the next generation of AUSSAT satellites. A new service called MOBILESAT will enable trucks, cars, aircraft and ships to carry telephones and other telecommunications devices throughout the Australian mainland and its nearby oceans.

MOBILESAT will come on line in 1992 with the launch of the first of the AUSSAT B series of satellites. Research and development of mobile terminals is underway.

ar

SHOWCASE

Yaesu Spares

Many items can be supplied ex stock. Others can be obtained via frequent orders direct from Japan. Also, photocopies from handbooks are available for most models.

Contact Stan Roberts VK3BSR

Bail Electronic Services PO Box 506 Wangaratta 3677 Ph: (057) 662359 (Business hours only).

EMI/RFI Split Ferrites

How often after the equipment is installed do we find we are faced with EMI or RFI interference and to fit toroidal ferrites means hours of painstaking work having to un-wire a connector so that the ferrite will slip over the cable.

A solution is the KG Split Ferrite core that is encased or enclosed with a plastic housing. The core can be easily slipped over the cable and the plastic housing, which has an interlock clip, will hold the ferrite in place.

The KG range is designed for both circular and flat ribbon cable. The toroidal styles range from as small as 6.5mm diameter up to 29mm diameter for large cables. The split block cores for ribbon cable is available with 3 slot sizes ranging from 33mm to 65mm. Various impedance values (at 100 MHz) are offered from 90 ohms to 230 ohms.

For a complete catalogue on KG Split Ferrites, contact Clarke & Severn Electronics, PO Box 129, St Leonards, NSW 2065. Tel: (02) 437 4199, Fax: (02) 438 3752.

New Bird Distributor

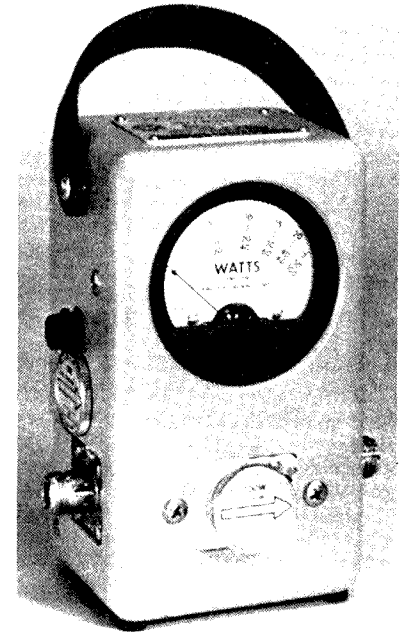
Vicom Australia Pty Limited has been appointed as Australia-wide distributor for the USA based Bird Electronics Corp.

Bird is a pioneer in the engineering and manufacturing of a broad spectrum of RF coaxial test instruments and custom design components. Bird has an ongoing commitment to innovation, quality and reliability which spans over forty years. The company's instruments have become the industry standard language with such names as "The Bird" (model 43 wattmeter), "Thruline" (directional wattmeters) "Termaline" (loads and absorbtion wattmeters), and "Tenuline" (coaxial attenuators). One of the main Bird products is the model 43 wattmeter. This has a frequency range of 0.45 - 2300 MHz, and a power range of 100mW - 10 kW using Bird plug-in elements. The model 43 is housed in a rugged diecast aluminium case and the meter is shock mounted.

Vicom General Manager, Mr Fred Grossman, said he was looking forward to adding Bird products to Vicom's other specialist test equipment, "Bird is surprisingly well known world wide and compliments Vicom's top shelf product line."

Vicom's other activities include communications engineering, consulting, R & D, RF and digital test equipment for government, and military and commercial markets. Trade enquiries for Bird equipment can be made to Vicom's branch offices throughout Australia.

Enquiries phone Robyn Kelly (03) 690 9399 ar.



Bird model 43 "Thruline" wattmeter.

WIA NEWS

continued from page 31

The guidelines go over such items as transmitter location, antenna installation, antenna coax routing, radio wiring and connection locations, and troubleshooting. The booklet also includes a detailed pictorial showing the recommended placement of single unit transceivers, as well as those with remote heads.

Let us hope that all other car manufacturers rapidly follow GMC's example! ar

HELP PROTECT
OUR FREQUENCIES.

BECOME AN
INTRUDER WATCHER
TODAY

SILENT KEYS

We regret to announce the recent passing of:

Mr Ivan Newport	VK2JF
Mr Frank Alan Barry	VK2ABA
Mr S C G (Jock) Macindoe	VK3ATD
Mr Eric W Trebilcock	L30042
Mr Harry L Roach	VK3DYZ
Mr Jim Sturges	VK4DH
Mr H M Dow	VK4KHD
Mr C W Austin	VK5CA
Mr Stanley Atkinson	VK5VW

Francis Allen Barry VK2ABA (1922-1989)

Allen died in St Vincents Hospital Darlinghurst on 30 July 1989 after a short illness.

His familiar call sign VK2ABA and strong signal will be remembered by many. He was a member of the WIA for many years, also the RNARS and the Old Timers' Club.

His life long interest in radio was stimulated during his service in the Royal Australian Navy, which he joined in 1939 - he served until 1956. He was involved in most Naval theatres of war between 1939-1945, and was on the HMAS Shropshire at the signing of the Peace Treaty with Japan in 1945. He also saw service in the Korean Campaign.

He worked in the Naval Dockyard Police, and also as a radio/radar instructor at HMAS Nerimba until his retirement in 1979.

He was a close friend of many and will be sadly missed by John VK2XW, and Allen's relations Mary, Noel, and Beb, and family.

A J Voysey VK2XW

Harry Roach VK3DTZ (1907-1989)

The end of July heralded the passing of another "Old Timer", Harry Roach VK3DYZ.

Harry first entered the field of Amateur Radio in the early twenties when he built his first crystal set and the progressed to the triodes and pentodes of the day. He was well known for his meticulous workmanship, and his skills in the construction of communication receivers often produced results which surpassed the commercially made units then available.

During World War 2 Harry served as a radar operator in the RAAF and was stationed in the islands to the north of Australia. Following his discharge Harry became very active as an SWL and for many years was Secretary of the Short Wave DX club. He regularly ran a segment on the Sunday broadcast on VK3BWI. Harry was one of the earliest members of the Moorabbin Radio Club, and in recent years one bright spot of his week was the regular "get togethers" with the "Old Timers" on Tuesday mornings. Another highlight in Harry's life was his regular visits on a Thursday to another great "Old Timer", Col Chirnside VK3WQ, and after much cajoling and encouragement, he was persuaded to sit for his Amateur licence. Harry passed through his Novice and Limited calls, and then the AOCP, and was allocated the call VK3DYZ.

During the post-war years, Harry developed another interest - the organ, and his Baldwin was played to perfection. Harry was the organist at a number of local churches.

Always ready to assist both the youngest and oldest members of the radio fraternity who were always welcome in his shack, Harry's passing followed a long period of patient suffering, and many visits to hospital since 1953.

Condolences are extended to his wife Rene and son Geoff - he will be truly missed by all who knew him.

VK3WQ and VK3XV.

Jim Sturges VK4DH

North Queensland amateurs were saddened by the recent passing of Jim Sturges VK4DH of Townsville. Jim will be remember for his dry wit, and his behind-the-scenes assistance for anyone who needed help.

Jim was educated at Charters Towers, and commenced his employment in Queensland Railways as an apprentice coppersmith. He then changed to a clerical appointment as a train controller, just in time to volunteer for the RAAF in World War II. His training in Canada started as a fighter pilot, but once again, he changed direction and finished up as a navigator on Halifax bombers.

His wartime experiences were with No 77 Squadron in raids over occupied Europe. He was engaged in bombing raids over Cologne, Eindhoven and Stuttgart, among others. During one raid, his plane was hit by a falling incendiary bomb from one of the "friendly" bombers, and the whole crew had to bail out over occupied territory. As a result of his exploits, he was awarded a Distinguished Flying Medal.

Jim was a foundation member of the Townsville Amateur Radio Club some 30 years ago, and had been a member for most of the intervening years. He served as Secretary, and was for many years a Trustee of the Club.

Jim's hobbies were many and varied, and included home-brewing projects for amateur radio, as well as making educational kits for his grandchildren. He was into computers and packet radio in recent years. Much of Jim's older amateur gear is now on display in the RAAF Museum at Garbutt.

We extend our sympathy to Jim's family, including his brother Frank VK4ATV, who supplied much of the information about Jim's career.

Peter Renton
Townsville Amateur Radio Club

Brian Wilson Austin VK5CA

Brian joined the Silent Keys on 22 July 1989, at the age of 73.

After serving in the RAAF during World War 2, Brian joined the WIA as a student member in 1945. He was licenced as VK5CA in April 1948.

Coopted onto the VK5 Divisional Council in 1949, he remained on Council until 1962, having held every position except those of Treasurer and Federal Councillor. He continued as Editor of the VK5 Journal, a position to which he had been appointed in 1960 until 1968.

He was made an Honorary Life Member of the WIA in 1968 in recognition of his service to the Institute. In 1973 he undertook the job of Federal Awards Manager and continued in this position until 1978.

Due to ill health, Brian retired from the Commonwealth Public Service in 1970. Despite this handicap, Brian enjoyed operating, particularly DX, and was active in WICEN in SA, for which his location, high in the Adelaide Hills, was ideal. In the latter years his wife, Marlene, gained her licence as VK5QO, and took over most of the WICEN activities.

Their home at Crafers was always open to their many friends, and was the background for an ABC TV presentation on WICEN.

Brian will be missed by the many amateurs and others who knew him. I am proud to say he was my friend.

Our sympathy is extended to Marlene VK5QO, and to her sister Valda VK3DVT.

Geoff Taylor VK5TY

Eric W. Trebilcock

Doyen of Amateur SWL - both at international and Australian level, Eric W Trebilcock, BEM, passed away at Myponga, South Australia on 7 September 1989, aged 78 years.

Somewhat incongruously, Eric held a PMG First Class Operators' Certificate of Proficiency for almost 50 years, yet during that period he did not take out an Amateur Operators' Licence. (He did, however, hold an Amateur Call VK5TK for a brief period pre-WW2.) Brim full of enduring enthusiasm for Amateur Radio in general, Eric ran the WIA Inward QSL Bureau for very many years. In recognition of that stupendous dedication he was made Life Member of the WIA.

The designators BERS195 and L30042, assigned to Eric for so many years are familiar to all enthusiasts in the SWL field. Present and past DX Column Editors of most Amateur magazines throughout the world have reason to remember EWT for his carefully prepared and detailed reports of stations heard in SE Australia on all HF bands.

Eric frequently won first place in the SWL Section of the annual BERU Contests and was proud to display a number of rose bowls awarded to mark his performances. His SWL Reports were also an inspiration for those SWLs seeking to obtain QSL cards from DX stations. They were precise, detailed and authentic with the result that his collection of rare QSLs is outstanding by any standards.

Apart from a relatively short period of service as a Postal Assistant with the PMG, "Treb" devoted all his professional life to the Department of Civil Aviation, Flight Service Branch. As an Aeradio operator stationed at Salamaua, New Guinea in late 1941, he saw "active service" like many civilians in that area. The story of his trek on foot over the mountains to Port

Moresby to escape the oncoming Japanese is almost legendary. Later, in various technical administration positions, he became well known for his skills and knowledge in the frequency management field.

The WIA extends its sympathy to Eric's wife Aline, his son Robert, daughter-in-law Penny and their children. He will be sadly missed by his family, friends and the Amateur fraternity throughout the world.

Allan Foxcroft VK3AE
and Ivor Stafford VK3XB

Scouts Bouncing Around the Satellites

This year's JOTA (Jamboree-on-the-air) promises to be bigger and better than the past few years.

Once again, with the help of AUSSAT, satellite technology is a major player in this annual event on the 21st and 22nd October.

For the past two years, Scouts and Guides participating in JOTA have utilised half-duplex links via AUSSAT's satellites. This year, it's even better: there are two extra services being provided.

A significant addition is a full-duplex link (simultaneous talk and listen capability) provided on 2m TX and 70cm RX in Sydney and Perth.

For the first time, this year Perth and Sydney will be able to communicate with the New Zealand National Repeater Link System via satellite. This service will be half-duplex only.

Also, a half-duplex capability is being provided between Sydney, Melbourne, Perth and Brisbane, on 2m RX/TX links.

All of this wouldn't be possible without the help of AUSSAT and the generous loan of equipment by Robin Chapple, National Sales and Marketing Manager for ICOM (Australia) Pty Ltd.

This equipment for the full duplex link is:

- Two IC3210 Base/Mobile full duplex transceivers.
- Two 2m/70cm dual band antennae for the IC3210.
- Two IC32 AT full duplex hand-held transceivers for test and evaluation purposes.

All frequencies and times of all links are to be announced on each Sunday up to three weeks before JOTA, on WIA news broadcasts.

Neil Fallshaw
VK2XNF
ar

OVER TO YOU

Wrong Use of Three Pin Plugs

Three pin plus should NEVER be used on 12V equipment. The method suggested in the article on page 31 of the September edition in many ways added to the dangers.

(1) It contravenes the SAA wiring code relating to the use of extra low voltage fittings.

(2) The suggested idea of wiring the active and the neutral pin together has a number of hazards and is unlikely to protect the equipment.
Fuses do not blow instantaneously, not even correctly rated ones. In the time the fuse takes to blow, a considerable voltage drop will occur in the neutral line and the pin connection. This voltage could easily exceed 12 volts.
There is considerable risk of suffering a burn if such a shorted plug is inserted in a live socket. This was mentioned in the Victorian Division's weekly broadcast.

(3) Any system imagined to be safe will be relying on the 3 pin outlet being wired in what is NOW considered the conventional manner. However, as many older readers will remember, prior to switch/socket combination units, the active and neutral were freely swapped between the pins. Also, in what were considered to be "non-hazardous" situations, an earth connection was not required. In older domestic installations, such wiring still exists. There is no "safe" way to wire a plug in such a situation.

(4) The idea is UNNECESSARY. Polarised, 2 pin plus are readily available from electrical wholesalers and many electronic retailers. I refer to the fittings which are frequently called "T" plugs due to the fact that when mounted in what has become that standard manner, the pins form a "T". When mounted this way, the top pin forms a minus sign and is, therefore, generally used as the negative pin.

These fittings, wired in this manner, are accepted as a standard by many emergency authorities.

Finally, under NO CIRCUMSTANCES should you use ANY conventional 240V fittings for low voltage equipment. You put your own life at risk, and the lives of others, who are unfamiliar with your equipment, are at even greater risk.

Geoff Syme VK3ACZ
PO Box 91
Irymple 3498

(We apologise for publishing the original article without adequate technical evaluation. Even the best editorial systems can occasionally be short-circuited! But the fuse has now certainly blown.! Ed.)

More on Polarised Plugs

I was staggered to see the article by VK2BIN regarding the use of 240 VAC 3 pin plugs and sockets for 12 VDC. I do congratulate him on making the wiring as fool proof as possible, but not all people - amateurs or not - are as aware or careful in what they plug into 240 VAC GPOs (General Power Outlets). Some quite small equipment does have inbuilt 240 volt power supplies and others do not - an unthinking person may plug the equipment into the 240 volts, even if the plug is marked 12 VDC./

However, the above reservations aside, there is a very real danger of electrocution if there is non-standard wiring involved in the home. It is not unknown for the on-off switch to be in the neutral line which means with the power turned off there would be 240 volts AC on the outlet, and the shorting link would be ineffective until the power switch was turned on. 240 volt power on the 12 volt equipment would swiftly ruin it. Whoever was touching the metal case at the same time, if the earth was not connected to the earth pin of the 3 pin socket would be lucky to survive.

Some older homes do not have the earth pin earthed, except in "earthy" situations, also a number of power points in older installations did not have any convention for the wiring of active and neutral and may have the neutral and not the active switched. This could occur where home handymen or with little electrical understanding could easily cut "unnecessary" earth wires or wire up power points with the good old Aussie attitude of "she'll be right mate."

I cannot stress too strongly my belief that this would be a most unwise and dangerous practice and although safe in VK2BIN's hands, could be most unsafe in a lot of other peoples' hands. Consider also, even smarter know-it-all, who finds that the device blows fuses when plugged in, opens plug up, finds some dill has put a short across the active and neutral, isn't sure which lead the main wire came from and wires it to the active line! Perhaps no blown fuse but certainly a blown set when power turned on.

it might be thought that I am overstating the situation, but Ian, believe me, there are people like that out there and installations like it.

To overcome the possibility of confusion why not use the 2 pin polarised plugs and sockets that are manufactured by Clipsal and HPM. The pin configuration is like a "T". These plugs and sockets have been mentioned many times in "AR" over the years. There is no chance of being able to put these 2 pin plugs into a conventional 3 pin socket, hence even a bird brain can't get it wrong.

Rodney Champness VK3UG
2/95 Benalla Street
Benalla 3672

Those Plugs Again!

I refer to an article appearing on page 31 of the current (September) issue of AR, contributed by VK2BIN, where it is suggested that ordinary 240 V 3 (flat) pin plugs be used as polarised 12 V DC plugs.

It is stated in that article that as a safety measure(!) a connection should be made between active and neutral so that if the plug was inadvertently inserted in a 240 V socket it would blow the fuse!!

As a licensed electrical contractor, and one who is deeply involved in the manufacture and distribution of plugs and sockets in Australia, I find it incredible that such *dangerous and* illegal practice should be published by this magazine.

Apart from the fact that such practice is strictly illegal (refer to any supply authority), it can also be quite dangerous to the operator when a direct short is inserted into a domestic 3 pin socket.

Tom Peyser VK2ETP
11 Kara Court
Randwick 2031

(There is nothing illegal about the use of such plugs for 12 V Tom, but it is ill-advised, as you rightly point out. Ed.)

Still More on Polarised Plugs

In AR Sept 1989, Ian VK2BIN has reported his use of 240 volt 3-flat-pin plugs on 12 volt DC circuits. He has suggested reducing the risk that they might be plugged into a 240 volt socket by ensuring that it would blow the 240V circuit fuse.

It would be simpler and much safer to use 2-pin"T" polarised, 15 amp, 32 volt plugs and bases, which are made by at least the two major manufacturers of electrical wiring accessories and available from the many sellers of such materials. The pins on these plugs are of similar size to those on the 3-pin plugs but arranged in a T formation.

I have used them successfully for DC circuits in my shack and also for quickly connecting a TV ladder type transmission line to a balanced ATU or to ground.

Frank Aston VK1FA
63 Ambilindum Street
Hawker ACT 2614

Pedal Power!

I suggest that the WIA QSL Bureau organisation will be interested in the following:

Having worked G4BRE (Maurice) in Crawley, Sussex, my QSL card was transported to Crawley, and delivered personally to Maurice by a pedal cyclist who passed through Adelaide on his "round-the-world trip" by bicycle.

The QSO took place on 8 February 1989 and the card was handed to Maurice on 5 August 1989. The cyclist was one, James Dawton, aged 27, a university graduate whose home is in Oxford, England. He spent three days at my QTH in the Adelaide Hills.

During the QSO I asked Maurice if he could advise James' father in Oxford of his son's present position on his tour, at the same time passing the parents' telephone number in Oxford. James was, of course, with me in the shack. Maurice replied, "Wait one, I'll do it now." The following communication line was set up immediately:

(1) James: Verbal voice to me - VK5YD
(2) VK5YD to G4BRE - CW 14 MHz
(3) G4BRE (Maurice) to Dawton Snr - GPO line to Oxford

. . . and, of course, the line worked both ways. Dawton Snr was both amazed and delighted; James was equally please, and Maurice expressed the view that this sort of thing makes Amateur Radio worthwhile. He also advised me later, by letter, that he had called in two other nearby "G"s and that they had "wined and dined" James as well as offering him a bed for the night.

I think this was a pleasing exercise!

VHA McBratney VK5YD
PO Box 151
Blackwood 5051

SM7PKK Pacific Tour 2 - 1989/90

Here is some additional info about my trip. As I said before, I planned to travel partly with other EU operators. Now it is time to release more info. OH1RY, some other Finnish operators and I have planned to visit Tokelau ZK3. These plans are now final. We will leave Apia on 2 November and operate from 4 to 14 November. We plan to have two stations on 24 hours a day working pileups and then another station working WARC and RTTY. Before the Dx-pedition we will be spread out over some of Pacific countries, all fighting to get the highest score! I will be at American Samoa working as KS6/SM7PKK.

My personal QSL-managers WILL NOT HANDLE QSLs FOR TOKELAU DX-Pedition. The Finnish people will take care of that. This is VERY important.

After the Tokelau DX-pedition I will stay in Western Samoa to work the CQ WW CW Contests while the Finns are travelling home. I will sign 5W1HK and OTH will be Apia as last time.

After that, I will go back to Fiji and probably on to Tarawa T3Ø, but not for sure! You will find me on the bands from some islands though. My plans will change during the trip depending on my money reserve and what islands are activated by others.

QSLs for MY OWN DX-pedition should go to my home address.

SM7PKK
Mats Persson
Betesv 22
S-240 10 Dalby
Sweden

You can send QSLs while I am travelling as I have different managers, with SM7EQL Ben in charge, organising it the best possible way. Please SASE and ONT' MIX QSL for different operations. In return, we will send QSLs for all contacts you have had with me on that single operation! Meaning you don't have to send QSL for every QSO! Fair enough!

Anyone interested in supporting my trip are welcome to do so. I will travel and activate as many countries as possible. At the latest, I must leave Pacific the 21 May 1990. That is the date when I must travel home, according to my ticket. That limit and the money limit are the only ones!

My Sponsors are:
Naval Electronics AB
Swedish Radio Supply
EUDX-Foundation

73 de Mats
SM7PKK

Cross-Band Repeaters

Dear Sir,

I have just read in AR (August '89) that the Melbourne repeater VK3RHF is soon to be operated as a "closed" repeater. Personally, I think the WIA will be stabbing limited licensees in the back if they throw support behind the idea of "closed" repeaters.

Limited licensees have been discriminated against for years by being prevented from operating on the HF bands because we have no Morse code qualifications. Now we must put up with yet more discrimination by being prevented from operating on a frequency in a band which, until now, we have had free use of as limited licensees.

Band-planning and "gentleman's agreements" aside (and that's really all band-planning is, a "gentleman's agreement"), what is to stop me from operating on this or any other "closed" frequency in the VHF-UHF amateur bands?

If the WIA supports this type of venture, it should hang its head in shame. If not, then it should petition the DOTC to withdraw its permission to allow this service to operate OR negotiate with the DOTC for permission for limited licensees to use the service also. Note, I do not wish access to all the HF bands, but if a repeater operates on VHF or UHF frequencies (where limited licence holders are permitted to operate) and it also retransmits on an HF band, then it should be open to all operators, full, limited and perhaps novices too (they are allowed to operate on VHF FM too.) Any other arrangement hints at discrimination.

The WIA pushed hard enough for permission to allow novices on 2m FM, how about pushing as hard for limited licensees to operate on the so-called "closed" repeaters down on 10m?

Angus Garland VK4QV may have hit on a good idea in his letter published in "Comments" in the same issue, and no doubt there will be a few others who feel inclined the same way about another society or organisation to represent radio amateurs. The WIA should make no mistake. Sure, the IARU will only recognise one society from each country, but in Australia's case it does not have to be the WIA. Perhaps the society with the largest membership should represent us at the international and national levels.

No doubt, the comments above will stir a few to putting pen to paper (the more the merrier), and probably most will criticise what I have written (again, good; it's a free country). But, perhaps there will be a few letters of support for the "opening" of "closed" repeaters on 70cm and 10m.

One last point, if anyone thinks I'm WIA-bashing, they're quite right. I paid my renewal subscription last week and I think I'm entitled to my criticisms in these pages, as are you (if you're a member).

George Christie VK3XEC
19 Browns Road
Montrose 3765

(The WIA is not unsympathetic to your viewpoint, George, in the occasional case of input on VHF/UHF, output on 10m. But DOTC is obliged to support the international regulations - no HF without Morse qualification - whether relayed or

direct. The WIA has not "stabbed you in the back", we are still "pushing". Ed.)

Six Metre Usage

I would like to bring the following information to the attention of all Six Metre Band operators as a matter of urgency.

Recently, after over 25 years of concerted effort by numerous Amateurs, we have regained restricted use of the lower end (50.050-50.200 MHz) of the 6 Metre band.

The use of this segment is quite different in character from the more familiar 52.000-54.000 MHz sub-band. The first 500 kHz above 50.000 Mhz is essentially "International" in character. From observation of operating procedures by many stations over recent weeks, it is painfully clear that many people haven't a clue as to the operating conventions used. The following applies:

(1) The section 50.000-50.010 MHz is reserved for EME (ie: Moonbounce) experimentation ONLY.

(2) The section 50.010-50.100 MHz is for CW use ONLY.

(3) The frequency 50.110 MHz is an INTERNATIONAL DX CALLING AND LISTENING FREQUENCY.

That is not simply MY interpretation but INTERNATIONALLY ACCEPTED OPERATING PROCEDURE, observed by operators in all major countries using the 6 M band, including Japan and the USA. This is no different from the international use of sub-bands on other major Amateur frequencies such as 14 MHz etc.

Local stations have been observed, REPEATEDLY, tuning, testing and rag chewing across town on 50.110 MHz. During one recent session, an experienced operator was copying weak CW on 50.110 MHz and very politely asked the local stations to please QSY from the calling frequency. With much bad grace, the locals very reluctantly shifted to 10 kHz higher and continued to rag chew and splatter over 50.110 MHz while the JA on CW was completely obliterated.

The same stations causing these problems constantly grumble about being asked to QSY off 50.110 MHz, and claim: "If we are not there, no-one will know the band is open." During the above incident, none of the rag chewers heard the DX station because they were all so strong that they drowned it out. When running 100 watts and working stations a few miles away, how can you hear weak DX under S9 + 40 dB signals?

One could be charitable and say that these operators are simply inexperienced, however, we are rapidly approaching the sunspot maximum and we will shortly experience the best 6 M DX conditions ever. Unless we are very careful, stupid operating by people who refuse to accept conventional operating procedures will prevent hundreds of other operators from hearing or working extremely rare DX stations, which we will probably never hear again.

PLEASE keep 50.100 MHz clear unless you are establishing communication with a DX station. When you do establish contact, QSY off the calling frequency and go UP the band WELL CLEAR of 50.110 MHz. If you want to talk across town there is up to 4 MHz of 6 M other than the calling frequency on which to do it. There is NO necessity for local QSOs below 50.150 MHz and as the band opens up the QRM in the section 50.100-50.150 MHz will be bad enough without having local QSOs and their resultant splatter across the band. At least have some consideration for the many serious DXers trying to use the band intelligently.

If you do hear a station misusing 50.110 MHz, please explain to them that it is in their interest as much as in everyone else's interest that the calling frequency is properly used and NOT abused.

Geoff Wilson VK3AMK
7 Norman Avenue
Frankston 3199

JOTA or JOKE ?

Ladies and Gentlemen,

For the last three years, several of us (technicians at a commercial television station), have made freely available our time and equipment for the sole purpose of helping the Scouting fraternity participate in Jamboree of the Air. However, it is becoming glaringly apparent to us that most of the Scouts who have used our facilities are not the slightest bit interested in talking to their counterparts across the globe, but more in playing the fool and generally misbehaving.

Last year, a $2,000 rig almost landed on a concrete floor when two young Scouts decided to play a game of tag around the operating desk. Had it crashed, who would be held responsible for the damage? The Scouts? The station? Their parents? We all know the answer to that one I'm afraid! The poor old amateur can only smile and say, to quote a well known personality on our television network: "Well, that's life folks."

As a result of these problems, our organisation has decided not to participate in any more JOTA exercises. Whilst this letter is not intended to be a slur on all Scouts and Girl Guides, it is intended to convey to all concerned that the proverbial ship by need a good shake up!

73 David G Barneveld VK4 BGB
PO Box 275
Booval 4304

(In the interest of the continuing success of JOTA, we hope that David's experience is very much an isolated case. Ed.)

Mobile Law

The legal position regarding mobile operation in a moving car, ie: while driving, is quite clear. It is illegal to use a hand held microphone while driving, because only one hand would be available to control the car.

I do believe that the use of hand held microphones and the switching on and off of a transmitter while driving is dangerous and irresponsible and I agree with possible police action against drivers - be they amateurs or CB operators - who put themselves and others at risk.

However, there seems to be a solution. It is quite easily possible to use a throat microphone or one fitted to a head band, and to switch the transceiver with a voice operated relay (either external or vox, if built in). However, built-in vox would probably be unusable due to the high degree of background noise. If the head band contains earphones, only one should be used, to keep one ear clear for the sound of emergency sirens.

I do not think that this mode of operation is covered in any regulations. It is, therefore, suggested that the WIA take this matter up with the authorities concerned with a view to obtain official approval (perhaps restricted to licensed amateurs) for it use.

Yours sincerely,

George H Cranby
VK3GI
PO Box 22
Woodend 3443

(The use of hand-held microphones while driving has been illegal only in Victoria; and more recently, in NSW, but apparently only as regards mobile telephones. Traffic regulations are a State responsibility, so action to alter their interpretation must come from the relevant Division. Ed.)

Now Hear This

Ladies & Gentlemen,

For some time now I have been reading various members' comments regarding the new membership fee rises that are being introduced to the WIA.

The general attitude that the bulk of the writers convey is that they do not intend renewing their membership when it next falls due to be paid. Nevertheless, I have not yet seen a letter from any member genuinely showing that the new fee rise will cause him or her real hardship.

On the contrary, the general view being conveyed appears to this writer to be that unless the WIA maintains the old fees, they (the writers) will resign from the Association. This sounds to me to be a small case of blackmail!

Let's face it folks, times move ahead whether you like it or not! My suggestion is that if you genuinely cannot afford the new membership fees, yet still wish to remain a member, then write to the Executive Office and tell them so. I am sure something could be worked out for you in the long run.

If, however, your sole aim is to whinge continually and thereby try and influence other WIA members into resigning via the pages of AR magazine, I strongly suggest to you that you put all your whinges down on paper, but don't send it to AR.

Instead, vent your anger by attaching the letter to the front of your rig, pouring petrol over it, and then chucking in a match. With a bit of luck, not only will the majority of members be relieved of the whingers who constantly appear in AR magazine, but we will be relieved of them on air as well.

73 David G Barneveld
VK4BGB
PO Box 275
Booval 4304

Room for a Waffle?

Over a period of several years, I have enjoyed a regular Sunday morning "sked" with a VK3.

On Sunday 30 July 1989, a "Breaker" made the comment that we were "waffling". A polite request by my VK3 friend for identification eventually brought forth a response by a VK2.

If "waffling" is an offence I plead guilty to the charge, as must thousands of amateur operators world wide.

Being a "gentleman" is one attribute of a commercial or amateur operator. I was encouraged to become involved in the fascinating activity of Amateur Radio by such a "gentleman" twelve years ago when my lifestyle was changed due to becoming physically handicapped. I have met "on air" many persons likewise handicapped by the effects of multiple sclerosis, injury, blindness, to name but a few of the disabilities which prevent us from leading a normal lifestyle.

On reflection, I am sure that the VK2 concerned would in no way deny us the privilege of the occasional "waffle" in maintaining communication with the outside world. This, in particular, applies to the many OM's and YL's who are confined due to their disability problem.

May I express my gratitude to the many "gentlemen" and "gentlewomen" who continue to enrich my life through the medium of Amateur Radio.

73 All around
Kev Mashford VK4LM
16 Forum Close
Mooroolbool Cairns
4870

Subscription Increases

The proposal to increase the federal share of subs revenue by 48% is not receiving much attention in the Over to You column of AR. There could be one or more of the following reasons for this.

- The editor is not publishing all comment received. *(We publish all. Ed.)*
- Protesters fear repercussions on the grounds of "uninformed comment". *(Fools rush in. . . ? Ed.)*
- Members are resorting to the old remedy for bad leaders - ignoring them. *(Shooting the messenger doesn't alter the bad news. Ed.)*
- The persuasion campaign to make the proposal (right or wrong) acceptable is succeeding. *(The proposal is unavoidable - we hope persuasion succeeds. Ed.)*
- Many members are protesting elsewhere.
- Many members have decided not to renew in December.

If I were President, I would be worried about those possibilities and looking for more assurance than a belief that members will accept the proposal.

The proposal should be capable of support in terms of logical reasoning applied to the facts, but in support, we are offered the Presidential assertions, that: "the divisional representatives saw the need for the WIA to operate on a professional footing", and "we need to project a professional image", and "the WIA is seriously under-funded."

The supporting facts have developed and gradually surfaced subsequent to those assertions. The institute has adopted the presently fashionable (in Australia) corporate management system. Because it is not possible to have a management collective without a collection of managers and we were short of those, we now have paid managers:-

- a General Manager
- an Assistant General Manager
- An Advertising and Administrative Manager
- A Members and Circulation Manager
- An Accounts and EDP Manager
- A Managing Editor

To boost the collective periodically, the divisions supply "management oriented" councillors. *(All of these "managers", bar one, have existed for years; they have simply been re-titled. Before the Managing Editor we had Production Contractors. Ed.)*

If there are not enough managers available, you make some. My shire have recently created a corporate management structure. To make up numbers they elevated(?) existing staff right down to the dog catcher - he is now the Pest Control Manager!

Our management collective now meets more frequently, for mutual reinforcement, to practice rhetoric and oratory, and for extended lunches and dinners. Those last are essential - without the benefit of after dinner ruminations in company with "bright young marketing gentlemen from a service industry" we would now be without the benefit of the present developments.

To support and assist the management collective we have management services (not to be confused with member services), comprising new and expensive office machines (more to come) and bright people to operate word processors, feed data banks, do magazine illustrations, seal envelopes and lick stamps. *(I assume the preceding two paragraphs refer to your shire, Lindsay. They are NOT true of the WIA. Ed.)*

The outcome of all that is the need to make do with what we have and make up for inefficient resource utilisation by injecting more. But is an increase in members subs the best method? Probably it is not. The consequent drop in our share of the ARS market, coupled with the need for concessional rates for some members will result in a subs revenue increase of much less than 48%. Most members will be disadvantaged financially. The 48% increase will most likely produce less than 30% increase in usable funds. That is not value for money.

I suspect that our leaders are planning further commitments at members' expense. There is a high probability that we will recruit paid professionals to provide "amateur member involvement in the Australian Preparatory Group leading to the National position papers." (for WARC). "That amateur representation must be regular, continuing, and technically competent." Is that a job description favouring a present member of executive? That, plus inclusion of "competent amateurs in national delegations to ITU conferences and meetings."

Is the present executive being too ambitious? Is someone creating a personal memorial, or maybe a WIA tombstone?

Lindsay Lawless VK3ANJ
Box 112
Lakes Entrance 3909

(Your suspicions are unfounded, Lindsay. We cannot afford "paid professionals" for WARC. Our intended delegates are technically competent. Far from being ambitious, we are compelled to react credibly to reality. If the end result is a "WIA tombstone" at least we will have tried. Ed.) ar

TRADE PRACTICES ACT
It is impossible for us to ensure the advertisements submitted for publication comply with the Trade Practices Act 1974. Therefore advertisers and advertising agents will appreciate the absolute need for themselves to ensure that, the provisions of the Act are complied with strictly.

VICTORIAN CONSUMER AFFAIRS ACT
All advertisers are advised that advertisements containing only a PO Box number as the address cannot be accepted without the addition of the business address of the box-holder or seller of the goods.

TYPESETTING :	Redfords Media 25 Glenferrie Rd Malvern 3144 Tel: (03) 500 0377
PRINTING:	Industrial Printing Richmond
MAIL DISTRIBUTION:	Polk Mailing Co. PO Box 140, Collingwood, Vic. 3066 Tel:(03) 417 5161

The opinions expressed in this publication do not necessarily reflect the official view of the WIA, and the WIA cannot be held responsible for incorrect information published.

HAMADS

TRADE ADS

AMIDON Ferromagnetic Cores: For all receiver and transmitter applications. Send large SASE for data and price to RJ & US Imports, Box 157, Mortdale NSW 2223. (No enquiries at office please . . . 11 Macken St, Oakley). Agencies at: Geoff Wood Electronics, Lane Cove; Webb Electronics, Albury; Electronic Components ACT; Truscott Electronics, Vic; Willis Trading Co, WA; Associated TV Service, Hobart.

SATFAX: Weather satellite picture receiving program for IBM XT/AT. Displays in 64 colours. Needs EGA colour monitor and card, AM demodulator and ADC interface. $45 + $3 postage.
RADFAX2: HF weather fax, morse & RTTY receiving program for IBM XT/AT. Needs CGA, SSBHF, FSK/Tone decoder. Also "RF2HERC" & "RF2EGA", same as RADFAX2 but suitable for Hercules & EGA cards respectively. $35 + $3 postage.
All programs are on 5.25", 360K floppy + full documentation. Only from M Delahunty, 42 Villiers St, New Farm 4005 Old - Ph: (07) 3582785.

FOR SALE - ACT

DECEASED Estate: Tono 7000E Morse RTTY keyboard with Sanyo 12 inch Greenscreen monitor and power supply. Also Tandy line printer with rollpaper attachment SER/PAR interface - VK1AU (062) 813607.

FOR SALE - NSW

EQUIPMENT rack 19 inch professional model seven feet tall - excellent condition (Ex-ABC) - $100 or offers - VK2ZCG (02) 521 5181.

TONO-777 Terminal Unit, reads and transmits AMTOR, BAUDOT, MORSE, ASCII, auto speed and mode selection. Used with PC or dumb terminal, excellent performer - $250.
NEC Multispeed laptop PC, runs MS-DOS, 2 720K drives, 640K RAM and 512K ROM, built in WP software, database and communications. Suitable for TONO-777. Complete with manuals and power supply/charger unit - $1500, ph: (02) 9814762 VK2HL.

ONE pair KW-40 Antenna coils - freq 7.0 MHz made by Unadilla/Reyco Division of Microwave Filter Co, USA, brand new. These ant traps provide op on 10, 15, 20, 40 and 80 metres. $60/pair ONO - QTHR Art VK2AS (02) 4167784.

ROTATOR Med duty KR400 as new hardly used. $200 - Eric (02) 6341462 (AH), (02) 3592678 VK2EED QTHR.

YAESU FT-107M ($850) & FV-107M ($120) or both for $930, 1 owner. Yaesu access for FT290R MkII, DC battery pack FBA-8 unused & new in box $45. Mobile Mount MMB-31 $45 unused and new in box. Casio TV-21 LCD pocket TV 2" screen $80. Cassette Deck 3hd Aiwa AD-3800G $450. Computer test bias, cal, eq for optimal recording. VK2KKN (02) 4385708 AH, (02) 9251375 (BH).

RTTY Station complete info tech M200E mod/demod M300C keyboard ASACA monitor Seimens 100 printer some spares all top order $700. Sony 2001D factory realigned 3 month warranty $500 - VK2BDT QTHR (048) 215036.

YAESU FT707 HF transceiver cw filter workshop manual YM37 mike FA707 power supply in original cartons $900 - Tom VK2QT QTHR (048) 711018.

SENDATA modem with cables and software for IBM PC $195. HB linear good working order $150 + carriage - (067) 752158 VK2WS QTHR.

ANTENNA 20m 204BA with BN86 Balun $275. Tower 33 ft lattice galvanized suits HAM-IV rotator $275. Marconi Sig Gen TF 801A 10-300 MHz book $45 - Chris VK2BAN (049) 733797.

YAESU FT-207R 2m handheld with all optional accessories $200. AWA SS70 HF SSB transceiver $150, both include manuals - VK2BSM not QTHR (02) 8995620.

HILLS crankup tower 14m with 4m extension including all guys turnbuckles etc $450 - Sandy VK2BS (044) 781053.

ICOM R7000 scanning receiver $1500. Kenwood SM220 station monitorscope with BS5 pan-display unit $550. Kenwood TS520S with DG5 digital readout $750. Yaesu FL2100B linear with spare tubes $1100. Icom IC211 2m all mode transceiver $400 - VK2JJ QTHR (042) 942334.

VALVES boxed $4 each - 5FP7 VR21 VR22 VT50 VT105 CV79 CV89 VR92/EA50 4TPB AC2/HLC RMA1204 RKR-73 955 959 NT82/CV1246 - buyer collects - VK2ZSV QTHR (02) 8782912.

YAESU FT102 150w HF transceiver SSB CW AM and FM, complete with narrow SSB filter, wide AM filter, YM-38 desk mike, SP-102 speaker and manuals $1250 ONO. Trio 1303G Oscilloscope/Monitorscope $250 ONO. ATN 11elt 70cm yagi, new unused $100 ONO. Buyer to pay freight - Paul VK2ATR (049) 593748 AH.

TH3-JR triband antenna $150. Yaesu FT-7B HF transceiver $500. CE42 15-10m duo band antenna $150. All in good condition - Kevin VK2FUO QTHR (060) 216845.

FOR SALE - VIC

BALLARRAT HAMVENTON Sunday October 29th 1989. Great Day Out for all Hams and families. Trade display and BBQ lunch.

KENWOOD TS520S transceiver GC $500. 43 feet pole mast and guys $30. Various lengths ladder line coax cable $15 - Bill (052) 436175.

TRANSCEIVERS Icom 1271E 23cm all mode mint $1400 posted. Icom 271H perfect working order $1050 posted - Roger VK3XRS (051) 568291.

ANTENNA 11 elem two metre ATN yagi with balun good cond $50 - Bert VK3TU QTHR (052) 782374 AH, (03) 607 7760 BH.

SAGEM TX20 teleprinter converted for 45/50/1200 Bd $200. Siemens 100 teleprinter complete with paper feeder $100. Paper with both. NI Cad batteries 650 mAH AA $4 pack of 6 no limit - VK3BKH QTHR ()3) 4043841.

SHACK clearance due QTH sale FL2100Z IC225 HL85 linear rotators beams HF & 2mx AA RTTY items VK3RMC MBOX CRO tubes etc - VK3BUS QTHR (054) 261233.

ANTENNA hygain hytower vertical covers 10-160 free standing KLM 2m linear 160 watts - VK3MM. QTHR

TEST equipment, leader LBO311 scope $110. Marconi TF995A/2 Sig. Gen with handbook $220. HF Osc test set No 1 type CT212 and dummy load/power meter CT211 $100 pair. All GC - VK3ZJS QTHR (03) 6107116 BH.

ICOM IC2A $250. IC4A $250. IC25A $350. Mobile antennas, coax relays switches etc, phone or write for full list - George VK3OO QTHR (03) 3374903, TX eqpt sold to licenced amateurs.

YAESU FT77 in EC with matching Yaesu FC700 antenna tuner Yaesu FV707 DM memory controller Yaesu FP700 20 Amp power supply, all in EC $1400. FT101B HF, YC601 digital freq readout and 101B remote VFO spare tubes $550. IC215 portable 2m with 10 channels fitted (mainly repeaters) $150. IC280 mobile 2m in EC $350. Yaesu memorizer in EC $350. FRG7 in EC $250. Mizuho DX555D HF-VHF generator and counter 44 kHz - 30 MHz. Sig gen 10 MHz to VHF counter including int mod in EC $250. Kyoritsu SWR meter K-109 0-30 MHz switchable 50-75 ohms in EC $80. ATU KW E-ZEE match 0-30 MHz, ATU KW160 for 160m. Both units in GC $75 each - VK3ZPW (03) 7765913.

YAESU 8800 all mode rcvr 150 kHz 30 mHz FRV8800 adds 118-174 mHz preamps, Tandy VHF Emtronics ETPI, HF $1095 lot - Syd VK3DSP (059) 852170.

DAIWA CNW418 500W PEP ATU covers WARC

HAM ADS

bands cross needle meter new condition $175 - VK3JA QTHR (055) 665117.

DECEASED SWL Estate: JRC NRD 515 RX with NDH 518 memory unit, NFG 505 ATU preamp and JRC speaker $1500. Also Palomar FL40 audio filter $30, MFJ ATU preamp $60, Palomar Rx preamp (1.8-54 MHz), $50 and Akai DT200 7-day audio timer $80 - Ken VK3AJU (03) 5279029.

BALLARAT Hamvention Sunday Oct 29 1989 sell and buy any unwanted gear. For table bookings or details phone Kevin Hughes (053) 355011 VK3WN.

YAESU FT101 B Ser 83N 204715 HF transceiver with manual, mic, cables, original PA tubes plus 1 spare $400. Also FT 650 SER 3M 316299 6M transverter with manual, cables, etc $100, both GC, no mods - VK3ADN QTHR (055) 962254.

HANDHELDS: Icom IC-μ2A 2m FM $350, Icom IC-4E 70cm with gain whip $400, both ONO - Peter VK3KAI (051) 222550.

YAESU models: FT101B transceiver in GC $350, FT2100B linear amp still in carton $1100, FRG7000 receiver in GWC $350 - Ken VK3ASN QTHR (03) 8425905.

YAESU FL2100B linear mint cond in carton $900, Yaesu FT102 HF all mode transceiver mint cond $1200 - Don Fryer VK3UF QTHR (057) 214088.

FOR SALE - QLD

KW ELECTRONICS 75Ω Dummy load $20, New Vivitar 35-70mm zoom lens Nikon fitting, exchange for Icom SM8 mike or what offers? John VK4WLX QTHR (071) 947443.

KENPRO rotator KR400RC $375, near new hardly used. HF beam CA-42 IOM-15M 8.5dB gain 25dB F/B brand new never used $179 - Geoff VK4CET (077) 737179.

KENWOOD UHF all mode TR9500 with Kenwood system base BO-9 and Isopole antenna perf cond $675 - VK4KCF (07) 2847739.

KENWOOD TS430S with FM, MB430 mounting bracket, PS430, MA5 5-band mobile antenna, Daiwa CN520 SWR&P meter, all mint cond with manuals plus Emtron EAT300 $1750 lot - VK4GS (07) 8441256.

FT 480R all mode Yaesu transceiver (2 m) in good cond plus hand book and circuits $400 - VK4ZAL QTHR (07) 2695832.

VZ300 COMPUTER with RTTY modem amber screen monitor data cassette, CW interface, and Morse program, 232 serial interface with power supplies and leads $450. DX400 coms RX $250. IC751 with filters CW/wide SSB desk and scan hand mic $1750 - VK4UO QTHR.

FOR SALE - SA

MICROWAVE Modules Ltd 430 MHz transverter MMT 432/28S (10 mx to 432) satellite model 10W output $250. Also dual gate mosfet 2mx converter MMC28/144 $100. 6mx linear metal work only with new 3-500Z Eimac tube socket and chimney as per ARRL handbook $350. Mobile mount for TS120S $50 - Jeff VK5OH (086) 257084.

TELCON semi air spaced twin coax 2KW to 2MX, transmitting tubes 4-65A; 4E27(813) Gundig reel-to-reel recorder two sets tubes KW2000; Portable Diathermy 600 watts 7 metres; Post-war receiving tubes new ribbon micro - VK5LC QTHR (08) 2716841.

FT DX400 Yaesu HF/Transceiver good working cond serial no 80998 new finals handbook $280 - Doug VK5AJR (087) 372983.

SWAP - VIC

ATN 8 element log periodic beam 13-30 MHz. Exchange for ATN 6 element log periodic or similar - Bruce Kendall VK3WL (03) 7417654 AH, (03) 544 4888 BH, (03) 543 4553 Fax.

WANTED - NSW

VALVES 1Q5GT, filter choke 60 mA 10H Rola or similar, plastic coil formers RCS any dia or pins - Stan VK2KSD QTHR.

HAMADS

Please Note: If you are advertising items For Sale and Wanted please use a separate form for each. Include all details; eg Name, Address, Telephone Number (and STD code), on both forms. Please print copy for your Hamad as clearly as possible.

*Eight lines free to all WIA members, ninth line for name and address Commercial rates apply for non—members. Please enclosed a mailing label from this magazine with your Hamad.

*Deceased Estates: The full Hamad will appear in AR, even if the ad is not fully radio equipment.

*Copy typed or in block letters to PO Box 300, Caulfield South, Vic 3162, by the deadline as indicated on page 1 of each issue.

*QTHR means address is correct as set out in the WIA current Call Book.

*A courtesy note will be forwarded to acknowledge that the ad has been received.

Ordinary Hamads submitted from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re—sold for merchandising purposes.

Conditions for commercial advertising are as follows: $22.50 for four lines, plus $2.00 per line (or part thereof) Minimum charge — $22.50 pre—payable.

State: .....

❑ Miscellaneous
❑ For Sale
❑ Wanted

Name: .....

Call Sign: .....

Address: .....

.....

YAESU FV901DM scanning remote VFO must be in top cond - VK2UH QTHR (048) 402228.

APPROX 70 feet tower crank-up galv guyed base plate no guys required price delivered to Bowral, must be A1 - A Walsh L20181 QTHR (048) 612092.

UNIDEN 2020 matching speaker and ext VFO - VK2AJE (02) 525559.

VALVE tester with manual and/or manual for Palec VCT-2 vale tester - Andrew Kay (02) 5551408.

WANTED - QLD

YAESU FT726 VHF/UHF Icom 271 or Kenwood VHF base transceiver, write to John Newman 26 Leichhardt Place, Glenden 4743.

ELECTROPHONE base command module power supply in working order or not - Peter VK4MKT QTHR (079) 857848.

TA 14-17 ex RAAF Base TX, please write to David, 70 Brisbane Avenue, Camp Hill, Qld 4152 (07) 3982840.

WANTED - SA

TL120 Kenwood HF/Linear in good working order - Doug VK5AJR (087) 372983.

DIGITAL frequency meter, prefer units with a 7216A basic counter chip or 1 GH2 frequency limit, does not need to be working - VK5MC (087) 359014.

SIX meter conversion details for Bushranger CB or similar unit, any help appreciated - Alan VK5BWG, PO Box 1337, Stirling North 5710, SA.

WANTED - WA

FT200 ext fittings VFO Linear trans vert fixed xtals anything made for them, also DC/DC supply 12V original parts pref - VK6NST (09) 4192951 rev chg accepted.

WANTED - TAS

FT77S, TS130V or similar rig in good working order with manual - Keith VK7SU QTHR (003) 944189.

YAESU FC-103 antenna tuner, must be in mint cond with books etc to complete 301 station - David (004) 252030.

FRAME or loop antenna commercially made suit antique battery operated TRF radio top price paid - (004) 261520.

WANTED - VIC

NALLY wind up tilt over tower or Hills wind up suitable for tiit over conversion - Leo VK3BSC (03) 5983115.

CIRCUIT or handbook for Pye TRP-1 HF portable valve transceiver, photostat would do, will pay costs - Rodney VK3UG QTHR (057) 621454.

RADIO service manuals Vol 6 (1943) and Vol 9 (1946) also RCA receiving tube manual - Ralph VK3CQK QTHR (058) 521372.

ADVERTISER'S INDEX

ATN Antennas 39
Australian Martime College 25
Callbook 29
Clark & Severn Electronics 47
Dick Smith Electronics 19
Electronics Australia ..... IBC
Electronics Today International ..... IFC
Emtronics 7
Ian J Truscott's Electronic World 11
Icom Australia ..... OBC, 32,33
Kenwood Electronics Aust. Pty Ltd 17
Linktech 47
Magpubs 31
Silcon Chip 37
Spectrum Engineering Australia P/L 13
Stewart Electronic Components 47
WIA NSW Division Novice Licence 39
TRADE ADS
RJ & US Imports 62
M Delahunty 62

CIRCUIT diagram for AWA Skyranger HF transceiver type HC-5-R. Geloso VFO unit 4/104 six bands - Manuel QTHR (03) 6107175 BH, (03) 6107711 Fax (att: Manuel).

ICOM BELIEVES FLEXIBILITY SHOULBN'T STOP HERE.

Yesterday's system of communication may not necessarily be today's system of communication (let alone tomorrow's).

But a lot of portable handhelds fail to recognise that the only constant in life is change itself.

So when the time comes for you to change frequencies, expand your system or reprogramme your handheld for different jobs, your system leaves you tied up.

Which is why Icom have introduced a new generation of portable handhelds flexible enough to adapt to any changes.

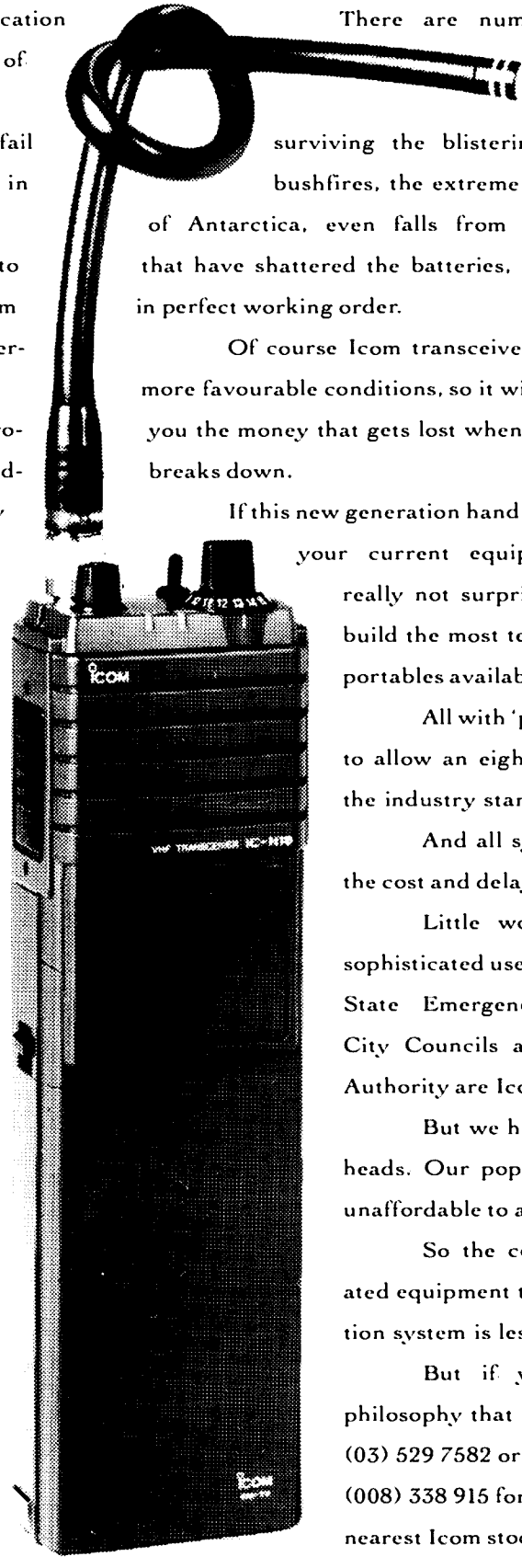
We recognise that different users may require different applications, so we've built a range of UHF and VHF handhelds to suit your requirements.

On a purely technical basis, Icom's portable handhelds offer you a much wider receive and transmit coverage capability than usual. Up to 40 MHz to be exact.

Another unique benefit is the ease with which Icom handhelds can be programmed.

Once you have programmed the transceiver, you can transfer the contents to other transceivers via Icom's advanced cloning system.

But perhaps most important is the flexibility of an Icom handheld in day to day use. Icom's extraordinary durability and reliability means it can handle the every day rigours of regular use in any situation you are likely to encounter.



There are numerous stories to tell of the Icom handheld's durability. Such as surviving the blistering heat of Australian bushfires, the extreme sub-zero temperatures of Antarctica, even falls from multi-storey buildings that have shattered the batteries, but left the transceiver in perfect working order.

Of course Icom transceivers work just as well in more favourable conditions, so it will probably at least save you the money that gets lost whenever critical equipment breaks down.

If this new generation handheld has suddenly made your current equipment antiquated, it's really not surprising. Icom design and build the most technically sophisticated portables available.

All with 'power saver' technology to allow an eight hour working day at the industry standard 5:5:10 duty cycle.

And all synthesised to eliminate the cost and delay of obtaining crystals.

Little wonder that technically sophisticated users such as the Victorian State Emergency Services, Telecom, City Councils and The Country Fire Authority are Icom users.

But we haven't let this go to our heads. Our popularity hasn't made us unaffordable to all but a few.

So the cost of updating antiquated equipment to a flexible communication system is less than you might think.

But if you subscribe to the philosophy that seeing is believing, call (03) 529 7582 or (008) 338 915 for your nearest Icom stockist.

ICOM

ICO 0039

AMATEUR RADIO

NOVEMBER 1989

WIA 80 COMPETITION

Win An Icom IC-900A!

THE WIA RADIO AMATEUR'S JOURNAL

AMATEUR RADIO

THE WIA RADIO AMATEURS JOURNAL

Vol 57 No 10 ISSN 0002-6859 November 1989

Amateur Radio is published by the Wireless Institute of Australia, as its Official Journal on the last Friday of the previous month.

EXECUTIVE EDITOR

Bill Rice VK3ABP

MANAGING EDITOR

Graham Thornton VK3IY

NEWS EDITOR

Jim Linton VK3PC

SENIOR TECHNICAL EDITOR

Peter Gibson VK3AZL

TECHNICAL EDITORS

David Brownsey	VK4AFA
Don Graham	VK6HK
Evan Jarman	VK3ANI
Peter O'Connor	VK4KIP
Gil Sones	VK3AUI
Phil Steen	VK4APA
Roy Watkins	VK6XV

DRAFTING

Vicki Griffin VK3BNK

ADVERTISING

Ann McCurdy

All contributions and correspondence concerning the content of Amateur Radio should be forwarded to: -

The Editor
Amateur Radio
PO Box 300
Caulfield South
VIC 3162

Registered Office

3/105 Hawthorn Road
Caulfield North VIC 3161

Telephone: (03) 528 5962
(03) 523 8191

Fax: (03) 523 8191
(Non dedicated line)

Deadlines

	Editorial	Hamads
December	6/11/89	8/11/89
January	4/12/89	6/12/89
February	8/1/90	10/1/90

CONTENTS

Technical

An Introduction to Synchro Torque Transmitters and Indicators (Part 2) 31
Dean Probert VK5LB

An RF Power Linear Using IRF Mosfets 16
Lloyd Butler VK5BR

Decibels Made Easy 20
Mervyn Eunson VK4SO

IBM Log Check and Sorting Program 24
Phil Connolly VK2BPC

Mosfet-4 VFO CW Transmitter for 80m 10
Drew Diamond VK3XU

On Building a VSWR Meter 6
Reg Fookes VK2AKY

The Icom IC-900A Modular Multi-band FM Transceiver - Equipment Review 37
Ron Fisher VK3OM

The 5/8 Mystery 9
Des Greenham VK2CO

They Say it Never Strikes Twice in the Same Place 27
Barrie Gillings VK2DWC

General

Short History of Communications 41
Ted Roberts VK4QI

VNG Update 40
Marion Leiba

Murphy's Corner - errata 21

Operating

Awards 47
Contests
Calendar, RNARS Activity Rules, ... 45
1989 Ross Hull Memorial Rules, National VHF/UHF Rules 46

Columns

Advertisers Index 64
ALARA 54
AMSAT 50
Club Corner 58
Divisional Notes
VK2Notes 56
VK3 Notes, 5/8 Wave 57
Education Notes 56
Editor's Comment 2
Hamads 62
How's DX 43
Intruder Watch 52
Morseword No 32 52
Over To You - Members Opinions . 60
Pounding Brass 49
QSLs from the WIA Collection 54
Silent Keys - Obituaries 59
Stolen Equipment 38
VHF/UHF - An Expanding World ... 44
WIA Directory 3
WIA News 3

Cover

Control unit for the fabulous IC900A VHF/UHF multi-band transceiver, which is the grand prize for the WIA 80 Competition. See details on page 36.

Ship of the Desert

EDITORIAL

BILL RICE VK3ABP EXECUTIVE EDITOR

This is mainly intended to be a first-hand account of how your Executive Editor's salt-lake safari has proceeded so far. A gentleman named Murphy has been much in evidence, and virtually everything that could go wrong, has! No, that's a little too strong. We have had no car or trailer problems of note, in over 2000 km of boat trailing, so it could be worse.

We put the boat into Lake Eyre South on Sunday 1st October. We pulled it out again on Tuesday 3rd October! In the meantime, the wind had seldom dropped as low as 30 knots. On Tuesday morning, half aground on the beach, the boat was rocking so much I could scarcely write, and the spray was going over the cabin. Since several members of our party were committed to being back in Melbourne by Monday 9th, we reluctantly wrote Lake Eyre South out of the program (even though there was up to four metres of water depth) and headed east to Marree; up the Birdsville track to see the waters of Cooper's Creek (still advancing, but so slowly!) and back, down to Port Augusta, where this is being written; and, we hope, shortly to Lake Torrens.

The main lessons which have been reinforced many times on the trip have been that, on the rough roads north of Lyndhurst (north of Leigh Creek), all but elastic-stop nuts will unscrew, all brackets etc carrying any load, will break, and mechanical bits which have survived years "down south" will disintegrate without notice. On the plus side, the combination of a solar panel and a wind-driven generator has worked perfectly. One of the highlights of the trip was when, on 2nd Oct, someone of whom we have all heard, none other than Dick Smith VK2DIK landed his Bell Jet Ranger only about fifty metres from our tent, and spent about an hour at Lake Eyre South talking to us, inspecting the boat, and having a bite of lunch! No prior arrangements; he was just looking at the flooded lakes while we happened to be there!

From here on, the objective is to sail for a day or two on Lake Torrens which, as mentioned some months back, has more water in it than at any time in the last hundred years, and perhaps also Lake Frome, before reluctantly leaving the Far North of SA. At least, even if windy, it's mild to hot, and barely a drop of rain for weeks, whereas further south they tell us it's pouring rain and cold. Wouldn't it be nice to stay here indefinitely? Unfortunately, your magazine calls. This issue must be proof-read on 19th Oct, so I can't get away from deadlines! 73 to all.

Port Augusta 5th Oct 89
ar

Wireless Institute of Australia

The world's first and oldest National Radio Society - Founded 1910
Representing Australian Radio Amateurs - Member of the International Amateur Radio Union
Registered Executive Office of the WIA: 3/105 Hawthorn Road, Caulfield North, Vic, 3161
All mail to: **PO Box 300, Caulfield South, Vic, 3162** Telephone: (03) 528 5962 (03) 523 8191
Fax: (03) 523 8191 (Non-dedicated line)

General Manager and Secretary: Bill Roper VK3ARZ

EXECUTIVE

President:	Peter Gamble	VK3YRP	**VK1 Federal Councillor:**	Kevin Olds	VK1OK
Vice Chairman:	Ron Henderson	VK1RH	**VK2 Federal Councillor:**	Peter Jeremy	VK2PJ
	George Brzostowski	VK1GB	**VK3 Federal Councillor:**	Peter Mill	VK3ZPP
	Brenda Edmonds	VK3KT	**VK4 Federal Councillor:**	David Jerome	VK4YAN
	Bill Rice	VK3ABP	**VK5 Federal Councillor:**	Bill Wardrop	VK5AWM
Immediate Past President:	David Wardlaw	VK3ADW	**VK6 Federal Councillor:**	Neil Penfold	VK6NE
			VK7 Federal Councillor:	Joe Gelston	VK7JG

FEDERAL CO-ORDINATORS

Amsat:	Graham Ratcliff	VK5AGR	**Int'l Travel Host Exch:**	Ash Nallawalla	VK3CIT
Awards Manager:	Ken Gott	VK3AJU	**QSL Manager (VK9, VKØ)**	Neil Penfold	VK6NE
Contest Manager:	Frank Beech	VK7BC	**Standards & FTAC:**	Rob Milliken	VK1KRM
Education:	Brenda Edmonds	VK3KT	**Tapes (Federal News):**	Bill Roper	VK3ARZ
EMC:	Hans Ruckert	VK2AOU		Ron Fisher	VK3OM
Historian:	John Edmonds	VK3AFU	**Videotape:**	John Ingham	VK5KG
Intruder Watch:	Gordon Loveday	VK4KAL	**WICEN:**	Bill Wardrop	VK5AWM

Repeater Cross Linking

WIA NEWS

BILL ROPER VK3ARZ GENERAL MANAGER & SECRETARY

When 2 metre band privileges were granted to Novice operators, both the WIA and the DoTC foresaw difficulties with those, at the time, very few cross linked repeaters.

Paragraph 45 in DOC 71 reads "The repeater "link" shall not be used to permit an Amateur station transmission to be retransmitted in a band it is not authorised to employ, except where the retransmitted signal is above 30 MHz".

The wording of this paragraph has been seen to be somewhat ambiguous, and has been interpreted differently by a number of amateurs, and even some DoTC personnel.

The regulatory viewpoint, arising from the July 1989 WIA/ DoTC Joint Meeting, is that the DOC 71 conditions apply to the link channels between repeaters, and not to the repeater emissions.

In other words, 432 MHz (or higher) links may be used but the ultimate Novice radiations from the linked repeater must fall within the Novice authorised allocation of 146 to 148 MHz.

Naturally, this poses a limitation on linking 2 metre repeaters to, for example, 70 or 23 cm repeaters. I am sure those involved already appreciate the limitations with links to 6 and 10 metre repeaters!

The DoTC appreciate that this limitation disadvantages other than Novice class licence holders, but they also strongly adhere to their ruling that amateurs should not receive privileges for which they are not authorised.

The WIA must agree with that principal because it merely restates our existing policies concerning licence grade privileges.

Although this problem has been apparent for some months now, the DoTC and the WIA have been conducting in-depth discussions in an effort to arrive at the most equitable solution for all concerned. The WIA has been consulting with involved members right around Australia, but this takes time. DoTC's willingness to negotiate and be patient (rather than insist on a bureaucratic interpretation of the regulation), so that we can all arrive at the best solution to this problem, will be appreciated by all 2 metre repeater users.

In a letter dated 10th October 1989, DoTC advised the WIA of their determination in this matter. After outlining the problems, the letter goes on to say:

"The Department has considered the options available to overcome the problem outlined and believes that the most equitable solution is to adopt links activated by a tone access system rather than permanent interconnections. This arrange-

WIA DIVISIONS

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually their residential State or Territory, and each Division looks after amateur radio affairs within their State.

Division	Address	Officers			Weekly News Broadcasts
VK1	ACT Division GPO Box 600 Canberra ACT 2601	President Secretary Treasurer	Ted Pearce Jan Burrell Ken Ray	VK1AOP VK1BR VK1KEN	3.570 MHz 2m ch 6950 70cm ch 8525 2000 hrs Sun
VK2	NSW Division 109 Wigram St Parramatta NSW 2124 (PO Box 1066 Parramatta) Phone (02) 689 2417	President Secretary Treasurer	Roger Henley Peter Balnaves David Horslall	VK2ZIG VK2CZX VK2KFU	(R Denotes repeater) Times 1100 and 1915 on Sunday 1.845 MHz AM, 3.595 AM/SSB , 7.146 AM (1100 only) 28.320 SSB, 52 120 SSB 52.525 FM 147.000 FM(R) 438.525 FM(R) 584.750 (ATV Sound) Relays also conducted via many repeaters throughout NSW.
VK3	Victorian Division 38 Taylor St Ashburton Vic 3147 Phone (03) 885 9261	President Secretary Treasurer	Jim Linton Barry Wilton Rob Hailey	VK3PC VK3XV VK3XLZ	1.840 MHz AM, 3.615 SSB, 7.085 SSB, 147.250 FM(R) Mt Macedon. 147.225 FM(R) Mt Baw Baw 146.800 FM(R) Mildura, 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday
VK4	Queensland Division GPO Box 638 Brisbane Qld 4001 Phone (07) 284 9075	President Secretary Treasurer	David Jones John Aarsse Eric Fittock	VK4NLV VK4QA VK4NEF	3.605 MHz, 7.118, 14.342, 18.132, 21.175, 28.400, 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday Repeated on 3.605 & 147.150 MHz, 1930 Monday
VK5	South Australian Division Thebarton Rd West Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Secretary Treasurer	Don McDonald Hans van der Zalm Bill Wardrop	VK5ADD VK5KHZ VK5AWM	3.550 MHz, 14.175, 28.470, 53.100, 147.000 FM(R) Adelaide, 146.700 FM(R) Mid North, 146.900 FM(R) South East, ATV Ch 34 579.00 Adelaide, ATV 444.250 Mid North (NT)3.555, 146.500, 0900 hrs Sunday
VK6	West Australian Division PO Box 10 West Perth WA 6005 Phone (09) 474 2626	President Secretary Treasurer	Alyn Maschette Bruce Hedland - Thomas	VK6KWN VK6OO	146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 3.560, 7.075, 14.115,14.175, 21.185, 28.345, 50.150, 438.525 MHz Country relays 3582, 147.350(R) Busselton 146.900(R) Mt William (Bunbury)147.225(R) 147.250 (R) Mt Saddleback 146.725(R) Albany 146.825(R) Mt Barker Broadcast repeated on 3.560 at 1930 hrs.
VK7	Tasmanian Division PO Box 1010 Launceston TAS 7250	President Secretary Treasurer	Mike Wilson Bob Richards Peter King	VK7ZWW VK7NRR VK7ZPK	146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.750 (VK7RNW), 3.570, 7.090, 14.130, 52.100, 144.100 (Hobart) Repeated Tues 3.590 at 1930 hrs
VK8	(Northern Territory) is part of the VK5 Division and relays broadcasts from VK5 as shown (received on 14 or 28 MHz).				

Note: All times are local. All frequencies MHz.

ment would allow Novice operators to use 146 to 148 MHz repeaters without the possibility of being automatically retransmitted on unauthorised bands.

Similarly, Unrestricted and Limited amateur stations would not be disadvantaged as, by the transmission of a tone signal, they could activate the link feature. The tone access facility would also have the added advantage of providing increased interference protection and allow better re-use of link frequencies.

Accordingly, as from the date of this letter, all new links used for interconnection of voice repeaters shall be required to be fitted with an audible tone burst access system. This facility shall be installed such that, to activate the link feature, the tone burst must be detected at the beginning of each transmission. Licensees of existing links will be given until 31st March 1990 to comply with the revised arrangements.

In the interim, Novice operators should ensure that they do not use repeaters operating in the 146 to 148 MHz band that are permanently linked to repeaters operating in other bands. The relevant paragraphs in the DoTC licence conditions brochure DOC71 will be amended to reflect the new conditions at the earliest opportunity."

In this letter, DoTC did not specify a frequency for the tone burst. However, they did recommend that, although selection of the tone burst frequency will be the responsibility of the repeater group concerned, the WIA may care to establish a "standard" set of frequencies to provide a co-ordinated approach.

After further discussion with the WIA Federal Technical Advisory Committee, the WIA has decided to recommend a tone burst frequency of 1750 Hz for this cross band repeater linking purpose.

This is the usual frequency of the tone burst facility already available in many 2 metre FM transceivers.

RF Tag Ident System

The DoTC is considering permitting RF identification devices to be used in Australia without being individually licensed.

The conditions that they are considering are similar to the USA Federal Communications Commission (FCC) Part 15 conditions for low power unlicensed devices.

As the proposed frequency bands include VLF, HF, VHF/UHF and microwave, and in particular 3.5 to 3.95 MHz, the DoTC approached the WIA for our views.

The WIA Federal Technical Advisory Committee examined the field strength limits proposed for the devices (15 microvolts per metre at 30 metres at HF) and compared the effective RMS noise field strength in a 1 kHz bandwidth with CCIR atmospheric noise and man made noise predictions.

The modes of modulation, hence occupied bandwidths, were not clear.

However, by making reasonable assumptions the WIA gained the impression the proposed devices would generate noise levels in excess of man made noise levels in business, residential and possibly rural areas.

Whilst it is not clear what these ID devices would be used on, possible applications could include valuable item ID tags such as VCR's, TV's, cameras and the like in stores, transport containers, pets, and persons committed to imprisonment in the home.

Thus the devices could be distributed far and wide beyond business areas, bringing with them their RF emissions.

As these RF emissions, hence noise levels, would occur in an international amateur primary band, 80 metres, the WIA has emphatically indicated its strong opposition to any approvals being granted.

Repeater Site Fees

Many of the amateur service repeaters in use in Australia have been installed on hilltop sites owned or leased by a number of authorities, such as Telecom, the DoTC, Forestry Commissions and the CAA (Civil Aviation Authority). The co-operation received from these authorities in allowing the amateur service to share their site facilities has been of great benefit to Australian amateur radio.

However, as with most, if not all, government or semi-government bodies, these authorities have been examining their operations recently with a view to becoming more financially self supporting.

Several Australian repeater groups have received advance warning of the possibility of being charged commercial rates for use of sites and masts for their repeater installations. Needless-to-say, the amateur service has many community benefit arguments (particularly the Wireless Institute Civil Emergency Net, WICEN) to put to these authorities in order to argue for the waiving of these proposed fees.

But it may be some time yet before we know the result of the amateur service representations to these authorities and learn whether we have achieved reduced fees, or even no fees at all.

In the meantime, it is interesting to note that the ARRL, and the amateur service in the USA, appear to have won a small victory in the 2 year battle with their Forestry Service about proposed site fees which were going to range from $300 to $1200 for amateur repeaters.

The US Forestry Service has just announced that they have set their annual site fee for amateur service repeaters at $75, which they say represents the cost to the Forestry Service for administration of the authorisation.

EMI Standards Draft

Over the past 12 months, the Communications Policy and Planning Division of the Department of Transport and Communications has been working on the question of Electromagnetic Interference (EMI) Standards. A stage has now been reached where a paper has been prepared which outlines the issues and a suggested approach.

This paper has been prepared following extensive discussion and consultation with industry representatives and organisations.

DoTC have now submitted the draft paper to the WIA for our comments, particularly on the recommendation that EMI standards are needed, and on possible implementation strategies.

Copies of this draft paper have been given to the Federal Technical Advisory Committee, headed by Rob Milliken, VK1KRM, to the WIA Federal EMC Co-ordinator, Hans Ruckert, VK2AOU, and to Alan Foxcroft, VK3AE, for study.

DOC 72 Now Available

The second in the trilogy of pamphlets, which are being produced by the DoTC to replace the old Amateur Operators Handbook, is now available free from all DoTC Communications Operations Division offices.

This pamphlet, DOC 72, which should be obtained by all existing and intending radio amateurs, outlines the operating procedures and practices applicable to amateur stations. The contents include calling and reply procedures, procedures for mobile and portable operation, distress and urgency communications, the Q code, classification of emission designations (do you know "off-the-top" what **is** a 6M25C3FMN

transmission?), the ITU phonetic alphabet, and Australian radio amateur callsign prefixes and suffixes.

The third part of this trilogy of pamphlets, entitled "Information for Prospective Amateur Operators", or DOC 70, is presently with the Australian Government Publishing Service and will be available shortly.

WIA 80 Award

Which WIA member will qualify for the WIA 80 Award certificate number 1? Eligible contacts for this award, which celebrates the 80th anniversary of the world's first and oldest national radio society, can commence as from midnight on October 31st of this year.

The rules are detailed on page 4 of September 1989 issue of Amateur Radio magazine, but basically you need to contact, and exchange membership numbers with, 80 members of the WIA, between November 1st 1989 and December 31st 1990.

If past experience is any criteria, this will be a popular contest, and the award certificates much sought after.

Update on Visiting ZL

Several weeks ago I advised you of the innovative step taken by the radio amateur licensing authority in New Zealand to enable short-term amateur visitors to that country to operate for a period of up to 4 weeks, using handheld transceivers on 144 MHz and above, without needing to obtain a reciprocal licence.

Full details of this arrangement are on page 4 of the October issue of Amateur Radio magazine.

However, further information just to hand from the New Zealand Radio Frequency Service points out that, because New Zealand Novice licensees are not permitted on the 2 metre band, Australian Novice licensees are therefore prohibited from operating under the terms of this new "walk-off" reciprocal arrangement.

Naturally, Australian Novice licensees are permitted to use the 3.5, 21 and 28 MHz bands in the usual manner while in New Zealand, provided they first obtain a standard reciprocal licence from the New Zealand RFS.

New VHF/UHF Record?

An interesting claim for a new VHF/UHF distance record has been received from John Martin, VK3ZJC, and Daniel Dobrosak, VK3KKW.

John and Daniel are claiming a new 1296 MHz mobile record distance worked of 138.2 km. John was using a 10 watt ICOM 1271 transceiver into a 0 dB gain cloverleaf antenna mounted on the ski bar of his van, and Daniel was using a 1 watt homebrew rig into a 6 dB gain Alford slot mounted on the roof rack.

As with all claims for new VHF/UHF distance records, this claim has been forwarded to the Federal Technical Advisory Committee (FTAC) in Canberra where all details will be closely examined.

MagPubs

As recently advised in Amateur Radio, and on Divisional news broadcasts, the overseas publications part of the WIA MagPubs operation was recently overhauled and is now bigger and better than ever before.

Monthly half page advertisements showing some of the greatly expanded range of publications now available are appearing in Amateur Radio magazine each month.

But, because of the expanded range of publications now available, members should realise that their Divisional Bookshop may not be able to carry all publications in stock at all times.

Divisional Book Shop officers have the latest list of publications available, so make sure you contact them first if you are contemplating purchasing a publication relating to amateur radio.

If your Divisional Book Shop does not have the particular advertised publication that you want in stock, then the expected delay in obtaining it should be no more than two to three weeks.

Log Book Covers

In the cleaning up and rationalisation of the Federal MagPubs operation, we found, to our surprise, a small supply remaining of the up-market and expensive log book covers that were produced several years ago and sold like hot cakes.

These dark blue, leatherette finished, solid covers with gold lettering on the front cover and the spine, are ideal to protect your valuable log book (the vertical, A4 type) and look very smart on the operating desk or in the bookshelves.

There are only 8 of these covers left in stock, and they are available to WIA members only at the reduced cost of $17.00, including packing and postage, from MagPubs at PO Box 300, Caulfield South, 3162, Victoria.

First in first served.

1989 Ross Hull Contest

Despite a number of initiatives, interest in the annual Ross Hull Memorial Contest has been gradually falling away over recent years, with only a handful of the limited number of people participating in the contest actually bothering to submit a contest log.

Given the vast size of our country, and the relatively small and uneven geographical spread of our population, it is very difficult to arrive at rules for a VHF contest which are equitable to all Australian radio amateurs.

This problem has concerned our hard working Federal Contest Manager, Frank Beech, VK7BC, for quite some time (I am convinced that the position of Federal Contest Manager must be one of the most demanding of the volunteer positions in the WIA structure).

Frank recently submitted a proposal to the Executive for approval of a new set of rules for the 1989 Ross Hull Memorial Contest. Executive examined the proposal with great deliberation, looking at both the advantages and the flaws, and finally agreed with all of Frank's proposals.

No one believes that these rules are going to solve all of the difficulties associated with this contest, but it is a different approach, and is a result of Frank listening to ideas and suggestions from a number of interested people.

These new rules will be published in detail in future issues of Amateur Radio, but the main changes are that the contest will take place over a shorter period, contestants will be able to operate from other locations than their home station for a couple of days during the contest, and the scoring system will be based on the Maidenhead Locator Squares.

If you are a VHF operator, give this year's Ross Hull Memorial Contest a try. And let us know how you think the new rules helped to make this year's contest a more interesting and exciting event.

DoTC and RFI

The new fee system for the DoTC investigation of interference complaints is expected to be introduced during October or November of this year.

As explained previously, there is no intention by the DoTC to charge a fee to the person causing the interference to broadcast radio or TV reception. So, under normal circumstances, if the transmissions from an amateur station are the cause of the interference, the amateur need have no fear that they are going to be charged a fee for the investigation of the

Continued on page 26

TECHNICAL

ON BUILDING A VSWR METER

REG FOOKES VK2AKY
19 DELAGOA PLACE CARINGBAH 2229

The main purpose of this dissertation is to pass on some wrinkles picked up during the exercise, rather than provide a complete recipe.

For a number of years I have used an Osker Block SWR-200 SWR and Power meter when adjusting my antenna tuning unit. While the SWR-200 is an excellent instrument, at 80m the sensitivity is rather inadequate, and at 160m virtually non-existent. So there was an incentive to acquire a more sensitive unit.

A literature search provided an abundance of designs, mostly of the current transformer type, so several mock-ups were tried. Maybe the problems were created by me, but in every case I found the alignment settings to be frequency-dependent. They could all be very nicely set up on 80m or 10m, but not both. It was noticeable that some of the designs went to great lengths in shielding, RF filtering and circuit symmetry, so perhaps this type is not as simple as it appears to be.

So the next thought was the old directional coupler concept (like the SWR-200). The slotted-line construction requires accurate mechanical work, and for increased sensitivity, large physical dimensions. It was decided to try the co-axial cable with inserted pick-up lines format.

Some preliminary trials and errors showed that to be able to null out the reverse currents and to have equal forward output from each pick-up line, it was necessary that:

1) each pick-up line be terminated by its correct Zo.

2) identical wire, ie cut from the same piece of stock, be used for each line.

3) the impedance of the RF source, transmission line and load should be the same as that for which the reflectometer is designed and adjusted. However, the error is not large if, say, a 50 ohm reflectometer is used with a 75 ohm RF system. The error can be practically eliminated by changing the pick-up line terminating resistors.

More than sufficient sensitivity on 80m was available with a 50 ohm directional coupler 14 inches (355mm) long with an RF power of 5 watts. It was quite satisfactory with an FT-101E at 160m. The alignment adjustments were independent of frequency (3.5-28MHz) within close limits.

Figure 1 is the circuit diagram, and Figure 2 the physical layout of the RF section. The wire used for the two pick-up lines was Teflon-insulated, silver-plated copper.

The principal contribution of this article is the method of constructing the directional coupler.

Directional Coupler Construction

For a reflectometer for use with a 50 ohm RF system, take a piece of good quality RG58 co-axial cable about 18 inches (450mm) long. Remove the PVC outer sheath from each end, being careful not to cut the braid wires, leaving the central 14 inches (355mm) intact. Pull out the centre conductor and polythene dielectric. At each end of the PVC sheath make a hole in the braid by pushing the wires aside and bend the two braid tails back so that a clear passageway is formed through the central section.

Neatly solder one end of a straightened length of 20 or 22 SWG copper wire about 3 ft (1m) long to one end of the co-ax inner conductor. Taper the adjacent end of the polythene dielectric.

Take a piece of Teflon-insulated, silver-plated computer wire-wrap wire about 3 feet long and cut it in the middle, (in my case the wire diameter was 0.009 in (0.23mm) and the overall diameter 0.019 in (0.45mm)). Solder one end of each piece to the copper pull wire just beyond the co-ax inner conductor. Fold back about half an inch at the end of the pull wire and thread it through the co-ax braid. The assembly should now look like Figure 3 (a).

Now comes the fiddly bit.

Clamp the free end of the pull wire in a vice and stretch it out by pulling on the co-ax inner section. Enter the two pick-up wires and the tapered end of the polythene into the opening of the braid, with the two pick-up wires diametrically opposite each other on the surface of the polythene. Ease the braid over the inner core/pick-up wires assembly by pushing the PVC outer sheath near the point

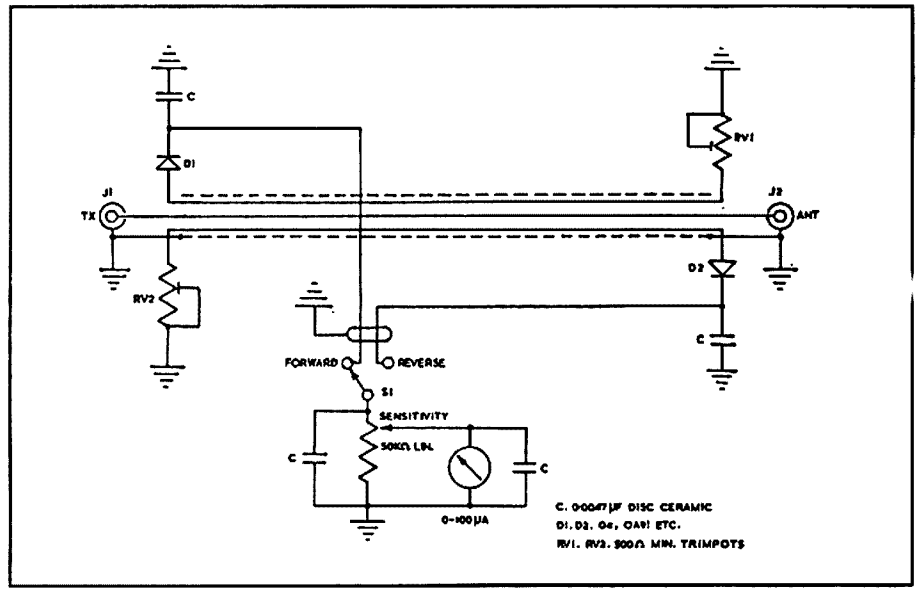


Figure 1

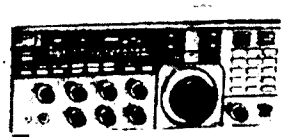
EMTRONICS OPENS IN W.A.

From Nov 1,
EMTRONICS W.A. P/L & WILLIS TRADING CO
have merged
Temporary address is the Willis Trading Co address,
165 Albany Highway VICTORIA PARK WA
Prices and service will be the same in all our four stores.

