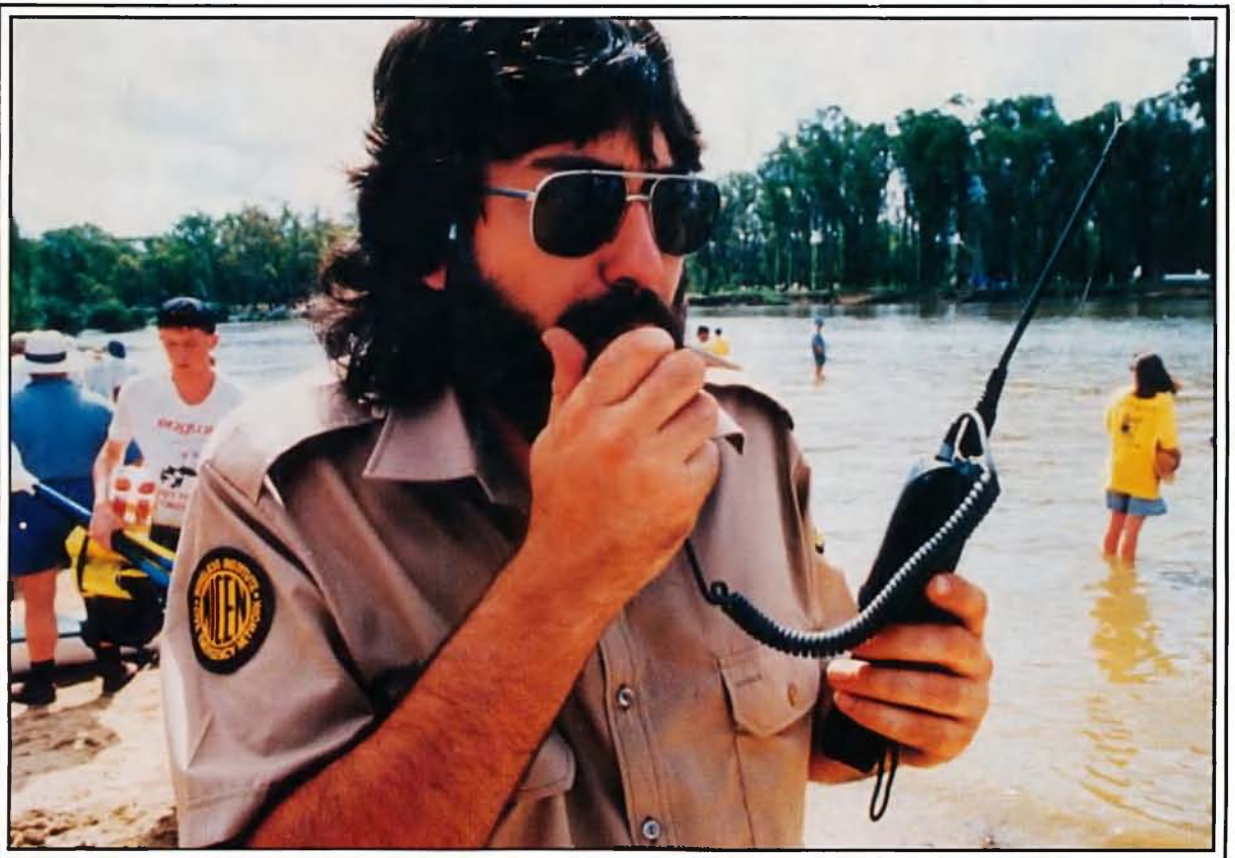


# RADIO **AMATEUR**

JANUARY 1994  
Volume 62 No 1



Journal of the Wireless Institute of Australia



## **IN THIS ISSUE:**

**WICEN Seminar**

**More on Getting a Multiband HF Vertical to Go**

**Part 2 of a Bandwidth Limited LF Converter**

**Interference Cancelling**

**and lots more**

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*Amateur Radio* is published by the Wireless Institute of Australia, ACN 004 920 745 as its Official Journal, on the last Friday of each month.

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**Deadlines Editorial Hamads**

February 10/01/94 12/01/94

March 07/02/94 09/02/94

April 07/03/94 09/03/94

Delivery of AR: If this magazine is not received by the 15th of the month of issue, and you are a financial member of the WIA, please check with the Post Office before contacting the registered office of the WIA. ©

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**Cover**

Rod Taylor VK3XRW operating at WICEN checkpoint 'Bravo' during the 1992 Murray River Canoe Marathon. Checkpoint 'Bravo' was located in a State forest 20 km west of Yarrowonga.

Photo: Australian Geographic

## Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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## Federal QSP

Here we are at the start of another year so let me begin by wishing you all a **Happy and Prosperous New Year** on behalf of the Federal Council and the Federal Office. I trust that the New Year brings you all that you wish for you and yours.