NEW **JRC**

JST 135-150 watts

* The ultimate HF Transceiver
Price $3199
* **Built by the professional for the connoisseur.**



NRD 525 Receiver

- Superb performance
- Quality Manufacture
- 200 memories
- VHF/UHF option available
- RS 232 option available

PRICE $2599

THPLinear Amplifiers Two Metres

	was	now	
• HL180V Auto	170W	$599	$545
• HL160 V25	150W	$499	$475
• HL85V	80W	$399	$299
SEVENTY CENTIMETRES			
• HL130U	120W	$799	$769
SIX METRES			
• HL 66V	60W	$299	$279

KENPRO ROTATORS

MODEL	BRAKING	ROTATING	PRICE
KR400	1530kg	400kg/cm	$369
KR400RC	1500kg/cm	400kg/cm	$429
KR800	4000kg/cm	800kg/cm	$659
KR2000	10,000kg/cm	2000kg/cm	$1299

All units include both top and bottom clamps.
8-core rotator cable available

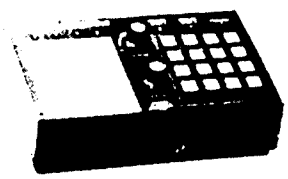
KENWOOD

Full range of all Kenwood products available at competitive prices from our 4 stores.

STOP PRESS

First shipment sold out New stock early Nov

NEW from A.E.A.
MM3 MORSE MACHINE



Featuring
- 2.99 WPM speed selection
- 20 memory channels
- 8000-character storage
- RS232 compatible
- Programmable auto beacon
- Random word generator
- QSO simulator
- Fully featured keys

ONLY $425

SUPER SPECIAL FROM DAIWA

Rotator model MR750
Braking 6000kg/cm
Rotation 700kg/cm

ONLY $399

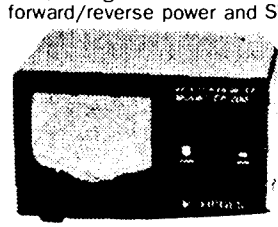
New antenna Emtron ED 52C Dipole

Featuring
- 2 Traps
- 33 Metres overall length
- Tuned Feeder
- Low SWR on all Bands
- Australian Made

SUPERIOR PRODUCTS FROM EMTRON

EMTRON'S PRECISION CROSS-NEEDLE SWR AND POWER METER
EP2000

Yes, this new from EMTRON, highly accurate CROSS-NEEDLE SWR and POWER meter, model EP-200 with a frequency range from 1.8 MHz to 60 MHz and 3 power ranges 20, 200, 2kw gives instantaneous readings of forward/reverse power and SWR



PRICE $110

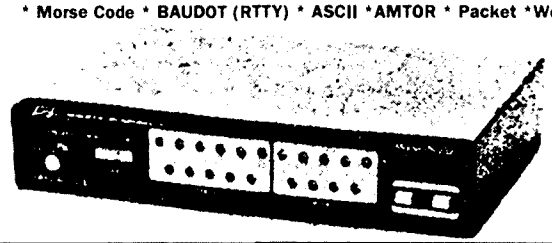
* EAT 300 Antenna Tuner	**$259**
* EAT 300A Antenna Tuner	**$369**
* EAA 230 Active Antenna	**$199**
* EPI SWR Meter	**$59**
* ENB2 Noise Bridge	**$129**
* EDMI Dip Meter	**$99**

LIMITED QUANTITY
ICOM
SUPER SPECIAL IC2GAT
- 7 Watts Output at 138V
- Digital Touchstep tuning
- Band & memory scan
- Programmable call channel

Normally $660 **ONLY $399**
Full range of all ICOM products

JOIN PACKET

New PK-232 Breakthrough incl PMS
A new software enhancement makes the AEA PK-232 the only amateur data controller to offer six transmit/receive modes in a single unit
*** Morse Code * BAUDOT (RTTY) * ASCII *AMTOR * Packet *Weather FAX**



PRICE $640
WITH FAX
PK88 $350

BANKCARD
MASTERCARD & VISA
WELCOME

MAIL ORDERS WELCOME

EMTRONICS

NSW & HEAD OFFICE:
92-94 Wentworth Ave, Sydney
NSW 2000. TLX: AA73990
PO Box K21 Haymarket, NSW 2000
Ph: (02) 211 0988 FAX: (02) 281 1508

VICTORIA:
288-294 Queen St, Melbourne
Vic 3000
Entrance from Lt Lonsdale St
Ph: (03) 670 0671

QUEENSLAND:
416 Logan Road, Stones Cnr
Qld 4120
Ph: (07) 394 2555
FAX: (07) 394 4316

WESTERN AUSTRALIA:
165 Albany Highway
Victoria Park WA 6100
Ph: (09) 470 1118

where the end of the polythene is located. Use the finger and thumb to grip the sheath in the spaces between the two pick-up wires. As far as possible keep the two wires diametrically opposite and straight. Work the braid and sheath along the inner assembly until the ends of the pick-up wires appear at the second hole in the braid. Carefully feed the inner assembly through and continue working the braid along until about two inches of the inner core protrude. Cut the pull-wire free from the co-ax and pick-up wires. It should now look like Figure 3(b).

Trim all the ends, check for open and short circuits as appropriate and assemble it and all the other components into the metal case of your choice.

Alignment

Using 50 ohm co-ax connect a Tx to J1 and a non-reactive 50 ohm load to J2.

With S1 in the Forward position, adjust the RF level and the Sensitivity control to give approximately FSD on the meter.

Change S1 to Reverse and adjust VR1 to give minimum meter deflection.

Reverse the leads to J1 and J2 and repeat the nulling procedure by adjusting VR2, and remembering that the positions of S1 are now reversed.

Re-check with the leads in the original positions.

With a good dummy load the meter should barely flicker in the Reverse position, and this should apply over the frequency range 1.8-30 MHz. The sensitivity in the Forward position should be equal for both pick-up lines at any given frequency.

Table 1 relates VSWR and a meter scale of 0-100.

Reflectometers for other characteristic impedances can be made by using an appropriate type of co-ax for the directional coupler, and possibly changing the value of VR1 and VR2, but see section 3 of paragraph five. **ar**

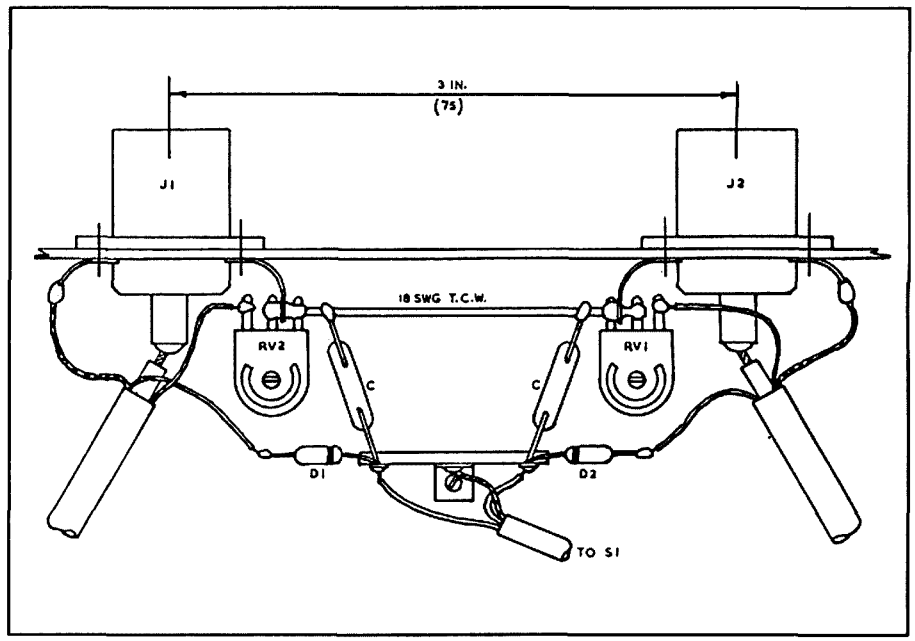


Figure 2

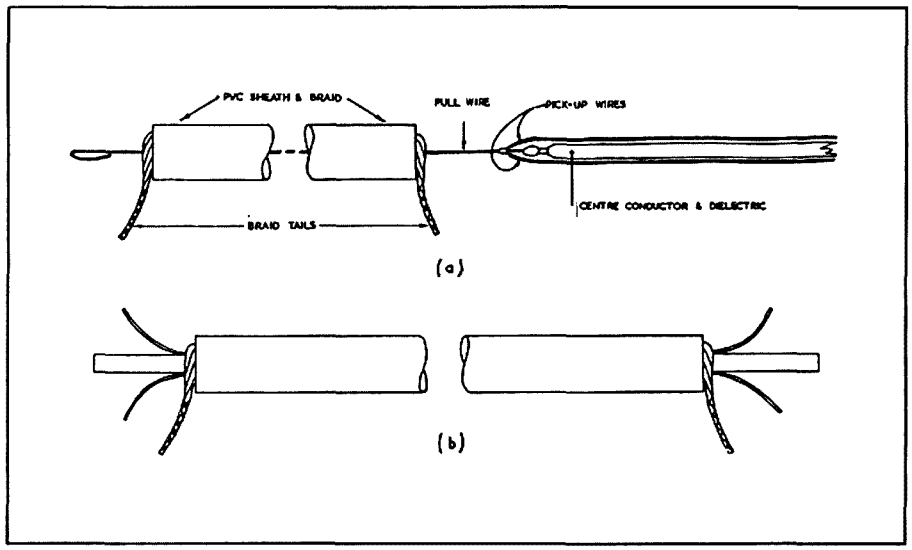


Figure 3

Table 1

VSWR	Meter	VSWR	Meter
1	0	1.8	28.6
1.1	4.8	1.9	31
1.2	9.1	2	33.3
1.3	13	2.5	42.9
1.4	16.7	3	50
1.5	20	5	66.7
1.6	23.1	10	81.8
1.7	25.9	?	100

THE 5/8 MYSTERY

DESMOND A GREENHAM VK3CO
16 CLYDESDALE COURT MOOROOPNA 3629

The great majority of 2 meter mobile operators use the old, well proven, quarter wave vertical antenna cut to around 19" (483mm) mounted somewhere on the vehicle. We all know that the most effective mounting spot is in the roof centre. However, even with XYL approval, it is not easy to bore a large hole in the roof of the new red Mercedes! So, the gutter or boot mount is the next most favoured method of antenna fixing with no permanent damage to the vehicle.

Most transceivers these days run around the 25 watts output and with this power and a well-tuned 1/4 wave antenna, many repeaters can be accessed reliably. However, if you live on the edge of repeater service area or you decide to travel, an increase in range is always useful. This can be achieved by increasing power or by using a more efficient antenna or possibly both.

Many articles have been written on mobile antennas of all different shapes and sizes, but one antenna always appears to retain its popularity, and that is the "5/8" (0.625 wavelength).

Why is it so effective and so much better than a 1/4, 1/2, 3/4 or full wave? Here are the answers: For maximum range on VHF it is desirable to radiate the signal at a low angle to the earth surface. There is little point in radiating most of the available energy up to the sky. Field radiation tests show that a 1/4 wave has a high angle of radiation and as we increase the antenna length up to 3/4 wavelength, the lowest radiation angle occurs at around 0.6 to 0.7 of a wavelength. Above 0.7 wavelength the radiation angle increases again, hence the familiar 5/8 figure (0.625). Antennas using this design are readily available commercially and perform very well exhibiting more than 3db gain over the familiar 1/4 wave. In general terms, 3db gain means an equivalent of twice the power. In simple terms, it makes your 25 watts radiate like 50 watts or better. This article will describe how to construct a 5/8 wavelength antenna at a minimum of cost.

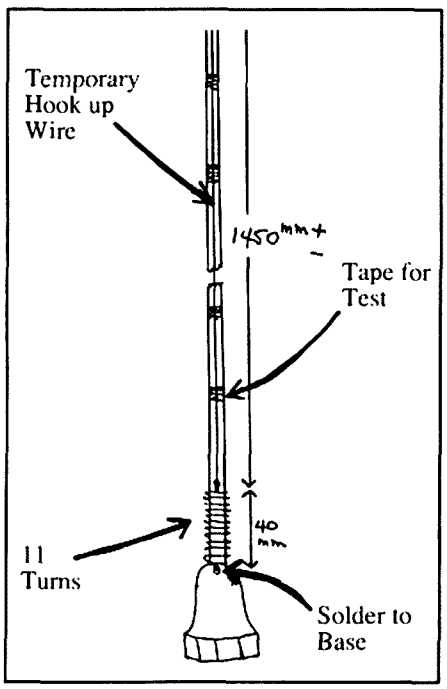


Figure 1

The first requirement is to find a CB antenna at least 1.5M in length. The condition of the antenna is not important providing the fibreglass rod and base are sound. There are many old damaged 27 MHz CB whip antennas available, so look around truck depots, trash and treasure sales etc.

Having obtained your antenna:-

Step One: Remove the old shrink tubing and the winding using a sharp knife. This will leave you with a clean fibreglass rod fitted to a standard base. Check that the rod is firmly in the base.

Step Two: This is a critical step and involves the winding of the base coil. The coil simulates 1/8 wavelength and, in conjunction with the 5/8 wavelength antenna, produces an antenna with an electrical length of 3/4 wavelength which exhibits a low impedance match to produce a low SWR on the feed cable. Find a 300mm length of 14# enamel wire - readily available from old power transformers etc.

Clean one end carefully and solder onto the base of the CB antenna (see sketch). Now wind on 11 turns spaced evenly over 40mm. Secure the wire with PVC tape or similar. Cut the wire and clean the end with a knife or razor blade. Onto the end of the coil, solder a 1450mm length of hook-up wire and run it up to the tip of the antenna - tape it in position.

This is the temporary antenna and is used for the test and tune up only - it will be replaced with braid at a later step. See Fig 1.

Step Three: Place the antenna on its mounting base on the vehicle with the required length of coaxial cable connected. Apply a signal to the feed line through a good quality SWR meter. Check the SWR at 144, 145, 146 and 147 MHz. The reading may he quite high, possibly 3:1 or greater. If the reading is lowest at 144 MHz, then the inductance is too large. To reduce the inductance, spread the turns further apart and recheck SWR. When the SWR is below 2:1 at 144 MHz, the antenna length can be adjusted by cutting short lengths from the top of the hook up wire. By carefully adjusting the coil and the antenna length, a low SWR (better than 1.4:1) can be obtained on 144 MHz.

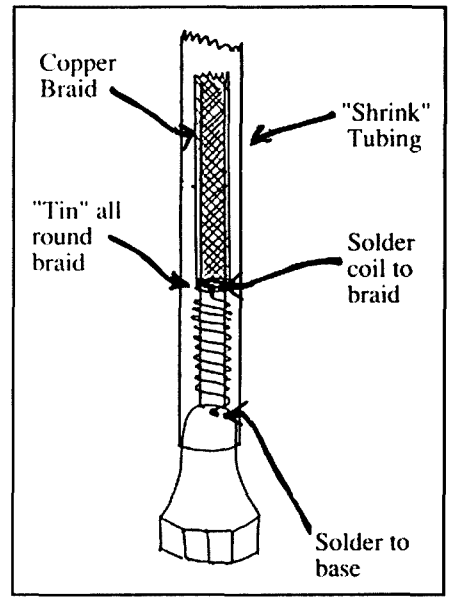


Figure 2

Step Four: Without disturbing anything, measure the length of hook-up wire used. This can now be removed, taking care to stop the coil from springing. The coil can be held using quick dry "aero" cement or "5 minute Araldite".

Step Five: This entails fitting braid to the antenna. Suitable braid can be purchased, but the easiest way is to find an odd scrap of coaxial cable. This can be stripped carefully and the braid contracted and removed. The braid is then fed over the fibreglass and pulled tight. The lower end is soldered to the coil end and the top 50mm is "tinned" to prevent unravelling. See Fig 2.

Step Six: The antenna can now be checked again for SWR. There may be a slight change due to different diameters of the radiating part of the antenna. A small adjustment of the coil and/or overall length may be necessary. When you are finally satisfied and have the SWR down to an acceptable figure we come to the last stage.

Step Seven: From your local radio or electrical supply shop you can purchase, for a modest sum, a length of "shrink" tubing, 18mm wide. Feed the tubing over the antenna from the top and make sure the tubing covers the base coil and part of the metal base. When this has been fitted, carefully rotate the antenna over a gas or electric stove burner to effect a "shrink". Do not overheat or you will burn the tubing. When the tube has shrunk all over and the antenna looks like the "real thing", check the SWR again and, if necessary, trim the tip by cutting off with a fine tooth hacksaw. Only trim 1/4" at a time or you will overcut and spoil an otherwise good antenna.

Conclusion

You now have a top quality 5/8 wavelength antenna and your outlay should have been well under $5.00. Your 25 watts will now sound like 50 watts and you will experience a worthwhile increase in mobile range, working simplex or through your favourite repeater. **ar**

'MOSFET-4' VFO CW TRANSMITTER FOR 80m

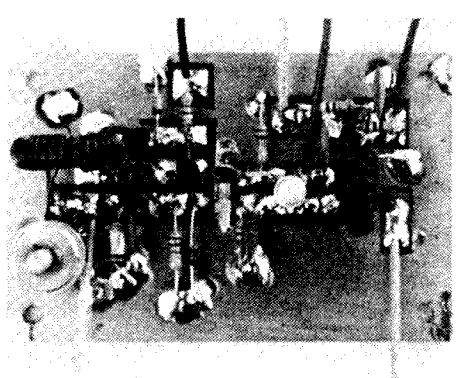
DREW DIAMOND VK3XU
"NAR MEIAN" GATTERS RD WONGA PARK VIC 3115

Hands up those who have been rockbound on 80 metres with one crystal and a mighty 4W of RF power. How many of us have cursed this one crystal, and wondered why no one will answer our CQs, or why it is that there always seems to be some private net operating there whenever the desire is felt for a nice little CW QSO? The 4W transmitter in AR of April '86 certainly was a popular project. However, only crystal control was offered. A number of experimenters managed to adapt VFO control, but with varying degrees of success. The CW end of 80m can become very crowded, so with only 4W of crystal controlled signal, operating can become very frustrating, even for the most dedicated QRP fan!

Here is an updated transmitter for you to try. The power MOSFET PA and driver have been largely retained from the original project. The VFO uses the classic Hartley configuration followed by a dual gate FET buffer. Parts count has been kept to a minimum without sacrificing the desired features of a CW transmitter; frequency and circuit stability, purity of output signal, cleanliness of keying and tolerance of load mismatch.

Measured Performance

Frequency Range:	3.500 to 3.700MHz.
Frequency Stability:	Less than 100Hz drift in any 10 minute sending period.
Output Power:	Nominally 4W, typically 5W into 50 ohms from a 12Vdc supply.
Spectral Purity:	Harmonics at least -55dBc.
Keying Ratio:	At least 90dB, with no detectable chirp or click.
Output Protection:	Will withstand any SWR, including short or open load, without damage. Remains stable regardless of SWR.
Power Supply:	Nominally 12Vdc at 1A.



VFO Board

Circuit Description

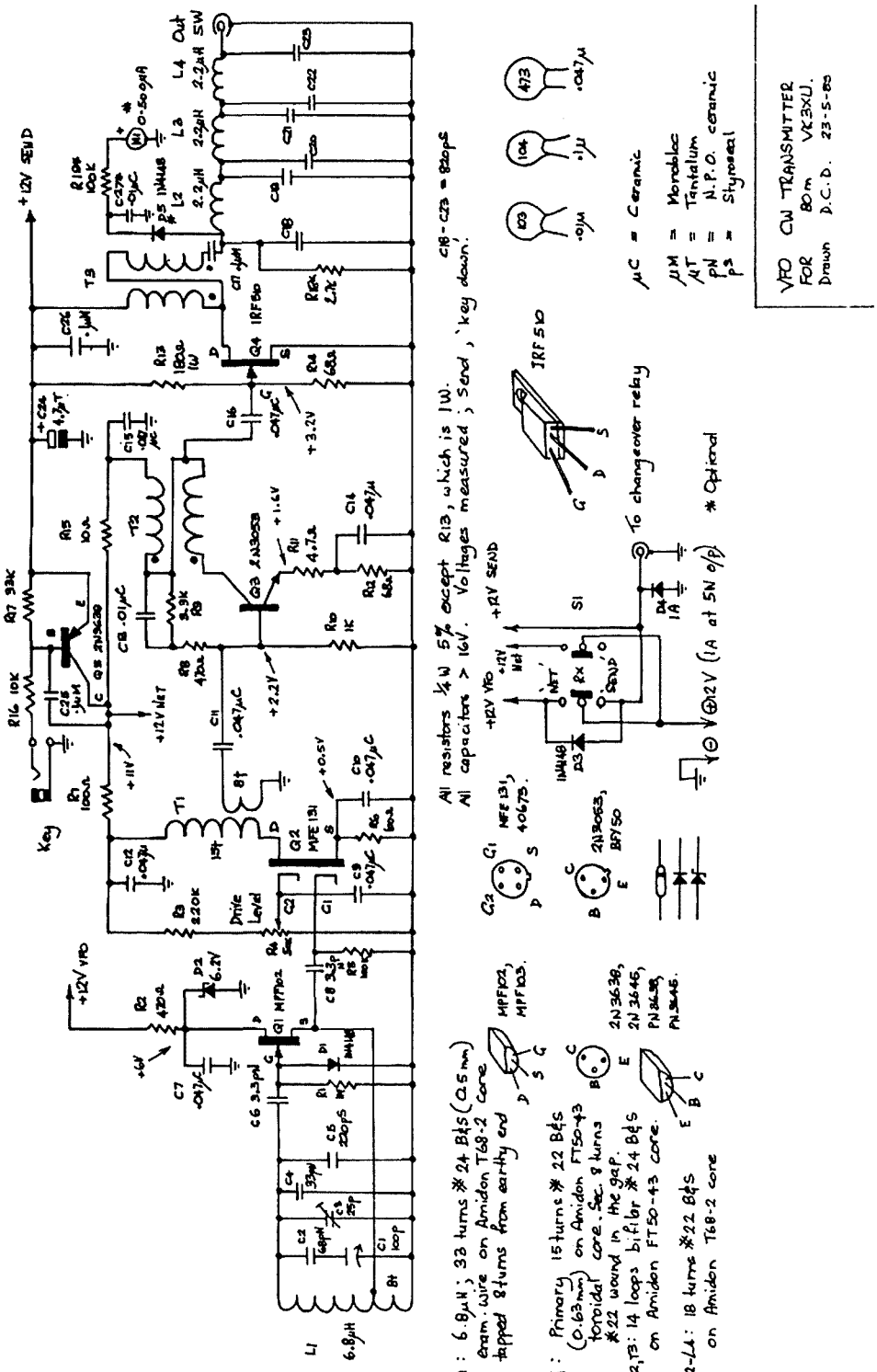
A Hartley oscillator maintained by Q1 supplies the chosen frequency between 3.5 and 3.7MHz. For frequency stability, any VFO must run at a fairly low power level, so the signal must be raised in discrete stages to the final power level (4 or 5W in this case). A dual gate FET buffer amplifier at Q2 follows the VFO and raises the power level to about 1mW at the secondary of broadband transformer T1.

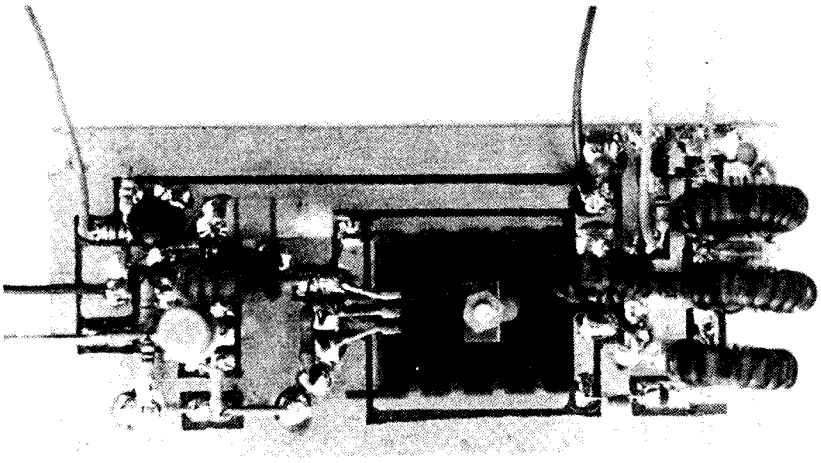
The gain of this stage may be varied by adjusting the voltage on gate 2, so providing a means of changing the output power from about 1W to 4W. A broadbanded driver stage at Q3 raises the signal by about 20dB and supplies 100mW of power at T2.

To generate a crisp but clean CW signal the carrier is interrupted by keying the positive supply to Q2 and Q3 (we could key the oscillator only, and this was tried during development, but the resulting signal was considered to be too chirpy). The supply is ramped up and down by Q5 in response to the key. Rise and fall times are determined mainly by the value of C25. The value shown; 0.1uF provides crisp keying. A larger value such as 0.33uF would yield softer keying if this is preferred.

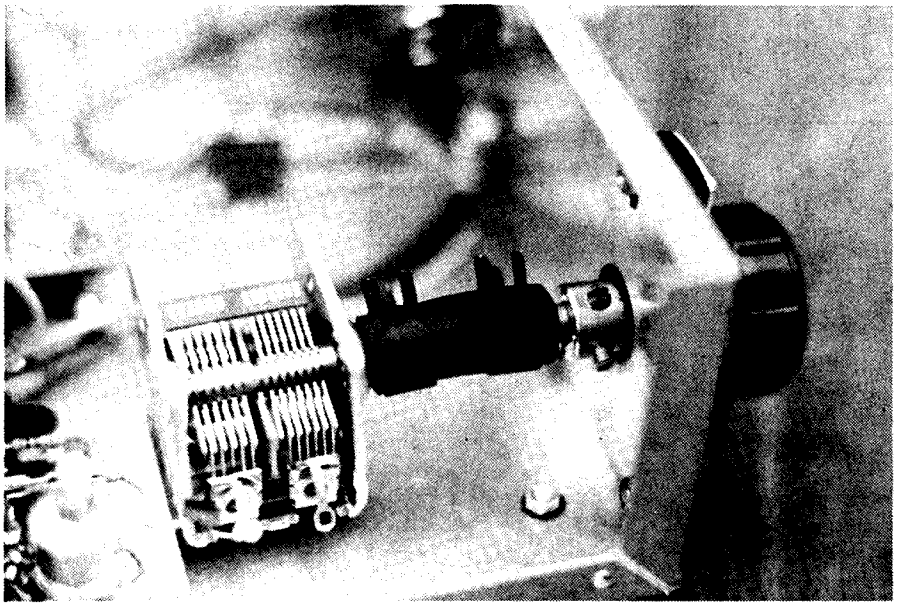
A power MOSFET at Q4 has a stage gain of about 17dB, and raises the power level to about 5W. The IRF510 device employed here was intended by Motorola

'MOSFET' VFO CW TRANSMITTER FOR 80m.





Driver and P A Board



Detail of flexible coupler

for use in switching power supply applications. Because of the speed capability however, these devices make a very nice amplifier, up to about 10MHz depending on circuit configuration. As the PA in a transmitter of this power level, the MOSFET is nearly ideal, as they are very tolerant of load mismatch, thermally stable (within limits), and are not so "gainy" at HF as to be always trying to oscillate. Present cost of this device is around $3.00. The output impedance of the PA may be approximated by;

$$Z = \frac{Vcc^2}{2Po} \text{ ohms}$$

Where Vcc = 11V (assuming 1V drop across the drain-source), and say 4.5W output power, so 2Po = 9.

Therefore,

$$Z = \frac{121}{9} = 13.4 \text{ ohms}$$

A 4:1 transformer at T3 steps this impedance up to 53.6 ohms, which provides a satisfactory match to our usual 50 ohm antenna load. An amplifier like this can produce a significant amount of harmonic output, so a three section low-pass filter is included to reduce these harmonics to a satisfactory level.

An RF voltmeter has been provided to give a visual indication of output power. If an external meter is available, such as an SWR meter, as is usually the case, then this part may be omitted.

Construction

I would have liked to offer a conventional printed circuit board for this project, but unfortunately the facilities to which I once had access have been dismantled. During "breadboarding" and development of this project, all kinds of construction methods were used, and it was found that the overall circuit was quite stable provided the components are wired onto or above a metallic ground plane. So just about any construction method that you feel comfortable with will probably work satisfactorily.

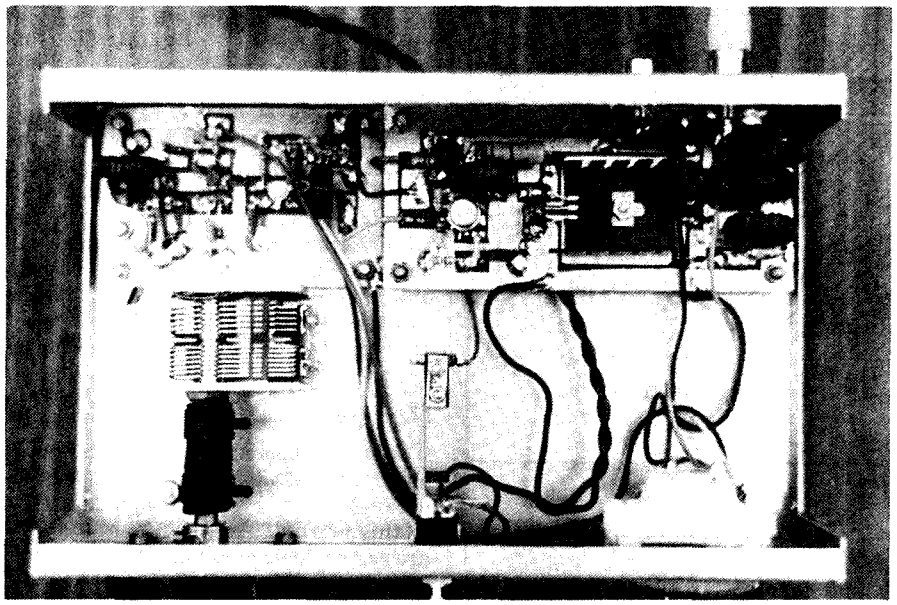
The components of my own transmitter are accommodated upon the copper side of two home-made printed circuit boards. So that any heat generated by the PA, and particularly the IRF510 cannot reach the VFO too quickly, a degree of thermal isolation is obtained by building the VFO and buffer on one board, and the driver and PA on a separate board.

Double or single sided board may be used if the suggested layouts are adopted. As you can see from the photo the components have had their leads cut to length, then simply soldered onto the copper pads of the board. The resistors may be mounted vertically if this is easier for you. The only holes required are one on each corner of the boards, and one for mounting the PA MOSFET. See Ref 1 for notes on home-made circuit boards.

The IRF510 will need a 6030 heatsink attached. A smear of heatsink compound or petroleum jelly must be applied between the MOSFET/heatsink interface to aid heat transfer. As the drain is connected to the mounting tab, do not forget to fit an insulated washer under the head of the screw which secures this device to the board.

The photo shows the wound components soldered in position, and no trouble should be experienced with the coils. However, the broadband transformers T2 and T3 could be a bit tricky if you have not made these before.

To make these; take two 300mm lengths of #24B&S (0.5mm) enamelled copper wire. Lay them parallel to each other, then twist the wires together at



Internal view

one end. Place this end of the pair in a vice. Twist the other ends together, then fix them in the chuck of a hand drill. Whilst keeping the wires taut; turn the drill until you have about three twists per cm. Give the drill a pull to set the twist, then remove the pair. Carefully wind this onto an FT50-43 toroidal core. About 14 loops should fit just nicely. Winding starts are marked on the schematic with a dot. The end of one winding must be connected to the start of the other winding to form the tap. Use your multimeter on ohms to identify starts and ends.

To protect the VFO from stray fields and the effects of air draughts (which will cause the VFO frequency to change), the transmitter should be housed in a metal box or cabinet. There are a number of ready made boxes available off the shelf. The one shown in the photo is a K&W #C853 which measures 20.5W x 13D x 6.5Hcm. Some holes must be provided to allow ventilation of the PA MOSFET.

To permit accurate frequency setting it is desirable that the VFO variable capacitor C1 should be driven by a vernier dial.

These have become expensive however. Dick Smith can supply one similar to that used in the prototype for about $15.00. As only 200kHz is covered by this VFO, it is possible to get by with a straight shaft and knob connected to C1. Netting will just take a bit more practice, and there will be no mechanism provided to prevent unintentional movement of the capacitor shaft.

Some sort of insulated flexible coupler should be interposed between the capacitor and drive (to prevent wear due to misalignment, and frequency changes due to alternate ground paths). These too have become "rare as hen's teeth". Those with access to machining facilities will no doubt be able to make something. Illustrated is my own approach to the problem: The 0.25" off-cut from the shaft of the 50K pot has been fitted into the vernier drive. A 3cm length of 0.25" I.D. rubber tubing (eg. fuel line) is fitted over the shafts where they almost meet and is fixed there with fuel filter clips. For further notes on VFO practicalities, see Ref 6.

When the transmitter is delivering its full output, about 1A will be drawn from the supply. There is plenty of circuit information around for 12V/1A power supplies using the 7812 type regulator chip, and need not be repeated here (see AR Oct '86).

Alternative PA

As an alternative to the PA used here, the MOSFET PA amplifier described in AR Oct '88 may be directly substituted. This amplifier can supply up to 8W into 50 ohms from a 13V supply.

Commissioning

Check that all components are correctly positioned and oriented. Pay particular attention to polarised components. A 50 ohm power meter/dummy load would be ideal for testing this transmitter off air. A 12V/5W globe would also provide a reasonable load (30 ohms).

With the cover off the cabinet, it should be possible to hear the VFO on the station receiver when S1 is placed in the 'net' position. With the plates of C1 fully meshed; adjust C3 so that the VFO is oscillating at exactly 3.500MHz. Check that the frequency can be adjusted to about 3.7MHz when C1 plates are fully open. If for some reason C3 cannot bring the lowest frequency to 3.500MHz, it may be necessary to change the value of C4. 10pF would increase the frequency,. 47pF would lower it.

When all is right with the VFO, it is recommended that the VFO tank coil L1 should be secured to the board. A small piece of perspex or bakelite may be fixed with epoxy cement between board and coil to provide this anchor.

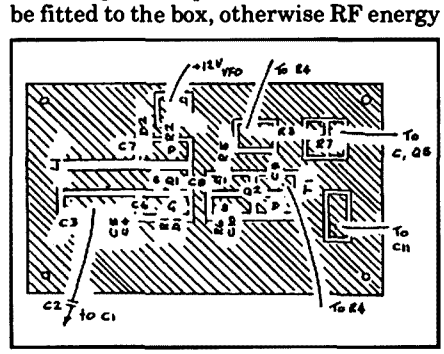
With the drive level pot set to minimum and S1 in the send position, close the key. About 1W will be indicated on the power meter, or the globe dimly lit. Increasing the drive should result in a smooth increase in power to about 4 or 5W. Because of thermal inertia, a globe makes a very poor dummy load for testing transmitters, so the keyed signal may

'Mosfet-4' CW transmitter

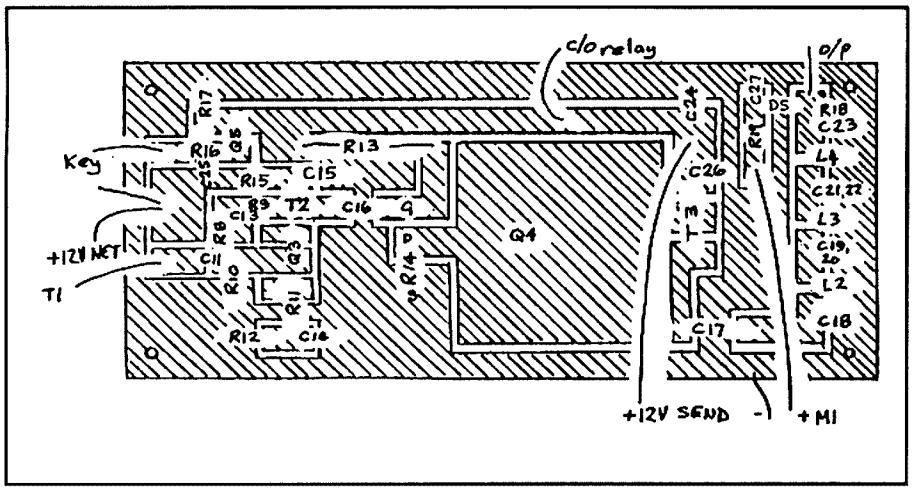
sound a little strange. A resistive dummy load could consist of 4 parallel 220 1W carbon resistors soldered to a coax connector to suit. Listening to the signal terminated in a resistive load will give a much better idea as to what the 'on-air' quality will be like.

If accurate frequency measuring facilities are available, it would be a good plan to make a calibration curve or table so that the VFO frequency can be set with a degree of confidence.

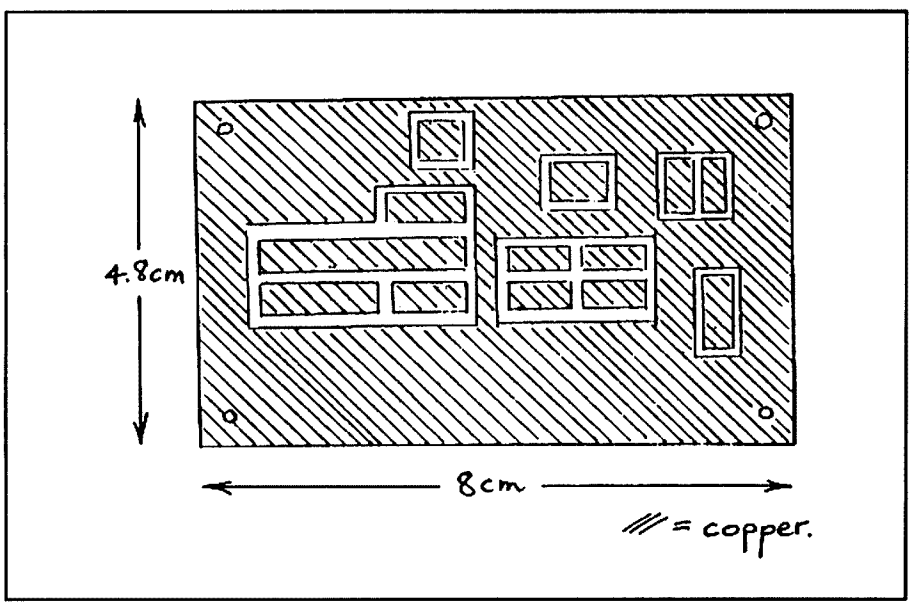
During on-air operation, the cover must be fitted to the box, otherwise RF energy



Component locations, VFO



Component locations, Driver and PA



Circuit Board, VFO, full size

may enter the VFO circuitry and cause frequency pulling and other strange effects.

Problems

Some key voltages are shown on the circuit as an aid to troubleshooting should this be necessary. If, after fruitless attempts on your part, you cannot get your transmitter to work properly, write to me about it, and I shall extend any reasonable amount of help necessary. Details can also be provided for a suitable power supply if required. Please include a SASE.

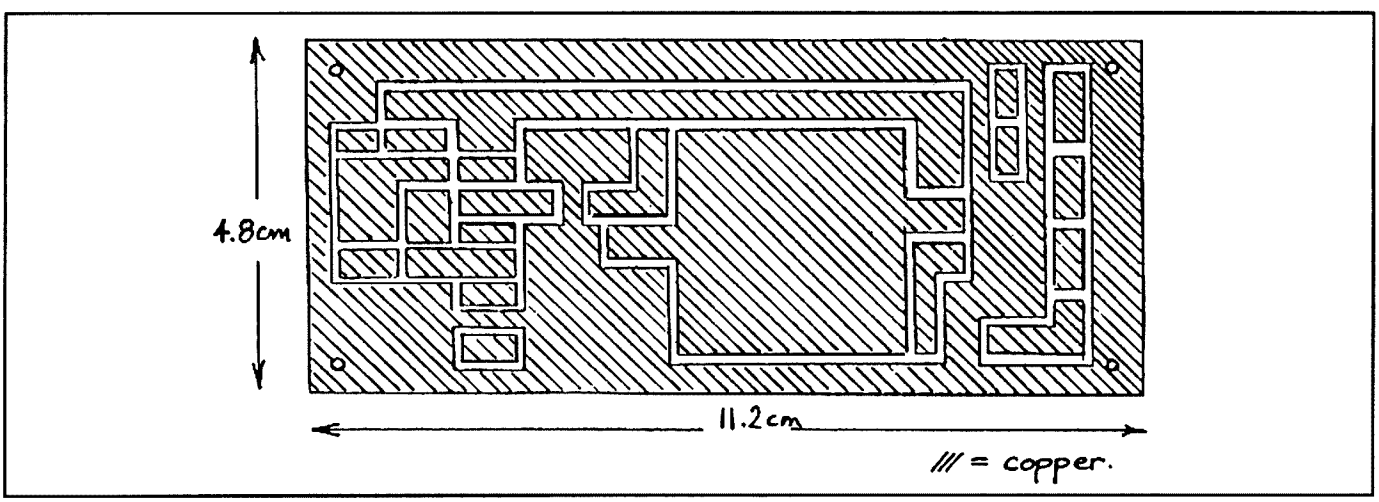
Parts

All the components used in this project are readily available at present. Suppliers of Amidon cores regularly advertise in this journal. The IRF510 MOSFETS are known to be available from Motorola distributors. Variable capacitors should be obtainable from Jaycar and Electronic World (Croydon, Vic.). All other components are available from the usual electronics parts suppliers.

See page 15 for parts list.

References and Further Reading

1. Method of Making Home Made Circuit Boards; AR Oct '88 page 9
2. Power MOSFET Transistor Data Book, Motorola.
3. Practical RF Design Manual, DeMaw, ISBN 0-13-693754-3.
4. 3.5MHz 5W CW Transmitter, Fletcher RADCOM Nov. '87.
5. Solid State Design, DeMaw & Hayward, ARRL.
6. Some Practical Tips On VFO Construction, Novice Notes, AR Jan. '88.



Circuit Board, Driver and PA, full size

Parts List - Estimated Cost: $60 - $70

Capacitors	
3.3pF NPO ceramic	C6, 8
25pF trimmer (preferably air)	C3
33pF NPO ceramic	C4
68pF NPO ceramic	C2
100pF variable	C1
220pF styroseal	C5
820pF styroseal	C18, 19, 20, 21, 22, 23
0.01uF ceramic	C13, 27
0.04uF (or 0.1uF) ceramic	C7, 9, 10, 11, 12, 14, 15, 16
0.1uF monobloc	C17, 25, 26
4.7uF tantalum, 16V	C24
Resistors	
4.7 ohm 1/4W 5%	R11
10 ohm 1/4W 5%	R15
68 ohm 1/4W 5%	R12, R14
100 ohm 1/4W 5%	R6, 7
180 ohm 1W, 5%	R13
470 ohm 1/4W 5%	R2, 8
1K ohm 1/4W 5%	R10
2.7K ohm 1/4W 5%	R18
3.3K ohm 1/4W 5%	R9
10K ohm 1/4W 5%	R16
33K ohm 1/4W 5%	R17
50K linear pot	R4
100K ohm 1/4W 5%	R5, 19
220K ohm 1/4W 5%	R3
1M ohm 1/4W 5%	R1
Semiconductors	
MPF102, MPF103	Q1
MFE131, 40673	Q2
2N3053, BFY50	Q3
IRF510	Q4
2N3638, 2N3645, PN3638	Q5
1N4148, 1N914	D1, 3
1A diode	D4
6.2V, 400mW zener	D2
Wound Components	
Amidon T68-2 toroidal core	L1, 2, 3, 4
Amidon FT50-43 toroidal core	T1, 2, 3

Miscellaneous

Cabinet box to suit, printed circuit material, DPDT centre off switch (S1), 500uA meter, 6030 heatsink, key jack, output coax connector, relay connector, vernier dial, pot knob, flex coupler (see text), screws, nuts, spacers, hook-up wire, #22 and 24 enam. wire, solder etc.

ar

AN RF POWER LINEAR USING IRF MOSFETS

LLOYD BUTLER VK5BR
18 OTTAWA AVE PANORAMA 5041

Here is a 50 watt PEP amplifier, using low priced transistors, which can be used on the lower frequency amateur bands.

Introduction

I was interested to read the article by Drew Diamond VK3XU (Notice Notes, AR Oct 1988) on the application of the IRF series MOSFET transistor for broadband linear RF amplification. Drew's amplifier used a pair of Motorola IRF510 transistors to generate 5 or 6 watts of peak envelope power from a 13.5V supply and operated within the frequency spectrum of 1.8 to 10 MHz.

I thought it might be of further interest to describe a higher power version of a linear amplifier which I had reason to design, some time ago, using two IRF430 transistors. The amplifier was required to deliver 50 or 60 watts of peak envelope power in the MF spectrum. Whilst, at the time, amateur band transmission was not in mind, subsequent tests have shown the circuit can deliver a power of 55 watts at 1.8 MHz, 40 watts at 3.5 MHz and 25 watts at 7 MHz. The IRF430 transistors used were the International Rectifier (IR) type called HEXFET because of their hexagonal source cell structure. (Refer to the appendix at end of article.)

Secondary Breakdown

An attraction in choosing the MOSFET transistor in preference to the bipolar transistor is the absence of second breakdown. An explanation of this, extracted from the IR handbook, is given in the following paragraph:

> One of the outstanding features of IR's power MOSFET is that they do not display the second breakdown phenomenon which is frequently the Achilles heel of bipolar transistors. A simple physical explanation accounts for this superiority. If localized, potentially destructive, heating occurs within a MOSFET transistor, the carrier mobility in that area decreases. As a result the MOSFET has a positive temperature coefficient and acts in a self-protective manner by forcing currents to be uniformly distributed through the silicon die. In contrast a bipolar transistor, particularly under conditions of high collector-emitter voltage, displays "current crowding" in the base region, which causes hot spots. Because of the bipolar's negative temperature coefficient, these hot spots tend to further "hog" the current and cause instantaneous, catastrophic destruction of the die.

On the face of it all, the problems of thermal instability, which normally have to be considered in the bi-polar power transistor, could be solved by the use of the MOSFET power transistor. In setting up the amplifier under discussion, this was found to be not quite true. The push pull amplifier was biased to operate in a nominal class B mode with a standing drain current of 150 mA per transistor and a current swing up to 1 amp per transistor at full power. The power supply used was nominally 60 volts. Figure 1 shows the limiting conditions of drain current and source to drain volts for the IRF430 transistor. Pq is the static operating point set and Pm the point of maximum current swing.

The heat sink was designed so that, at continuous full power, temperature rise at the transistor junctions would be within the limits specified for the transistor. However, under continuous operation at full power, an effect similar to thermal runaway in a bi-polar transistor was experienced.

The explanation of this runaway effect is found in the transfer characteristic curves (refer figure 2). For a junction temperature of 25 degrees C, a standing current of 150 mA is achieved with a forward gate to source bias of 3.5V. At a junction temperature of 125 degrees C and the same bias, standing current rises to nearly 0.5 amp. To maintain the standing current at 125 degrees the same as it is at 25 degrees, bias must be reduced to 3.1V. Clearly, some form of circuit is required which senses the junction temperature and reduces the bias voltage as the temperature rises.

One might be tempted to draw another conclusion that because of the insulated gate, with extremely high input resistance, the MOSFET can be driven from a virtual voltage source supplying negligible power. However, the power MOSFET has very high input capacitance; in the case of the IRF430, around 700 to 900 pF. For a broadband amplifier, this capacitance must be loaded down with shunt resistance so that the impedance presented to the driving amplifier is reasonably constant over the required frequency range. A small amount of drive power is therefore consumed in this resistance load. The other alternative is to have a tuning system at the input which is used to resonate the circuit at whatever specific frequency is in use.

The Circuit

Detail of the circuit is shown in figure 3. Gate to source biasing is developed from a 15V supply through a resistive network. The individual static current in each transistor is set to 150 mA by potentiometers R1 and R2. A thermistor, cemented to the transistor heat sink as close as possible to the transistors, senses the temperature and reduces the bias voltage to correct for the rise in drain current as the temperature rises. (Referring back to Drew's article, it can be seen that he used a diode, fixed to the heat sink of his amplifier, for the same purpose.)

Each transistor gate is loaded down with a 200 ohm resistor selected to mask the input capacitive reactance within the MF range. (These same resistors were left installed for the amateur frequency tests.) At lower frequencies, drive power is essentially that required to develop the required voltage swing across these resistors. At amateur band frequencies, input impedance is essentially the input

KENWOOD

CHRISTMAS SPECIALS

THESE OFFERS START 1ST NOVEMBER, 1989 AND CONTINUE UNTIL STOCKS LAST. STOCKS ARE LIMITED.

1 Buy a TS-440S or TS-680S and get a TH-45A handheld free. Worth over $500

TS-440S

• 160m to 10m amateur band transceiver with 100kHz to 30MHz general coverage receiver • all mode operation • automatic antenna tuner built in (80-10 meters) • 200w PEP input

TS-680S

• 160m to 6 m amateur band transceiver with 500kHz to 30MHz general coverage receiver • all mode operation optional automatic antenna tuner • up to 100 watt output

FREE one TH-45A with your purchase of either TS-440S or TS-680S.

- 70cm FM handheld transceiver
- 5 watt output power
- multiple scan functions
- 14 channel memory

2 Huge saving on the topselling TH-25A

- 2m FM handheld transceiver
- 5 watt RF output
- memory scan and band scan
- 14 multi-function memory channels with lithium battery backup

Phone your Kenwood dealer for price, or phone Kenwood for the name of your nearest authorised dealer.

KENWOOD ELECTRONICS AUSTRALIA PTY. LTD.
(INCORPORATED IN N.S.W.)
4E Woodcock Place Lane Cove, N.S.W. 2066. Australia
Ph (02) 428 4222. (02) 428 1455. Fax (02) 427 6869
Call now for further information and the name of your nearest authorised Kenwood dealer

Please phone, mail or fax for information
Name .....
Address .....
Postcode .....
Publication .....
Issue .....
Model .....

capacitive reactance of the MOSFET transistors and lower values of load resistance could have been considered. R11 and R12 are parasitic suppressors which should be mounted directly on the transistor gate pins. These were included as a precaution rather than because of any problem experienced.

Based on continuous tone modulation and 60 watts PEP output in the MF region, power dissipation is around 30 watts per transistor. (This is a nominal value as both maximum power output and efficiency fall as the frequency rises. We discuss this further in a later paragraph.) Thermal resistance of the transistor junction to its case is 1.67 degree C per watt. Allowing a further thermal resistance of 0.2 degree C per watt across the transistor insulating washer, 30 watts dissipation gives a temperature differential between the junction and the heat sink of 56 degrees. Defining maximum temperature as 40 degrees C and given the maximum allowable junction temperature which is 150 degrees C, the maximum allowable temperature rise in the heat sink is (150 - 56 - 40) = 54 degrees. For two transistors dissipating 30 watts, the heat sink must therefore have a thermal resistance of 0.9 degrees C per watt.

If tone tests were limited to short transmission periods and if the amplifier were only intended for SSB speech, average dissipation per transistor could be considered to be around 10 to 15 watts. Calculating on this dissipation, the thermal resistance of the heat sink could be around 2.5 to 4.5 degrees per watt. A 150 mm length of Mullar 35D heat sink would do nicely.

The heat sink actually used was 200 mm of Mullard 55D type material. Conservatively selected on the basis of continuous power in the amplifier, it is somewhat of an overkill for sideband speech transmission with lower average power and for this application, a smaller heat sink could be used, as suggested in the previous paragraph. Beryllium insulating washers were fitted because of their low thermal resistance. (There is not much point in having a large heat sink if a high temperature gradient is allowed to build up across the insulating washer.)

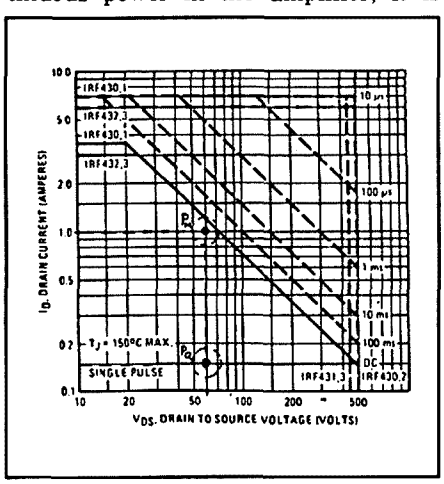


Figure 1 IRF430 - operating condition within maximum safe operating area

The output coupling transformer, made up by quadfilar winding on a 29 mm ferrite toroidal core, reflects a drain to drain load resistance of 50 ohms at its primary windings from the 50 ohm output circuit. Maximum output power (Pm) is calculated from the following:

$$Pm = \frac{2(Vp)^2}{Rdd}$$

Where Vp & Rdd = peak voltage swing = drain to drain load resistance.

At low frequencies, the value of Vp approaches the voltage of the supply rail giving an output power calculation of over 100 watts. As frequency is increased, a limiting factor on the value of Vp called slew rate comes into effect. Slew rate is the maximum instantaneous change in output voltage that the amplifier can deliver in a given time. If we consider an output signal waveform, the maximum rate of change in voltage of the waveform, or the maximum slope of the waveform, increases with both frequency and amplitude of the waveform (refer figure 4). For a given frequency, maximum possible output voltage is achieved when the slope equals the amplifier slew rate. When frequency is increased, the maximum voltage swing is reduced and so also is the maximum power output. This explains why we can only get 55 watts at 1.8 MHz and an even lower value of 25 watts at 7 MHz.

The problem of limiting slew rate can be dealt with by using a higher frequency type of power transistor, but it will cost more. The IRF430 can be purchased for about 4 or 5 dollars, considerably less than a 'hot' RF type. This gets back to the basis of Drew's article in making an amplifier suitable for the lower frequency amateur bands with moderately priced transistors. Actually, the IRF510 transistors used by Drew are a little faster than the IRF430 but of course rated for lower power.

Power Supply

The power rail selected was 60 volts, supplied via an ILP 225 VA toroidal power transformer, bridge rectifier and simple capacitance filter. Regulation was considered adequate at around 6%. For SSB speech transmission, the transformer rating is a considerable overkill and a more economical approach might be to rewind the secondary of an old valve receiver power transformer. A secondary winding of 50 volts at around 1.5 amp rating should be satisfactory.

A further 15V rail was derived from the 60v supply via a voltage regulator. This rail, used elsewhere as a general system supply, is also used as a source to bias the IRF430 transistors.

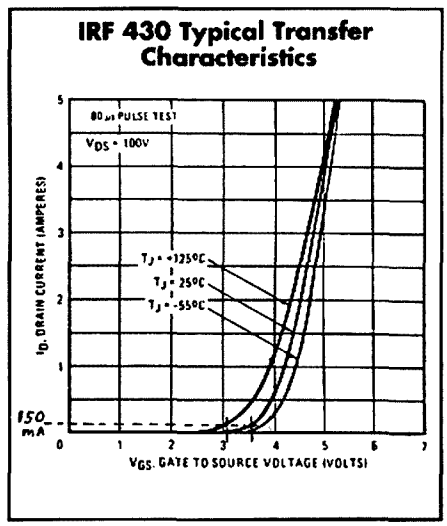


Figure 2 Over a temperature range of 25 degrees C to 125 degrees C, a change in gate to source bias volts of 3.5 to 3.1 volts is needed.

Harmonics

Odd order harmonic level at the output of the amplifier is quite high and as is usual when using a broadband amplifier to feed an antenna, an efficient harmonic filter for each band is required. The filter should have at least 50 dB of rejection at the third harmonic frequency. Design of suitable low pass filters is given in amateur radio handbooks. Design information has also been given in previous issues of AR, in Drew's article (ref 3) and in one of my own (ref 4). If toroidal cores are used to construct the inductors, iron dust cores and not ferrite types are recommended. The ferrite cored inductors have been found to change their value of inductance when high power is pumped through them, resulting in de-tuning of the filter. The iron dust cored inductors are more stable in this respect. As an alternative, air cored coils can be made with quite high Q and are quite satisfactory. They also cannot saturate so that they are very stable and are certainly cheaper to construct, even if they are a little larger.

NOTES
1. V1 & V2 mounted on 8 inch mullard 55D heat sink & insulated with beryllium washers.
2. STC M53 thermistor glued to heat sink.
3. T1 - 18 turns, 7 filar wound 35 SWG on 9 mm toroidal core u = 128.
4. T2 - 18 turns, quadfilar wound 22 SWG on 29 mm toroidal ferrite core u = 800.
5. Set R1, R2, for static Id of 158 mA in each transistor.

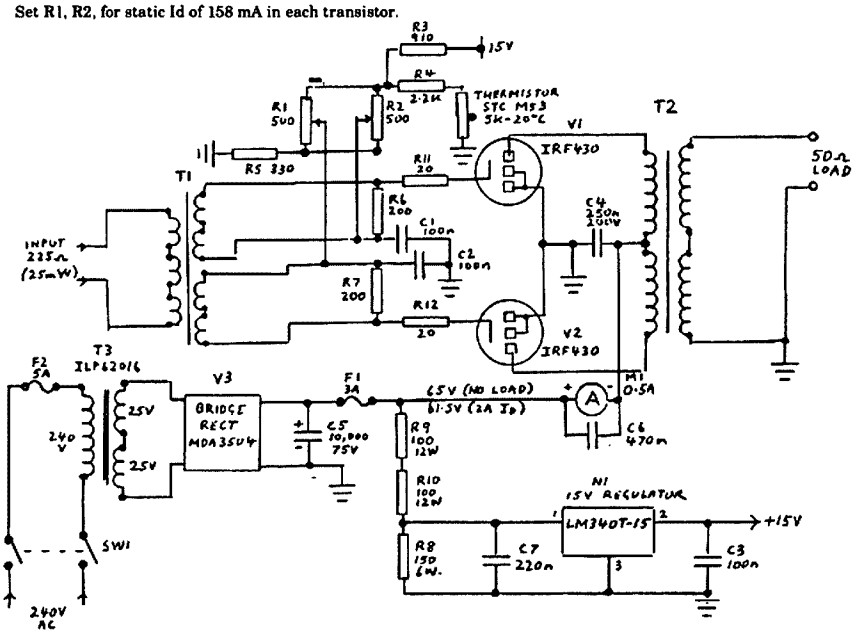
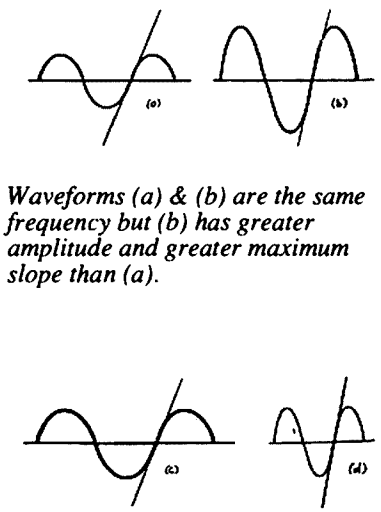


Figure 3 Linear Amplifier Circuit Diagram.



Waveforms (a) & (b) are the same frequency but (b) has greater amplitude and greater maximum slope than (a).

Waveforms (c) & (d) are the same amplitude but (d) is a higher frequency and has a greater maximum slope than (c).

Figure 4 Maximum slope of waveform increases with both amplitude & frequency.

Operation

With no signal input, the transistors are individually set for a static drain current of 150 mA. To do ths, the alternate drain circuit is opened whilst the relevant bias potentiometer (R1 or R2) is adjusted.

To check maximum power output at a given frequency, the amplifier is connected to a 50 ohm dummy load and the AC output voltage across the load is monitored with a CRO. The input can be fed from a standard RF signal generator as ;around 25 mW is all that is needed to drive the amplifier to full power. The input level is increased until the output waveform shows limiting and the peak to peak voltage (Vpp) is then recorded. Maximum power output (Pm) is given by:

$$Pm = \frac{Vpp^2}{400}$$

Total drain current should not be allowed to exceed 2.2 A and if the heat sink is not designed for continuous signal operation, the current should not be sustained for more than a brief period.

As discussed previously, the higher the operating frequency, the lower is the peak to peak voltage swing (and hence drain current swing) achievable without serious waveform distortion. Amplifier efficiency is decreased with a rise in frequency, but as maximum drain current is also decreased there is no problem of increased power dissipation and subsequent rise in heat sink temperature at the higher frequencies.

Summary

The reasonably priced IRF MOSFET transistor can be used to provide moderately high power amplification on the lower frequency amateur bands. Maximum power output decreases as frequency is increased but quite reasonable performance can be achieved at 1.8 and 3.5 MHz using an amplifier such as the one described. The amplifier is still usable at 7 MHz but at reduced power.

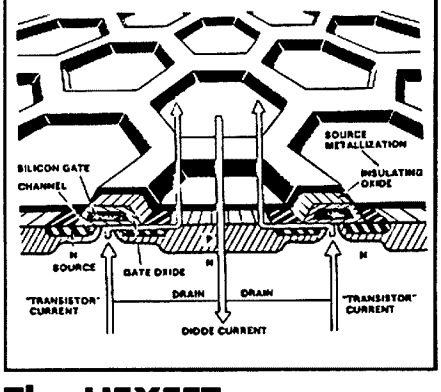
References

1 International Rectifier HEXFET Databook - Power MOSFET Application & Product Data.

2 Motorola Handbook - Power MOSFET Transistor Data.

3 Drew Diamond VK3XU - MOSFET Power Amplifier for 1.8 to 10.1 MHz - Novice Notes, Amateur Radio, Oct 1988.

4 Lloyd Butler - Tank Circuits & Output Coupling - Amateur Radio May 1988, plus corrections July 1988.



The HEXFET Structure

The HEXFET surface is characterized by a multiplicity of closed hexagonal source cells (over 500,000 per square inch) from which the name HEXFET is derived. In cross section, the HEXFET is based on a double-diffused (DMOS) structure. A channel is formed by double diffusion at the periphery of each hexagonal source cell. An insulating gate oxide layer covers the channel. A silicon gate then overlays both the insulating oxide and channel. The silicon gate in turn is insulated from the source by an additional

Continued on page 21

DECIBELS MADE EASY

MERVYN EUNSON VK4SO
BOX 1513 GPO BRISBANE QLD 4001

It all started innocently enough when Alexander Graham Bell invented the telephone.

You see, as wires were strung at length, distance naturally caused a power loss. At 10 miles or so, the measured power dropped to one-tenth of its original value. This was adopted as a unit, called the Bel, after the system's inventor.

Note that right from the start, this was a RATIO of output power to input power. It was immaterial what the actual levels were in watts (or milliwatts or whatever). Later, when amplification became possible, a gain was expressed as a + value, and a loss as a - value.

The unit was too large in practice, but dividing by 10 gave the decibel, abbreviated to dB. And conveniently, one decibel was the minimum change in level detectable by the human ear.

Now the ear, being superbly engineered, responds to the full range of natural sounds from a faint whisper to a massive explosion one-million-million times (10^{12}) greater. All this is compressed into a scale of 120 dB. When sound reaches this upper level it has crossed the threshold of feeling to cause pain.

A perfect form of automatic-gain-control or agc is built in to the ear. Sound itself has two characteristics, frequency and intensity, which our mental responses perceive as pitch and loudness: both vary exponentially or logarithmically as the applied stimuli. Thus a solo piper sounds fine (0 dB), two pipers together only slightly louder (3 dB gain), and ten in a pipe band just twice as loud as one (+ 10 dB). To obtain twice the sound of one such band, one hundred massed pipers are needed (+ 20 dB).

So, power has to increase tenfold for double the level of loudness, and this is the basis of decibels.

Ratio or Number	Power of 10	Common Log
1,000	10^{3}	3
100	10^{2}	2
10	10^{1}	1
1	10^{0}	0
0.1	10^{-1}	- 1
0.01	10^{-2}	- 2
0.001	10^{-3}	- 3

Table 1

Conversion to Decibels

Gain Ratio (+) Voltage	Gain Ratio (+) Power	dB	Loss Ratio (−) Power	Loss Ratio (−) Voltage
1.000	1.000	0	1.000	1.000
1.122	1.259	1	.794	.891
1.259	1.585	2	.631	.794
1.413	1.995	3	.501	.708
1.585	2.512	4	.398	.631
1.778	3.162	5	.316	.562
1.995	3.981	6	.251	.501
2.239	5.012	7	.200	.447
2.512	6.310	8	.159	.398
2.818	7.943	9	.126	.355
3.162	10.000	10	.100	.316
3.548	12.59	11	.0794	.282
3.981	15.85	12	.0631	.251
4.467	19.95	13	.0501	.224
5.012	25.12	14	.0398	.200
5.623	31.62	15	.0316	.178
6.310	39.81	16	.0251	.159
7.079	50.12	17	.0200	.141
7.943	63.10	18	.0159	.126
8.913	79.43	19	.0126	.112
10.000	100.00	20	.0100	.100
--	10^{3}	30	10^{-3}	--
10^{2}	10^{4}	40	10^{-4}	10^{-2}
--	10^{5}	50	10^{-5}	--
10^{3}	10^{6}	60	10^{-6}	10^{-3}
--	10^{7}	70	10^{-7}	--
10^{4}	10^{8}	80	10^{-8}	10^{-4}
--	10^{9}	90	10^{-9}	--
10^{5}	10^{10}	100	10^{-10}	10^{-5}

Table 2

Relative levels perceived by the ear thus could be expressed in exponential powers to a common base of 10, shown by indices. By disregarding the common base and expressing only the indices, the result is logarithms (a fancy word from the

Continued on page 22

AN RF POWER LINEAR USING IRF MOSFETS *from page 19*

oxide layer. All of the hexagonal source cells are then parallel connected by a continuous sheet of metalization which forms the source terminal.

Transistor action occurs by penetration of an electric field into the channel area which modulates the conductivity between drain and source. Conventional current flow is from the drain substrate, across the channel surface, and vertically out the source terminal. **ar**

MURPHY'S CORNER

On P28 of last month's issue, we suffered another attack of the 'anonymous author' syndrome! The undeserving victim was Graham Rogers VK6RO, author of the article "How To Use A Dummy Load (or 10 of them)". Perhaps readers would kindly correct our gross oversight by neatly inserting at the top of P28 - Graham Rogers VK6RO, 22 Grace St, Ferndale 6155. Sincere apologies to Graham.

Murphy seems to show a distinct leaning towards disrupting the writings of Lloyd Butler VK5BR! We trust that this is merely a statistical result, due to Lloyd being our most prolific Technical Author. Entire lines have been omitted from Lloyd's contribution in October AR, completely distorting the meaning.

Page 24, column 3, lines 6-8 should have read:

With the high SWR, higher current at current antinodes causes **increased IR loss and higher voltage at voltage antinodes causes** greater dielectric loss.

Page 25, column 1, lines 13-14 should have read:

Curve B of figure 13 **is a corrected curve for SWR at the transmitter versus matched** attenuation when the SWR at the load is lowered to 10. **ar**

A Call to all Holders of a Novice Licence

Now you have joined the ranks of amateur radio, why not extend your activities?

The Wireless Institute of Australia (N.S.W. Division) conducts a Bridging Correspondence Course for the AOCP and LAOCP Examinations

Throughout the Course, your papers are checked and commented upon to lead you to a successful conclusion

For further details write to:

The Course Supervisor
WIA
PO Box 1066
Parramatta NSW 2124
(109 Wigram Street, Parramatta)
Phone: (02) 689 2417

11am to 2pm Monday to Friday
7 to 9pm Wednesday

S-meter Reading	Induced Voltage	Gain dB
S-1	1 μV	0
S-2	2 μV	+ 6
S-3	4 μV	+ 12
S-4	8 μV	+ 18
S-5	16 μV	+ 24
S-6	32 μV	+ 30
S-7	64 μV	+ 36
S-8	128 μV	+ 42
S-9	256 μV	+ 48

S-Meter equivalent values

Latin for 'astrologer'). And that's all decibels are - a simpler and more practical way of stating powers (or logarithms).

Logs are no great mystery. At one time complicated tables were used to read log values, but these days an instant answer can be displayed on a pocket calculator. But in practice, neither of these aids is needed for decibels.

It's extremely easy. As Table 1 shows, $100 = 10^2$ and $1000 = 10^3$, and thus the log of 100 is 2 and that of 1000 is 3. If these figures were relative power levels, in any units, there would be a ratio of 1000:100 or 10:1. This could be written 10^1. And isn't that a Bel? Which of course is 10 dB. Simple! The log is the value in Bels, multiply by 10 and there's dB.

This could be expressed as a formula,

dB = 10 log P2/P1.

In practice, calculations are much easier. Instead of deriving a ratio you could merely subtract the respective log values. Using the same figures, let's say you buy a 1 kW linear to beef up the 100 watt output of your rig. The respective logs are 3.0 and 2.0, with a difference of 1.0 by subtraction. Mentally shift the decimal point, and you have the same 10 dB again.

But, hold on, is this 1 kW of the linear the output power, or did the manufacturer quote the input to the final? H'mm. allowing for efficiency of the valve, typically 50% - 55%, that makes a difference. About 3 dB difference, which is subtracted to leave + 7 dB. But that's the order of gain from a 3-element yagi—oops! You've just found out you should have bought a beam instead!

Fine, the system obviously works with nice easy figures. But what about odd ratios, say a linear with 396.83 watts out for 97.1 watts in? Just as simple, for logs are 2.598 and 1.987, with .611 being the difference. No, the correct answer is not 6.11 dB gain, for round figures only are used. Fractions or decimals are useless, for as before the ear cannot detect increments of less than one decibel. The answer is plain + 6 dB.

Great! This time with a fourfold increase in power, your S-9 signals out are now S-9 and a shiver, and your S-2 signals are S-3 (decibels never lie). That beam still would be the better proposition - you'd also hear the weak ones stronger!

This now becomes even easier. As rounded figures alone are used, neither a book of logs and anti-logs nor an electronic calculator is needed, only a reference of ratios. A basic decade table with ratios from 1 to 10 alone would suffice - here for the purpose of explanation a second decade is added, plus multiples of 10 to 100. Intermediate values can be obtained by shifting the decimal point, for example, + 5 dB represents a power increase of 3.162 times, thus + 15 dB is 31.62 times. Similarly 316.2 times is + 25 dB, and so forth. Conveniently, the - dB values become the reciprocal of the + dB values.

In our pursuits, decibels are used mainly to indicate antenna gain or the attenuation of cables and insertion loss of various devices (all related to power). However, the conversion table also shows voltage ratios, for it is quicker and more convenient to measure voltage than power. But then both relative voltages must exist across a common resistance (whose value need not be known).

You recall that by Ohm's Law,

$Pwr = E^2/R$

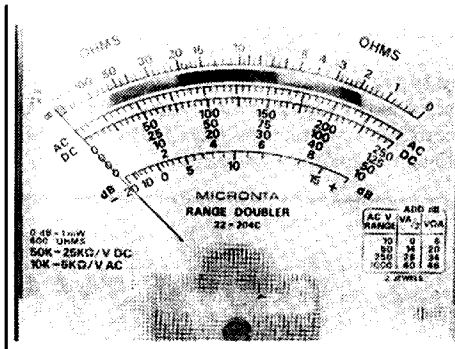
So, power is proportional to voltage squared (which is why the power ratios in the table are the square of the voltage ratios). And, to square any number, its logarithm is multiplied by 2. Thus the formula given before may be expressed also as:

dB = 20 log V2/V1.

If input and output impedances differ, this will not be valid. Thus the voltage gain of an audio amplifier cannot be expressed in dB, only the power gain into a stated load, say a 8 ohm or 15 ohm speaker.

Now, decibels are a RATIO and not a definite value - you cannot put 2 dB in for 20 dB out, for whatever the input is, it always is referenced 0 dB. But if the input, or reference, is made a known standard in absolute units as 0 dB, the output likewise is known in absolute units as well as a ratio.

For this reason it is commonplace to use voltage comparisons with a varying input of speech (or music) in order to use an amplifier to its full capacity without distortion. This requires an established reference standard in absolute units.



dBm multimeter scale (bottom)

Several of these are employed in such professional fields as broadcasting and acoustics, when a further letter such as dBm or dBv denotes the reference used.

One often used was born with the telephone. The overhead wires, in pairs 10 inches apart, essentially were an open feedline with a characteristic impedance of 600 ohms. Then 6 milliwatts dissipated across this 600 ohms became 0 dB. Or, if you like, to itself it had a power ratio of unity or 1.

Now look at a multimeter, and there's a scale marked + 20 dB and - 20 dB either side of 0 dB. The zero point is well off-centre on the 10v scale at 1.9 volts. Which of course is the same 6 milliwatts across 600 ohms! For other values up to 100 dB, the higher voltage ranges are employed. So now you have a ready-made level or VU meter.

Some multimeter scales are calibrated in the broadcasting dBm standard of 1 milliwatt dissipated across 600 ohms. This has its zero point at 0.775 volts on the 5v scale, which conveniently puts + 10 dBm almost centre-scale at 2.45 volts. Switch to the 50v range and the centre reading is + 30 dBm (add 20 to the reading). Or + 50 dBm on the 500v range (add 40).

And, while not calibrated as a VU meter, doesn't the meter on your rig do the same on transmit? The rig is 'talked up' to full output power!

As the S-meter on receive, it is calibrated for relative signal inputs. The reference standard is one microvolt at the antenna, which represents S-1 (as 0 dB) on the meter as determined by the agc voltage at the detector. Each incremental S-unit is + 6dB, for a progressive doubling of the input voltage induced in the antenna, right up to S-9 or 256 μV (+ 48 dB).

Old timers do not need these newfangled gadgets, and accurately state signal strengths with the use of an unerring ear. Which is how all this started!

Decibels now should roll glibly off your tongue, even if you've not the foggiest notion of using common or Brigg's deci-

mal system of logarithms. But beware, there are other systems in Continental countries where natural or hyperbolic logs are preferred, expressed in Nepers. The calculations are no more difficult, for Nepers = .5 $\log_e$ P2/P1.

But again there's an easier way, for decibels may be converted into nepers and vice versa, as 1 neper equals 8.69 decibels. **ar**

WARC BANDS STILL NEW FRONTIER A DECADE LATER

More than 60 countries have already allowed their radio amateurs to use the so-called WARC bands of 30, 17, and 12 metres. These three HF bands were gained by the Amateur Radio Service at the World Administrative Radio Conference in 1979. However, it has taken the past decade for the various radio administrations to relocate other services from these bands.

The current sunspot cycle peak is providing significant opportunities for worldwide communications and experiments by radio amateurs on the WARC bands. Full call radio amateurs and shortwave listeners should find the 10 MHz, 18 MHz and 24 MHz bands, which sit conveniently between the conventional HF amateur bands, offer them new DX challenges. A beacon has been heard loud and strong on the 12 metre band. Using a frequency of 24.915 MHz it signs IK6BAK and gives its QTH locator JN63KR. This beacon will help you check propagation on the band, particularly towards Europe.

There have been a few initiatives to increase use of these bands including a special activity during the WIA's 75th Anniversary.

The WARC bands will also feature in the rules of some WIA 80 events over the next 12 months, because it is WIA policy to encourage greater use of these three bands.

Another stimulus for the 30 metre band has been the IARU Region 3 conference recommended packet band plan which gives that mode a place on the band. Another worthy initiative has been the re-broadcasting of the WIA Queensland Division news service on the 17 metre band.

Peter Brown VK4PJ transmits the re-broadcast on 18.120 MHz followed by a callback at 2330 UTC on Sundays. He began this activity more than a year ago, and stations on the callbacks have been from all Australian states, New Zealand and near Pacific Islands. Peter suggests that other WIA Divisions could give consideration to broadcasting on a WARC band. From his experiences, 17 metres is a good band for Australasian and Oceania contacts, without the QRM present on the traditional bands. **ar**

IBM LOG CHECK & SORTING PROGRAM

PHIL CONNOLLY VK2BPC
PO BOX 104 TORONTO 2283

It seems that the vast majority of computer programs that are published in Amateur Radio magazines are either Log,Contest or associated programs. This is no exception and I make no apologies as I feel this could be a useful utility to the growing number of IBM or compatible owners. This may be particularly so if you are interested in contests but prefer to use the age old process of pen and log book, or like me, feel your pen would be more reliable than the keyboard at contest speeds.

When I first saw the program that this log sorter was built around it was in the guise of a VZ200 contest program in Vol 4 Issue 8 1984 of the now defunct Micro 80 magazine and had been submitted by Ron Carson. On running the program, it became obvious to me that it had more use as a sorter and log check, though it could be used as an assistant to prevent doubling callsigns in a contest, if you felt that you could handle a keyboard and log papers at the same time. Having now not long acquired an IBM compatible and pensioned off the faithful old System 80, I started looking for some software to run in the new machine. Being basically lazy when it comes to the hard work of punching in a lot of software from the keyboard, and having a twelve year old boy who loves to get at the plastic brain for long periods of time, I found it quite easy to point Darren in the direction of the new toy armed with the simple program for the VZ and the challenge of 'see what you can do with this son!'

Darren soon found that the IBM was a little different from the VZ basic, but not to the point of being one for the too-hard basket, and he seemed to be enjoying the job of enhancing this program for the new machine. The final result has certainly seen the program change somewhat; it is more extensive and looks better on screen, but basically it still has the same functions as the original program.

If you, like me, have ever been in the RD contest and then at the end you have had to do a check log by long hand, you will realize the great benefits and time saving this program will offer. How I wished I had my VZ version with me in 1987 on Norfolk Island as VK9NP when it came time to clean up the RD log.

The program needs little explanation and is simplicity itself to run. You simply feed in your list of callsigns and let the audible tone and on-screen display tell you if you if you have a duplicate or not. There are five options to choose from the main menu: List - for an entry list to date; Sort - for an alpha-numeric sort of the list; Print - to send your list sorted or unsorted to the printer; End - to quit program; Enter - for your callsign entry's.

Throughout the program you will receive other options that will be self explanatory.

Good luck in the contest!!

G-LAND NOVICE LICENCE PROPOSAL

The Radio Society of Great Britain has proposed two Novice licences for Britain. The RSGB said it had developed the proposal in response to a considerable decline in the number of new people joining the hobby and a demographic drift in the existing radio amateur population.

A suggested syllabus which includes basic operating standards and disciplines requires about 30 hours of study. HF bands would be available to those who passed a 5wpm morse code test, while a limited-Novice licensee would only have access to VHF/UHF/SHF bands.

Under the proposal Novices could use 160m, 80m, 30m, 15m, 10m, 6m, 70cm, 1.2GHz and 10cm. CW privileges are proposed on all bands, telephony on 160m, 10m, and all the higher bands except 6m which is reserved for data modes. An incentive to try out data modes and RTTY is provided on bands except 80m, 30m and 15m. SSTV and ATV is proposed for the new Novice licences on 1.2GHz and 10cm.

New Zealand third party traffice go ahead

After considerable debate within the local amateur radio fraternity, the New Zealand Radio Frequency Service (NZRFS) has given radio amateurs permission to handle third party traffic (TPT).

Some strongly resisted the move, claiming it was not in the best interests of the hobby, and called for TPT to be a restricted privilege. However the NZRFS, after weighing up the arguments for and against, and in a climate of general deregulation in telecommunications, opted to give TPT privileges to all radio amateurs. At the same time, it announced that unqualified persons could speak over an amateur radio station under the supervision of the licensee. ar

```
1000 KEY OFF
1010 CLS
1020 PRINT:PRINT:PRINT:PRINT:PRINT:PRINT:PRINT:PRINT
1030 PRINT TAB(17);"|~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~|"
1040 PRINT TAB(17);"| |~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~| |"
1050 PRINT TAB(17);"| |                                        | |"
1060 PRINT TAB(17);"| |  IBM or compatible contest log sorter  | |"
1070 PRINT TAB(17);"| |     Rewritten  by  Darren  Connolly    | |"
1080 PRINT TAB(17);"| |       PO BOX ID4 TORONTO NSW 2283      | |"
1090 PRINT TAB(17);"| |                                        | |"
1100 PRINT TAB(17);"| ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ |"
1110 PRINT TAB(17);"~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~"
1120 FOR A=1 TO 10000:NEXT A
1130 CLS
1140 CLEAR 2000
1150 DIM C1$(2000)
1160 CLS
1170 PRINT:PRINT:PRINT
1180 PRINT TAB(21);CHR$(201);STRING$(31,205);CHR$(187)
1190 GOSUB 2060
1200 PRINT TAB(21);CHR$(186);"   NEXT CALLSIGN, SEE BELOW    ";CHR$(186)
1210 GOSUB 2060
1220 PRINT TAB(21);CHR$(186);"  LIST  :- LIST WITHOUT SORT   ";CHR$(186)
1230 GOSUB 2060
1240 PRINT TAB(21);CHR$(186);"  SORT  :- SORT CALLSIGNS      ";CHR$(186)
1250 GOSUB 2060
1260 PRINT TAB(21);CHR$(186);"  PRINT :- LIST ON PRINTER     ";CHR$(186)
1270 GOSUB 2060
1280 PRINT TAB(21);CHR$(186);"  END   :- END PROGRAM         ";CHR$(186)
1290 GOSUB 2060
1300 PRINT TAB(21);CHR$(186);"        :- ENTER CALLSIGN      ";CHR$(186)
1310 GOSUB 2060
1320 PRINT TAB(21);CHR$(200);STRING$(31,205);CHR$(188)
1330 PRINT TAB(24);"   ENTER :- ";:INPUT A1$
1340 IF A1$="SORT" OR A1$="sort" THEN 1540
1350 IF A1$="LIST" OR A1$="list" THEN 1790
1360 IF A1$="END" OR A1$="end" THEN CLS:KEY ON:END
1370 IF A1$="PRINT" OR A1$="print" THEN 1970
1380 FOR I=1 TO LEN(A1$)
1390 NEXT I
1400 CLS
1410 FOR I=1 TO N
1420 IF A1$=C1$(I) THEN 1510
1430 NEXT I
1440 N=N+1
1450 C1$(N)=A1$
1460 PRINT:PRINT:PRINT TAB(21)" ";A1$;" IS NEW CALL SIGN"
1470 PRINT:PRINT:PRINT TAB(23)" ";N;" CALLS LOGGED "
1480 FOR X=1 TO 3000
1490 NEXT X
1500 GOTO 1160
1510 PRINT:PRINT:PRINT TAB(22)" ";A1$;" ALREADY LOGGED"
1520 SOUND 523.25,5.25:SOUND 0,3:SOUND 523.25,5.25
1530 GOTO 1470
1540 CLS:PRINT:PRINT TAB(30);"SORTING":PRINT
1550 FOR I=1 TO N
1560 A1$=C1$(I)
1570 PRINT"*";
1580 FOR J=1 TO N
1590 IF A1$<=C1$(J) THEN 1630
1600 B1$=C1$(J)
1610 C1$(J)=A1$
1620 A1$=B1$
1630 NEXT J
1640 C1$(I)=A1$
1650 NEXT I
1660 PRINT:PRINT:PRINT TAB(27);"SORT COMPLETE"
1670 PRINT:PRINT:PRINT
1680 PRINT CHR$(201);STRING$(31,205);CHR$(187)
1690 PRINT CHR$(186);"    DO YOU WANT A PRINTOUT?    ";CHR$(186):PRINT CHR$(186)
;STRING$(31,32);CHR$(186)
1700 PRINT CHR$(186);" [PRINT] = PRINTOUT TO PRINTER ";CHR$(186)
1710 PRINT CHR$(186);"  [YES]  = PRINTOUT TO  VDU    ";CHR$(186)
1720 PRINT CHR$(186);"   [NO]  = RETURN TO MENU      ";CHR$(186)
1730 PRINT CHR$(200);STRING$(31,205);CHR$(188)
1740 I$=INKEY$:IF I$="" THEN 1740
1750 IF I$<>"Y" AND I$<>"y" AND I$<>"P" AND I$<>"p" AND I$<>"N" AND I$<>"n" THEN
 1740
1760 IF I$="N" OR I$="n" THEN 1160
1770 IF I$="P" OR I$="p" THEN 1970
1780 IF I$="Y" OR I$="y" THEN 1790
1790 PRINT
1800 CLS:PRINT:PRINT TAB(25);"CALL SIGNS LOGGED":PRINT
1810 FOR J=1 TO N+1
1820 PRINT C1$(J),
1830 NEXT J
1840 PRINT:PRINT TAB(18);CHR$(201);STRING$(29,205);CHR$(187)
1850 PRINT TAB(18);CHR$(186);" PRESS >>SPACE<< TO CONTINUE ";CHR$(186)
1860 PRINT TAB(18);CHR$(200);STRING$(29,205);CHR$(188)
1870 I$=INKEY$:IF I$<>" " THEN 1870
1880 GOTO 1890
1890 CLS:PRINT:PRINT:PRINT:PRINT"    DO YOU WISH TO CONTINUE?"
1900 PRINT:PRINT"           Y=YES      N=NO"
1910 PRINT:PRINT:PRINT:PRINT TAB(20);" ";N;" CALLS LOGGED "
1920 K$=INKEY$
1930 X$=INKEY$:IF X$="" THEN 1930
1940 IF X$="N" OR X$="n" THEN 2080
1950 IF X$="Y" OR X$="y" THEN 1160
1960 IF X$<>"Y" AND X$<>"y" AND X$<>"N" AND X$<>"n" THEN 1930
1970 LPRINT TAB(23);CHR$(201);STRING$(19,205);CHR$(187)
1980 LPRINT TAB(23);CHR$(186);" CALL SIGNS LOGGED ";CHR$(186)
1990 LPRINT TAB(23);CHR$(200);STRING$(19,205);CHR$(188)
2000 LPRINT
2010 FOR I=1 TO N+1
2020 LPRINT C1$(I),
2030 NEXT I
2040 GOTO 1040
2050 END
2060 PRINT TAB(21);CHR$(186);STRING$(31,32);CHR$(186)
2070 RETURN
2080 PRINT:PRINT:PRINT TAB(21);CHR$(201);STRING$(15,205);CHR$(187)
2090 PRINT TAB(21);CHR$(186);" ARE YOU SURE? ";CHR$(186)
2100 PRINT TAB(21);CHR$(186);"   << Y/N >>   ";CHR$(186)
2110 PRINT TAB(21);CHR$(200);STRING$(15,205);CHR$(188)
2120 G$=INKEY$
2130 IF G$="Y" OR G$="y" THEN CLS:END
2140 IF G$="N" OR G$="n" THEN 1160
2150 IF G$<>"N" AND G$<>"n" AND G$<>"Y" AND G$<>"y" THEN 2120
```

WIA NEWS *From page 5*
interference complaint.

Apparently some amateurs are under the mistaken impression that, if their station is established as the cause of the interference, whether it is their fault or not, the DoTC investigators will provide the radio amateur with a written report of the circumstances of the interference.

Current practice of the DoTC is to provide, on request, written advice to the **complainant** on a recommended course of action to rectify their interference problem.

Therefore, under normal circumstances, a radio amateur will only receive a written report about an interference investigation by the DoTC, if the amateur is the complainant.

Visiting Canada?

The Canadian Radio Relay League (usually known as the CRRL), the WIA's sister society in Canada, recently advised the WIA that an Australian amateur had some problems obtaining his reciprocal Canadian licence because he applied to the Canadian Department of Communications head office in Ottawa, instead of to the appropriate regional office.

If you are visiting Canada, and wish to obtain a reciprocal amateur licence, you need to forward a copy of your operator's licence, your station licence, and the details of your stay in Canada, to the appropriate regional office of the Canadian DoC, at least 3 months before your visit.

Visitors' reciprocal licences in Canada are free, so there is no need to send any money.

The Executive Office of the WIA has a list of the addresses of the regional offices of the Canadian DoC, and on receipt of a stamped, self addressed, envelope, we will forward a copy to members.

Incidentally, if you are travelling to Canada, or any other overseas country, don't forget to investigate using the amateur radio International Travel Host Exchange program. It could make your visit that much more interesting.

Listen for Microsats

From the American Radio Relay League (commonly known as the ARRL, the sister society to the WIA in the United States of America) comes news that, on November 10th, 1989, from the spaceport of the European Space Agency located near the equator in French Guiana, an Ariane IV rocket is scheduled to carry 6 amateur radio satellites into orbit.

Four of these satellites have been dubbed MicroSats because of their unusually small cubed-shaped size measuring only 9 inches on a side.

These tiny satellites, in comparison to the large military and commercial satellites normally flown today, represent the ultimate in small, low cost, highly efficient spacecraft design.

The design and construction of these MicroSats has been co-ordinated and organised by the Radio Amateur Satellite Corporation (normally known as AMSAT), in collaboration with the ARRL, and the Tucson Area Packet Radio Association.

Although OSCAR satellites, such as OSCAR-13 which was successfully placed in orbit last year, have been getting heavier and larger, these new MicroSats represent a radical departure in philosophy.

Because of the dearth of launch opportunities caused by the Challenger shuttle accident over 3 years ago, AMSAT now has to pay the full cost for launches which, until recently, were provided essentially free of charge. Because of the competition from commercial satellite users to find space on launch vehicles, AMSAT has found it necessary to change to a small satellite design which requires only modest launch support services, and can fit into places on the launch vehicle normally reserved for lead ballast.

While large aerospace companies employ thousands of engineers and technicians, supercomputers, and command almost unlimited budgets, AMSAT and the amateur radio service have again proved that they have the initiative and ingenuity to stay at the leading edge of electronics design and construction on a shoe-string budget.

USA Codeless Licence

The Australian amateur service morse-code-free licence, the Limited Licence, was introduced in the mid-1950's. There was the usual hue and cry from those who saw it as the end of amateur radio but, as we all know, they were wrong (why is it that the small minority of people who are the most resistant to change always seem to be the most vocal?).

This innovative approach to amateur service licensing introduced a whole new group of people to our leisure time hobby, to the extent that Limited Licensees now make up almost 20% of Australian radio amateurs.

Considering that we have had the code-free licence in this country for over 30 years, it has been rather interesting to read the many conficting editorials and "letters to the editor" appearing in the amateur radio press in the USA over the past few months about the question of whether to seek a code-free licence for that country's amateur service or not.

The latest newsletter to hand from the ARRL advises that the ARRL finally petitioned their licencing authority, the FCC, on 31st August 1989 for a new "Communicator" code-free licence class.

Of further interest is that the ARRL only requested this licence for use on amateur frequencies above the USA 220 MHz band.

Keep the WIA Going

In keeping with the majority of similar volunteer and membership organisations in Australia, the WIA is having difficulty in finding enough suitably qualified volunteers to perform all of the administrative and other tasks needed to keep the organisation going.

Just one example, for instance, is that the majority of Divisions do not even have enough volunteers to fill all the vacancies on their Divisional Council.

Amongst other things, this means that more and more work is falling on the shoulders of the few, and that not only is some of the work needed "falling off the edge", but these hard working volunteers are beginning to suffer from "volunteer burn out".

Unfortunately, the Federal Treasurer, Kathy Gluyas, VK3XBA, has been forced to resign from Executive because of ill health, and the Melbourne based Executive are now suffering from the same problem as the Divisions.

Executive are very much in need of two additional, Melbourne based, members. It is not so much the amount of work needed from these two additional members (it should only amount to about the equivalent of two evenings per month), but the administrative, managerial, and financial skills that are important.

If you live in, or near Melbourne, have these skills and experience, and would like to make a worthwhile contribution to the future of amateur radio, Executive is anxious to hear from you. **ar**

THEY SAY IT NEVER STRIKES TWICE IN THE SAME PLACE

BARRIE GILLINGS VK2DWC
121 BANNOCKBURN ROAD TURRAMURRA 2074

Benjamin Franklin's Kite

They say it (lightning, that is) never strikes twice in the same place. They also say that the reason is that after the place is struck, it isn't the same place any more. This is an account of my own, personal lightning strike, but before giving you the messy details, I would like to share with you information I have gleaned on the subject from articles in the July 1975 and November 1988 Scientific American. This information may be old to many readers, but may be new to some, as it was to the writer.

Ever since Benjamin Franklin flew a kite in a thunderstorm and proved to his own and others' satisfaction that lightning is an electrical discharge, the phenomenon has been the subject of many investigations, but its exact origins and the mechanism by which rain clouds become electrified are still not completely understood. Please do not attempt to reproduce Nutty Benny's experiment, as it is extremely dangerous, and he was lucky to have survived to establish and edit the "Saturday Evening Post.'

Static Electricity is Anything But

We do know that lightning is the transfer of electric charges from one region of a cloud to another, or between a cloud and the earth. How are these charges developed? We don't have a complete answer. Commonplace articles have equal numbers of positive and negative charges distributed evenly over them, and are electrically neutral. The distribution can be altered, and the object is then said to be "electrified" or carry a static electrical charge. The degree of charge is measured in volts.

The place where I work (a hospital) has carpets, and is air conditioned. When the air is dry, my shoes alter the charge distribution between me and my surroundings, sometimes by as much as 100,000 volts. I sometimes inadvertently and painfully re-establish equilibrium by grasping a doorknob. In the days of ether anaesthesia, this effect was nothing to joke about. Ether vapour is highly inflammable, and a nurse's nylon underwear could lead to an exploding patient. If you too are troubled by such sparking, forgo nylon underwear, or carry a bunch of keys or a pen to discharge yourself.

Can Electrons Cause a Strike (Industrial)?

Some years ago, this problem led to industrial unrest through complaints from the Sydney Harbour Bridge toll collectors, who got zapped regularly by motorists whose car tyres on the bitumen built up a charge. Some of you may recall the wires which were installed in the road surface to discharge the cars as they approached the collection booths. They are not there anymore. Perhaps modern motor tyres are now conductive, or perhaps the current toll collectors are hardier specimens. Some car owners attach to the vehicle's chassis a rubber strip, which drags along the ground. You have probably seen them. Maybe you have one yourself. These are believed to bleed off any static charge, and reduce thereby the likelihood of car sickness. In view of the total absence of a scientific basis for this belief, the only beneficiaries may be the sellers of the strips.

Can Electrons Cause a Strike (Electrical)?

A human on a carpet pales into insignificance against a typical lightning bolt, which represents a potential difference of several hundred million volts, and transfers perhaps 10 coulombs (or around 10^{20} electrons) in a very short time. That is a lot of amperes. Your average storm cloud, producing several flashes per minute is putting out a few hundred megawatts.

There are two basic hypotheses which have been advanced to explain how all this charge separation takes place: i) the precipitation theory, and ii) the convection theory.

In the precipitation theory, large raindrops, small ice crystals and hailstones fall under gravity past a mist of smaller, suspended raindrops. The falling particles become negatively charged and leave matching positive charges behind. Thus, the base of the cloud becomes negative, and the body and top positive.

In the convection hypothesis, warm air currents rising in the cloud carry positive charges from the ground and up through the cloud. Negative charges from cosmic rays and such are attracted to the cloud surface by the positive charges within it, and form a "screening layer." Downdrafts carry negative charges to the base of the cloud. Updrafts do the opposite, the effect being similar to a van der Graaf generator.

In both theories, the end result is a massive dipole. However, the precipitation model requires no convection, and the convection model no precipitation. Which one is correct? Are they both correct?

The answer, according to the Scientific American, is an ambivalent "yes" and "no". A thundercloud is apparently not dipolar but tripolar, with a main, negatively charged area sandwiched between two positively charged regions, something like a very simple capacitor, and surrounded by a negative "shield".

In a big, fat, healthy cumulonimbus, (the "cunim" much feared by pilots), the main negative charge is about six kilometres high, only a few hundred metres thick, and at a temperature of about minus 15 degrees Celsius. The upper positive region can extend to the tropopause, at a height of about 13 kilometres and a temperature at the top of about minus 65 degrees Celsius. Your average pilot can't fly over that! The base of the cloud has a smaller positive charge layer about three kilometres thick, and a temperature of about plus 10 degrees

Celsius at the base.

It is now believed that the likely explanation for charge distribution in thunderclouds is the interaction between "graupel" particles and ice crystals. What are these "graupel" particles, I hear you ask. They are, apparently, millimetre-sized ice particles which are larger than ice crystals, from which they strip charges at the critical temperature of about minus 15 degrees Celsius, which, you may recall, is the temperature around the middle of a thundercloud. Feel free to win a few extra points with "graupel" in your next "Scrabble" game.

But even this picture is oversimplified, because a thundercloud has a life cycle, and builds up and decays, with violent updrafts and downdrafts. There are charged chunks of cloud going up and down like demented elevator operators. This leads to great instability between charges, and so we have lightning.

The Massive Discharge

Once the electric field between charges exceeds the dielectric strength of the intervening atmosphere, say around a million volts per metre, you have lightning. In less than a second, maybe 10^{20} electrons go from here to there, the electrical power being equivalent to 100 million of your average light bulbs. The energy appears as light, radio waves (that pesky QRN), sound waves (thunder) and heat.

Cloud to Cloud

Most of the discharges occur within the cloud, and we don't get to see them, except perhaps as bursts of diffuse light. A double ended branch or "tree" invades the negative and positive regions. These don't bother anyone except nervous creatures, such as my dog, who goes to the smallest, darkest place in the house, and, of course, foolish pilots in a hurry to get home.

Cloud to Ground

In a cloud-to-ground discharge, the negative end of the "tree" becomes a "stepped leader" carrying a few hundred amperes in the direction of down. At about 100 metres from the ground, there is a return stroke, which transfers a 10 kiloampere current (10,000 coulombs of positive charge) upwards. This is what you see (or perhaps you don't see, if you are standing in the wrong spot) as a lightning flash. For a copper conductor to carry this current safely, it would have to be a quite heavy gauge, (like about 20 square centimeters in cross section area), and would cost a lot.

The stepped leader may take 20 milliseconds to move downwards, but the return stroke is over in about 20 microseconds. This may be the end of it, but more commonly, the current pathway created allows repetitions of the process, at 10 to 100 millisecond intervals, several to many times. The electrical energy involved is enough to light up those 100 million ordinary light bulbs. But only part of it appears as light. Some appears as radio waves (QRN) and some as heat. The heating of the air in the path of the discharge channel causes the oxygen and nitrogen to expand rapidly and produce acoustic energy, as thunder. The heat can be up to 30,000 degrees Celsius, and the pressure from 10 to 100 atmospheres. For complex reasons, explained in the Scientific American article, but not understood by the writer, the more powerful the lightning stroke, the lower the frequency of sound of the thunder, typically around 60 Hz. The energy also causes the production of ozone and nitrogen oxides.

Sight and Sound

You, as the observer, see the lightning strike, then, if you are lucky and are not the person on the spot, as it were, there will be a perceptible pause, and you will then hear the thunder. Now sound travels at around 700 miles per hour at sea level, or, if you are metricated, about 1100 kilometres per hour. But light travels at, let us say, lightning speed, and at the short distances we are considering, you see the flash almost when it occurred. So if you now count the number of seconds which elapse between seeing the flash and hearing the thunder, and divide by five, the result will be the distance in miles between you and the event. For the younger reader attuned to the metric system, you should divide by three to get the distance in kilometres.

Please note that this figure is the distance between you and the event, and not distance as the crow flies, (or would fly if it wasn't raining). The discharge may well be five to ten kilometres above you, up there near the troposphere. But it is a useful trick, which you can use to determine whether an electrical storm is approaching, departing or staying put, and to impress friends and bystanders.

Complications

But once again, this is an oversimplification. For a strike going straight to ground, the counting system works fine. But a discharge in the clouds can travel several kilometres, across your field of vision, or away or towards you, and at any horizontal or vertical angle. Counting to the first sound of the thunderclap after the flash will tell you where the discharge started. It is the direction it then takes in relation to your location that dictates what you hear subsequently.

If you hear a single sound, a "clap" of thunder, it is probably a single ground strike. If you hear a "roll" of thunder, it is probably a long, intracloud discharge. Time the duration of the roll in seconds, and apply the above formula. This will give you the minimum length of the discharge, which may take a tortuous path through the cloud, usually at a fairly constant height of about five kilometres. Then, of course, you could have a combination of both a cloud and ground discharge, and hear claps and rolls worthy of the 1812 Overture. It is all really quite complicated.

More Complications

It gets more complicated. The attenuation of a sound increases as the square of its frequency, so at a distance you are more likely to hear the big discharges, and they will be low in pitch, or even felt only as vibrations. Then there is the effect of air temperature gadients and winds. These can deflect the sound so that it fails to reach you, or refract it so that it passes over your head, even though the discharge is quite close. The maximum range for hearing thunder may be as little as ten kilometres, but under favourable conditions it may be much more. It is something like tropospheric ducting of radio waves.

An Everyday Occurrence

There are thousands of electrical storms taking place on the earth at any given time. Some are quite small, with five or so discharges taking place per minute. In the big ones, however, there may be 100 or more per minute, and there is a lot of electricity reaching the ground. Why then does not everyone's hair stand on end, like those van der Graaf generator demonstrations where the operator looks like Yahoo Serious?

According to the Scientific American, there is a nearly constant potential dif-

ference of 300,00 volts between the negatively charged earth and the upper atmosphere. They say there is a "fair weather" leakage current of about 2,000 amperes which would eliminate this potential difference if thunderstorms, mainly in the tropics, did not balance this current. The writer does not understand the significance of this phenomenon, but perhaps a reader or two out there does. In any event, everything is going to be alright, and you should not worry if you haven't experienced a thunderstorm recently.

The Benefits

Thunderstorms do us a lot of good too. They are certainly fun to look at, can be quite exciting and make one of the loudest of nature's noises. Their electrical activity also fixes a lot of atmospheric nitrogen, which falls to earth in rain and fertilises our soils. So the next time you see one, you can marvel at its complexity, stand in awe of the massive energy it releases, and reflect that we still do not fully understand how it works. One thing we can understand, however, is how much damage a lightning strike can cause. One only has to look.

The Effects

The physics of a thunderstorm may appeal only to the technically inclined reader. But the following case history should be of interest to any ham who has an antenna.

It was the night of Friday, 9th of December, 1988, and it was raining. In fact, it was raining very hard, as it is wont to do in the writer's home QTH, Turramurra 2074, a suburb with one of the largest annual rainfalls in Sydney. It is also one of the highest, a fact of which your writer was prior to this date, blissfully unaware.

The property boasts many trees, one of which is a very tall gum tree (eucalyptus citriodora) of extreme beauty and grandeur, and, incidentally, ideal as the mounting point for one end of a G5RV dipole. It was used for this purpose, the OM being at the time happily ignorant of the fact that the land height plus the tree height meant close proximity of the antenna to any clouds that might pass overhead. The antenna farm is completed by a TH3 Junior, mounted on a disused chimney in the corner of the shack, and a home brew triband spider quad.

The Calm Before The Storm

On the evening of December 9, 1989, the OM and XYL were settled in their chairs in peaceful domesticity, watching television. The rain was pouring down, the rain gauge recording 55 mm for the relevant 24 hour period. But this was no big deal for Turramurra folks. Nine months earlier in April, we had a 24 hour reading of 155 mm, so this was your average rainfall, and we were unperturbed. At around 8 pm the sound of distant thunder was heard, and lightning flashes could be seen through the curtains. Rainwater gushed over the flooded roof gutters.

Now the XYL has a thing about the big tree. In the way of ladies who have raised six harmonics into adulthood, and aware of problems you and I perceive but dimly, she expressed her doubts about the security of the tree, which she is convinced will eventually blow over in a storm and demolish the "West Wing". The OM pooh poohed this 'negative' thinking, but nevertheless was sufficiently concerned to count, (surreptitiously), the seconds between flash and bang in the approved fashion (see above). The counts started at 20, then shortened to 15, then 10. The flashes were by then annoyingly bright, and the thunder oppressively loud. The sounds of ambulance, fire engine and police sirens could be heard all around. Then all the lights went out.

The Blackout

A quick check of the neighbours' houses indicated that it was a general power failure, probably from a power surge tripping something somewhere in the power grid, or, as I unthinkingly remarked, because of a fallen tree. By the time the emergency torches were located, (and the flat batteries replaced), the power was restored. Good old Electricity Supply, on the job as usual. The rain continued to fall, and the roof gutters continued to gush.

By this time the lightning was getting to be quite impressive, and the dog, up to this point attempting to insinuate her head between chair and occupant, was now attempting to climb on to our laps, and she weighs 45 kilograms! We continued to watch television, but the XYL looked pale, and was not giving the show her full concentration. The rain then eased to a mere downpour, and the sounds of thunder abated as the storm passed overhead and moved off towards Palm Beach. The XYL uncurled her clenched fists, and the dog opened her eyes.

The Strike

Then it happened. There was a monumental thunderclap, the house shook to its foundations, all the lights went out and there was the sound of breaking glass. The XYL uttered a most uncharacteristic expletive which had hitherto never passed her lips. The OM improved considerably on her performance. We both realised that we had suffered a direct strike. A quick look out the window revealed the neighbours snug in their well lit homes. This was no mere power failure, this was a more serious occurrence. OM and XYL then checked the tree. Yes, it was still upright, no problem there. Then, against the forcefully expressed advice of the XYL, the OM went to the fuseboard to see whether the core balance had tripped. Happy days, let us reset it. Lo, the lights come one - but only some lights.

Ever the optimist, the OM then removed and repaired blown fuses in sequence, in an attempt at damage control. Repairing them restored power on two of our three phases. The third phase was out, and Murphy's Law dictated that our refrigerator and freezer were on that phase. So was the television set, but it was a dull program we were watching anyway, so we went to bed. On the way we noticed on the floor a small piece of plastic, which we could not identify.

Inspection For Damage

The following day was sunny and clear, and OM and XYL were up early assessing damage. There didn't seem to be anything out of the ordinary. The tree was fine, the quad and the TH3 were fine, but where was the G5RV? One half of it was on the ground, undamaged. The other half had disappeared from the face of the earth. So had the ladder line. Plastic separators and shreds of plastic were all that remained. The central and end insulators were 30 metres away. The heavy coiled spring used as a shock absorber against tree movement was a shrivelled remnant of its former self.

There was a large chunk of concrete blasted out of the carport, and a long mud splash on the wall of the house. One car hubcap was lying beside its wheel. One windscreen washer jet was missing, and found later several metres away. We agreed that this must be where the lightning went to ground. Unfortunately, this was only partly correct.

The Extent of the Damage

The breaking glass heard the night before was found to be an outside light, blasted from its housing by the shock wave. The black plastic (see above) was now identified as the remains of the small transformer used to power the receiver cradle of the cordless telephone. Never mind, we still have an old fashioned dial telephone. Call the electrician. He arrived within the hour, and quickly discovered a blown council fuse. Aha, so one phase was out! Curiously, none of the house wiring was damaged. Clever tricks behind the fuseboard got our refrigerator and freezer back in operation, but the fuse was a job for the County Council. They were rather busy, as we were not the only victims of the night's 'acts of God'. It took more than an hour of "all our lines are busy, but you are in a queue . . . " before the service call was arranged. You've been there, heard that.

But the real extent of the damage revealed itself gradually, like the sun rising. Downstairs there was a funny swishing noise. It seems to be coming from under the house. Why is there a foot of water here? The rain wasn't that heavy. Dear reader, there was a hole in the copper water pipe running under the floor. A visit to the laundry then revealed a pile of wet clothes which were dry the previous night. A fine spay is coming from a ventilator. Here is another hole in the copper water pipe. Upstairs to call the plumber, who also arrived within the hour. We now have two tradesmen working. Then we found a third hole in the plumbing.

Who turned off the Christmas tree lights? No one. All the tiny little bulbs had blown. Check the television set. Nothing. Is it perhaps the video recorder? Yes, it is. The video recorder has gallantly protected the television set from damage by blowing up beyond repair.

Now it is time to go shopping in the other car. Actuate the garage door opener. Nothing. The receiver board has blown. Never mind, do it by hand. Come back from shopping. Do some washing. Not possible, machine timer inoperative, (but we jibbed at doing the washing by hand).

Then a final thought at the end of an eventful, fun-packed and exciting day - what of the equipment in the shack? The Kenwood 520 (on the TH3) is fine, no problems. The Kenwood 820, through the antenna tuner (with the quad and G5RV) is not very well. Burned contacts in the tuner, and no HV in the transceiver.

Apart from the above, damage caused by our lightning strike was slight.

The Current Pathway

Reconstructing events, the strike hit the G5RV, and part of the charge went down the tree trunk, carport supports and then to ground via an old dynabolt in the concrete. The remainder of the electrons raced along the antenna and ladderline, vaporising the copper, but leaving the plastic undamaged, then entered the electrical wiring in the roof. Some of the electrons went to the fusebox and blew one main fuse and nearly all the house fuses. The core balance transformer was undamaged, and probably tripped in time. The remainder surged along the metal conduits (it's an old house) and went to ground wherever they fancied. They especially fancied the copper water pipes, and when they did, punched neat holes to let the water out. The other antennas were spared, as they were both, by their design, connected one way or another to excellent grounds.

A Dally Event

The writer is not unfamiliar with lightning, having lived in Malaysia for three years, where lightning is practically a daily event during the two monsoon seasons. But there, they manage things better. All well constructed houses have lightning protection in the form of a broad copper strip (inch by quarter inch) along the roof top, with three or four sharpened copper spikes protruding. These are not there to conduct a strike to ground, though they may do so on occasion. What they really do is leak madly from the tips of the spikes when a charged thundercloud is overhead, and reduce the electrical potential between ground and cloud, hopefully to below the breakdown voltage of the intervening air. In retrospect, this is a precaution which Turramurrians and others on the high ground could well consider.

Tales to Tell

The author has now dined out on this story many times since the event, and found to his amazement, that others had similar tales to tell. One even described how he was actually struck by lightning and suffered no more than singed hair. It wouldn't have happened in Malaysia, where the lightning bolts are of considerably heavier gauge. It kills around one person a month there.

Insurance, Don't Have a House Without It!

There is a happy ending, of sorts. Insurance covered all the damage, but the assessor, a very businesslike lady, wanted to see the evidence, of which was an abundance. It is indeed "great to know that you're covered by GIO."

Precautions

What does one do when a very dark cloud is approaching? Well, if you are playing golf, head for the clubhouse via the lowest ground available, and consider leaving the clubs behind. Keep away from high ground, all tall trees or structures and conductors like railings and wire fences. If you are at home, stay indoors and do not use the telephone. In the shack, some recommend disconnecting all antenna leads, which is probably a wise precaution. One ham suggests covering the antenna connector with a plastic bag and pushing the lead out the window, but this might be a bit extreme.

A Sacrificial Dipole

Let me close on a humorous note. The XYL has been inclined to complain about the three amateur radio antennas and the TV antenna. She says the place looks like Pine Gap, but without the protesters and the CIA. The similarity will be enhanced when I put up the dish.

But she has modified her attitude somewhat since the event, however, following a harmonic's analysis of the situation. He suggested that without the G5RV on the tree, the strike may well have blasted the trunk, and really demolished the "West Wing", and ventured the opinion that the antenna could be termed a "sacrificial dipole". The tree now carries a replacement G5RV, with her enthusiastic approval.

However, it has been placed a lot higher up. ar

Have you advised DoTC of your new address?

AN INTRODUCTION TO SYNCHRO TORQUE TRANSMITTERS AND INDICATORS

(Selsyns to you and me) Part Two

DEAN PROBERT VK5LB
RMD VERRALL ROAD HOPE FOREST 5172

Introduction

In this second Part the author intends to detail how to set up a pair of synchro torque indicators for quiet efficient operation, how to identify which selsyn you have and what its operating parameters are as far as available information will permit. Many of these units were manufactured during the war and so data on all of them is not available.

Selsyn Types

Transmitters fall into five main groups which concern those wishing to use them for beam indication.

Selsyns have certain information stamped on their cases ie Frequency c/s 50, 60 or 400. (c/s=cycles/second), Voltage ratings 50/50, 110/50, 115/90. (Rotor/stator). These values will be stamped on the case of the unit ie 50v 50. Serial numbers are, Muirhead type No E-10-A/1 or British Services Number 6549A.

It will have either Transmitter or Indicator (or Receiver) together with a Mk11 or Mk111 stamping on it. Also there should be the manufacturer's name, Muirhead or GEC etc.

The 400 c/s units were developed for aircraft use and are much lighter and have fewer windings in the laminations. They will work on 50v 50c/s but not as well. They tend to be a little sluggish compared with the 50v 50c/s units but still do the job.

Whatever selsyn you intend to use will be up to you. The information to look for is Transmitter or Indicator. If it is not one of these it is probably unsuitable.

Transmitters

These fall into the following categories.

Synchronous Link Transmitters
Transmitters
Coincidence Transmitters
Follow-through Transmitters
X-Co Transmitters

Indicators

Receivers are suitable for pointer indication only due to the amount of torque they develop. Most are 50v 50c/s such as the E-10-A/1 unit. The E-10-A/2 is a 115v 60c/s unit. It probably will work OK on 50v 50c/s. Regardless of the serial numbers, the word Receiver or Indicator is what you should look for. Remember from Part One that Transmitters will work with Transmitters so it is not essential that you obtain an Indicator/Transmitter set.

Transmitters are usually manufactured with 3" diameter cases and Indicators usually with 2" cases as a guide.

Other Types

(Not suitable for indication purposes.)

The other selsyns are:-

Hunters: Generally these only have a partial movement such as that used in turning on and off a switch or hydraulic valve mechanically.

It has a serial number similar to E-25-A/1 and is usually in a 3" case. Its correct name is a torque differential Receiver. It has markings on the back of the case of 1,2,3 and 1,2,3 with distant and local stamped on the back.

Resolvers: Have at least two separate stator windings (not connected) and two rotor windings. Serial number E-64-B/1 or E-64-C/1 with 1R,2R,3R and 1T,2T,3T stamped on the back.

Linvars: Are characterised by having only one winding on the stator and one on the rotor. They are correctly called a linear Variometer and have markings on the back on 1,2 and X,Y only. Serial numbers are E-8-D/1 or E-8-D/2 etc.

Servo Induction Motors: They have 3 phase 2 pole star connected windings internally and are motors. They have a no-load speed of 2,800 rpm. Serial numbers are E-16-A/1, or similar, and have an X,Y and 1,2 marking on the back.

Hysteresis Motor. Again a motor which revs at 3000 rpm. It operates on 240v 50c/s 3 phase and has 1,2,3, stamped on the back. Serial Number E-49-E/1 etc.

Split Field DC Motors. This one revs at 7000 rpm, is a DC Servo Motor and has the markings A,A and F1,F2 on the back. Serial Numbers are similar to E-52-A/1.

Induction Generators. Supply is 50v 50c/s at 1000 rpm. It has 2 phased windings spaced 90 degrees. Serial Number is similar to E-5-A/1 and has 1,2 and X,Y stamped on the back.

Two Pole Permanent Magnet Alternators. They have two phases in quadrature; each 7.5v 25c/s at 1500 rpm. Serial numbers are similar to E-28-B/1 and has numbers 1,2 and X,Y stamped on the back.

As you can see, unless it has an X,Y and 1,2,3 stamped on the back it will not be suitable for indication purposes. There is an exception the author is aware of however.

Transmitter Magslips

Suitable transmitters fall into two categories: Control Magslips and Torque Magslips.

The control transmitters are generally used in conjunction with a Transmitter and a Receiver making up a three unit system. The control unit corrects differences between the headings of the Transmitter and Receiver. It is also used as a stand alone Transmitter. They take the following forms, with 3" cases,

50c/s Transmitter, E-17-A/1.
Coincidence Transmitter, E-20-A/1.
Transmitter (for FT supply), E-22-A/1.
Follow Through Transmitter, E-

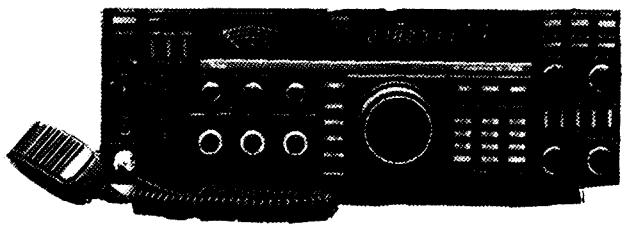
THE GEORGE BUSH, MA
MIKHAIL GORBACHE

What has made Icom's range of transceivers world leaders in their class? Could it be the uncompromising standards of a George Bush? Is it the durability of a Maggie (Iron Lady) Thatcher? Or the innovative thinking of a Mikhail Gorbachev?

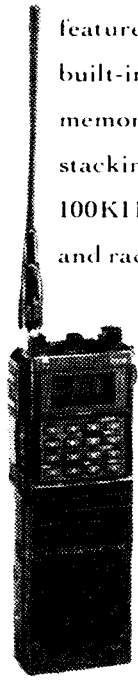
It is, in fact, a combination of all three.

Which has led millions of radio users around the world to choose Icom. Their vote has made Icom the world leader of transceivers.

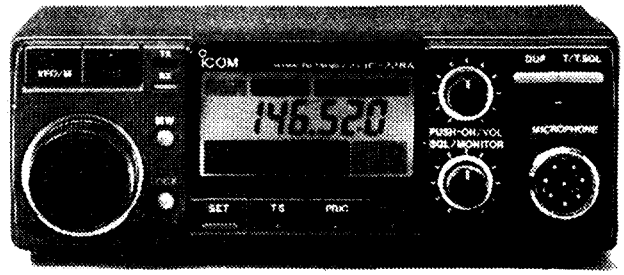
The Icom IC-725 HF mobile 500KHz-30MHz transceiver is complete with DDS synthesiser, 26 memories (two memories for duplex frequencies), switchable pre-amplifier, scanning, CI-V system for PC control, built in antenna tuner controller and band stacking register.



The Icom IC-765 HF transceiver features DDS synthesiser, high speed auto tuner, built-in AC power supply, 99 programmable memories, keyboard frequency entry, band stacking register, general coverage receiver 100KHz-30MHz, CI-V system for PC control and rack mounting dimensions.



The Icom IC-32AT dual band FM transceiver outputs 5.5W and has a full duplex crossband operation, on/off switchable power saver and 20 double-spaced memory channels that can store two frequencies. The programmed scan function scans all frequencies between two programmable frequencies. And Priority Watch monitors the Call Channel, a memory channel or all the memory channels in succession, every five seconds.



The Icom IC-228A (25W) and IC-228H (45W) mobile FM 144MHz transceivers are compact and easy to operate with 20 memory channels, multi-colour LCD programmed and memory scans, variable tuning steps, priority watch, main controls lit for night operation.

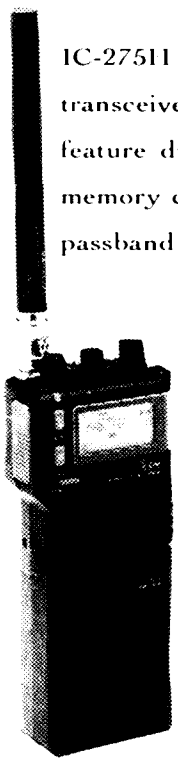
RGARET THATCHER AND V OF TRANSCEIVERS.

The Icom IC-475A (25W) and IC-475H (75W) 430 MHz All Mode transceivers are designed for packet mode with direct digital synthesizer (DDS), 99 memory channels, USB, LSB, CW, FM, passband tuning and adjustable IF notch filter.

The Icom IC-575A (10W) and IC-575H (100W) 28/50 MHz All Mode transceivers have a receiver coverage of 26-56 MHz and are equipped with direct digital synthesizer (DDS), 99 memory channels, and passband tuning.

The UHF FM Icom IC-4 GAT with 6 watt output has digital touch step for frequency selection, programmable call channel, LCD readout, optional pager function, programmed and memory scans, automatic power save and 20 memory channels.

The Icom IC-275A (25W) and IC-275H (100W) All Mode 144MHz transceivers are designed for packet mode and feature direct digital synthesizer (DDS), 99 memory channels, USB, LSB, CW, FM, and passband tuning.



The palm size Icom-2SA, 144 MHz FM transceiver has 5 watts output with optional BP-85, 48 memory channels and an automatic power saver, LCD readout, operation from battery or external 12V DC supply. A PTT lockout switch is provided to prevent accidental transmissions. Options include: paging, code squelch functions and beep tone on/off control.

Call Melbourne on (03) 529 7582 or interstate on (008) 338 915 for your nearest Icom stockist. ICOM

ICO 0047

21-A/1.

60c/s Transmitter, E-17-N/1.
Coincidence Transmitter, E-20-C/1.
Follow Through Transmitter, E-21-D/1.

400c/s Transmitter, E-17-N/2.
Coincidence Transmitter, E-20-C/2.
Follow Through Transmitter, E-21-D/2.

The 2" case Control Magslips take the following forms but are less common.

50c/s Transmitter, E-1-A/1.
Coincidence Transmitter, E-3-A/1.
Follow Through Transmitter, E-4-A/1.

60c/s Transmitter, E-1-J/1.
Coincidence Transmitter, E-3-D/1.
Follow Through Transmitter, E-4-D/1.

400c/s Transmitter, E-1-J/2.
Coincidence Transmitter, E-3-D/2.
Follow Through Transmitter, E-4-D/2.

The Torque Transmitters take slightly different forms. The 3" case types are characterised by,

50c/s E-18-A/1, E-18-D/1, E-18-C/1.
50c/s High Torque E-19-B/1, E-19-H/1, E-19-F/1, E-19-N/3.
60c/s E-18-H/1.

400c/s E-18-M/1, E-18-D/2.

The 2" case Torque Magslips are,

50c/s E-2-J/1, E-2-H/1, E-2-B/1, E-2-K/1.
60c/s E-2-B/4, E-2-K/3.

400c/s E-2-J/2, E-2-H/2, E-2-B/3, E-2-K/2.

Transmitter Marking Exceptions

As mentioned earlier there are some exceptions to the X,Y and 1,2,3, rule. The following chart shows them clearly.

Type	Rotor			Stator		
	A	B	C	D	E	F
E-17-A/1, E-17-N/1, E-17-N/2, E-22-A/1	-	Y	X	1	2	3
E-20-A/1	-	2	1	X	Y	Z
E-20-C/1, E-20-C/2	-	SY	SX	1	2	3
E-21-A/1, E-21-D/1, E-21-D/2	1R	2R	3R	1T	2T	3T

Figure 1 Terminal Designation

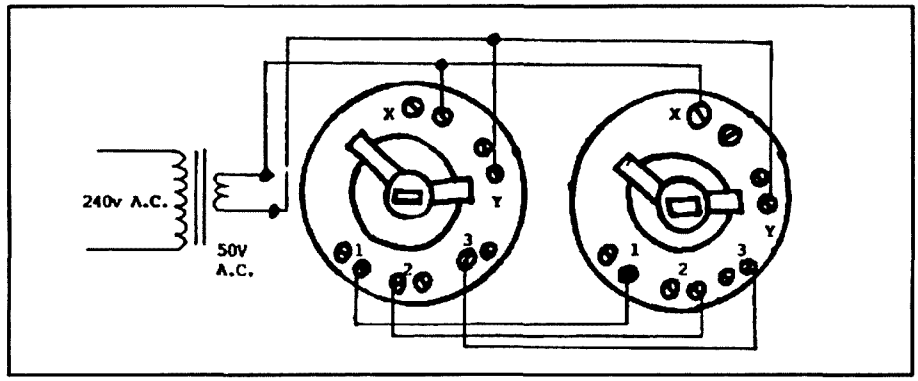


Figure 2 Indicators

Receivers have usually 2" cases as stated. Serial numbers are,

50c/s E-10-A/1, D-505-A, D-787-A, D-787-B

60c/s E-10-A/2.

From the preceding the reader should now be able to identify a unit and assess its suitability for indication purposes, the voltage requirements and the c/s it may need. 400c/s units could be used at 400c/s by using a suitable oscillator.

Setting Up The Units

The author obtained a couple of transformers from the junk pile that sits in his shed. One had several taps on the secondary which included 20v, 30v, 40v and 50v. A multi-meter on the transformer gave the following AC readings, 20v, 32v, 41v and 53v.

The rotor requires 50v AC. The X and Y windings were connected as illustrated in Figure 2. The 1,2,3 screws were connected from the transmitter to the receiver. The 53 volt tap was tried first. The transmitter rotation was quickly and "firmly" followed by the receiver. There was no hesitation in the start of the indicator needle movement or "coasting" to a stop by the needle after the transmitter had stopped being rotated. There was a slight hum from the indicator however. Selsyns run cold but with a very slight hum normally. It should only be very slight however.

The next voltage was 20v but was totally useless. The 32v tap allowed the needle to move about but sluggishly. The needle moved after the transmitter was rotated and "coasted" to a stop after the transmitter stopped. If the transformer was switched off and then on again, the surge of current, on start up, sent the indicator needle around a few more degrees. This indicates that the 32 volts was not sufficient to set the needle to the correct reading in the first place.

Using a dropping resistor, a voltage of 48 volts was tried. There was no hesitation or coasting. There was no needle change on start up indicating that the needle indicated the correct reading the transmitter sent it. There was no audible hum from the indicator, even when it was placed on an *empty metal* tin. Experimentation may be required depending on the units which are acquired. Some may not hum at 50 or so volts. You may only have a transformer of 45 volts. It depends on individual circumstances. The author used ordinary light flex twin lead for X,Y and used a much lighter wire, similar to telephone cable, for the 1,2,3 connections. 50 volts AC appears on all wires by the way.

The manufacturer warns that the units should not be mounted with clamps around the case of the units. A friend VK5LV, John, does use this method but has insulated his units with foam rubber, between the case and the clamp, to silence any hum, with entirely satisfactory results. Under these circumstances clamping seems to be ok. The cases are usually clamped by pressure units at each **end**, using clamp rings. These may or may not be attached to the units which you buy. All of the author's had clamp rings attached and this is probably the usual case, so it is not a worry. If yours don't, then clamp them lightly with sufficient rubber to cushion the case, ensuring the case is not squashed out of shape.

The author hopes this is of some use to amateurs enterprising enough to sort something out for themselves. Remember that there is a lot of useful gear out there in radio amateur land. All you have to do is look and ask. Then be able to recognise what it is you are looking at. Recently the author was in a junk yard and saw an old "Treatment" unit from a hospital. It had the unmistakable dial of a variac on it. Further inspection showed it was a high power oscillator with a large RF transmitting triode, suitable for linear SSB amplification in it, plus the transformer etc. The author bought it for $5.00 but that is another story. All you have to do is look. **ar**

Radio Amateurs: Have you checked out EA lately?

No doubt most radio amateurs are aware that *Electronics Australia* is by far this country's largest-selling electronics magazine, as well as being its oldest (we began way back in 1922, as *Wireless Weekly*). But have you looked inside the magazine lately?

Remember Jim Rowe, VK2ZLO? Jim used to be Technical Editor, and then Editor – back in the late 1960's and 1970's. You may recall some of the amateur radio and test equipment projects he developed, which proved to be extremely popular. Well, Jim is back at the helm of the magazine, and has been busy giving it a new lease of life.

You'll now find lots of new 'departments' in the magazine, including Solid State Update (with news of new semiconductor devices), Silicon Valley Update (news from the USA) and What's New in Entertainment Electronics. Plus all of your old favourites like Forum, The Serviceman, Circuit and Design Ideas and so on. And of course plenty of 'meaty' technical articles and contruction projects.

FEATURES IN OUR NOVEMBER ISSUE:

AUSTRALIAN QRP IS ALIVE AND WELL

A look at low power 'QRP' amateur activity around the world, with special emphasis on what's happening here in Australia. Written by Tom King, VK2ATJ

SIMPLE FM TRANSMITTER FOR 2 METRES

At last! Here's a low cost, easy to build solid state FM transmitter for 2 metres, in modular form. Nothing fancy, but it puts out a clean crystal-locked signal of about 1.5 watts – great for your own QRP experiments!

THE RACE TO MAKE PHOTONIC IC CHIPS

The future of communications may well be with *photonics* – which uses light photons instead of electrons. Here's how it works.

What about *amateur radio* projects? Well, there still aren't too many, at present – Jim Rowe's been a bit too busy! But he's *very* interested in boosting the amateur radio content, so if YOU have developed an exciting amateur radio project, please contact Jim by writing to him at EA, 180 Bourke Road, Alexandria 2015 or phoning him on (02) 693 6620 – to discuss the possibility of publishing it as a contributed article.

Take a look at the new, rejuvenated *Electronics Australia* – on sale at your newsagent at the beginning of every month. Or subscribe now, by phoning (02) 693 9517 or 693 9515.

Electronics Australia

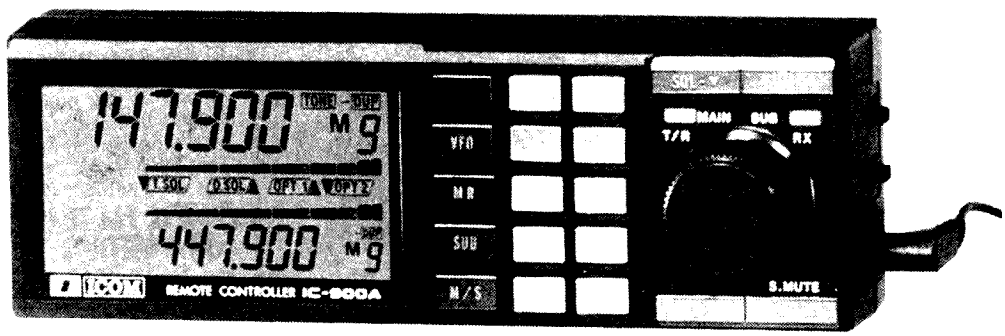
Australia's Top Selling Electronics Magazine

WIA 80 COMPETITION!

CELEBRATE THE 80TH ANNIVERSARY OF THE FIRST AND OLDEST NATIONAL RADIO SOCIETY IN THE WORLD

WIN

AN ICOM IC-900A MULTI-BANDER SYSTEM VALUED AT $2000



Remote Controller

How would you like to win a fantastic ICOM IC-900A series multi-band mobile control unit, complete with modules for two metres and 70 centimetres, plus your option of either six metres or 10 metres?

Thanks to ICOM Australia Pty Ltd, the winner of this competition will receive a magnificent IC-900A multi-bander system set up for 144 and 432 MHz operation, and will be able to select either the additional six-metre or 10-metre module.

However, you could still be a winner, even if you do not win this IC-900A. The three runners-up in this great competition will receive a full refund of their 1990 WIA membership fees, worth up to $65.00 each.

Who can enter?

This great contest is open to any person who is a financial member of the WIA as at 1st February 1990, except that employees or office bearers of the WIA Divisions and Executive are not eligible to win a prize.

How to enter?

Easy! Fill in this form by completing, in less than 30 words, the statement "I am a member of the WIA because . . . .", place it in an envelope together with your address label accompanying this issue of Amateur Radio magazine, and post it to "WIA 80 Competition, PO Box 300, Caulfield South, Vic, 3162", to reach us no later than 1st February 1990.

A photocopy of this form may be used if you do not want to cut up Amateur Radio magazine, but the Amateur Radio address label must be the label used to mail this issue of Amateur Radio magazine to you. This competition will be run over a period of three months, and WIA members can enter three times if they so desire.

The winning entries will be selected by a judging panel, and the winners will be announced in the March 1990 issue of Amateur Radio magazine.

WIA 80 Competition PO Box 300 Caulfield South Vic 3162

Dear Sirs,
I wish to enter the WIA 80 competition, and accept the rules as published.

I am a member of the WIA because .....

.....

.....

.....

.....

(Complete this statement in 30 words or less)

Callsign or
Membership Number ..... Signed .....

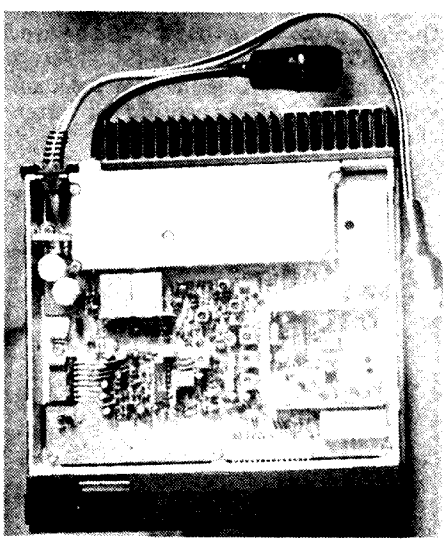
THE ICOM IC-900A MODULAR MULTI BAND FM TRANSCEIVER

RON FISHER VK3OM
"GAALANUNGAH" 24 SUGARLOAF ROAD BEACONSFIELD UPPER

First of all, let me wish you luck in the WIA80 competition. I hope you win this wonderful rig. Having used it for the last couple of months, I don't like giving it up. However that's one of the problems of being an equipment reviewer. There is no doubt about it, the IC-900 is one of the most unusual rigs that I have come across. I rather get the idea that ICOM engineers decided to try out a few innovative technical thoughts that they might later use in other applications.

The transceiver actually comes in several pieces with a very small control panel that can be placed in any convenient position. This is then connected by a very thin cable to the interface unit which can be mounted under the car seat or tucked up under the dash board. The standard ICOM PTT microphone is also connected to this unit as is the separate loud speaker. There are, in fact, two speaker sockets, so you can also have one for the back seat passengers. There is a long DC cord attached to the interface unit, nearly seven metres long. ICOM must think that we all drive buses or something but, if you are like me, I always run out of cable at the wrong time. Now, if you thought we had covered all the units, you are wrong, there are still some to go.

There is a second interface unit that is connected to the first, via five metres of fibre optical cable, and on the back of this are the connectors for the various "band" units. Our prize unit is supplied with three of these for use on the 50, 144 and 430 MHz bands. These, along with the second interface unit, can be stacked away in the car boot or some other out-of-the-way place. Just as a thought, a longer interface connecting fibre optic cable is available as an option. This might enable you to use the whole thing as a base station with the control unit mounted in the shack and the "band" units mounted near the antenna to reduce losses in the feeder. In fact, I note in the latest ICOM news letter that the remote principle is being used in a new marine transceiver. The possibilities are endless.



Interior view of the 2 metre "Band" unit. Photo - John Friend VK3ZAB

The complete set up. Ready to go. Photo - John Friend VK3ZAB

The "band" units are actually separate transceiver units for each band with a power output of ten watts on six, twenty five watts on two, and twenty five watts on 70 cm. They are all the same size and appearance. There is also available a unit for the ten metre band which again is for FM operation only. As you can see, this system needs quite a bit of thought and effort to install. It's not the sort of thing that you can throw into the car five minutes before setting off on a trip. However, once installed, you have a versatile thief proof, all-band, VHF/UHF set up.

Let's look more closely at the physical aspects of the "band" and interface units. The "band" units measure 175mm deep/175 mm wide and 25mm high. The six and two metre units are fitted with flying lead SO-239 antenna connectors while the 430 MHz unit is fitted with a flying "N" type connector. Each is fitted with a DC power connector. Perhaps it should be made clear that no controls are fitted to any of these with all control functions coming from the remote control unit. This measures only 153mm wide, 50mm high and 38mm deep. With a weight of only 200 grams it would be quite feasible to secure it to the car dash board with double sided sticky tape. This unit contains a three by five push button matrix for frequency and memory selection.

A green illuminated LCD multi purpose display takes up most of the left half and a channel selector knob is to the right. Audio volume and squelch are controlled by rocker switches with the volume/squelch slowly increasing or decreasing as you hold the button down. This is very neat but of course there is no way of knowing where each is set until the rig is turned on. With separate modules for each band full duplex operation is possible.

The control unit display shows both the main transceiver frequency plus the sub-band which can be selected simultaneously for receive. A small button near

the tuning control allows the sub band audio to be selected on or off independently of the main receiver audio level. If you were to connect a second speaker, it is possible to have main and sub band audio from separate speakers. There are ten memories for each band and repeater off-sets can be programmed with the memory. Also high or low power can be selected for each unit.

A single push of a button can interchange the main band and the sub band, so if you are transceiving on two metres and suddenly hear a call on 70 cm which is set up as the sub band, one push and you are talking on 70, another push and you are back on two metres. Also direct access to a call channel is easily available. All of this magic is available to the operator via a CPU contained in the control unit. There are even two 'S' meters but as we shall later see they are typical for VHF FM transceivers - almost useless.

The IC-900A On The Air

Over the last few years I have operated an ICOM IC-28A in the car and consider it to be one of the easiest FM rigs to operate. The 900 is somewhat more complex and it takes time to get used to all the facilities. I did not attempt to set it up in the car but instead spread it around the shack floor. Luckily I have a dual band antenna for 146 and 430 MHz, along with a diplexer, but so far no antenna for six. My on-air tests were therefore confined to 2 metres and 70 cm. I was able to check out the six metre unit on the test bench though.

Receiver sensititivity on two appeared to be good, but when compared directly with the IC-28A it was found that the 28 was, in fact, slightly better. However, to balance this, the received audio quality on the 900 sounded better. Transmitted quality was rated as good, but with a very small amount of synthesizer noise audible to close stations. Deviation was rated as just right. One thing noted was that the modules got rather hot after a period of testing. If you decide to mount the 'band' modules in the boot, don't throw your travel rug over them or pack the grocery shopping too close. An optional cooling fan is available but even with this, some space around the unit would be necessary. I guess the heating problem would be more pronounced if you like to use the duplex mode. However, as far as I can hear, this type of operation is not all that common as yet.

The IC-900A On Test

As I mentioned earlier, I did not have an antenna for six metres and at the other end, I do not have a signal generator that goes up to 430 MHz so some educated guesses had to be made.

Receiver sensitivity was first checked on the 50 and 144 MHz units. For 12dB sinad, 50MHz was 0.15uv and for the 144 MHz unit it was 0.16uv. It was noted that the squelch would open well below these figures. Next, receiver audio output power was measured at both 8 and 4 Ohms and was found to be rather higher than usual at about 3 watts for 8 Ohms and just over 4 watts at 4 Ohms. Received distortion at 5 kHz deviation was just about 4% for both bands. This amount of distortion is not as good as many current FM transceivers but quite satisfactory for speech transmission. Transmitter power output was checked on all bands using my usual dummy load power meter. In all cases the measured output exceeded the specified output by a small margin. The following results were recorded

	6 metres	2 metres	70cm
High	11 watts	26.5 watts	25.5 watts
Low	1.2 watts	5.2 watts	4.5 watts

All of these were measured with 13.8 volts DC input to the transceiver. The last and most important measurement was the "S" meter calibration. It was almost the same on both six and two metres. Both had a total range of about one normal 'S' point, that is about six dB. In other words it will tell you if you are hearing a signal or not. I should say that this is fairly typical for modern FM transceivers and is something that manufacturers should have a close look at.

As I mentioned earlier, results of performance on the 430 MHz receiver had to be subjective. I compared the receiver with a four year old transceiver that I have used intermittently over the years and found that the IC-900A performed in a similar manner.

The Instruction Book

I must admit that I was rather disappointed with the manual. As the IC-900A breaks new ground in amateur equipment, I feel the least that ICOM could have done would have been to explain how it all worked. This is, after all, the beginning of a new concept, and I am sure we will see more of it in the future. The actual operating and hook up instructions are well covered. I would strongly suggest that the new owner take time and read the book through several times, before connecting it all up and starting to try and get it on the air.

The IC-900A Conclusions

I wonder when ICOM might see fit to produce a control head and interface unit to remote control an HF SSB transceiver mounted in the boot of the car. I feel that this must come in the very near future, and the sooner the better. This system proves that it can be done. After all it is still possible to mount a two metre transceiver inside a car (just), but I don't know of any modern car that will take an HF transceiver under the dash board.

However, back to the IC-900A. I can think of many ways that it could be used both as a mobile and fixed station setup. If you happen to win it please let me know what you do. I will be waiting with interest.

Our sincere thanks to ICOM Australia. **ar**

STOLEN EQUIPMENT

1 x Kenwood TR2600A 2m handheld transceiver SN 5060934, missing hand strap, with MS30 mobile bracket and SMC30 speaker mic & DSE 1 amp switchable voltage power supply cat. M-9530, also has home brew 1/4 wave telescopic antenna.

1 x Kenwood grid dip oscillator, model DM81, stencilled in 20mm bright yellow letters "Applied electricity R 1259." SN 4020163 stolen from Ellis Horman VK2KLF, 38 Leura Rd, Auburn 2144 on 10/8/89.

ar

Repeaters - addition, deletions, alterations. Have you advised the WIA Executive Office of changes to the repeater list?

VNG UPDATE

MARION LEIBA
HONORARY SECRETARY, VNG USERS CONSORTIUM
26 FIMISTER CIRCUIT KAMBAH ACT 2902

My article, "The resuscitation of VNG" (Amateur Radio, vol 57, no 3, March 1989), covered VNG's adventures and misadventures to near the end of January 1989. At that time, VNG was transmitting on 5 MHz on a three-month temporary licence which had commenced on 8 December 1988. Because of interference complaints when a vertical aerial was used, it was being radiated from a Wells quadrant aerial with 5 kW power and a VSWR of 2.5:1.

Equipment

Considerable progress has been made since that time. On 31 January, the aerial was stubbed and VNG is now going out at 10 kW power on 5 MHz with a VSWR of 1.4:1. All four transmitters have been operational, but the modulation transformer in the standby blew recently and is being repaired.

When DOTC gave permission for VNG to undertake experimental transmissions on 10 and 15 MHz near the end of June (see below), radiation took place initially from stubbed Wells quadrant aerials. This has proved satisfactory for 10 MHz (VSWR 1.4:1), but was a disaster for 15 MHz. The transmission lines burnt through at the stub! The 15 MHz transmission is now taking place from a stubbed quadrant aerial with a single strand of wire on each arm.

The two private lines to Telecom Research Laboratories have been installed, so the BCD time code came back on VNG on 29 March 1989, and the precision quartz oscillators are once more phase-locked by the two-tone signal generated by Telecom's caesium beam master standard. The BCD time code gives day number of year, hour and next minute. Please contact me if you would like to know how to decipher it.

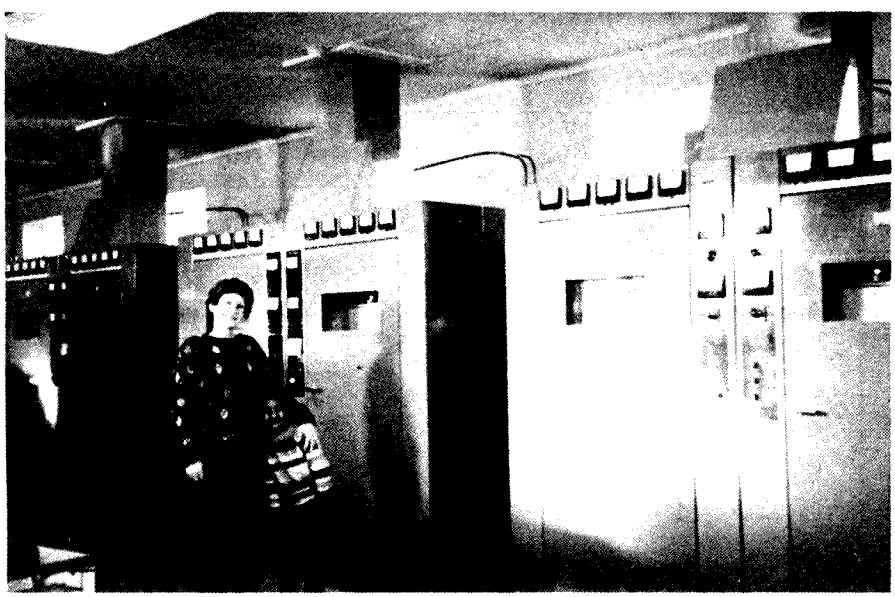
Licensing

With the exception of brief shutdown periods, VNG has been transmitting continuously on 5 MHz on a series of three-month licences. DOTC has now granted a one-year licence for continuous transmissions on 5 MHz, valid until 6 September 1990, provided that there are no serious international complaints.

DOTC has also granted an experimental licence for transmissions on 10 and 15 MHz until 30 November 1989 at times to be agreed by DOTC depending on international reaction. At present the transmissions on these two frequencies are taking place between 2200 and 0700 UTC each day.

We are still awaiting the necessary international approvals so that permanent licences can be granted. DOTC has advised that Papua New Guinea has given its approval, but there has been no other official reaction.

However, because of complaints to the Consortium of co-channel interference in Antarctica and New Zealand, the four Canberra-based members met with the Minister for Communications, Ros Kelly, and officers of DOTC on 30 August to request frequencies other than 5, 10 and 15 MHz. Our preferred option was 4.5, 7.5 and 16 MHz. We were informed that out-of-band frequencies would not be considered, because of the crowding of the radio frequency spectrum, so 4.5 and 7.5 are out. However, DOTC has agreed to investigate the possibility of 16 MHz instead of 15 MHz. Whether we get it will depend on the number of licensees who would need to be reallocated.



Marion Leiba with her son Kenrick (aged 7) in front of the 15, 10 and 5MHz VNG transmitters at Llandilo.

Overseas Reception Reports

The 15 MHz (and more rarely the 10 MHz) transmissions have been booming in to Europe, and we have been flooded with reception reports, particularly from West Germany, Italy and England. VNG has also been reported from Austria, Belgium, Spain, Scotland, Wales, Holland, Greece, Hungary, East Germany, Czechoslovakia, USA, Canada, India, Indonesia and New Zealand.

Since transmissions commenced on 10 and 15 MHz, the daytime usage of VNG has increased considerably. It is now being used for time-keeping at over 40 seismographs (earthquake recorders) throughout Australia. Other users include automatic and semi-automatic FM radio stations, surveyors, electric power authorities, SWLs, radio amateurs, professional astronomers and around 80 amateur astronomers.

Funding

In June this year, AUSLIG (Australian Surveying and Land Information Group of the Department of Administrative Services) agreed to fund VNG for at least five years provided that it achieves sufficient cost recovery from users by purchase of its bulletins (contact Orroral Observatory, AUSLIG / DAS, PO Box 2, Belconnen, ACT 2616 for more

Steve Lester measuring the VSWR on the 10 MHz feeder prior to stubbing the aerial on 26 June 1989. Ian Pogson VK2AZN looks on.

information). Alternatively, you can help keep VNG on the air by contributing to the VNG Users Consortium. We pay some of VNG's incidental expenses (such as our GPO Box 1090, Canberra, ACT 2601, mentioned by Graham Conolly VK2BL on his current VNG station identification announcement, which was recorded free of charge in the Sydney studios of the ABC). The balance of Consortium funds will be remitted to AUSLIG near the end of each financial year as a partial reimbursement of VNG's running expenses (an estimated $40 000 per annum).

Many people have worked very hard (some of us unpaid) to achieve the current progress with VNG. We would appreciate your making a yearly pledge of even a few dollars to help justify AUSLIG's support. It also demonstrates to the Government, in concrete terms, that we really do think that this national facility is important. Please contact me if you would like to contribute. Non-negotiable cheques or money orders should be made payable to the VNG Users Consortium. **ar**

Have you advised DoTC of your new address?

A SHORT HISTORY OF COMMUNICATIONS

Ted Roberts VK4QI
38 Bernard Street Rockhampton North 4701

Final instalment, continued from June issue.

If an oil terminal is in imminent danger of exploding with disastrous results to a community, it is obviously more important to have the area cleared with the minimum delay than to insist that security be observed.

The security of the message is the third requirement for a good communication system. Some messages of their very nature require immediate and urgent action, and the action desired is more important than the security of the message. If an oil terminal is in imminent danger of exploding with disastrous results to a community, it is obviously more important to have the area cleared with the minimum delay than to insist that security be observed.

Anyway, in these days of scanners, all such services are monitored by a large number of people including the news media, so security is very short-lived in such circumstances. On the other hand, services which regularly handle such matters as military and diplomatic traffic, not forgetting those dealing with decisions affecting the prices of commodities and stocks and shares must be as secure as possible.

If the security lasts until after the event it has at least achieved its purpose, but it would be more secure if there was no access to these messages at all. This is the ultimate in security and it can be seen that no message can be classified as truly secret if any eyes, other than the originator and the addressee, have access to it. This is obviously impossible if the message must pass through a communication channel between these two, so some form of complicated cipher and reciphering method must be used. Unless the originator and the addressee attend to the enciphering and deciphering themselves, we are forced to employ another two people to encipher and decipher the message. So our minimum number of people cognisant of the secret message has grown to four. If the message must be repeated to several other people, then the number of cipher clerks, ratings, or officers must increase similarly. The security in this case is diminished, but it all hinges on the honesty and security consciousness of the cipher personnel. Should the message be filed in a filing system by filing clerks, then the security is further downgraded. The filing of a truly secret message is to be deplored, as it is then available to be read by others by accident or intent. The meaning of secret would preclude knowledge of its very existence. Lesser degrees of security are the norm however, and in the case of SES or WICEN-type operations, would normally mean the operators passing on requests for information to the officer directing an operation or his deputies, unless authority is otherwise delegated. It is a good thing to have this point clear at the outset of any operation undertaken by these organisations so everyone knows where they stand, and no partial truths about the operation are passed on to the media or other persons making inquiries.

Having considered the need for speed, accuracy and security as essential items in the moulding of a sound communications system, we can now discuss the way to implement these needs in the development of a training program for intending communicators.

Any member of the organisation will fit into the system anywhere and be able to pass messages to and from all points of the system without unnecessary delay and with perfect accuracy.

Speed can only be achieved by considerable practice after laying down a thorough and universal training program. It is of no use one person laying down one system of procedures and another down-the-line another system and so on ad infinitum. Each system will work successfully but they will not be universal and there can be no common interface from unit to unit. Therefore, we are back to square one with a little gained and a lot lost in the need to retrain everyone in the same procedural system. This will ensure that any member of the organisation will fit into the system anywhere and be able to pass messages to and from

all points of the system without unnecessary delay and with perfect accuracy. Obviously this will not occur overnight and can only be the result of long and patient training over quite some time. It is at this point that these organisations must undertake their own training programs and it is to be hoped that this article points out the necessity for that training and the reasons to develop a high degree of self discipline amongst the trainees in order to ensure a well-run communication system by these organisations.

One point has not been raised as yet about our messages and that is the allocation of priorities for different grades of messages. Most traffic passed will be of a routine nature and it is of no great matter if they are delayed for a small time. There is no need for delay if the channel is open and no other more urgent traffic is waiting for transmission and the normal principle is to transmit the messages in the order of their being lodged for transmission.

Some messages, by the nature of the action required by the addressee, will need to be passed on ahead of the routine traffic. These messages will require handling with a degree of priority or precedence as can be easily understood. In the WICEN and SES services, these degrees of precedence are of four orders. They are, in increasing degrees of importance:

Routine
Priority
Immediate
Flash

The use of a higher degree of priority than justified is unnecessary and will only cause delay in the transmission of those messages truly meriting their degree of priority. The use of the precedence Flash will not normally be used on WICEN nets but may well be used on SES nets. Where a message is addressed to both action and information only addressees the precedence is usually downgraded to routine for the information addressee.

It is a fact of life that the transmission of messages over the telephone is the weakest link in the chain. On the other hand, transmission by telegraph is done by trained personnel and the accurate copying of messages is inherent with this medium. As this method is not used in SES and rarely used in WICEN, we will not further consider this mode of operation and concentrate on the voice method of message handling.

Speak clearly and break the message up into phrases that make sense in themselves!

Imagine a line of some 12 or more people spaced a couple of metres from each other. If one whispers a short sentence to the last person in the line, who then moves up and whispers this message to the next in line and so on, the message spoken out loud by the person receiving it at the head of the line will usually be significantly different than when it was first passed for transmission.

The main reason for this is inattention to what is being said. If the message is what the listener is expecting there is very little corruption in handling it, but if the content is unusual or unexpected, the error rate rises rapidly. Further difficulties may be the existence of hearing defects (sometimes unknown) and bad speaking habits on the part of the participants.

The first area we can try training budding operators is in the proper way to speak when passing a message. Speak clearly using a natural rhythm and break the message up into phrases that make sense in themselves. Do not speak at high speed but speak slower than normal. Remember that the person at the other end has to write the message down so give them time to do so, otherwise they may do the same to you when they get the opportunity. Apart from that, speed causes parts to be missed and requests for repeats which slows the overall speed considerably. It is a great help to keep the volume and pitch of the voice constant. When using a telephone handset or a radio microphone, speak into them properly and do not let your attention wander and speak into, under, or over the microphone as you move your head around following some other action.

In voice transmissions, it is usual to spell unusual or important words to ensure their accuracy. At first sight this would seem to be very easy but a universal method of spelling is required which will not cause confusion to all concerned. Ordinary spelling runs into the problem of letters which are pronounced alike such as B and D and these cause further confusion when spelling words instead of removing the original problem. For this reason, many attempts were made to create suitable phonetic alphabets but most suffered from some problems.

One of the earliest systems used by the British Army, perhaps before WWI, but certainly during it, was Ack, Beer, Cork, Don, Eddy, Freddy, etc. At this point we can see that Eddy and Freddy are very easily confused so this system defeats its own purpose. However, it was in use until the outbreak of WWII in some areas.

Maybe before this system was introduced, Bell Telephones or Western Union in the USA were using an alphabet which was based on large cities, i.e. Amsterdam, Boston, Chicago, etc. The allies during WWII introduced a joint phonetic alphabet, such as, Able, Baker, Charlie, Dog. Easy, Fox, etc., and this was eventually replaced by the current ICAO phonetic alphabet which is in almost universal use today.

ALPHA BRAVO CHARLIE DELTA ECHO FOXTROT GOLF HOTEL INDIA JULIET KILO LIMA MIKE NOVEMBER OSCAR PAPA QUEBEC ROMEO SIERRA TANGO UNIFORM VICTOR WHISKY XRAY YANKEE ZULU

When an important or unusual word or address in the text of the message is read out, it is normal practice to say:

"Anastasia - I spell, ALPHA, NOVEMBER, ALPHA, SIERRA, TANGO, ALPHA, SIERRA, INDIA, ALPHA. - Anastasia" and then continue reading the rest of the message. Where numbers or addresses occur, it is usual to spell them out also to avoid confusion. In the case of numbers, the procedure is to say, 'FIGURES, WUN, TWO, THUH-REE', and carry on with the rest of the message. In the event an unpronounceable word is contained in the message, it is usual to spell it without first pronouncing it as follows:

"Part number, I spell, DELTA, TANGO, XRAY, SLANT, WUN, NINER, SIX, SLANT, BRAVO, OSCAR" for DTX/196/BO.

A strong sense of self-discipline is necessary on the part of the operators in order to allow a radio net to operate with minimum problems. It is necessary for all stations in a net to have a common time basis so it makes good sense to synchronise time at all stations.

The successful operation of the net depends mainly on a disciplined appreciation of the fact that the Net Control Station is exactly that and should be obeyed implicitly. Unnecessary tuning on the net frequency is to be deplored as bad manners and operating on the part of the offenders and this practice leads to possible blocking of important traffic. Unnecessary and idle chatter is another means of demonstrating poor circuit discipline and cluttering of the channel. Remember that a WICEN or SES net is a communication channel and not a natter channel. There is ample scope for this type of operating on CB or other amateur channels where they are no longer cluttering up the communication channel.

The necessary training in operating

Continued on page 45

HOW'S DX

STEPHEN PALL PO BOX 93 DURAL NSW 2158

Hurricane Hugo

The Caribbean is known not only for the many beautiful islands with exotic prefixes, but also for its hurricanes. The latest, - Hurricane Hugo, - with winds up to 230 km/h during one week rampage over 3500 kilometres, killed 47 people in the Caribbean and southern United States and caused over $US3 billion damage.

The news media was full of stories about the devastation and the difficulties caused by the total breakdown of commercial communications. One could hear practically every day, the reference made to "ham operators", "amateur radio operators" who still had the facilities with battery operated sets, makeshift dipole antennas which replaced the expensive damaged yagi beam antennas, and were able to assist in the emergency with traffic handling. 14325 kHz was occupied continuously 24 hours by the Miami Hurricane Centre, other emergency traffic was using 14275 14283 14303 14315 kHz, and the United Nations traffic net from New York was conducted on 14330 kHz. If you listened on these frequencies, you heard the tragic news instantly. Due to skip conditions, several VK Stations were also assisting by passing back messages across the Pacific from the Caribbean to other parts of the US.

Walvis Bay

It was early June when Ian, ZS1IS appeared on the bands, both CW and SSB. This could be a potential "New Country" in the future, as Namibia is looking forward to its first independent elections and its own government. Lately several amateurs: US, French and ZS had a short visit to ZS1IS, and with additional equipment have improved the QSO rate between ZS1 and the rest of the World. For the September QSOs, where the operators signed with names other than Ian, - the QSL goes to KC1AG.

Bouvet Island

Pat, VK2RZ in the September issue of Amateur Radio, already announced that there will be a DX-Expedition to this remote part of the Southern Arctic Ocean in December. It is planned at Christmas time, and the operators will be Einar LA1EE, Erling LA6VM and Kaare LA2GV. The prefix of the inhabited Island is 3Y, the suffix is not yet known. The DXpedition is backed by the LA-DX Group, and the estimated budget is $200,000. The organisers hope that the world amateur population will make donations to the tune of $100,000. Bouvet is one of the most sought after DX prefixes, and there are not many VKs who worked this island in the past. The first operation was in 1962, the second in the late 70s, and now this one. We strongly suggest to our DX readers to make donations to this cause, however small. The address is: Club Bouvet, Box 88, N-1361, Billingstadsletta Norway. Bank draft should be made out to: Club Bouvet, Den Norske Creditbank, account no 7085 05 07382.

'Afghanistan - YA

It was reported by several DX-ers that YA5DD was on the air in September. It appears to be a Club station with several amateur operators, however officially there is no news about this operation.

Most likely it is a legal operation; they have even given a post office box no for the QSL: PO Box 1118, Kabul, Afghanistan.

Hungarian DXpedition in Mongolia

JT0DX, in Ulan Bator was heard operating on 28516 at 0900 mostly Europeans. QSL goes to HA6KNB.

News From Here and There

John, PA3CXC/ST0 arrived in Sudan and everybody was ready to work him. He was heard only once conducting QSOs with two stations, then there was a big silence. At one stage there was even some doubt, whether the signals heard were "genuine". After a few days the mystery was solved: John arrived and went on air, but operated only for a very short time. He "blew" his finals, stopped operating and returned to Holland.

Roland, F8EN will be in Gabon in November 89, using the callsign TR8CR.

Irma VR6ID is on the bands around 0800 UTC on 1430 on Sundays. Her QSL manager is KB6ISL.

June TL8JL, was operating from the Central African Republic with 56 report on the longpath.

QSL to: K4UTE William R Hicks, 7002 Deauville Road, Jacksonville, FL 32205 USA.

Evan H5AA was operating from Bophuthatswana. This is a so called "independent" nation, one of the homelands in South Africa. It is an official callsign, but it is not recognized as a DX Country. The coordinates are: 26 deg South and 26 deg East.

VR6CL is not located on Pitcairn Island. He is operating as marine mobile, and waiting on a FO call sign.

In the past I have worked several Austrian (OE) stations which were part of the UN Peacekeeping force on Golan Heights using their own callsign with a supplementary suffix of YK. This counts as a YK QSO. However at the end of September, I was fortunate to work Rasheed, YK1AA. QSL direct to Box 35, Syria.

Interesting QSOs and QSL managers

A92BE, Don in Bahrain, QSL direct to Callbook address.

ED5LBD Special prefix celebrating the Anniversary of the EA DX Association. QSL to EA5FKQ.

SV8RX Giorgios on Zakinthos Island (Xante)

CS7YH, Lucia, QSL to CT1YH.

ZS1IS, Pierre in Walvis Bay. QSL to KC1AG.

9M2PL/P/9M8. Ganesh visiting his father. QSL to 9M8PV.

4S7RO, Ron in Colombo, QSL to DJ9ZB.

VQ9MC Dennis on Diego Garcia Islands Group. QSL to K8QMC.

7P8DX El in Lesotho, QSL to callbook address.

7X5ST Saad in Algiers. QSL to PO Box 2, Algiers, Algeria.

HP6AYV Victor in Panama. From the 16th Sept. QSLs to I0WDX.

9X5AA Rod in Rwanda, Africa. QSL to W4FRU.

ZK1WL Warwick on Penrhyn Island, North Cook. QSL to Box 90, Raratonga, Cook Islands.

3B8FV Gerard on Mauritius Island. QSL direct to PO Box 62 Quatre-Bornes, Mauritius.

S79SC Simon, who was born in VK6. QSL to Box 234, Seychelles, Indian Ocean.

BZ4RCC One of the few personal calls in China. Cheng on 14187 kHz. QSL to Box 1827, Nanjing. China.

PJ2ELB Wim, visiting his brother in Curacao. QSL to PA0WGS.

TI2KX QSL to WA4JTK NP4A QSL to W3HNK

ZS3HL QSL to W3HNK TR8RS QSL to Box 5487 Libreville, Gabon, Africa.

S79T QSL to JI3ERV.

Interesting QSLs received:

YJ8RG, 6Y5IC, 5W1GT, ZS3GB, T5MF, HC8JG, V85NR, T32AF, HC8DX, TI2YO, JW6WDA, JW5E, ZL9BQD, T28RW, T26LP, P4OV, V47RF, 9X5KP. **ar**

VHF - UHF

AN EXPANDING WORLD
ERIC JAMIESON VK5LP 9 WEST TERRACE MENINGIE 5264

Twenty Years Down The Line

The publication of these notes in this issue of AR represents the end of 20 years of such reporting from my desk.

In that time there have been many changes, eg: the establishment of an Australia-wide beacon network; the consolidation of SSB and FM as an integral part of our operating procedures; the ever-gradual shift to more operating at frequencies in the UHF and SHF bands; an increase in EME activity; packet radio and satellite operation; three sun-spot solar cycles and, most recently, the return of usage of the 50MHz band. No doubt the availability of good commercial amateur equipment has helped in many ways to achieve some of the more complex activities though considerable home-brewing is still necessary if your sights have been set on the regions above 1296MHz.

These notes have appeared regularly, covering a wide range of interests and subject matter allied to the bands above 50MHz, thanks to the support shown by many readers who have written letters containing information of interest to others.

There are a few correspondents still sending information who have been part of these columns for many years. Others come and go, some will write after a long break, and so it goes on. Your input, no matter how large or small, has always been gratefully received and acknowledged in some way through the columns.

From time to time I write something which is seen by some to be controversial enough for some flak to fly; and, of course, some falls on my desk. Providing it is sensible flak, I do not mind, as it can draw my thinking to a way which then can be of benefit to all. If it becomes too personal, I can choose to ignore it - fortunately such instances have been very rare over the 20 years.

My writing career commenced in 1938 when, at the age of 14 years, I provided SWL information for a column in "The Adelaide Advertiser" and the Melbourne "Listener In". Since then, my shoulders have broadened sufficiently to handle all manner of people and the loads they represent!

However, there have been many enjoyable moments. I have met some very fine people as a result of my amateur radio activities, and particularly through the writing of these columns. The preparation has taken a vast amount of my time and cost me considerable money, due to STD phone calls, fax usage, postage etc. But none of these costs is begrudged, as I see them as my contribution to the furthering of the cause of amateur radio, particularly in the field of VHF and UHF. The fact that I am well known on the air has its rewards, in that other operators can give me a small news item, and certainly they acknowledge that I do exist!

Later I may write a resume of the past 10 years along the lines of my first 10 years, published in 1980. However, for the moment, I will remember these November notes for two important reasons, the first being the end of the 20-year period, and the other being that they are being handwritten from a bed in the Memorial Hospital, Adelaide, where I am recovering from a further operation to my back, in an effort to keep me walking.

Apart from anything else, I am missing the facility of my word processor, which cannot readily be brought to me for use in a hospital ward! However, I will do the best I can from a rather awkward situation - it would have been easy to say it is too difficult, but then, I have you, my readers to consider.

Brunei

Andrew V85DA reports that six metres had been very quiet until 30/7 when he worked YB0ARA and YC0UVO. 5/8: JA8RC and JH0INP on CW. 24/8: 14 JAs on SSB between 1530 and 1630 UTC. 25/8: VK8RH and VK8AH very strong at 1320. 27/8: 0813-0929 64 JAs followed by a further 21 on 28/8. Almost daily contact with JAs. On 7/9 at 1250 worked VK8AH, who said he earlier had worked VS6XWU. 11/9 was a good day with JAs, H44HIR beacon, VK4RTL, VK8RAS, VK4RIK etc. At 1217 VK6RO was heard weakly. Same day between 1320 and 1412 Andrew worked 62 JAs on CW. On 11/9 and 12/9 JAs, VK4, VK8 etc.

Andrew ran a scan on his data base and found he had worked 632 different six-metre stations from Brunei and, of these, 566 were JAs. His total QSO count is 875, with 775 from JA. He has now worked 42 JA prefectures and 111 JA cities, all confirmed. Andrew also advised VK8RH in Darwin was continuing to work JAs on 144MHz.

News From South Africa

From "ZS VHF NEWS" comes advice of several beacons. Most direct their antennas to Europe, but ZS6DN is directed towards VK and operates continuously on 50.050.

From Marion Islands, ZS8MI operates with an IC551D and a four-element beam. J52US closed down on 30/9, but hopes to be operational from Sierra Leone in January 1990. Others to come on are Mal, Z23JO and A22BW, and moves are under way to supply 3DAOAU and 7P8DP with six-metre equipment.

Through June and July the South Africans had relatively quiet conditions, with a brief opening to G and PA on 4/6, and to OH on 12/6. On 22/7-23/7 openings occurred to EI, F, G, GJ, GM and 9H. As August progressed, their contacts to mediterranean stations increased, and good signals from G on 5/8, 13/8, 16/8, 25/8 and to LA on 8/8 and 25/8. Their pattern of operation conditions closely follows those of VK, ie to the north. However, they are constantly reminded that VK does exist, and are asked to look to Australia between 0600 and 0800 UTC.

Well known operator, Peter Carey, ZS6JT has closed his 432/1296 EME station following recent heart surgery. Peter pioneered EME from Africa as ZE5JJ from Zimbabwe, before moving to South Africa several years ago. From the Australian VHF/UHF fraternity we wish Peter a speedy recovery.

50MHz Beacons

Following my September request for input on the subject of beacons on 50MHz, some correspondence has arrived on my desk. So far it seems very obvious that we should move with great caution so as not to jeopardise the DX potential of the band, particularly when related to the narrow segment available.

However, some writers should be aware that my comments were of an exploratory nature only, with no advocation towards widespread installations on 50MHz. As I pointed out, the days are gone when we can have the luxury of beacons in each state and widely separated in frequency.

Further views will be welcome, but please give your suggestions very careful consideration, particularly in regard to the effect of a strong beacon signal radiating in capital city areas having a high density of six-metre operators. Also, what happens in a noisy area when you turn on the noise blanker!

The Six metre Scene

Although out of touch with six metres due to hospitalisation, David VK5KK and Keith VK5AKM report very little activity. On 27/8

VK5ZBK worked JE1CCO. On 3/9 VK5NY and VK5ZMK worked 3 x JA8s and a JR7 around 0300. Following some auroral activity, VK3 and VK5 stations had an opening to W on 20/9. On 24/9 VK84H in Darwin worked ZD8MD around 2330 - the station being around for about an hour - a very good contact. At the same time it was reported YB0 was hearing the FY7 beacon. Finally, on 1/10, reports were received that W stations were hearing TV signals from Australia and New Zealand.

It seems inevitable the conditions should improve during October, and I should be home to share in these contacts.

Graham VK6RO advised of some activity during August with ZL TV on 16/8 at 2356. On 20/8 he worked VK5RO at 0057, and observed TV on 48260 from 0424. On 22/8 0813 to 0830 he worked 4 x JAs, and had daily openings to JA for the next week, mostly around 0430. On 29/8 he heard HL0PV at 0630, followed by BZ1FB at 0705 and BY1PK at 0708, both on CW at 559 signals.

These two stations from China represented a new country for Graham. Congratulations!

Closure

Of necessity these notes are somewhat disjointed this time - hopefully by next month the VK5LP call sign will be on the air again.

Closing with two thoughts for the month: "Cats seem to go on the principle that it never does any harm to ask for what you want", and "It's daunting to see a youngster start his first job at a salary you once dreamed of as the culmination of your career!"

73. From the Voice by the Lake, but temporarily from near the River Torrens. **ar**

A SHORT HISTORY OF COMMUNICATIONS

Continued from page 42

procedures and exercises can be left in the hands of these organisations - after all, they have been doing just this successfully for a long time. If we approach either of these services with the fore-knowledge that good operators are made rather than born and are prepared to put in the necessary work and large amount of practice needed to become fully proficient, we can eventually reach the stage of being good operators in a well run net in a service to be proud of

ar

CONTESTS

FRANK BEECH VK7BC FEDERAL CONTESTS MANAGER
37 NOBELIUS DRIVE LEGANA 7277

Contests Calendar, RNARS Activity, Ross Hull, WIA VHF/UHF Rules.

November:

11th	Australian Ladies Amateur Radio Assn contest, rules last month.
11th-12th	Czechoslovakian DX contest, rules last month's "AR"
15th	RNARS activity contest SSB section, rules this issue.
16th	RNARS activity contest CW section, rules this issue.

December:

23rd - 6th	Ross Hull Memorial VHF/UHF contest. Rules this issue AR.

January 1990:

1st - 6th	WIA Ross Hull contest continues.
27th-28th.	WIA Second trial VHF/UHF Field Day Contest. Rules this issue.

Contest news is a little thin on the ground this time of year, and very little seems to come this way from the overseas societies. However, the contest manager has plenty to do, and the Remembrance Day logs will be receiving some attention next week. I have already opened about 300 envelopes, some of these contain a few log entries bulk posted, so it looks as though the numbers will be about the same as last year.

The Ross Hull memorial contest has had the scoring changed slightly to induce the UHF boys to enter into the spirit of things more, and hopefully to send a log sheet to me, with the scoring and multipliers using the Maidenhead locator system. The contest is really open to all, and no high power 'you beaut' station will be guaranteed to be a winner. The plodder who keeps turning the beam and looking around will have just as much chance, so please go to it and give it your best.

The RNARS activity contest will be of interest to many who are on the lookout for some of the many nautical type awards that are issued by the various marine clubs around the world. To have these stations very active over the contest period will please quite a few, including me.

Whilst you are all planning what to do with yourselves after the Christmas break, and after the activity of the Ross Hull contest is still giving you ideas of what you could have worked if you had gone up to so-and-so to operate from, why not plan ahead and find a spot to go for the Australia Day weekend that will enable you to work a large number of stations like yourself, all anxious to work another locator square and climb a little higher up the ladder towards the worked all VK locator squares award, if and when it gets off the ground.