As we look forward towards this new year of 1994, we once again turn our minds to the international scene as this is the year for the triennial IARU Region 3 meeting, this time to be held in Singapore. It is an opportunity for the representatives of the member societies to get together to discuss matters of mutual concern and interest. Matters for discussion also include items from the IARU Administrative Council as well as from the other two Regions.

One area of amateur radio activity which has been fostered in Region 3 in recent years has been the sport of ARDF, or Amateur Radio Direction Finding. It's a little different from the radio fox hunts many of us are familiar with, being more akin to a combination of orienteering and pedestrian foxhunting.

October 1993 saw the holding of the first IARU Region 3 ARDF competition in Beijing in the People's Republic of China. The WIA was well represented by Wally Watkins VK4DO and Frank Sleep VK4CAU. Wally has submitted an article for *Amateur Radio* which should appear shortly so that we can all learn more about this new sport.

As we start this new year, let us all remember that, as radio amateurs, we can overcome the adversities that surround us if we all take the trouble to try and work together. Some things may not happen overnight and may take what, to you, seems to be an inordinate length of time to achieve. Rest assured, however, that matters are never forgotten. Like great forests, they take some time to come to fruition, but it does need us all to help.

Let us start this new year as we mean to continue, and become more active in our hobby, whether it's simply being on air more often, or helping out behind the scenes.

I, for one, hope to get on air more often and look forward to seeing you there.

**Kevin Olds VK1OK**  
Federal President  
ar

## Editor's Comment

### The Same Old Story?

Back in May 1990 the editorial was entitled "Why Join the WIA?" The question had been asked a few times before that over the years, usually with the same answers. Here I must admit that asking the question in these pages is mostly "preaching to the converted". We can only make our views known to potential members if you, our present members, read *Amateur Radio* and also show it to your non-member friends. Or at least tell them about it!

I was surprised to find that, in fact, many things had changed since 1990. Not so much the answers as the organisation of the WIA itself. Similarly, the organisation of our supervisory body has changed. Even the Act under which we enjoy our "hobby" is new. Incidentally, I do not like the word "hobby" for amateur radio. It's rather like equating Formula One car racing with dodgem cars in an amusement park! But what other word is there?

In 1990 I referred to some peoples' picture of the WIA management as being an entrenched minority of stodgy old-timers; and I invited those who wanted change to join their Divisional Council or the Executive and provide some "new blood".

So what has happened? Executive has ceased to exist! Half the Federal Councillors have only been

Councillors for a year or so. Most of the Divisional Councillors are also new names. The WIA has changed very considerably in only a few years. If some amateurs refused to join because "Joe Blow" was "in the chair", think again! Joe Blow has probably been superseded! That in itself doesn't guarantee improvement, but at least it demonstrates willingness to change.

Some things don't change. We now have as members only 34% of VK licensees, even less than in 1990. Total licensees are less than 18000 (about one in a thousand of Australian people). So we have as members only 0.034% of the population! Nevertheless we amateurs have access to more space in the spectrum than any other service except Defence.

The Citizens' Bands are tiny in

comparison, yet there are well over 200,000 licensed Cbers. If there are to be changes here, who has the numbers? Can we justify our spectrum space? Only as a coherent organised body representing all VK amateurs. If all VK amateurs also helped to pay for the WIA, our subscription fees could be reduced to less than half their present \$40 — \$72 (depending on Division and grade).

Changes in the DoTC have created the Spectrum Management Agency (SMA). That word! Spectrum. It is a finite resource, to become a tradeable commodity on a national market. Who bids on behalf of the amateur service? Only the WIA. Does it have your support? Can it survive without you? Can you survive without it?

The future of amateur radio depends on YOU!