Please give this contest a go, many who find the long period of the Ross Hull contest too demanding, may find the 12 or 24 hour period of this contest more to your liking. I must once again apologise for an error in the results of the John Moyle field day contest. I listed VK2XEX as the winner of section "F" when, in fact, the winner was VK3XEX.

Rules for RNARS Activity Contest 1989

Dates: Saturday 15 November 1989 SSB.
Sunday 16 November 1989 CW.

Times: 0600 to 1800 GMT both days.

Bands: 3.5,7,14,21,28 MHz
SSB 3740, 7050, 14335, 21360, 28933 plus or minus 10 kHz.
CW 3520, 7020, 14052, 21052, 28052 plus or minus 10 kHz.

The contest is open to all amateur radio stations, but is mainly a naval club activity. It is open to all SWL's.

Stations Call 'CQ Naval' and give RST plus their RNARS/INORC/MF/MARAC number. Non-naval club members give RST plus number starting at 001.

Separate logs and numbers to be submitted for SSB and CW sections, plus separate sheet for each band.

Scoring: Contact with naval club stations = 10 points,
Contact with non-naval club stations = 1 point.
A bonus of 10 points may be claimed for each first naval DXCC call area worked. These will be added at the end to make a multiplier.
For the benefit of this activity, VE,VK,W,ZL & ZS call areas worked will count as separate countries.

Certificates will be awarded as follows:

1. Top RNARS in each country CW & SSB.
2. Top RNARS QRP station (10 watts or

under) CW & SSB.
3. Top RNARS SWL in each country.
4. Top NON RNARS participant.
5. Top NON RNARS SWL.

Logs: To be considered, logs are to be received by 31st December 1989.

CW Logs to Ray James GM4CXM, 4 Pentland Place, Bearsen, Glasgow. Strathclyde GU61 4JU.

SSB Logs to Butch Pearson G0CBY, 107 Southeastern Road Ramsgate Kent CT11 9QD. UK.

Rules For The 1989 Ross Hull Memorial Contest

Objects:

Licensed amateurs resident in Australia will endeavour to contact as many other licensed amateurs as possible using frequencies above 30MHz.

Frequency Bands:

All authorised amateur bands above 30MHz.

Contest Period:

Between 0001 UTC December 23rd 1989 and 2359 UTC January 6th 1990.

Modes:

PHONE: SSB, FM, CW

No terrestrial repeaters are to be used for scoring.

No cross band contacts unless via an orbiting satellite.

Satellite contacts are permitted if the Uplink is in a contest band.

Contacts within one's own Maidenhead locator square will not count for scoring.

Contest Exchange:

Report, serial number, and your Maidenhead locator square cypher.

Score:

On 6m	2 points per contact.
On 2m	2 points per contact.
On 70cm	5 points per contact.
On 50cm	10 points per contact.
On 23cm	15 points per contact.
On 13cm	25 points per contact.
On 9cm	50 points per contact.
On 3cm	50 points per contact.

Total Score:

The total score will equal the number of points claimed. Plus 50 times the number of DIFFERENT locator squares worked, irrespective of bands.

Repeat Contacts:

Stations may be worked once per band per UTC day.

Operator:

Single operator only.

Log Sheets:

The logs sheets must show:

Date and time UTC. Band used. Mode used. Station worked. Report sent, serial number sent, locator square cypher, report received, serial number received, locator square cypher received. Points claimed.

Cover Sheet:

Operator's Name, Address, Callsign used. Equipment used. Location. Maidenhead number.

Total number of points claimed. The number of different locator squares worked.

Location:

To add some interest during the contest period, an operator may operate from any other location for a period of up to 48 hours, provided details of the alternative location are entered in the log and cover sheet.

Awards:

Certificates will be awarded to the highest scoring station in each Maidenhead locator FIELD. The locator Fields will also be used to determine the winners outside Australia.

A perpetual trophy is awarded annually for competition between members of the Wireless Institute of Australia. The winners name is engraved on the trophy, and the winner also receives a suitable certificate.

The entrant with the highest overall score for the contest will be the winner and his/her division will hold the trophy for one year.

(Please note; Re the perpetual trophy being awarded to WIA members only. THIS DOES NOT MEAN THAT THE CONTEST IS FOR WIA MEMBERS ONLY). Any licensed amateur may enter this contest.

Participation Certificates:

Please indicate on the entry cover sheet and enclose a SASE (at least 180x150) if a participation certificate is required.

Post Your Entry To:

Federal contest manager, C F Beech VK7BC, 37 Nobelius Drive, Legana, Tasmania 7277.

Entries must be postmarked no later than 1st February 1990.

Rules For A National VHF/UHF Field Day Contest

Objects:

To promote the portable operation of amateur stations using the VHF and UHF bands.

Contest Period:

27th January 1990 - 28th January 1990. Times 0200 UTC Saturday until 0159 UTC Sunday.

Mode:

Any mode within the terms of your licence.

Sections:

Section "A" Any continuous 12 hour period.
Section "B" Full 24 hours.

Categories:

(A) Single operator, single band. One person performs all station functions.
(B) Single operator, all band. One person performs all station functions.
(C) Multi operator; those stations using more than one person for operators, loggers, spotters etc.
(D) Home station, all band, one person performs all station functions.

Contest Exchange:

Signal report RS/RST. Serial number commencing with 001, Maidenhead locator square number to fourth figure, ie QE38.

Scoring: Two points for 50/144 MHz contacts.

Four points per contact on 432MHz.

Six points per contact above 432MHz.

Contacts between portable field day stations count double points.

Home stations half score. ie One point on 50/144, two on 432 etc.

Multipliers:

The total number of different grid squares on each band.

Final Score:

Multiply the total number of contact points by the total number of multipliers.

Repeaters:

The use of repeaters is not allowed for scoring purposes.

Repeat Contacts:

To generate activity, a station may be worked every four hours.

Location:

A station must remain at one location during the contest period except as previously specified.

Power Supplies:

Any type of power supply may be used, including "mains power".

Awards:

To the highest scorer in each section, for each Maidenhead locator field.

To the highest scoring club station in each locator field.

Front Sheet:

This must contain, name of operator/s, callsign, location, section entered, equipment used. A signed statement that the rules and spirit of the contest have been observed.

If the operator requires a participation certificate, please include a large SASE for same.

Entries To:

F Beech VK7BC, Federal Contest Manager, 37 Nobelius Drive, Legana, Tasmania 7277. Entries must be postmarked no later than February 28th 1990. **ar**

AWARDS

KEN GOTT VK3AJU FEDERAL AWARDS MANAGER
38A LANSDOWNE ROAD ST KILDA VIC 3183

Who's for a VK Grid Square Award? Ideas Welcomed

While I will not reach for that cliche, "a ground swell of opinion", I definitely sense a feeling among WIA members that the time has come to introduce a new award based on Maidenhead Locator numbers, alias the grid square system.

In fact, I intimated to the 53rd Annual WIA Convention in Melbourne last April that as soon as the WIA Antarctic Award was launched (see AR, June 1989) that I would turn my attention to a grid square award (let's call it GSA). The idea was to have the GSA in place by the end of 1989.

I have submitted draft rules for the WIA GSA to the Federal Executive meeting on October 20-21, but without expecting the matter to be finalised then, or even wishing it to be. Apart from uncertainties posed by the airlines dispute, the executive needs time to ponder the proposals, and I would like as many WIA members as possible to be involved in defining the concept of the award and in framing the eventual rules.

If you are interested in having a say, please send me a SASE (10 x 23 cm or larger) and I will mail you a copy of the draft rules submitted to the WIA Federal Executive. I'm still hoping to have the rules approved by Federal Executive by end-1989, but even if the matter passes into 1990, the start-up date for the GSA could still be Dec 31, 1989. In the meantime you might like to share some of my thoughts, problems, dilemmas, and uncertainties which arose in drafting the rules.

HF, VHF, UHF, and so on

Most of those who have written or spoken to me about the need for a GSA have been VHF/UHF operators. Propagation characteristics on these bands make the Maidenhead system attractive to these operators, apart from the fact that the revamped Ross Hull Memorial Contest makes use of the Maidenhead numbers. For these and other reasons, it is apparent that VHF/UHF operators are generally more familiar with the grid square system than are the rest of us.

I am proposing, however, that the GSA be open to all amateurs on all bands, and on as uniform a basis as possible. The basic idea will be to contact stations in 100 different grid squares, with this rule applying both to local and DX operators and, to the extent practicable, to all bands (but see below).

Ending the distinction between local and DX stations is novel. For example, the rules of the WIA's most popular award, the WAVKCA, calls for VKs to make 88 QSOs while DX amateurs need only 22.

However, just QSOs with 100 different grid squares? Or should there be an obligation to contact at least one/two/three or whatever stations in each VK call area? Your ideas would be welcome. And if you favour call area quotas, should these be the same for local and DX stations?

I am suggesting that the 100 QSO rule apply to all bands (and modes) from 1.8 MHz to 144 MHz.

What About SHF and EHF?

But what after that? What figure should be set for 70 cm? And for 1.2 GHz? And for the SHF (super) and EHF (extra) bands? In these realms, I'll be relying heavily on advice from others.

In fact, I'm open to persuasion on almost everything except the verification principle to be used.

WIA awards generally require proof of QSOs in the form of QSL cards. These need not be submitted, but in their absence there must be a list of cards certified by two other amateurs to the effect that they have personally inspected the cards on the list and that the list is accurate in all details.

However, for "one-off" WIA awards, such as those for our 75th and 80th anniversaries (see September AR), cards are not necessary, merely a certification by two other amateurs that the QSOs are in the applicant's log book.

Somebody suggested to me that the GSA should dispense even with this simple requirement, and that it be issued simply on an applicant's claim that he had worked stations in a given number of grid squares.

This would certainly simplify my work as Federal Awards Manager. I would simply put a pile of signed certificates near the door of the Federal WIA office and anybody who considered himself/herself qualified could walk in and take one home and fill in his/her name and callsign. (For non-WIA members, there would also be a collection box into which they could put their $5 fee.)

However, I hardly see the Federal Executive agreeing to lapse the integrity of a WIA award to that extent. I am suggesting that we use the certified log extract principle (ie cards not needed).

Portable Operations

I have also written into the draft rules a provision that an amateur can work portable from a "rare" grid square and count a QSO from it, provided that the contact is with a station in his home QTH.

However it has been suggested that operators are unlikely to set up portable stations merely to make one QSO, and that contacts with stations in grid squares, other than the home one, should count too.

This opens a can of worms - apart from a situation in which a station makes 100 QSOs from a portable QTH and so qualifies for the GSA under the portable callsign.

However, I don't think it appropriate to allow a mix of QSOs from home and portable QTHs to count (apart from the one exception mentioned above).

Once again, I'm open to persuasion.

If at all possible, I want to avoid rules which involve measuring distances between grid squares. A grid square is a grid square, irrespective of whether two squares abut or, are thousands of km apart.

Finally, all comments are welcome, irrespective of whether you want to look at the draft rules.

Corrections

Typographical errors again made nonsense of some items in last month's Awards Column.

The Major Mitchell, National Parks, Natural History, Power Valley (10/10) and Wombat Awards listed as "Missing, Presumed Killed" are (or were) issued by VK3 groups, not VK4.

The cost of the USSR Award, Trophy Ukraine, is not $3.00 or 60 IRCs as reported, but $30.00 or 60 IRCs. Repeat, $30.00 or 60 IRCs.

Finally, Bill Vogel, who looks after the 10/10 Festival City and VIPM Award is VK5NVW, repeat VK5NVW, not a VK4. Apologies for the error, Bill.

Awards Issued Recently (WAVKCA)

1667	Zdenik Mensik	OK1ZL
1668	Ryochi Kirano	JA6EFT

Continued on page 49

KENWOOD

KNOCKOUT DUAL-BAND DUO!

TM-731A

The Kenwood TM-731A redefines the original Kenwood term "dual bander". The wide range of innovative features include a dual watch function, selectable full duplex operation, automatic band change, 30 memory channels, large dual LCD displays, programmable scanning, and 50 watts of output on 144 MHz and 35 watts on 430 MHz.

The optional RC-10 multi-function handset remote controller is also available, making the TM-731A even more enjoyable to operate.

Features:

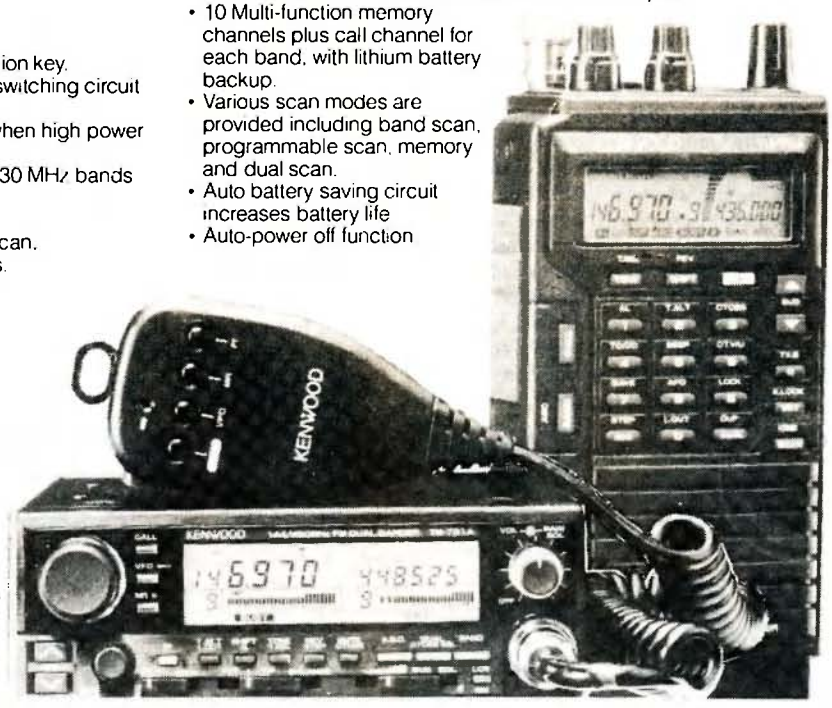
- Ultra Compact design with easy to install mount.
- Multi function microphone with programmable function key.
- High sensitivity receiver and an improved antenna switching circuit for wide dynamic range.
- Hi/Lo power switch for power reduction to 5 watts when high power not needed.
- Dual watch function to receive both 144 MHz and 430 MHz bands at the same time.
- 30 Memory channels with Lithium battery backup.
- Various scan modes are provided including band scan, programmable band scan, memory and dual scans.
- Frequency lock function prevents accidental loss of selected frequency.
- Dual frequency selector may operate independently of each other for main and sub-bands.
- Sliding balance controls audio output between main and sub-bands.
- Easily selectable dual and single band operations.
- Large amber multi-function LCD display for best visibility in sunlight or after dark.
- Built-in selectable CTCSS Tone Encoder

TH-75A

The TH-75A combines the 2m and 70cm bands together into one compact, feature-filled hand-held package. Large dual LCD displays, dual watch, selectable full duplex operation, tone alert and many additional features make this dual band HT different from the rest.

Features:

- Dual watch function allows you to receive both VHF and UHF bands at the same time.
- Built in 2 VFOs for main and sub-bands.
- Large multi-function LCD display provides excelient visibility.
- Tone Alert System for both bands causing a beeper tone to signal the presence of an incoming signal.
- Automatic band change function changes between main and sub-bands when a signal is present.
- Selectable dual and single band operations.
- Five watts RF output is available when operated with 13.8 VDC
- Balance control for main and sub-band audio output.
- 10 Multi-function memory channels plus call channel for each band, with lithium battery backup.
- Various scan modes are provided including band scan, programmable scan, memory and dual scan.
- Auto battery saving circuit increases battery life
- Auto-power off function



KENWOOD ELECTRONICS AUSTRALIA PTY. LTD.
(INCORPORATED IN N.S.W.)
4E Woodcock Place, Lane Cove, N.S.W. 2066, Australia
Ph. (02) 428 4222, (02) 428 1455. Fax (02) 427 6869
Call now for further information and the name of your nearest authorised Kenwood dealer.

Please phone, mail or fax for information
Name _____
Address _____
_____ Postcode _____
Publication _____ Issue _____
Model _____

POUNDING BRASS

GILBERT GRIFFITH VK3CQ
7 CHURCH STREET BRIGHT 3741

Congratulations Maggie VK3CFI (QRP138) on your win in the John Moyle Memorial National Field Day 1989 contest. (Maggie phoned me with this info). Also congratulations on your new Australian citizenship on 21 August (info courtesy Lo-Key). Your participation is an asset for the WIA, the CW Operators QRP Club, Morse Code Operation, and now Australia, too. Welcome! Your example will put me back into the field day next year in section B for sure, and I hope a few other Morsiacs will follow, and make their own effort to go portable for this important contest. For your efforts, may the rewards be great.

Some of you may have seen the news about a severe storm which hit the north east on 11 September; winds of up to 160kph were reported, and the Albury power station suffered an explosive failure. My own 55-foot tower folded at the 25-foot level, after an unidentified missile cut one of the guy ropes (the one on the windward side, unfortunately). I spent the following week trying to extract 20 and two-metre yagis from assorted trees without completely wrecking them. It really is amazing how much they will take. Wire dipoles are less robust and all need replacing. Needless to say, retrieving the mess from 30 feet up in the trees was the most dangerous part of the whole exercise, and I was relieved to climb down for the final time. I would like to hear from any other amateurs in the area who have had storm damage, with the intention of designing a storm-proof system.

"No-code entry in USA?

A *Morseum Magnificat* reader in South Africa runs an amateur Morse class. After reading the debate about the future of Morse in recent British and American magazines, and seeing the results of readership surveys, he tells me his students are convinced the test will be abolished shortly in both countries. They think that other countries will follow suit, and they are wondering whether it's worthwhile continuing with their classes.

There certainly have been a lot of words generated on the subject, but at the present time it's all wishful thinking based on a misunderstanding! The heated debate in the USA relates to various proposals that there should be a 'no-code entry' into amateur radio for operation on certain frequencies *above 30MHz*, something we have had in Britain for years! In CQ magazine, June 1989, Ed Judge W5TOO reports on the conclusions of the ARRL committee specially set up to study the issues and make recommendations to the ARRL board of directors.

The committee recommended that the present USA Technician class be renamed 'Technician Plus' and that a new code-free 'Technician' licence be created with all operating privileges above 30MHz, including 50MHz but excepting 2m, where only digital operation between 144.9 and 145.1MHz would be allowed. Upgrading to the new Technician Plus grade would be effected by passing a Morse test of 5wpm, giving access to the 80, 40, 15 and 10m bands, exactly as with present Technician grade.

Using virtually the same argument as the RSGB, the ARRL thinks that under future pressure, the greatest strength of amateur radio will be in numbers. W5TOO comments that bright young people, 'computer literate, technically adept and creative' are willing to prove their competence in areas of regulations and technical knowledge, but are unwilling to submit to what they view as a non-relevant, outmoded and unreasonable requirement - the Morse code.

During the Committee proceedings, Dave Sumner K1ZZ, Executive Vice-President of ARRL, advised that the League estimated a growth rate in new licensees - with a no-code licence - of 12%, provided they worked hard at recruiting. But it was agreed there would not be the flood of new people some seemed to fear. ARRL will now decide if it wishes to petition the FCC for an amendment to the amateur regulations to permit code-free entry as recommended by the committee.

By contrast . . .

Undoubtedly national societies everywhere are attempting to do what they think is best for amateur radio, but it is interesting to compare their different approaches.

On the basis of the American argument, the fact that the UK has a code-free licence for frequencies of 50MHz and above should surely mean that we are already successfully recruiting our fair share of 'computer literate, technically adept and creative bright young people'. Yet the RSGB, in its own efforts to bring these same elusive folk into amateur radio, is proposing a new novice licence to include a 5wpm Morse test which, in the States, is thought to keep them away!

While their concern on behalf of amateur radio is to be applauded, one sometimes wonders if the societies are on the wrong track. I was particularly struck by the comment of an industry spokesman at the Miami Hamfest, reported by W5TOO: "If you stood at the entrance to the World's Fair and handed out blank Extra Class tickets, maybe one hundredth of one percent would ever be used." W5TOO also commented: "We all love amateur radio . . . But the sad fact is, in the eyes of a public accustomed to supersonic jet travel and intercontinental long-distance calls, amateur radio has lost its magic."

It seems more than likely that the major effort of abandoning the Morse test completely would be inside amateur radio, resulting in greater use of the HF bands by existing amateurs, rather than the attraction of more newcomers to the hobby. Whatever the eventual result, however, the Morse test is unlikely to be dropped as a qualification for amateur operation up to 30MHz until it is no longer a requirement under the international radio regulations."

(From Tony Smith G4FAI 'Morse Report', Amateur Radio Sept '89.)

On a final note this month, I had hoped to complete the assembly of a new kit from C M Howes Communications (UK), but rebuilding my antenna system is still in progress. I hope to have a report on the ASL5 audio filters for you next month instead. It is an audio filter for external use with a communications receiver. It gives improved selectivity for all speech modes and CW reception with most popular makes and models of receiver/transceiver. It offers both a narrow band CW filter, and a sharp rolloff on SSB, offering tighter filtering than most crystal filters. ar

---

From page 47

1669	Warren W Edwards	WD6HDF
1770	Yoshio Tada	JS1QHO
1771	Don J Milner	ZS6AQS
1772	Hiroyuki Wakabashi	JH4GNE
1773	Shizuki Anezaki	JHØLME
1774	Hiroshi Higuchi	JA3EQO
1775	Yokichi Suzuki	JF7DZA
1776	Gianni Galli	I4CSP
1777	Akihiko Endo	JR4NUN
1778	William Kling	KI6PG
1779	Charles A Brown	N5CB
1780	Frank E Murphy	KI4FW
1781	Ake Berndtson	OH4OJ
1782	Shoji Okuno	JA3BVJ
1783	Ikusuke Miyazaki	JA6TMU
1784	Henry J Kiernan	KF2O
1785	Fabio Lava	HB9AUS
1786	A J H Hales	G4NEX
1787	Classe Bergman	SM3GSK ar

AMSAT

MAURIE HOOPER VK5EA
11 RICHLAND ROAD NEWTON SA 5074

National Coordinator
Graham Ratcliff VK5AGR

Information Nets

AMSAT Australia
Control: VK5AGR
Amateur check in: 0945 UTC Sunday
Bulletin commences: 1000 UTC
Primary frequency: 3.685 MHz
Secondary frequency: 7.064 MHz

AMSAT SW Pacific
2200 UTC Saturday, 14.282 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT Australia net. This information is also included on some WIA Divisional Broadcasts.

AMSAT Australia Newsletter and Computer Software

The excellent AMSAT Australia Newsletter is published monthly by Graham VK5AGR on behalf of AMSAT Australia and now has about 270 subscribers. Should you also wish to subscribe, send a cheque for $20 payable to AMSAT Australia addressed as follows:

AMSAT Australia, GPO Box 2141, Adelaide 5001.

The Newsletter provides the latest news items on all satellite activities and is a "must" for all those seriously interested in amateur satellites. Graham also provides a Software Service in respect to general satellite programs made available to him from various sources. To make use of this service, send Graham a blank formatted disk and a nominal donation of $10 per item to AMSAT Australia together with sufficient funds to cover return postage. To obtain details of the programs available and other AMSAT Australia services send a SASE to Graham.

MICROSAT/UOSAT D & E Launch Delay

(from AMSAT-NA News Service)

Special AMSAT/MICROSAT Bulletin - September 29, 1989

Official word received today indicates that Ariane-4 V35 launch of the four AMSAT Microsat satellites and the two UoSAT satellites plus the primary Spot-2 satellite will be delayed at least four weeks from the previously announced November 10th date.

The statement received from Paris states: "Pyro initiators in the vehicle equipment bay atop the third stage in the Ariane 4 launchers for the V34, V35 and V36 missions are all exhibiting characteristics that are sufficiently out of specification that a joint decision by Intelsat and Arianespace was taken to scrub the V34 launch scheduled for October 5th and postpone it for a minimum of four weeks. The pyro initiators cause separation of the payloads from the launcher."

Since all three launchers have the same problem, a slip in the schedule for the first will cause a delay for all the other missions. In addition, the V35 launch of Spot-2 has orbital insertion geometry constraints to properly phase the new satellite with Spot-1 which may cause additional delays in launching the MICROSAT/UOSAT payloads.

All the MICROSAT test and ground support equipment had already been shipped to Kourou, and the satellites were due to accompany the AMSAT launch vehicle integration crew who were to have flown down today. Needless to say, all these transportation plans have been cancelled. The time gained as a result of the slip will be used to do additional system level and software testing on the satellites.

UOSAT D & E Ready For Launch

(from AMSAT-NA News Service, 30 September)

UOSAT D & E Status Report on Environmental Tests

UOSAT D and UOSAT E were removed from the thermal vacuum chamber at the UK Royal Aerospace Establishment (RAE) late in the afternoon on Monday, after completing four hot and three cold cycles. The satellites' internal temperatures had been cycled between -30 and +50 degrees C, and all systems were operated over this temperature range.

During the second cold cycle (Saturday night to Sunday morning), all systems were turned off and allowed to stabilize at -20. They were then re-started one by one, confirming that the satellites can be started after a prolonged cold period.

These thermal vacuum tests provided us with our first long period of UOSAT D & E operations, and we were able to exercise all systems during the 5-day tests. The number of alternative data paths and graceful failure modes which have been built into UOSAT D & E make comprehensive check-out impossible in the limited time available before launch, but we have used all of the primary systems and paths.

Both spacecraft performed well throughout the temperature cycling. In particular, the 1802 On-Board Computers, the Z80 "SPARE computers" and the 80C186 PACSAT Communications Experiment (PCE) experienced no difficulties. In a last minute fit of "jitters" we installed one of our own telemetry temperature sensors directly on the 80C186 in the PCE, and were able to confirm that it runs consistently 10 degrees hotter than its surroundings. There was some fear that this processor in its 68-pin "grid-array" package might develop into an undesirable "hot spot", but this did not occur.

The RF systems - including the 10W power amplifier for PACSAT experiments with very small groundstations - operated without difficulties throughout the tests. Both the temperature cycling and the prolonged operational test period did identify some minor problems in each satellite. The navigation magnetometers seem to be temperature sensitive (but they function perfectly at the expected operational temperature), and the overcurrent protection trips on some of the power switches trip unnecessarily at low temperatures. These problems are now being investigated at the University of Surrey prior to shipping the two satellites to Kourou.

Today (Wednesday) UOSAT-D travelled to Portsmouth for spin balancing, while UOSAT E was de-Gaussed and magnetically tested back at RAE. Tomorrow the positions switch, and on Friday the final shake tests will take place. The UoSAT team is operating a 24 hour/day schedule to conduct these tests each day and to exercise and prepare the satellites for the next test each night.

OSCAR-10 Transponder Schedule

Please DO NOT use the Mode-B Transponder on OSCAR-10 until at least the middle of November 1989 as the Beacon and Transponder signals began FMing during the last weeks of August. An estimate of AO-10's attitude on

02Oct89 is LON 49 degrees LAT -22 degrees which equates to only 6% solar panel illumination. By the second or third week in November the solar panel illumination should be greater than 70% and should once again support Transponder operations.

AMSAT MICROSATS Successfully Complete All Environmental Testing

AMSAT-NA News Service 24Sep89

This week all four of the AMSAT MICROSATs (PACSAT, LUSAT, DOVE, and WEBERSAT) completed the necessary environmental tests, that is, thermal vacuum and vibration tests with "flying colours". These successful tests now mean the MICROSATs are now "certified" to fly aboard the Ariane IV launch vehicle.

On Sunday, Sept 17th the MICROSATs completed thermal vacuum testing at the Martin-Marietta Space Simulation Laboratory (SSL) in Denver, CO. Only minor hardware "anomalies" were found at very low temperatures of -25 degrees C; all of these small problems were quickly corrected on Monday by the MICROSAFT Test Team. On Wednesday of this week, each of the MICROSATs were subjected to several vibration tests, which simulate the vibrations they will "feel" when they ride aboard the launch vehicle. The MICROSATs were "shaken" in all three axes to the "acceptance" levels specified by Arianespace in their all important document known as the "Interface Control Document". The "shake" test was again performed at the Martin-Marietta facility in a building known as the Acoustic Vibration Laboratory (AVL). Also completed this week was the pyrotechnic "shock" test.

In this test a "live" ordnance device was ignited; this very complicated and dangerous device is used to cut the "bolt" which holds a MICROSAFT to the separation plate on the Ariane IV rocket.

In this test, the "engineering" test model was used, and not a real MICROSAFT spacecraft. The "engineering" model received a jolt of 46 g's for about 3 milliseconds! Despite this big acceleration, the MICROSAFT structure was able to handle the shock without any problem.

As of Friday, Sept 22nd, all these environmental tests were completed; the following Friday, Sept 29th, the MICROSATs and the AMSAT Launch Team will travel to Kourou, French Guiana, to start the launch campaign on Oct 2nd.

The first AMSAT Launch Team to arrive next week in Kourou will consist of the following individuals: Jan King (W3GEY), Bob McGwier (N4HY), Jeff Zerr, Harold Price (NK6K), Lyle Johnson (WA7GXD) of TAPR, Charlie Bonsall of Weber State University, Jose Machao (LU7JCN) of AMSAT Argentina, and Junior de Castro (PY2BJO) of AMSAT Brazil.

This team of AMSAT volunteers will perform the next major task of integrating the MICROSATs onto the Ariane Small Auxiliary (ASAP) structure.

An Update On Cross-Mode B/ Mode S Operational Frequencies On AO-13

AMSAT-NA New Service 24Sep89

In early August, a simple software change on OSCAR-13 made it possible to turn off the Mode S beacon for normal transponder operation, and one of the surprises which became evident to Mode S users was the appearance of Mode B signals on the Mode S downlink passband. In other words, it is now possible to make "cross-mode" contacts between Mode B and Mode S. Bill McCaa (KORZ) has completed the following 'revised' table concerning this new mode of operation on OSCAR-13:

Mode S Uplink:	435.602 to 435.638 MHz
Mode B Uplink:	435.480 to 435.516 MHz
Mode S Downlink:	2400.711 to 2400.747 MHz
Mode B Downlink:	145.918 to 145.882 MHz

Because of the cross-mode operations are now possible, Mode B users should be aware of the potential for QRM-ing Mode S users. The best suggestion for Mode B users to avoid QRM-ing Mode S stations is for the Mode B stations to use QRP power between 435.480 and 435.516 MHz.

Satellite Activity for July/August 1989

1. Launches.

The following launching announcements have been received:

Int'l Satellite Number		Date	Nation	Period min	Apg km	Prg deg	Inc	
1989-								
059A	COSMOS 2034	Jul 25	USSR	105.0	1026	988	82.9	
060A	COSMOS 2035	Aug 02	USSR	88.8	268	191	82.6	
061A	STS 28	Aug 08	USA	90.5	317	314	56.9	
061B	USA 40	Aug 08	USA					
061C	USA 41	Aug 08	USA					
062A	TV-SAT 2	Aug 08	Germany		1429.9	35785	35544	0.2
062B	HIPPARCOS	Aug 08	Europe	628.9	35632	223	7.0	
063A	RESURS-F4	Aug 15	USSR	89.0	258	192	82.3	
064A	USA 42	Aug 18	USA					
065A	COSMOS 2036	Aug 22	USSR	89.6	273	248	62.8	
066A	PROGRESS M	Aug 23	USSR	88.5	235	191	51.6	

2. Returns

During the period eighty nine objects decayed including the following satellites:

1965-007A	OSO 2	Aug 09
1976-085A	COSMOS 851	Aug 05
1980-037A	COSMOS 1179	Jul 18
1987-064A	COSMOS 1870	Jul 29
1989-054A	COSMOS 2030	Jul 29
1989-055A	RESERS-F 3	Aug 08
1989-057A	COSMOS 2032	Aug 03
1989-060A	COSMOS 2035	Aug 16
1989-061A	STS 28	Aug 13

3. Notes

1989-061A STS 28 was launched by the United States Department of Defense. USA 40 and USA 41 were deployed from STS 28.

1989-062A TV-SAT 2 and 1989-062B HIPPARCOS were launched from the Kourou Space Center, French Guiana by an Ariane 44 LP rocket.

ar

INTRUDER WATCH

GORDON LOVEDAY VK4KAL FEDERAL INTRUDER WATCH
CO-ORDINATOR RUBYVALE 4702

As I conclude the summary for Region 3 Co-ord, I find it a good time to review those logs that arrived at my QTH - far too few this month. I hope it is not a sign for the future. Late arrivals will be dealt with in next month's summary. I must mention the effort put in by Karl VK6XW; he has "filled' the idea put forward by the DOTC and broadcast by Bill Roper VK3ARZ over the WIA Divisional News. Karl has concentrated his observations to a small section of 14MHz and come up with some very interesting and helpful information. His 30-odd loggings of one intruder should please DOTC and demonstrate to it that we do take notice of its suggestions. I would urge ALL observers to concentrate on small sections of the bands in which they work most frequently. I would like to suggest about 100kHz first up. In this way, you would become an expert at picking ANY NEW intruder, and become familiar with the present ones in that section.

The Radio Tele Station on 14.048 has shifted a bit to dodge another F1B intruder. He is now on USB instead of AM, but using N0N when no traffic. From the bearing given by the observer (290 deg) it would suggest the location to be in INDONESIA.

Some state co-ords are not doing their job very well at all. In the 10 years I've been co-ord in VK4, my monthly time has been only about three hours. If those co-ords are not prepared to put that amount of time into a hobby to help their fellow operators, I suggest they resign now. The position is NOT restricted to male operators; I'm sure the YL or XYL operators could do the job just as well.

Remember, your licence is of no use without frequencies.

Many carriers N0N have been reported right across the 20-metre band daily, for periods up to one hour with 14250 kHz being a 24-hour continuous. The "Woodpecker" has been observed on 14 and 21MHz bands.

We have the usual CBers on the WHOLE of 10 metres at considerable strength. VK6RO alone logged 2259 intrusions from our near north.

Karl VK6XW has submitted an informative set of observations of VRQ on 14069.3 to 14073+ segment. He has logged VRQ 30 times during period 22/7 to 27/8, complete with notes. This is what DOTC was talking about. Thanks Karl, much appreciated.

VK6RO

Welcome to Graham VK6RO on his appointment as Co-ord for his state. "We" in the monitoring service are still getting far too many RTTY reports with no frequency shifts recorded. Observers, PLEASE check your modes tape for a clear explanation of how to achieve this . . . if you do not have a tape, send me a blank C60; these are free, and post free.

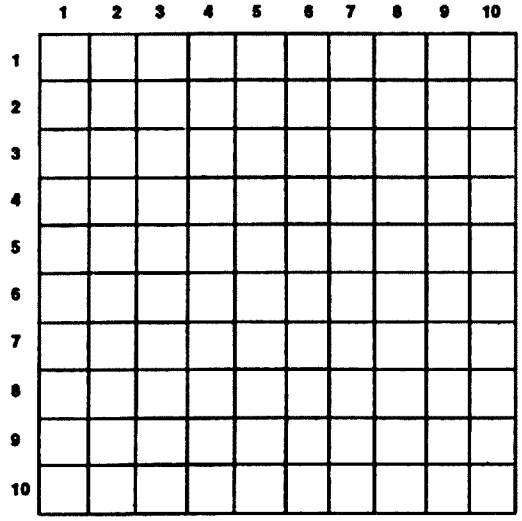
With the increase of propagation towards the year end - a timely reminder ... Guard our bands against intruders; it gets harder each year. Join the Intruder Watch. Here in VK, as in most other countries, we depend on a very small band of dedicated observers who, in fact, sacrifice valuable amateur on-air time by just listening and recording (both on paper and cassette) intruders into our bands . . . Yes, those used by non-reporting operators . . . Bands which have cost us a lot of dedicated voluntary time and money to get for the radio amateur. If you are a recently licensed amateur, remember that the amateur fraternity all over the world contributed money, in small and large sums, to their respective national organisations to enable the IARU to be at the various World Administrative Radio Conferences when they fell due. Have you made a donation for the 1992 conference? Thanks to the groundwork done by our own WIA volunteers, Amateur Radio is enjoying the new frequencies of 10, 18 and 24 MHz. Frequencies causing much bother are 14.038 and 14.044/48. (Check them out and let me have your findings, please). 73, 'till next month.

Morseword No 32

Solution on page 59

Across
1 Melt
2 Auction
3 Powder
4 Obstacle
5 Annoy
6 Colour of a horse
7 Foolish
8 Jot
9 Small children
10 Goes in haste

Down
1 Dog
2 Replete
3 Hurried
4 Blemish
5 Massage
6 Willing
7 Church dwelling
8 Barrels
9 Rips
10 Part of a stair



Round the world QSL delivery by cyclist James Dawton. Photo shows James handling a card from VK5YD to Maurice G4BRE at Crawley, Sussex. G3YAB looks on as GØIMC points to this unusual delivery. For the full story, see 'Pedal Power' AR October 89 p59. Submitted by VHA McBratney VK5YD.

Condensed Intruder summary for Aug/Sept

Freq	Date	UTC	Log X	Mode	ID	Comments
14023	1508+	0710+	23	F1b	UMS	Often heard 8 hours straight
14025	2108	0945		A3J		THAI Fishing Boats/DARWIN HBR
14038.5	1009	1059		F1b		RTTY RYs idling
14046.5	2309	mni	4	F1b		Pos 3rd shift mod to 14047.5
14048	1808	mni	31	USB		Rad tel/Chin accent/24 hours daily
Also changes freq to 14044						
14065	1908	2215+		A3e		B/caster (345 deg 8HA) x mod
14070	2409	0929	2	A1a	VBX	VPO de VBX QSV K
14086	2409	1026	2	A1a	NPO	CPQ de NPO QSV K
14087	2309	0200			F1b	RTTY 2KHz shift
14100	2309	0930	2	A1a	NZB	ZBK de NZB Traffic
14119.5	mni	mni	13	F1b	UVC?	3rd Cyrillic shift 12 hrs on air
14123.5	2308+	mni	20	mni		
14127						Suspect European no ID in 8 hrs
14131.2	2408+	mni	4	F1b/F1CW		F1CW mxd cypher 6 hrs on air
14139.5	2309+	mni	7	F1b/N0N		Not UMS. 200/67 3rd shift 8 hrs
14140.5	238/179	mni	12	mni	UMS	5ltr/5fig. Moscow Nav Radio
Large amt TFC HS Morse abt 50wpm callsign clearly observed						
14168.5	0509+	mni	6	F1b	USWZ	Radio ROSTOV ?? USSR
14199.5	2308	mni	10	F1b		
14200.5	2808	1155	3	wide		
				F1b		Also F1CW 400+ KHz shift 8 hrs
14202.5	1109+	mni	6	F1b/A1a		RTTY Russian ltrs Q code used
14215	0409	1000+	4	A1a	2UH	FF9 de 2UH tfc out
18099.5	mni	mni		A1a	???	5 fig cypher UMS-type sending
21032.5	dly	mni	29	F1b/A1a	UMS	ID in A2 10 hrs daily
21068/9	mni	mni		R7b		18.5 KHz wide
21072	1708	1130		A1a		5ltr groups (315 deg 8HA)
21116	mni	mni		A1a	CQ5	Chinese Dip Service Beijing
21181.4	2809	0642		F1b		RTTY 1.7 KHz shift
28151	0608	0240		A3j		B/cast either Chin or Japan
28279.4	2809	0607/31		A5		TV carrier 50Hz (10deg E, VK4KAL)
28574.5	1509+	1313	5	A3e		B/cast European/USSR ????
28576.1	2309	1104+		A3e		B/cast USSR news M/F voices

Many CB intruders were observed in the 28-30MHz sector, - the final count will be interesting. This listing is of those stations most observed during September, for inclusion in AR.

Logs supplied by: VKs 2PS, 2AAB, 2EYI, 3XB, 4BG, 41S, 4ADY, 4AKX, 4BHJ, 4BTW, 4BXC, 4EKA, 4KAL, 4MWZ, 4VJT, 5GZ, 5TL, 6RO, 6XW, 8HA. **ar**

New Look AR Magazine

This issue of Amateur Radio magazine is special (but then, isn't every issue of this magazine so special that all members keep it on their bookshelves for years, and refer to it again and again?).

Did you notice that this issue of your favorite radio journal looks somewhat different, or hadn't you noticed in the rush to read HAMADS?

Quite apart from the usual monthly magazine, jam-packed with lots of news, technical articles and general reading, this November 1989 issue of **your** magazine is something special.

You may have noticed last month that the index page, and the WIA Directories, looked different. This month it is the front cover masthead which has been changed, as well as the layout of the internal pages. Not dramatic changes, but in keeping with our policy of continuing to seek ways and means of improving your magazine for you.

Many of the presentation changes have come about as a result of a positive response to our requests from Mark Jamieson and his co-operative team at Redfords Media.

This issue is also special in that it marks the completion of 20 years of VHF column notes by Eric Jamieson, VK5LP. Eric's first VHF column for Amateur Radio magazine appeared in the December 1969 issue of our journal. Just think about that for a moment. That's quite an effort, and is an outstanding record for a regular contributing columnist.

And in this "new look" November issue of Amateur Radio, we announce details of a fantastic new competition, available to **WIA members only**, as part of the WIA 80 anniversary celebrations. A chance for members to win a fabulous IC-900A transceiver donated by **ICOM Australia Pty. Ltd.**, one of Amateur Radio magazine's major advertisers. Enjoy the hours of reading in this special November 1989 issue of your magazine (naturally, after you have first eagerly perused HAMADS)

ar

ALARA

JOY COLLIS VK2EBX
PO BOX 22 YEOVAL 2868

VK5 ALARA Ladies luncheon held on 23 July. L to R: (out of picture) Lorraine VK5LM; Vicki VK5FK; Joy VK5YJ; Pauline Koen; Judy VK5BYL; Meg VK5AOV (behind Judy); Denise VK5YL; Grace Taylor; Christine VK5CTY; Jenny VK5ANW; Janet VK5NEI and Maria VK5BMT.

ALARA Contest

The eighth ALARA contest will be held on Saturday 11 November commencing at 0002 UTC and ending at 2359 UTC. We cordially invite all licensed operators and SWLs to join us.

Contacts made with members during the contest do count towards the ALARA award, a point to remember for those interested in obtaining this unique certificate.

Hope we can make this the best contest yet!

Logs: It is disappointing if, after a contest, your log has to be rejected for any reason; so, please check before forwarding to ensure that it is signed, has your full name, address and callsign and is legible. (No carbon copies, please). Single log entry (combined CW and SSB), but novice YLs entering for the Mrs Florence McKenzie Trophy should indicate their CW score separately.

Logs must show date/time UTC, band, mode, callsign worked, report and serial numbers sent and received, name of operator of station worked and points claimed.

They should reach the contest manager by 31st December 1989.

Contest Manager: Mrs Marilyn Syme VK3DMS. PO Box 91, Irymple, Victoria, 3498.

ALARAMEET 1990

The response to the ALARAMEET survey conducted recently has been enthusiastic, with a total of 35 adults indicating they will be attending, and 11 adults and one child hoping to be there.

Although there are still over 10 months before the Dubbo get-together, it is of great assistance to the organisers to have an early indication of numbers in order to plan booking of accommodation etc.

Anyone interested, please contact Maria VK5BMT for further details.

Bits and Pieces

Annie DF2SL informs us that a YL CW Activity Day is held on 15th of each month. Look for contacts on the hour on 14.050 MHz.

The total number of contacts made during ALARA's operation of VI88WIA last year were 1128 CW and 2102 SSB. Bureau QSLs are still being received, and will be dealt with as they come to hand.

VK5 Birthday Luncheon

The VK5 birthday luncheon was held on 23rd July at the Royal Coach Motor Inn, Kent Town. An enjoyable day was had by all who attended.

New Members

Welcome to new members: Janet VK5NEI, Jill ZL2BHJ and SWL Kathy Armstrong, daughter of Christine ZL2BQW.

Kathy, who had her seventh birthday in September, is our youngest member, also a member of WARO, and already quite deft with a soldering iron. We are very happy to have this young lady in ALARA.

All the best until next month, 73/33. **ar**

QSLs

KEN MATCHETT VK3TL HON CURATOR
WIA QSL COLLECTION PO BOX 1 SEVILLE VIC 3139

From Greenland

The history of Greenland began in the year 982 when the Norwegian, Eric the Red sailed from Iceland to found Greenland. It is said that he named it so in order to persuade people to colonise the area. The country was a Danish colony from the year 1261 to 1953 when, in the latter year it became an integral part of Denmark sending representatives to the Danish Parliament.

Before World War 2, American personnel in Greenland used the prefix NX. In *The Radio Amateur's Handbook* of 1936 a footnote under a list of International Prefixes reads "There are, in addition, certain prefixes not officially assigned which are at present used by amateurs of several countries. Some of these are ....NX Greenland, NY Canal Zone .....". This prefix was quickly followed by the OX prefix, both prefixes being used for a short time before the outbreak of war. In the post-war DXCC listings only the OX prefix appears.

The station NX1XL operated out of Greenland in 1933, being the station associated with the University of Michigan's Expedition to Greenland. in 1936, the station NX2Z was the only permanent one in the country. It acted as a land station for the 1935 Danish Polar Expedition.

We see the first listing of OX for Greenland in 1937. The call-sign allocation by the International Telecommunications Convention (supplemented by provisional action of the Berne Bureau) had included the prefix block OUA - OZZ for Denmark and so both the Faroes Islands and Greenland (both being Danish territories) could be given the OY and OX prefixes.

In fact, during the pre-war era some confusion existed over the prefixes used for these two countries. In the March 1936 edition of QST we read "The anomalous situation with regard to Greenland and the Faroes has been cleared up by the assignment by the Danish Government of OX to Greenland and OY to the Faeroes. The latter, by the way, are considered part of Denmark, whereas Greenland is a Danish colony".

The WIA QSL collection contains only the prefixes OX3, OX4 AND OX5. These are probably the only OX prefixes issued to individual licencees. The prefix XP has also been allocated to Greenland. In the late 1960's a MARS station, XP1AA operated out of Thule, and XP1AR out of Sonderstrom. The OX3 prefix is issued to Greenland nationals whereas OX4 and OX5 have been taken up by US personnel in Greenland.

There was a time when only Greenland nationals were listed in the Call Book (probably for security reasons) but both are now listed albeit separately.

The rare OX9 prefix was used for the first time in 1982 to commemorate the millenium of Eric the Red, the founder of Greenland. The call OX9V was allocated to a radio club in the area in which the folk-hero is said to have settled.

Having quite a small population and a dearth of radio amateurs (a little over one hundred), Greenland has always been attractive to DX-hounds. The fact that it is one of only five DXCC countries in the evasive CQ DX Zone 40 also makes it a prize for WAZ certificate hunters.

OX5AT

This QSL dated July 1972 is from Thule, an American Air Base on the north-west side of Greenland following a QSO with the writer (when active from Nauru Republic as C21TL). The QSL together with its drawing of huskies and their sled shows a map of Greenland, a small star indicating the position of Thule. Since most of us are used to looking at world maps based on the Mercator projection, we tend to think of Greenland as quite a large sub-continent. On the Mercator map, areas are exaggerated towards the poles and so the country looks as large as, if not larger, than Australia. In actual fact its area of approximately two and a quarter million square kilometres makes it a little less than the area of Western Australia. Of this, only about an area a little more than half the size of Victoria is free of ice. As will be seen from the map on the QSL card, most of the country lies within the Arctic Circle (represented by the dotted line).

Intermarriage between Danes and Eskimos has resulted in a vigorous mixed race of Greenlanders.

However, the days of the igloo and the kayak have almost gone except in small communities in certain locations on the east coast and in the Thule region where almost pure Eskimo people can still be found. It is interesting to note that although Greenland has been a Danish possession for many hundreds of years, Denmark did not take control of Thule until 1937.

This was because Thule had been in a distinctive position since its discovery by the explorer, Rasmussen who set up an independent type of local government which was respected by the Danish authorities.

By an agreement dated April 1941, the United States Government was given permission to set up military bases in Greenland. Today Thule is the base of an "early warning" radar facility.

KG1AX

The alternative prefix KG1 (used by American personnel) appeared for the first time in ARRL Countries List in January 1956 (other KG prefixes at the time were KG4 Guantanamo Bay and KG6 Marianna Islands). It remained on DXCC country listings until 1965.

The KG1AX QSL dated August 1956 was from an American based at Camp Tuto, which is situated east of Thule at the edge of the Greenland Continental Ice Cap.

It is this gigantic ice cap which covers most of the country rising to heights of an incredible ten thousand feet (approximately 3300 metres).

The ice sheet slopes towards the coast, regularly discharging icebergs which float out into the Atlantic. It was no doubt one of such icebergs which caused the White Star Liner *Titanic* to sink with its disastrous loss of life in April 1912.

Thanks

The Wireless Institute of Australia would like to express its thanks to the following for their contribution of QSL cards towards the Collection :-

(Supplementary List)

Frank VK2QL, Eddie VK8XX, John VK3WZ, Barry VK5BS, Jim VK9NS, Graham VK2FGI (ex VK3AOT), Vic VK5AGX, Lindsay VK5GZ.

Also to the friends and families of the following "silent keys" :-

Max Lindsay VK4HD (courtesy of John VK4PU), Joe Kilgariff VK5JT (courtesy of Lindsay VK5GZ)

DX QSL Contributors' Ladder

(See "AR" March 1989)

Herewith a list of contributors together with special QSLs that have kindly been donated to the WIA Collection (Supplementary List) :-

Jim VK9NS : Prefixes new to the collection :- RO, CLO, CXO, XM3, TE32, 5N6, ZY5, ZF8, YX5, JY7, BY9, CQ2, YT7, YI0, YE0, ZF20, XQ5, XF1, HW2, AG8, CM5, VX6, VC2, VC1, T5, PT9, OY1, HV2. Special Call QSL :- W87PAX, Graham VK2FGI : Prefixes C53 (The Gambia), 8SK4 (Sweden) Special Call : 8A0IT (International Tourism)

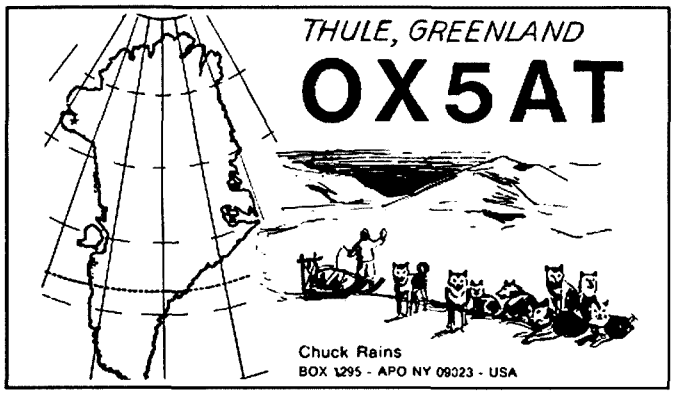
Vic 5AGX : Prefix GB75

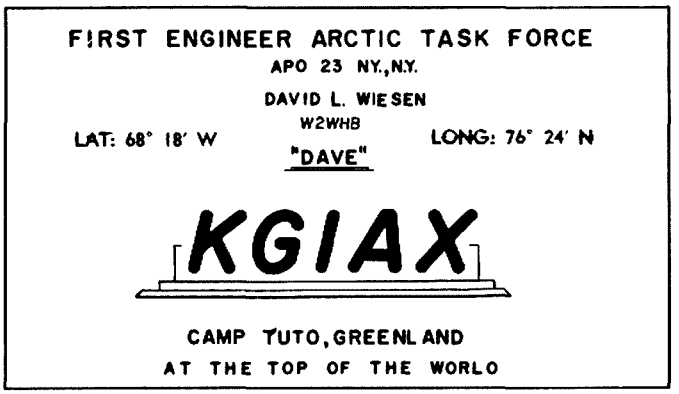
Special Calls : W230G, OK5CSR, 8JIHAM

Current State of the Ladder

Robin	VK6LK	141 points,
Henry	VK3AHQ	91
Chas	VK4UC	58
Jim	VK9NS	57
Eddie	VK8XX	52
Vic	VK5AGX	34
Barry	VK3XV	26
Barry	VK5BS	23
Keith	VK4KS	11
Steve	VK3OT	10

Thanks to all contributors. Keep up the good work. If you would like to play a part in building up the WIA QSL collection and to save something for the future, would you please send a half dozen (more if you can spare them) QSL's which you feel would really help the collection along. All cards are appreciated, but we especially need commemorative QSL's, special event stations QSL's, special event stations QSL's, specially assigned QSL's (eg VK4RAN), pre-war QSL's, unusual prefixes, rare dx and pictorial QSL's of not so common countries. Could you help? Send to PO Box 1, Seville 3139, or phone (059) 643 721 for card pick-up or consignment arrangements for larger quantities of cards. Thanks. ar





EDUCATION NOTES

BRENDA EDMONDS VK3KT FEDERAL EDUCATION OFFICER
12 PINEWOOD DRIVE MT WAVERLEY 3149

Devolvement Update (continued)

As stated in last month's notes, the devolvement process is moving steadily along.

The WIA is one of a number of bodies which have now received copies of the amended version of the AOCP exam bank and the procedures for having papers accredited.

The 'procedures' document contains detailed information on how to seek accreditation, and guidelines for administration of examinations, for preparing papers for the bank, and for producing new questions. Samples of the forms to be used to notify DOTC of intended examinations or of examination results, and to inform candidates of their results, are also included, as are sample papers for all sections of the examinations. At present, the sample Regulations paper is based on the current handbook, as the new brochures are not yet complete. It is expected that the Regulations question bank, based on these brochures, will be available in late November.

This latest package also contained a list of those to whom devolvement packages have been sent. This I see as being a very useful item. As I have previously stated, I would like to see close co-operation between all those who are actively involved in preparing or administering examinations. I fully expect that the first few exams for any group will show up any problems in the system. If we can share comments and experiences, we may all save ourselves considerable time and effort.

The letter from the DOTC Examinations Officer spelt out the status of the banks with respect to their distribution. While it is recognised that the banks will be used as training material in some situations, the letter clearly states "The question banks, the diskettes and the associated documentation are all copyright, and to publish them without permission would be a breach of copyright and would be actionable". The material has been distributed only to those who have expressed an intention to arrange examinations, and it is not intended for them to be any more widely distributed.

A further point made is that at present the banks are only 'first edition' and it is expected that, after a few months use, amendments and additions will extend the range and depth of all banks.

I would strongly urge any groups that run classes and intend to arrange exams for the candidates at the end of the course to give thought now to how the exams are to be organised. For everyone's peace of mind, I recommend the appointment of an 'examinations officer' totally separate from the classes and instructors so that there cannot be any hint of unfair practices.

I have previously asked for information about classes and bodies that offer training. Once again, I would like to update the listings I currently hold so that we can develop a register of all sources of instruction or aids, such as videotapes, CW tapes or on-air nets. Even if you have previously supplied this information, please send it again. Even if your club or group conducts classes only occasionally, or supplies tapes only to group members, please let me know. Similarly, if you have knowledge of a particularly useful textbook or source of learning materials, I would be pleased to hear of it. And, if there are specific items that you feel the Education Officer or the WIA in general should be able to supply help to candidates or instructors, let me know of those, too. You can send these items to me or to the Executive Office in Caulfield at any time. My best wishes to those sitting for the November exams. Remember, READ THE QUESTION, and ALL the answers. ar

DIVISIONAL NOTES

VK2 Notes

TIM MILLS VK2ZTM

Divisional Broadcasts

IPS Predictions for the next few months indicate that HF coverage from VK2WI is going to be difficult on the existing frequencies. A trial transmission is to be made on 30 metres. It would also be desirable if more country clubs could set up relays to their local repeater, to assist those with difficult reception on HF. Check the Sunday broadcasts for details of the tests.

Happenings for November

Wagga ARC field day over the weekend 4/5th - Conference of Clubs, hosted by the CCARC at Gosford Sat 11th - Opening of the 23cm repeater at VK2WI, Dural, Sunday 12th which is being combined with a Microwave field day and demonstration - Trash & Treasure, Sunday afternoon 26th.

Divisional News

There has been a slight change to the telephone hours for the Divisional office. If you are ringing please note that the new times are noon to 1pm, and outside these times there is a message-taking machine across the line. (02) 6892417. Wednesday night 7 to 9pm as usual... The Division has been able to obtain a small stock of a different model Alinco 2 metre hand-held. Details from the office or via the broadcasts... VK2AWI, the station set up at Amateur Radio House, now has antennas installed on 2 and 70cm plus a couple of HF dipoles. Additional antennas are to be installed over the next few months... Some information sheets on VK2 WICEN have been redrafted recently and are available from the Divisional office.

Mobile Telephone Use

Last July the NSW Government altered the Motor Traffic Act to make it an offence for the Driver of a Motor vehicle to use a hand-held telephone while the vehicle is in motion. While it appears that it was aimed at the users of cellular telephones, the police could extend their interest to the use of any hand-held microphone. The Division has been trying to get a written clarification that it applies only to a 'telephone'. Handsfree operation is approved.

Tom, VK1VST has advised that he will be a member of a hiking party during December in the Snowy Mountains back to VK1. About a 10 day operation, with nightly reporting via local repeaters, usually VK1RGI on 9500.

Keep in touch with VK2 events and news on the two Sunday broadcasts, see page 3 this

AR for times and frequencies, or telephone news headlines on (02) 6511489 or by packet from VK2RWI 4850 and other systems. Also see the Divisional news sheet 'QST' in your club newsletter. ar

VK3 Notes

JIM LINTON VK3PC

Classes and Exams

The WIA Victorian Division will be conducting classes in 1990 as a service to members and for those who wish to enter the hobby. It will also examine licence candidates in all DOTC required subjects. In February classes for the Novice theory and morse will begin running 26 weeks. An AOCP theory bridging course is scheduled to commence on August 14, 1990. An information sheet fully explaining the classes and special enrolment is now available.

Call Books

Stocks of the 1990 Australian Radio Amateur Call Book have been selling quickly. The price to WIA members is $8.50 or $10 posted. Later this month we expect to receive early copies of both the 1990 International and US Call Books. Copies may be reserved by forwarding a $20 deposit to the Vic Div Book Officer. Members are asked to please note that the Division does not have a credit card facility. All payments forwarded should be by money order or cheque.

New Phone Numbers

The Division's telephone number will change in the near future from 259 9261 to 885 9261. This is a change in prefix only and our fax number will change accordingly to 885 9298. Both the new and old numbers are currently operating.

Instructor Ron Cannon Retires

Well known and popular Morse code instructor for the WIA Victorian Division, Ron Cannon VK3BRC has retired from the position he held for more than 12 years.

His knowledge, patient teaching, friendly encouragement, and practice cassettes have been appreciated by the many who have learnt the code at his classes. The successive WIA Divisional Councils were pleased to have Ron as part of the team conducting the WIA classes at the old headquarters in Brunswick Street Fitzroy, and this year at Camberwell Boys' Grammar School.

Ron was first licensed in 1932 as VK7RC in Wynyard, Tasmania. In 1938 he obtained the Broadcast Operators Certificate of Proficiency, and added to his qualifications with a First Class Commercial Operators Certificate in 1941. He was one of the first radio amateurs given permission to operate crystal controlled on the broadcast band, in those early days when amateurs broadcast music and entertainment to the general public. The old-timer occasionally showed his code class students the home-brewed crystal he used around 1280kHz when VK7RC ran broadcasts. It was made from a quartz spectacle bought at the Victoria Market for sixpence or a shilling, when Ron visited Melbourne in 1934 during its centenary celebrations. In a comment on the future of CW, this keen brass pounder says he believes it will continue to be an attraction to further generations because of its uniqueness. Ron has found among his students some who have an affinity with the code, and make it a regular part of their on-air activity. Some of the personal enjoyment from amateur radio for Ron has been meeting his former students on air using CW.

The WIA Victorian Division President has awarded Ron Cannon a Letter of Appreciation for his sterling job of helping so many qualify over the years, and best wishes in his retirement.

Division Library

The reference library is once again open to members. It has taken many months since the move from Fitzroy to Ashburton to re-establish this service. We have technical publications and one of the most complete collections of amateur radio magazines in Australia. A photocopy facility is available for a nominal charge.

Coax Cable and Connectors

As a new service to members, the Division can now supply good quality coax cable, either in low loss foam or Mil Spec RG213, and a range of connectors. These are available to members only at a special price. Plans are continuing for the introduction of other services to members, making membership of the Vic Div even more worthwhile. ar

5/8 Wave

JENNIFER WARRINGTON VK5ANW

The Display of Members' Equipment Night was once again a very successful night and the standard of entries was very high. Trevor Lowe VK5ZTJ won the ICS Award (and an ESC Voucher) for the best piece of equipment over all, with his 2m Digipeater.

Peter Furness VK5FS won the Millar Award for his Radio Controlled Tank Water Level Indicator, for a remote tank on a farm.

ESC Vouchers were won by - Martin Luther VK5GN for his Memory-Keyer and Audio Mixer; Steve Stephenson VK5ZB for his PEP Reading Power Meter; and Clarry Castle VK5KL for his noise-cancelling device for 160m which I gather he has been developing for something like 50 years! Also deserving of an honorable mention was Steve Mahoney VK5AIM with his antenna rotator and controller, which he calls an 'Antenna AIMer' (get it?). I believe that the judges job was not an easy one, and we thank Merv VK5MX and Rob VK5FI for taking it on.

Buy and Sell Night Changes

At our last Buy and Sell, there was a lot on offer, too much in fact! There were three deceased estates, and many members who had to take their gear home unsold, despite the fact that the meeting went on into Wed morning! Council discussed the matter, and has come up with the following ideas: our Oct meeting will be a Buy and Sell of Deceased Estates only, and it will be held on the fourth Tuesday of the month, and not the fifth Tues. In fact, it has been decided to go back to the old system, and cut out meetings on fifth Tuesdays altogether. It's hardly fair to a Speaker who puts a lot of preparation into his talk, if no-one turns up, because they've all decided to leave it until next week, and come to the Buy and Sell night instead.

For those of you who didn't get to sell your gear in Aug, don't despair, there will be a Buy and Sell on Tues Nov 28th for members' gear only - no deceased estates. This should clear up any backlog, and you can then start afresh at our Jan 1990 meeting. But, if the 'other half is nagging you to get rid of that (dare I say) junk! (pre-loved equipment) before then, don't forget the Adelaide Hills Sale Day at Westbourne Park Memorial Hall, Goodwood Road, Cumberland Park, just south of Big W) on Sat 4th Nov from 10am to 2.00pm. Guaranteed to be far more entertaining than the Grand Prix and the Pageant put together!

Correction to September's Column

In Sept Column I wrote that Brian Austin VK5CA was awarded his Honorary Life Membership for being the Journal Editor for 8 years. His XYL, Marlene VK5QO suggests that it was because Brian was a Council Member for some 25 years - that's a lot of dedication and service by anyone's calculations.

Diary Dates

Don't forget..... Tues Nov 28th Buy & Sell for members only (no deceased estates).

Tues Dec 5th. Christmas Social (bring your partner and a Plate of supper) Woodville Community Hall, 64c Woodville Rd Woodville. 8.00pm. ar

Gold Coast Amateur Radio Society Inc

Gold Coast Hamfest '89

The 1990's are almost upon us bringing new standards of technology which affect the way we think and communicate. If you're interested in radio, electronics and computers then the 12th annual Gold Coast HAMFEST is a must!

On Saturday the 11th November, the Gold Coast Amateur Radio Society Incorporated in conjunction with a large assortment of exhibitors will present HAMFEST '89 at the Albert Waterways Community Centre in Mermaid Waters.

The exhibition will include commercial and hobby displays in radio, electronics and computers - introducing such areas as HAM Radio, satellite television, computer communications over radio, radio teletype, receiving weather satellite pictures, vintage radio displays, computers, amateur television, trade displays and much, much more.

There will also be new and second hand equipment and parts for sale. Plenty to learn about and plenty of bargains too.

If you're into CB radio and want to get serious about radio communications, then you can find out about, or even enrol in, the next Novice Amateur Radio Operators course. All of this and more is available at HAMFEST '89.

There will be door prizes and raffles and almost certainly something for everyone - so bring along the family. Refreshments will also be available.

Doors will be open between 9am and 5pm Saturday 11th November 1989 at the Albert Waterways Community Centre on the corner of Hooker and Sunshine Boulevards, Mermaid Waters on the Gold Coast (adjacent to Pacific Fair Shopping Centre and not too far from Jupiters Casino).

All of this for an entry fee of just $2.00 - be there!

All Enquiries To:

Andrew Chantler VK4TAA

PO Box 6620

Gold Coast Mail Centre

Bundall QLD 4217

Phone B/H (075) 56 2466

A/H (075) 39 6609

The Gosford Field Day

Australia's largest gathering of amateur radio and electronic enthusiasts, will be held at the Gosford Show Ground on Sunday, 18th February, 1990.

More than 1,400 people attended the last Field Day and this year the attendance is expected to be even higher.

The tradition of the Gosford Field Day stems back to the early days of radio experimentation and provides a meeting place for enthusiasts and hobbyists to trade ideas and equipment.

The first Field Days were organised in the 30's by four amateurs from Wyong, VK2TX Phil Levenspiel, VK2CK Geoff Warner, VK2XP Jeff Thompson, VK2OC Owen Chapman. In 1931, the highlight of the field day was a cricket match held on Wyong Race Course, and in 1932, a hot dinner, at which over 150 sat down, was held in the ground of VK2OC's house at Toowoon Bay. 40 metre fox hunts were a feature of both events.

The coming Field Day has something for everybody with an interest in radio or electronics:

Seminars: Expert speakers will present a number of lectures which will reflect the increasing technological diversity of the hobby.

Trade Displays: Featuring the latest offerings of equipment with many of the traders offering special discounts on prices for the latest equipment on the day.

Disposals: Offer the possibility to buy that piece of equipment that you have been looking for or an opportunity to sell that surplus piece of equipment. Last Field Day more than 1,600 items were traded.

A Flea Market: For those that have wanted to clean out the garage or shack of all that gear that has accumulated over the years. You can sell from the boot of your car, a trailer, or the tables that are available.

Home Brew Contest: With prizes for open and junior constructors.

Equipment of Yesteryear Contest: Bring along your old equipment and display it for others to see and enjoy and be in the running for a prize.

Bus Tour to The Ferneries: This is a complimentary bus tour to this unique place just 11 km from Gosford. The Ferneries comprises 50 acres of native rainforest with widening paths through picturesque forests of palms, tree ferns and gums.

There is plenty of off-street parking at the Gosford Showground and for those travelling by train, a courtesy bus will pick up and return passengers to Gosford Railway Station. Tea, coffee and biscuits are available from 8.00am to 3.00pm at no charge, and take-away food can be purchased in the Showground.

The Gosford Field Day is organised by the Central Coast Amateur Radio Club, and further information can be obtained by writing to: The Field Day Committee

Central Coast Amateur Radio Club Inc

PO Box 252 Gosford NSW 2250

Phone (after hours only): (043) 92 2244

VK4 Disabled Persons' Radio Club News

The Club's 6th Anniversary was celebrated at Roley (VK4AOR - QTHR) and Elaine Norgaard's at "Eden Farm" near Oakey on Father's Day, the 3rd September. Enjoying beautiful VK4 weather, the day was described by club member Ron Bainbridge (VK4BRZ) as the best yet.

Packet AMTOR and RTTY displays and operations were set up by Roley and Ron Smith (VK4AGS), making good contacts Australia-wide and into Noumea. AMTOR mailbox goodwill message, courtesy of VK6YM from Jack and Alma (VK4YC/P8) Richters, camped at Kakadu National Park, was well received.

The day was well attended by non-licensed disabled club members, including regulars Paula Batchelor - who enjoyed a first-hand QSO with Heinz (VK3BEW) -, Des Orr, Andrew Stewart and Prue Cornford. They all went out from Toowoomba per parent body HHELP's (Help Handicapped Enter Life Project) handi-bus, driven by volunteer Ray Dougherty.

Given that many disabled have speech impediments, keyboard communication was the theme of the day. This resulted in members having a chance to communicate on equal terms *for the first time in their lives*. As this also broke down the barrier of a microphone, they thoroughly enjoyed the opportunity.

Bill Burge, club patron and father of Tony (VK4BAC), complimented the club on the day's activities, during which there was a minute's silence at 0400 UTC in memory of Tony. As well there were the normal formalities giving varying reports and aspects on the club's yearly progress and activities.

Roley expressed his appreciation of the ongoing support and attendance by various other amateurs and members of the Darling Downs Radio Club.

Club nets are held every Friday night at 0900 UTC on 3.590 MHz. Club call is VK4BTB. Station Manager Roley Norgaard (VK4AOR) (076) 967587 or Graeme Whitehead (VK4NYE) (076) 308323.

DOWN AT MOORABBIN

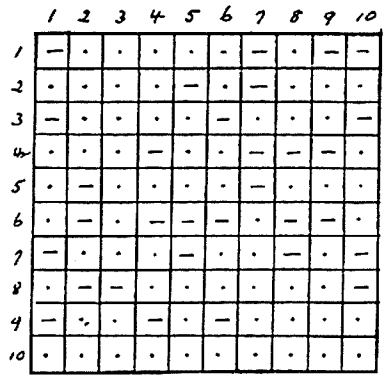
The following were elected at the AGM of the Moorabbin and District Radio Club on 21 July:

President, Steve Cima VK3CIM; Vice-President, Milton Crompton VK3MN; Secretary, Doug Richards VK3CCY; Treasurer, Morrie Lyons VK3BCC; Committee Members, Denis Babore VK3BGS and Hans Linder VK3DNS.

QSL Officer, Fred Kolb VK3CFK; Librarian, Alistair Duff VK3KAD; Publicity Officer, Allan Doble VK3AMD; Newsletter Editor, John Hill VK3WZ; Station Officer, Doug Richards VK3CCY; Components Manager; Ray Fowler VK3BHL; and Awards Manager, Fred Kolb VK3CFK. **ar**

Solution to Morseword No 32

From page 52



Across: 1 thaw; 2 sale; 3 dust; 4 snag; 5 rile; 6 roan; 7 daft; 8 whit; 9 tikes; 10 hies.

Down: 1 cur; 2 sated; 3 hied; 4 stain; 5 rub; 6 fain; 7 manse; 8 vats; 9 tears; 10 tread.

SILENT KEYS

We regret to announce the recent passing of:

Mr J F Magee	VK1FM
Mr John Clarke	VK2DBZ
Mr Dick Woolfe	VK2DZX
Mr J M Ross	VK4JO
Mr R E Padman	VK5DP
Mr Peter Priestly	VK6IS
Mr P G Wilkinson	VK6YW

John Francis Magee VK1FM

Radio amateurs in Australia and overseas will be saddened to learn that VK1FM, Jack Magee, became a silent key on 2 September 89 while playing golf on his "home" course with his regular companions. He was 71 years of age.

Jack was a late starter in radio, taking his Novice licence in 1978 while inspired by his brother Kevin, YJ8KW, who had been an enthusiast for many years. I first met Jack as his instructor, helping him to grapple with the more advanced radio theory and with improving his morse speed. In those days also, it became my pleasure to "carry" my call-sign to Jack's place on Sunday evenings, so that he could chat with Kevin on 20 meters - Kevin's favourite band. Kevin's motivating influence was strong, and Jack was soon successful in his efforts; in up-grading, he exchanged his Novice call, VK1NBW (No Bad Whisky!) for the two-letter suffix. But he did better than simply succeed. He went on to improve his telegraphy skills, and it was not uncommon to hear him on the bands working CW in the 15-20 wpm speed range, where he soon found that relaxed ability to converse in code without putting pen to paper.

As a confirmed "narrow-bander", he later moved to RTTY adding both to his keyboard skills, and to his enjoyment of the hobby.

I think perhaps Jack's greatest single joys in amateur radio were (a) maintaining contacts with his friend Olle, SM0KV, and (b) participating at Government House in the arrangements for the opening ceremony of JOTA. The friendship with Olle began on radio, and blossomed into a wider relationship involving the wives, Shirley and Ulla, and visits to each other's homes at opposite ends of the earth. Both this and the JOTA interest gave Jack a great deal of pleasure over many years. During his working life, Jack had qualified in law, and at amateur radio meetings when controversy sometimes arose, his quiet counsel of moderation was often heard and often heeded.

His family, his church, his charitable works, his radio and his golf were the things that Jack valued most in life; he will be sadly missed in all of those areas. On behalf of radio amateurs everywhere, we offer our condolences to his wife Shirley, their three daughters, Patricia, Bernadette and Judith and two sons, Peter and John, who have supported him so strongly in all of his interests.

Don Hume VK1DH

John Clarke VK2DBZ

The death occurred on Wednesday 20 September of John Clarke VK2DBZ of Beresfield, near Maitland.

John, who was 91, had been in hospital in Newcastle for the last three weeks, but prior to this had been active on the air almost daily.

John Clarke, first licensed in Australia as VK2DZ, had had a distinguished service and professional life in radio.

Originally a Royal Navy signals operator, he served on two of His Majesty's Ships in the Battle of Jutland in 1916. Both vessels were sunk in this fierce encounter. He became licensed as a radio amateur in 1920.

His professional work included the establishing of much of the domestic service of All India Radio, and he was a personal consultant to Mahatma Gandhi, and a friend of the poet and writer Rudyard Kipling. In Australia, he was an official of the Institution of Radio Engineers, and held a management position with Astor Radio in the early days of television. Throughout all, he was an enthusiastic radio amateur and an unforgettable character.

We mourn the passing of John Clarke VK2DBZ.

Westlakes Amateur Radio Club

Peter Priestly VK6IS

Peter Priestly VK6IS became a "silent key" on the 1st October, after an illness of several months. Formerly a member of the Royal Navy and Merchant Service, Peter had worked in Perth in the Commonwealth Employment Service for some years.

After his retirement several years ago, Peter was attracted to amateur radio and persevered with his study and exams, obtaining first a novice and later a full call. Despite an all-too-brief career as a ham, Peter was a great enthusiast, and proud of his membership in the Royal Naval Amateur Radio Society in the UK and locally in the WIA.

He will be sadly missed by his friends on forty and two metres. Peter is survived by his wife Angela and daughter Samantha, to whom we extend our deepest sympathy.

Lee Hitchins VK6HC ar

OVER TO YOU

ALL LETTERS FROM MEMBERS WILL BE CONSIDERED FOR PUBLICATION AND SHOULD BE LESS THAN 200 WORDS. THE WIA ACCEPTS NO RESPONSIBILITY FOR OPINIONS EXPRESSED BY CORRESPONDENTS.

DXpedition Cards

When attending the monthly general meeting, I received from the QSL Bureau Manager the 3W8DX card. This was in reply to my card sent by direct mail, with SAE and "postage" costs. Having been involved with DXpeditions, the "postage" included is always much more than sufficient to cover postage, as I'm aware of expedition costs.

Overheard on 14MHz on 28/7/89 - many VKs were complaining about non-arrival of their 3W8 cards. They, too, had all sent direct QSLs. Perhaps the bureaux have by now also delivered theirs!

Point of all this? Many bureaux do not send or pass over NON-members' cards, but return them to where they came from, be they from bureau or managers. If I had not been a member, I would not have received my 3W8 card, which was sent through the bureau in return for my direct mail QSL.

It's a known fact that DXpeditions cost money. But, is this a fair way to return QSLs? Yes, it's known that the BIG GUNS all received theirs direct, but the little pistols would like the same treatment, please.

Acting as a QSL manager in the past leads me to make this statement, "much more is received from little pistols to cover "postage costs" than is ever received from the BIG GUNS". Any further comments from members of the WIA, or even non members?

NEIL PENFOLD VK6NE
2 MOSS COURT KINGSLEY 6026

Percentage (?) Membership

I query the percentages quoted on club memberships in the article on page 5 of September issue. My understanding is that if in the Westlakes ARC the actual "WIA membership to non-WIA membership is 68%" then it has 68 WIA members to every 100 non-WIA members - percentage already being a ratio. To put it another way, slightly over 40% of its members would belong to the WIA, and I doubt it would be lauding that.

Similarly, in the 80% quoted, the CW Operators QRP Club has 58 WIA members and 72 non-WIA members in its 130. Is that what they mean?

Recent comment in our daily press highlighted the fairly common problem. Somebody appealed, "heaven spare me from percentage points!" Unfortunately for them, this is an integral part of the decimal system. A change of temperature from 30 degrees to 20 degrees is a change of 10 degrees or 33.3% (one third of 30), so a change from 30% of something to 20% is a 10 percentage point change, but also a 33.3% change!

I make no apology for my lack of technical expertise because I obtained my AOCP for the sole purpose of working to introduce young people to proper communications, so I rely on the articles in AR for education.

Such errors in use of mathematical terms can be a little confusing.

P V HUGHES VK6HU
58 PRESTON ST
COMO WA 6152

Still More Polarised Plugs

I cannot, for my own peace of mind, overlook the article on page 31 of Sept AR "Polarised Plugs . . . the Simple Way". Modifications to standard 240V three-pin plugs and sockets would be viewed as a very serious offence in a Coroner's Court.

For the author's purpose there are abundant supplies of two-pin polarised plugs and sockets available from electrical suppliers.

The reason for my distress at the suggested modification is the simple fact that in almost all electrical house wiring today the cables can carry and are rated at 27.5 amps, and their protection is usually a slow lag circuit breaker or fuse rated at 30 amps. The incoming supply mains and service fuse are usually rated at 90 amps.

When an inadvertent short circuit occurs whilst a plug is being inserted, then for a few milliseconds, due to the "lag" time, the cable will deliver 90 amps at 240 volts, ie over 20 kilowatts.

Having witnessed this happen, I should describe the result.

The metal around the the plug volatilises, as also does most of the skin and flesh in contact with the plug. If the victims heart fails, cardiac massage must be used whilst the ambulance is called and the patient rushed to hospital. After painful treatment and about five weeks convalescence, the victim may be able to return to light duties.

We do greatly appreciate the many good technical articles submitted to AR, but please put a . . . NO . . . NO . . . on this one, and I will sleep more peacefully, but still with the memory of a good friend shockingly burned.

LEWIS SMITH VK2LS
30 CUNNING STREET
PORT MACQUARIE 2444

And More!

I refer to the article on page 31 of September AR titled "Polarised Plugs . . . The Simple Way".

I cannot believe that the editor of any technical magazine would be so irresponsible as to allow the publishing of an article which suggests the use of standard three pin plugs for low voltage applications. To print such an article is inexcusable.

The author of the article is foolish in believing that a link between the normal active and neutral pins of the plug will protect him or his equipment from damage when such a plug is connected to the mains. He assumes that his power outlets are correctly wired - there is ample documented evidence relating to fatalities to prove this is not always the case. He also assumes the power circuit is protected by a fuse of the correct rating - does he believe in Santa Claus?

I have been employed in the electrical trade since 1963, am a licensed electrician and a licensed electrical contractor. For the past 16 years I have been employed by an electricity supply authority and during that time have found incorrectly wired power outlets and fuses so heavily wired that faults have taken the 100 Amp council service fuse.

I know I am suitably qualified to criticise this article!

Since 1974 I have been the NSW Central Coast Region WICEN Co-ordinator and would be appalled if a member of my team started using three pin plugs on his low voltage equipment.

Although I don't advocate their use (because two wiring "standards"" are in use), polarised low voltage plus are available from any reputable electrical wholesaler. These plugs are manufactured for use on equipment operating at or below 32 Volts and cost a little more than the normal three pin variety. Their pin configuration is in the form of a "T" so that they cannot be inserted into a three pin outlet.

Although the damage is now done, I am sure that you will feel compelled to publish a

prominent warning on the dangers of using three pin mains plugs on low voltage equipment.

RA WELLS VK2TV
PO BOX 66
TOUKLEY 2263

(We plead guilty to thoughtlessness, but not irresponsibility. Letters published in response have made very clear to all the dangers of the suggested application. Many who had never seriously thought about some of the more obscure safety implications are now well aware of them. They would still be ignorant had we not published the item. Ed.)

The Last of Those Plugs . . .

I wish to protest about the publication of the article entitled Polarised Plugs . . . The Simple Way which appeared on page 31 of the September 1989 issue of Amateur Radio. In my opinion it should have been titled Polarised Plugs . . . The Deadly Way.

The Federal Tape on the regular WIA broadcasts brought the hazards of this article to our attention, but by this time it was too late! The Amateur Radio technical editors should NEVER have allowed this article to be published!

The mere thought of using a MAINS plug for low-voltage use is inviting disaster - indeed, it is sheer STUPIDITY! Even if a warning is written on the outside of the plugs, it does not prevent young children or even adults from inadvertently plugging it into the mains power outlet.

What if the fuse or circuit breaker were too slow to react? It is possible that the 12 volt equipment on the other end would be destroyed or even worse, and electrical shock - perhaps fatal - could result to whoever plugged it in!

I ask that the author please use mains plugs and sockets for their intended purpose and stick to low voltage connectors for low voltage work and would advise other amateurs AGAINST the methods described in the article.

So what if the low voltage connectors are dearer (and I dispute this in any case) - what price can you place on a life?

STEVEN PULLAN VK2KXX
17 CLARINDA STREET
HORNSBY 2077

PS: I hope the author has a copy of the *emergency* heart-lung resuscitation chart prominently displayed in his shack!

(The Technical Editors are without blame, Steve. Due to a procedural malfunction, they were not given the opportunity to consider the article. The points you make have now had adequate exposure, and the time has come to call a halt to this correspondence. Ed.)

Beacons on Six

I feel I must draw your attention to something brought up by Eric VK5LP in his column in September AR, page 40. It would appear from his *comments* that Eric is actively canvassing the idea of placing beacons in the new 6m segment. Unfortunately, that is something we need like a hole in the head.

The following points apply re Eric's suggestions:

1) One purpose in expanding the SSB section from 50.150 to 50.200 MHz was to provide much needed additional operating space.

2) Since the release of the new segment there has been a vast increase in 6m activity, making the expanded segment essential, not a luxury.

3) In an area such as Melbourne, where there may well be 50 stations active during a band opening, the situation can be chaotic. In a 50kHz segment with geographically closely spaced stations, it is impossible to fit more than a handful of stations in. You simply can't work weak DX with another station less than 5kHz away, even under the best of conditions. If a local station is running full power, and the signal is even slightly broad, you have probably lost the best part of 20kHz to that one station alone - more with a bad signal. We need every bit of the segment for SSB use.

4) The idea of having beacons in the 50.100-50.200 MHz segment has horrified all those who have spoken to me about it. Even ONE local beacon would mean a loss of at least 20 kHz out of the additional 50 kHz we have gained. You couldn't expect to work any DX within at least 10 kHz above and below a local, well sited beacon. Where powerline noise is a problem and noise blankers are a must, the presence of a constant beacon signal could mean constant cross modulation. Further, DX stations will have reduced operating space with VK beacons filling the band, making it harder to hear other VKs from all areas. 50.100-50.200 MHz is a PRIME DX area in places such as JA or W, and any beacon in that segment would be an ENTIRELY INAPPROPRIATE use.

5) If the eastern states had been given the same spectrum as VK5, 6, 8, 9 and 0, the matter would be completely different, and no-one would object to a SUITABLE beacon subband. But the very limited spectrum available in VK1, 2, 3, 4 and 7 makes such a plan impractical below 52.0 MHz. Remember also, these call areas contain the bulk of the Australian Amateur population.

6) Now, more than ever, we must observe our international obligations. Before attempting to run beacons on any frequency, the effect on other users of the band must be considered. For example, a beacon in VK4, VK6 or VK8 may well be copied in JA etc for very lengthy periods. On a poorly chosen frequency it could well have little more than nuisance value. A good example is the beacon just above 28.885 MHz (6m liaison frequency) which QRMs this frequency constantly.

7) If beacons are installed in the section below 50.100 MHz, CW users of the band must also be given consideration, as there is only 50 kHz for purely CW operation (50.050-50.100 MHz). If a beacon were placed in each call area in this segment it would effectively ruin CW operation in VK, as every state would have at least 20 kHz destroyed by its local beacon, plus QRM from beacons on Es.

8) At the present time there are beacons in Darwin on 50.056 MHz, Perth on 50.066 MHz, Toowoomba TV on 51.670 MHz, Wagga TV on 51.740 MHz, plus all the existing 52 MHz beacons. What real need is there for other beacons? Any serious DX station will listen first for the TV audio as we listen for the BY/UA video. I am usually working JAs before JA beacons are at a useful level.

9) Even now, after DECADES of band plans, we still haven't been able to confine the existing beacons on 52 MHz to the correct subbands, eg Darwin on 52.200 MHz (should be on 52.480 MHz) and Wickham on 52.320 MHz (should be on 52.360 or 52.365 MHz etc).

10) If the states with full access to 50-54 MHz want to put beacons below 52.0 MHz in a reasonable area, which won't QRM local or DX stations, I can see no reason why they shouldn't do so. To ruin 50.050-50.200 MHz at this time would, in the opinion of myself and many others, be both selfish and unthinkable. We simply have too much to lose, and very little, if anything, to gain.

11) The new regulations relating to operation in the eastern states on 50.050-50.200 MHz SPECIFICALLY prohibit use of modes other than CW or SSB, which would rule out FSK for beacon use.

12) The international CW section of 6m (50.010-50.100 MHz) has virtually been transformed into a de facto beacon segment (check September AR, page 39). It will be noticed, however, that only ONE beacon is listed worldwide between 50.110 and 50.200 MHz.

I recall many years ago that Eric was very vocal when it was proposed that the VK5 6m beacon be moved from 53.000 MHz to the 52.300-52.500 MHz segment adversely affecting operation around Adelaide on 52.050 MHz. That proposal was minor compared with the present suggestion. I consider that if beacons are promoted in the 50.100-50.200 MHz segment it could well wreck all the good that has been done by the WIA, VK1RX and DOTC to improve the availability of 50 MHz. If that were to happen it would be an absolute tragedy.

GEOFF WILSON VK3AMK
7 NORMAN AVENUE
FRANKSTON 3199

HAMADS

TRADE ADS

AMIDON FERROMAGNETIC CORES: For all receiver and transmitter applications. Send large SASE for data and price to RJ & US Imports, Box 157, Mortdale NSW 2223.
(No enquiries at office please ... 11 Macken St, Oatley). Agencies at: Geoff Wood Electronics, Lane Cove; Webb Electronics, Albury; Electronic Components ACT; Truscott Electronics Vic; Willis Trading Co WA; Associated TV Service Hobart.

SATFAX: weather satellite picture receiving program for IBM XT/AT. Displays in 64 colours. Needs EGA colour monitor & card. AM demodulator & ADC interface. $45 + $3 postage *** RADFAX2: HF weather fax, morse & RTTY receiving program for IBM XT/AT. Needs CGA, SSBHF, FSK/Tone decorder. Also "RH2HERC" & "RF2EGA", same as RADFAX2 but suitable for Hercules & EGA cards respectively. $35 + $3 postage *** All programs are on 5.25". 360K floppy + full documentation. ONLY from M. Delahunty, 42 Villiers St. New Farm 4005 QLD Ph (07)3582785

FOR SALE - NSW

Antenna tuner Tokyo HC500 with manual $100 GELOSO TX 10 to 10 metres working $50 VK2CJP (02)444985 IAN QTHR.

SSTV Scan Converter MXV200 fast in slow out with circuit and manual plus non working TV camera $50 phone Phil VK2BVM (064)953331.

KENWOOD 520S External VFO CW Filter spare finals VGC $500 QTHR (065)625755.

TS820S Handbook Mic $450 ATU New $175 2m Transceiver P/S $100 I4AVQ vert ant $60 John QTHR (VK2ANZ).

Two piece Telescopic Tower with tilt over frame complete $550. TL922 AMP $2750. FL2100 AMP $950. TS830S Transvr $900. All first class equip. Other *sundry* items also. Ring VK2ECR QTHR (02)5229784.

FOR SALE - VIC

YAESU FT101E FL2100B Mic. H'Bks etc GC $1000 VK3DN (03)7268544 QTHR.

Apple 2+. Twin floppies. 64K RAM with 80 column & Z80 cards. Applesoft in ROM. 12 inch green monitor. Free software. Perfect condition $1250. Ken VK3MW QTHR. AH (03) 5605278 Bus (03) 5221476.

Hampack III. Plug-In RTTY/CW/ASCII card for Apple 2 PC. Covers all amateur and commercial speeds and shifts. On Board Modem. Software & Manual included perfect. $200 Ken VK3MW. QTHR AH (03) 5605278 Bus (03) 5221476.

Antenna 2m Swiss quad $45 cash, good condition VK3DVT QTHR (03) 5926236.

Swan 700CX HF transceiver. 80-10m, digital readout, 700W PEP. $450 ONO. Electronic Keyer $80, or $500 the lot. Tino VK3EGN QTHR. Ph. (052) 782506.

Yaesu HF Transceiver FTDX100 in immaculate condition with mic speaker and manual $325. VK3AMT Phone (03) 7899106.

Colour Video Camera : Sony HVC-2000PE 6 x PWR Zoom, Elect Viewfinder 12v Operation. C/W Hard carry case, adapter for 12v in, Audio/Video out. $300.00.
YAESU FT-2700RH Dual Band FM Mobile. Full Duplex, 25W both bands, as new, in box, never used mobile. C/W VS-1 Voice Synth, 2 spare mounting brackets, spare PWR cable $950.
YAESU FT270RH 2m FM Mobile. 45W, 10 mem, Dual VFO, VGC in box. C/W FVS-1 Voice Synth, spare PWR cable $600.
YAESU FT727G Dual Band Hand-Held. 5W both bands, 10 mem, VOX, etc, etc. C/W 2 x FNB4 Nicads, FBA-5 AA Case, NC-15 Fast Charger. As new in box. Will FAX or Post brochure $900.
YAESU Accessories : FT209 Carry Case, brand new $10 MMB-21 Window Bracket suit FT209 etc, $10.00 PA3 Car Charger/Adaptor suit FNB3, 290R, 208R etc. $25
VZ-300 RTTY System. C/W VZ-300, RTTY Cart, Printer I/F, B/W TV/Monitor. All 12v or 240v operation. GC $220. ALSO: VZ-200 $40.00 (No accessories) VZ200/300 RS232 Terminal kit, new unbuilt $30 (or both $60). Craig VK3KLI (03) 5276895.

YAESU FT107DMS T/RCVR: W/Pwr/Sup solid state, 12 memories PB freq shift, 5 MHz STD receive freq, W/WARC mod kit, maint manual, service extender board, VG cond, see AR Feb 87 P39, $850. Stan VK3SZ QTHR. PH (03) 560305.

YAESU FL2100B Linear: Excel cond. $950. Stan VK3SZ QTHR. PH: (03) 5604305.

FOR SALE - QLD

Tono 7000 communication computer with manuals $450. ATV Equip incl 88 element ant, converter, xmitter, VC1400 Sanyo video sound camera and manual the lot $475. Lin VK4QN (075) 934039.

Complete RTTY system, Siemens model M100 teleprinter 45 baud, fitted with paper tape reader/transmitter and answer-back drum, quantity of paper tape, spare ribbons, manuals and circuits, plus SEQTG RTTY terminal (TX/RX) for above, will also interface with a computer, all in excellent condition. See complete system running. $100 the lot. VK4KUG. Phone (07) 8412410 after 6.30 pm or QTHR.

Icom IC502 portable base six meter transceiver includes 25W amplifier $170 Neil VK4BIT QTHR (07) 3516589.

Kenwood TS940S, Rockwell Collins KWM380 TXVR's (Solid State) and Telereader CWR 685E CW-RTTY-RVR, all in perfect condition, Phone Mike VK4CF (07) 2847739.

Spectrum analyser 10mHz 63GHz N/R $350. Icom781 super-Rig as new $7800 neg 2m H/H 144-148mHz thumb wheel op. $250 frequency counter Tekido Riken,. Xtal oven $350 THP HF 500 WATC $150 UHF cavities $200 each. Mick VK4BM (071) 982176.

Kenpro rotator KR400RC $375 near new hardly used. Ideal for HF/VHF beams. Includes pipe mounting or plate mounting options. Excellent condition. Geoff VK4CET (077) 737179.

SK Estate. YAESU FT1 TRX, including Yaesu external speaker with filtering and YAESU desk mike. Packed in original carton. Recently dealer serviced. $1750. Enquiries VK4SZ, QTHR. Ph (070) 613286.

FOR SALE - SA

DECEASED ESTATE - Pair 866; five UHF triodes type 6442; two QQE0640 plus one socket; two QQV0640 plus two sockets; three 4X150A and two air system sockets. SIGNALLING LAMP. 1942 ex PMG/ARMY in case complete with filters and spare globes. Offers. (08) 3392329. QTHR VK5QO.

Kenwood TR 2400 2m hand held service manual and charger $100 (licenced persons only). 350 tono decoder CW-RTTY-ASCII interface computer, printer, oscilloscope TV/monitor. complete with B/W 6 inch portable 240/12V TV monitor $300.
6DQ6B/6146B valve new $25. QTHR. Rick VK5BG (085) 563155 evenings.

Want to live in the Adelaide Hills without the hassles of setting up an amateur station? Very soon for sale is a 3 BR, ducted air conditioned home, 33 ft tower and TH6, full size dipole, 4 acres of land, 2000ft altitude. One of the best radio sites in SA. 10 miles, 20 min from Adelaide. Magnificent views, plus many other features. Would consider selling station as a going concern. Contact VK5QO QTHR (08) 3392329.

FOR SALE - TAS

Complete station. FT101ZD VGC $600. FL2100B linear amplifier $900. Ian VK7JY Tel (003) 272011.

FOR SALE - NT

Icom ICO2AT handheld nicad pack charger manual exc condition $295. Yaesu FT707 FP707 FC707 FV700DM FTV700 with 50MHz 144MHz 432MHz modules $1600. Will separate. Jeff VK8GF QTHR Ph W (089) 522388 H (089) 521016.

WANTED - ACT

Kenwood TS530S, TS830S or Yaesu FT101ZD with WARC bands. Stirling VK1EV (062) 748920, 588483 QTHR.

WANTED - NSW

Slow scan gear, need camera, fast/slow and slow/fast scan converter. Mainly for JOTA weekend. Any other JOTA slow scan operators? Would like to arrange scheds. Andrew VK2EPO, QTHR, (02) 6369310.

Yaesu FT200 TCVR with matching power supply manual and any spares must be VGC. Fair price paid. Max VK2GE (065) 855732.

2 1/4" Square 6x6 projector blower cooled reasonable price. (068) 281543 BH, 281261 A/H. Ron VK2FLG QTHR. Ron Pearson PO Box 47, Walgett 2832.

UNIDEN 2020 matching speaker and ext VFO VK2AJE (02) 5255559.

WANTED - VIC

Yaesu FV101B external VFO in good condition only. Bob VK3EFD QTHR. (03) 3742416.

Tri-band 3 elem. beam. Hy-Gain TH-3 or similar. Cash waiting for good antenna. Bert VK3TU, (052) 782374 or (03) 6077760 during bus hrs.

Kenwood TL922. Will pay top price for unit in good condition. Roth Jones, VK3BG (03) 725 3550.

WANTED - OLD

WWII signaller would like details and circuit RF amplifier No 2 used with WWII 19 set VK4EF, 97 Jubilee Tce Bardon Old, 4065, Ph (07) 366 1803 after hours.

Telequipment D43 Dual trace scope. Manuals circuits etc any info please. All costs paid. Phone (071) 2966247 reverse charge VK4AUK QTHR.

RF Sig Gen up to 200 or 500 MHz old or older is ok. Phone (071) 296247. Reverse charge VK4AUK QTHR.

Manuals circuits etc. Ratclilfe mod 600 (FM) monitor all costs paid. Phone (071) 296247 reverse charge. VK4AUK QTHR.

Wanted oscilloscope dual trace good order 20 MHz capability. 2µ/div x5 magnifier around $500 plus freight Clarry Stenneth 1-19 Limpus Street, Urangan, 4655. Phone (071) 253415.

Circuits: Eddystone EC10 receiver, Philips scope GM5600-01, RF/GEN PM 5300-01, Palec VCT 3 tubetester, Collins R391URR/RCR, audio oscillator type 601E Techtron, Cossor scope model 1035 AWA IR7003 No 34 sig GEN 200 KHz - 30 MHz, Linmark valve stereo amp SA200, Tech TE221, audio/osc, Techtron 020 TAC D10/OSC, VK4DL QTHR. (071) 961186.

WANTED - SA

Wanted six meter conversion details for bushranger CB or similar unit any help appreciated. Alan VK5BWG PO Box 1337, Stirling North, 5710, Sth Aust.

CIRCUIT DIAGRAM and any other information for the SUNAIR aircraft receiver/exciter Model ASB 100A. Will reimburse expenses - Ivan VK5QV QTHR.

HAMADS

Please Note: If you are advertising items For Sale and Wanted please use a separate form for each. Include all details; eg Name, Address, Telephone Number (and STD code), on both forms. Please print copy for your Hamad as clearly as possible.
*Eight lines free to all WIA members, ninth line for name and address Commercial rates apply for non—members. Please enclosed a mailing label from this magazine with your Hamad.
*Deceased Estates: The full Hamad will appear in AR, even if the ad is not fully radio equipment.
*Copy typed or in block letters to PO Box 300, Caulfield South, Vic 3162, by the deadline as indicated on page 1 of each issue.

*QTHR means address is correct as set out in the WIA current Call Book.
*A courtesy note will be forwarded to acknowledge that the ad has been received.
Ordinary Hamads submitted from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re—sold for merchandising purposes.
Conditions for commercial advertising are as follows: $22.50 for four lines, plus $2.00 per line (or part thereof) Minimum charge — $22.50 pre—payable.

State: .....

❑ Miscellaneous
❑ For Sale
❑ Wanted

Name: .....

Call Sign: .....

Address: .....

.....

TYPESETTING : Redfords Media
25 Glenlerrie Rd
Malvern 3144
Tel: (03) 500 0377

PRINTING: Industrial Printing
Richmond

MAIL DISTRIBUTION: Polk Mailing Co.
PO Box 140,
Collingwood,
Vic. 3066
Tel:(03) 417 5161

ADVERTISER'S INDEX

ATN Antennas 15
Callbook 15
Dick Smith Electronics ..... IBC
Electronics Australia 35
Electronics Today International IFC
Emtronics 7
Ian J Truscott's Electronic World 25
Icom Australia ..... OBC, 32,33
Kenwood Electronics Aust. 17, 48
Magpubs 23
Silicon Chip 39
Stewart Electronic Components .. 21
WIA NSW Division 21

TRADE ADS
RJ & US Imports 62
M Delahunty 62

HOW TO JOIN THE WIA

Fill out the following form and send to:

The Membership Secretary
Wireless Institute of Australia
PO Box 300
Caulfield South, Vic 3162

I wish to obtain further information about the WIA.

Mr, Mrs, Miss, Ms: .....

Call Sign (if applicable): .....

Address: .....

.....

State and Postcode: .....

FT-747GX BUDGET H.F. TRANSCEIVER

The FT-747GX is a compact SSB/CW/AM and (optional) FM transceiver providing 100 watts of PEP output on all 1.8-30MHz amateur bands, and general coverage reception from 100kHz to 30MHz. Convenience features include a front panel mounted speaker and unobstructed digital display, operator selectable tuning steps for each mode, dual VFO's for split frequency operation, and 20 memory channels (eighteen of which can store split Tx/Rx frequencies). Wideband 6kHz AM, and narrow 500Hz CW IF filters are also fitted as a standard feature. Includes bonus D-2105 or D-2110 hand microphone. See ARA Review - Vol II, Issue II.

D-2930

2 YEAR WARRANTY!

$1269

or **$1299** with heavy duty antenna base and choice of 1 H.F. mobile whip (80, 40, or 20m only)

FT-4700RH DUALBAND TRANSCEIVER

Continuing the tradition started by Yaesu with the FT-2700RH, the new FT-4700RH dualband 2M/70cm FM transceiver now provides higher levels of performance, while offering even better value for money!

Features include 50 watts output on 2 metres (144-148MHz), and 40 watts output on 70cm (430-450MHz), with an inbuilt cooling fan for long term reliability. True full-duplex crossband operation is supplemented by dual band simultaneous reception or auto-muting reception (with independant squelch and mixing balance), so you can listen for calls on both bands simultaneously, or work someone on one band while also listening on the other band. The optional YSK-4700 controller cable allows the main body of the transceiver to be installed under a seat, while the front panel/controller mounts conveniently on the dashboard. On the control panel, the bright amber backlit LCD shows both VHF and UHF frequencies and signal strengths, and all controls have backlit labels for clear readability, with a dimmer switch for nightime viewing. A total of 20 memories and 5 selectable tuning steps make frequency selection easy, while the advanced scanning features allow quick detection of signals on either, or both bands. And all this is backed up by our exclusive 2 year warranty, the longest in the industry.

Cat D-3300

Optional YSK-4700 (D-3301) **$49.95**

$1295

With Bonus

D-4207 2m 5/8λ antenna
D-4030 70cm Co-linear antenna
D-4516 ×2 UHF antenna bases

Save $100

' Stock not held at all stores - please call for availability

WITH ALL THE FEATURES IN ICOM'S NEW MOBILE TRANSCEIVERS, IT'S A WONDER THEY'RE STILL MOBILE.

Icom have packed so many functions into the IC228A and IC3210A mobile transceivers, you'd think there was no way you could still make them so compact. (It might explain why nobody else has made a transceiver with so many features.)

Some of the features both transceivers share is the multi-colour LCD display for easy viewing. Orange, red and green highlight the numbers and letters displayed in black.

There are various power outputs across the range, from 25W to 45W.

For novices, the 228A can be reduced to 10W.

The Programmed Scan function scans all frequencies between two programmable scan edge frequencies, while the Memory Scan function scans all memory channels in succession, except, of course, those you lock out.

Thanks to the pocket beep, you'll never miss a call. By installing a UT-40 Tone Squelch Unit (this is sold separately) the transceiver functions as a pager. When the frequency of a received tone equals the tone frequency you set, a thirty second alarm is emitted over the speaker.

As for monitoring the input frequency when you work a repeater, that's as simple as pushing the Monitor Switch on the front panel to open the squelch and check the frequency.

Every five seconds, Priority Watch monitors the Call Channel, one or all memory channels in succession. And that's while you operate! No longer do you have to flip back and forth between frequencies.

While the IC228A has 20 memory channels, the more advanced IC3210A has 40. Each channel stores all the information required to work a repeater.

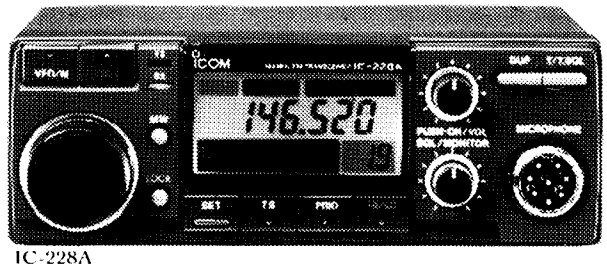
With the IC3210A, there are 20 double-spaced memory channels for 2 metres and 70 cm.

What's more, the IC3210A offers full duplex facility. Which means you can now simultaneously transmit on one band and receive on the other. You never have to wait for a long "over". You have full "break in". In fact, you can talk as easily as talking over the phone.

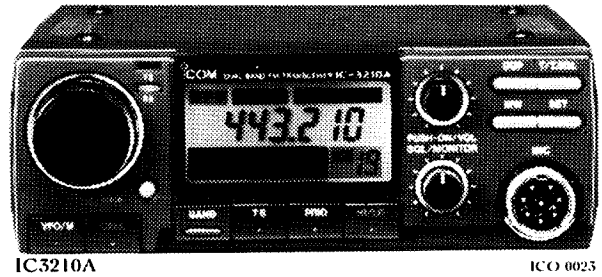
Call (008) 338 915 for your nearest Icom stockist today. (The telephone conversation in itself is a very good example of IC3210A's duplex facility.)

With all these functions in one small compact mobile, it really is a wonder they're still so compact and mobile.

ICOM

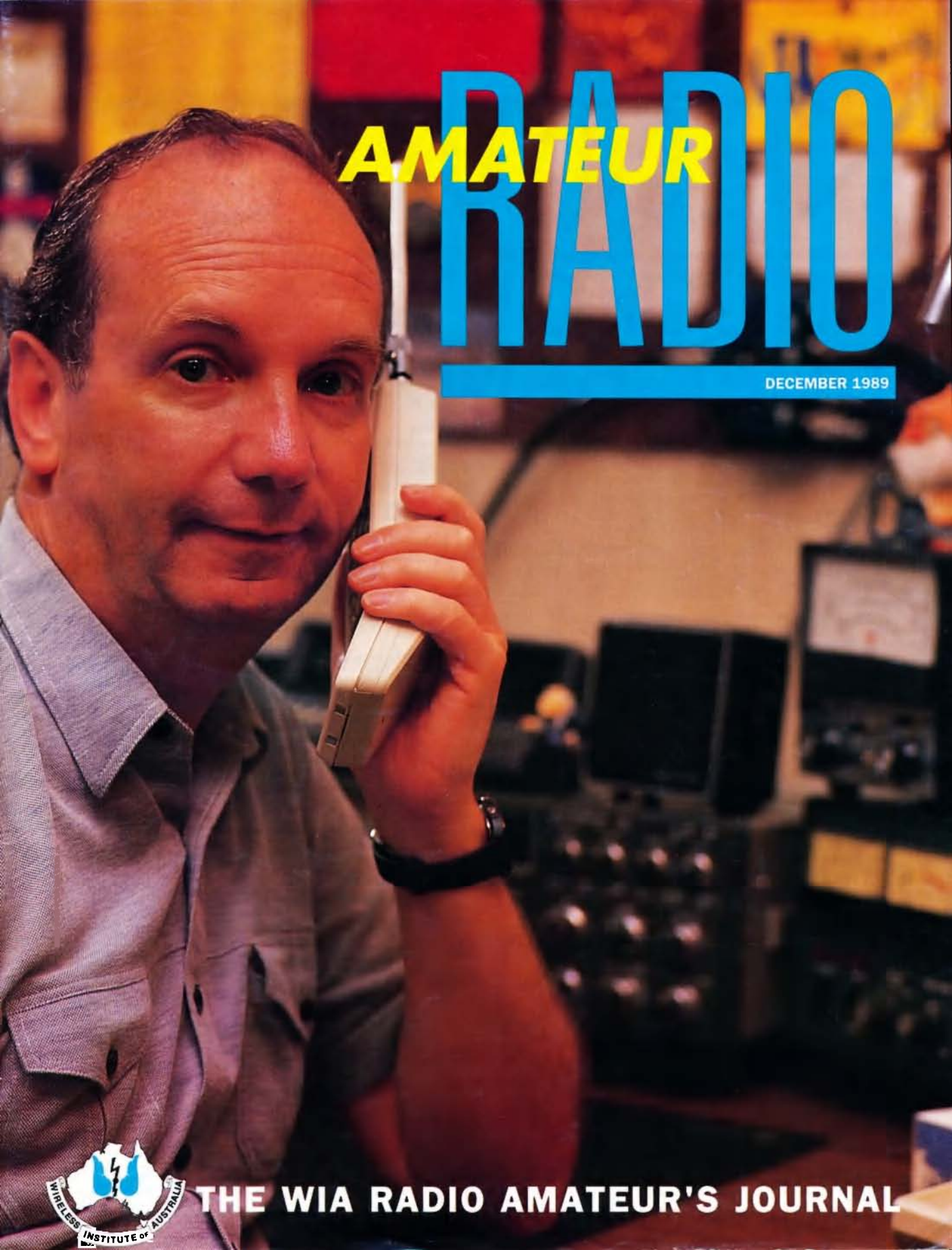


IC-228A



IC3210A

ICO 0023



AMATEUR RADIO

DECEMBER 1989

THE WIA RADIO AMATEUR'S JOURNAL

KENWOOD

KNOCKOUT DUAL-BAND DUO!

TM-731A

The Kenwood TM-731A redefines the original Kenwood term "dual bander". The wide range of innovative features include a dual watch function, selectable full duplex operation, automatic band change, 30 memory channels, large dual LCD displays, programmable scanning, and 50 watts of output on 144 MHz and 35 watts on 430 MHz.

The optional RC-10 multi-function handset remote controller is also available, making the TM-731A even more enjoyable to operate.

Features:

- Ultra Compact design with easy to install mount.
- Multi function microphone with programmable function key.
- High sensitivity receiver and an improved antenna switching circuit for wide dynamic range.
- Hi/Lo power switch for power reduction to 5 watts when high power not needed.
- Dual watch function to receive both 144 MHz and 430 MHz bands at the same time.
- 30 Memory channels with Lithium battery backup.
- Various scan modes are provided including band scan, programmable band scan, memory and dual scans.
- Frequency lock function prevents accidental loss of selected frequency.
- Dual frequency selector may operate independently of each other for main and sub-bands.
- Sliding balance controls audio output between main and sub-bands.
- Easily selectable dual and single band operations.
- Large amber multi-function LCD display for best visibility in sunlight or after dark.
- Built-in selectable CTCSS Tone Encoder

TH-75A

The TH-75A combines the 2m and 70cm bands together into one compact, feature-filled hand-held package. Large dual LCD displays, dual watch, selectable full duplex operation, tone alert and many additional features make this dual band HT different from the rest.

Features:

- Dual watch function allows you to receive both VHF and UHF bands at the same time.
- Built in 2 VFOs for main and sub-bands.
- Large multi-function LCD display provides excellent visibility.
- Tone Alert System for both bands causing a beeper tone to signal the presence of an incoming signal.
- Automatic band change function changes between main and sub-bands when a signal is present.
- Selectable dual and single band operations.
- Five watts RF output is available when operated with 13.8 VDC.
- Balance control for main and sub-band audio output.
- 10 Multi-function memory channels plus call channel for each band, with lithium battery backup.
- Various scan modes are provided including band scan, programmable scan, memory and dual scan.
- Auto battery saving circuit increases battery life.
- Auto-power off function.

KENWOOD ELECTRONICS AUSTRALIA PTY. LTD.
(INCORPORATED IN N.S.W)
4E Woodcock Place, Lane Cove, N.S.W. 2066, Australia
Ph. (02) 428 4222, (02) 428 1455, Fax (02) 427 6869
Call now for further information and the name of your nearest authorised Kenwood dealer.

Please phone, mail or fax for information

Name _____

Address _____

_____ Postcode _____

Publication _____ Issue _____

Model _____

AMATEUR RADIO

THE WIA RADIO AMATEURS JOURNAL

Vol 57 No 12 ISSN 0002-6859 December 1989

Amateur Radio is published by the Wireless Institute of Australia, as its Official Journal on the last Friday of the previous month.

EXECUTIVE EDITOR

Bill Rice VK3ABP

MANAGING EDITOR

Graham Thornton VK3IY

NEWS EDITOR

Jim Linton VK3PC

SENIOR TECHNICAL EDITOR

Peter Gibson VK3AZL

TECHNICAL EDITORS

David Brownsey	VK4AFA
Don Graham	VK6HK
Evan Jarman	VK3ANI
Peter O'Connor	VK4KIP
Gil Sones	VK3AUI
Phil Steen	VK4APA
Roy Watkins	VK6XV

DRAFTING

Vicki Griffin VK3BNK

ADVERTISING

Ann McCurdy

All contributions and correspondence concerning the content of Amateur Radio should be forwarded to: -

The Editor
Amateur Radio
PO Box 300
Caulfield South
VIC 3162

Registered Office

3/105 Hawthorn Road
Caulfield North VIC 3161

Telephone: (03) 528 5962
(03) 523 8191

Fax: (03) 523 8191
(Non dedicated line)

Deadlines

	Editorial	Hamads
January	4/12/89	6/12/89
February	8/1/90	10/1/90
March	5/2/90	7/2/90

CONTENTS

Technical

A VLF-LF Receiver 10
Lloyd Butler VK5BR
Morse Code is a Myth 16
Mervyn Eunson VK4SO
TR-7 Operation with VHF Transverters 28
RL Drake Co.
Valve Receiver Conversions 21
Rob Gurr VK5RG

General

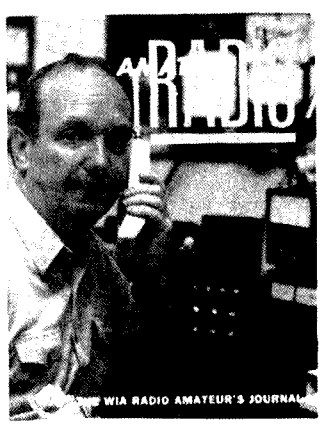
Antenna Impedance Matching (Book Review) 57
Ron Cook VK3AFW
Better TV & Radio Reception (Book Review) 30
Jim Linton VK3PC
JAL Ham Fair 35
David Wardlaw VK3ADW
WIA 80 Competition 34

Operating

Awards
ANZAC, VR6 Bicentennial 43
Connecticut DXA 44
Contests
Calendar, French Contest Rules (1990) 41
Australasian Sprint Results 41

Columns

Advertisers Index 64
ALARA 50
AMSAT 46
Club Corner 53
Data and Digital 48
Divisional Notes
VK2 54
VK3, VK4 55
5/8 Wave, VK6 56
Education Notes 54
Hamads 62
How's DX 36
Intruder Watch 56
Morseword no.33 40
Over to you - Members Opinions 58
Pounding Brass 45
QSLs from the WIA Collection 51
Silent Keys - Obituaries 58
Spotlight on SWLing 49
VHF/UHF - An Expanding World 38
WIA Directory 2,3
WIA News 3
WICEN 46



Cover

Peter Gamble VK3YRP, Federal President of the WIA. See page 2 for an important message.

PRESIDENT'S MESSAGE

PETER GAMBLE VK3YRP FEDERAL PRESIDENT

Why be a Member of the WIA ?

This is a question that crosses an Australian radio amateur's mind from time to time and deserves a reasoned response.

On first consideration the answers can be grouped under three headings:

- the tangible,
- the intangible, and
- the fair go.

Tangible Benefits

A couple of years ago the WIA was frequently confronted with the assertion "All I get for my membership is a magazine!" This led to a review of what services were provided, who were the providers of the services and did non-members receive some, or all, of these benefits for free?

The last count on this score showed some forty services, spread almost equally between the Executive Office and the Divisions. Never-the-less, it is a fact that, to most members, Amateur Radio magazine is the most tangible evidence of membership. That is why AR conducted a survey of its readers last year.

After the magazine, I would suggest that repeaters, news broadcasts and QSL bureaux rank next in importance. Each of these services is visible, useful and, as it happens, free to non-members, except perhaps QSLs which cost only a nominal fee.

It is also a fact that members services are highly dependent upon proximity to the servers, which are the Divisions in capital cities and large radio clubs across the country. In an ideal situation the country member should feel he is as well served as his city counterpart and I believe this is achievable as clubs become more involved in the server role.

A number of members services are valued highly, but only infrequently invoked. These include advice on planning approval for towers, EMC support (when interference becomes a problem) and information on reciprocal and visitors licences for overseas trips. The first two can be very emotive issues when they are invoked!

It is frequently said that for communicators, we are very poor at communicating! I believe this is very true and it is not assisted by our three tier management structure of Federal, Divisions and members.

As President, I am putting a lot of effort into helping break down those communications barriers. I see the need to use all means at our disposal, including AR magazine, Federal tapes on our news and information broadcasts and word of mouth.

It is also a characteristic of our hobby that we tend frequently to communicate erroneous matter, rumours and disinformation. Our sister society in the USA, the ARRL, observed this in a recent QST editorial where they examined the great potential power of packet radio both to aid and damage amateur radio depending on the thought applied to its use. Indeed, the WIA wishes positively to use this mode, and several Divisions currently either run amateur radio bulletin board services or regularly contribute to them.

Intangible

It is a fact of life that people's interest in a matter diminishes the less they believe it affects them directly, and amateur radio is no exception.

Starting at the highest level, the major WARCs occur about every 15 to 20 years. They create a peak of interest during the build up phase before the meeting, often related to frenzied fund raising activities to support a delegation to Geneva to "retain our bands". The results of the WARC, whilst far reaching, are often slow to filter down to the ordinary operator and they are frequently delayed in implementation. For example, we have only just received one of the major gains of WARC79, that is the exclusive use of the 18 and 24 MHz amateur bands.

For those who would say "I don't need international representation", I would reply that you cannot confine your emissions within national frontiers. Furthermore, were it possible to so confine your radiation, you would quickly become dissatisfied with your hobby.

Continued on page 8

Wireless Institute of Australia

The world's first and oldest National Radio Society - Founded 1910
Representing Australian Radio Amateurs - Member of the International Amateur Radio Union
Registered Executive Office of the WIA: 3/105 Hawthorn Road, Caulfield North, Vic, 3161
All mail to: **PO Box 300, Caulfield South, Vic, 3162** Telephone: (03) 528 5962 (03) 523 8191
Fax: (03) 523 8191 (Non-dedicated line)

General Manager and Secretary: Bill Roper VK3ARZ

EXECUTIVE

President:	Peter Gamble	VK3YRP	**VK1 Federal Councillor:**	Kevin Olds	VK1OK
Vice Chairman:	Ron Henderson	VK1RH	**VK2 Federal Councillor:**	Peter Jeremy	VK2PJ
	George Brzostowski	VK1GB	**VK3 Federal Councillor:**	Peter Mill	VK3ZPP
	Brenda Edmonds	VK3KT	**VK4 Federal Councillor:**	David Jerome	VK4YAN
	Bill Rice	VK3ABP	**VK5 Federal Councillor:**	Bill Wardrop	VK5AWM
Immediate Past President:	David Wardlaw	VK3ADW	**VK6 Federal Councillor:**	Neil Penfold	VK6NE
			VK7 Federal Councillor:	Joe Gelston	VK7JG

FEDERAL CO-ORDINATORS

Amsat:	Graham Ratcliff	VK5AGR	**Int'l Travel Host Exch:**	Ash Nallawalla	VK3CIT
Awards Manager:	Ken Gott	VK3AJU	**QSL Manager (VK9, VKØ)**	Neil Penfold	VK6NE
Contest Manager:	Frank Beech	VK7BC	**Standards & FTAC:**	Rob Milliken	VK1KRM
Education:	Brenda Edmonds	VK3KT	**Tapes (Federal News):**	Bill Roper	VK3ARZ
EMC:	Hans Ruckert	VK2AOU		Ron Fisher	VK3OM
Historian:	John Edmonds	VK3AFU	**Videotape:**	John Ingham	VK5KG
Intruder Watch:	Gordon Loveday	VK4KAL	**WICEN:**	Bill Wardrop	VK5AWM

1990 Member Fees

During the first week of December, almost 6000 members of the WIA will receive renewal notices for their membership subscription.

As has been detailed and discussed in Amateur Radio magazine and on Divisional news broadcasts over the past 7 months, WIA membership fees for 1990 have increased considerably in a "catch-up" jump to compensate for the lack of CPI increases over the past 10 to 15 years, and to improve member services.

Much chopping and changing of the proposed 1990 fees took place as Divisions met again and again in an attempt to ensure that every aspect of financing the operation of the WIA was minutely examined.

The final result can be seen on page 3 of December issue of Amateur Radio magazine, with the maximum fee for full membership of a majority of Divisions being $65.00.

You will also notice a new grade of membership. After much discussion, and following many requests from both individual members and Divisions, there is now available a new, inexpensive grade of membership of the WIA whereby you can be a member receiving all the normal benefits of membership, but **WITHOUT RECEIVING AMATEUR RADIO MAGAZINE.**

This particular subscription varies with some Divisions. For example VK1, VK3, VK4, and VK5/8 provide this new grade of membership for only $39.00, with VK2 charging $33.00, VK6 $30.00 and VK7 charging $38.00.

You will also note that, as from 1st January 1990, there will be only three levels of membership subscription. F, or Full member; G, which is the Pensioner or Needy member, combined with S, the Student member; and X, the new non-AR membership which used to be available only to family members.

The three year membership is still available to F and G members **ONLY** on payment of an amount equal to three times the relevant fee (and, in this regard, please note that there is no two year membership available).

As a matter of interest, the break up of the Federal component of the full membership fee is as follows:-

Amateur Radio Magazine	$30.00
Federal Executive	$16.25
IARU component	$ 0.75
International	$ 2.00
Total	$49.00

WIA NEWS

BILL ROPER VK3ARZ GENERAL MANAGER & SECRETARY

WIA DIVISIONS

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually their residential State or Territory, and each Division looks after amateur radio affairs within their State.

Division	Address	Officers			Weekly News Broadcasts	1990 Fees
VK1	ACT Division GPO Box 600 Canberra ACT 2601	President Secretary Treasurer	Ted Pearce Jan Burrell Ken Ray	VK1AOP VK1BR VK1KEN	3.570 MHz 2m ch 6950 70cm ch 8525 2000 hrs Sun	(F) $65.00 (G) (S) $52.00 (X) $39.00
VK2	NSW Division 109 Wigram St Parramatta NSW 2124 (PO Box 1066 Parramatta) Phone (02) 689 2417	President Secretary Treasurer (Office hours	Roger Henley Peter Batnaves David Horsfall Mon-Fri 11.00 - 14.00 Wed 19.00 - 21.00)	VK2ZIG VK2CZX VK2KFU	(R Denotes repeater) Times 1045 and 1915 on Sunday 1.845 MHz AM, 3.595 AM/SSB, 7.146 AM (1100 only) 28.320 SSB, 52 120 SSB 52.525 FM 144.12 (SSB) 147.000 FM(R) 438.525 FM(R) 584.750 (ATV Sound) 1281.75FM (R) Relays also conducted via many repeaters throughout NSW.	(F) $59.00 (G) (S) $47.00 (X) $33.00
VK3	Victorian Division 38 Taylor St Ashburton Vic 3147 Phone (03) 885 9261	President Secretary Treasurer	Jim Linton Barry Wilton Rob Hailey	VK3PC VK3XV VK3XLZ	1.840 MHz AM, 3.615 SSB, 7.085 SSB, 147.250 FM(R) Mt Macedon, 147.225 FM(R) Mt Baw Baw 146.800 FM(R) Mildura, 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday	(F) $65.00 (G) (S) $52.00 (X) $39.00
VK4	Queensland Division GPO Box 638 Brisbane Old 4001 Phone (07) 284 9075	President Secretary Treasurer	David Jones John Aarsse Eric Fittock	VK4NLV VK4QA VK4NEF	3.605 MHz, 7.118, 14.342, 18.132, 21.175, 28.400, 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday Repeated on 3.605 & 147.150 MHz, 1930 Monday	(F) $65.00 (G) (S) $52.00 (X) $39.00
VK5	South Australian Division Thebarton Rd West Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Secretary Treasurer	Don McDonald Hans van der Zalm Bill Wardrop	VK5ADD VK5KHZ VK5AWM	1820 kHz 3.550 MHz, 7.095, 14.175, 28.470, 53.100, 145.000, 147.000 FM(R) Adelaide, 146.700 FM(R) Mid North, 146.900 FM(R) South East, ATV Ch 34 579.00 Adelaide, ATV 444.250 Mid North (NT)3.555, 146.500, 0900 hrs Sunday	(F) $65.00 (G) (S) $52.00 (X) $39.00
VK6	West Australian Division PO Box 10 West Perth WA 6005 Phone (09) 474 2626	President Secretary Treasurer	Alyn Maschette Bruce Hedland - Thomas	VK6KWN VK6OO	146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 3.560, 7.075, 14.115,14.175, 21.185, 28.345, 50.150, 438.525 MHz Country relays 3582, 147.350(R) Busselton 146.900(R) Mt William (Bunbury)147.225(R) 147.250 (R) Mt Saddleback 146.725(R) Albany 146.825(R) Mt Barker Broadcast repeated on 3.560 at 1930 hrs.	(F) $56.00 (G) (S) $45.00 (X) $30.00
VK7	Tasmanian Division PO Box 1010 Launceston TAS 7250	President Secretary Treasurer	Mike Wilson Bob Richards Peter King	VK7ZWW VK7NRR VK7ZPK	146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.750 (VK7RNW), 3.570, 7.090, 14.130, 52.100, 144.100 (Hobart) Repeated Tues 3.590 at 1930 hrs	(F) $63.00 (G) (S) $50.00 (X) $38.00
VK8	(Northern Territory) is part of the VK5 Division and relays broadcasts from VK5 as shown (received on 14 or 28 MHz).					

Note: All times are local. All frequencies MHz.

Membership Grades

Full	**(F)**	**Pension**	**(G)**
Needy	**(G)**	**Student**	**(S)**
Non receipt of AR			**(X)**

Planning for WARC 92

WARC 92, an Administrative Radio Conference of the International Telecommunication Union (ITU) to be held in Spain, in 1992, will have on its agenda re-allocation of certain parts of the radio frequency spectrum. An Administrative Radio Conference is a meeting of member countries of the ITU which has the power to amend the International Radio Regulations which are in the form of a treaty between the countries which sign the Final Acts of the Conference.

At the WARC each member country has one vote, and has the right to speak. Recognised international agencies such as ICAO, IARTA, and IMCO are also allowed to attend but can only speak by invitation. The International Amateur Radio Union (IARU) is a recognised international agency, and therefore is allowed to attend a WARC.

The main work of a WARC is carried out by committees which are further divided into working groups. These committees and working groups often meet simultaneously in order to cover the detail of the agenda as quickly as possible. The final text has to be passed by a plenary of the WARC.

In WARC 79 there were nine committees and one of those, the committee dealing with allocation of frequency matters, was further divided into six different sub-committees dealing with different parts of the spectrum.

As can be seen, the manner in which the best interests of the amateur radio service can be served, is to have at least one amateur as a member of the national delegation.

In 1959, the late John Moyle was an observer on the Australian delegation to WARC 59. As John was not a full member of the Australian delegation, his participation was limited, but it was still a breakthrough for the WIA and the amateurs of Australia.

In 1979 David Wardlaw, VK3ADW, and Michael Owen, VK3KI, were full members of the Australian delegation to WARC 79, and thus were able to participate fully in the discussions. With two amateurs as part of the Australian delegation, it was possible to cover a great deal more of the matters of concern to the amateur service.

The Australian official preparation for WARC 79 was spread over more than three years. The WIA's preparation for WARC 79 was spread over an even longer period.

Now we have WARC 92 looming ahead, just over two years away. Although we understand that this will be a limited WARC (at just over four weeks in duration it will be much shorter than WARC 79), it will still cover frequency allocation in areas which include amateur bands on both HF and UHF.

The WIA has made a decision to fund at least one delegate on the Australian delegation, and it is understood that this is acceptable to the Australian administration.

Preliminary costings are being prepared at the present time. When considering these costings, it is imperative to realise that an amateur delegate must be on an equal footing to the other delegates as far as expenses are concerned, if he is to be completely effective.

The WIA has been invited to join the Australian Preparatory Group for WARC 92 which is to be convened early in 1990. This is the official Australian group which prepares Australia's position and forwards proposals on the issues under consideration at WARC 92, and also studies the proposals from other administrations.

In the light of experience gained at WARC 79, it is essential that the WIA, representing the Australian amateur service, should have a minimum of two representatives to attend all meetings of the Australian Preparatory Group, and be part of the Australian delegation to WARC 92.

These representatives will need to have a comprehensive knowledge of the requirements of the amateur service, both nationally and internationally, a knowledge of the other services that use the radio spectrum and how their proposals may affect the amateur service, and a knowledge of the existing ITU Constitution, Convention and Radio Regulations.

To achieve this, and to provide the maximum possible effort to protect the amateur bands, the WIA needs the support of every amateur in Australia. Only as a strong, financially viable organisation, representing the majority of active radio amateurs in Australia, can we hope to protect our amateur service interests.

Repeater Cross Linking

Wow!! What a storm of controversy! The subject of cross band linking of repeaters, a matter which only affects a small percentage of radio amateurs in Australia at the present time, has been the cause of a great deal of misunderstanding and ill-informed comment amongst the Australian amateur community in recent weeks.

Let me try to detail briefly the chain of events without becoming embroiled in the technical arguments.

Cross band linking of repeaters has been under contemplation and discussion in the amateur service for quite some time. DoTC and the WIA started discussions in April 1988, immediately after DoTC announced approval for Novice operation on 2 m, because of the concern that a Novice licensee's transmissions could be re-transmitted by a linked repeater with output on a frequency for which the Novice was not licensed to operate.

As a result of discussions at the Executive meeting on 17th and 18th June 1989, the Federal Technical Advisory Committee (FTAC) wrote a letter to all WIA Divisions answering some queries raised about repeater cross band linking and the apparent differing interpretations of "regulations" between states. The WIA attitude was to oppose any individual approach to DoTC to seek more detailed interpretation because this inevitably seems to lead to tighter conditions in direct contradiction of de-regulation.

At the WIA/DoTC Joint Meeting on 25th July 1989, DoTC asked for the WIA's comments on tone access switching for operation of cross band linked repeaters. The WIA impression at this stage was that the matter was important, but not urgent, and there was plenty of time to explore all the ramifications of the problem.

Therefore, following the delayed release of the minutes of this meeting, FTAC again wrote to all Divisions on 12th September requesting comments on the matter so that it could be discussed at the Executive Meeting scheduled to be held over the weekend of 7th and 8th October. Regrettably, this meeting had to be postponed because several Executive members would have been unable to attend because of the airline dispute.

Towards the end of September DoTC advised the Executive Office by telephone that it needed a response by the end of the month because it was being pressured by a repeater licensee to grant a licence for a cross band linked repeater.

Between 26th and 28th September, FTAC telephoned all Divisional Federal Councillors to hasten along their decisions. The end result was that all Divisions agreed with the concept of tone access switching for operation of cross band linked repeaters, with several indicating a preference for the CTCSS method.

The Chairman and other Canberra members of FTAC then decided that the method of tone access switching should be by 1750 Hz tone burst. This resolution was relayed to DoTC in a letter dictated to the General Manager and forwarded to Canberra DoTC on 7th October 1989.

This decision by FTAC to recommend tone burst was constitutionally correct, and did not have to be referred back to the Divisions. However, with hindsight, and particularly in view of the technical complexi-

ties of the matter, the WIA Executive should have withstood the pressure from DoTC for such an urgent decision, and referred the question of the method of tone access switching back to the Divisions.

And this is where the misunderstandings occurred. Particularly when, because of a communication misunderstanding between FTAC and the Executive Office, the news release from the WIA incorrectly stated that the decision to recommend tone burst access was a majority vote of the Divisions and interested parties.

Then, amongst all the tumult and emotive shouting, it became apparent to Executive that "Murphy's Law" was well and truly in operation. Although the WIA and DoTC had been talking all along about control of cross band linking of repeaters only in those circumstances where the output of the cross linked repeater would transgress the terms of the amateur operators licence (eg Novice licensee being re-transmitted on 432 MHz), the ruling by DoTC extended the tone access switching of repeaters to all linked repeaters, whether they were cross band or not!

Further difficulties stemmed from the wording of the DoTC ruling. Taken literally it meant that some existing repeater system management control functions were now of dubious legal status!

Following a discussion by Executive, including all Divisional members of Executive per medium of a nationwide telephone conference hookup, a four page fax letter of 26th October 1989 was sent to all Divisions by the Federal President, Peter Gamble, VK3YRP. This fax explained the circumstances, provided background material, and advised that a meeting had been arranged with DoTC in Canberra on 9th November 1989 to re-negotiate the matter of tone access control of cross band repeater linking. Divisions were asked to provide their detailed recommendations on the method of tone access switching as soon as possible.

That meeting with DoTC took place on Thursday, 9th November 1989 between Peter Gamble, George Brzostowski and Rob Milliken from the WIA, and Alan Jordan and Wayne Huxley from DoTC.

As a result of the meeting, DoTC indicated that it would be prepared to consider sympathetically, an approach from the WIA which proposed the use of standard tones, whether they be CTCSS, DTMF or tone burst, for repeater control functions. Further, control on repeater linking would only be mandatory for cross band linked repeater systems where there is the possibility of an amateur operator transgressing the terms of his licence.

A submission is being prepared for consideration by Executive members from all Divisions at the Executive meeting to be held over the weekend of 18th and 19th November 1989.

As the "crisis" seems to be resolved, and we wait for the next one, we should pause for a moment and reflect on what can be learnt from this matter.

Perhaps it has pointed up the fact that private submissions to DoTC for rulings do have the power to throw spanners into the works. Also, that as communicators, amateurs sometimes do not communicate very well with each other either at an individual level, or at Divisional and Executive level.

And, further, that the WIA should not allow itself to be pressured into rushing a decision on such a complicated technical matter. Nevertheless, it is encouraging for the future of amateur radio in this country to note that, when the chips were down, the Divisions and a great number of WIA members rose to the occasion with constructive criticisms and suggestions, and assisted the WIA Executive satisfactorily to resolve the situation.

Amateur Growth In VK

The DoTC official statistics for Radiocommunications Licences current as at 30th September 1989 are just to hand. Statistics can be boring, but the figures in this report make for some interesting interpretation, and for some concern.

Amateur radio has a marvellous history of achievement and I believe that radio amateurs will continue to benefit mankind, not only technically, but also in the increasingly important area of international friendships and understanding. However, many national radio amateur societies are currently very concerned about the lack of growth in the hobby, which could lead to difficulties for the amateur service in the future.

In the 12 months to 30th September 1989, the amateur licensees in Australia increased by only 94 from 18026 at 1st October 1988, to 18120. This is a growth of only .52%, and is surely a matter of concern!

In this year to 30th September 1989, Novice numbers decreased by 67, and AOCP licensees increased by 166. Victoria had the biggest increase in total amateurs, increasing by 99 to a total of 5022, but NSW still has the highest number of amateurs with a total of 5274, even though there was a decrease of 135 in the past 12 months.

Amateur Radio Publicity

Publicising amateur radio is more necessary now than it ever was before. Every radio amateur in Australia, whether a member of the WIA or not, has a role to play. It would be wrong if the WIA did not emphasise the importance of individuals and amateur radio clubs who help our hobby by showing-off the best in amateur radio.

One such instance occurred recently because of the terrible earthquake damage to San Francisco. Amateurs in Australia, many of them members of IARN, provided invaluable service by passing health and welfare messages and enquiries to and from the stricken area. And, for a change, the media seemed to keep its coverage of the radio amateur involvement accurate and informative.

Much of the credit for this excellent local media coverage of the importance of amateur radio in a disaster situation like the San Francisco earthquake must go to the tireless Sam Voron, VK2BVS, and his IARN team which included, amongst many others, Ken Richards, VK3CKK, Harry Brown, VK6AP, Ray Gray, VK6RQ, and Phil Evans, VK2KEV. Well done!

1990 Call Book

The 1990 Australian Radio Amateur Call Book has proved to be a great success, and a substantial improvement on the 1988 Call Book. Supplies of the limited edition of this invaluable reference work are dwindling rapidly, and it seems possible that many amateurs may miss out.

If you have not already obtained your copy of the 1990 Call Book, could I suggest you hasten to contact your Divisional Bookshop before supplies run out.

The 1990 Call Book is available for the concessional price of $8.50 to WIA members, plus postage where applicable.

Exam Question Banks

Amateur examination devolvement has taken another big step towards being a reality according to a letter received from the DoTC Examinations Officer, Keith Carr-Glynn, which enclosed the Question Bank for the Regulations Examination, to join the Question Banks already received for the AOCP and Novice Theory Examinations.

DoTC stresses that this Regulations Question Bank can only be used for examinations AFTER 21ST FEBRUARY 1990. Until then, the old system still applies and DoTC examinations have been written

using the old syllabus.

DoTC also advises that, with the comprehensive assistance of Marshall Emm, VK5FN, of the Adelaide Hills Amateur Radio Club, it expects to be able to distribute to approved examining bodies in the near future, a compiled dBase III Plus program which will be able to be used to generate and print examination papers for use in Amateur examinations.

As Keith put it so aptly in his letter, we are rapidly approaching the end of an era with amateur examinations having been distilled down to a floppy disk and four books. And the beginning of a new era, where the *continuing* success and high standards of the Amateur Service in Australia will shortly be in the hands of the Amateur Service itself.

When devolvement of amateur examinations comes into effect early next year, it will be an important and vital step in the continuing deregulation of the Australian Amateur Service.

ABC Gets it Wrong

Despite the considerable efforts by the WIA, radio clubs and individual amateurs over the years to educate the print and electronic media to the very real differences between radio amateurs, users of the Citizens Band service, and illegal users of the radio spectrum, most of the time the media seems to get it wrong.

It's strange, but when the amateur service is providing beneficial services to the community in times of emergency, such as the recent San Francisco earthquake, the media seems to get it reasonably right, if you make some allowances for use of journalistic licence.

However, when some operator from another radio service, licensed or not, causes problems, the media seems to immediately lump all such occurrences under the headlines of "amateur radio operators" or "radio hams", etc..

The latest national blunder of this type by the media was included in the highly rated ABC TV show "The Investigators" in their program transmitted on 7th November 1989.

The Executive Office was inundated on Wednesday, 8th November 1989, with telephone calls and faxes from amateurs all around Australia protesting at the program's implication that amateur radio operators were responsible for foul language appearing on the 27 MHz band, which we all know is a band now used by the Citizens Band Radio Service.

The Federal President, Peter Gamble, VK3YRP, immediately faxed off a formal letter of complaint to the producer of "The Investigators", to join the many other protest letters and faxes sent by WIA Divisions, radio clubs, and individual radio amateurs.

In an initial telephone conversation from the Executive Office with the producer of the show, it was obvious that the error was made in ignorance. It was explained to the producer that, although the word "amateur" cannot normally be claimed exclusively by any group to have a distinctive and specific meaning, apart from the dictionary definition of the word, when it is used in conjunction with radio communications, the word "amateur" most definitely does take on a very specific and legal meaning.

This specific meaning is not only clearly spelled out by the specialised agency of the United Nations, the International Telecommunication Union (ITU), but also in the Australian Radio Communications Act.

It is expected that a clarification of, and an apology for, the use of "amateur radio operators" in the incorrect context will be made in the next televised production of "The Investigators" on Tuesday, 14th November 1989.

WICEN Use of Bands

Comments heard on air after a recent Wireless Institute Civil Emergency Net (WICEN) exercise suggest that there is more need for communication between WICEN and the general amateur, and more need for understanding by the general amateur of the vital role played by WICEN.

It can be irritating to commence a regular "sked" on a particular frequency, only to be told "this frequency is in use for a WICEN exercise, please QSY". Fortunately, most radio amateur operators are prepared to oblige, and do so willingly.

But problems do arise when the amateur perceives the request to have been made officiously or tactlessly. Tolerance on both sides is essential, but more support is gained if the activities which will tie up frequencies are advertised well in advance. In addition, such publicity may well attract an audience, some of whom may become interested in becoming involved in future activities.

Divisional news broadcasts, and Amateur Radio magazine, are obvious vehicles for advance publicity of WICEN, or other, exercises.

For example, two events known to be taking place during December 1989 are the Great Victorian Bike Ride, and the Murray River Canoe Marathon.

The Bike Ride starts at Yarrawonga on 2nd December, runs for 9 days, and will be using 2m repeaters VK3s RGV, RML, RNE and RMM.

The Canoe Marathon runs from 27th December at Yarrawonga to 31st December at Swan Hill. The main frequencies to be used will be 3.600 MHz and 146.500 MHz, with the possibility of using VK3RWP on 147.300 MHz.

In both events other frequencies, including UHF, may be used if the situation requires them. Please be tolerant if your favourite frequency is unavailable for a short time.

1296 MHz Band Plan Approved

UHF enthusiasts have been wanting a change in the existing WIA 1296 MHz band plan for some time. At the 1989 WIA Federal Convention, it was decided that, subject to the Civil Aviation Authority (CAA) accepting the existing guard band for airport radar, the WIA would adopt the new VK4 recommended band plan, as it provided the greatest flexibility for all modes of operation and experimentation on the 1296 MHz amateur band.

The existing 1296 MHz band plan is published as Plan A on page 31 of the 1990 Australian Radio Amateur Call Book, and the proposed new band plan is shown as Plan B on the same page.

Subsequent to the Federal Convention, approaches were made to CAA seeking their approval for the new band plan.

A reply has been received from L N Tate, the Manager Communications Engineering of CAA which reads...

"I have discussed your revised Band Plan with our Radar Section, who see no problem at this time.

You may be aware that the Authority has just committed substantial funds to the updating of existing and installation of new radar sites, to give coverage along the eastern seaboard of Australia from Cairns southward. This contract will see over the next two years the removal of existing radars from the 1270 - 1280 MHz band, therefore, if the users of the 1296 MHz Amateur band cause no interference as a secondary service to the Authorities' radar during this period, we have no objection to the new band plan."

In view of this approval, it is expected that the WIA Executive, at its next meeting, will formally adopt and announce the changeover to the new bandplan.

DOC 70 Available

The last of the three pamphlets produced by DoTC to replace the old Amateur Radio Operators Handbook is now available free from all DoTC Communications Operations Division Offices.

DOC 71, Licence Conditions and Regulations applicable to

Continued on page 44

4 STORE BUYING POWER

ROTATORS! ROTATORS! ROTATORS!

Make	Model	Braking	Rotation	Price
KENPRO	KR400	1530kg/cm	400kg/cm	$369
KENPRO	KR400RC	1500kg/cm	400kg/cm	$429
KENPRO	KR500A	Elevation Rotator		$479
KENPRO	KR800	4000kg/cm	800kg/cm	$659
KENPRO	KR2000	10,000kg/cm	2000kg/cm	$1299
KENPRO	KR5400B	Azmith/Elevation		$899
CREATE	RC5-1	7000kg/cm	600kg/cm	$575
CREATE	RC5A-3	15,000kg/cm	1600kg/cm	$1199
CREATE	RC5B-3	20,000kg/cm	2,200kg/cm	$1730

FIRST SHIPMENT SOLD

Next shipment due Nov.

NEW from A.E.A.

MM3 MORSE MACHINE

Featuring
- 2.99 WPM speed selection
- 20 memory channels
- 8000 character storage
- RS232 compatible
- Programmable auto beacon
- Random word generator
- QSO simulator
- Fully featured keys

ONLY $425

PERTH OPENING SPECIAL

Never to be repeated!

DAIWA ROTATORS Model MR 750

Braking 6000kg/cm rotation 700kg/cm

ONLY $399

TOKYO HY-POWER

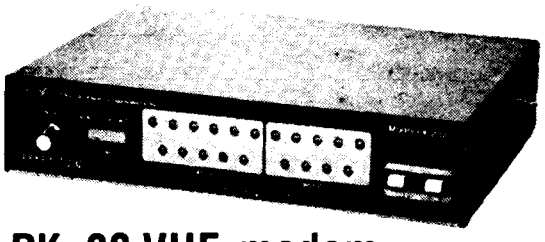
LINEAR AMPS 2 mtrs	was	JUST ARRIVED now
HL 180V auto	$599	$545
HL 160V/25	$499	$475
HL 85V	$339	$299
HL 130U	$799	$769
6 mtrs		
HL 66V	$299	$279

JOIN PACKET

New PK-232 Breakthrough including PMS**

A new software enhancement makes the AEA PK-232 the only amateur data controller to offer six transmit/receive modes in a single unit.

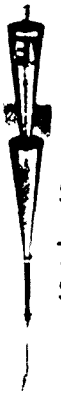
★ Morse Code ★ Baudot (RTTY) ★ ASCII ★ AMTOR ★ Packet ★ Weather FAX



PRICE $640 incl FAX

PK 88 VHF modem $299

AEA Isopoles 2m & 70cm

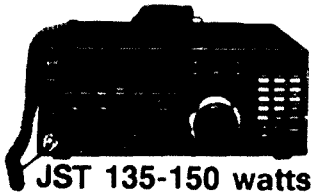


2mtr $145

70cm $199

NEW JRC

NOW IN STOCK



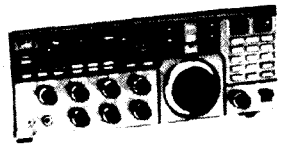
JST 135-150 watts

* The ultimate HF Transceiver

Price $3199

* **Built by the professional for the connoisseur.**

NRD 525 Receiver



- Superb performance
- Quality Manufacture
- 200 memories
- VHF/UHF option avail.
- RS 232 option avail.

PRICE $2599

ICOM

SPECIAL - IC28A only $499

ALL ICOM PRODUCTS, COMMERCIAL AND AMATEUR ARE AVAILABLE FROM EMTRONICS.

Contact us for Australia's most competitive prices!

KENWOOD

Full range of all Kenwood products available at competitive prices from our 4 stores!!!

REVEX SWR & POWER METERS

W560 $299 1.8-525MHz 3W/20W/200W

W570 $350 1.8-1300MHz 5W/10W/200W

THESE PRECISION HIGH QUALITY METERS EMPLOY REVEX EXCLUSIVE WIDEBAND COUPLERS & PROVIDE LABORATORY GRADE PERFORMANCE.

BANKCARD
MASTERCARD & VISA
WELCOME

EMTRONICS

MAIL ORDERS WELCOME

NSW & HEAD OFFICE:
92-94 Wentworth Ave. Sydney
NSW 2000. TLX: AA73990
PO Box K21 Haymarket, NSW 2000
Ph: (02) 211 0988 FAX: (02) 281 1508

VICTORIA:
288-294 Queen St. Melbourne
Vic 3000
Entrance from Lt Lonsdale St
Ph: (03) 670 08551 or 670 0330
Fax (03) 670 0671

QUEENSLAND:
416 Logan Road, Stones Cnr
Qld 4120
Ph: (07) 394 2555
FAX: (07) 394 4316

WESTERN AUSTRALIA:
336 Albany Highway,
Victoria Park WA 6100
Ph: (09) 470 1118

Message from Peter Gamble

Continued from page 2

Negotiations with national authorities are similar. One could cynically say the Department's name changes more frequently than major circumstances affecting amateurs! In the last forty years there have been only a few momentous changes such as limited licences, novice licences and a new RADCOM Act, all of which involved close liaison with the WIA.

The changing mode of national government has also meant a change in the method of negotiation with the administration. Negotiation, public involvement and the importance of representational groups or societies are all key factors.

The WIA provides a combined or coherent voice for the majority of Australia's active radio amateurs. The remainder contribute only a few uncoordinated views, due to a mixture of apathy by the greater number coupled with extremist views of a fairly vocal minority. Sadly, this last group make inordinate demands upon the Department's limited resources and lead DoTC to suggest and wish they would work through the WIA. In these times of "user pays government" often the silent majority bear the expense of the vocal minority in the form of increased licence fees!

Since non-members reap the benefits of all WIA/DoTC negotiations you might ask "Why belong when I can get it anyway?"

This is true, but why should these amateurs "bludge" on their fellow amateurs who are prepared to support their hobby. And, of course, the WIA can only improve its bargaining position with government if it can confidently state it represents the interests of a majority of active radio amateurs.

Fair Go

Australians have always been the champions of giving the little man a fair go. We often refer to the "little Aussie battler". The WIA also believes in this view. It wishes to see all amateurs get a fair go, to see they are given a voice in the management of their hobby and are not subject to any oppressive "big brother" influences.

But the WIA feels that this approach has accompanying, reciprocal responsibilities, responsibilities which need to be seen and counted. Australian radio amateurs must share some of the volunteer workload of managing our hobby, and ultimately share the not insignificant cost of these activities.

Cost of Membership

Having introduced the crunch words "cost" and "money", let us look a little more closely at the funding involved.

Over the last twenty years the WIA, both Federally and Divisionally, has gone through some financial ups and downs. We had our difficult times with galloping inflation in the 70's and gained some respite, unfortunately mainly illusionary, with the high interest rates of recent years.

The WIA has been managed by volunteers with sometimes less than adequate business acumen who have, for the best of motives, held down subscriptions to less than the prevailing inflation rates with the aid of interest from investments. We have also extended ourselves at times, entered into activities without determining their long term escalating and recurring costs, and never properly examined their cost effectiveness.

The Federal body has recognised many of these problems and identified them as issues in the preparation of its corporate plan. We hope, in due course, to implement measures to alleviate these problems by supporting and guiding our many volunteer officers.

I mentioned earlier the volunteer support. That support is essential to keep the WIA functioning. However, as an organisation we have too often prevailed upon a few willing workers to remain in office for far too long, allowing them to get tired, frustrated and not able to contribute their best. This has been to our ultimate disadvantage.

In years gone by, when life was not as hectic, it was common for the secretary of, say, a sporting club or hobby society to remain in office for 20 or more years with no reward, a little praise, much abuse, an honorarium of 20 guineas and perhaps a medal at the end of it all! Todays life style calls for a different type of volunteer officer, one who serves for a much shorter period but, when compared with the past, at a more hectic rate. The result is that "burn-out" occurs if he or she is not rested and replaced after a few years. The WIA needs to tap the great pool of business management acumen in its ranks to share the tasks of administering amateur radio in Australia.

Indeed the WIA is appealing to all amateurs' sense of "giving things a fair go" to come forward and contribute actively and positively in return for your privilege of using many megahertz of that valuable, finite resource, the radio frequency spectrum.

Conclusion

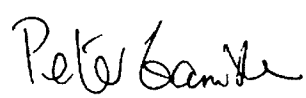
I hope, as you think about these things, you will agree with me that being a member of the WIA is value for money and that you will continue to renew your membership.

If you are one of the many non-members who read "AR" from time to time, perhaps you will consider joining us.

As we approach WARC92, the WIA needs to make sure that we are united on the key issues and have the support of the majority of active amateurs in Australia.

Remember, also, that there are many ways in which you can help your hobby, whether it be at a local club level, Divisional level or at the Executive level. This is an opportunity to enjoy so much.

On behalf of the Executive, and the staff of the Executive Office, I would like to extend Seasons Greetings to you, and may 1990 be a challenging and exciting year for you.



Try This

Patient Kenwood T S 820 S, approx 9 YO.

Symptoms: Very erratic digital readout, with audio blanking.
Diagnosis: Dust between plates of VFO tuning capacitor.
Special Instruments: Household vacuum cleaner (hose type).
Procedure:

1. Apply electrical tape to nozzle of vac cleaner for efficient seal.
2. Remove top cover of T S 820.
3. Switch on rig.
4. Apply nozzle of vacuum cleaner to 3/16" (4.8 mm) hole on top of VFO Shield Cover.
5. Whilst observing readout, rotate dial full travel in both directions, rocking at bad spots.
6. Continue until symptoms disappear maybe 5-10 mins.

Prognosis: Complete recovery.
Note: The above procedure recommended before onerous exploratory operation.

R MacDonald VK4ARM
ar

EMTRONICS

THE AUSTRALIAN RADIO COMMUNICATION CENTRE!

EMTRONICS OPENS IN WA

FROM DEC 1st 1989 EMTRONICS (W.A.) Pty. Ltd. WILL BE IN ITS NEW MODERN PREMISES AT: 336 ALBANY HIGHWAY, VICTORIA PARK W.A., 6100. PH: (09) 470 1118

NEW 1KW EMTRON TUNER EAT-1000A Only $550

This new EAT-1000/A is EMTRON'S latest antenna tuner built on special request by many amateurs. Built with finest components available. 5 position internal antenna switch, cross needle SWR/power meter, built in 3:1 balun for open feedline and antenna terminals for coax line, open feedline as well as longwire. EAT-1000/A will tune almost everything from 1.8 to 30 MHz. At lowest price professional design and quality that EMTRON provides. MADE IN AUST.

NEW 300W EMTRON TUNER EAT-300A Only $369

The finest 300 watt antenna tuner on the market with quality that only EMTRON can provide! Unique features such as **● Cross needle SW 12/forward & reverse power meter ● Built-in 100 watt dummy load ● Antenna switch including bypass-● Built-in 1:4 balun for open feedline ● Lowest price & professional deisgn ● Matches everything from 1.8-30 MHz ● Made in Australia by Emtron**

OVER 3000 FAMOUS EAT-300 SOLD

EMTRON'S fastest selling 300 watt antenna tuner with SWR meter, built-in 1:4 balun, heavy duty ceramic switch and top grade components. Works with all rigs and is found in Amateur, Commercial and Marine services.

Only $259

FOR SWL EMTRON DESIGNED ETP-1

Antenna Tuner & Low Noise Amplifier For Receivers!

ETP-1 will match your antenna to your receiver for maximum signal from MW to SW. It utilizes a low noise 12dB gain *preamplifier* to boost weak signals. Special spring loaded long wire terminals as well as SO239 connectors make ETP-1 the most versatile tuner/amplifier on the market.

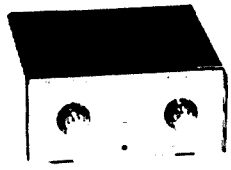
ONLY $159 & $10 P&P

EMTRON'S PRECISION CROSS NEEDLE RF EP2000 SWR METER

Yes this new from EMTRON — highly accurate CROSS-NEEDLE SWR & POWER meter, model EP-200 with a freq range from 1.8 MHz to 60 MHz and power rangers 20, 200 watts, gives instantaneous readings of forward/reverse power and SWR plus 2 KW.

ONLY $110

NEW from EMTRON



Professionally made noise bridge for all kinds of RF measurements antenna adj etc

NOISE BRIDGE with EXPANDER EBN-2 $129 & $10 P&P

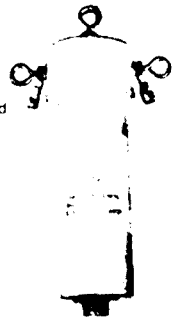
EMTRON'S NEW HF SWR METER EP-1

Specially designed with PRICE, QUALITY AND ECONOMY IN MIND. Freq range from 3.50 MHz. Reads forward and reflected relative power. Ideally suited for amateur and CB services.

$59 & $7 P&P

BALUNS

NEW



- ★ For dipoles, yagis, inverted vees and doublers
- ★ Replaces centre insulator
- ★ Puts power in antenna
- ★ Broadbanded 3-40 MHz
- ★ Small, lightweight and weatherproof
- ★ 1:1 impedance ratio or 4:1
- ★ For full legal power and more
- ★ Helps eliminate TVI
- ★ With SO 239 connector
- ★ Built-in DC ground helps protect against lightning

Only **$59**

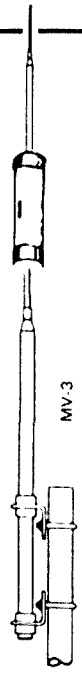
$59

ANTENNA CENTER INSULATOR

NEW

- ★ Small, rugged, lightweight, weatherproof
- ★ Replaces centre insulator
- ★ Handles full legal power and more
- ★ With SO 239 connector

$20



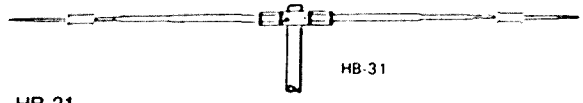
EMTRON 3 band vertical for 10,15,20 metre bands ONLY $129

New THE ED 5-2C DIPOLE

MULTI BAND TRAP ANTENNAS

- Completely factory assembled ready to use
- Heavy 14 (7/22) guage standard copper antenna wire to survive those severe storms.
- Centre fed tuned feedline supplied
- Only two traps
- Includes centre insulator with an eye hook for centre support
- Includes custom insulators molded of top quality material with high dielectric qualities and excellent weatherability
- Complete installation instructions included
- Overall length 33 mtrs less when erected as an inverted vee or sloper
- Handles 2 kw PEP & covers 80 through 10 metres.

Only $159



HB-31

Three band rotatable dipole for 10, 15 and 20-meter band for hams with a limited budget.

$169

'A VLF-LF RECEIVER - 10kHz TO 500 kHz WITH RESISTANCE TUNING

LLOYD BUTLER VK5BR
18 OTTAWA AVE, PANORAMA 5041

Introduction

Few communications receivers tune to frequencies below 500 kHz and because of this, many radio enthusiasts are unfamiliar with this section of the radio frequency spectrum which supports numerous radio services.

Likewise, the writer had no receiver which could tune these frequencies and set out to design a simple receiver for just that purpose. The superheterodyne receiver described is the result. It has been designated a VLF-LF receiver, because it tunes the VLF-LF range from 10 to 300 kHz, but it also tunes part of the MF spectrum from 300 to 500 kHz. The VLF and LF bands have their own unique useful characteristics and these will be discussed further on.

The receiver design is a little different from the usual form. It has no variable capacitors or inductors except for one preset trimmer in a trap circuit. Tuning is carried out by a potentiometer, the resistance of which sets the frequency of the heterodyne oscillator. The RF end is untuned and the receiver bandwidth is set by two inexpensive ceramic filters in the IF channel. All inductive elements are provided by stock lines of miniature RF chokes.

Because of the low frequencies involved, it has been possible to use a number of excellent integrated circuit packages which would be unsuitable on the HF bands. The circuit diagram of the receiver is shown in figure 1 and the following discussion refers to elements in that diagram.

The Mixer Stage

The mixing is carried out by an operational multiplier package type XR2208. This device is suitable for use at frequencies up to 8 MHz, and as a mixer at low frequencies its performance is outstanding. Performance tests at an input frequency of 200 kHz and an intermediate frequency (IF) of 455 kHz have produced the following results:

Conversion gain (Ratio of output level at 455 kHz to input level at 200 kHz): minus 6 dB.

Equivalent noise level at input: 10 microvolts in a 1 kHz band.

Third order intermodulation products: At input levels below 70 microvolts, products are below the noise floor. Even at 1 volt input, the third order products are 55 dB below signal level at 455 kHz.

Level of signal at the output, equal in frequency to the input signal: 33 dB below the level at the input.

Level of signal at the output, equal in frequency to the local oscillator frequency: 53 dB below the level of the oscillator at the mixer input.

The low level of third order intermodulation products adds up to a low order of nuisance intermodulation beats or "birdies". The low level of local oscillator signal in the output assists in achieving operation with the oscillator frequency close to the intermediate frequency, as is needed when tuning at signal frequencies down to 10 kHz.

The Tunable Local Oscillator

For a tunable oscillator, precision oscillator package type XR2209 was selected so that variable resistance tuning could be applied. This device can be operated at frequencies up to 1 MHz and for an R-C tuned oscillator, has the excellent temperature stability of 20 parts per million per degree Celsius. For the maximum oscillator frequency of 955 kHz required, frequency drift over a 20 degrees change is therefore only 360 Hz.

The XR2209 can be connected for either square wave or triangular wave output, the latter of which is fed to the mixer via a sine shaping filter. The filter is used to reduce the possibility of oscillator harmonics mixing with high level high frequency signals, which manage to get through the RF filter at the receiver input and produce unwanted IF beats.

The tuning is carried out by two potentiometers, one for coarse tuning and one for fine tuning. The fixed tuning capacitance and the limiting resistance in series with the two potentiometers, are trimmed to obtain an oscillator frequency range of 465 to 955 kHz, which is 455 kHz higher than the tuning range of 10 to 500 kHz. The coarse tuning potentiometer is connected to a dial which is calibrated in coarse frequency. The values of resistance and capacitance have been selected to suit the full resistance range of the coarse potentiometer. If a vernier dial is used with a shaft rotation of only 180 degrees, the value of limiting resistance can be decreased and the value of fixed capacitance increased to correct for this.

RF & IF Amplifcation

To provide RF and IF gain, JFET operational amplifier packages type LF353 have been used. These are an 8 pin DIL package containing two amplifiers with a 4 MHz gain-bandwidth product. At the frequencies involved, a gain of 100 for each package. The RF amplifiers are actually set to realise a gain at low frequencies of 20 per unit, giving a total gain of 400. Of course, this gain decreases at the high frequency end of the tuning range.

One LF353 package is used for RF amplification and one and a half LF353 for IF amplification. The remaining odd half is used as an audio driver following detection.

The RF Circuit

The front end of the receiver is broadbanded up to a frequency of around 500 kHz above which higher frequencies are attenuated by a low pass filter. The function of the low pass filter is to reject signals at image frequency which, as it happens, fall within the broadcast band. It also rejects higher frequency signals which could mix with harmonics of the local oscillator to produce a 455 kHz IF

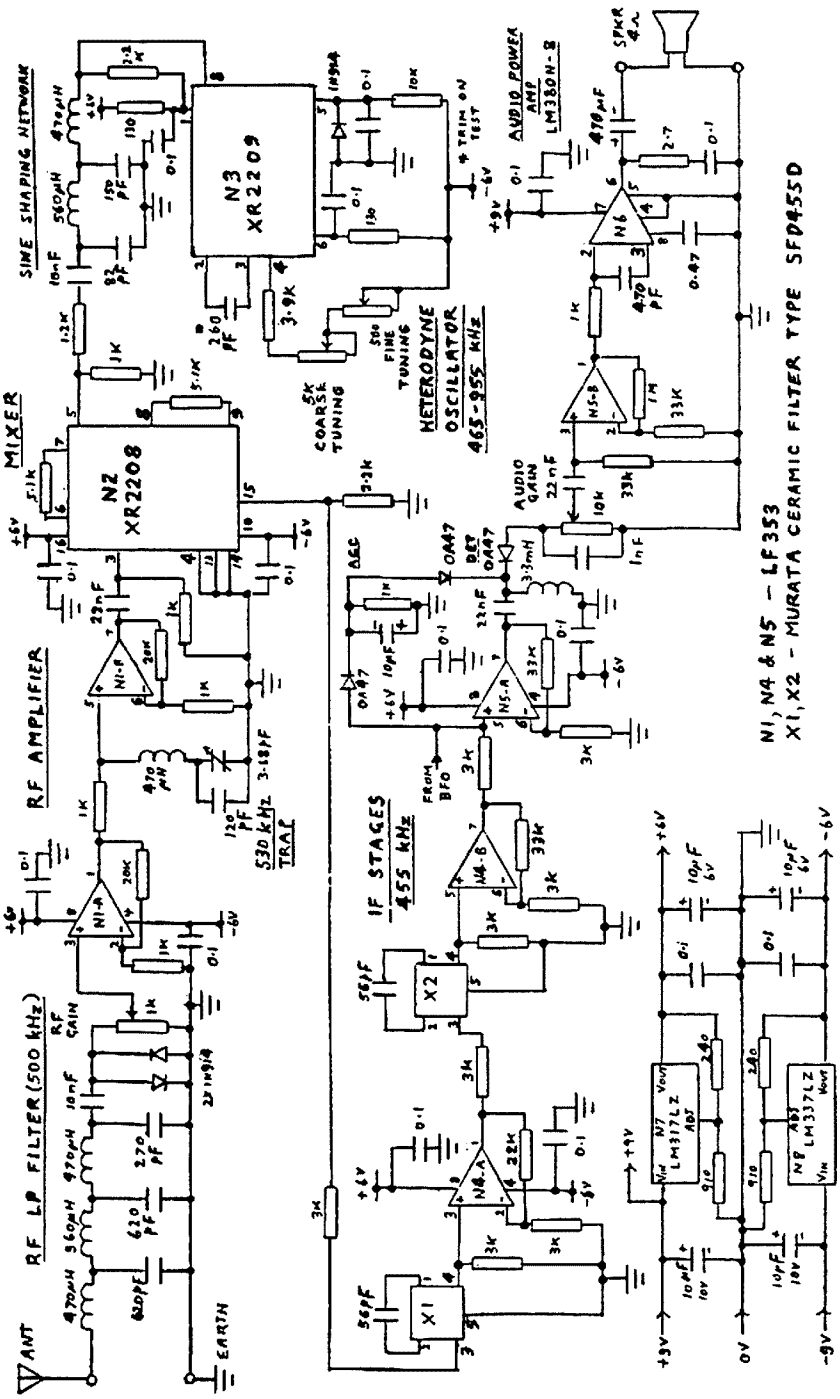
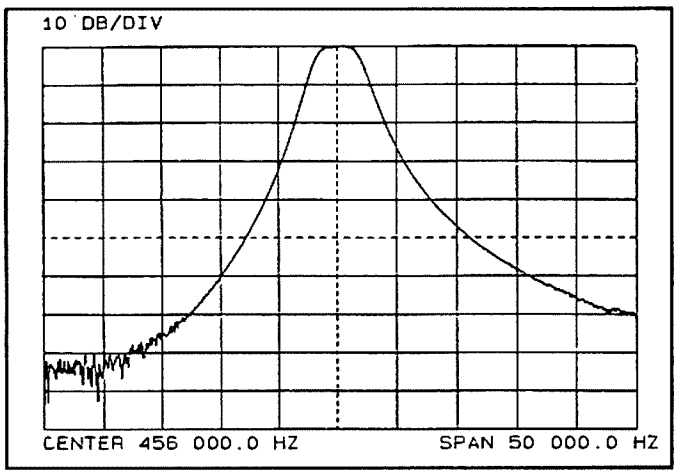


Figure 1 VK5BR VLF-LF Receiver Circuit Diagram (Refer also to fig 4 for BFO)



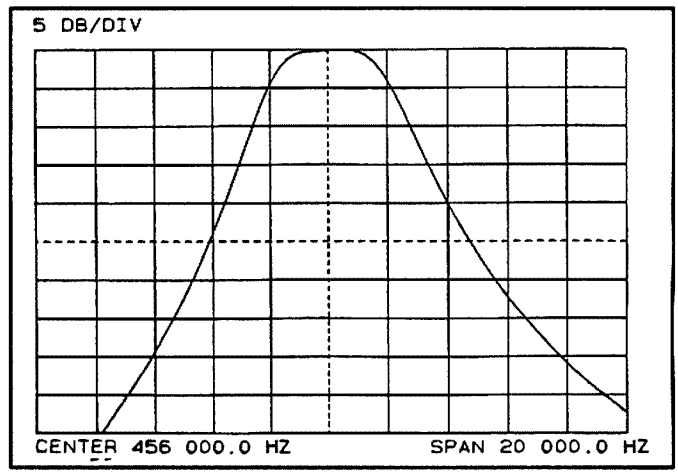


Figure 2 Intermediate Frequency (IF) Response

beat. The 3 dB cut off point of the filter is set at 500 kHz and its response is 55 dB down at the 2nd harmonic of the cut off frequency.

In the coupling circuit between the two RF amplifier stages, a trap circuit is also included. In the first instance, the receiver was made to reject signals above 420 kHz and the trap was fitted to reject direct signal pick up at the intermediate frequency. Direct pick up at 455 kHz proved to be no problem and this was attributed to the properties of the XR2208 which balance out the input signals. Furthermore, the receiver could also be tuned across 455 kHz with no undesirable effects. In consequence of this, the input filter was changed for a cutoff frequency of 500 kHz to extent the range of the receiver. The only problem with this change was that it opened up the RF end to signal entry at the extreme end of the broadcast band. Strong local station 5UV on 530 kHz mixed with the second harmonic of the heterodyne oscillator to produce a signal when the receiver was tuned to receive 37.5 kHz. Furthermore, if the RF gain was set too high, 5UV would cross modulate other signals. To eliminate this problem, the trap was set to the 5UV frequency just above 500 kHz.

The IF Circuit

The selectivity of the receiver is achieved with two Murata type SFD455D ceramic filters in the IF channel. These are a low price unit essentially made to replace 455 kHz IF transformers in transistor receivers. Using the two of these filters, the 3 dB bandwidth is 3.7 kHz and adjacent channel rejection is 47 dB at 10 kHz from centre frequency and 65 dB at 20 kHz from centre frequency. The response of the IF channel is shown in figures 2a & 2b. Figure 2b is an expanded version of 2a. The steep slope of the IF response enables signal reception down to 10 kHz. For this tuned condition, the heterodyne oscillator runs at 465 kHz and this must be rejected by the IF channel.

The values of components connected around the filters are as suggested in the manufacturers brochure but if a wider bandwidth is desired, it can be achieved by a change in these values. The writer experimented with one of these filters and found that its bandwidth could be expanded to around 7 kHz by operating with the circuit constants shown in figure 3.

Audio Stages

The IF signal is detected by a diode and following R-C filter. The audio output is fed via the half LF353 pre-amplifier to an 8 pin version of the LM380 power amplifier. The LM380 has internal thermal limiting and using heat sinking only via the circuit board pins, it can deliver an audio power of up to 1 watt into a 4 ohm load with a power supply of 9 volts.

Beat Frequency Oscillator (BFO)

Most of the signals heard within the frequency range transmit in the AM or MCW mode and the receiver was initially wired up for only that type of reception. However, there are also CW signals on the bands, such as those transmitted by the marine coastal radio, for which a BFO is needed. A BFO is also useful for detecting the presence of some of the navigational signals such as Omega. A BFO was eventually added and this is shown in an additional diagram, figure 4.

The 455 kHz ceramic filters, used in the IF stages, are quite inexpensive and this provided an attraction to use a third filter for crystal control of a stable BFO. Tests on the filter showed that a crystal element could be accessed between pin 5 and any of the other pins on the filter and each element gave a parallel resonance around 456.85 kHz. Pins 1 and 2 elements were found to produce a higher Q than pins 3 or 4 elements.

Another half LF353 was pressed into service to form the oscillator in conjunction with the ceramic element across pins 1 & 5 and other components as shown in figure 4. Frequency of oscillation was measured to be 456.36 kHz, which was a satisfactory offset to 455 kHz to operate the incoming signal within the 3.7 kHz IF passband and give a suitable audio frequency beat. The series inductor and shunt capacitor at the amplifier output form a sine shaping filter fitted as a precaution in case harmonics of the BFO caused any problems. The second buffer amplifier is really unnecessary, but it was given a job to do, as it was available as a spare in the LF353 package and required no extra components.

The component values shown to make the circuit oscillate were determined experimentally on a single LF353 and a

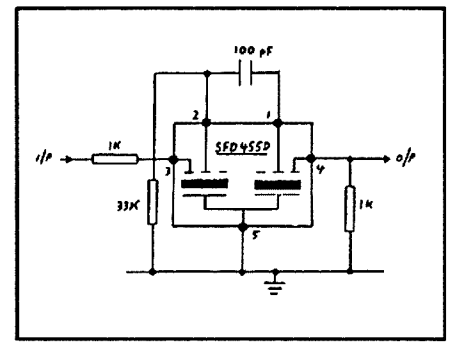


Figure 3 Ceramic Filter - Connection for wider bandwidth

single ceramic filter. This is pointed out because, in duplicating the circuit, constants in these devices (particularly the filter) might well vary in different samples, possibly resulting in the need for a change of component values in the feedback path.