ar

## 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	1994 Fees
VK1	ACT Division GPO Box 600 Canberra ACT 2601 Phone (06) 247 7006	President Christopher Davis Secretary Hugh Blemings Treasurer Don Hume	VK1DO 3.570 MHz LSB, 146.950 MHz FM, 438.525 MHz FM each VK1YYZ Monday evening (except the fourth Monday) commencing at VK1DH 8.00 pm.	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK2	NSW Division 109 Wigram Street Parramatta NSW (PO Box 1066 Parramatta 2124) Phone (02) 689 2417 Fax (02) 633 1525	President Terry Ryeland Secretary/ Roger Harrison Treasurer (Office hours Mon-Fri 11.00-14.00 Wed 1900-2100)	VK2UX 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 VK2ZTB (* morning only) with relays to some of 14.160, 18.120, 21.170, 584.750 ATV sound. Many country regions relay via a local 2 metre repeater. Sunday 1000 and 1915. Highlights included in VK2AWX Newcastle Monday 1930 on 3.593 plus 10mx, 2mx, 70cm, 23cm. News headlines by phone (02) 552 5188. Some broadcast text can be found on the Packet network.	(F) \$66.75 (G) (S) \$53.40 (X) \$38.75
VK3	Victorian Division 40G Victory Boulevard Ashburton Vic 3147 Phone (03) 885 9261	President Jim Linton Secretary Barry Wilton Treasurer Rob Hailey Office hours Tue & Thur 0830-1530	VK3PC 1.840MHz AM, 3.615 SSB, 7.085SSB, 53.900 FM(R) Mt Dandenong, VK3XV 146.700 FM(R) Mt Dandenong, 146.800 FM(R) Mildura, 146.900 VK3XLZ FM(R) Swan Hill, 147.225 FM(R) Mt Baw Baw, 147.250 FM(R) Mt Macedon, 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday.	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK4	Queensland Division GPO Box 638 Brisbane QLD 4001 Phone (07) 284 9075	President Ross Marren Secretary Lance Bickford Treasurer David Travis	VK4AMJ 1.825, 3.605, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, VK4ZAZ 28.400 MHz. 52.525 regional 2m repeaters and 1296.100 0900 VK4ATR hrs Sunday. Repeated on 3.605 & 147.150 MHz, 1930 Monday	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK5	South Australian Division 34 West Thebarton Road Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Bob Allan Secretary Maurie Hooper Treasurer Bill Wardrop	VK5BJA 1820 kHz 3.550 MHz, 7.095, 14.175, 28.470, 53.100, VK5EA 147.000 FM(R) Adelaide, 146.700 FM(R) Mid North, VK5AWM 146.900 FM(R) South East, ATV Ch 34 579.000 Adelaide, ATV 444.250 Mid North Barossa Valley 146.825, 438.425 (NT) 3.555m 146.5000, 0900 hrs Sunday	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK6	West Australian Division PO Box 10 West Perth WA 6872 Phone (09) 386 3888	President Cliff Bastin Secretary Treasurer Bruce Hedland- Thomas	VK6LZ 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. VK6OO Country relays 3.582, 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 146.700 at 1900 hrs.	(F) \$60.75 (G) (S) \$48.60 (X) \$32.75
VK7	Tasmanian Division 148 Derwent Avenue Lindisfarne TAS 7015 Phone (002) 43 8435	President Andrew Dixon Secretary Ted Beard Treasurer Peter King	VK7GL 146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on VK7EB 147.000 (VK7RAA), 146.750 (VK7RNW), 3.570, 7.090, 14.130, VK7ZPK 52.100, 144.150 (Hobart) Repeated Tues 3.590 at 1930 hrs	(F) \$69.00 (G) (S) \$55.65 (X) \$40.00
VK8	(Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).		Membership Grades Full (F) Pension (G) Needy (G) Student (S) Non receipt of AR (X)	Three-year membership available to (F) (G) (X) grades at fee x 3 times.

Note: All times are local. All frequencies MHz.

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# WICEN — Victoria Co-ordinator's Seminar

*Howard Small VK3DLH\* describes an important WICEN event*

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**Photo 1 (l to r) Nicholas Kanarev (instructor at AEMI), David Tilson VK3UR, Richard Scott (SES Regional Officer) and Hal Hallenstein (State Coroner) chat during a break at the seminar.**

When the Victorian WICEN Management Committee approved David Tilson's (VK3UR) proposal for another two day live-in Co-ordinator's seminar, it agreed that the priority for training this time should not be related to amateur radio. This might seem strange as we all know that WICEN volunteers simply have to use their technical skill to provide communications for other agencies in an emergency. Training, surely, should therefore revolve around the best way to provide communications? In other words it should revolve around amateur radio.

This was a common belief and it showed that the issues of emergency communication management and planning weren't being considered. All amateurs have a level of technical skill by virtue of having obtained a Certificate of Proficiency. Very few amateurs have training or experience in emergency response management. Now that WICEN is a

recognised agency under the Victorian State Disaster Response Plan (DISPLAN) there is an obligation to provide its service at a professional level. This entails provision of communications in total: the provision of equipment and trained operators at a consistent level of performance over an extended period in adverse conditions. The Co-ordinator's role is to make sure this happens and at the same time to plan for the support and administration required to ensure the well-being of the WICEN operators in the field.

Being volunteers does not take away any of the responsibilities attached to this role. Usually it makes them even more demanding as the volunteer has the duties of the professional without the luxury of full-time related employment allowing for extended preparation and training.

The seminar was to address these issues and help Co-ordinators understand and prepare for their

obligations. All Co-ordinators from WICEN Victoria, WICEN representatives from ACT, NSW, SA and Qld and a representative of the WIA were invited: a total of forty-three attended the Victoria Police Training Academy facilities at Glen Waverley (an eastern suburb of Melbourne). Cost of the seminar (some \$3,000), given the importance of the training and the voluntary participation by Co-ordinators, was to be met fully by WICEN.

The seminar started with a presentation by Acting Inspector Ken Mackey, Victoria Police. The Chief Commissioner of Police has overall responsibility for DISPLAN in Victoria and it is through Inspector Mackey that he exercises his authority. The presentation on DISPLAN structure and responsibilities was authoritative and clarified WICEN's role. It also drew attention to the legislative authority that exists to ensure emergency services can operate unhindered. Inspector Mackey gave some interesting examples of the way this can be used to support WICEN if required.

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## *The presentation on DISPLAN . . . clarified WICEN's role.*

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Those who believed that proper counselling after an incident was a "Yuppie" activity not meant for real men found the presentation by Simon Brown-Greaves to be an eye-opener. Simon, a consulting psychologist, had worked with the Victoria Police for many years and now provides a consulting service to a range of organisations including banks. His stories of post incident stress involving undercover police, the Hoddle and Queen Streets shootings and armed hold-up victims brought a sense of reality to the issues. When the results of providing counselling to hardened police showed return to duty rates of virtually 100% compared to about 45% for those not receiving counselling it was hard to argue against the benefits and requirement for this work. The Ash Wednesday experience of some attending the seminar made it clear that WICEN



**Photo 2** One of the syndicates hard at work during the exercise. (l to r) Simon Griffith VK3ZNT, Richard Hoskin VK3JFK, Ed Crane VK3KUC, Graham Jackson VK3GBJ, Gordon Cornell VK3FGC and John Pile VK3ZPO.

operators will be exposed to distressing and difficult situations. Post incident counselling will certainly help and the methodologies suggested by Simon will be employed by WICEN Co-ordinators in future.

Mr Nicholas Kanarev, from the Australian Emergency Management Institute, who lectures on the techniques for decision making in a crisis, was a lively speaker. Within minutes he had everyone feeling the

pressures of crisis decision making and his presentation brought out valuable lessons on the need for careful assessment of objectives. Stripping out the irrelevant or less important issues helped Co-ordinators find the key events when the pressure was on and taught them the value of calm, controlled response during all phases of an incident but particularly during the time immediately following a call out.

It is highly likely that an incident requiring WICEN assistance will also involve loss of life. Mr Hal Hallenstein, the Victoria State Coroner, discussed the legal impact this could have on responding agencies and stressed that the area must be treated as a crime scene. When seen in light of his explanation about the history and role of the Coroner it again brought home issues of direct relevance to WICEN. Most of those present hoped that Mr Hallenstein did not talk too widely of the original role of the "Crown". The rewards available from a body tax paid by the community seemed too tempting for our governments to resist

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**Photo 3 A syndicate, comprising (l to r) Brett Wilkinson VK2XMU, David Harris VK3DVW, Maggie Iaquinto VK3CFI, Ian Marsh VK3PLL, Collin Lelean VK3CWL and Bill Mahy VK3DIF tackle yet another exercise challenge.**

(It seems that, like most taxes, some sought to avoid this one. As death was inevitable, the best avoidance scheme was to move the body during the dead of night to another town which would then have to pay the tax! Hence the King appointed a Crowner to investigate each death and determine which community was responsible for the tax.)

Leigh Baker VK3TP, Federal WICEN Co-ordinator, presented the new (second) edition of the WICEN Regional Co-ordinator's Manual. In doing so he highlighted the importance of the Co-ordinator's role and the strategic significance WICEN has for amateur radio generally and the WIA in particular.

Woven between these presentations was a continuing exercise. It aimed to reinforce the issues developed by our guest speakers and provide an opportunity for Co-ordinators to share their knowledge and experience.

The first task of the five syndicates was to respond to a call-out late on Saturday night in which an aircraft had crashed near Healesville (some 70 km East of Melbourne). This area was selected for the exercise as it is poorly serviced by agency communications systems and presents considerable challenges in establishing reliable links (as was well known to the organisers of the

WICEN support for the recent Healesville Rally Stages). The crash, a 747 Jumbo jet, had disrupted police and telephone communications in the area. Forty-five minutes was allowed to develop the initial response plan (being action they would take in the

first forty-five minutes after receiving the call). They then presented their solutions to the seminar.

The next phase of the exercise simulated the period (some hours later) when they had arrived at Healesville. They had about half an hour to prepare a briefing on WICEN's capabilities in support of the Emergency Services at this incident. The presentation to the seminar was to be the briefing they would give the Emergency Service Representatives at the local command centre.

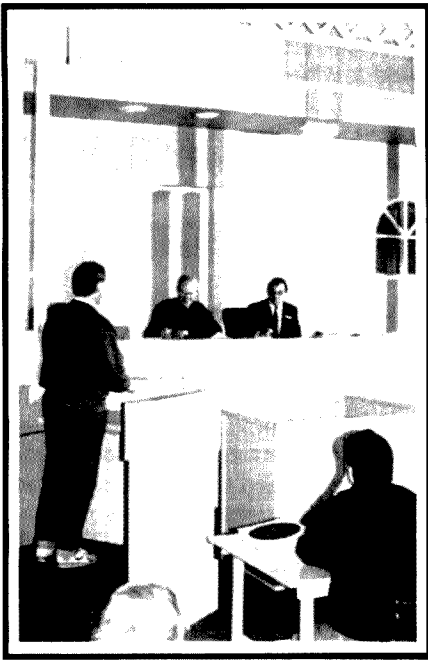
Each syndicate received different instructions for the third phase. They ranged from operational planning for communication teams supporting searchers, through similar planning for teams supporting police controlling the area, to post incident plans and proposals for future WICEN training. The presentation, all expected, would again be in the seminar room to fellow participants. Wrong.