Power Rails

Split power rails of plus and minus 6 volts are used for all stages except the audio power amplifier. The split rails enable precise centring of amplifier operating points making it easy to directly couple, without capacitors, many of the amplifier stages. The 6 volt rails are derived by voltage regulators type LM317LZ and LM337LZ from a nominal source of plus and minus 9 volts. These regulators are packaged in standard TO-92 transistor cases and are very compact. The regulators are needed to stabilise the voltage, in particular to the XR2208 oscillator, as its high frequency stability can only be achieved if its power rail voltages are held constant.

Decoupling of the 6V rails is used in feeding both oscillator circuits. These are running at a high signal level and the decoupling is necessary to prevent coupling into other circuits via the power rails.

The audio power amplifier is powered directly from the positive 9 volt source and does not load the regulator.

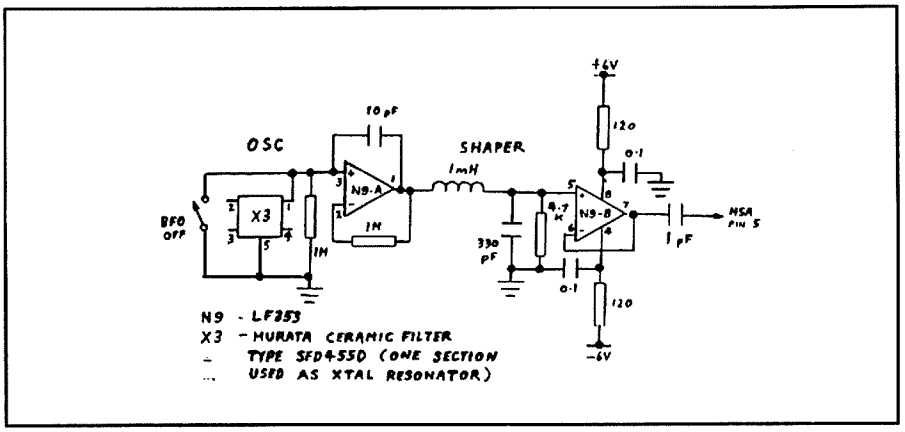


Figure 4 Beat Frequency oscillator (BFO) Circuit Diagram

The regulated load current is approximately 30 mA per 6 volt rail and is well within the 100 mA capacity of the regulators. The additional load current from the LM380 increases the current on the 9 volt positive supply to 37 mA in the quiescent state and to 134 mA when the power amplifier is driven to its maximum output with continuous sine wave wave signal. Under signal conditions, average current is in the order of 50 mA.

The 9 volt power sources can be two small 216 type torch batteries or twin unregulated DC supplies rectified from a transformed AC supply. If batteries are used, the positive supply must be shunted with a 2200 µF electrolytic capacitor to prevent the swinging load current of the LM380 from developing a corresponding voltage drop across the battery internal resistance. If the voltage is allowed to swing below 7.7 volts, the regulators cannot do their job and instability occurs. This also puts a limit on how far the batteries can be discharged before the regulated voltage fails. The possibility of instability is eliminated if a separate (third) battery is used for the LM380 so that supply to the regulators is unaffected by the LM380 varying load.

Overall Sensitivity

For satisfactory performance, receiver generated noise level, referred to the receiver input, must be lower than the noise incoming from the antenna. At low radio frequencies, the atmospheric noise is very high and hence receiver sensitivity does not have to be as good as that normally sought for receivers operating in the HF or VHF bands. In this receiver, the minimum discernible signal level is around 3 microvolts for frequencies below 100 kHz. Above 100 kHz, sensitivity falls because of the shaped response caused by the RF filter and the 530 kHz trap and to a lesser extent by the failing response of the RF amplifiers at high frequencies. Figure 5 plots minimum discernible signal level as a function of frequency together with a plot of atmospheric noise against frequency. The noise is that anticipated from a 10 to 30 metre antenna in a bandwidth equal to that of the receiver, or 3.7 kHz. The figures have been derived from information published in the ITT Reference Data for Radio Engineers and based on a noise level for Australia of around 45 dB above KTB at 1 MHz. Based on figure 5 and using the range of antenna lengths specified, the receiver has adequate sensitivity for frequencies up to 350 kHz. The receiver still operates up to 500 kHz, but owing to the shaped RF response, it has a considerable reduction in sensitivity as 500 kHz is approached.

Full automatic gain control (AGC) has not been provided in the RF and IF circuits, partly because the LF353 amplifiers did not quite lend themselves to control of gain and partly because ionospheric fading was not anticipated on this band. Had AGC been contemplated, gain controlled amplifiers such as the Motorola MC1590 or the Plessey SL6120 might have been a better choice for RF amplification. Because RF gain is manually controlled, some care must be taken in setting the RF gain control to prevent receiver overload when tuning to a very strong signal, such as the local airport beacon. The placing of the gain control at the RF amplifier input might appear open to question as attenuation at its input effectively degrades the receiver noise figure. On the other hand, it is the best place to control the input signal level to prevent cross modulation in the amplifier. Furthermore, at the frequencies concerned, incoming noise is generally predominant over receiver noise and the noise figure is not so important.

The main nuisance of no AGC was found to be the audio overload which occurred when shifting the tuning from a weak signal to a very strong signal. This effect was reduced by applying a form of AGC which lowered the gain of the last IF stage on very strong signals. To achieve this, DC voltage is rectified from the IF output of the stage and is applied to a germanium diode connected at the stage input. The variable resistance of the diode acts as the shunt element of an inverted L network. The higher the signal voltage, the higher is the diode current, the lower is the resistance of the shunt element and hence the greater is the loss in the network.

One might well ask why this AGC system was not applied at the RF input as is usually done. This, in fact, was experimented with but found to encourage cross modulation from strong stations within the passband of the RF filter. This is a problem with broadband RF stages. There is no selective tuning to attenuate the level of the strong signal and the variable slope gain characteristic, needed for AGC control, is also a good mixing medium for the strong signal to cross modulate any other signal.

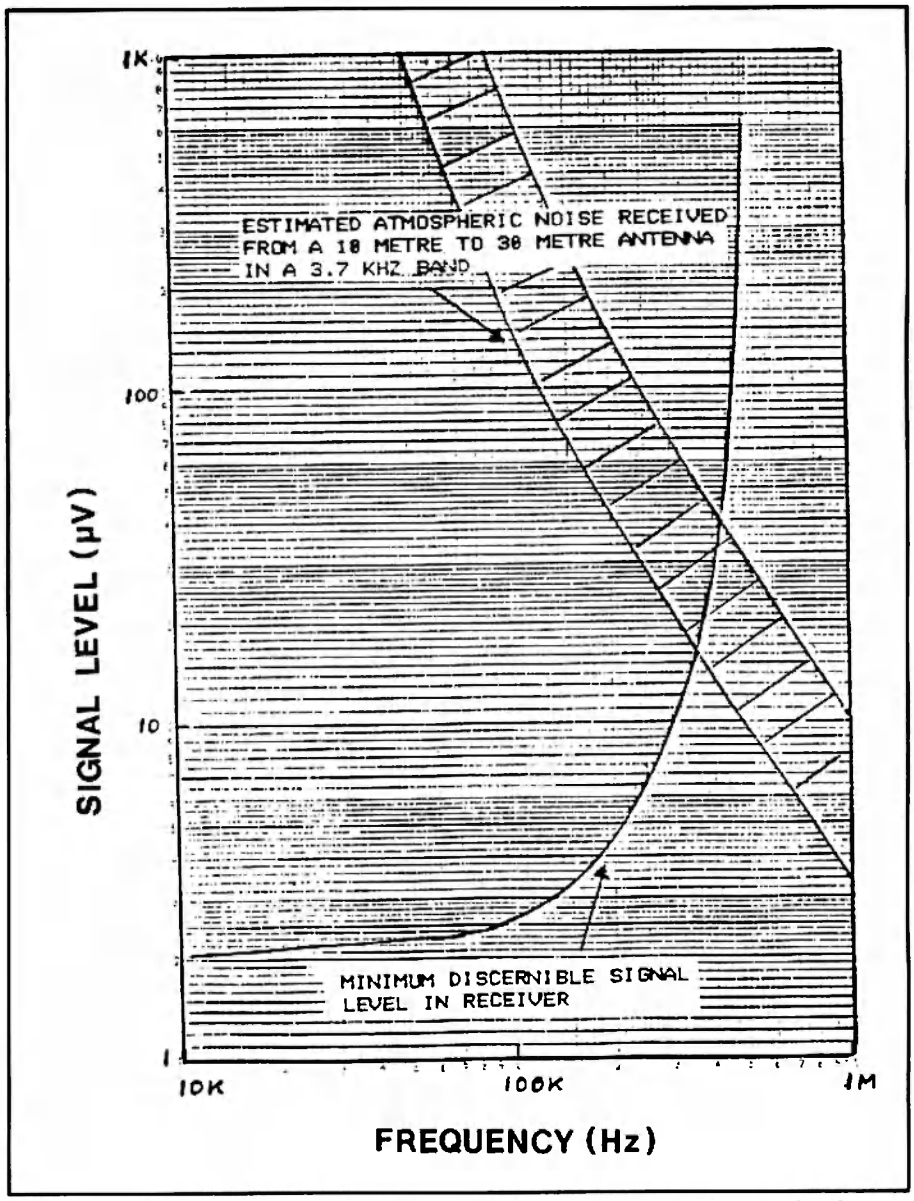


Figure 5 Minimum discernible signal level & estimated atmospheric noise level

Alignment

The only tuned circuit is the trap. This can be aligned by feeding a modulated signal at a fairly high level into the receiver input at a frequency just above 500 kHz and adjusting the series trimmer for minimum audio output. One might choose to select the frequency of the lowest frequency local broadcast station, as did the writer. In the writer's case, the receiver was tuned to 37.5 kHz and the trap set for

minimum signal from 5UV (refer to the previous discussion in the section on the RF circuit).

The only other possible adjustment is the setting of the heterodyne oscillator frequency to cover the frequency range of 465 to 955 kHz, over the tuning range of the coarse potentiometer control. This is done with the fine potentiometer control set to centre position. Trimming of the capacitance across pins 2 & 3 of N3 and the fixed resistor at pin of N3 could be necessary to suit individual samples of the XR2209 package. Its frequency range can be checked using a frequency counter connected across its output or by feeding the receiver input with a signal generator set to the extremities of the input frequency range, 10 kHz and 500 kHz.

Notes on Assembly & Components

There is nothing particularly critical about the receiver layout except that the circuit wiring should flow from input to output in order, as is normal practice and outputs should be kept away from inputs. It is not an arduous task to hardwire the whole unit (except for controls) on a small piece of Vero board. The writer's experimental receiver was fitted on a card space of 12 cm x 10 cm.

All the inductors used are the miniature ferrite cored types such as the Siemens range of RF chokes type 878 108-S. These are about the size of a small resistor, are colour coded like a resistor and can easily be mistaken for one. There are a few precautions to observe in mounting these chokes. Unlike toroidal cored inductors, the field around them is not confined and they should be mounted with extended leads, at least 1 cm off any metal on the circuit board, to prevent change of inductance and lowering of Q. If two of them are mounted close together, they should be mounted at right angles to reduce interaction between their fields.

As a general rule, capacitors with a low resistive component should be selected for filters and tuned circuits and this also applies to the filters and trap circuit in this receiver. Most people choose ceramic capacitors for use in their projects because of their small size, but their resistive component varies from sample to sample in a batch and it is often quite high. Unless they can be carefully selected for low resistive component, using an impedance bridge or Q meter, they should be avoided if possible. Mica capacitors are good but are usually much larger. There are some high quality ceramic capacitors made, such as the Vitramon VP31 range, but they might be difficult to obtain at the local electronics store.

The only other components, which require particular mention, are the capacitor and variable resistances used to control the frequency of the heterodyne oscillator. The capacitor across pins 2 & 3 of N3 should be a good stable type (perhaps a mica) and the potentiometers should be non-inductive with good resolution. Good quality one-watt carbon or cermet types of potentiometer are suggested to give nice smooth tuning. This is emphasised because there are some very poor potentiometers on the market today, particularly in the miniature variety. On of their faults is the high degree of mechanical backlash which seems to be caused by the elasticity of the bush sealing the shaft. Fortunately this backlash is steadied when the shaft is loaded down by the reduction gear on a tuning dial.

What Can Be Heard

The VLF and LF bands have their own unique useful characteristics. Transmission is by ground wave, virtually unaffected by reflection from the ionosphere and because of this, transmission is highly predictable and very useful for direction finding and other forms of radio navigation. Atmospheric attenuation falls as frequency is lowered and given sufficient radiated power, signals at VLF travel large distances around the earth's surface. A difficulty is the massive aerial system needed to achieve some order of antenna efficiency and hence radiated power.

Another limitation is the restricted amount of channel space, not suitable for wideband systems. For example, one television channel of around 6 MHz bandwidth, on its own, takes up 20 times more band space than the whole of the VLF and LF spectrums put together.

Radio waves are highly attenuated when passing through water but waves in the VLF region are attenuated the least. (This was discussed in an article by the writer in Amateur Radio, April 1987.) Because of the comparatively low attenuation, the VLF band is used for communication to submarines.

Within the Australian region, there are many strong signals transmitted in the VLF and LF band and the part of the MF band tuned by the receiver. Included in these are the following:

Omega navigation system can be heard in a frequency band of 10 to 13 kHz. There are actually five different frequencies transmitted which are switched in a certain order of eight segments in a ten second time frame. One of the Omega stations is located in Victoria, Australia.

The North West Cape VLF station can be heard with a frequency shift of 100 Hertz between 23.25 and 23.35 kHz.

A proliferation of aeronautical homing beacons (known as non-directional beacons or NDBs) within the spectrum of 200 to 420 kHz, transmit continuous carrier with morse ident code and some also with voice aerodrome traffic or information.

Australian maritime coastal radio stations operate with CW on a range of fixed frequencies between 420 and 490 kHz and listen for merchant ships on 425, 468, 480 and 512 kHz. The maritime distress frequency is 500 kHz.

Throughout the world, there are several stations in the VLF-LF spectrum which transmit standard time and frequency. GBR (Rugby UK) is well known for its time services on 16 kHz. MSF (Rugby) also transmits on 60 kHz. At low frequencies, these typical signals are ducted around the earth in a type of wave guide formed by the D layer and the earth. With a bit of luck, one might pick up some of these.

There are various teletype services which can be heard from time to time. Of course it is difficult to identify who they are unless you can decode their signals.

In Europe, frequencies between 150 and 300 kHz are used for long wave broadcasting but at these frequencies, distances are too great for reception within Australia.

For those enthusiasts who are interested in short wave listening and identifying various stations, there is another field of endeavour in long wave listening.

Other Options

We have discussed the design of a complete VLF-LF receiver but there are a few other simple options which might be attractive to others interested in these bands. If you have an existing receiver with a 455 kHz IF channel, you could build just the RF end of the receiver described and feed the XR2008 mixer output into the second receiver IF stage, via a switch which selects either the VLF-LF front end, or the existing receiver RF end.

Another option is to use the VLF-LF RF end as a converter and feed the mixer output into the second receiver tuned at the low frequency end of the broadcast band. A frequency would have to selected clear of strong broadcast carriers and the connecting lead would have to be carefully shielded. The capacitor across pins

Continued on page 16

MORSE CODE IS A MYTH!

MERVYN EUNSON VK4SO
BOX 1513 GPO BRISBANE 4001

True, Morse never did devise the simple code that bears his name-fame (or blame) is heaped on the wrong man! Nor did he invent the electric telegraph, as commonly supposed.

Samuel Finley Breese Morse was a painter of fashionable portrait miniatures. Born in 1791 at Charlestown in Massachusetts. Known as Finley to family and friends, others addressed him as Professor (he tutored in art at the University of New York). He was without scientific learning or engineering skill.

Morse, blind to massive conflicting facts, always claimed that he alone invented the first electric telegraph in 1832, though naught was done to develop it for several years (then his efforts produced a dud!).

But as early as 1795 systems had been demonstrated using static electricity. Then after Alessandro Volta produced the first chemical battery in 1801, history's path is strewn with ingenious telegraphs applying the new electromotive force. The first commercial success, patented in England in 1837, was that of the patnership of William Cooke and Charles Wheatstone, being a direct-reading instrument with multiple line wires and five needles. Subsequently they reverted to a two-wire system and one centre-zero galvanometer needle, deflected left-right by separate keys.

This latter method was a refinement of that pioneered in 1825 by Ludovitsch Schilling of Kronstadt, a Russian nobleman, who built a line for Alexander I between the Czar's palaces at St. Petersburg. Others effected improvements, notably Karl Gauss and Wilhelm Weber at Gottingen in 1833, as did Professor Steinheil at Munich in 1837, who discovered the principle of the earth return. But these were men of science, disinterested in pecuniary exploitation.

The apparatus of Cooke and Wheatstone served well in communications for English railway systems (no post offices existed before Rowland Hill introduced penny postage in 1840). And this, with a US patent before that of Morse, found favour in America as well.

All these early telegraphs featured an obsession with direct-reading methods, or in obtaining a visual record of the message (the very word "telegraph" means "writing from afar" and was coined in France to describe the Chappe semaphore of 1793). Strangely, in that great musical age none conceived the notion of aurally receiving a series of simple sounds. But then railway operators found divided concentration difficult in following the fluctuating needly by eye and simultaneously writing the message - it proved easier to copy the audible "click-clack" by ear instead.

Morse the late-comer also proposed a registering system that was woefully cumbersome and impractical. Its basis was a dictionary of selected words marked with coded numbers. The message was set in words cast from printer's type with special projections, which were rendered into electrical impulses by passing under a circuit breaker. At the receiving end a crude pantograph (made from a picture frame) caused a stylus to register a serrated line. Counting the peaks converted the message into numerals, then decoded by reference to the numbered dictionary (the illustration shown reads "SUCCESSFUL EXPERIMENT WITH TELEGRAPH SEPTEMBER 4 1837"). None of this was original, for the inventor Edgeworth in 1794 used a numbered dictionary with his semaphore.

Grossly inadequate, the wretched failure along with Professor Morse would have passed into the abyss of oblivion. Among other shortcomings, it would not function beyond a line length of a few feet (he was ignorant of the law propounded by Georg Simon Ohm in 1827). As he lacked appropriate technical knowledge, Morse then sought scientific advice from Dr Gale, a university academic, who acquainted him with the discoveries of

---

Continued from page 15

2 & 3 of the XR2209 oscillator would also have to be decreased to shift the oscillator frequencies up a little. Do not try to shift it up too far as the frequency limit of the XR2209 is specified as 1 MHz, although you might get it to operate a little higher than that.

In the receiver described, the IF channel was specifically designed with a narrow bandwidth and a steep out of band slope so that 10 kHz could be tuned. If an attached receiver option is used, tuning quite as low at 10 kHz might be restricted if the receiver bandwith happens to be too wide.

Considering some other options, a different type of RF amplifier could easily be used, perhaps with better performance at the MF end of the tuning range. It is strongly recommended that you stay with the XR2208 as a mixer, because of its balanced mixing type of performance and its low order of intermodulation products.

Summary

A receiver has been presented which tunes the VLF and LF bands and part of the MF band. The receiver makes use of a number of integrated circuit packages and circuit techniques, perhaps a little unusual in radio receivers. Use of the XR2209 oscillator package with resistance tuning and a broadband RF front end eliminates the need for a ganged tuning capacitor. The XR2208 operational multiplier performs as a mixer at the frequencies concerned with outstanding performance. The dual operational amplifier package LF353 has been put to work as an RF and IF amplifier. A section of an inexpensive ceramic filter is used as crystal control for a stable BFO. There are no coils to wind as all the inductors are inexpensive RF chokes of preferred value, available off the electronics store shelf.

The receiver has more than adequate sensitivity on the VLF and LF bands. Its sensitivity falls on the MF band as 500 kHz is approached.

Included in the discussion is an introduction to what can be heard on the VLF, LF and lower MF bands. Apart form the complete receiver in itself, a few alternative options have been presented on how a VLF-LF front end could be added to an existing receiver. For the keen experimenting listener, the VLF-LF bands might well be another new field of endeavour to explore. ar

KENWOOD

CHRISTMAS SPECIALS

THESE OFFERS START 1ST NOVEMBER, 1989 AND CONTINUE UNTIL STOCKS LAST. STOCKS ARE LIMITED.

1 Buy a TS-440S or TS-680S and get a TH-45A handheld free. Worth over $500

TS-440S

• 160m to 10m amateur band transceiver with 100kHz to 30MHz general coverage receiver • all mode operation • automatic antenna tuner built in (80-10 meters) • 200w PEP input

TS-680S

• 160m to 6m amateur band transceiver with 500kHz to 30MHz general coverage receiver • all mode operation optional automatic antenna tuner • up to 100 watt output

FREE one TH-45A with your purchase of either TS-440S or TS-680S.

- 70cm FM handheld transceiver
- 5 watt output power
- multiple scan functions
- 14 channel memory

2 Huge saving on the topselling TH-25A

- 2m FM handheld transceiver
- 5 watt RF output
- memory scan and band scan
- 14 multi-function memory channels with lithium battery backup

Phone your Kenwood dealer for price, or phone Kenwood for the name of your nearest authorised dealer.

KENWOOD ELECTRONICS AUSTRALIA PTY. LTD.
(INCORPORATED IN N.S.W.)
4E Woodcock Place, Lane Cove, N.S.W. 2066, Australia
Ph (02) 428 4222, (02) 428 1455, Fax (02) 427 6869
Call now for further information and the name of your nearest authorised Kenwood dealer

Please phone, mail or fax for information
Name .....
Address .....
Postcode .....
Publication ..... Issue .....
Model .....

Joseph Henry, the scientist who had pioneered the first successful electromagnets and propounded the laws for practical construction. Henry, in 1831, already had built and demonstrated an electromagnetic telegraph over a distance of one mile.

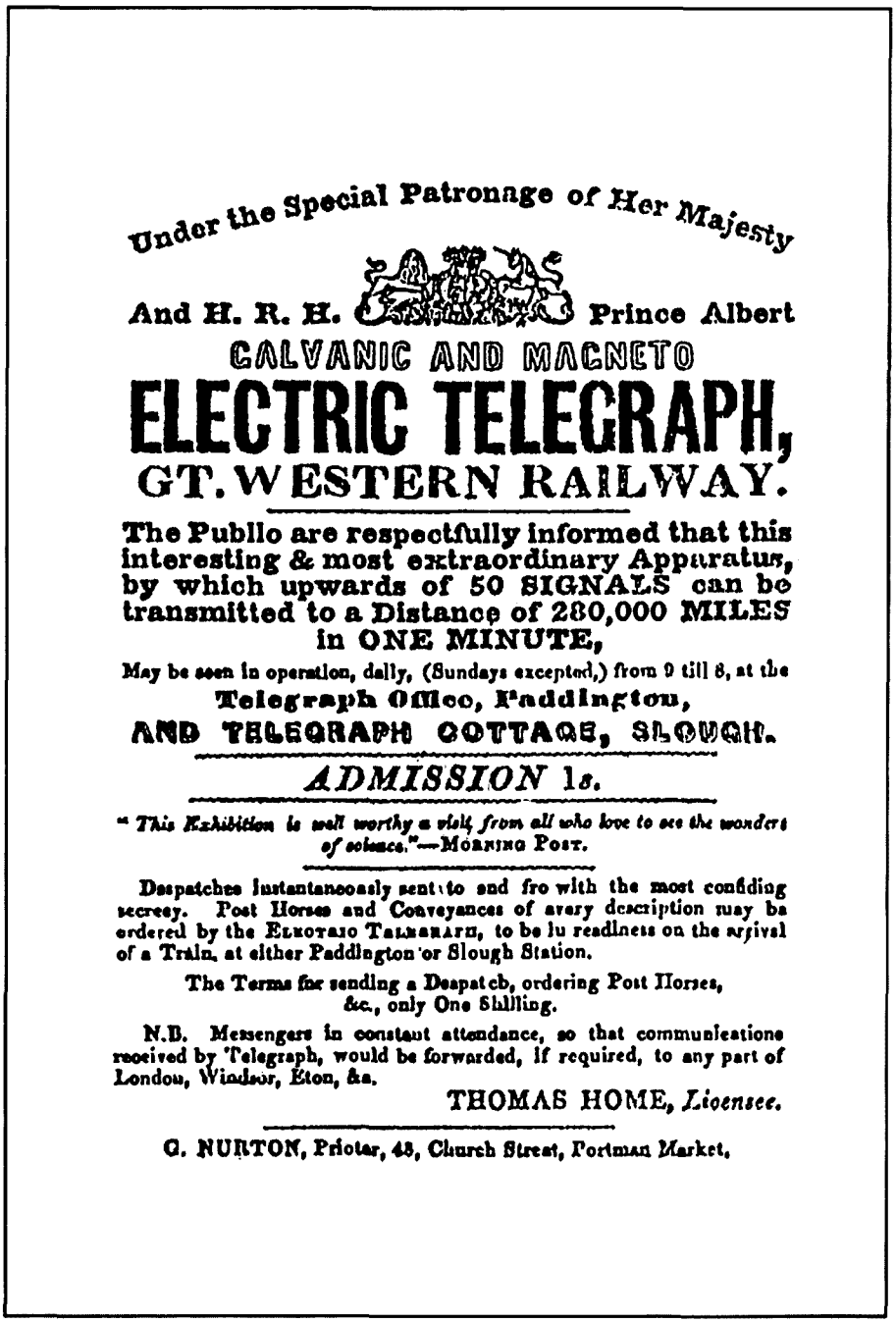
A partnership with Dr Gale resulted, which was barren until joined by a young university graduate and skilled technician named Vail. A fourth partner was the lawyer Francis O J Smith, a US Congressman whose lack of scruples matched Morse's vanity. The lure was Government funds for development of the telegraph, which pious patriotism decreed would come from American know-how. Smith proved ruthlessly adept at lobbying.

Alfred Lewis Vail was the technical genius who devised the practical solutions. Naively he let himself become bound by contract with Morse to fashion new designs and obtain patents at his own expense in return for a share of the partnership profits. His father and brother assisted, for innovative tinkering was a family trait - an equally gifted cousin Theodore Vail Long was associated with the American telephone system from 1878 tto 1919.

All that Alfred Vail invented and pioneered became a contribution to the common partnership without individual recognition, and was patented in Morse's name. Under Vail's inspiration the awkard numbered dictionary was discarded for a time-interval code of long and short impulses. In this Vail claimed no originality - in fact a similar code of dots-and-dashes first was used by another American in 1826. That was Harrison Dyar, who at the racecourse on Long Island demonstrated a system using high-tension discharge with blue litmus paper developing red streaks from fixation of the air's nitrogen to anhydride by the action of the spark.

No doubt exists that Vail alone, without Morse, devised the forerunner of our present telegraphic code, as well as the key to transmit it. This authenticated by contemporary references, including the "New York Sun" newspaper. And Frederick Read, the writer of Morse's biography, acknowledged that Vail "...furnished the means to give the child a decent dress". But that restrictive partnership covenant denied any acclaim for Vail.

Apocryphal fancy attributes construction of Vail's code to the layout of a printer's type font, which favours the letters most used. Thus it is said that E became a single dot, with the vowel I being two dots, and so on. Maybe so and maybe no, for beforehand the original swinging needle of Cooke and Wheatstone



Under the Special Patronage of Her Majesty

And H. R. H. Prince Albert

GALVANIC AND MAGNETO

ELECTRIC TELEGRAPH,

GT. WESTERN RAILWAY.

The Public are respectfully informed that this interesting & most extraordinary Apparatus, by which upwards of 50 SIGNALS can be transmitted to a Distance of 280,000 MILES in ONE MINUTE,

May be seen in operation, daily, (Sundays excepted,) from 9 till 8, at the

Telegraph Office, Paddington,

AND TELEGRAPH COTTAGE, SLOUGH.

ADMISSION 1*s*.

"*This Exhibition is well worthy a visit from all who love to see the wonders of science.*"—MORNING POST.

Despatches instantaneously sent to and fro with the most confiding secrecy. Post Horses and Conveyances of every description may be ordered by the ELECTRIC TELEGRAPH, to be in readiness on the arrival of a Train, at either Paddington or Slough Station.

The Terms for sending a Despatch, ordering Post Horses, &c., only One Shilling.

N.B. Messengers in constant attendance, so that communications received by Telegraph, would be forwarded, if required, to any part of London, Windsor, Eton, &c.

THOMAS HOME, *Licensee.*

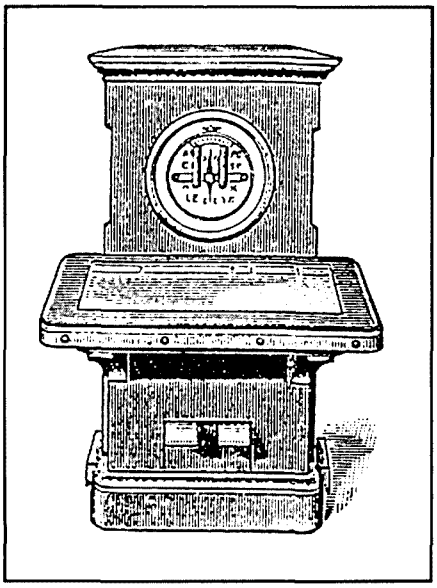
G. NURTON, Printer, 48, Church Street, Portman Market.

1 English railway poster of 1840

flicked once to the left for the letter E (sounding "click"), twice to the left for I ("click-click") and left-right for A ("click-clack") and so forth. The same combinations were used originally by Schilling, and later by Steinheil as well as Gauss and Weber.

However, this code of Vail shows scant resemblance to the form now used, for his dashes were of three varying lengths and the cyphers for the letters C, O, R, Y and Z had staggered spaces. The numerals he used also differ vastly from the version known today.

This mattered naught in a registering system, with the message decoded into plain language by sight. It was Vail who adapted the unwieldy receiving pantograph to a springwork-driven paper tape embossed with dots-and-dashed by a sharp stylus. Development proved protracted, and with the inexorable effluxion of time it was May 1844 before the first line was built over the 37-mile path from Washington to Baltimore. Interestingly, the conductors were of iron, for hard-drawn copper wire was unknown, and glass door-knobs formed the insulators.

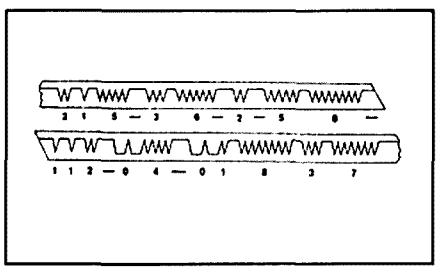


2 Single needle English telegraph

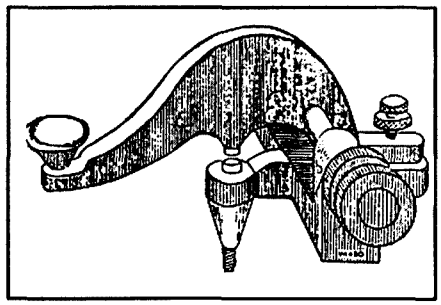
But again, as in England, the operators spurned the recording register and perversely preferred to resolve the clacking relay by ear instead. Thus was born the accoustic sounder, another of Vail's inventions. This variation proved vastly better - freed from mechanical restraints limiting receiving to ten words a minute, telegraphists began copying by ear at speeds of twenty and thirty words per minute, as fast as the fist could send.

Then by 1846 true high-speed transmission by perforated tape was pioneered in England by Alexander Bain using his superior telegraphic code of even combinations. In his alphabet all the first half rationally commenced with a dot, the rest with a dash, and likewise the numerals.

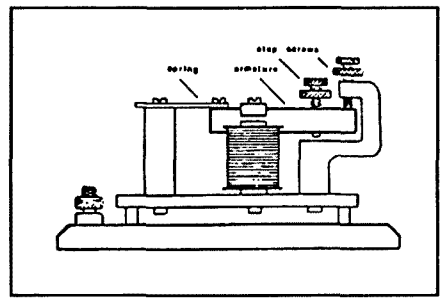
But neither code suited European lan-



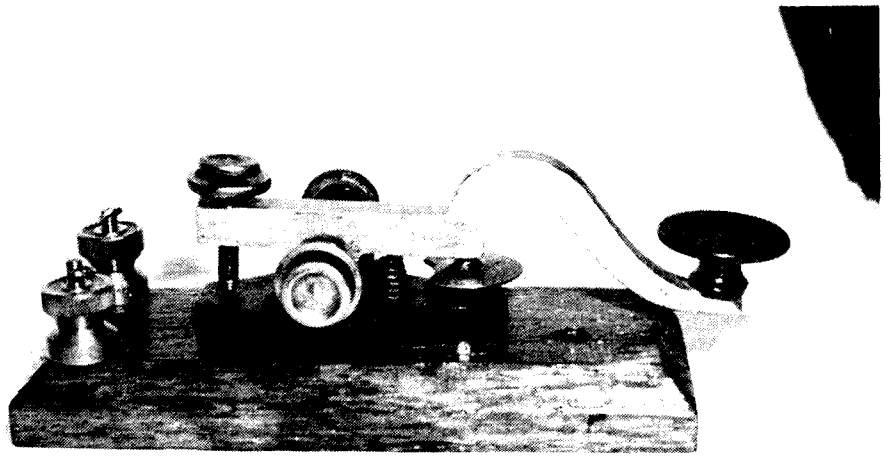
3 The system devised by Morse in 1837



4 Hunchback key of Alfred Vail c. 1840



5 The acoustic sounder's construction



6 Early American 'camelback' key - The Shawsmith Collection

guages, which abound in accented letters and other pronunciation marks called diacriticals. A conference of nations in 1851 combined elements of both to produce the revised Continental Code for use in Europe. Thus at one time varying codes were in use, but when radio this century adopted the 50-year old modified European version, it became the International Morse we know today.

Private companies in the US used individual preferences until a series of mergers began with the Mississippi Valley Printing Telegraph Company, leading to consolidation into Western Union by Hiram Sibley in 1856. And this nationwide company standardized on the original code of Vail. This then became styled Landline Morse, and was retained for line use in America until manual telegraphy became phased out in the present century.

Telegraphy eased its way into the days of Spark radio (first called "aerial telegraphy" and then "wireless"). The staccato tympany of the line sounder's "clickety-clack" became the rhythmic music of the earphone's "diddily-dah". Borrowing inspired abbreviations and the Q-series of the line telegraphists, radio honed use of morse into a sophisticated means of global communications - a true universal lingo in its own right. Soundly complementing CW, the most efficient and economical of all modes, it cuts through QRN and QRM with the least bandwidth and the utmost intelligibility (the key has no accent). There is no incidence of error with competent exponents, and old timers sagely know the art as "the Immaculate Reception".

Being metrical in the classical sense of poetry, with related long and short iambic notes, it flows smoothly as any rollicking ballad. Yet, as modern as tomorrow, it forms a type of digital mode, each long and short equating easily to the 0 and 1 of binary notation. Thus even a dumb computer without a brain can read morse.

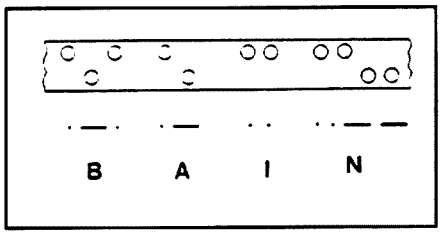
But that's only copy-book code of utter precision generated by another computer or punched tape. And only if signals are solid and in the clear without interference or fading. It's harrowing to watch a microprocessor balk and display garbage or a string of E's, while a human operator ignores trivialities, anticipating mangled bits to take correct hard copy, then signified by a cheery "RR - all received".

History thus is seen to repeat itself, for 150 years past it was known that no contrivance devised by man could match

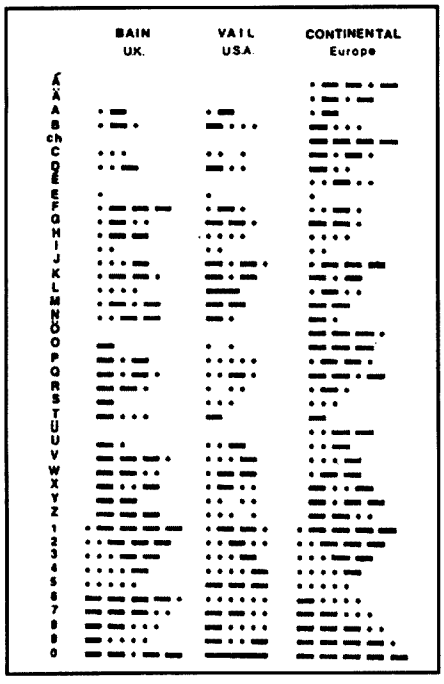
Have you advised DoTC of your new address?

the infallible ear of an expert operator.

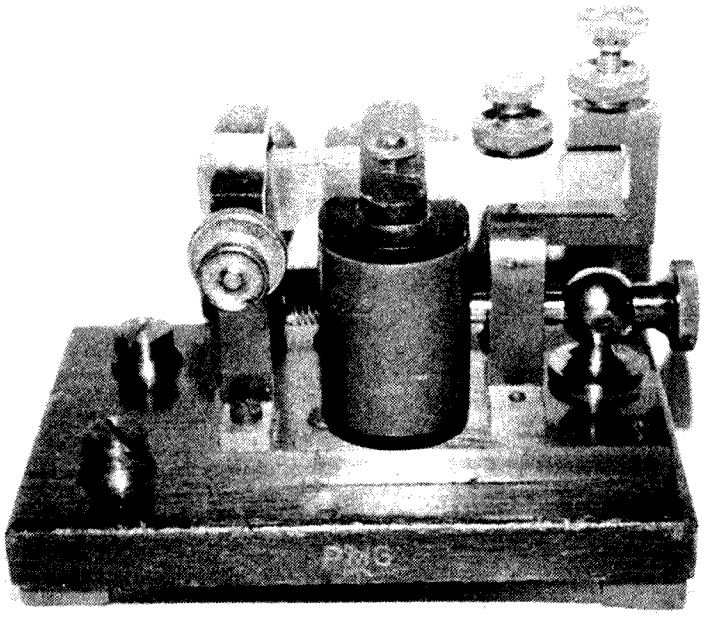
Today's lateral schism regardless, it's still what distinguishes a fully competent radioman from those playing with inconsequential inanities as an idle pastime. It's also why examinations require proven proficiency in copying the code by ear. **ar**



8 The first perforated tape system



9 How our present code was formed



7 Early bench mounted sounder - The Shawsmith Collection

VALVE RECEIVER CONVERSIONS

ROB GURR VK5RG
PO BOX 35 DAW PARK 5041

Introduction

Over many years of Amateur Radio experimenting, I have frequently undertaken the modification of High Frequency communications receivers, to improve their effectiveness for amateur use. The available of World War 2 disposal items, and some other commercial manufacturers' receivers over the years, has been a source for such projects.

Equipment suited to conversion may be obtained by a number of methods, but my own manner has been to purchase cheaply, in "dubious" condition, at ham auctions, buy and sell meetings, and by direct barter. The most important thing is, not to buy too much of a "pup", as you could finish up with a worthless piece of junk. From experience, any receiver that has had its front-end coils or gangs altered in any way will never be restoreable to its original tuning range.

If a receiver with an untouched front-end does come to hand, the most important initial work is to test it out and restore the front end to its original condition, be it valve or solid state. If the front end cannot be brought up to its original tracking and oscillator stability, it is difficult to proceed further. An ideal way to check out the frond-end is to ignore those stages after the first mixer, and using an auxiliary IF/AF strip, work exclusively on the front-end.

I have rebuilt, modified and almost ruined for all time, models such as BC348, BC342, MN26C, Command, SX28, RAX and many others. It is ideal that the frond-end of each project is returned to the manufactured condition and specifications, to ensure no obscure faults are carried over into your conversion.

Solid State

It is ideal, of course, to totally convert the equipment to solid state. However, there may at times be reasons why some stages much be left in the original condition...such hybrid conversions might be necessary where decisions on further steps have not yet been made. Anyone in doubt about their first solid state conversion should consider my first attack on a Command receiver...prior to conversion, it consumed 11.3 Watts of low tension power and 12.5 Watts of high tension (total 23.8 Watts). On completion, the total DC consumption was 12 Volts at 250 milliamps (3 Watts), about a sixth of the original consumption ...additionally it was a cooler set, weighed less, and I could work on it with greater safety due to the lower voltage.

There are now many alternative devices available, such as bipolar, FET, MOSFET, balanced mixers and other ICs etc.

Command Receiver

My latest conversion has been a 3-6 MHz Command, wherein I used a slightly different IF (1650 kHz in lieu of 1415 kHz). This was due to my possessing some 1650 kHz SSB 8 pole Crystal Filters, some of which had been used in previous conversions. A great deal of time had been spent a year or two ago experimenting with the oscillator tracking for this new IF.

This recent conversion used MFE131, dual gate MOSFETs, in RF, Mixer, IF, and Product Detector stages. Audio was from an MC1464 IC, AVC was generated in a BC108; the BFO a crystal controlled MPF102 "grid-plate" oscillator. AM detection was by a diode and dedicated MPF102 AF preamp, and USB/LSB switching by silocon diodes.

The tuneable oscillator however gave me a bit of a problem.

High Frequency Oscillator

Most of my previous oscillator conversions of Commands have used a circuit from "Shortwave Magazine", (fig 1) reprinted in "Amateur Radio", June 1968.

Continued on page 26

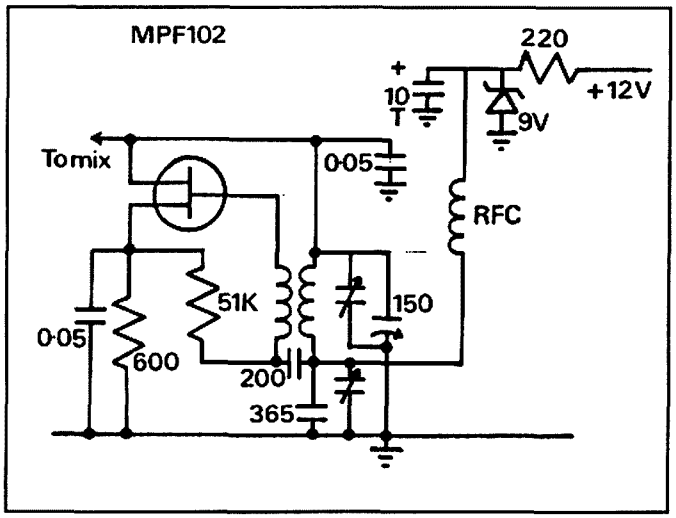


Figure 1

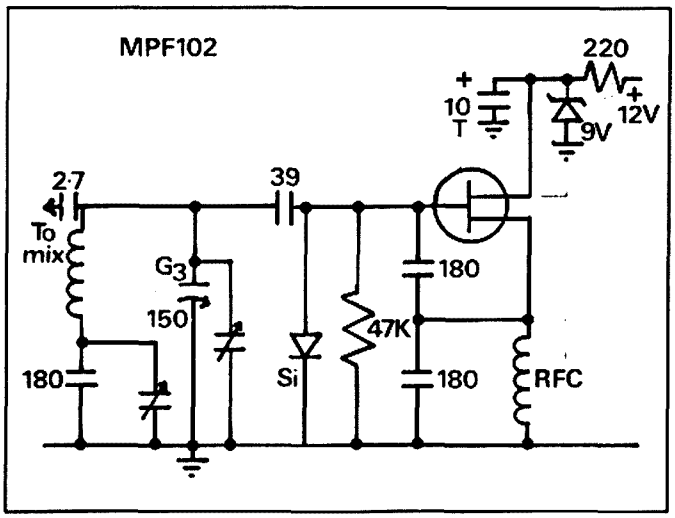
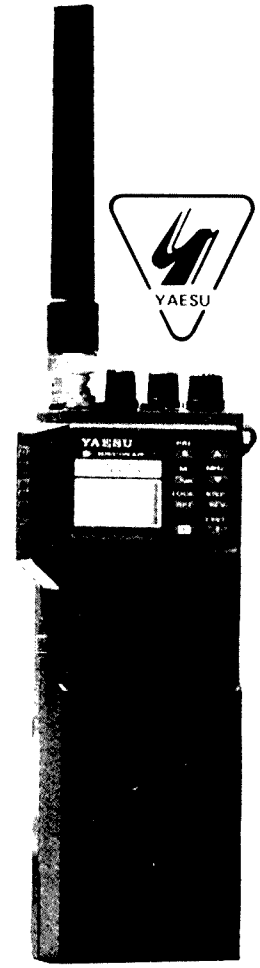


Figure 3

THE BEST YOU CAN GET!



Ultra Compact - Rugged Construction - Superb Performance!

The Yaesu FT-23R 2M Transceiver

Superb performance on the 2m band with all the reliability you know you can expect from Yaesu. The FT-23R is tiny in size, only 55mm x 32mm x 139mm, yet this hand held packs more punch than you'd believe possible.

It's fully micro-processor controlled with 10 memories (7 memories can even be programmed for non-standard repeater shifts), repeater splits, pushbutton or manual scanning (busy/memory/priority), 1MHz up/down stepping, up to 5 watts output (with FNB-11) and more.

You get full 144 to 148MHz band coverage in the palm of your hand. Supplied with high capacity, 600mAH FNB-10 NiCad battery giving 2.5W output, AC charger, mini rubber-duckie antenna and carry case.

Cat D-3490

WITH FULL 2 YEAR WARRANTY

SAVE $30

Now Only $399

It's NEW
2m & 70cm In One!

The Amazing FT-470

Dual band performance at its best! The highly sophisticated FT-470 transceiver has just arrived. It represents the pinnacle of high-tech design in compact hand helds providing both 2m and 70cm coverage in one.

2.3 watts on the 2m and 70cm bands with the latest multi-tasking microprocessor control allowing a high degree of flexibility. In fact, several functions can be performed simultaneously - even the reception of 'both' bands at the same time! That's right, you can be talking through your local 2m repeater and scanning channels for your next 70cm contact at the same time.

There are also 21 freely tuneable memories and 2 VFO's per band. Plus inbuilt C.T.C.S.S. (Tone Squelch) with paging facility, a variety of scanning facilities, LCD display showing 5.5 frequency digits on both bands at the same time and LCD bargraph signal/P.O. meter. The programmable 'power saver' system helps maximize battery life, and frequency selection via tuning knob or direct keyboard entry is a standard feature.

Comes complete with high capacity 1000mAH NiCad battery pack, carry case, dual band antenna and charger. Why buy 2 hand-helds when you can have everything in one?

Cat D-3360
See A.R.A review Vol 12, Issue 5

Just $849

SAVE $39.95

2 YEAR WARRANTY

DICK SMITH ELECTRONICS

YAESU

Computer Aided All Mode Transceiver!

FT-747GX Budget HF Transceiver

Better performance and value for your dollar is the hallmark of the FT-747GX from Yaesu. Incredibly lightweight and measuring just 238 x 93 x 238mm it takes up next to no space in the shack and is well worthy of consideration as a mobile rig.

The FT-747GX SSB/CW/AM (& optional FM) transceiver provides 100 watts PEP output on all 1.8 - 30MHz amateur bands and general coverage reception continuously from 100kHz to 30MHz.

Superb Features

You get the ultimate in convenience including front mounted speaker, a clear unobstructed display and control layout that leaves selection, via the 15 pushbutton controls and two dual pots, as easy and uncomplicated as it can be.

With operator selectable tuning steps for each mode, dual VFO's for split frequency operation and 20 memory channels -eighteen of which can store split Tx/Rx frequencies. Wideband 6kHz AM, and narrow 500Hz CW IF filters are fitted as a standard feature,as well as a clarifier, switchable 20dB receiver attenuator and noise blanker to optimize reception under varying conditions.

It's also fitted with the CAT (Computer Aided Transceiver) system for user programming for even more advanced control by an external computer.

What's more, you'll get a BONUS D-2110 hand held microphone when you purchase your new Yaesu FT-747GX from Dick Smith Electronics, your authorised Yaesu Distributors.

Cat D-2930

SAVE $90 $1179

With 2 Year Warranty.

Yes, we stock a range of antennas and mounting bases for mobile use. Ask at your nearest store!

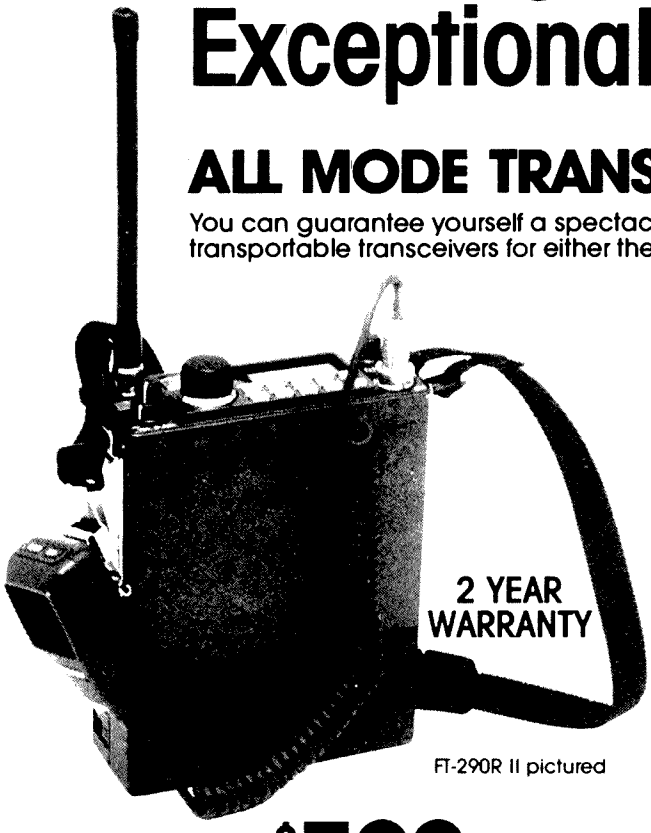
DS XPRESS
PHONE AND MAILORDER SERVICE
ORDER BY PHONE - 008 22 8810 (LOCAL CALL FEE)
OUTSIDE SYDNEY SYDNEY AND ENQUIRIES - 888 2105
FAX (02) 805 1986 OR Write To DS XPRESS, PO Box 321 North Ryde NSW 2113
All major credit cards accepted, O/Nite courier available.
24 HOUR DESPATCH OF ALL ORDERS

DICK SMITH ELECTRONICS

Extra-High Performance-
Exceptional Quality & Value!

ALL MODE TRANSPORTABLE TRANSCEIVERS

You can guarantee yourself a spectacular summer season with these all mode, multi-purpose transportable transceivers for either the 6M or 2M bands!



FT-290R II pictured

With 10 memories which store mode and repeater offset, 2 independent VFO's (set one on DX segment and the other on FM segment), all mode squelch, noise blanker on SSB/CW, 4 tuning steps per mode, 2.5 watt output power (plus selectable 250mW), analogue S-meter and PO meter, and full functions for operation through repeaters.

It's easy to operate with just three knobs and 10 buttons which allow access to all functions quickly and easily. The units are supplied with hand microphone and antenna. PLUS -they now come complete with FBA-8 (9 x 'C' size) battery holder for shoulder-carried portable operation at no extra charge!

6 Metre - FT-690RII

Covers 50-54MHz. Channels steps SSB/CW - 25/100/2500Hz.
With telescopic whip antenna.
Cat D-2874

2 Metre - FT-290RII

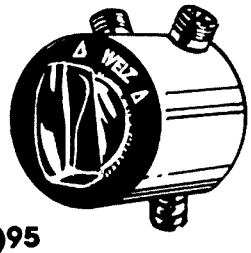
Covers 144-148MHz and comes with rubber duck antenna.
Cat D-2875

See A.R.A. review Vol 12, issue 5.

Either Version $799 ea
Comes With Battery Holder (D-2876)
This month only! Save $49.95

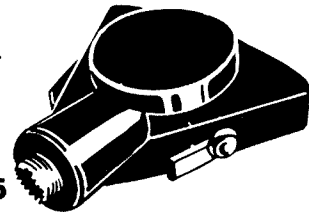
ONE PLACE TO SHOP FOR ALL YOUR ACCESSORIES!

High Quality 2-Way Coax



You can tell by the way it feels that this ultra high quality 2 position coax switch will give you years of trouble free operation. Suitable for HF, VHF and UHF (900MHz) use. Gives superb isolation, lower insertion loss (<0.1dB) and better performance. Anything less just isn't worth it!
Cat D-5208
Nothing But The Best! **$69.95**

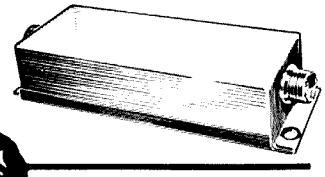
Rak BL-50A Balun



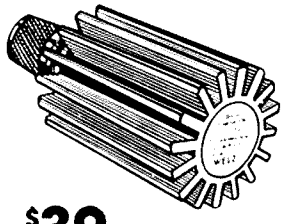
Designed for use as a centre support for dipoles or yagi antenna. Input is 52 Ohms balanced with output 52 ohms unbalanced. The RF input power is 1kW with an insertion loss of less than 1dB. Frequency range covers the entire HF band (3 to 30MHz). **$59.95**
Cat D-5310

Problems With TVI & BCI? Shinwa Filter

Great for amateur use! Easy to fit and helps eliminate TVI and BCI. Handles up to 500 watts. Cut off is around 30MHz with an insertion loss of less than 1dB and maximum attenuation of around 50dB. An easy solution! **$39.95**
Cat D-7080



15 Watt Finned Dummy Load

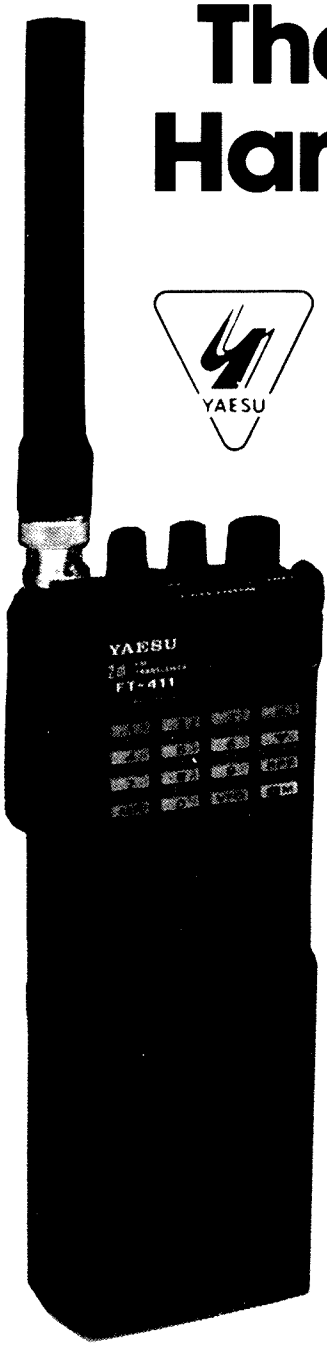


A high quality coax terminator with superb SWR characteristics. Heat resisting ceramic resistor assures <1.2:1 SWR DC - 500MHz, with gold plated core for minimum contact resistance. 50 ohms impedance at 15 watts continuous or 100 watts up to 30 seconds.
Cat D-7025

$39

DICK SMITH ELECTRONICS

The Ultimate 2 Metre Hand-held Transceiver



The FT-411 is a top-of-the-line ultra compact 2 metre handheld offering an incredible array of features without the size and weight of previous sets. Expanding on the microprocessor controlled features of previous models, the front panel multi-function back-lit keypad allows easy frequency entry, selection of the 49 tunable memories (which store repeater shifts, or separate Tx/Rx frequencies), setting of the programmable-interval 'power-saver' system, as well as a host of other convenience features. CPU control also offers 2 VFO's, rotary dial tuning with 5 selectable tuning steps, a multi-function back-lit 6 digit LCD screen with bargraph Signal/P.O. meter, and a range of scanning options. Even VOX (voice-activated transmit) circuitry is provided, allowing hands-free operation with the optional YH-2 headset.

Yaesu have also recognised that a hand-held radio must be ruggedly constructed, and yet be small enough and light enough to carry around all day. Through the extensive use of surface-mounted components, a heavy duty die-cast rear panel, rubber gasket seals around all external controls and connectors, and a carry case supplied as standard, the FT-411 will provide reliable operation even in dusty or humid environments while measuring only 55 (W) x 155 (H) x 32mm (D), and weighting less than 550 grams (including a high capacity 1000mAH FNB-14 NiCd battery giving 2.5W output). A range of inexpensive optional accessories are also available to provide flexibility for users differing requirements. See ARA review Vol 12 Issue 3.

Complete Package: FT-411, FNB-14 7.2V NiCd, Carry Case, Antenna, Approved AC Charger.

SAVE $30 **$469**

D-3350

EXCLUSIVE 2 YEAR WARRANTY

Optional Accessories

PA-6	DC Adaptor/Charger suit FNB9/10/14	D-3498	$39.95
FNB-11	600mAH NiCd Battery (5W output)	D-3496	$99.00
MH-12A2B	Speaker/Microphone	D-2115	$49.95
YH-2	Mic/Earphone Headset	D-2200	$49.95

• **NSW** • **Albury** 21 8399 • **Bankstown Square** 707 4888 • **Blacktown** 671 7722 • **Campbelltown** (046)27 2199 • **Chatswood Chase** 411 1955 • **Chullora** 642 8922 • **Gore Hill** 439 5311 • **Goeford** 25 0235 • **Hornaby** 477 6633 • **Hurstville** 580 8622 • **Liverpool** 600 9888 • **Maitland** 33 7866 • **Miranda** 525 2722 • **Newcastle** 61 1896 • **North Ryde** 88 3855 • **Parramatta** 689 2188 • **Penrith** (047)32 3400 • **Railway Square** 211 3777 • **Sydney City** 267 9111 • **Tamworth** 66 1711 • **Warringah Mall** 905 0441 • **Wollongong** 28 3800 • **ACT** • **Fyshwick** 80 4944 • **VIC** • **Ballarat** 31 5433 • **Bendigo** 43 0388 • **Box Hill** 890 0699 • **Coburg** (03)383 4455 • **Dandenong** 794 9377 • **East Brighton** 592 2366 • **Essendon** 379 7444 • **Footscray** 689 2055 • **Frankston** 783 9144 • **Geelong** 43 8804 • **Melbourne City** 326 6088 • **Richmond** 428 1614 • **Ringwood** 879 5338 • **Springvale** 547 0522 • **QLD** • **Brisbane City** 229 9377 • **Buranda** 391 6233 • **Cairns** 311 515 • **Chermside** 359 6255 • **Redbank** 288 5599 • **Rockhampton** 27 9644 • **Southport** 32 9863 • **Toowoomba** 38 4300 • **Townsville** 72 5722 • **Underwood** 341 0844 • **SA** • **Adelaide City** 232 1200 • **Beverley** 347 1900 • **St. Marys** 277 8977 • **Elizabeth** 255 6099 • **Enfield** 260 6088 • **WA** • **Cannington** 451 8666 • **Fremantle** 335 9733 • **North Perth** 328 6944 • **Perth City** 481 3261 • **Midland** 250 1460 • **TAS** • **Hobart** 31 0800 • **NT** • **Stuart Park** 81 1977

*Yaesu stock not available at all stores; please call for availability

From page 21

In this circuit the MPF102 FET is directly in place of the triode valve, and coupled to a suitable DC supply. All worked well - however one particular fault showed up in this recent conversion.

With the set working well, and quite equal to other receivers in the shack, I utilised it as a tuneable IF for some 2B,52 and 144 MHz converters. I was shocked at the number of "joeys" or "beats" I could hear across the various bands, and checked to ensure they were not produced by the line oscillator of any nearby TV receiver. During these tests, I found my 147 MHz FM receiver mute opened up for no apparent reason...eventually, I determined that the tuneable oscillator had a lot of high level harmonics radiating from it.

I calculated a few of them, and they were up beyond the 40th, and were very strong on 147 MHz etc...no wonder spurious signals showed up on the converter set up.

Previous use of the converted receivers for straight tuning of their design ranges had not shown these harmonics to be any problem. The oscillator in use in the set was of the "tickler' feedback type, but used the tuned circuit as the anode load and the feedback winding in the grid circuit.

Development Of A Circuit

I was aware from previous experience that there were two alternative circuits I should try...the Franklin or the Colpitts. The Franklin required two transistors or FETs plus an isolating stage, all of which were too big for the available space. The Colpitts used only one device, and most of the mounting points were already in-situ (point to point wiring was used throughout the conversion), so I decided to save the Franklin idea until after the Colpitts had been assessed.

The oscillator tuning range required for the set was 4.65 MHz to 7.65 MHz. However, the shunting effect of the high capacity feedback divider network, as well as the heavy coupling capacitor in the ideal circuit (fig 2), made the achievement of this range impossible...I had lost the required tuning range, but had by

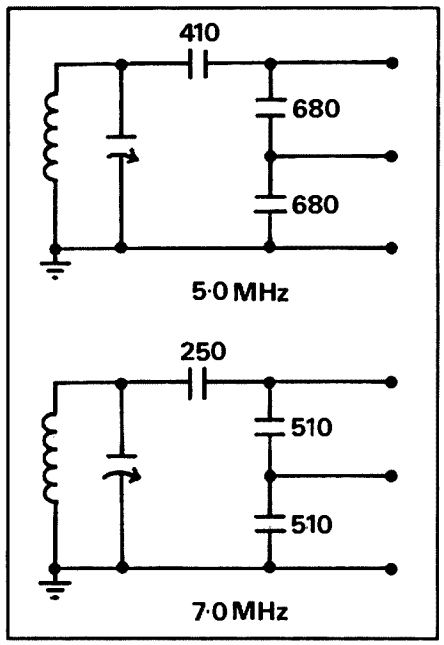


Figure 2

now proved the harmonic output of the Colpitts was totally acceptable.

Experiments at reducing the coupling capacitor showed that there was a lower limit where oscillation failed; similarly, the feedback capacitors also could be reduced, but only to a lower limit at which the same effect occurred. As the values were reduced, the tuning range became more realistic. Finally, with the values shown (fig 3), I had a stable oscillator, suitable tuning range, and the objectionable harmonic radiation. I was additionally delighted that, when checking against my 500 kHz crystal marker, the calibration at all seven 500 kHz calibration marks on the 3 to 6 MHz dial were spot-on. The use of the feedback winding in the old Command oscillator coil was now unnecessary.

Summary

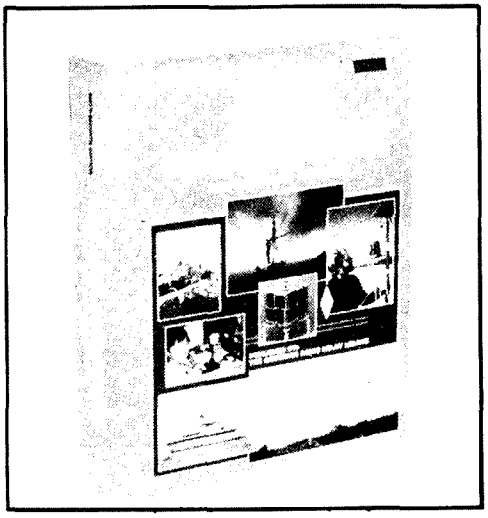
The above oscillator experience is recorded for the information of others undertaking similar conversions of high frequency receivers. Whilst an article on the overall conversion is unlikely, I have a copy available of the final receiver circuit, to assist anyone with a similar bent. Correspondence on such conversion techniques would be welcomed. ar

The Ideal Christmas Gift ... The New ARRL Handbook For 1990 Is Now In Stock ... so order now to be sure of your copy ...

This is the most comprehensive edition since the **Handbook** was first published in 1926. The sixty-seventh edition contains over 1200 pages and over 2100 tables, figures and charts. Added to this edition are new antenna projects including three high-performance Yagis for 144, 220 and 432 MHz designed by Steve Powlishen, K1FO. Dick Jansson, WD4FAB, has completely revised the space communications chapter, which includes his innovative helical array for AO-13 Mode L.

As always, the **Handbook** includes many chapters of construction projects, including:

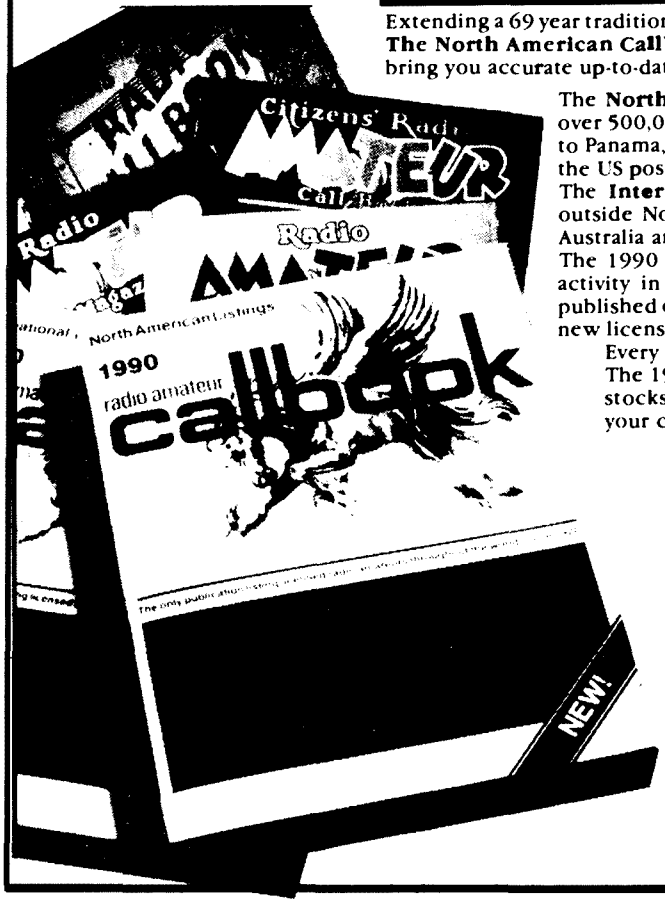
- Power supplies, keyers and measuring devices
- QRP transmitters and VHF/UHF preamps
- High-performance communications receiver
- High-power HF and VHF amplifiers
- 1296-MHz transverter
- Digital audio memory keyer



The HANDBOOK has always been known as a reference for component data. There is an entire chapter devoted to everything from tube and transistor specifications to aluminium tubing sizes. There also is up-to-date information on digital techiniques and operating practices.

1990 ARRL Hand Book (Hard Cover) Stock Number WIA 287 $52.90 .. Less 10% For WIA Members

The New 1990 Call Books



Extending a 69 year tradition, we bring you three new Callbooks for 1990, bigger and better than ever! **The North American Callbook**, the **International Callbook** and the new **Callbook Supplement** bring you accurate up-to-date QSL information on over 1,000,000 amateurs through-out the world.

The **North American Callbook** lists the calls, names and address information for over 500,000 licensed Radio Amateurs in all countries of North America from Canada to Panama, including Greenland, Bermuda and the Caribbean islands plus Hawaii and the US possessions.

The **International Callbook** lists over 500,000 licensed amateurs in countries outside North America. Its coverage includes South America, Europe, Africa, Asia, Australia and the Pacific area (exclusive of Hawaii and the US possessions)

The 1990 **Call Book Supplement** is a new idea in callbook updates, listing the activity in both the North American and the International Callbooks. It will be published on the 1st June, 1990, this combined supplement will include thousands of new licenses, address changes and call sign changes for the preceding 6 months.

Every active amateur needs the **Callbook!**

The 1990 Callbooks will be published on December 1, 1989 and we should have stocks in Australia by Air Freight by the 2nd week of December so please order your copy now and have it in time for christmas.

- Over 1,000,000 current amateur listings in all countries of the world
- Telegraph Codes ■ Then and now call changes ■ Silent Keys
- Census of Amateur Licenses in all countries ■ Standard Time Charts
- International Postal Information ■ World-wide QSL Bureaus
- Table of Amateur Prefix Allocations ■ Prefixes of the world
- Plus many other featurs.

1990 Nth American Call Book Stock # WIA288 $58.50 Less 10%
1990 International Call Book Stock # WIA289 $62.50 Less 10%
1990 Call Book Supplement Stock # WIA290 $17.50 Less 10%
Supplement Available June/July 1990

MAGPUBS

The above books, pins many more, are available from your WIA Divisional Bookshop.

All items are pins postage and handling where applicable if not in stock at your Divisional Bookshop, order will be taken and filled promptly

TR-7 OPERATION WITH VHF TRANSVERTERS

THIS IS A FACTORY MODIFICATION FROM THE RL DRAKE COMPANY.
IT HAS BEEN SUBMITTED TO AR BY W TOMCZYK VK2OE

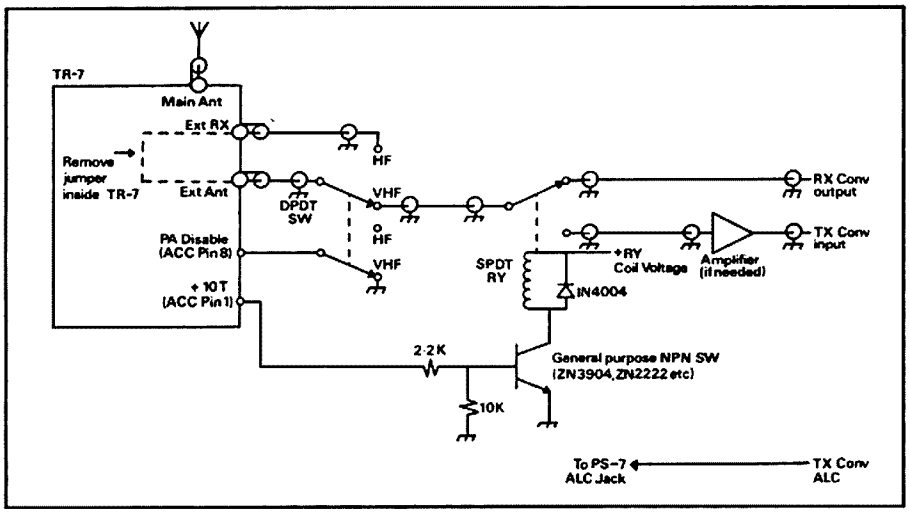


Figure1 Using the TR-7 with a VHF Transverter

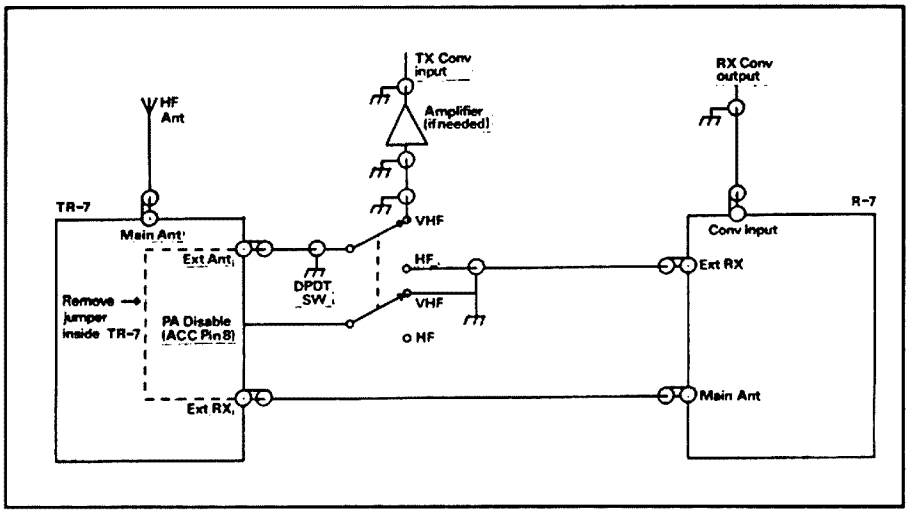


Figure 2 - Using the TR-7/R-7 Combination with a VHF Transverter

Repeaters - addition, deletions, alterations

Have you advised the WIA Executive Office of changes to the repeater list?

Operation of the TR-7 with devices such as transverters requires a low-level transmit drive signal. While it is possible to use an attenuator on the output of the TR-7 to obtain such a signal, there is another method which is more efficient and eliminates the chance of overdriving the accessory device.

Refer to figure 1, and note that that in the VHF position one section of the DPDT switch grounds the PA Disable line (pin 8 of the TR-7 Accessory connector). This prevents the relay and power amplifier section of the TR-7 from operating in transmit mode, and provides a low-level signal at the EXT ANT jack on the rear panel. This signal is routed through the other section of the DPDT switch to a relay which selects the receiving and transmitting converters as required. Note that since the TR-7 relay is not operational in this configuration, the HF antenna is automatically disconnected.

The amplitude of the low-level signal obtained in this manner is approximately one milliwatt, or 0.2 volts (rms) into 50 ohms. If a higher amplitude is required, the signal can be amplified by a one or two stage transistor gain block, many of which have been described in the literature.

The DPDT switch, relay, switching transistor and associated components can all be housed in a small enclosure to provide shielding and operational convenience. Note that all RF leads should use RG-58 or similar coaxial cable. In addition, be sure to remove the jumper between the EXT RX and EXT ANT jacks in the TR-7 for proper operation.

Figure 2 shows the interconnection method when using the TR7/R7 pair. In this case, the relay is eliminated, and the converter input of the R7 receiver is used for the receiving converter output. For transceive operation, depress the RCT pushbutton on the TR-7.

Operation of the TR-7 and R7 will be exactly as described in the Operator's Manuals for these units, except that the TR-7 relay and power amplifier will not function in the VHF mode. With the DPDT switch in the HF position, operation will be entirely normal.

ar

BETTER TELEVISION AND RADIO RECEPTION

A true self-help guide written in plain language which communicates technical concepts in a readily understood manner for those needing to deal with interference and reception problems. Jim Linton VK3PC reviews this DOTC publication in his second feature article on the Department's plan to charge a $60 fee before its field staff will visit a household to diagnose the cause of degraded TV or radio reception.

Better Television And Radio Reception Booklet

The Department of Transport and Communications (DOTC) has spared no effort in its new publication called "Better television and radio reception - your self-help guide." It is part of the Department's educational program aimed at consumers, electricity supply authorities, and the electronics repair industry. DOTC in the book explains that well over half of all reception problems are caused by deficiencies in receivers, inadequate or faulty antenna installations, or result from people trying to receive stations too distant for reliable reception.

In recent years there has been an increasing tendency for members of the public to call on the Department's field staff to check out every claimed interference problem. In nine out of ten such investigations, currently about 17,000 a year, it was found a reception problem existed and the problem was not the result of genuine interference. In these cases, the remedy could have been achieved by the householder or with help from a service technician.

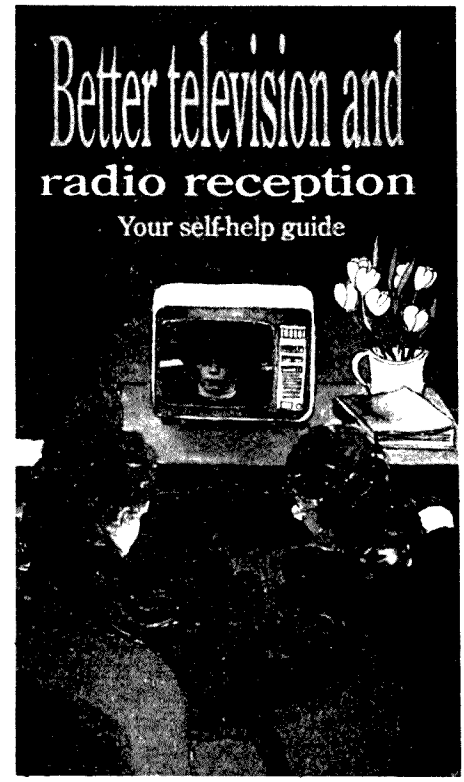
The book is truly a self-help guide, written in plain language, and DOTC hopes it will result in many reception problems being fixed without its involvement. It offers advice on how to choose and install the right type of antenna, a list of filters and associated devices, and how to select a television technician or antenna specialist. DOTC has held briefing seminars with industry groups, and those who attended were eager to get their hands on a copy of the book.

An information package including the book is being sent to radio and TV repair service organisations and antenna installers throughout Australia. There was a lack of experience in how to deal with immunity problems and the book will be a valuable reference guide. The DOTC education initiative is certain to see an increase in the number of reception problems being handled by the TV service industry itself. Electricity supply authorities have also been consulted on the need for them to respond, when complaints are made about degraded TV reception caused by power line faults.

The publication is in an ideal format with high quality photographs depicting typical reception and interference problems. The consumer or technician can easily find a reference and picture of a problem and advice on how to deal with it. There are sections on television and VCRs, AM radio, FM radio, and other electronic equipment. Each section is a step-by-step guide in diagnosing the particular reception or interference problem being experienced. It cannot be over emphasised in reviewing this book, that the language it uses communicates technical concepts in a readily understood manner. The first section makes reference to radiocommunications transmitter interference, and has pictures showing typical AM, SSB and FM transmitter interference to TV sets and Video Cassette Recorders.

It states: "In almost all cases, the cause is not the radio transmitters or its operator. The problem occurs because some television receivers are incapable of rejecting unwanted signals from nearby transmitters. This deficiency is termed lack of radio frequency immunity." It then details the cures for this type of problem including the use of simple plug-in filters.

In a similar manner, it informs readers that a number of other appliances such as hi-fi systems, cassette recorders, telephones, electronic organs and home intercoms can be affected by a nearby transmitter. The book says these devices are designed to reproduce audio frequencies only, and should not be able to pick up Citizens Band, Amateur or business two-way radio transmitters. The methods by which the radio frequencies are reproduced in this audio equipment are discussed with suggested cures.



Powerline interference, electrical appliance interference, and interference caused by computers is explained along with remedial action. Typical interference patterns seen on TV screens caused by a fault on a nearby high voltage powerline are shown by photographs. The book says if neighbours experience the same problem, then this is usually a good indication that the cause is a powerline fault. After making sure all is in good order with a household TV antenna system, DOTC advises that the consumer contact their electric supply authority. And while the book is a self-help product, the Department doesn't intend to abandon consumers. It has set up a telephone advisory service for those who experience difficulty in using the book.

DOTC will continue to operate an interference investigation service provided to investigate interference to radiocommu-

nications services, as well as genuine interference involving broadcasting services. However, it has embarked on a program to educate consumers, power supply authorities and the TV service industry on their obligations regarding reception problems. DOTC field staff have been overloaded with calls to the Department's present free investigation service, with most of investigations turning out to be reception problems. Although 17,000 such calls are handled a year, these would only be a small fraction of those experiencing reception problems which can easily be cured.

DOTC aims through its education program to make the public aware of typical reception problems and how to fix them. The Department spends over one million dollars a year, with its highly skilled and equipped staff investigating claims of interference which turn out to be a receiving system problem, or a power line fault. It is seeking an improvement in this situation for both itself and TV viewers (radio listeners) by a two stage approach.

The first will include the release of the self-help guide which in summary explains how to achieve better reception and where to seek the best advice. The book includes a questionnaire to help identify the likely cause of a reception problem, and what action should be taken to resolve it. This will be backed up by a telephone advice service available through a STD-free 008 phone number.

After the book is widely available and publicised in the media, DOTC will bring in the second stage of its program. In late 1990 or early 1991 it will introduce a $60 fee for those who want DOTC field staff to visit their home to diagnose the cause of degraded TV or radio reception. The consumer also has the choice of not paying the fee and merely sending the Department a completed questionnaire, if they wish to report a specific source of interference.

In this circumstance, DOTC staff will not send its staff out to diagnose individual problems. The questionnaire will be used to monitor the nature and incidence of reception problems, and to detect cases of interference and broadcasting planning problems which affect the wider community.

Better Television and Radio Reception - your self-help guide, will be available free from DOTC in early December and copies should be held by most WIA divisions as a membership service. **ar**

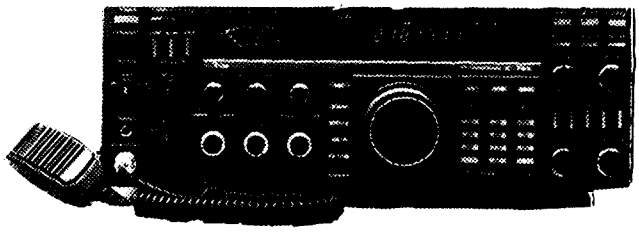
THE GEORGE BUSH, MA
MIKHAIL GORBACHE

What has made Icom's range of transceivers world leaders in their class? Could it be the uncompromising standards of a George Bush? Is it the durability of a Maggie (Iron Lady) Thatcher? Or the innovative thinking of a Mikhail Gorbachev?

It is, in fact, a combination of all three.

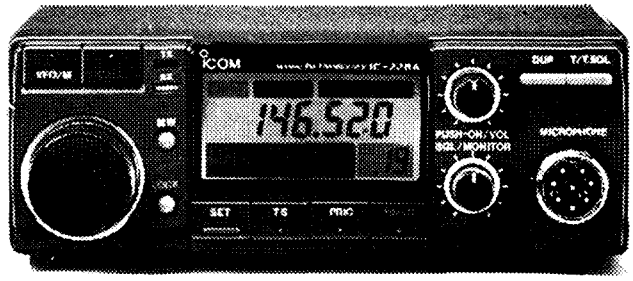
Which has led millions of radio users around the world to choose Icom. Their vote has made Icom the world leader of transceivers.

Announcing the IC-726. An advanced, HF/50MHz transceiver that combines VHF technology with the latest in sophistication. Designed for amateurs or veterans, and ideal for mobile users. 26 programmable memory channels, multi-mode transmitting and receiving and a host of other features and options.



The Icom IC-765 HF transceiver features DDS synthesiser, high speed auto tuner, built-in AC power supply, 99 programmable memories, keyboard frequency entry, band stacking register, general coverage receiver 100KHz-30MHz, CI-V system for PC control and rack mounting dimensions.

The Icom IC-32AT dual band FM transceiver outputs 5.5W and has a full duplex crossband operation, on/off switchable power saver and 20 double-spaced memory channels that can store two frequencies. The programmed scan function scans all frequencies between two programmable frequencies. And Priority Watch monitors the Call Channel, a memory channel or all the memory channels in succession, every five seconds.



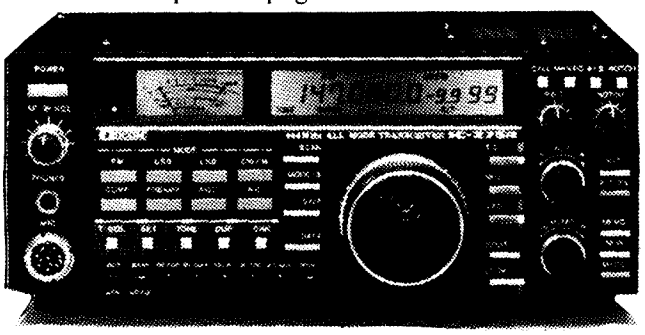
The Icom IC-228A (25W) and IC-228H (45W) mobile FM 144MHz transceivers are compact and easy to operate with 20 memory channels, multi-colour LCD programmed and memory scans, variable tuning steps, priority watch, main controls lit for night operation.

RGARET THATCHER AND V OF TRANSCEIVERS.

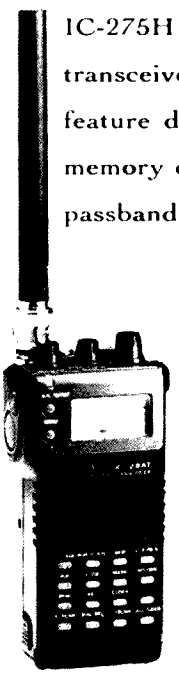
The Icom IC-475A (25W) and IC-475H (75W) 430 MHz All Mode transceivers are designed for packet mode with direct digital synthesizer (DDS), 99 memory channels, USB, LSB, CW, FM, passband tuning and adjustable IF notch filter.

The Icom IC-575A (10W) and IC-575H (100W) 28/50 MHz All Mode transceivers have a receiver coverage of 26-56 MHz and are equipped with direct digital synthesizer (DDS), 99 memory channels, and passband tuning.

The ICOM IC-4SA an amazing 70cm midget hand held. Comprising 48 memories plus 1 call channel, operating from batteries with 5 watts output at 13.8v or an external 12v DC supply. Auto power off function, scanning, scan skip, clock and time function, an optional pager and more.



The Icom IC-275A (25W) and IC-275H (100W) All Mode 144MHz transceivers are designed for packet mode and feature direct digital synthesizer (DDS), 99 memory channels, USB, LSB, CW, FM, and passband tuning.



The remarkable IC-2SAT is the ultimate in mini handheld high performance 2M FM transceivers. With convenient keyboard, re-chargeable batteries, 5W output (opt. with a 13.2v battery pack), 48 memories, a call channel and a variety of other sophisticated super multi functions. Plus 18 optional extras. Another marvellous break-through in miniaturized hand helds.

Call Melbourne on (03) 529 7582 or interstate on (008) 338 915 for your nearest Icom stockist.

ICOM

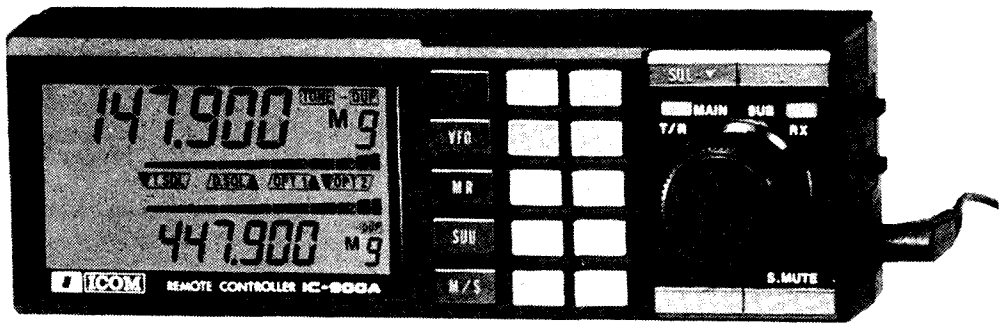
ICO 0047

WIA 80 COMPETITION!