The Academy has a court room used for training of Police Officers. It was here that all were assembled to find that three months had elapsed and they were to appear before a



**Photo 4 A group photo of those who attended the WICEN seminar.**





**Photo 5 Peter Nilon VK3PQ takes the witness stand in the exercise judicial enquiry, appearing before Richard Scott (SES Regional Officer) and Hal Hallenstein (State Coroner), with David Johnson VK3YWZ as the clerk.**

judicial inquiry into Emergency Service response to the incident. The inquiry was headed by Mr Hallenstein assisted by Mr Richard Scott, Regional Officer of the Victoria State Emergency Service.

The syndicate representatives who had drawn the short straw were required to take the witness stand and answer some very penetrating questions. This brought home a number of issues but clearly showed the need for retention of message forms and operator log sheets. In hindsight some post incident stress counselling may have been warranted after that experience!

The training program was broken by a formal meal on the Saturday evening in the Officer's Mess at the Academy. During that meal well deserved Certificates of Appreciation were presented to Leigh Baker VK3TP, Federal Co-ordinator, and David Tilson VK3UR, seminar organiser. No time was wasted, though, and Saturday night was devoted to presentations by Peter Tyers VK3KTS, on the WICEN National Training Syllabus, David VK3UR, on ADMIN (the emergency services communications network he

administers) and Howard Small VK3DLH, on publicity and sponsorship.

All participants agreed that the seminar was demanding but very beneficial. The assistance provided by the guest speakers and by the Victoria Police were key factors in the Seminar's success. Another important factor was the sponsorship offered by OPTUS Communications which covered the total cost of the weekend. This clearly saved WICEN's scant financial resources

for other tasks but, perhaps as important, is welcome community recognition of our efforts: we offer our sincere thanks for the support given by OPTUS.

Finally, the seminar organisers would like to give credit to the participants. Their total involvement in the weekend activities and their thoughtful responses to the exercises tasks augur well for WICEN's future in Victoria.

*\*372 Springvale Road Forest Hill VIC 3131*

ar

## WIA News

### Calling all Divisions

In October, Telecom introduced a new free call service which may interest WIA Divisions. Dubbed the "Statewide 1-800 Freecall" service, it operates rather like the long-established and well-known 008 Freecall service, employed by a lot of businesses.

As you know, calls to 008 numbers are free to callers from anywhere in the country; the holder of the 008 number pays for the incoming calls. The new 1-800 Freecall service is similar, but calls can only be made to a 1-800 number from within the state in which the holder resides.

Free calls to a 1-800 number can be limited by geographical region (for example, outside the state capital's metropolitan area), to given hours in the day and given days in the week — that is, calls to the 1-800 number will only get through between, say, 10 am and 2 pm, Mondays to Fridays. The customer can decide.

You may have the 1-800 number on a separate phone line and handpiece to your existing phone service, or simply have it diverted to your existing (ordinary) number.

Now here's a great opportunity to make it more easy and convenient for members and others who live outside a Division's metropolitan

headquarters to make phone contact. Being able to specify the days, times and geographical limitations to suit your requirements means you can control the costs, too.

By making it easier and more convenient for people to contact you, you encourage them to do so — an important factor in encouraging people to join and for members to order books or other material that your Division might sell. That's the same reason why so many businesses maintain a 008 national Freecall number — to encourage business. Having the 1-800 number divert to your Division's ordinary number (even if it's mostly answered by an answering machine) saves the installation cost of an extra line and phone. 1-800 account charges are \$10 per month (a miserly \$120 per year), plus call charges.

The NSW Division installed a 1-800 Freecall service in November. Their new Freecall number is 1-800 817 644. It is open between 11 am and 12 noon Mondays to Fridays and 7 pm to 9 pm on Wednesdays. It diverts to the Division's normal number, 689 2417. Callers in NSW and outside the Sydney metropolitan region can use the number to call the NSW Division (and that includes Penrith!). They are trialling it for 12 months.

# Getting a Multiband HF Vertical To Go! (Part II)

*"Doc" Wescombe-Down VK4CMY/VK5HP\* with more useful information about vertical antennas.*

## The Vertical Antenna — How Good is it REALLY?

In response to many requests from other operators, it may be opportune to share some more basic facts about vertical aerials. If we can all agree that a good antenna system makes or breaks an efficient communications station, then perhaps the rest of this article will generate some thought.

Most amateurs I know purchase their equipment, including the antenna. Usually this is a pre-fabricated Yagi-Uda, quad or multiband vertical for HF use. They then install this atop a roof, mast or tower and commence working the world. Some operators prefer the lower frequencies such as 160, 80 and 40 metres, so their antenna is often a length of wire (resonant or not) loaded by a tuning unit and erected at a compromise height (neighbours, councils, YL/XYL QRM and physical constraints are all prevailing).

But what are these good operators missing out on? They are missing the point that **DOLLARS DO NOT REPLACE DESIGN!** It doesn't matter if they run an FT1000 into an Alpha 76 or Henry amplifier in the wireless office (my preferred term for "shack"), if the antenna installation is below par, most of their money spent will be wasted. Most of the RF energy produced will be wasted.

Most operators live in built-up residential areas and have the associated constraints mentioned earlier. It is often amazing to me that some RF energy even **LEAVES** some of the installations visited.

Our key to DX operation is the **VERTICAL RADIATION ANGLE** of the RF energy that we produce. If we can cause this to be in the vicinity of 20 degrees to the horizon, for example, the first reflection zone (from F layer propagation) will be

approximately 1000 km away. A vertical angle of 50 degrees will produce a first reflection zone of 400 km approximately.

However, if we could **LOWER** the vertical angle to 5 degrees we would increase our first reflection zone distance to around 2400 km. Lowering the angle to 3 degrees will increase this to 3000 km. Although such low angles are not practically feasible, they illustrate the point: **FOR OPTIMUM DX OPERATION, LOWER THE VERTICAL ANGLE!**

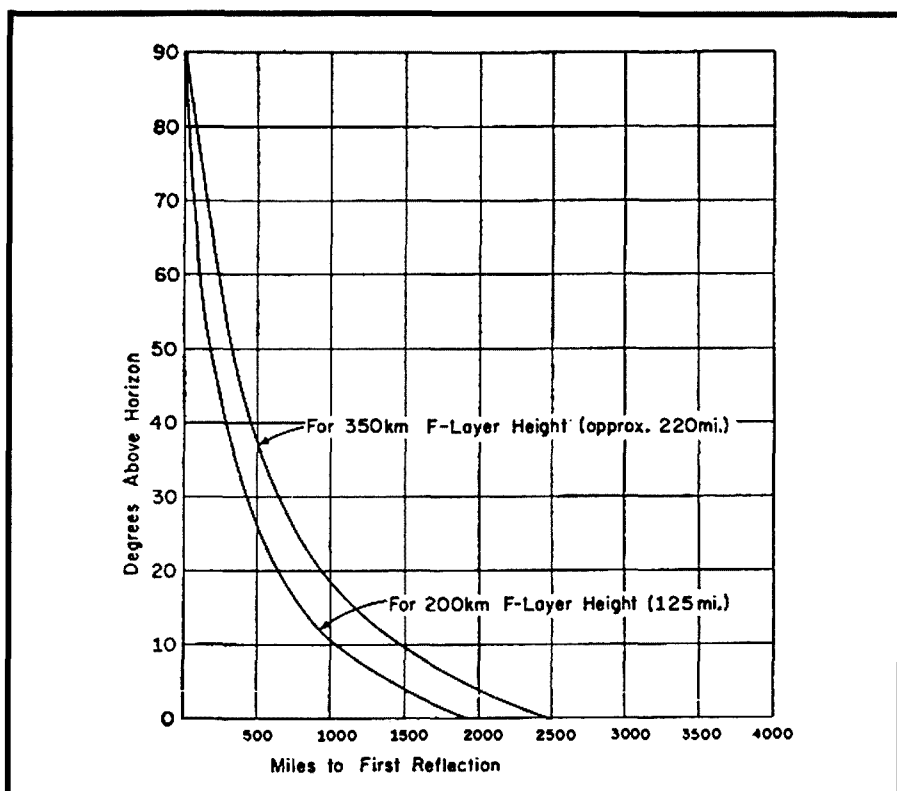
How does your installation line up? Well, as an example, a half wave dipole for 20 metres at a height of 11 metres will generate a "useful" major lobe between 15 and 45 degrees (all

figures approximate). Transmitted power is, therefore, being dissipated over a wide (first reflection) zone of 300 to 1700 km. Your 80 metre dipole suspended 15 metres high will send its "useful" major lobes out at between 30 and 90 degrees! This gives an effective first reflection zone distance of only 800 km and the antenna is primarily acting as a "cloud warmer", ie most of the RF energy produced by the FT1000/Henry 2 kW amplifier combination is propagated skyward, not to be reflected at all! Is that what you have spent all those dollars for?