CELEBRATE THE 80TH ANNIVERSARY OF THE FIRST AND OLDEST NATIONAL RADIO SOCIETY IN THE WORLD

WIN

AN ICOM IC-900A MULTI-BANDER SYSTEM VALUED AT $2000



Remote Controller

How would you like to win a fantastic ICOM IC-900A series multi-band mobile control unit, complete with modules for two metres and 70 centimetres, plus your option of either six metres or 10 metres?

Thanks to ICOM Australia Pty Ltd, the winner of this competition will receive a magnificent IC-900A multi-bander system set up for 144 and 432 MHz operation, and will be able to select either the additional six-metre or 10-metre module.

However, you could still be a winner, even if you do not win this IC-900A. The three runners-up in this great competition will receive a full refund of their 1990 WIA membership fees, worth up to $65.00 each.

Who can enter?

This great contest is open to any person who is a financial member of the WIA as at 1st February 1990, except that employees or office bearers of the WIA Divisions and Executive are not eligible to win a prize.

How to enter?

Easy! Fill in this form by completing, in less than 30 words, the statement "I am a member of the WIA because . . . .", place it in an envelope together with your address label accompanying this issue of Amateur Radio magazine, and post it to "WIA 80 Competition, PO Box 300, Caulfield South, Vic, 3162", to reach us no later than 1st February 1990.

A photocopy of this form may be used if you do not want to cut up Amateur Radio magazine, but the Amateur Radio address label must be the label used to mail this issue of Amateur Radio magazine to you. This competition will be run over a period of three months, and WIA members can enter three times if they so desire.

The winning entries will be selected by a judging panel, and the winners will be announced in the March 1990 issue of Amateur Radio magazine.

.....

WIA 80 Competition PO Box 300 Caulfield South Vic 3162

Dear Sirs,
I wish to enter the WIA 80 competition, and accept the rules as published.

I am a member of the WIA because .....

.....

.....

.....

.....

(Complete this statement in 30 words or less)

Callsign or
Membership Number ..... Signed .....

JARL HAM FAIR

DAVID WARDLAW VK3ADW

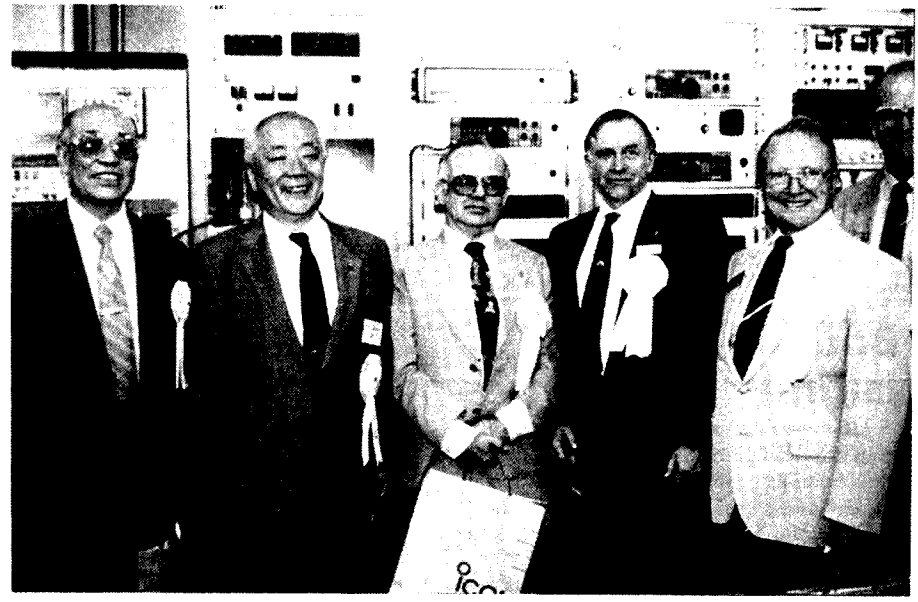
While in Tokyo to attend a Region Three Association Directors meeting I visited the JARL's HAM FAIR, held at the New Hall of the International Trade Center in Harumi, Tokyo. This fair is supported by JAIA, the association of manufacturers of amateur radio equipment in Japan. The major manufacturers well known in Australia, Kenwood, Yaesu and Icom had large displays to show off their latest equipment. In addition, many smaller manufacturers had their own stands displaying a large variety of accessories. As well as the manufacturers a number of retailers were also represented and seemed to be doing a roaring trade, as were the stall holders in the flea-market.

The JARL, IARU Region 3 Association, TIRNA (the organisation of overseas amateurs in Japan), JLRS (JA YLs) and many specialist groups were represented on their own individual booths.

A special station 8JIHAM was operated on multiple bands throughout the period of the Fair using the latest equipment. A number of Australian stations were contacted. A special feature was made of the new WARC bands 18 MHz and 24 MHz.

This Fair, spread over three days, is the largest in the world, with an approximate total attendance of 58,000. This puts it ahead of America's "DAYTON HAMVENTION" and West Germany's "HAM RADIO" held in Friedrichshafen in Germany.

One striking feature of this Fair is the large number of young people attending.



In Front of The Simulated Control Room in the JAS-16 Booth-L to R: BZ1CP, JA1AH, 9V1RH, VK3ADW, W1RU and ZL2AHJ.

Showing that Japan does not have the problem that we in Australia, together with a number of other countries, have of attracting young people into the fraternity.

There was a home brew contest, with a significant number of excellent entries showing that the art of home construction is not lost in the land of the World's major manufacturers of amateur radio equipment. There was also a chance for visitors to the fair to demonstrate their proficiency in soldering - this attracted a continuous crowd. On another stand, you could test your CW contest ability against a computer.

A number of advanced techniques were displayed, including spread spectrum using TV line oscillators to synchronise the system. This was on a closed circuit, as the JA administration doesn't allow it over the air as yet.

All in all, it was an excellent show, indicating the strength of amateur radio in Japan.

ar

HOW'S DX

STEPHEN PALL VK2PS
PO Box 93 DURAL 2158

Instead of "How is DX?", this column should have the title "How **was** DX?" as there is at least six weeks time lag between the events happening and the news appearing in print. Most of the activities reported here took part in October, however here is the news, as it happened. (The lag due to magazine requirements can be as little as three weeks – Ed).

Bouvet Island

After years of waiting for some activity from this uninhabited rocky island in the most southern part of the Atlantic Ocean (QTH: 54 deg 25' South 3 deg East) we will have not one, but two DX groups, which will activate this very rare "DX country". We reported in November "AR" about the Norwegian Club Bouvet group, which will commence activities this Christmas. News is now to hand, that another group, the 3YØB DXpedition, will land on the island early February 1990. A 30 man/person scientific and radio team under the leadership of Mike, W9SU will be on the island for 10-12 days. Among the usual bands and modes, they will operate also on RTTY, and Oscar 13 will be available for 24 hours each day during this operation, with special program written for the activation.

Angola D2

Finally, after many rumours of alleged amateur activity from this war-torn African country, it seems we now have legitimate operation. LU6ELF/D2 started operating on the 7th of October. Jorge is a Captain in the Argentinian Navy, in the medical section. He intends to be in Angola until March/April 1990, with the United Nations Military Force. He was heard on the LU-DX net around 1900 UTC on 21340 kHz. It appears that his radio equipment is not the most modern, and his antenna restricts him to 21 MHz. However, according to the news heard from Jim VK9NS, it is possible that he will be in the possession of a more up-to-date transceiver soon.

Fernando de Noronha

This is a group of islands off the Brazilian Coast in the Atlantic Ocean. Under the callsigns ZYØRF, ZYØRC, and ZYØRV there was activity from the 29th of September to the 3rd of October, by Andree, Jim, and Epy. QSL route: ZYØRF to PYØFF, ZYØRC and ZYØRV to PY7XC.

North Cook Islands: ZK1

Ron, ZL1AMO and Robert ZL4DO were active on the North Cook Islands with their respective callsigns:ZK1CQ and ZK1RS. CW mode is the favoured by Ron, and he was heard on most of the traditional spots on HF. QSL to their home calls.

Rotuma: 3D2

All those who missed out on Bing's (VK2BHC) first activity on this island, now have the opportunity to work this new "DX country". Bing returned to Rotuma on the 15th of October, and will stay there for about 3 months. His Rotuma call is: 3D2XV. This time, he will concentrate on ten metres and six metres operation, SSB only. QSL strictly direct to his home call.

Chatham Island ZL7

"Dusty" ZL2VS, one of the several operators of the "222" net, will be active from this remote NZ island from the 15th of January to the 29th of January, 1990. He will work mainly CW, using the special Commonwealth Games prefix: ZM7VS - QSL to his home call.

South Shetland

HL5BDS was working from this island in the Antarctic Peninsula. He has a sked with JA3MNM on each Sunday at 1100 UTC on 1412o kHz. QSL to: HL1ASS.

Pacific Wanderings SM7PKK

When you read these lines, Mats, SM7PKK is already on his way to Western Samoa as 5W1HK. He started his tour in October in American Samoa as KH8/SM7PK. Then he goes to Tokelau with the OH1RY boys. Sometime in December/January he intends to visit Rotuma, then Tuvalu and later West Kiribati. He does not plan to go back to Sweden before the end of April, 1990. (See also AR p61 Sept '89 and p59 Oct '89 – Ed.)

Space Shuttle Atlantis

Space shuttle Atlantis carrying Jupiter probe "Gallileo" left the US Cape Canaveral space base on the 17th of October 1989. When checking the bands around 14292 kHz at 1200 UTC on the 19th of October, I discovered an interesting broadcast. Goddard Amateur Radio Club, under the callsign WA3NAN was broadcasting direct from the Shuttle the early wake up call for the astronauts. One could hear the morning reveille followed by military music, playing the popular navy song "Anchors away". One could hear the talks and comments between the astronauts and space centre, and all this right in the middle of SSB QSOs. Incidentally, the station, which has NASA connections, said that it had the permission of the FCC (the US equivalent of our DOTC) to do this broadcast.

Interesting QSOs and QSL Information

BZ4RDX - Knee - 21205 kHz SSB QSL to: Box 1827 Nanjing PRC.

JY5FA - Nasr - 14250 kHz SSB QSL to: Box 243, Amman, Jordan.

XU1SS/DU1 - Seth - He says he is one of the original operators of XU1SS which was very active for a few months in 1984 from Kampuchea on 14165 kHz SSB. He gave his QSL information as: YB3CN.

JTØDX the Hungarian DXpedition from Ulan Bator, Mongolia. They were active on several bands, until the 15th of October. QSL to: HA6KNB.

D44BS - Angelo - 14220 kHz SSB. QSL to: Box 104 Praia, Cape Verde Republic Africa.

VQ9TC - George - Chagos Archipelago = 14010 kHz CW. QSL to: NØJCV.

ZR1RC - Roger - 21205 kHz Grand Cayman Island SSB. QSL to call-book address.

PP5ZYZ - Joe - Brazil - 28488 kHz SSB, Santa Catarina Island. QSL to home call.

6W2EX - Jacques in Senegal, 14243 kHz SSB. QSL to: F6FNU.

OY9JD John on Faroe Island, - 14 MHz. QSL to call-book address.

KNØE/P/KH3 - Pete - Johnston Island 28 MHz. QSL to: K9UIY.

YJ8AB - Jack in Vanuatu, - 21205 kHz SSB. QSL to: KC4MJ.

UZ1ZZZ/A/Bob on Kildin Island near Murmansk - 21220 kHz. QSL to: UA1ZX.

CI1ASJ - Andy in Canada - 21296 kHz. QSL to: VE1ASJ.

V63CQ - Todd in Ponape - 28495 kHz SSB. QSL to: KB5FGL.

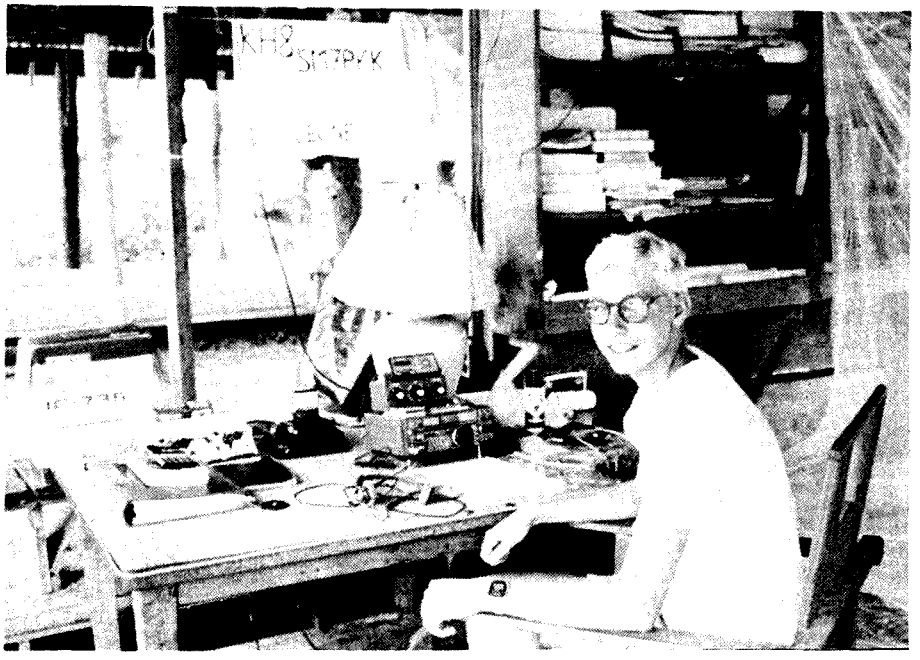
4U1ITU - Pierre in Geneva - 14220 kHz SSB. QSL to: F6HIZ.

3D2EA - Eric - in Fiji - 21205 kHz SSB. QSL to: Box 15377 Suva Fiji.

TJ1BW - Mike in Kumbo Cameroon - 21205 kHz SSB. QSL to: DL6FAL.

D44BC - Julio - 14194 kHz SSB. QSL to: Call-book address.

3D2VB - QSL to: OH3GZ



Mats Persson SM7PKK at his QTH in American Samoa during his 1988/89 tour.

JY5FY QSL to: Box 2121 Amman, Jordan.

TI2KX QSL to: WA4JTK.

HP2DS QSL to: Box 882 Colon Panama.

ZF1DJ Box 1565 Grand Cayman Island West Indies.

ZM5PX QSL to: ZL3PX.

5W1KT QSL to: Box 1672 Apia Western Samoa.

CEØZIG QSL to: NR8J

5N9NRK QSL to: Box 8426, Kaduna, Nigeria, West Africa.

More About Nets

ANZA Net: It was Percy VK4CPA, who originated the net and gave the name ANZA to the net.

The "222" Net

It was in 1978 when I first discovered this net on 14220 kHz. It was called then if my memory serves me right - the Pacific Net, and was run by Jim P29JS. After Papua and New Guinea, Jim settled on Norfolk Island and he is now known world wide under the callsign: VK9NS. Jim organised and took part in many DXpeditions. One of the early ones was the Heard Island activity as VKØHI and VKØCW in January 1983. The latest was his expedition to Banaba (Ocean) Island under the callsign T33JS. The international amateur DX fraternity honored Jim in 1986 at the Dayton Convention, USA, when he was elected to the "DX Hall of Fame" organized by the well-known "CQ" Magazine. The "222" Net - as it is known - operates on 14222 kHz each day (except Monday). Check-in starts at 0530 UTC. The net is run under Jim's guidance by a number of his helpers: "Dusty" ZL2VS, Frank VK1ZL, Heather VK2HD, Don VK1DH, Harry VK2BJL, Craig VK4SSB, John VK3WJ, and on the weekends, by Jim VK9NS himself. It is a world-wide DX net, and if you keep to the rules, you have an equal opportunity to work that elusive rare DX which appears only on Nets.

From Here And There And Everywhere

Mauri, OH4ML is on an interesting journey in the Pacific. He operated as OH4ML/H44 until the 18th of October, then moved on to 3D2ML, 5W1ML and as A35ML. He returns to Finland on the 7th of December.

Alex in San Jose, Costa Rica, operated under the callsign TI00D, celebrating 100 years of democracy in that middle American country. QSL to: TI4SU.

Martin, in Berlin (East), operated under the callsign Y40DDR celebrating the 40 years of existence of the German Democratic Republic. QSL to: Y28CO.

Malcolm, V85AH, is leaving Brunei soon. All QSLs to: RSGB QSL Bureau.

VLAD, 4KØF, is floating on Nordpol 30 (floating Icefloe). He reported his position on the 15th of October as: 83 deg North and 169 deg West and the temperature was minus 25 degrees! QSL to: UAØQBO.

There is no doubt, the Scandinavians like the south Pacific. A Finnish group under the leadership of Peter, OH1RY has activated Vanuatu as YJØR, intends to go to Tokelau Islands, ZK3 in November, and might end up in Western Samoa and American Samoa. They will operate both in CW and SSB on the usual DX frequencies.

There were several Dutch stations operating with the special prefix of PA6Ø to PA66 celebrating the existence of 60 years of amateur operating licences in Holland. VKs have to work 15 special prefixes to qualify for a special award.

QSL Cards Received

Here is the latest list of cards received, which would identify the DX stations who really QSL. VKØMP, 3B8CF, 5Z4BI, EL2WK, EL2DK, GJØKKB, ZD8RP, FR5ZD, V31PC, VK9ZM, 5W1GY, TU2UI, KK1XV, VKØAE, J52US, TL8JL, YJ8JS, 8Q7MR, 3D2BW, VO7AW, VKØGC, T33JS, VK9ND, VR6ID, 9J2BO, FR4FD.

Finally, many thanks for the support received from : VK2RZ, VK3AJU, SM7PKK, OH1RY and "QRZ DX."

I wish you all a Merry Christmas and a healthy and happy New Year, and of course 73 and good DX-ing. ar

VHF - UHF

An Expanding World
Eric Jamieson VK5LP 9 West Terrace Meningie 5264

All times are Unviersal Time Co-ordinated indicated as UTC

Beacons on Six Metres

Freq.	*Call Sign*	*Location*	*Grid Square*
50.000	GB3BUX	England	IO73
50.005	H44HIR	Honiara	QI00
50.005	ZS2SDX	South Africa	KE25
50.011	JA2IGY	Japan	PM84
50.015	SZ2DH	Greece	KM18
50.017	JA6ZIH	Japan	PM51
50.020	GB3SIX	England	IO73
50.020	CX1CCC	Uraguay	
50.025	6Y5RC	Jamaica	FK17
50.025	OH1VR	Finland	KP12 (1)
50.028	JA7ZMA	Japan	QM07
50.029	CT0WW	Portugal	IN61
50.032	ZD8VHF	Ascension Is	II22
50.032	ZS5SIX	South Africa	KG50 (1)
50.035	ZB2VHF	Gibraltar	IM76
50.035	ZS3VHF	South Africa	JG87
50.039	FY7THF	French Guyana	GJ35
50.045	QX3VHF	Greenland	GP60
50.048	TG4BFK	Guatemala	
50.050	GB3NHQ	England	1091
50.050	ZS6DN	South Africa	KG44
50.056	VK8VF	Darwin	PH57
50.057	TF3SIX	Iceland	HP94
50.062	PY2AA	Brazil	GG66
50.064	WD7Z	Arizona	EL59
50.065	GJ4HXJ	England	IN89
50.065	NB30/1	Rhode Is	FN41
50.066	VK6RPR	Perth	OF78
50.063	KH6HI	Hawaii	BL01
50.075	VS6SIX	Hong Kong	OL72
50.078	TI2NA	Costa Rica	EK70
50.080	KH6JJK	Hawaii	BL11
50.080	HC8SIX	Galapagos Is	EI59
50.085	9H1SIX	Malta	JM75
50.086	VP2MO	Montserrat	FK86
50.088	VE1SIX	Canada	FN65
50.090	KJ6BZ	Johnston Is.	AK56
50.092	W5GTP	Louisiana USA	EM40
50.099	KP4EKG	Puerto Rico	FK68
50.100	HC2FG	Ecuador	F107
50.100	5H1HK	Tanzania	
50.110	KG6DX	Guam	QK23
50.110	A61XL	United Arab Emir.	LL74
50.120	4S7EA	Sri Lanka	MJ97
50.321	ZS5SIX	South Africa	KG50
50.490	JG1ZGW	Tokyo	PM95
50.499	5B4CY	Cyprus	KM54
52.100	ZK2SIX	Nive	AH50
52.200	VK8VF	Darwin	PH57
52.310	ZL3MHF	Christchurch	RE66
53.320	VK6RTT	Wickham	OG89
52.325	VK2RHV	Newcastle	QF57
52.330	VK3RGG	Geelong	QF21
52.345	VK4ABP	Longreach	QG26
52.370	VK7RST	Hobart	QE37
52.420	VK2RSY	Sydney	QF56
52.425	VK2RGB	Gunnedah	QF59
52.435	VK3RMV	Hamilton	QF12
52.440	VK4RTL	Townsville	QH30
52.445	VKRIK	Cairns	QH23
52.450	VK5VF	Mount Lofty	PF95
52.460	VK6RPH	Perth	QF78
52.465	VK6RTW	Albany	QF84
52.470	VK7RNT	Launceston	QE38
52.485	VK8RAS	Alice Springs	PG66
52.510	ZL2MHF	Mount Climie	RE78

(1) These are two additions to the beacon list.

Although the beacons on 144 MHz and above are not due for listing this month, Peter Parker VK6BWI has written to say that the Busselton beacons on 144, 432 and 1296 MHz are off the air. According to the report the Busselton Radio Club is now defunct so the future of the beacons is in doubt until further notice.

Six Metres

I am still confined to a hospital room (now at Meningie Hospital) and will be for some further weeks. However, I am now able to spend some limited time at home in the company of my wife, although not during the hours when I might find some long haul DX on 50 MHz, hence, I continue to rely on the reports from other amateurs, in order that the record of activity is maintained. For those who have kindly enquired, I am making slow progress towards walking again; but a further six months of therapy may be required to arrive at a stage where I could be happy with my state of walking.

Peter, VK8ZLX sent me a copy of his log containing many mouth-watering contacts, and advised that his tally of countries worked stands at 45. Peter reported that 50 MHz was relatively quiet during September and early October, with the occasional JA being worked. The band started to open on 9/10, when at 1236 he worked VS6XCL and VS6XMQ followed by JI1DXM. At 1253 V63AO was involved in a JA dogpile, and TV sound carriers were heard on 55.250 and 53.750. At 2147 the paging stations on 43.2 MHz were S9 plus. On 10/10 the JAs came through again from 1057, while YB2CTW and VS6XMQ and VK8ZLX were involved with many JAs from 1318.

Then the big one came! On 11/10 at 0915 Peter VK8ZLX worked G4CCZ at 5x3, while Jeff VK8GF worked G2ADR at 0930. Peter said at first he thought someone was playing around when he worked G4CCZ, but when Paul gave his locator square as 1091 Peter knew it was authentic. At 0936 he worked G4FXW 5x4, 0941 G2ADR 5x3; 0945 G3ENZ 5x1. JAs were working H44GP, and police and pagers were on 42.120 and 43.200 respectively.

On 12/10 VK8ZLX scored another new country, when at 0843 LA3EQ in Norway was worked at 5x7. The saga continued at 0849 with G4CVI 5x2; 0850 EI6AS 5x5; 0853 PA0RDY 5x5, 0854 G3LQR 5x6; 0856 G3KOX 5x6; 0857 GW3LDH 5x5; 0859 G8ECI 5x7; 0900 GJ4ICD 5x4; 0901 G4ASR 5x3; 0903 JR5GFG 5x9; 0904 G4RFS 5x1; 0905 JA1PTK 5x9; 0906 DL8HCZ 5x9; 0909 GI4OPH 5x4. Between 0909 and 1017 Peter worked the following stations: GI4TMB, GI8YDZ, G3IMV, G4GIR, PA2VST, G3OIL, PA0HIP, PA0JOP, G8JDX, G4NDG, G0IMG, G3BJD, G3JVL, G4RQP, G3SEK, G1SDX, GW2HIY, G0JHC, G8KRU, G4GAI, G1IYA, G0HNW, EI6AS, G3NE0, GW8ZCP, JH4PFU, GW3LDH, with sinal levels varying from 5x1 to 5x9. His total was 44 contacts! Surely a red letter day for VK8 and possibly other VK call areas. Peter noted VK4DDG working a GU8 about 0940. On 12/10 Peter had to be content with JR6BU, JA3DXD and hearing the VS6SIX beacon.

It all started again on 13/10 when VK8KTM heard G4CCZ at 0755. At 0824 VK8ZLX worked OH2TI 5x5; 0826 PA2VST 5x1; 0833 PA0RDY; 0839 SM6PU 5x2; 0840 SM7AED 5x3; 0844 DL8HCZ 5x3; 0845 PA3ECU 5x3; 0849 PA6HIP 5x7; 0852 G3OIL 5x2; 0853 G3TED 5x1; 0856 G4CVI 5x9; 0857 G4ASR 5x5; 0903 PA0JOP 5x7. From this time until 1029 Peter worked the following: PA3BFM, PA2VST, PA0EHA, PA2HJS, JH7UPW, GJ4ICD, G3SED, G4BAO, G4JCC, G4CCZ, G3FXB, JH3ORQ, PA0HM, G3WOS, G8CUB, G0LFF, G4IJE, G4NDG, G6HKM, G6HB, G3HBR, G8ADM, PA3EGB, PA0BM, G3CEG, G2YEU, G4SJG, G3ENZ, G8ECI, G1YDI, PA3ECU, G6HCV, GW3MHW, G1ZMS, PE1DTU, G3JVL, G3IBI, G4QKW. He also heard the GB3BUX beacon on 50.000 and the 5B4CY beacon on 50.499 MHz. AT 1120 JAs were working 3D2 and P29.

On 14/10 the band opened earlier at 0614 to OH1ZAA 5x2; 0615 OH2HK 5x5; 0626 OH3MF 5x5; 0630 OH2BUW 5x2. Around 1730, the band seemed to fill with TV signals on 48.238, 48.250, 48.259, 49.758 all at S9. CW was heard on 50.104 at 0736 and there was a solar noise peak at 0751. TV signals continued on 48.260, 49.758 and 46.170 until at 0836 G3ZYY was worked at 5x5; 0837 G8JDX 5x1; 0853 G4CVI 5x5; 0905 F9DI 5x5; 0914 FC1JG 5x5 then back to more TV signals.

15/10 commenced even earlier at 0551 with OH2HK 5x5; OH2ZAA and OH2BUW heard;

at 0641 Jeff VK8GE worked OH3NJC at 5x5. At 0714 there was a strong video signal on 49.758 with considerable flutter, also on 48.238 at S8. The band opened to Europe again at 0717 with OH3NJC 5x5; from then until 1005, Peter worked OH5BM, OH1VR, JA1PVI, OH2II, OH9NLO, G8GXP, G4HBA, JH1QES, G3UKV, OH8MT, LA3EQ, LA1ZE, LA9BM, G3ZYY, JH5OJI/3. LA9RAA. At 1115 Peter worked HL9TG, followed by JA dogpiles at S9 plus 80 dB! The JAs were also working to the Caribbean area via the long path.

On 16/10 there were many signals between 42 and 49 MHz from 0600 until at 0726 OH2TI was worked at 5x5. From then until 0950, Peter worked OH2KT, OH1YP, PA0HIP, PA2VST, GJ4ICD, PA3BFM, PA3ECU, PA0JOP, PA0FM, JI1NFM, PE1ILY, JA1YDV, PE1DTU, JL3BPN, OH1YP, PA60HIP, PE1HXX, G4CCD, SM7BAE, OH1AYQ and heard the OH1VR beacon on 50.025.

On 17/10 at 1335 VK8ZMB advised that Darwin stations were working to SV. On 18/10 JAs were working 9H1GB at 0924. JAs were into Alice Springs from 0936 and at 1316 Peter heard the SV1SIX beacon on 50.0395. From 1300 onwards 50 to 51 MHz was virtually ruined by massive video crud. The following morning at 2110 the pager signals on 43 and 44 MHz were S9 plus.

At 0830 on 19/10 VK8ZLX worked Steve VK3OT at 559 on forward scatter, and JA3XAI was 5x9 at 0934. On 20/10 it was VS6XCL at 1215 5x5 and JR6BU 5x5. On 21/10 at 0951 Peter reported very severe TEP distortion on 50 MHz. On 22/10 KG6DX was 5x9 at 0235, and at 0300 V63AO was 5x9 from the Eastern Caroline Islands.

Except for JAs, the band was relatively quiet until 27/10, when at 0850 Peter worked FC1JG at 5x1. At 0932 Peter worked G4KLF/MM, who was maritime mobile in the Gulf of Oman, and running 10 watts to a dipole antenna. The G4 station subsequently set up a cross-band contact between VK8ZLX on 50 MHz and OK3CM on 28 MHz. The Czechoslavakian station said it was unlikely that OK stations would be permitted any six metre privileges, due to the density of television stations in their country and those nearby.

At this point Peter's log ends; however, scattered through his log are comments that European stations were also being worked by VK8GF, at a rate almost consistent with his own, and by VK8KTM from time to time.

On 12/10 I received a phone call from Wally VK4DO at Airlie Beach that at 0910 he had worked GJ4ICD at 5x9 and at 0916 PA0EHA at 5x7. The same day John VK4ZJB worked GJ4ICD at 0847 with signals 5x5. It is also known VK4BRG, VK4FXX and VK4DDG have been involved. Unfortunately, not being on the band myself, I cannot report who else may have had contacts.

It appears in general that the European stations have not been reaching very successfully into the southern regions of Australia. Steve VK3OT spent a lot of time calling on CW, and was rewarded by having a contact with PA0BFM on 19/10. On the same day, Bill VK5ACY was in the shack of Roger VK5NY; both heard three overs of PA0BFM from 0909, but were unable to make contact. Roger remarked that the PA0 station was giving signal peaks with the beam at first pointing north and then pointing west. It is believed Mick VK5ZDR also tried.

On 27/10 at 0250 KL7NO from Alaska was noted working VK4s. At 0254 both VK5ACY and VK5NY successfully worked the Alaskan at 5x3. Subsequently his signal rose to 5x9 and his repeated CQ calls went unanswered!

Being allowed a short visit to my home from hospital on 27/10, I observed that at 0600 VK5ACY and VK5NY were working NI6E in Hawaii with 5x9 reports, though only S2 at Meningie. At 0645 VK5ZDR worked KH6ME at 5x2. At 0650 K6GSS/KH6 was 5x7 at VK5LP, so the signals were swinging around all over the place. I exhibited extreme discipline, and resisted the temptation to come on the air, due to the necessity of writing these notes!

South Africa

The ZS VHF News has arrived on my desk once more, and as their geographical location is somewhat similar to ours for northern paths, it is of interest to record some of their happenings.

The VHF News lists a number of new six metre stations. A22BW commenced on 8/9 by working 9H1JN, 9H1AW, SV1AB, ZC4MK and others. 3DA0AU contacted several stations in the Mediterranean area. From Lesotho, 7P8DP will soon be active. C31LDN is now operational and so is TA4/G3SDL. Others include EL2FO, 9Q5EE, FR5DN, TR8CA and FD1NLQ/7X.

The September summary was that conditions were below expectations, with no seasonally unusual propagation, with the exception of a brief weak JA opening on 17/9. There was propagation to the Mediterranean area virtually every day, although on a few evenings beacons only were heard. Probably the Australian scene could be viewed in a similar manner - nothing really outstanding in September except for some brief JA openings!

Peter VK1RX has done extensive computer predictions covering the Canberra to Pretoria path, and concludes that April 1990 will probably be the optimum period during Cycle 22 for six metre contacts between South Africa and Eastern Australia.

The ZS VHF NEWS also reports that Cycle 22 is continuing to progress at a rate comparable to Cycle 19, and is now about 25% ahead of Cycle 21. Current predictions are for Cycle 22 to peak at approximately 200 around March 1990, and there is a 90% confidence level that the peak will fall between 165 and 240. Cycle 19 peaked at a record level of 201 in November of 1957. Cycle 21, the second best cycle recorded, peaked at 165 in December 1979.

Six metre operators in Southern Africa have already experienced propagation similar to that which occurred only late in Cycle 21. The first ever ZS/JA contacts were in April 1981 - two years after the Cycle 21 peak, whereas a Number of ZS/JA contacts have already been made a full year before the predicted peak of this cycle. On the North American path, the first Cycle 21 contacts were made in November 1980, almost a year past the peak, and contacts have been made already this cycle with VE1YX in March 1989. Improved equipment, and more people listening to this cycle, will account for some of these contacts, but certainly not all. If these are valid indicators, six metre enthusiasts worldwide have an exciting two or three years ahead of them.

It is certain that the above comments are equally valid for Australia, with the large number of contacts between VK8 and Europe as a hopeful indicator for VK operators who can claim contacts with six metre stations on all continents. Graham VK6RO wrote to say he worked JS6CDB at 559 on 14/10. As this station is located in Okinawa, it represented a new country for him, bringing his total to 16. Graham said that at least until 15/10, conditions in Perth had been very poor, with only a few JAs to interrupt the listening to noise!

Contests

Frank Beech VK7BC, the Federal Contest Manager, has forwarded details of the 1989 Ross Hull Memorial Contest. Full details are in the November issue of AR. The Contest period is from 0001 UTC 23/12/89 to 2359 on 6/1/90, and all authorised amateur bands above 30 MHz may be used, with points varying from 2 points per contact on six and two metres, to 50 points on 3cm. I note the 50 cm (576 MHz) band has been included, but our use of the band has been withdrawn.

The emphasis is on locator square contacts, with no contacts allowed with stations in your own square. Last year, many amateurs were not aware of their locator square, and this tended to inhibit operation. Hopefully, that situation may have changed by now, and more stations will be prepared to participate and submit a log. Provision has been made to allow operation from any other location, for a period of up to 48 hours, providing details are given. Presumably this is to allow an amateur to have a break at Christmas, or whenever he may be away from his usual location.

The National VHF/UHF Field Day Contest is again being sponsored between 0200 on 27/1/90 to 0159 on 28/1/90 and will be for any continuous 12 hour period or for the full 24

hours. There are categories for single operators on one band or all bands, plus multi-operator stations and home stations.

Scoring is two points for 50 and 144 MHz, four points on 432 MHz and six points above that band. Contacts between portable field day stations score double points, and home stations half the normal scores.

I am pleased to see that a concession I have long sought has been granted, being that any type of power supply may be used, including mains power. There are many good sites around where power is now available, and the ability to float a battery charger across a battery may encourage a few more stations to enter.

Before some people get on their soap boxes and say mains power makes everything too easy, let us consider a few more points. Many field day stations operate on 240 volts AC from an engine-driven alternator. As this field day contest is being held in the middle of summer, the risk of setting a bushfire may be diminished by such devices not being used - quite apart from the considerable cost of hiring, collecting and returning the alternator. In the light of the millions of dollars of compensation being paid out for damages from the 1980 and 1983 Ash Wednesday fires in South Australia alone, it makes one stop and think of the possible risks of starting such fires. Also, lone operators these days place themselves at some risk to person and equipment, by operating from isolated mountain sites, should they be investigated by a mob of yahoos. Should they feel this way, perhaps a usefully elevated site not far from a farm house may give them a feeling of added security, and the ability to use some power may encourage their participation.

Other News

John Martin, VK3ZJC, has written to say that a group of Melbourne operators are evaluating the need for beacons on 1296 and 2304 MHz.

Regarding 50 MHz beacons, John makes several comments. One of which suggests that if we do have 50 MHz beacons, they would be better if situated in widely separated locations, and suggests for consideration Perth, Darwin, Adelaide, Geelong, Sydney and northern VK4. (Maybe Alice Springs should be considered in the light of the experience of the past month...5LP.) Others could be left on 52 MHz. His other comments are placed on file for the time being.

On two metres, John reports that on about 11/9 Geoff VK3ZGJ heard the VK3RGG beacon in Birdsville, at reasonable strength for two hours. The next night it was available for about 20 minutes. He was using a halo antenna on the bullbar of his Kombi van. He called CQ on 144.100 using CW and SSB, but no one responded! This is not the first time Geoff has had interesting signals from and to the outback. A year or so ago, he had a good contact into the Mount Newman (VK6) repeater on 144.900. That's a long haul from Melbourne.

Roger VK3XRS has increased power to 120 watts on 432 MHz and plans to add a second Yagi to his antenna system. Phil VK3KUB has moved from Springhurst to Wangaratta, and plans to use his home built 1296 MHz transverter in the near future. VK3BID now has 1296 MHz equipment, but details are not available.

Peter VK6BWI, reports most operating around Witchcliffe, about 40km from Cape Leeuwin, is now mainly confined to repeater operation, with only 3 or 4 amateurs within 100km having UHF facilities. With the demise of the Busselton Radio Club, Peter obviously feels out on a limb in a good operating area.

Closure

I take this opportunity to wish everyone a safe and happy Christmas, and may the New Year bring you many contacts. These notes represent the start of my 21st year of reporting for AR.

I again thank those operators who have supplied me with information throughout the past year, and at other times. Your correspondence is always welcome.

I am also indebted to those who respond to my requests for information when I telephone them, and the others who take the trouble to phone me - one who is very regular in that regard is John VK4ZJB.

Thank you also to the Editor and the staff of AR. Your interest and consideration of my efforts has always been appreciated.

Closing with two thoughts for the month: "At times I used to trouble about what life was for - now being alive seems sufficient reason" and "Rainbows apologise for angry skies". 73. From The Voice by the Lake. **ar**

Morseword No 33

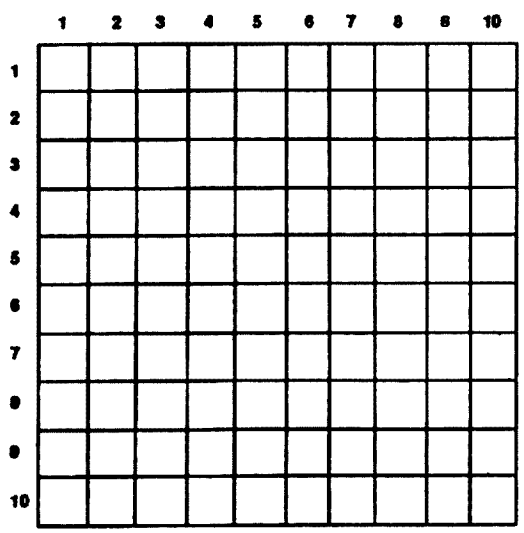
Solution on page 49

Across

1 Tries to take off weight
2 Type of gun
3 Grasslands
4 Performs
5 M. Marceau is one
6 Flans
7 Medication
8 Sound of a horn
9 Tags
10 Little brother

Down

1 Animal reserve
2 How disgusting!
3 Futile
4 Listen
5 Weep
6 Emanation
7 Grabs
8 Heave
9 Survival craft
10 Bed linen



Audrey Ryan © 1989

QSP Call Book

Despite the best efforts in the world, the WIA 1990 Australian Radio Amateur Call Book Editor, whilst browsing through its contents the other night, found an error in the 2m repeater and beacons listings.

Murphy struck by putting the Mt Dandenong (Vic) repeater, VK3RML, in the beacons list.

It should, of course, be in the repeater list as VK3RML Mt Dandenong 146.700 MHz transmit, 146.100 MHz receive, Melbourne. **ar**

CONTESTS

FEDERAL CONTESTS MANAGER FRANK BEECH VK7BC
37 NOBELIUS DRIVE LEGANA 7277

Contest Calendar

December:

23-6th Jan. Ross Hull memorial contest, rules in November "AR"

January:

1-6th Ross Hull contest.

27-28 Second trial VHF/UHF National field day. Rules November "AR"

27-28th French contest CW section. Rules this issue.

February:

24-25th French contest, phone section. Rules this issue.

News of overseas contests is not filtering down to my desk these days. The rules for the French contest were taken from a letter that I received from the region I contests convenor, who acknowledged receipt of the VK/ZL contest rules.

To publicize the VK/ZL contest, copies of the rules had been sent to more than 60 national radio societies in all three IARU regions by the end of June. Copies went to the major amateur radio magazines. The ARRL and the RSGB acknowledged receipt. How many societies gave the contest any publicity remains a mystery: some would probably have missed publication deadlines, some will have been filed and forgotten - only time will tell, as results come in during the next couple of months.

Later this month will see the Ross Hull memorial contest. In response to requests that more emphasis be given to the higher frequencies, the scoring has been biased in favour of the UHF areas. This will no doubt encourage all those who have been lamenting the decline of UHF activity in this contest. Now is your chance; give it a go. The time period was shortened, to provide a period when the vast majority of amateurs would have at least one or two weekends available over the festive season (not all have long holiday periods, and many still have to work).

To add a little spice to the contest this year, the location rule has been changed to allow for the change of location for up to 48 hours. This will assist those who may like to take advantage of a good site for a while, or even take the family away for the weekend.

Later in January, I have arranged another trial VHF/UHF National FIELD day contest. Please give this contest a try. If it is accepted and proves popular, then my successor will be able to press for a National VHF/UHF field day contest to become part of the regular contest calendar. Then the Institute could have an exclusive VHF/UHF field day contest, like the majority of national radio societies, but it must be a 24 hour contest.

May I wish you all a merry Christmas and a happy new year.

French Contest 1990

Traffic: Only with stations from FRANCE, FFA (French Army in Germany), DOM-TOM (departments and territories overseas). Prefixes beginning with F, TV, HW, TK...

Periods: CW begins the last Saturday of January, for 1990. Saturday 27th January, 0600 UTC to Sunday 28th, 1800 UTC.
PHONE begins the last Saturday of February, for 1990. Saturday 24th February, 0600 UTC to Sunday 25th, 1800 UTC.

Bands: 80, 40, 20, 15, 10 m, on IARU segments:

CW: 80 m —> 3,500 - 3,560
40 m —> 7,000 - 7,035
20m —> 14,000 - 14,060
15m —> 21,000 - 21,080
10m —> 28,000 - 28,100

SSB: 80 m —> 3,600 - 3,650
3,700 - 3,800
40 m —> 7,040 - 7,100
20 m —> 14,125 - 14,300
15m —> 21,200 - 21,400
10m —> 28,500 - 28,800

Reports: RS(T), and serial number. French stations give also their department number.

Categories: Mono-operators, multi-operators, SWL.

Points: For each QSO, one point in the same continent, or three points with one other continent.

Multiplier: Per band, one point for each different department (Corsica-TK - has two departments: 2A and 2B), FFA (DA1 and DA2), DOM-TOM. The station F6REF/00 give one special point. NOTE: the station DA2REF is not a multiplier...

Final Score: Sum of all QSO points multiplied by the sum of multiplier points from each band.

Awards

Europe: For each country —> 1st mono-op for 100 QSO minimum 1st multi-op for 250 QSO minimum.

Other Continents: For each country —> 1st mono-op for 100 QSO minimum 1st multi-op for 250 QSO minimum.

Logs: Must be received before 15 March for CW party, and 15 April for PHONE party, and must be sent only to:

RESEAU DES EMETTEURS FRANCAIS
REF CONTEST
C/O M. PACCHIANA Christian F6ENV
7 chemin des écoles quartier St Jean
13110 PORT-DE-BOUC FRANCE

1989 Australasian Sprint Results

DAVID BOX VK5OV
56 CLIFTON STREET, HAWTHORN 5062

Entries for the fourth series of Sprints, the first under the title of "Australasian" instead of "National", were slightly down on last year, as were the scores. However, judging by comments included with some of the logs, everyone seemed to enjoy the challenge of gaining as many contacts as possible in the one hour available. The CW Sprint was held on 1 July 1989 and the Phone Sprint on 8 July, in both cases on 80 metres between 1200 and 1300 UTC.

The Adelaide Hills Amateur Radio Society and the South Australian Division of the WIA congratulate the overall winners and also the winners in the individual call areas.

Winner of the Overall Trophy in the CW spring was Alan Hughes ZM3KR by one point from Roger Crofts VK4YB. Alan reversed the situation of last year in which he was one point behind the winner.

In the Phone Sprint the overall winner was Steve Jenkinson VK3YH who also was runner up in this section in 1988.

It was disappointing that in the CW Sprint there were no entries from four of the VK call areas and there was only one ZL entrant. However, I believe that conditions on this occasion were rather poor and the event apparently clashed with the ZL Memorial Contest. The latter fact would account for the comments from a couple of entrants about ZL stations putting out contest calls outside of the hour laid down for the Sprint.

Also disappointing was the fact that in both Sprints less than half the amateurs taking part submitted logs. The Contest manager would have been delighted to have been inundated with entries, however small.

Lists of the logs submitted, together with the points claimed, are shown below. Certificate winners are indicated by asterisks.

CW Sprint

ZM3KR*	27	VK5ADX*	21
VK2APK*	16	VK5FN	19
		VK5AGX	18
		VK5RG	14
VK3OA*	18	VK5AFO	12
		VK5ADD	11
VK4YB*	26	VK5ATT	10
VK4BIL	17	VK5AO	10
VK4TT	15		

Phone Sprint

ZL1BVK*	36	VK5ADX*	34
ZM3KR	35	VK5AFO	28
		VK5YX	27
VK1PJ*	42	VK5NVW	26
VK1BEB	20	VK5RV	25
		VK5UE	25
VK2CKW*	21	VK5KGS	20
VK20H	10	VK5ATT	18
		VK5ZD/P4	10
VK3YH*	45	VK5OV (check log)	16
VK4YB*	41	VK6APK*	33
VK4NEF	28		
VK4VXX	28	VK7HX*	26
VK4CYL/P	16		

Some Operator Comments

CW Sprint

VK3OA QRN was very high and there did not seem to be as many operators as last year.

ZM3KR A very enjoyable contest again this year. Looking forward to next year.

VK4BIL Good fun as usual. One hour is about my sort of contest.

VK5AGX Surprised to find so few stations operating. A splendid contest for beginners to gain confidence with the key and deserves every support.

VK5ADD Thanks again for the hour of fun and frustration.

VK5AO One of the good things about it is that writing up the log only takes a short time.

Phone Sprint

VK2CKW Enjoyable evening but very quiet. It appears contests may be going out of fashion.

VK3YH Really enjoyed the contest again. Seemed to be fewer contestants but the band was a bit noisy. Thanks for putting on the contest, the one hour format is great.

VK4NEF Operators a bit thin on the ground. Hopefully better next year.

VK4CYL Operated portable from Twin Falls, 200 km south of the tip of Cape York, sitting in the drivers seat of a 4WD with the steering wheel as a desk. Not a good location for Australasian contacts but worked two UAØ's after the contest. Enjoyed the contest and looking forward to next year.

VK5RV Surprised at the interest shown. All the contestants appeared to be enjoying the contest.

VK6APK Thank you Adelaide Hills Amateur Radio Society for sponsoring a great sprint once again. It's not easy to knock up a good score from VK6 but really good fun trying. See you again next year. **ar**

Results of 13th Annual 3.5 MHz WA Contests

C WATERMAN VK6NK

Results for the 3.5 MHz CW Contest

VK6DZF	-	2900 points
VK6HQ	-	1926 "
VK6AFW	-	1616 "
VK6RF	-	876 "
VK3XB	-	588 "

Results for the 3.5 MHz SSB Contest

VK6ELL/P	-	4844 points
VK6HQ	-	3180 "
VK6RG	-	3102 "
VK6AFW	-	3080 "
VK6AF	-	1980 "
VK6RF	-	1712 "
VK5GZ	-	1518 "

Conditions for both contents were very good with some good CW contacts with all of VK and some DX to ZL, JA, and W6.

More participation by VK6 stations would have been appreciated by all, "so how about it for the next time", it's a very friendly contest of only 3 hours duration. **ar**

New Element Discovered

It is reported that physicists at the CSIRO have now discovered the heaviest element known to science. The element, tentatively named Administratium (Ad) has no protons or electrons, which means its atomic number is 0. However it does have one neutron, 125 assistants to the neutron, 75 deputy neutrons and 111 assistants to the deputy neutron.

This gives it an atomic mass number of 312.

Since Administratium has no electrons it is inert. However it can be detected chemically because it seems to impede every reaction in which it is present. According to Dr I M Fedup, one of the discoverers of the element, a very small amount of Administratium made one reaction that normally takes less than a second take over four days.

Administratium has a half-life of approximately three years, at which time it does not actually decay. Instead it undergoes a reorganisation in which the assistants to the neutron, deputy neutrons and assistants to the deputy neutrons exchange places. Some studies have indicated that the atomic mass number actually increases after each reorganisation. Particle movement however also becomes slower and more erratic.

As yet no practical use or advantage has been found for Administratium. **ar**

From Summerland ARC Newsletter Oct 1989

Have you advised the WIA Executive Office of your new callsign?

Use the form on the reverse of the AR address flysheet.

AWARDS

KEN GOTT VK3AJU FEDERAL AWARDS MANAGER
38A LANSDOWNE RD ST.KILDA 3183

Official Approval for New ANZAC Award

Before the Land Forces Amateur Radio Group (LFARG) could start its new ANZAC Award, it had first to obtain Australian Government permission to use the word "ANZAC".

The LFARG was able to point out that its 54 members were all past or present army personnel and that the award was to mark the 75th anniversary of the Anzac landing at Gallipoli on April 25, 1915.

It was also pointed out that it was intended that LFARG members would activate their stations annually on January 3 and on Anzac Day in connection with the new award.

In response, the Minister for Veterans' Affairs, the Hon Ben Humphreys, wrote:

"Thank you for your letter requesting permission to use ANZAC in an award to be presented by the Land Forces Amateur Radio Group.

"I have much pleasure in granting my permission. Your group have a valid association with the ANZAC tradition. All members are either past or current members of the Army and the object of your Group, to preserve and promote the fellowship engendered during the Army, is consistent with the honourable tradition of ANZAC."

The Minister concluded by saying: "I wish the Land Forces Amateur Radio Group success in their endeavours and in honourably maintaining the ANZAC tradition".

Conditions

Applicants within Australia must make 50 contacts with LFARG members, and those abroad must make 25. Multiple contacts with the same LFARG member may count, provided that a calendar month has elapsed between each QSO.

QSOs may be made on any band, using any mode, but repeater contacts are not eligible.

Claims must be supported by a log extract showing the callsign and membership number of each LFARG station worked, date and time, band and mode, and signal reports exchanged.

SWLs may obtain the award on similar terms, showing both callsigns involved in each QSO.

Applications, accompanied by A$5 (no IRCs please) should be sent to Secretary LFARG, A J Jackson VK2ELE, 9 Loquat Ave, Leeton, NSW 2606.

The ANZAC Award commences on January 3, 1990 (ie only contacts made on or after that date are valid) and further information can be obtained on the LFARG net on 3.590 MHz at 0930 UTC every Wednesday.

The award certificate is shown on the next page and is accompanied by a leaflet explaining the origins of ANZAC and its significance in the history of the two nations involved.

VE-VK on 160 m

It may not be a first, but it is novel in my experience: I've just sent a WAVKCA certificate to Bob Eldridge VE7BS in British Columbia, endorsed "SSB 160 m".

Bob only needed 22 QSOs to qualify for the award, but he kindly sent me a list of 154 QSOs with VK stations on 160 m in the six years preceding September 30 last.

Bob writes that during this period he made a special point of looking for VKS at his sunrise and that many of the QSOs were made with 100 Watts output, and the balance with 400 Watts. Among the stations worked, one used only 10 Watts and several ran on 50 Watts or less.

"I was surprised to find in 1985 that there was a path VE/VK almost every day throughout May to September. I have kept a list of VKs worked and heard on 160, and it is now nearing 200 different stations."

Pitcairn Bicentennial Award

Next year will see the 200th anniversary of the settlement of Pitcairn Island by Fletcher Christian and his fellow mutineers from the HMS Bounty.

A delightfully easy-to-win award is being offered to mark the occasion. It is in the form of a 28 x 35.5 cm certificate featuring a painting by the famous Bryan Moon.

The award is available to amateurs, SWLs and Pitcairn enthusiasts in general. However, awards sent to amateurs and SWLs will carry gold endorsement stickers not available to others.

The award period is from 0001 UTC January 1, 1990, to 2359 UTC December 31, 1990. Only one QSO with a VR6 station is needed to qualify for the award, and during 1990 these stations will be using the special callsign VR200PI/ followed by the last two letters of their normal callsign.

There are other rules relating to obtaining QSL cards which are too lengthy to reprint here. In any event, applications for the award whether from amateurs, SWLs or interested observers, must be made on a special form obtainable from the Award manager, Dr G O'Toole KB6ISL, 9605 San Gabriel Av, So Gate, Cal 902080, USA. This form also contains full details regarding QSL cards and other details of the award not outlined here.

The initial award costs US$5 or 14 IRCs, with US$1 or 3 IRCs and SAE for later endorsements.

I have written to KB6ISL asking if he has any objection to my making copies of the application form and rules available to WIA members for a nominal fee, and will advise readers of his response in a later issue of AR.

Defunct VK Awards

I'm extremely grateful to Dave Handscomb VK6ATE for help on several matters.

First, he has sent me a mountain of information about the Twenty-Eight Chapter of 10-10 and about 10-10 itself. I plan to share this information with AR readers early in 1990, since it appears to be some years since AR published a run-down on what 10-10 is all about.

More immediately, Dave has thrown some light on several of the awards which I listed as "missing, presumed killed" in my October column.

Dave assures me that the Blue Mountain Lagoon Award (VK2), the Sun Valley Award (VK4), the Power Valley Award (VK3) and the Coral Sea Award (VK4) are all now definitely QRT, and that all were 10-10 products.

Meanwhile I have learned from other quarters that the worked Rockhampton Award (VK4) is alive and well, and that its custodians can be found at Box 496, Rockhampton 4700. This award costs 5 IRCs to VKs or anybody else.

WIA 80 Award

November 1 was the start-up date for the award commemorating the WIA's 80th anniversary, and judging from activity on the Family Hour Net on 14.227 MHz each night, I'll soon be receiving a lot of applications for it from the USA.

Like some other VKs, I was taken by surprise when K and W stations asked me for my WIA membership number. It took me a couple of minutes to unearth my certificate from the files.

Don't let this happen to you. If you don't carry your membership number in your head, keep it by you in the shack. Failing that, the code number on the address label of your copies of AR can be given.

However, be sure to let the other station know whether the number given is from a membership certificate or an address label.

QSOs with US stations seeking the WIA 80 Award are helping me along at a good rate of knots towards my ARRL WAS Award. In case you missed it, the rules for the WIA 80 Award were published in the September issue of AR, p4.

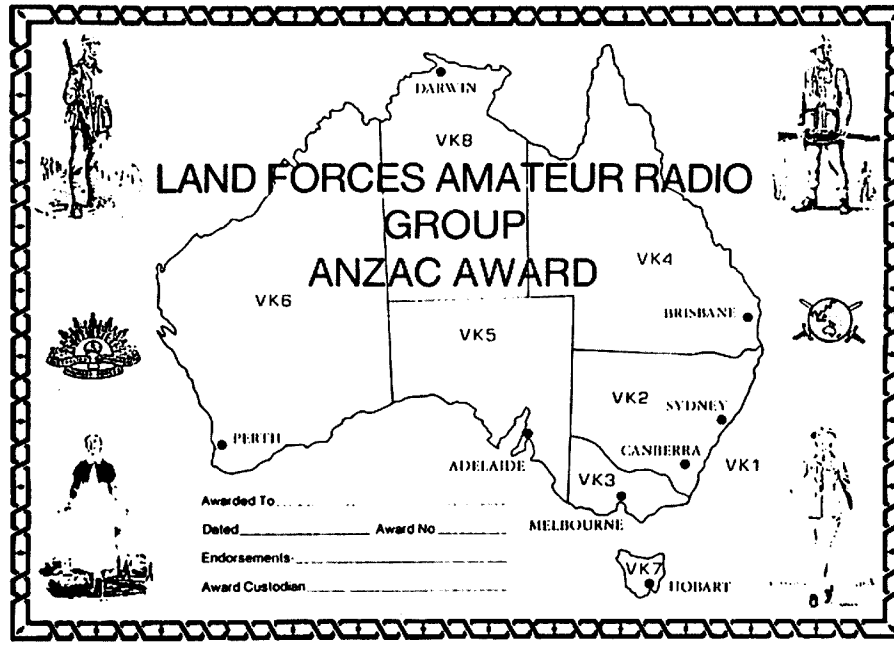
Connecticut DXA

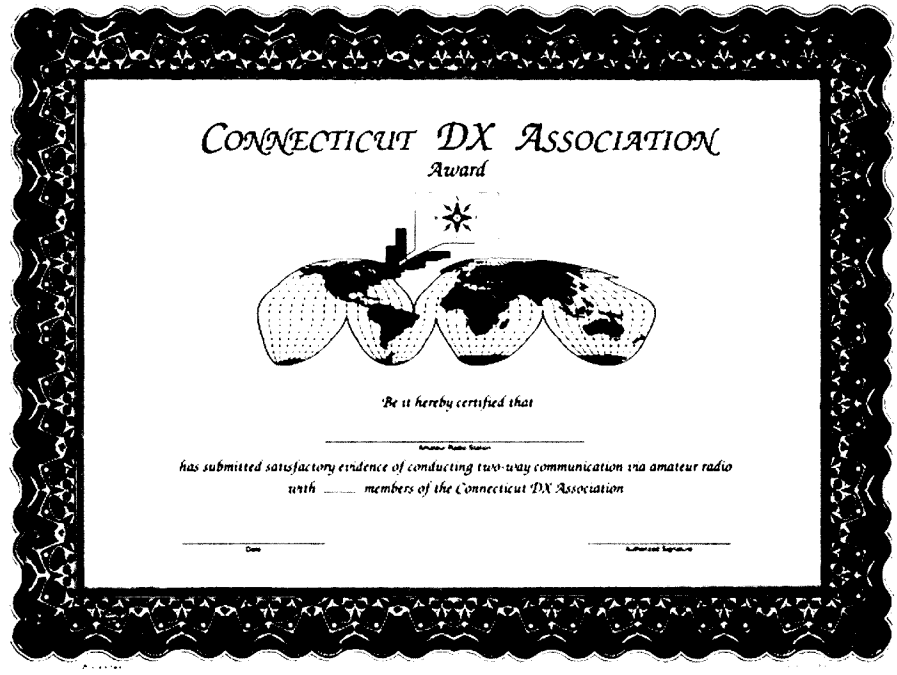
The Connecticut DX Association (CTDXA) is offering a new award, (pictured below).

DX stations need to contact only three CTDXA members, and SWLs need only provide callsigns, time, date, mode and frequency of five QSOs involving a CTDXA member. All modes accepted, but repeater contacts not valid.

Log extracts (not cards) should be sent to Richard Moris, KB1LE, 46 Collins Rd, Bristol, CT 06010, with three IRCs. KB1LE can also supply a list of CTDXA members on receipt of a SASE.

The CTDXA is well known and widely respected both in the USA and internationally. Its members include Don Search W3AZD, the ARRL DXCC Administrator, who comments that "the Connecticut DX Award is a natural addition to the avid DX chaser's shack". Another active member of CTDXA is Frank Cooper W3NV, currently on the ARRL DXCC honor-roll with 313 countries confirmed.





Awards Issued Recently

WAVKCA (VHF)

38 Shinroku Kido JA6LLA (6m)
39 Yoshifumi Tanaka JE2IIH (6m)
40 Yiyoshi Mizutani JR2HCB (6m)
41 Masaya Hirota JA3IW (6 m)

WAVKCA

1790 Alexander Sancheza TI2SAH
1791 Frank Cook KA6CJL
1792 Sean Carvin EI2CR
1793 Scott Travis KB5GEC
1794 Arnold Andersson SM5CIK
1795 Bob Eldridge VE7BS
1796 Shuichi Mochizuki JE1CCD
1797 Hans van Loenen PA3ADS
1798 Akira Nakamura JA1ASO
1799 Max Muhammad YCØHET

ar

WIA NEWS

Continued from page 6

the Amateur Service, has been available for several months; DOC 72, Operating Procedures for the Amateur Service, became available a few weeks ago; and now we have DOC 70, which is of vital interest, particularly to prospective amateur operators.

DOC 70 details the qualifications required to obtain an Australian amateur licence, the various grades of licence, examination arrangements and exemptions, licensing of club, repeater and beacon stations, a schedule of countries with which Australia has reciprocal qualification and licensing agreements and, most importantly, the format and syllabus for each of the amateur examinations. ar

POUNDING BRASS

GILBERT GRIFFITH
7 CHURCH STREET BRIGHT 3741

C M Howes Communications make two types of dual-bandwidth audio filters. The CSL4 has a CW bandwidth of 300Hz at - 6db, and the sharp SSB rolloff means that unwanted signals are over 50dB down at around 3.3 kHz. It is designed for use on the C M Howes series of receivers but can make an improvement on most receivers.

The CSL5 filter offers the same performance as the CSL4, but being an external filter it simply connects to the receiver's external speaker or headphone jack, and has an onboard 1W output stage to suit 8 ohm loudspeakers (or higher at reduced power). The ASL5 can even be upgraded by adding the ASL4 module, to give a two stage filter with even steeper skirts, all the connections are detailed in the instructions. All the active filtering is done by the TA75074P IC and the amplifier is an LM380 IC. These, together with 43 resistors and 35 capacitors fit on a board which measures 51 by 108mm and you will need a screened case to prevent the usual stray radiation found in the shack from interfering with the signal. A fine tipped iron as well as a steady hand (or a hand-rest) is essential, and I used IC sockets rather than soldering the IC's directly into the board. The extras list is short, consisting of the case, IC sockets (opt), jack sockets for input and output, and a one pole three way switch to select either wide, SSB, or CW. If you use a battery supply, you will need a switch and maybe a led indicator.

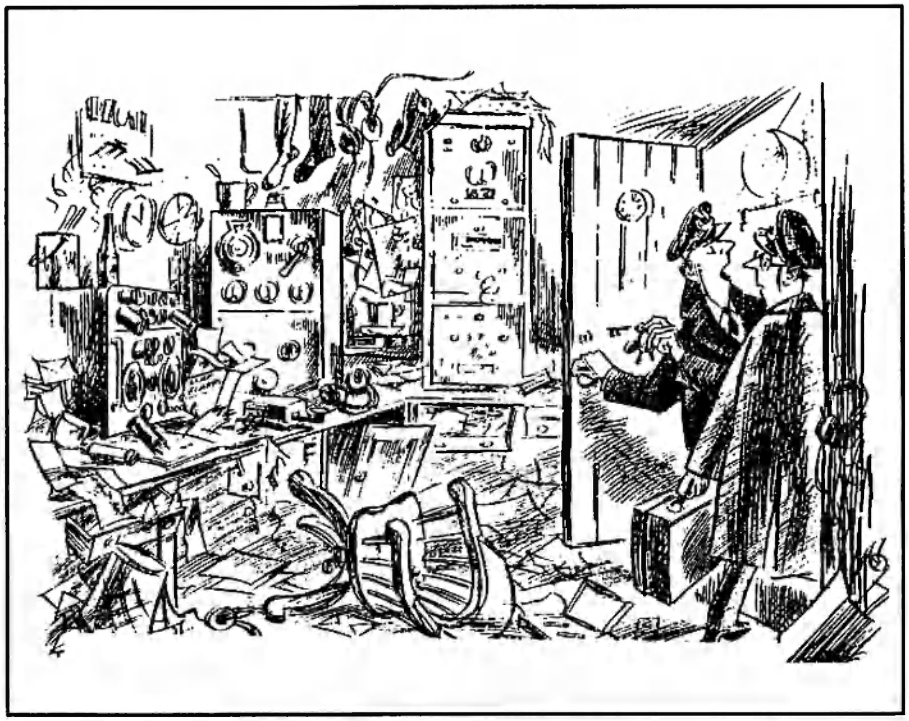
There is not much to say further about such a simple kit, I found that it was superfluous when used on my IC751A, as that rig already has all the filters available (plus an Icom audio filter designed for the IC740), but the improvement on both my homebrew receivers was much appreciated, especially as they are direct conversion and not very selective. The ASL5 made listening much easier and less tiring. Contact: C M Howes Communications, Eydon, Daventry, Northants, NN11 6PT, England. (who supplied the kit).

I am again in a rush to beat the deadline for this month, after spending the whole week getting ready, and the weekend lifting my tower back up. Even though it tilts over, I have fitted steps to it, so that I can climb up for adjustments. My 160 metre dipole still needs replacing, but everything else is OK. Hope to see you on air soon.

Merry Christmas and have a happy New Year.

73's Gil VK3CQ.

ar



". . . and another thing: I'm always careful to leave the wireless room looking exactly as I found it when I joined the ship."
Contributed by Gil Griffith

WICEN

GUEST AUTHOR: ALAN DIHM VK3ADK
PO BOX 106 MITCHAM 3132

WICEN at the International 3 Day Equestrian Event

On Saturday 14th October, 40 operators attended the International 3 day Equestrian Event run by the Victorian Equestrian Association at Werribee Park. The event included the Trans Tasman Cup (a teams event against New Zealand), selection trials for the Australian team for the World Cup, and was also used by the State Government, as an exhibition event to promote Victoria's bid for the Olympic Games. WICEN's role was to provide safety and scoring communications for the cross country section on the Saturday. The event involved many international and interstate competitors. On the first day the competitors went through exhaustive dressage tests. The second day was divided into four consecutive stages - A (road and track work), B (steeplechase), C (further road and track work), and D, which was the cross country stage. The third day was show jumping.

The WICEN operators were required for stage D only, to pass safety and scoring traffic. Stage D comprised 27 obstacles over a course of about 6.5 kilometres, and had an optimum running time of 11 minutes. Horses were to be dispatched at 3 minute intervals, so a quick calculation indicated a scoring type message every 8 seconds at worst, plus any safety traffic. Safety traffic would be passed to the event director at our net control room for action. Any resulting messages would be passed back to officials at each obstacle via an operator with each official. A link was to be provided via UHF CB to an SES net, which linked the start of stages A, B, C and D and the crash crews, doctors, vets, St Johns Ambulance, the horse ambulance and the SES. This net would also send section times to another location.

In order to accomplish our tasks, four networks were set up. We used three VHF nets and one UHF net; three for scoring and one for liaison. Because of possible desensing problems, one of the VHF nets had a remote base station and was linked through a UHF translator to net control. None of the checkpoints was further than two kilometres from net control, so the field operators could use handhelds on low power. In places where vehicles could be kept out of the field of view of the TV cameras, operators worked in vehicles if necessary.

In practice however, we provided additional operators at the start of section A, the finish of section D, at 3 emergency stopping points and at the SES bus. This was achieved by using one operator to cover more than one jump official, where the obstacles were close together and our efficiency would not be compromised.

Net control was in the (National Trust classified) mansion, and was luxurious when compared with the usual facilities at other exercises. We had plenty of power points, phone, large tables, whiteboard, lots of chairs and an urn. The organisers provided lunch for all operators.

Our communications worked well all day. There were some dramas out on the course, and some hectic moments at net control. When required, horses were stopped, the doctor called, crash crews dispatched, and the event stopped and started efficiently, because of our reliable communications. Officials at the jumps remarked to us how much easier their job was with a radio operator with them to relay messages.

The "real time" scores that we sent in enabled the TV commentators (channels 7 and 9) to give up-to-the-minute progress scores as they made their commentary.

The organisers were delighted with the service provided by WICEN, and suggested that we would be very welcome next year to provide the same or possibly an expanded service.

As always, the excellent communications did not just happen but were the result of much planning. Thanks to all operators, and particularly to Leigh VK3TP, Jamie VK3KPU and Dave VK3UR whose planning and efforts culminated in a very successful exercise, which has undoubtedly enhanced the reputation and public awareness of WICEN and amateur radio. **ar**

AMSAT

MAURIE HOOPER VK5EA
11 RICHLAND ROAD NEWTON 5074

National Coordinator
Graham Ratcliff VK5AGR

Information Nets
AMSAT Australia
Control: VK5AGR
Amateur check in: 0945 UTC Sunday
Bulletin commences: 1000 UTC
Primary frequency: 3.685 MHz
Secondary frequency: 7.064 MHz

AMSAT SW Pacific
2200 UTC Saturday, 14.282 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT Australia net. This information is also included on some WIA Divisional Broadcasts.

AMSAT Australia Newsletter and Computer Software

The excellent AMSAT Australia Newsletter is published monthly by Graham VK5AGR on behalf of AMSAT Australia and now has about 270 subscribers. Should you also wish to subscribe, send a cheque for $20 payable to AMSAT Australia addressed as follows:

AMSAT Australia, GPO Box, 2141, Adelaide 5001.

The Newsletter provides the latest news items on all satellite activities and is a "must" for all those seriously interested in amateur satellites. Graham also provides a Software Service in respect to general satellite programs made available to him from various sources. To make use of this service, send Graham a blank formatted disk, and a nominal donation of $10 per item, to AMSAT Australia together with sufficient funds to cover return postage. To obtain details of the programs available and other AMSAT Australia services send a SASE to Graham.

Decay of Oscar-9

From UoSAT-OSCAR-11 Bulletin 202
27th October 1989

UoSAT-1 decayed on Friday 13th October 1989 at 0751.49 GMT on orbit 44761 around 49.2S 220.9E and 46.4S 220.OE (in the South Pacific area). Any telemetry or reports from the last 6 hours of UO-9's life would be appreciated by the University of Surrey.

Microsat/Uosat D & E Launch Delay

Further to the information given last month, the launch has been rescheduled for 19 January 1990. The additional delay is due to the launch "window" required for the primary payload on the launch vehicle.

The following is from AMsat-NA Bulletin 287.03, 14 October 1989.

Arianespace Announces The MICROSAT & UOSAT D/E Launch Date of Jan 19 '90.

This week Arianespace formally notified AMSAT-NA and University of Surrey officials that the new launch date for the MICROSATs (PACSAT, LUSAT, DOVE, and WEBERSAT), UOSAT D & E, and the primary payload, SPOT-2, is now planned for January 19, 1990. The launch campaign will begin six weeks prior to the launch date.

The announcement of the launch delay two weeks ago came as a complete surprise to both AMSAT and University of Surrey officials. Both groups were in the final phases of getting their satellites ready for the trip to Kourou, French Guiana in order to start the launch campaign on October 2nd. The launch delay announcement came only hours before the MICROSAT Launch Team was to leave for Kourou, and twelve hours before the University of Surrey Team was to depart. This extra time will certainly not be wasted by either AMSAT or University of Surrey Teams. The delay will allow more time for correcting minor hardware problems which appeared during thermal vacuum and vibration testing. The UOSAT D & E Team have been performing extensive testing of the CCD camera picture taking software with this extra time. The MICROSAT Team will continue to test the AX.25 packet protocol software along with the bulletin board feature they have incorporated.

OSCAR-13 October Woes

October was not a good month for Oscar-13, which suffered two dramatic "crashes". The first was on Monday 9th October and the second on Sunday the 29th. The following article from Amsat-NA Bulletin 287.01 (14 October) describes the first incident.

AO-13 Temporarily Out Of Service Due to IHU Crash; Returns To Service 13th October 1989.

OSCAR-13's onboard computer, commonly referred to as the Integrated House-keeping Unit (IHU), this week suffered what electronic experts call a "Single Event Upset" (SEU). This is a condition that is caused when a high energy particle, a proton, enters a memory "cell" in a computer chip and actually "flips" the bit from a "1" to a "0" or visa versa. In the case of spacecraft, the high energy particles are usually the by-products of solar flares and they wreak havoc on Random Access Memory (RAM) chips and microprocessors on satellites. Such bit flips generally have the disastrous effect of causing the software running on spacecraft microprocessors to crash. The first notice that the IHU software was running amok was discovered early Monday morning, Oct 9th between 0720 UTC and 1115 UTC on Orbit #1012. The first reports received said that the telemetry beacon was sending an unmodulated carrier, and that OSCAR-13 was in Mode B at the wrong Mean Anomaly (MA) count according to the recently published schedule. Also, it was using the omni-directional antenna instead of the high-gain antenna as it was supposed to. Almost immediately upon hearing this, DB2OS, G3RUH, and VK5AGR, AMSAT Ground Command Stations, went to work to start restoring the IHU. By late Monday night, DB2OS was able to send a "reset" command which restarted the IHU from scratch. To home computer users, this is the equivalent to doing a soft reboot. Peter was then able to load a simple routine that allowed safe operation of OSCAR-13 especially during solar eclipse periods around perigee; this simple routine did not allow any transponder operation, nor did it allow telemetry to be sent. Once the reset command was sent, then the tedious and laborious task of reloading the flight software to OSCAR-13's IHU began.

Complicating this effort was the combination of high squint angles and noise generated from ground radars. Eventually all the software was reloaded, and DB2OS and other ground stations then started to examine the IHU's 1802 microprocessor and all of its memory to see if there was any damage done. At the present time, the general consensus is that there was no hardware damage! This was hopefully, an isolated event which was associated with a severe solar storm that occurred several days before the IHU crash. OSCAR-13 has returned to service as of Friday, Oct 13, 1989 at 1330 UTC. The following will be the transponder operating schedule until further notice:

Bahn Attitude 208/-3 Omni Antennas from MA 240-060

Mode-B: MA 003 to MA 160
Mode-JL: MA 160 to MA 200
Mode-B: MA 200 to MA 240
OFF: MA 240 to MA 003

Mode S users will note that there is no Mode S transponder operation planned. However, it is anticipated that it will be reinstated shortly.

New RS Launch Planned

RS14 and RUDAK 2 to fly piggyback on GEOS - Nico PAODLO @ PI8ZAA

During the DATASPACE 89 Colloquium at the University of Surrey in England around July 30, the following information on the new RS14 and RUDAK 2 systems were supplied by Leonid, UA3CR, and members of AMSAT-DL.

The Russian ORBITA organization is constructing a new amateur satellite system, Radio Sputnik 14, which contains a linear mode B transponder. Meanwhile, AMSAT-DL is building a new RUDAK digital packet radio repeater. These systems are to be built into a new Russian experimental Geological Survey satellite. For the time being this satellite is indicated as "GEOS", but after launch it will probably be known as a satellite in the KOSMOS series. During the Colloquium at the University of Surrey, preliminary agreement papers were signed by representatives of ORBITA and AMSAT-DL.

GEOS is to carry a transponder, which will be used to relay geological data between geological research stations and their base station. This transponder will be in the UHF range, not far from the 70 cm amateur radio band. The electrical power for the RS14 and RUDAK 2 systems will be delivered by the GEOS power system. GEOS is currently planned to be launched in the middle of 1990 into a circular orbit at an altitude of around 1000 km and with an inclination of about 83 degrees.

RS14 will contain a mode B transponder, a telemetry system and two beacon transmitters. One of these beacons will also be used as the downlink for RUDAK 2. The uplink frequencies of the transponder are planned to be between 435.080 and 435.180 MHz and the downlink frequencies between 145.850 and 145.950 MHz. The transponder will be inverting and its maximum around 145.850 MHz. The second beacon on 145.990 MHz can be switched between RS14 CW telemetry and the RUDAK 2 downlink. When the mode B transponder is in operation this beacon will have an output power of 2W. When the transponder is off the beacon will transmit at full power, i.e. 10 to 12 W. Note: All frequencies may change before launch!

The RUDAK 2 digital repeater is very similar to RUDAK 1, which is on board OSCAR 13 but failed to operate well. This digipeater can be used to relay packet radio messages using the AX.25 protocol. There will be two uplink frequencies and one downlink frequency on RUDAK 2. The first uplink is planned to be on 435.00 MHz and is to be used for 1200 bps FSK. The second uplink is planned on 435.150 MHz and is to be used for 4800 bps FSK. The RUDAK 2 downlink on 145.990 MHz will transmit 1200 bps PSK. The combined antennas of RS14 and RUDAK 2 will be monopoles for 2 m and 70 cm.

The launch of GEOS is expected to take place from the launch centre near Plesetsk in the north of the USSR. Representatives of AMSAT-DL may be invited to be present at

the launch. Leonid, UA3CR, has promised to try to set up a launch net on amateur radio frequencies, so that everybody may witness the launch when it happens. Also, Leonid will try to present before the launch as much information as possible on the launch details, on the planned orbital parameters, etc.

Meanwhile, the RS12 and RS13 transponder systems, which will fly on board a KOSMOS navigation satellite, are waiting for a launch possibility. RS10 and RS11 are now operating from the KOSMOS 1861 navigation satellite. This KOSMOS is on stand-by because its predecessor is still functioning very well. As soon as the old KOSMOS fails KOSMOS 1861 will come into operation and the new back-up KOSMOS, with RS12/13 on board, will be launched. Nobody knows when this will happen. Therefore, the launch may have to be delayed well into 1990.

Several Eastern European countries are co-operating on a new amateur radio satellite project: RS15. This satellite is to carry several transponders and beacons. Details are not yet available. parts of this new satellite are being developed now by the Budapest University team of Bandy, HA5WH. The launch of RS15 is not expected before 1993.

ar

OSCAR-13 Schedule for 1 December 1989 to 8 January 1990
Station: Adelaide

Hour - UTC

```
-----0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
01DecBBLLLLLBB-------------------------------------------------BBBBBBBBBBBBBBB
02DecLLLLBBB---------------------------------------------------BBBBBBBBBBBBBLLL
03DecBBBBB-----------------------------------------------BBBBBBBBBBBBBBLLLLLBB
04DecBB-------------------------------------------BBBBBBBBBBBBBBBLLLLLBBBB-
05Dec---------------------------------------BBBB----------BBLLLLB--------
06Dec-----------------------------------BBB-------------------------------
07Dec---BBBBBB------------------------BB---------------------------------
08DecBBBBBBBBB-----------------BBB-------------------------------------BBBB
09DecBBBBBBBB-----------------BB---------------------------------------BBBBBB
10DecBBBBBBBL---------------BBB-----------------------------------BBBBBBBBB
11DecBBBLLLL--------------B-------------------------------------BBBBBBBBBBBBB
12DecLLLLLB-------------------------------------------------BBBBBBBBBBBBBBLL
13DecLBBBB-------------------------------------------BBBBBBBBBBBBBBLLLLLB
14DecBB-------------------------------------------BBBBBBBBBBBBBBLLLLLBBBB
15Dec---------------------------------------BBBBBBBBBBBBBBLLLLBBBB----
16Dec---------------------------------BBBB----------BLLLLLB----------
17Dec-----------------------------BBB-------------------------------
18Dec-BBBBB---------------------BBB-----------------------------------BB
19DecBBBBBB-------------------BB-------------------------------------BBBBBB
20DecBBBBBB-----------------BBB---------------------------------BBBBBBBBB
21DecBBBBL-----------------BB-----------------------------------BBBBBBBBBBB
22DecBLLLL--------------B-------------------------------------BBBBBBBBBBBBBL
23DecLLBB-------------------------------------------BBBBBBBBBBBBBLLLLL
24DecBB-------------------------------------------BBBBBBBBBBBBBLLLLLBBB
25Dec---------------------------------------BBBBBBBBBBBBBLLLLBBBB--
26Dec-----------------------------------BBBBBBBBBBBBBLLLLLBBBB------
27Dec---------------------------BBBB----------BLLLLL-------------
28Dec-------------------------BBB-------------------------------------B
29DecBBB---------------------BBB-----------------------------------BBBBB
30DecBBBB-------------------BB-------------------------------------BBBBBBB
31DecBBB-----------------BB-----------------------------------BBBBBBBBBB
01JanBBL---------------BB-----------------------------------BBBBBBBBBBBBB
02JanLL--------------B-------------------------------------BBBBBBBBBBBLLLL
03JanB-------------------------------------------BBBBBBBBBBBBBLLLLLBB
04Jan--------------------------------------BBBBBBBBBBBBBLLLLBBBBB-
05Jan---------------------------------------BBBBBBBBBBBBBLLLLBBBB----
06Jan-----------------------------------BBBBBBBBBBBBBLLLLBBB---------
07Jan---------------------------BBBB----------BLLLL----------------
08Jan-----------------------BBB-------------------------------------BBB

LEGEND:  B  Mode B visible;  L  Mode L visible;  -  satellite below horizon
```


DATA AND DIGITAL

GUEST AUTHOR: PETER BROUGHTON VK3AZQ
9 ANDREWS ST BURWOOD 3125

An Introduction to Packet Radio

Packet Radio is becoming very popular and and increasing number of radio amateurs, who already own a personal computer or (PC) are asking for information on this subject. I have therefore decided to use my PC to extract a condensed version of some of the information at hand, to pass on to those of you who are interested in this fascinating hobby.

Packet Radio in the amateur community is producing something of a revolution in high speed communications. There are many advantages to using this form of communication by comparison with other digital information which the computer can so easily provide. It has already changed the way we live and no doubt will continue to be used as a creative tool which automatically handles the arduous task of sorting and filing.

Packet Radio is extending its tentacles into amateur radio as part of the information revolution. New forms and improvements are occuring at an ever increasing rate and standards are being established to combat the sort of obsolescence to which the earlier enthusiasts were subjected. The terminal node controller (TNC) is changing the way we communicate, and soon PC operators will be asking how they managed to do without it.

The Advantages Over Other Systems

We hear a great deal about digital communication these days, but if you think back, you must admit that CW, radio teletype (RTTY) and more recently amateur teletype over radio (AMTOR) are, after all, only digital forms of communication.

In its most basic form, packet is simply a faster way for radio amateurs to pass information from one station to another. Also, it has added to the quality of information exchange, and it is 1000 times faster than AMTOR.

HF packets operate at a speed of 300 baud, which is 5 times faster than RTTY. On VHF, packets operate at speeds of 1200 baud, which is 10 - 20 times faster than RTTY. A data rate of 4800 baud is being used experimentally, and data rates of 9600 baud are soon to be tested for the new data highway, linking Queensland with Victoria.

Packet supports the transfer of binary data from computer programs, and is the only error-detecting mode supporting the full ASCII encoding. It is now possible to locate a radio amateur using such sketchy information as his callsign, and be provided with details of his activities without him being personally involved during the contact. If he has packet equipment, text, data, graphics or video information can be left on a database to be automatically passed to him or collected even in adverse conditions, such as one could expect on the HF band.

The advantage of error detection and networking may be supplied to voice and video signals. The technique addressing enables repeaters to relay packets of information from one station to the next, thus forming a network. The protocol used in Packet Radio is much the same as two strangers who meet and introduce themselves before starting a conversation, first by shaking hands and exchanding credentials - "My Card". Protocols are usually referred to as etiquette, and in Packet Radio can be lengthy, because they have to cover every action and event that is likely to occur. CW uses a simple form of protocol in the transmission of single tones according to an agreed code; RTTY uses two tones and the information is transmitted back and forth between them by using frequency shift keying (FSK) to an agreed code, but no protocol is required. AMTOR enhances RTTY and uses a protocol for selective calling, error detection and acknowledgement. Packet uses the ASCII code for the passage of text although binary data (object code) and digitised voice, video and telemetry may be transmitted equally well. Packet uses FSK just as RTTY does, but the modulation technique is not required.

Protocols are the major source of packet power and usefulness and are essentially written in software. American radio amateurs have opted for a software protocol called AX.25, which is a version of the international X.25 protocol used commercially for the transmission on information packets.

Packets are made up of frames, which consist simply of a series of zeroes and ones. The frame begins with a flag to identify it, and the first frame contains the callsign of the sending station, the station intended to receive the frame and all those stations that are to repeat the frame on the way to its destination. Then a field identifies the type of frame sent ie connection request, acknowledgement, or status polling and if data is to be sent, the protocol field is followed by a packet of data. Next comes an error checking field which tests frame accuracy. If an error exists, no attempt is made to correct it. The frame is discarded and restransmitted.

A schematic representation of the frame is shown below:

Flags	To Call	From Call	Control	Data	Frame Check Sequence

Protocols make networking possible. Packet stations can extend their range by using other packet stations as repeaters. In fact, any packet station can be a digipeater. A packet station listens to every transmission on the frequency, to see if the message is addressed to it or to be repeated through it. Packet Radio usually has a well organised mail box system, called a Bulletin Board, and some of them remain in operation on a 24 hour basis.

Software provides the major changes in packet radio, and this gives assurance that there will be no call to replace costly equipment as new methods of operation evolve. A growing number of operators use a small plug-in card in one of the expansion slots in their computer. So the result is a very neat layout, requiring little more space to operate in this new mode over conventional computer usage.

I have no wish to dampen your enthusiasm at this stage, but be warned. An IBM compatible computer is essential if you want to use the system up to present day standards. You will need at least 640K of RAM to cope with the latest software programs, two 360K disk drives and a bi-directional printer can save an awful lot of waiting time as well.

For those enthusiasts who cannot afford to purchase new equipment but already own a C64, Macintosh, Rabble 65, 6809 H/B, VAX, Amstrad, Amiga 1000, C128, NEC 8801, Microbee, TONO7000E, Sharp, TRS80, Toshiba, Bondwell, COCO, and BBC-B - take heart; there are packet users out there with the same equipment.