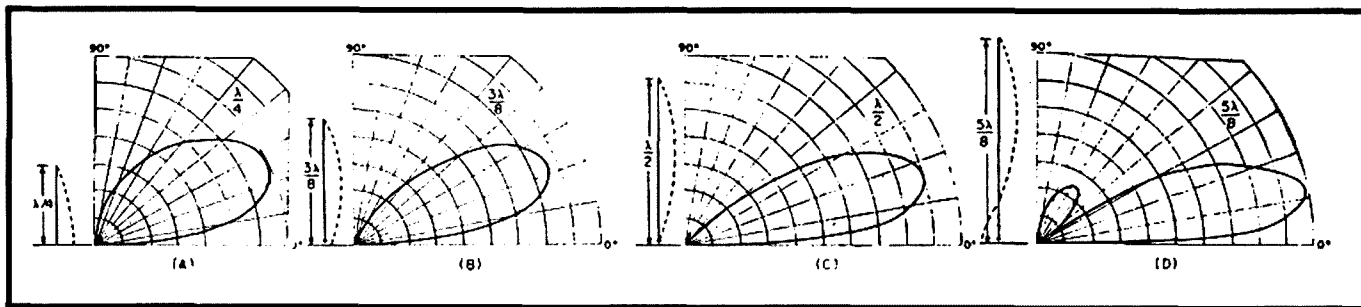
It may be said that installing a Yagi-Uda array will improve this scene, but all such an array can do is **REDUCE THE SIZE OF HIGH ANGLE LOBES**, but **CAN DO NOTHING TO LOWER THE DESIRED ANGLE OF RADIATION.**

So what can we do? Use a vertical antenna.

A 5/8 wavelength vertical is the **OPTIMUM HEIGHT** for HF use. Anything bigger than this becomes useless as well as unwieldy at low frequencies, because the low angle lobe (desirable) reduces rapidly



**Figure 1 — Vertical radiation angle above horizon vs distance to first reflection.**



**Figure 2 — Vertical radiation patterns for vertical antennas from quarter to five eighths wavelengths long.**

(undesirable) and the high angle lobe (undesirable) increases rapidly and bifurcates into a number of useless angle lobes (undesirable).

1/4 wavelength verticals provide a useful lobe at 10 to 55 degrees; 3/8 wavelength 8 to 40 degrees; 1/2 wavelength 5 to 35 degrees and the 5/8 vertical 3 to 27 degrees ideally. This is why so many broadcast stations use this type of antenna.

OK, you say, but what about my location? How does that affect DX performance? A picture tells a thousand words and Figure 3 illustrates the importance of CLEARANCE beyond the ends of radials.

A 1/4 wavelength vertical radiator for 80 m is just about 20 m long, and, given a really good ground system, can have a radiated wave angle useful enough for DX efficiency. RF energy radiated from the top of the vertical will, in part, reflect from the ground about DOUBLE that length away from the base as shown. This shows WHY LONG RADIALS ARE SO VITAL FOR OPTIMUM PERFORMANCE. Beyond this zone

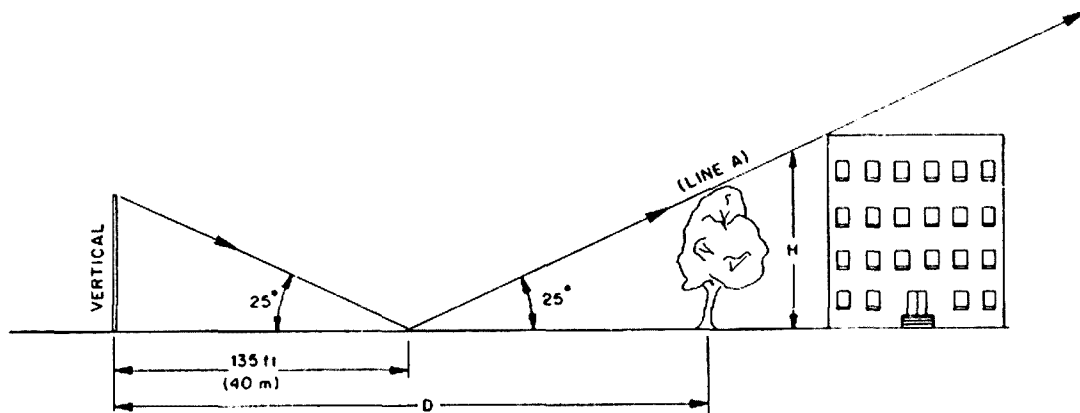
should be kept clear of obstructions (trees, buildings, power lines, other towers or masts, etc). This means that for 80 metre operation, no structure taller than the antenna should be closer than 80 METRES FROM IT! Smaller obstacles (fences, clothesline, garden shed, etc) may be a little closer but still not within 40 metres of the aerial!