The most cost saving exercise for the uninitiated however, is to join a progressive packet radio club, such as the Melbourne Packet Radio Group, and gain the benefit from the advice they can give you to start you in the right direction.

Reference

A Packet Primer
by Gwyn Reedy W1BEL
73 Magazine August 1986 **ar**

SPOTLIGHT ON SWLING

ROBIN L HARWOOD VH7RH
52 CONNAUGHT CRESCENT WEST LAUNCESTON 7250

Firstly, I must apologise for the failure of this column to appear in November, but due to the non-delivery of Australia Post by the deadline time of the copy, you were not able to see it.

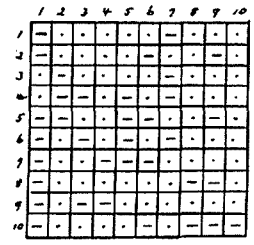
We are now in the D-89 period, and conditions are very good. It does now appear as if we have passed the peak of the current Sunspot Cycle in September, just as had been predicted by the Brussels Sunspot Centre. On the eighth of September, the Solar flux was at 304, the highest on record. Not surprisingly, HF propatation around that period was excellent. The 11 meter broadcasting allocation was very good, with signals coming in from South Africa, the USR, France, Belgium, the UK and Norway around 1100 and even earlier, Denmark and West Germany were heard, 21 MHz was also extremely lively and there weren't many vacant channels.

During September, the Carribbean and the east coastline of the USA, especially in the Carolinas and Georgia, were hit by Hurricane "Hugo". Severe damage was reported from Guadeloupe, the British and American Virgin Islands, Puerto Rico plus other West Indies islands. The joint BBC-Deutsche Welle relay base at Antigua was off-air for a few days following "Hugo", but is now operational. Although Montserrat was badly affected, the relay base there had been closed just a few weeks prior to the Hurricane.

I know that many listeners were able to follow "Hugo's" path via amateur radio. The Hurricane Net on 14325 kHz was carrying traffic between the Caribbean and the States. Other channels were pressed into service to handle Health & Welfare traffic. Propagation conditions were abysmal, and the behaviour of some amateurs within the USA was apalling. All nets experienced deliberate interference, which led to frayed tempers. Fortunately, the American FCC were monitoring these channels and reportedly traced several sources of this QRM. I am sure that they are in for a nasty surprise.

Solution to Morseword No 33

From page 46



Across: 1 diets; 2 bren; 3 leas; 4 acts; 5 mimer; 6 tarts; 7 dose; 8 beep; 9 tabs; 10 bro.

Down: 1 zoo; 2 ugh; 3 vain; 4 hear; 5 sob; 6 aura; 7 takes; 8 heft; 9 raft; 10 sheet.

Then on October 17th at 0004 UTC, San Francisco was shaken by a severe earthquake. Radio KGEI went off the air, as did coast station KFS, but Family Radio's transmitters are in Florida and they temporarily lost the feed from the studios in Oakland (CA). Communications were severely disrupted and again amateur radio came into prominence. Within hours, several nets were operational, particularly on channels previously used during Hurricane "Hugo". The behaviour was better, as most amateurs were only too aware that Ham radio was the only mode of communications for 24 hours to the general public.

Australian amateurs should remember that, during emergency conditions, the FCC has designated 14275 and 14325 as emergency or priority frequencies and if you hear emergency or priority traffic, please QSY +-5 kHz from the channels. Adjacent splatter played havoc with net control stations trying to copy stations operating on battery power and rudimentary antennas.

Radio Australia is changing the emphasis of its programming from Sunday December 3rd. They are going to concentrate on Asia and the Pacific, particularly on English programming. A new program schedule has come into effect, and it would pay you to obtain one from Radio Australia, GPO Box 428G Melbourne Vic 3001. These changes follow the recent review by RA's parent body, the ABC. One important change was the proposal to delete the Japanese language service from HF. This was surprising, as I'm led to believe that RA's Japanese programming was popular. Perhaps RA will have second thoughts when the protests come rolling in from Japan.

Radio Canada International has introduced a daily service in Standard Chinese (Putonghua) as from the first of October. It is from the NHK site in Yamata, Japan on 15270 and 17810 kHz from 1300 till 1330 and on 6150 from 1500 till 1530. RCI has been very careful not to use the Xian site in the PRC for the Chinese, but only for the Japanese service and English Service to Asia. Incidentally, you can hear Montreal on 11955 from Xian and 15210 at 1200 to 1230 and from 2200 till 2230 on 11705 from Yamata, Japan. Both are to Asia in English.

Don't forget the BBC World Service Christmas Day Special at 0930, with the Queen's Christmas Message followed by the Festival of Nine Lessons and Carols from Kings' College, Cambridge on the usual WS frequencies. And that leads me to wish you all a happy Christmas and that 1990 will be what you would desire.

ar

Have you advised DoTC of your new address?

ALARA

Joy Collis VK2EBX
PO Box 22 Yeoval 2868

The vacancy for a second Vice-President of ALARA has now been filled by Christine VK5CTY. Congratulations Christine.

ALARA Contest

Next month it should be possible to give a report on the Contest, and hopefully this year we will have a winner for the Florence Mc Kenzie CW Trophy.

The first winner of this prestigious Trophy was Jill VK4VNK (now VK4ASK), followed by Bobbie VK2PXS, who surprised herself by winning it in 1986.

Liz VK3PSG (now VK3JQ) was the 1987 winner, and unfortunately 1988 saw no contestant enter for the Trophy.

Hopefully this year it will once again be awarded in memory of the lady, who trained so many in the intricacies of Morse Code prior to and during the second world war, and made such a valuable contribution to amateur radio. ALARA is proud to perpetuate the memory of Florence McKenzie through this competition, and I'm sure if she were alive today, she would thoroughly ensorse the suitability of this remembrance of her name.

Family Membership

Following a recent decision, a person who is a resident member of a family which includes a full member of ALARA can become an ALARA member by paying a subscription of 50% of the appropriate rate. Such a person is to be known as a Family member, who does not receive a Newsletter.

JOTA

For the first time in nine years, I was unable to participate in JOTA this year, due to other commitments, which was disappointing.

I have been informed by ALARA members who did take part that conditions on the 10, 15 and 20 metre bands were poor, due to the solar flares, and that few DX contacts were possible.

However, some worthwhile contacts were made intrastate, interstate, and with New Zealand, many of them via satellite, which was of great interest to the scouts and guides concerned.

Hopefully next year conditions will be better.

Annual Electronics Sale

On November 4th, the Adelaide Hills Amateur Radio Society Annual Electronics Sale was held.

This has proved a popular event. It is not only amateur radio equipment that is sold, but any electronics gear.

On this occasion, ALARA assisted by running a hot drink stall, which was much appreciated by thirsty patrons.

Yasuko JL3EGP & Atsuko JP3DHT Glenelg (Adelaide) August 1989.

YL Contest

DLYC Mid-Winter Contest:

CW: Saturday 13th Jan 1990 from 0700 to 1900 UTC.

SSB:Sunday 14th Jan 1990 from 0700 to 1900 UTC.

Award Update

No 151 27/6/89. Meg Box VK5AOV. 2 stickers.

Bits And Pieces

Profuse apologies to Coral VK8NCH and Carol VK8NCA for getting them mixed up! Coral VK8NCH is, of course, the recently elected President of the Darwin Amateur Radio Club, not Carol VK8NCA as reported in October AR.

ALARA members were well represented in the Craft section of this years Royal Melbourne Show; Marilyn VK3DMS collecting a first prize for her soft toys, Gwen VK3DYL and Barbara VK3BYK walking off with prizes and "commendeds". Congratulations

Maria was very happy to meet Yasuko JL3EGP and Atsuko JD3DHT when they visited Adelaide in August. Both ladies were given a "whistle stop" tour of the city and surrounds, chauffeured by Maria, and enjoyed themselves immensely.

Josie VK4VG would like to see more YLs join her net on Tuesday evenings, 0930 UTC on 3.570 +/-. If this day is inconvenient, why not let her know, and she may be able to arrange a different evening.

Marlene VK3FML recently tried her hand at a little home-brewing, making herself a QRP CW rig with output of 4 watts. Apparently it is working very well, and Marlene is quite pleased with the success of her project.

Denise VK5YL scored a week in Japan in early October. While there, she climbed Mount Fujiyama, and had a little more excitement than she bargained for when a 5.9 earthquake struck.

Anny DF2SL was on the 14.222 YL net on 16th October with special callsign DL0XYL, and Florence F6FYP made many YLs happy on 30th October with CN2YL. This was a new YL country for most of us.

Please note new address for Mary Ketzler KA0OMH, DX contact for YLRL: Rtl, Box 194AA, Mondovi, WI 54755.

BYLARA 10th Anniversary Rally Drayton Manor Park 14th May 1989.

Congratulations to Margaret VK4AOE who recently became a great-grandmother.

New Members

Welcome to new members: Iris GØFIW, Pat VK4MP, Mina VK8MM, Erika VK3AEB and Jennifer VK3MDR. Great to have you in ALARA.

My old antenna was a mess
My new one is so neat...
My old one worked across the world,
My new one across the street!
(From WARO Bulletin - September 1989.)
Seasons greetings to all,
73/33 **ar**

QSLs FROM WIA COLLECTION (20)

KEN MATCHETT VK3TL HON CURATOR WIA QSL COLLECTION
PO BOX 1 SEVILLE VIC 3191

Former British Colony In East Africa

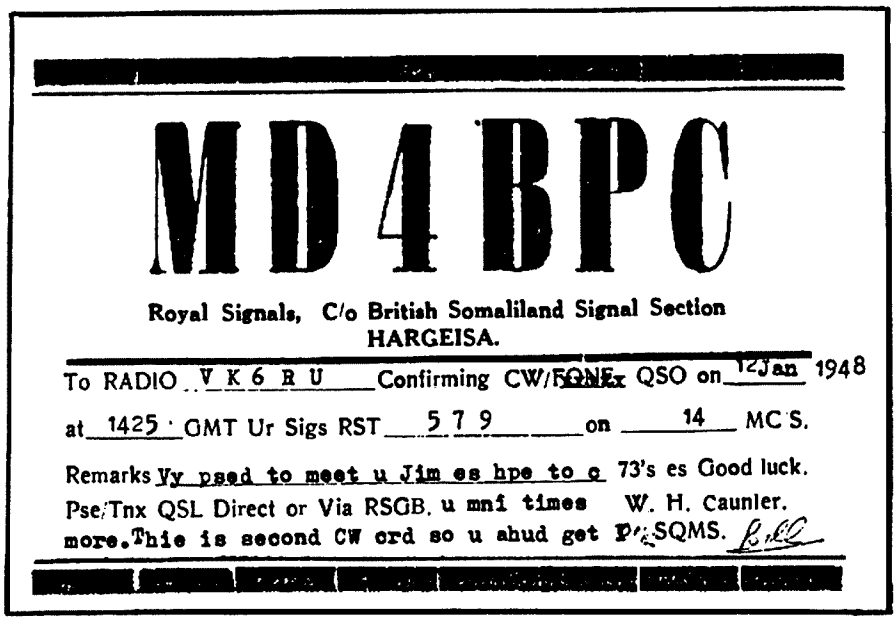
The former colonies of British Somaliland and Italian Somaliland form present-day Somali. This republic lies in the north-east corner of the African continent, the so-called "Horn of Africa". The country is bounded by Ethiopia and Djibouti to the west and Kenya to the south. Its area is just over half a million square kilometres which makes it a little smaller than NSW. In the days of the two East African colonial powers, the British colony lay to the north-west bordering on French Somaliland (now Djibouti), while the Italian colony lay to the east.

British Somaliland was established following treaties with local Sultans, Britain's initial interest being mainly logistic. Colonisation was primarily due to the demand for an uninterrupted supply of meat cattle to feed her garrison stationed at Aden. Of course, after the opening of the Suez Canal in 1869, the strategic importance of the coastal towns of the colony increased enormously. This lead to treaties that established in 1884 the Somali Coast Protectorate which subsequently became known as the British Somaliland Protectorate. This territory was administered by the India Office in London, responsibility passing to the Colonial Office in 1907.

Italy having entered World War 2 in June 1940, Italian forces invaded the colony, but were defeated in the following year. The two Somali colonies (British and Italian) became administered by a military governor assisted by an army council and this arrangement continued until 1949.

MD4BPC

The Bureau International de L'Union telegraphique of Berne had allocated the prefix M (together with B and G) to Great Britain even before World War 1. Of course, in those days such an allocation was not for the benefit of the handful of radio experimenters that existed, but for ships and the land stations with which vessels were in contact by spark telegraphy. As pointed out in earlier articles, experimenters were not given use of these



MD4BPC

Royal Signals, C/o British Somaliland Signal Section
HARGEISA.

To RADIO V K 6 R U Confirming CW/~~PONE~~ QSO on 12Jan 1948

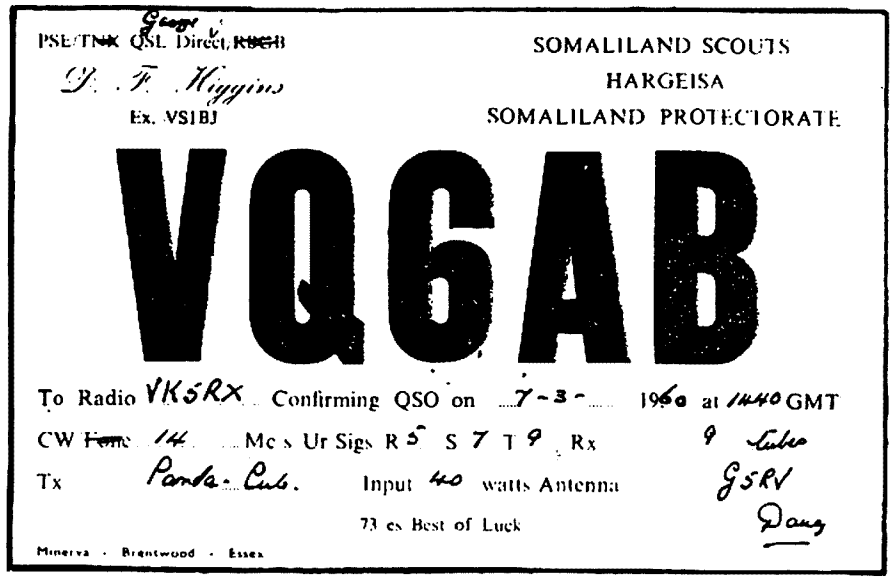
at 1425 GMT Ur Sigs RST 5 7 9 on 14 MC'S.

Remarks Vy psed to meet u Jim es hpe to c 73's es Good luck.
Pse/Tnx QSL Direct or Via RSGB. u mni times W. H. Caunler.
more.Thie is second CW crd so u ahud get P~ SQMS.

allocated prefixes until the late 1920's. The prefixes which were used were in effect, abbreviations of the names of their countries. Nevertheless, just before World War 2 the M prefix surfaced for the first time in amateur radio being allocated to Manchukuo (MX) of all places!! The use of this prefix was, however, short-lived because of the defeat of Japan, which had administered Manchukuo (later Manchuria) through a puppet-government. Just a few years after WW2, Monaco commenced to use the M1 prefix, but a whole series of M prefixes were used by military occupation forces such as MB in Austria, MD in several African countries and the Middle East and MP in the Gulf States, just to mention a few. The prefix MD4 was allocated to the "new" post-war DXCC country of British Somaliland. The MD4BPC QSL shown here was sent to well-known Australian DXer, Jim Ruble, VK6RU, in 1948 by a signals unit attached to the British occupying forces stationed at Hargeisa, an important religious and inland trading centre for nomadic tribesmen. This city became the capital of British Somaliland when, following military occupation, the capital was transferred from Berbera on the coast. The reason for the change was that the British wished to indicate a greater involvement in Somali problems.

VQ6AB

The prefix VQ6 (British Somaliland) appeared for the first time in the Official List for ARRL post-war DXCC, published in the February 1947 issue of QST. QSLs bearing either the VQ6 or the MD4 prefix were acceptable for the DXCC award. The VQ6 prefix continued to be used long after the MD4 prefix had expired as military personnel were withdrawn. It remained valid for the DXCC award until Somali became independent on 1st July, 1960.



PSE/TNX QSL Direct, ~~RSGB~~
George
G. F. Higgins
Ex. VS1BJ

SOMALILAND SCOUTS
HARGEISA
SOMALILAND PROTECTORATE

VQ6AB

To Radio VK5RX Confirming QSO on 7-3- 1960 at 1440 GMT
CW ~~Fone~~ 14 Mc's Ur Sigs R 5 S 7 T 9 Rx 9 Tubes
Tx Panda Cub. Input 40 watts Antenna G5RV
73 es Best of Luck Doug

Minerva · Brentwood · Essex

The QSL resulted from a QSO between the Somaliland Scouts and Old Timer, George Luxon VK5RX, who recently celebrated both his eightieth birthday and his diamond wedding anniversary.

6O6BW

Although numerical prefixes are quite common today, Somali was one of the sixteen or so countries to use one in 1960, and the first of the prefixes using the numeral 6. By far the most common prefix for Somali amateurs has been 6O1 but other prefixes have been used. The station 6O2AB reported in 1961 that British troops were then vacating Somaliland (QST Feb 1961) and 6OØ DX was reported in net operations in 1980. There was a report also that 6O64TI was operating in 1987 as a special event station, but no details are available. The above prefixes were allocations from the block 6OA - 6OZ but in 1988 a new prefix block allocation of T5A - T5Z was made. The station T5GG operated (and QSL'd) early that year. The QTH of the 6O6BW was Chisimaio (more usually spelt Kisimayo or Kismaaya) a town lying by the Indian Ocean in the far southern part of Somalia, just near the Kenyan border. With Soviet assistance in the mid 1960s, it became a naval port, but it has a history as an Arabian and Persian trading post dating back to the eighth century. The QSL was a confirmation of a QSO by the writer when operating from Norfolk Island in 1965 as VK9TL. Next month: Italian Somaliland.

If you like to play a part in building up the WIA QSL collection and to save something for the future, would you please send a half-dozen (more if you can spare them) QSLs which you feel would really help the collection along.

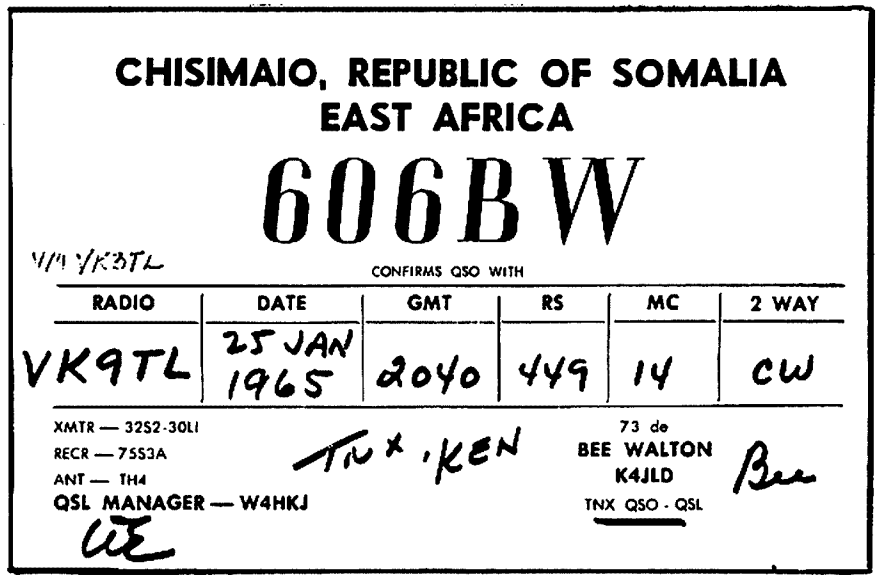
All cards are appreciated, but we especially need commemorative QSLs, special event stations QSLs, especially assigned call QSLs (eg VK4RAN), pre-war QSLs, unusual prefixes, rare DX and pictorial QSLs of not so common countries. Could you help? Send to PO Box 1, Seville 3199, or phone (059)643721 for card pick-up or consignment arrangements for large quantities of cards.

Thanks

The WIA would like to thank the following for the kind donation of QSL cards (Supplementary List):

Jim VK1JL (ex VK3AST)

Arthur VK2AV, Peter VK2FWI (ex VK8DN/MM), Ray VK3RF, John VK3AJT, Moorabbin & District ARC, VK3APC, Brian VK4LV, Greg WBØRTK



CHISIMAIO, REPUBLIC OF SOMALIA
EAST AFRICA

606BW

V/A VK3TL

CONFIRMS QSO WITH

RADIO	DATE	GMT	RS	MC	2 WAY
VK9TL	25 JAN 1965	2040	449	14	CW

XMTR — 3252-30LI
RECR — 75S3A
ANT — TH4
QSL MANAGER — W4HKJ

TNX KEN

73 de
BEE WALTON
K4JLD
TNX QSO - QSL

Bee

Also our thanks to the friends and families of the following "silent keys" (Supplementary List): Des Butler VK1DK, Roy Jonasson VK4NE, Cliff Trail VK3AIT, Bob Grundy VK5BG, Eric Trebilcock BERS195, Ron Guttormsen VK4RL

DX QSL Contributors' Ladder

(See "Amateur Radio" March 1989, page 55 for details.)

Contributions (Supplementary List):

Brian VK4LV:- Prefixes: VY3, T42 (Cuba) 4Z9, FF2, RG4, NH8, EM6, NI6, RIØ. Special Call: G4HMS

Lindsay VK5GZ:- Prefixes FT5 (Amsterdam Is), VU4 (Andaman Is), DH6. Special Calls: VK2RAS/5, AX51TU, GB2PYE.

Vic VK5AGX:- Prefixes GB75, IQ1, CN9, WW7, FM5. Special Calls: W23OG, OK5CSR, 8J1HAM

Current State of the Ladder

(10 points and above)

Robin	VK6LK	141
Henry	VK3AHQ	91
Chas	VK4UC	58
Eddie	VK8XX	52
Vic	VK5AGX	42
Brian	VK4LV	28
Barry	VK3XV	26
Barry	VK5BS	23
Keith	VK4KS	11
Lindsay	VK5GZ	11
Steve	VK3OT	10

Congratulations

A very find effort. Can we get a few more top Dxers to part with a few QSLs?

Starting from January 1990, we will be compiling a NEW contributors' ladder. Same scoring (see "AR" March 1989, page 55) except that a "new country" to our collection will count 20 points. **ar**

New International Standards of Voltage & Resistance

As from 0001 UTC on January 1, 1990, the values of the standard Volt and standard Ohm will change. The Comite Consultatif d'Electricite of the Comite International des Poids et Mesures decided last year to establish new international reference standards of voltage and resistance. These would be based on the Josephson effect and the quantum Hall effect, respectively.

However don't rush to adjust your multimeter, or replace resistors in a power supply, because the new international standards will differ little from the four separate standards currently held in laboratories throughout the world. The biggest change in adopting the laboratory reference standards when the international standard comes into being will occur in the United States. The USA National Bureau of Standards will increase the US representation of the Volt by about 9.26 parts per million (ppm) and its value of the Ohm by 1.69 ppm. **ar**

CLUB CORNER

VK4 Disabled Persons' Radio Club News

A classic example of the spirit of amateur radio was displayed by Tony Venables VK2KCK on a recent visit to his future in-laws in Toowoomba.

On hearing of my novice interest in the service, which included a secret hope of some day working "Wheelchair Mobile", he gladly gave a day of his holiday to shop around for rubber duckies and 5/8 vertical whips, magnetic bases, mounts and screws.

After much soldering, head scatching, mumbling and animated conversation, we finally made a VHF contact with Dugald Johnston VK4EKA via the Arch Marshall memorial repeater VK4RDD on Mt Lofty in Toowoomba.

The 5/8 vertical stood in the middle of the bedroom, the steel reinforcing in the concrete floor making an adequate ground plane. The 221A nestled on a strut right beside the left elbow-rest on FRED - my electric wheelchair - the batteries of which provided a good power supply.

He finally had everything tidied up by around 8 pm., and went home to a very tolerant fiance. Surely this Good Samaritan act exemplifies amateurism in the true Spirit of Christmas. Keep your ears open for VK4NYE "Wheelchair Mobile - WM??"

The club wishes all amateurs a safe, rewarding Christmas and an enlightening 1990. We'd especially like to send greetings to all who have supported the club, either on our net or by some other means.

We'd particularly like to extend Yuletide greetings to the DX operators such as Bill Christie VK6NWD who, though having to compete with shocking QRN at times, listens in regularly and has a QSO when possible, and also Bernie Kellow VK4PAE when committments allow.

We hope other regulars will call in to our 80 metre net around Christmas, and join with us in the spirit of the season.

Club nets are held every Friday night at 0900 UTCC on 3.590 MHz. Club call is VK4BTB. Station Manager Roley Norgaard VK4AOR (076) 967587 or Graeme Whitehead VK4NE (076) 308323. **ar**

Have you advised DoTC of your new address?

EDUCATION NOTES

BRENDA EDMONDS VK3KT
PO BOX 565 MT WAVERLEY 3149

Getting the Message Across

A few recent events have illustrated the difficulties of ensuring that information reaches its destination in its original form. There seems to be little excuse for the changes and losses that occur when information is passed, but all too often, the message fails to reach some of the intended recipients, or arrives in a form very different from the original.

Sometimes we can only blame Murphy, but often problems can be traced to lack of precise instructions, or inattention on the part of the receiver, sender or relayer.

If I can use "Education" in the broadest sense, there is a vast amount of educating done on the amateur bands. This ranges from the organised discussion nets, through the requests for information so frequently heard on repeaters, to the dissemination of everyday information about the hobby or events related to it.

One of our main problems is how to ensure that amateurs are in fact informed about the activities of the Institute, clubs or other groups. The main media are, of course, this journal and the Divisional broadcasts, but not all members avail themselves of these services, and so messages that originate in these official sources are frequently garbled as they are passed on, eventually being received third, fourth or fifth hand, often hardly recognisable.

Those who do read or listen frequently do not register the information at the time. We have all heard a discussion on a repeater concerning a forthcoming event, and noted how little of the information from the previous week's broadcast has been absorbed. (Please note, this is not intended as criticism - I know how easy it is to miss or forget some of the information.)

Can we then ensure that all members are kept informed? What information is necessary? How can it be published?

After a recent WICEN exercise, it was noted that some amateurs had not been made aware that "their" repeater was to be used for WICEN traffic. Most operators accept such usage, and willingly move off if requested to do so, but perhaps in such matters we should be looking at the publicity value of keeping the whole fraternity informed of the activities of small groups. It is very easy to assume that everyone is familiar with a plan or a topic that for us is an everyday matter.

The Institute has frequently been charged with being a secretive body. Members claim the right to be notified of activities of both Divisions and Executive, but in many instances those members do not equally accept the responsibility of receiving, storing and acting upon the information that is disseminated. Similarly, many decline to contribute to discussions or data collection even when it is specifically requested. Information flow in a body such as the WIA must be in two directions, - in from the members as well as out to them, if the system is to be at its most efficient.

As an example, I have heard very little so far from groups intending to run examinations.

I have not discussed here the problems of communicating with and informing non-members where the information affects all amateurs. An example of this is the WARC conference that is now approaching.

Members will receive regular bulletins on matters relating to this major event in the radio world, and will be asked to contribute in a number of ways, but any benefits from the conference will be enjoyed by all amateurs, not just WIA members. Here is one area where members can help to "educate" non-members on an individual basis, as there do not seem to be any formal channels to be used.

My best wishes for the festive season to all my readers.

ar

DIVISIONAL NOTES

VK2 NOTES

TIM MILLS VK2ZTM

1990 Fees

The Divisional component for Full Members has been determined by Council at the October meeting as $10. The Federal/AR component for 1990 is $49. The VK2 fee for 1990 for renewal or new member is $59. Full details of all VK2 fees will be given on the broadcasts and in Jan AR.

Alinco Hand-Helds

The VK2 Division has obtained a small quantity of DJ-100T 2 metre hand-helds. These have additional features to the previous offer. Details are available from the office. The cost is $375.00 plus $7.50 pack and post. Include a current AR label with orders. This offer is available only to members.

Divisional Broadcasts

The last transmission for the year will be on the 17th December. The first for 1990 will be Sunday the 14th January...The first test transmission on 30 metres took place on the 22nd October. It was a time of high solar disturbance. The following Sunday, conditions were much better. Frequency - approx 10.125 MHz. 100 watt pep USB into a dipole at 12 metres, with the main lobes along the NSW coast...The 23 cm repeater was commissioned on Sunday the 12th November at Dural. The equipment was a donation from Dick Smith Electronics. A small microwave field day was held at Dural to mark the event...

Games 89

A Games and Hobby expo was held at the Royal Sydney Showgrounds from the 10th to the 12th November. The VK2 Division, together with Sydney Clubs and the specialist groups, provided an extensive display...The VK2 Division featured in an article in the Sydney Morning Herald's "GUIDE" on Monday 30th October...

Divisional Office

A reminder that the latest Australian Callbook is available from the office at a price to members of $8.50 plus pack and post of $1.50 (Total $10). Stocks are limited, so don't delay. If you require a 1990 edition of either the International or USA callbook, place your enquiry with the office. They would be about $50 each...The office will close for the Christmas break in the week before, and reopen in January. Details as usual via the broadcast, or on the telephone news headlines on (02)6511489...The Parramatta office now has FAX facilities. Members wishing to use this mode should check availability with the office first by phone on (02)6892417.

Trial Exam

The Division conducted a trial exam at

Parramatta on Sunday the 29th October when 21 persons attempted 63 papers. They were hard papers. Unrestricted Theory - 15 attempted, 4 passed. Novice Theory - 13 attempted, 5 passed. Regulations - 14 attempted, 13 passed. Morse Code. Novice - 10 attempted. 4 passed; Unrestricted 10 wpm - 8 attempted, 3 passed. If clubs would like to obtain the trial papers, would they contact Terry Ryeland VK2UX, Education Liaison Officer, via the Divisional office. If any member would like a trial paper, contact the office for details.

WICEN (NSW) Inc

The date for the 1990 Hawkesbury Outward Bound Canoe Classic is Saturday the 4th November 1990. WICEN membership application forms may be obtained from the Divisional office.

New Members

A warm welcome is extended to the following who were in the October intake.

W D Brack VK2XPL, Wiley Park, R G Brade VK2GAL, Riverwood, H C Deverell ZL1TFK, Dubbo, W L Dodd Assoc Wentworthville, A J FisherVK2AAF Beecroft, P C Goldstone VK2APS Bandora Point, A Hosseini Assoc St.Leonards, A Jo VK2GAH Beverly Hills, P J Maunsell VK2GAG Bradbury, C C Maile VK2MGU Broadway, T H Truong Assoc Bonnyrigg F Weber VK2FZI Batemans Bay, P C Wohlhagen VK2PSW Albury.

VK3 NOTES

JIM LINTON VK3PC

WIA Vic Div Subscriptions

A general meeting of the WIA Victorian Division held on 26/10/89 decided the membership subscription levels for 1990. From January 1, 1990, there will be only three subscription levels in all seven WIA divisions. In Victoria they are: Full membership (which includes Associates) $65. Concessional $52. And a new membership subscription which does not receive Amateur Radio magazine costing $39. The Concessional subscription will be automatically granted to all existing pensioner and student grade members. It may also be available at the discretion of the WIA Victorian Division Council to those who are bona fide students, pensioners, or needy members of the Institute. The three subscription levels will be increased each year by up to the Consumer Price Index for the preceding period.

The Full membership of $65 consists of a $49 Federal Component, a $16 increase, and it includes a $2 levy to provide funding for international representation. Your Division opposed the $16 increase in the Federal Component but a majority vote of all Divisions saw it passed. The Divisional component is $16 for each FULL member and $5 in respect of concessional subscription. The Division needs funds to provide membership services. It had absorbed two-thirds of the 1989 increase in the Federal component rise, and all CPI increases. The new subscription levels start on January 1, 1990. The bulk of renewals for about 80 per cent of members occur at this time of the year. Anyone who joins the WIA Victorian Division before the end of 1989 need only pay at the 1989 subscription levels.

WIA Victorian Technical Advisory Committee Meeting

The annual meeting of the Victorian Technical Advisory Committee (VTAC) was held on Saturday, November 4, 1989, resulting in a productive discussion forum. Some 19 people involved in repeater and beacon operation and maintenance from throughout Victoria took part. The meeting was opened by the WIA Victorian Division President, Jim Linton VK3PC, who described those in attendance as being like a "fraternity within a fraternity". He said the efforts of those involved in the running of repeaters and beacons was appreciated and in their own unique way they were putting something back into the hobby of amateur radio. Jim Linton reminded those at the meeting that they were free to make suggestions and recommendations for consideration by the WIA Victorian Division Council. He said the Council is receptive to people's suggestions and had placed on the agenda for the next Council meeting to be held later this month consideration of a report on the VTAC meeting.

There were two resolutions unanimously passed by the VTAC meeting: The first reads: "The Victorian Technical Advisory Committee recommends that for controlling access to cross-band linked repeaters where inverted access by radio amateurs not licensed to operate on that band can occur, the approved access method for suitably qualified amateurs be CTCSS using 123 Hertz."

The second resolution reads: "VTAC further recommends that to overcome interference to mobile receivers from paging transmitters that amateur repeater output transmissions be encoded with 123 Hertz." This will enable those affected by interference to fit receiver decoders to limit the noise. This system fits well with the concept of CTCSS because combination encoder and decoder devices are available which are stable, and cheap. For those not suffering interference no difference in repeater operation will be noticed.

In another decision taken yesterday it was decided that in future any radio amateur in Victoria could make a written submission for consideration at the annual VTAC meeting. Submissions would be invited in advance of the meeting to be held early next November, and those making submissions would be invited to address the afternoon session of the meeting.

Demonstration Station Being Considered

The Divisional Council is currently investigating all options available regarding the transfer of VK3AOM from the old Science Museum in the city to the new location at Spotswood.

There are many factors to be considered, not the least being our long standing and happy association with the museum, and the desirability to publicise our hobby with the young people of today.

The task is being made more difficult by the fact that the State Government has severely limited funding for the Museum and they are looking to us for considerable financial input.

The shorter hours that the new Science Museum will be open and poorer access to the general public, compared with the old city location, and the resultant cost effectiveness of the venture as a public relations exercise, must be carefully looked at. The possibility of some degree of sponsorship from commercial organisations together with firm commitments from the Museum are all being reviewed.

VK4 NOTES

BILL HORNER VK4MWZ

The festive season is upon us again. With all the regional conferences finished, your council now has to wade through the paperwork. Needless to say, the airline strike hasn't done much for the cause.

With the new year around the corner, all the new fees and WIA plans take effect. No doubt many of you will be due for renewal.

The Dalby 2m repeater should be fully operational soon, if not already.

Seasons greetings to you all, please drive carefully.

See you next year.

5/8 WAVE

JENNIFER WARRINGTON VK5ANW

The Old Timers' Lunch

On Oct 31st was held at the Marion Hotel, with over 100 "Old Timers" attending. 18 ladies also attended. From the favourable comments that I heard, I would think that we will probably be going back there next year. 1st Prize in the raffle was won by Lionel Medlen VK5ACW, 2nd Prize was won by Beryl Collins the XYL of Lindsay VK5GZ, and 3rd Prize was won by Wally Mann VK5DF. Our thanks for organising the event goes to George Luxon VK5RX, Ray Deane VK5RK, John Allan VK5UL, and Max Farmer VK5GF.

By the time you are reading this we may have a new, or a reinstated former, ESC Manager. Ian Bedson VK5ZB1 with the help of his fiancee, Janet, and later Tom Sears VK5NTJ, managed to keep the bureau going despite having his house pulled down and rebuilt. But now, Ian has decided that enough is enough, and has let us know that we shall need to look for a replacement for him. We wish Janet and Ian every happiness when they "tie the knot" on New Years day, and our thanks for all their past efforts.

New Address for Publications Officer

John Gardiner wishes to advise that he now has a mail box no. Orders for publications can be sent to John at PO Box 659 Cowandilla, SA 5033.

Diary Dates

Tues Dec 5th WIA Christmas Social

8.00 pm at Woodville Community Hall, 64c Woodville Rd, Woodville. Bring your partner and a plate of supper.

Tues 23rd Jan 1990

This will be a Buy and Sell meeting, there will be NO MEETING on Jan 30th.

I would like to wish you all a very happy, and safe Christmas and holiday time.

VK6 NOTES

JOHN HOWLETT VK6ATA

Call Book

Copies are now available to members at the WIA meetings price $8.50. Country members send $8.50 plus $1.05 P&P. Clubs ordering 12 copies send $102 plus $4.55 P&P and save on postage. The bookshop has a wide range of books available; why not discuss your requirements with John VK6GU or write to PO Box 10, West Perth?

Repeater News

A grant os $1000 from the WA division to the repeater group, will help get a new repeater facility started at the Roly-Stone site. A portable building will replace the existing 6'x5' garden shed, and will house a computer for use as a digi repeater and BBS in the future. The building will be air conditioned, to ensure stability and reliability as more technically advanced equipment is installed. The site will eventually be a control hub, and expand the number of repeaters being linked at present.

This is an exciting project in which to be involved. Contact Trevor VK6MS QTHR, and get in at the start.

Clubs

The WIA is printing some AR promotional pamphlets which will be available soon. Properly distributed, the pamphlets can encourage new recruits to your club and AR. Suggested drop off points include Scout and Guide meetings, Youth and Church clubs, public and school libraries. Shops selling radio parts, CB etc. Contact me on (09)3074407 or write to WIA PO Box 10 West Perth for your initial supply.

Page One

Yes, Fred Page SWL L60854 is certainly number one with the membership sec. Fed up with some peoples attitude, Fred has single handedly started a campaign to recruit members to the WIA, with a great deal of success. If you haven't received a letter from Fred, it's probably because you are doing the right thing.

Council wishes you all "A merry Christmas". But take it easy with the contact cleaner. **ar**

INTRUDER WATCH

GORDON LOVEDAY VK4KAL INTRUDER WATCH CO-ORDINATOR
RUBYVALE QLD 4702

Purpose of IW

Some very interesting reading matter arrived during the week I was preparing these notes. I must thank the President of IARU Dick Baldwin W1RU, for the information.

For all of us, the ability to enjoy amateur radio is a rare privilege, one to be guarded zealously. Obviously, therefore it is up to us to vigorously to report the interference caused to amateur radio stations by stations of other services & countries operating within our allocations. We need ALL kinds of reports, we need reports - we need many of these reports, which simply list the presence of an offending station. We need reports which go into DETAIL of technical characteristics of an offending station. Whatever your level of operating & technical skill, there is a place in the IARUM Monitoring Service for you. YOUR HELP IS NEEDED NOW. It is a task which brings the participant little glory, BUT the satisfaction of knowing that you are doing something worthwhile. It is a task which results in some frustration, because to effect the removal of an intruding station often takes a great span of time. The primary goal of the IARUMS is the protection of the Amateur Service. Please join "US" in working toward a successful accomplishment of that goal. What better Christmas Spirit could you get. **ar**

IARUMS SUMMARY FOR SEPTEMBER 1989

FREQ	UTC	DATE	Logged	MODE	I D	REMARKS
14000	1220	18/8	1	F1b		M/channel 345 deg E (8HA)
14002	1118	06/9				series of ..—etc
14023	0710++	15/8+	23	F1b	UMS	Often hrd 8hrs straight
14024	1225	18/8	1	F1		350 deg E (8HA)
14025	0945	21/8	1	AJ3		Thai fishing boats Darwin harbour
14025.5	mni	mni	12	F1b		
14038.5	1059	10/9	1	F1b		RTTY RY's
14040	1200	15/8		mxd		330 deg E Asian female voice
14046.5	mni	mni	2	F1b		
14046.5	mni	23/9	4	F1b		Pos 3rd shift mod to 14047.5
14048	1215	18/8	32	A3J		Rad Teleph Chinese accent 315
14055/6	1035	20/9	2		PKJ	Calling CPQ
14065	2215	19/8	1	A3E		345 deg E X mod (8HA)
14067	1329	16/9	1		UCN	
14067	"	"	1	F1b		RTTY RY's
14070	0929	24/9	2	A1a	VBX	VPO de VBX QSV K
14072	1055+	23/9	1	"		tfc out OK R ZGR K &c
14073	0220+	21/9	2		RMWV	UAZK de RMWV QYZ Repeated
14075	1235	15/8	1	A1a	VRQ	350 deg E (8HA)
14076+	0156	23/9	1	F1b		RTTY blanks
"	1015	"		A1a	CPO	VDQ de CPO
14085	1026	24/9	2	"	NPO	CPQ de NPO QSV K
14087	0200	23/9	1	F1b		RTTY 2kHz shift
14100	0930	"	2	A1a	NZB	ZBK de NZB tfc
14101.8	0949	11/9	1	A7a		
14118.2	1122	06/9	2	A2		LL U60 5 NRT QR74 145T
14119	0845+	24/9	1	A1a	IEKA	de IEKA taking tfc
14119.5	mni	mni	13	F1b	UVC/O?	3rd Cyr sh 12 hrs op on air
14123.5+	"	"	20	mni	No ID	8hrs op suspect ex EUROPE
14124.6	"	"	19	F1b		Also A3C
14131.2	"	"	4	F1b		F1cw is mxd cypher 6 hrs on air
14139.5	mni	"	7	F1bNN	Not UMS	200/67 3rd shift 8hrs " "
14140.5	"	"	12	mxd	UMS	5 fig/51tr Moscow Nav Radio
Large amt tfc HS morse abt 50wpm				Callsign clearly observed		
14143.5	"	13/9	4	F7b	UPC 80	Also F1b
14147.5	0945	24/8	2	A1a	OH6J	Blocks 5 fig cypher & carrier
14149	0515	27/9	1	"	RGT77	RGT77 1924 D BT tfc
14115.5	0822+	mni	4	F1b	RTTY	2kHz shift
14168.5	mni	"	6	F1b	USWZ?	Radio ROSTOV ?? USSR
14170.5	"	"	6	F1b	UMS	ID in cw F1b most used 3rd sh
14183.5/45 code		0836+	11/9	2	F1cw	RIV??? Also uses military Q
14184.5	mni	mni	5	F1b/A1a	UDT???	uses 200/67 & 3rd reg shift
14199.5	"	"	15	F1b		Also carrier
14200	0900	20/9	2	A1a	VMO	VLQ de VMO tfc out
14200.5	1155	28/8	3	F1b		+ F1cw 400+/hz shift 8 hrs op
14202.5	mni	mni	6	F1b		Russian 1trs Q code used RTTY
14215	1000+	04/9	1	A1a	2UH	FF9 de 2UH tfc out
14226	0555	11/9	1	F1b		RTTY 2 kHz shift
14235.2	mni	mni	4	F1b		Band condx to Europe allow cop
21007	1158	17/8	1	A1a		315 deg Darwin
21031.5	dly mni	mni	31	F1b.A1a	UMS	10hrs dly ID in mcw
21068/9	mni	"	-	R7b		18.5 kHz wide
21072	1130	17/8		A1a		5 ltr groups 315 E Darwin
21073.9	0212	21/9		JM		
21100	0405	"	1	A3J	???	2 way QSO foreign males USB NOT amateur
21116	mni	mni	1	A1a	CQ5	
21181.4	0642	28/9	1	F1b		RTTY 1.7 kHz shift
21276	0450+	05/9	2	A1a	JUXK	UVKS de JUXK QSA?
21327	0500+	04/9	3	"	TD9	TJ8 de TD9 also on 21355
28151	0240	06/8	1	A3e		B/caster either JA or China
28574.5	1313	15/9	11	A3e		B/caster European or USSR??
28576.1	1104+	23/9	1	"		USSR B/caster News M & F voices

VK6RO has contacted a Gov Interpretation Service in WA & confirms most CB intrusions are from Thailand using Channelised 28 MHz AM rigs, sigs every 10kHz. A total of 3,487 logged this month. It is obvious these rigs are factory made. Can the IARU do anything about it??

Book Review

RON COOK VK3AFW

ANTENNA IMPEDANCE MATCHING by Wilfred N Carron Published by the ARRL

Every radio amateur needs a good antenna. Frequently an antenna, which is desirable in other respects, will present a mismatch to the feedline and the transceiver. A common approach today is to use an ATU to compensate for this. A better solution is to match the antenna before it is connected to the feedline. This book describes how you can do this.

My first impression was that the book was generously illustrated with diagrams and charts, and would be easy to read. This was confirmed as soon as I started to read. Wilf logically works through the background theory, and by the time you have completed the first third of the book, you will know more about practical antenna matching than most professional antenna engineers. The contents of the book are distilled from some 40 years experience in matching antennas for military and civil applications, in many fixed and mobile environments. No more prior knowledge than would be appropriate for a Nove licence holder is necessary to read and learn from this book. Don't worry if you don't know what a Smith chart is; with this book you will soon be using one to solve matching problems.

The majority of the book is devoted to illustrating, by way of worked examples, the application of the theory covered in the earlier part of the book. Both narrow band and broad band matching are covered. Even old hands are likely to learn a trick or two. I was surprised to see that a simple L network can be configured in five different ways to match a dipole.

One day, someone will put the contents of this book onto a computer, but until then you can learn some neat tricks with pencil and paper to match any antenna. Although only HF antennas are covered in the book, the principles can be readily used on any frequency where transmission lines and lumped impedances can be used.

I recommend this book to any radio amateur (or professional) who is serious about achieving the best match at the antenna, rather than at the operating console. Indeed, I liked this book so much I bought my own copy! This book is just one from the extensive range of publications available from WIA Magpubs. The price is $30 (less 10% for WIA members) from WIA Magpubs. ar

SILENT KEYS

We regret to announce the recent passing of:

Mr Bruce Cross	VK2KBB
Mr Colin Leane	VK2MHS
Mr Rupert Crosby	ex VK3BC
Mr Les Doubleday	VK4LD
Mr WAT Howe	VK5AWH
Mr BW Austin	VK5CA

Colin Leane VK2MHS

Colin was a uniting Church Minister, and came to the Albury Wodonga area some few years ago. He occasionally visited the Twin Cities Radio Club when time permitted, as he was a busy minister in his parish.

This year, he was able to find enough time to attend the AOCP classes run for Radio Club by Graeme VK3ZR; recently he became secretary.

He was a jovial guy - full of fun and humor - and was just beginning to really enjoy the benefits of having passed his novice licence in August this year. We heard him mobile and from his home, and he was beginning to become a most active amateur in the border district. It was obvious that he found Amateur Radio to be a good relaxation. He was clearly enjoying the hobby.

He met with a most unfortunate accident, when returning to Albury from Melbourne late at night recently. He fell asleep at the wheel and ran off the road and hit a tree near Euroa on the Hume Highway.

So ended the life of a really great guy, who had helped countless people, and who was a real pun-maker with a great sense of humour.

He used to joke that his callsign meant VK2 "My Holy Son".

His gear will no doubt be treasured by one of his grandchildren, who has shown interest in our hobby.

All the members of the Twin Cities Radio Club will miss him greatly and we pass our condolences to his family.

PETER WOHLHAGEN VK2PSW
SECRETARY

Ex-VK3BC Rupert Crosby

"The Mornington Peninsula area has lost one of its great Amateur Radio identities with the death of Rupert E B Crosby on 21/8/89. The well modulated voice emanating from VK3 Baker Charlie was known to many amateurs, both locally and far afield.

A descendant of the William Crosby family of Hobart shipping fame, Rupert was born in 1917. He attended Melbourne Grammar school, and commenced work in 1931 as a wireless telegraphist with the PMG.

During the 1939-45 war he served with the Army, firstly as a signals instructor with the 3rd Div Southern Command, then later with the AIF in NT and NG with the rank of Captain.

More recently he worked for the ABC before retiring to Sorrento about 15 years ago. Rupert was first licensed on 6/8/1940. He was a foundation member of the Southern Peninsula Amateur Radio Club, a member of the "Old Timers Club", and almoner with the Sorrento lodge. He ran the 80m "Sparc" net for many years, and assisted with the Masonic net in the period 1981-6.

Rupert suffered a major road accident a few years ago, from which he never fully recovered. He later moved back to Melbourne for a short time, before final admission to Heidelberg Hospital with meningitis. To his wife Irene, we extend our deepest sympathy."

JOE DONALD (VK3AXM)
SOUTHERN PENINSULA AMATEUR RADIO CLUB

Les Doubleday VK4LD

Les obtained his 2nd Class OCP on 1/6/38 when he then went to sea as a radio officer on various merchant ships, terminating in 1946. He then joined OTC retiring in 1979, during which time he saw service in Sydney, Port Moresby and lastly in Rockhampton. He obtained his Amateur licence in 1947, and mainly used CW mode to communicate with his mates in and around Australia - mostly on the 40m band. Also, he was an accomplished pianist and organist, and used these talents to the benefit of people in old aged persons homes in Rockhampton.

Les was an unassuming type of person, always ready to help anyone with any problems. He continued to do this, until he was restricted by a long and debilitating illness to which he finally succumbed. He is survived by Hilda and four (4) children, Margaret, Helen, Robert and June, and he will be sadly missed by all who knew or had come in contact with him.

MERV DEAKIN VK4DV

William A McDevitt VK4XM

At the grand old age of 84 years, Bill VK4XM joined the SKs on a higher frequency, on 26th May 1989.

Bill was born in the Land of the Long White Cloud, a fact not known to many of his friends and one of his first jobs was that of W/O at sea. He obtained the amateur call ZL1FN, and made many DX QSOs in the 1920s when a CQ was truly "a call into the unknown". After a few years he quit the job of ship's "SPARK" and crossed the Tasman to settle in Australia where, with the sound of morse still ringing in his ears, he eventually took out a VK2 licence.

VK4XM was an electrician by trade - a very competent one who worked on some important projects for large companies, viz BHP in Wollongong and Newcastle, then the Lysaght Group. From 1950 he was employed in Burnells in Nth Queensland where he became well-known to the local amateur group. During the 1960s Bill finally settled in Brisbane to enjoy his retirement.

In the true spirit of amateur camaraderie Bill was always ready to give his time to others, less experienced, who had radio problems. A member of the WIA in his earlier years VK4XM regularly attended meetings. The loss of such a skilled member of the fraternity is always irreplaceable. W A McDevitt is survived by one son, Anthony.

ALAN SHAWSMITH VK4SS
ar

OVER TO YOU

ALL LETTERS FROM MEMBERS WILL BE CONSIDERED FOR PUBLICATION AND SHOULD BE LESS THAN 200 WORDS.
THE WIA ACCEPTS NO RESPONSIBILITY FOR OPINIONS EXPRESSED BY CORRESPONDENTS.

10 Metre Intruders

I wish to raise what I consider to be a very serious matter.

Tuning across the 10 m Band any day between 3.00 pm and 9.00 pm EAST, one finds the band full of intruders.

These intruders are Indonesian nationals using our AMATEUR band for CB operation.

In fact the spectrum from the 27 MHz CB allocation to 28.8 MHz is full of these intruders - there must be thousands of them.

To all intents and purposes 10m is useless for DX into Asia during the above mentioned times. If a clear spot is found your contact is likely to suffer deliberate QRM.

If you call CQ you are likely to be called by an Indonesian pirate (yes they have SSB rigs too!)

To be called by an unlicensed intruder I gard as the ultimate insult.

Therefore I hope by now Australian amaurs are aware of this problem.

I hope that action is being or will be taken federal level to obtain some relief in this atter.

At the very least I would hope that the donesion authorities are reminded of their ligations under the ITU agreement and at Australian amateurs are daily being sulted and inconvenienced.

IAN BERWICK VK3ALZ
107 LOONGANA AVE, GLENROY 3046

(Ian's letter was referred to the Federal truder Watch co-ordinator, VK4KAL, and s response follows. We will also discuss the oblem with DOTC. Ed)

Agree . . .

I quite agree with Ian's concern, it is seris and I don't know what the action will be. n DOTC or ITU or anyone else impose any strictions on these illegal operations? The 3ers ARE NOT all from INDONESIA, I ve reason to believe that THAILAND shares is honour (my informant is one well versed Asian languages). It would also appear at these sets are being manufactured spelly for the 10m band, at a spacing of 25 Iz...A3 mode channelized. There are just many transmissions for the sets to be nverted...VK6RO logs over 2,500 CBers each nth from his own QTH...I would estimate 00 each month come to my notice.

If we were fortunate enough to find out who e manufacturer is, and if it happened to be supplier of Amateur Rigs, well just maybe a ycott could be considered. Could Governnt do anything through DOTC? I mened this matter to Bill VK2COP to see what can "unearth" via David Rankin.

It would appear that many have ignored eir leaders in our immediate north. Counes can't win respect by these tactics. Maybe few kilowatts of power would deter em...I've heard a W or two do just that, very ective!

I'm sorry, Bill I've got NO solution to the oblem, I do not know how to get through to ese people, any more than I know how to get re observers!

I can only suggest to Ian that he sit on an truder and make him move first, it does rk some of the time, especially if your ntact has more power.

Not having a magic wand, I can only pass my kind regards.

GORDON LOVEDAY VK4KAL
FEDERAL INTRUDER WATCH
CO-ORDINATOR
"AVIEMORE" RUBYVALE 4702

Whingers

This is a response to the discussion point raised by David (VK4BGB) in his letter about whingers in the October issue.

David need not worry about whingers influencing other members by writing to AR. Our editor will censor opinions which might lure members away from the party line. He will also add editorial interjections to the parts of letters actually published and follow up with a persuasive editorial and other advocatory journalese to support executive opinions and edicts.

A threat to resign from the institute as a protest against a federal executive edict is a form of blackmail, but probably justified, because ordinary members of a WIA division have no other form of redress for what they perceive as the wrongs of the federal executive. The executive is not elected by a poll of ordinary members.

The cost of the proposed increase is not the problem David; most members can easily afford that, but the divisions cannot afford to lose members and potential members because the increase does not guarantee better value.

The federal executive is becoming a group of entrenched officials who make decisions at meetings conducted in camera. They stifle debate about those decisions, and label dissenters ill-informed fools or, like David, label them whingers. Such derogatory comment is foolish because it will alienate the really useful members; those who want to exercise their democratic right to participate in the decision making.

The Federal WIA is a private company established in 1972 to sell services to the divisions (see the Memo and Articles of Association). In the meantime the company executive have developed an authoritarian control of the divisions and their members and in their turn are being manipulated by the government bureacracy to the point of being an arm of that bureacracy. The exception is the general manager and staff who are genuinely providing service. The cost of the service is of course in the hands of the purveyor. For those interested in regaining member control I suggest winding up the federal company or disbanding the federal company and the divisions and replacing these with a genuinely democratic National Institute. I also suggest the divisions conduct, separately, a postal poll of all members to assess the acceptability of those options.

One final comment which David and other readers might consider. The proposed increase is to cover present fund shortfall which includes the salary of a bargain priced manager. What provision is there for a future in which paid executives will demand their market value?

LINDSAY LAWLESS
BOX 112
LAKES ENTRANCE 3909

(Little of what you say actually corresponds with the facts, Lindsay. To take your comments in order:

i. No opinions are censored. They may be abbreviated to save space. Very rarely, if completely incorrect or perhaps libellous, they may be rejected and the writer privately advised why.

ii. "Executive opinions" and "party line" are emotive journalese, implying malfunction where none exists. Executive decisions are in accordance with Divisional viewpoints and reflect authority given by Divisions to the Executive. Sometimes there are misunderstandings, in which case if it has acted against a Divisional intention, Executive is rapidly requested to revise its action. We do not issue edicts!

iii. "Ordinary members" have at least two "forms of redress" against "perceived wrongs". They can write to AR (as you have) or to the Executive, or they can talk to their Federal Councillor (who now meets with Executive four times a year). Resignation achieves nothing.

iv. Speaking as one of Executive's "entrenched officials", I would welcome the opportunity to retire and hand over to a successor. There seems no rush of applicants, either for Executive or the Divisional Councils. Meetings are not "in camera"; "ordinary members" may attend if they wish. Debate is not "stifled". Some people ARE ill-informed, and some ARE whingers. The "democratic right" to participate in decision making implies an obligation to know what you are talking about!

v. "Authoritarian control of the Divisions" is more emotive verbiage. The Divisions control Executive, usually by reasonable discussion. Our relationship with the "government bureaucracy" is two-way, again by reasonable discussion. A "genuinely democratic National Institute" is what we all desire, but in the process of achieving it, let us be careful not to "throw out the baby with the bath-water!" Ed)

Very Trying?

In answer to a members' letter, in the October issue, you mentioned that the WIA had at least tried.

Yes, the WIA is trying all right. Trying hard to commit self-immolation!

Recently, we (in VK3) have seen: 1. The relocation of the rooms from a good, inner-city location to one that is remote from public transport; 2. The long-term closure of the Inwards QSL bureau; and, 3. As if to add insult to injury, a PHENOMENAL increase in membership fees.

The WIA will soon be drawing its members from only the "super-rich".

Please, WIA stop "trying".

TERRY ROBINSON VK3DWZ
21 RUSSELL AVE
WOODEND 3442

(The reasons for your complaint 3 have been covered in some detail, Terry. As for numbers 1 and 2, these are Victorian Divisional decisions. The Division may also respond to your letter. Ed)

The "Quiet" Call Channels

"Call channels" on all amateur bands have been allotted in WIA band Plans for a number of years.

The first allocation I am able to find on 2 metres is in the 1979 Callbook for channel 50 or 146.500 MHz.

There were probably nominated calling frequencies before this time. I would like to hear more of the history of the various call channels.

Until recently the WIA - intended use of these channels was not clearly defined. I quote the General Manager & secretary of the WIA, Bill Roper, VK3ARZ - P9 4 March AR "the CALLING CHANNEL of 146.500 MHz, or the old channel 50 is intended to be just that, a CALLING CHANNEL, and not a frequency for general conversation."

This intention has been announced on the Sunday WIA broadcast also.

A few amateur stations still continue to chat for lengthy periods on this Primary call channel (and other call channels on other bands).

I guess they may be uninformed in the recommended WIA Practice of making contact on a CALL CHANNEL then moving to a recognized simplex channel (or repeater) not in use. Eg 146.425 : 146.450 : 146.475 :146.525 : 146.655 etc.

Check the Band Plans for the Amateur Service on page 24 of February 1989 issue of Amateur Radio for the preferred frequencies for your operation.

If there is some technical reason that you have to hold a conversation on the call channel I would like to discuss it - just give me a call - on 146.500 and we will find somewhere to QSY.

If you do not wish to use the system of "Gentlepersons agreement" on which the band Plan is based, consider the following:

My fellow radio operator and I arrange to make contact on Call Channel 6500. He is using a 2 watt hand held. I have a mobile station - 10 watts. We are about to call and two base stations make contact on 6500 and carry out a long over QSO. I attempt to contact my fellow radio operator during the miniature break between the base stations' long overs. The base stations do not seem to hear our calls and continue on. We cannot hear each other but we are in contact range if the call channel were QUIET.

Next - Two "country" radio operators having a QSO on 6500, one base, the other mobile 50 km, from my base station. The base is S3 and the mobile "in the noise" to me. I wish to contact my fellow operator who is mobile 20 km away. He would be S1 to me normally from his position. We are not able to call without causing interference to the incorrect operators or waiting perhaps an hour for a QUIET call channel.

Lastly - DX on the SSB call channel 144.100. A base station close to mine puts 100 watts through two co-phased 13 element yagis up 15 metres. I have a 10 watt transmitter through one 11 element yagi up 10 metres. Guess what - the neighbour bags a contact on 144.100 from VK6 and does not attempt to QSY. If there were other DX I have no possibility of making a contact through the QRM unless the call channel is QUIET.

I hope through this article our fellow operators can see why we should follow the Band Plan which has been carefully devised over a long time and continues to be updated by a dedicated and experienced group of people elected to the task.

JOHN SMEDLEY VK5AJS
4 BENTLEY AVE
FULHAM GARDENS
5024

Use of Q Code

I refer to recent correspondence on the above subject from B Bernays VK6CH and KWH Perry VK5AFF. Both these gentlemen suffer from a lack of knowledge of the subject and an apparent lack of a sense of humour. To set the record straight, the following facts are presented. The Central Highlands ARC has 31 members from VKs 2, 3, 4 and 7. We pay no annual subscription, but raise enough funds to pay such expenses as the annual licence fee for the club station call by fining OUR members for sundry misdemeanours on air. No other amateur is affected by our club rules. Our authority for the banning of Q Code on phone is the ARRL Operating Manual 1980, page 31, which states "Q-signals should not be used on phone".

Finally, I can assure both gentlemen that they would be most welcome to our state at any time, and that they would receive the friendship and hospitality which is always offered to visiting amateurs.

BOB JACKSON VK7NBF
VICE-PRESIDENT CHARC
FALMOUTN
7215

UTC Time?

Let us have a policy of using UTC time throughout AR - our magazine is international, so let us forget local time. A stupid example: P35 AR Sept 1989 column 1 JOTA: When! Local time 0001 hours. (Local time where??) *(At any time zone worldwide - Ed)*. Further down the article - column 3 national broadcast 0400Z. (Still at the war!)

In WIA Directory P3 AR Sept 1989, you make it hard for interstate amateurs. *(UTC is impractical for broadcast times due to daylight saving changes Bob - Ed).*

AR seems to have forgotten the experimental side of our hobby - circuits suitable for beginners - I don't mean only novices.

BOB NEVILLE VK4NFE
124 ROSCOMMON RD
BOONDAL 4034

Book Availability

Following my review of the book "Secret Warfare", I received a few phone calls from amateurs unable to obtain the book. They were told it was not available etc. This is not so. A workmate had a copy sent to him from Britain about the time the article appeared in AR. I checked with the bookshop I obtained my copy from: Irene's Bookshop, 97 Bridge Street, Benalla, 3672, telephone 057 62 4304, and found that it is, indeed, still available.

It is likely to be obtainable through Angus & Robertson. If you are unable to obtain it through your own bookshop, Irene's Bookshop would be prepared to assist any who do want to obtain this book.

RODNEY CHAMPNESS VK3UG
2/95 BENALLA STREET
BENALLA 3672

Polarised Plugs

Further letters on this topic have been received from VK3YNB, the original author VK2BIN, and VK5RG. It was stated last month that this correspondence was now closed, and the letters from 3YNB and 2BIN do not introduce any new information to the discussion. We thank them, nevertheless, for their contributions.

However, the letter from VK5RG does make several points which have not been clarified before, and refers in some detail to the SAA Wiring Rules. We concede therefore that it should be published as the "last word" on the whole confusing situation. Ed.

Power Safety Article

I believe the letters "Over to you" in the October, 1988 issue, as, well as the Editor's apology for the p31, September article, have confirmed that most amateurs are sufficiently alert with respect to the dangers of AC mains and GPO configurations.

I make a few final observations on the correspondence:

A fuse or circuit breaker is installed in a circuit primarily to protect the cable - ie. from overheating and insulation flow caused by excessive current. The mistaken belief that it protects the equipment, regrettably continues, although equipment protection is one consideration.

Australian Standard AS 3000 - 1986 "SAA Wiring Rules", Section 7 ""Extra Low Voltage Installations" lays down requirements for up to 40V AC or 145V DC installations. An "installation" is defined in paragraph 0.5.5a, page 19, and as the ELV Section in most cases is a "portion of an installation", our wiring on our DC 12V circuits must comply with Section 7.

Paragraph 7.14 addresses plugs and socket-outlets and specifically where in the same premises there is an installation of a greater voltage, the ELV plugs and sockets must, in 7.14 (a) have voltages marked, and 7.14 (b) use plugs/sockets that are different from those used on the higher voltage.

The recommended plug/socket types are mentioned by other correspondents, and must comply with AS 3112.

The editor's comment about use of the 240V three pin flat plug being legal for 12V is subject to interpretation, but in my opinion contravenes AS 3000 1986, Paragraph 7.14 (b). Its use invites conjecture on validity of insurance, manslaughter charges, as well as the already mentioned damage to amateur equipment.

I might draw readers' attention to Paragraph 4.27 concerning Batteries — numerous rules are broken daily by amateurs, however be warned of flying red-hot copper if you use a rewirable fuse. Paragraph 4.27.4.1 requires the use of circuit breakers or enclosed (inferred) fuses at the Battery Terminals. Suitable 20-30 Amp, Automotive CB s are available from any auto supply outlet, are self resetting, and a must where battery installation are used.

ROB GURR VK5RG
PO BOX 35 DAW PARK 5041
ar

Rowland Bruce VK5OU (L) presents the Ross Hull Memorial Trophy to 1989 winner Trevor Niven VK5NC. Photo Ian Hunt VK5QX

"I always operate on beacon frequencies, OM . . . . . lots less QRM!!"

Bill Martin K2COP

HAMADS

TRADE ADS

AMIDON FERROMAGNETIC CORES: For all receiver and transmitter applications. Send large SASE for data and price to RJ & US Imports, Box 157, Mortdale NSW 2223. (No enquires at office please...11 Macken St, Oatley). Agencies at: Geoff Wood Electronics, Lane Cove; Webb Electronics, Albury; Electronic Components ACT; Truscott Electronics Vic; Willis Trading Co WA; Associated TV Service Hobart.

SATFAX: weather satellite picture receiving program for IBM XT/AT. displays in 64 colours. Needs EGA colour monitor & card. AM domodulator & ADC interface. $45 + $3 postage***
RADFAX2: HF weather fax, morse & RTTY receiving program for IBM XT/AT. Needs CGA, SSBHF, FSK/Tone decorder. Also "RH2HERC" & "RF2EGA", same as RADFAX2 but suitable for Hercules & EGA cards respectively. $35 +$3 postage***All programs are on 5.25*. 360K floppy + full documentation. ONLY from M.Delahunty, 42 Villiers St, New Farm 4005 OLD Ph (07)3582785

AMATEURS! — receive FAX/RTTY/CW using your computer and famous Listening Post Project. Software for Apple II, Mocrobee, C64/128 (no CW). Commodore program is new, more features! All print out using common dot-matrix printers. Apple & Commodore put fax on-screen. Full documentation. $32, post free, anywhere in VK. FT Promotions, PO Box 547 Rozelle NSW 2039. Ph: (02) 818 4838. Fax: (02) 818 2949

FOR SALE - ACT

YAESU FT707 transceiver with digital VFO, ATU & mobile mount. Gear in excellent condition is complete with all handbooks and workshop manual $800. Swan 100mX mobile transceiver with matching power supply. Unit is in excellent condition and is complete with owner's handbook $600. Both units are working 100% and have no known faults. Phone Richard VK1UE (062)581228 or QTHR.

FOR SALE - NSW

DECEASED ESTATE of VK2KBB. Bruce Cross 22 Crescent Ave, Taree. Telephone (065)522692
Yaesu V/UHF FT-726R fitted with 70cm & satellite units. Realistic offer. Yaesu FT-270 RH with external speaker & voice unit $650. Tokyo Hy-power amplifier HL-1207 new $500. Tokyo Hy-power amplifier HL-180V as new $400. Tokyo Hy-power amplifier HL-85V $250. FT 101 with antenna tuner $525. Kempro rotator $200. 2 metre satellite 20 element antenna with masthead amplifer $400. Skeleton slot 5x5 $200. Midland 10MZ with CB crystals $100. Power supply 12V & 5V $50. DX 160 $80. Regulated power supply $50. Preamplifier $35. Amplified Realistic speaker $30. Plus various other antennas etc.

MARCONI TF801A/1 sig generator 10-310 MHz $150. USG20D sig generator 120 kHz - 500 MHz $50. University 3 inch CRO $75. Palec VT (probe) multimeter $35. VK2ETH QTHR. (065)822928.

Kenwood TS430S TCVR with CW filter. As new little use. Mic manual orig packing $1,100. Kenwood PS430 power supply $350. VK2ETH QTHR (065)822928.

Late model kits for electronic IAMBIC keyers from California. Call VK2AXR, Al in Sydney (02)4776275 after 6pm.

ALPHA 374 HF amplifier grounded grids for three 8874 tubes. Manual or preset band tuning networks - $1650. (02)3492636.

Bargain. TS93OS Kenwood. Recently fully serviced by Kenwood. Mint condx. Manual, original carton. Air test available. QTHR Harry VK2DA. $2,000 lic Amtrs only. (02)941039 or (02) 949 1195 PM.

HF linear Eimac 4CX1000A vacuum capacitors B & W tank circuit C core transformers 100% duty cycle at legal limit. VK2DTR (02)9183835.

EIMAC 4CX1000A tube socket & chimney, silver-plated tank circuit, HF Millen band switch, Vac-caps 1000 pF 10,000V ceramic-1000 pF 5000V glass-10 pF filter 5000V (02)9183835.

TS820S handbook, mic, $450. ATU new $175. 2 mtr transceiver, P/S etc $100. 14AVQ vert ant $60. John QTHR (02) 638 4191 VK2ANX.

SIEMENS model 100 and model 15 type teleprinters both with manual and circuits. Model 15 has spare printing hammer $25 each. 240V to 115V stepdown transformer suitable for such teleprinters $50. Phone John VK2CJV (02)8095024 QTHR.

FOR SALE - VIC

ICOM 735 HF transceiver 6 months old HK electronic keyer, spare power lead, mobile head-set mint cond $1600. Kenwood VHF transceiver TM255OA 45 Watts 23 memory has DCL channel link fitted mint cond $500 both with manuals & orig boxes. (03)7269222 aft 5 pm.

MICROBEE 32k RAM computer, fitted with internal ROMPAK. Contains word processor, Z80 editor/assembler, Logo, spreadsheet, EPROM programmer & RTTY programs in EPROM. Microbee Technical Manual and Engineering Notebook, much other information. RTTY modem (XR2206/XR2211 ICs) with connecting cables. ETI-668 Microbee EPROM programmer $350. Icom IC22S 2m FM Transceiver, very good condition, with bracket, mic and handbook. Yaesu FP-2 base PSU/SPKR. Homebrew external programmer/digital display/priority channel monitor. 1/4W ground plane antenna $250. DSE 80m HF SSB Transceiver, with bracket, mic and handbook, 15m conversion kit. Regulated mains PSU in matching case. Low-pass filter. 3-way antenna switch $350. Bob VK3BMA QTHR, (03)4042241 AH, (03)6573708 BH.

ICOM IC2A 2 metre hand-held c/w original packaging, leather case and charger. Nicad batteries recently replaced $190. Peter Hamilton VK3XFO QTHR (03)7231694 AH.

ZENITH radio frequency meter $30. Hansen SWR power meter $50. Roller inductor with counter $50. Kingsley receivers four off one with coil boxes power supply $40 lot. Heathkit comm receiver xtal filter plus manual $40. VK3ABW. Phone: (03) 568 7428.

KENPRO 2000 heavy duty rotator $450. ONO Ted VK3TG 14 Nottingham St, Port Arlington 3223 (052)593225.

AWA VHF FM all valve xmitter 50 Watts output 10 sets of xtal freqs RGV, RML, RBA, RMM (old) RMM (new), RWZ, RGL, RCV, 40, 50 plus room for more. Wall mounted frame all in VGC - also spare valves ideal base stn. Make me a fair offer. Arthur VK3CUA QTHR - (054)437425.

STC31 VHF FM hybrid trxmitter has 3 xtals freqs RML...ch40, ch50. Output power 15 Watts...spare valves. With circuit $60. Arthur VK3CUA - QTHR (054)437425.

---

2 M FM 8 element mono band cubical quad all aluminum structure one fibre glass spreader for each loop. 9 mm alum tubing (loops) 14 ft alum boom - approx - gain 13.5 DBI easy to assemble and to tune (no drill holes) $120 - ONO - VGC. Arthur VK3CUA - QTHR - (054)437425.

FT230R 2m FM transceiver to swap for 10 m mobile SSB transceiver Stan VK3BNJ (03)7436708.

KENWOOD TS-440S transceiver VGC plus full service manual $1,750. Kenwood TL-922 linear amp mint cond $2,500 ONO. Welz RS-3050 DC power supply 30A peak, variable voltage $450 ONO. Daiwa CNW518 2kW ATU $450. Nally tower 14.5 m foundation pipe $1,250 ONO. Kenpro KR-2000 RC 12 mths old cost $950 sell $750 ONO. Kenwood phone patch controller & line isolation unit WIA VK2 inspected and Telecom approved $100. Several 20 plus metres of RG8U & RG213U $45 each. Arlec 18A surge battery charger $140. Maldol 2 kW 1:1 balun $35. MFJ 6 pos coaxial switch box suit HF & VHF $90. CW key on base $40. Heathkit kW Dummy load $50. EM5 multiband HF mobile whip with spring loaded pipe mast which mounts on towbar $95. 10 m mobile whip $35. 2x8 el 2m phased beams some elements need repair $85. 10 el SSB 2m beam some elements need repair $50. 6 m length 49 mm diam 4 mm thick high tensile scaffolding aluminium $80. Chirnside multi-band vertical base ant $60. Various other assorted bits & pieces for sale eg C.42 FM transceiver & matching tuner $45. Please enquire (03)359.2903. Paul VK3CGR.

KEN KP202 2m hand-held 6 ass channels C/W nicads and drop-in charger GC $120. STC 151 B 25 Watt mobile on 2m, handbook GC $65. QTHR (054)286309. VK3ZJS.

ANTENNA w wulf duo band Yagi ten and fifteen metres. Assembly and tuning details. Good condition $140. VK3GRB QTHR (03)5921944.

YAESU FL2100B linear mint condition in carton $900. Ken VK3ASN QTHR (03)8425905.

FOR SALE - QLD

YAESU FT101E VGC in orig box with manual, unused spare finals and spare driver $450. Kenwood AT130 ATU with mobile mount $125. Graham VK4GD QTHR (07)3780798.

MICROWAVE MODULES MML 432/50 70cm linear amplifier 50 Watts $350. Ampere APB-82A 2 metre linear amplifier 80 Watts $250. Ross VK4IY QTHR (075)651445.

HIGH POWER military amp SL42, 1kW CW continuous, 23-60 MHz. 7 metal boxes: transformer, rectifier, filter, PA, SW indicator, C42/C45 AC PSU, Yagi. Rack assembly, all cables, manual. Missing L348/U2 control unit. Weight approx 500 kg. Offers to VK4APD QTHR. (07)3973751 evenings.

ICOM IC505. 50 MHz transceiver with FM adaptor base power supply and manuals $400. Kenwood TM257OA 144 MHz transceiver with base AC supply and manuals $500. Ken VK4BX QTHR (070)913040.

FOR SALE - SA

TELCON semi air spaced twin coax 2kW to 2m, transmitting tubes 4-65A; 4E27(813) Grundig reel-to-reel recorder two sets tubes KW2000; Portable Diathermy 600 watts 7 metres; Post-war receiving tubes new ribbon micro - VK5LC QTHR (08)2716841.

FOR SALE - TAS

NEW TUBES 2C39BA QQE06/40 QB3/300 $40 ea. QQE03/20 QE05/40F 6883 $20 ea. QQE03/12 QQE02/5 QQE04/5 $10 ea. QE03/10 5763 12BY7A E88CC E18OF $5 ea. Lionel VK7ZLB QTHR (003)272799.

SWAP - ACT

NIKON camera system VGC. Incl wide range of accessories, for crankup tiltover tower and/or mobile rig recent vintage HF/VHF similar value VK1RJ QTHR (062)885394.

WANTED - ACT

YAESU mobile antenna gutter-grip type. Only need RSM-2 base, lead and 2m antenna. Contact Richard VK1UE (062)581228 or QTHR.

WANTED - NSW

FTV107R xvertr, SP107P spkr, FP107E pwr supp, all ivory faced. EAT2000 ATU also wanted Ken VK2LT (02)5195669.

Trapped vertical HF also 2m amp. (066)723625 A/H VK2AVS.

Butternut HF6V antenna in very good condition 10-15-20-30-40 and 80 mtrs. Phone or write to Steve (02) 6541809. VK2PS QTHR.

WANTED - VIC

TH3-JR triband antenna or similar - Leo VK3BSX (03)5983115. QTHR.

KENWOOD SWZ00 coupler type SWC1 1.8-150 MHz. (03)7837717 QTHR. VK3ZLA

RSL14 14 MHz resonant whip to suit Yaesu RS series mobile antenna. Stan VK3BNJ (03)7436708 QTHR

ACCESSORY for Yaesu FT901 or FT902 transceiver like FV901D7, YO901, speaker. Fred Kent (058)646287 QTHR (058)622545 FAX.

PLEASE don't throw out those QSL cards. Please contact Ken VK3TL on (059)643721 or PO 1 Seville 3139. WIA QSL collection hon curator.

BSR tone arm assy required turn overhead STD to LP to suit Kreisler model 11-37 table radio gram. Also photostat of circuit mould be appreciated. Neil VK3YLW (03)5804312. QTHR

FT101ZD Yaesu in GC will pay good price for good unit Damian VK3EHP (053)524183 aft 6pm not QTHR.

HAMADS

Please Note: If you are advertising items For Sale and Wanted please use a separate form for each. Include all details; eg Name, Address, Telephone Number (and STD code), on both forms. Please print copy for your Hamad as clearly as possible.

*Eight lines free to all WIA members, ninth line for name and address Commercial rates apply for non—members. Please enclosed a mailing label from this magazine with your Hamad.

*Deceased Estates: The full Hamad will appear in AR, even if the ad is not fully radio equipment.

*Copy typed or in block letters to PO Box 300, Caulfield South, Vic 3162, by the deadline as indicated on page 1 of each issue.

*QTHR means address is correct as set out in the WIA current Call Book.

*A courtesy note will be forwarded to acknowledge that the ad has been received.

Ordinary Hamads submitted from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re—sold for merchandising purposes.

Conditions for commercial advertising are as follows: $22.50 for four lines, plus $2.00 per line (or part thereof) Minimum charge — $22.50 pre—payable.

❑ Miscellaneous

❑ For Sale

❑ Wanted

Name: .....

Call Sign: .....

Address: .....

.....

State: .....

WANTED - QLD

BUY or borrow manual Hygain 402BA 40 metre beam so I can convert old TH6DX beam to it VK4EF 97 Jubilee Tce Bardon Brisbane 4065 (07)3661803 AH.

KENWOOD speaker SP930. Graham VK4GD QTHR (07)3780798.

ROTATOR suit Yagi 3 element beam must be good condition Len VK4BIH QTHR (07)3963650.

FOR EDDYSTONE RX valves UAF42, UCH42, UL41. Can anyone help please? Will pay reasonable price, postage etc John VK4WLX QTHR (071)947443.

DESPERATELY need copy of EMI record or tape Joe Loss orchestra carnival SCXP 7785 if tape best quality material please. Allan VK4FBB QTHR (071)921948.

WANTED - SA

SIX METER conversion details for Bushranger CB or similar unit any help appreciated. Alan VK5BWG PO Box 1337, Stirling North, 5710, Sth Aust.

WANTED - TAS

AUSTRALIAN official radio service manuals vols 1, 6, 9, 12, 13 & 14 R&H Jan 45, Feb 45, Feb 46, Mar 48, Dec 48, May 49, Feb 51, Apr 51, Mar 52, Dec 52, May 58, Jan 65. Lionel VK7ZLB QTHR (003)272799.

TYPESETTING : Redfords Media
25 Glenferrie Rd
Malvern 3144
Tel: (03) 500 0377

PRINTING: Industrial Printing
Richmond

MAIL DISTRIBUTION: Polk Mailing Co.
PO Box 140,
Collingwood,
Vic. 3066
Tel:(03) 417 5161

ADVERTISER'S INDEX

ATN Antennas 45
Callbook 13
Dick Smith Electronics .. 22,23,24,25
Electronics Australia ..... IBC
Electronics Today International .. 29
Emtronics 7, 9
Ian J Truscott's Electronic World 35
Icom Australia ..... OBC, 32,33
Kenwood Electronics Aust. .. IFC, 17
Magpubs 27
Q D Electronics 31
Stewart Electronic Components .. 31
VHF Magazine 45
Vitcall 20
WIA NSW Division 37

TRADE ADS

RJ & US Imports 62
M Delahunty 62
FT Promotions 62

HOW TO JOIN THE WIA

Fill out the following form and send to:

The Membership Secretary
Wireless Institute of Australia
PO Box 300
Caulfield South, Vic 3162

I wish to obtain further information about the WIA.

Mr, Mrs, Miss, Ms: .....

Call Sign (if applicable): .....

Address: .....

.....

State and Postcode: .....

Radio Amateurs: Have you checked out EA lately?

No doubt most radio amateurs are aware that *Electronics Australia* is by far this country's largest-selling electronics magazine, as well as being its oldest (we began way back in 1922, as *Wireless Weekly*). But have you looked inside the magazine lately?

Remember Jim Rowe, VK2ZLO? Jim used to be Technical Editor, and then Editor – back in the late 1960's and 1970's. You may recall some of the amateur radio and test equipment projects he developed, which proved to be extremely popular. Well, Jim is back at the helm of the magazine, and has been busy giving it a new lease of life.

You'll now find lots of new 'departments' in the magazine, including Solid State Update (with news of new semiconductor devices), Silicon Valley Update (news from the USA) and What's New in Entertainment Electronics. Plus all of your old favourites like Forum, The Serviceman, Circuit and Design Ideas and so on. And of course plenty of 'meaty' technical articles and contruction projects.

FEATURES IN OUR DECEMBER ISSUE:

AUSTRALIA'S SCHOOL OF THE AIR

For almost 40 years, the RFDS radio network has been providing over-the-air lessons to Australia s outback kids. A look at the School of the Air, written by Mervyn Eunson, VK4SO.

HIGH SPEED PHOTOGRAPHY WITH A VIDEO CAMCORDER

Take advantage of the high speed electronic shutter on your video camcorder, to examine things like a smashing light globe. Tom Moffat explains how...

HAM TALK

Another article in our occasional series on amateur radio topics. Here we look at the story of one of Australia's oldest hams: Clem Henry VK2UR.

What about *amateur radio* projects? Well, there still aren't too many, at present – Jim Rowe's been a bit too busy! But he's *very* interested in boosting the amateur radio content, so if YOU have developed an exciting amateur radio project, please contact Jim by writing to him at EA, 180 Bourke Road, Alexandria 2015 or phoning him on (02) 693 6620 – to discuss the possibility of publishing it as a contributed article.

Take a look at the new, rejuvenated *Electronics Australia* – on sale at your newsagent at the beginning of every month. Or subscribe now, by phoning (02) 693 9517 or 693 9515.

Electronics Australia

Australia's Top Selling Electronics Magazine

ICOM'S NEW HF TRANSCEIVER HAS MORE ARROWS THAN ANY OTHER HF TRANSCEIVER.

Frequency synthesis by Direct Digital Synthesizer which provides low noise floor and fast lock up.

Built in controller for automatic antenna tuning. Compatible with AH-3 HF automatic antenna tuner.

Twenty six memory channels. Channels 23 and 24 memorise both receive and transmit frequencies for split operation.

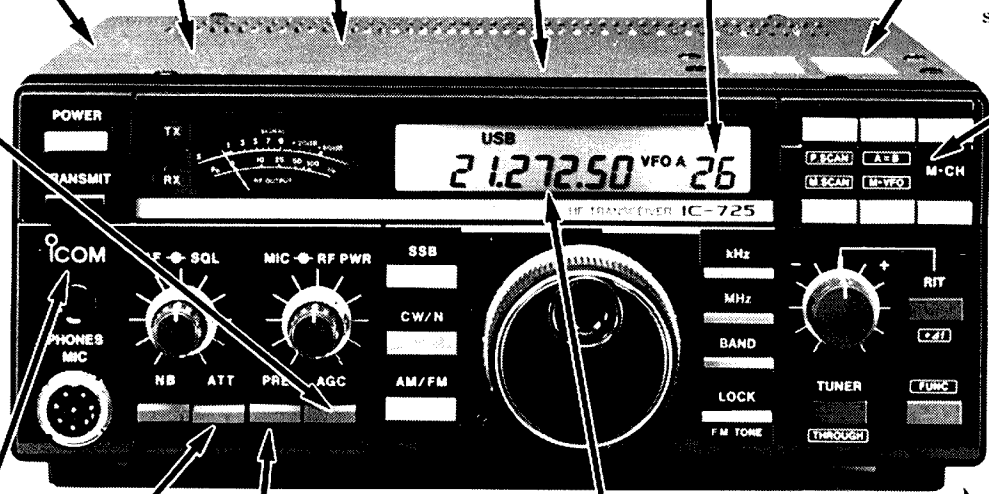
Semi break-in with adjustable delay timing and sidetone for CW operation.

Band stacking register (identical to that of IC-781).

105 dB dynamic range.

Three scans: programmed, memory and selected mode memory.

Automatic gain control (fast/slow).



20 dB receiver attenuator.

Switchable tuning steps, 20Hz, 50Hz, 1KHz and 1MHz.

And one highly advanced feature that no other brand of transceiver will ever have. Call Melbourne on (03) 529 7582 or interstate on (008) 338 915 for your nearest Icom stockist.

10 dB receiver preamplifier.

General coverage receiver 30KHz to 33MHz. (500 KHz to 30 MHz guaranteed.)

Built in CI-V system for computer control (CT-17 required) and transceive function.

100 watts output on USB, LSB and CW transmitting and receiving. 100 watts FM and 40 watts AM with optional unit.

ICOM