In conclusion, allow me to quote from LEE (1984) by presenting these comparisons for your consideration. "VERTICAL v HORIZONTAL:

- (1) Low angles are easily obtainable with a vertical antenna.
- (2) The vertical is simpler in construction. Even 50 or 60 foot self supporting pipe masts are easily erected.
- (3) The vertical itself requires less space. Ground radials or a ground plane of some sort are required for efficient operation. However, radials can be bent in directions which will fit into one's available space. (NOTE: The author lived in Warwick for one year on a very small allotment and radials for the roof mounted ground plane

antenna were actually wound around the house exterior and fastened to the support stumps and weatherboards as appropriate. Not ideal, but it worked).

- (4) The vertical is easy to feed at its base with unbalanced coaxial cable, using a "gamma" type of feed or a matching network as required.
- (5) The vertical discriminates against TVI because TV antennas are horizontally polarised (*Not everywhere in Australia! — Ed*). Some claim that it increases BCI. If this should happen, it is not due to its vertical nature but to its strong low angle radiation. ANY antenna which gives strong low angle radiation, such as stacked Yagis, could also cause BCI.
- (6) The vertical is somewhat more susceptible to rain and snow static and to noise impulses in the neighbourhood when used for receiving.
- (7) The vertical is non directional and thus cannot discriminate against interference from unwanted



**Figure 3 — Clearance required for ideal layout of a vertical antenna.**

directions when receiving. However, one could erect three vertical elements and make a very neat switchable array to cover 60 degree sectors in azimuth.

- (8) the vertical is unobtrusive and pleasing to the eye of neighbours.
- (9) The gain of a co-linear vertical can approach that of a three element horizontal Yagi. It is actually greater at the low angles of interest."

Please note that the author claims no originality of material or ideas in these two article parts. But, from an OPERATOR's viewpoint, having used QRP CW for nearly 20 years into G5RV, extended double Zepp, dipoles, 2 and 4 element quads, 3 element monoband Yagi, 1/8, 1/4, 1/2, and 5/8 wavelength verticals with a variety of radial systems, I am now firmly settled with the 1/4 and 1/2 wavelength vertical for 80 and 40 metres as described in Part I. Having 10 plus hectares of land on an unobstructed hill at 900 plus metres altitude, no power lines for several kilometres and 120 halfwave radials, obviously assists.

However, anyone with, or contemplating erecting a vertical

antenna should be able to go about it better!

My thanks to Paul VK5TT for his assistance while I experimented at Whyalla SA on a city lot, and to Andy VK5AAQ whose 160 and 80 metre interest and experience is always appreciated.

#### References

- (1) "Low Band DXing" by John DEVOLDERE (ON4UN) — ARRL 1987.
- (2) "The Amateur Radio Vertical Antenna Handbook" by Capt Paul H Lee (N6PL) 2nd Edition — CQ Technical Series 1984.

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## WIA News

### UK Call Book

The Radio Society of Great Britain (RSGB) published their 1994 Call Book at the end of October last. Containing over 60,000 callsign listings from the UK and Republic of Ireland it runs to 416 pages and costs nine pounds and fifty pence (plus postage and packing), the same as the 1993 Call Book.

In addition to the callsign listings, the RSGB's 1994 Call Book includes a wealth of information on awards, band plans, beacons, clubs, contests, DXCC countries, EMC, reciprocal licensing, packet radio, propagation, repeaters and satellites.

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RSGB  
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# The Bandwidth Limiting LF Converter Simplified

Lloyd Butler VK5BR\* continues his development of low frequency receiving converters

## Introduction

In my previous article (ref 1), I discussed reception of signals around 200 kHz and introduced an idea to limit and control the bandwidth of an LF converter. An experimental circuit was presented which made use of discrete component oscillator and mixer modules which I had on hand. I indicated that I would do some further work to simplify the circuit and in particular make use of the NE602 package which is a balanced mixer with inbuilt oscillator facility. The new circuit is now presented.

As in the previous circuit, signal pick-up is via a tuned loop antenna which also provides front end signal selectivity and the mixer output is fed to the receiver via a crystal filter around 1.5 MHz. The reasons for choosing this arrangement were given in the previous article and reference should be made to that article for the background.

## The NE602

The NE602 package is a double balanced mixer with an onboard oscillator which injects its signal internally into the mixer. It can operate at frequencies well up into the VHF region and requires minimal peripheral components. To make the oscillator work, it is only a matter of connecting the oscillator section to a crystal or an inductor with associated capacitors in a Colpitts configuration.

The NE602 is finding its way into many amateur radio applications and because of this I think I should highlight a few precautions concerning its application. The first precaution concerns the low input level at which the third order intercept occurs. Let us explain this a little further. The mixer output frequency is the sum or difference of the oscillator

and signal frequencies. Other mixing products are also produced, the most significant of these being what are called the third order products. Whilst the output voltage of the desired sum or difference frequency increases linearly with the signal input voltage, the third order products increase in a steeper slope curve following a cubic function law. The curves of figure 1 from the NE602 application notes show how the two components

*“ . . . the input signal range should be between a few microvolts and 27 millivolts.”*

increase with different slopes. It can be seen that there is a theoretical point where the curves cross and the components have equal output voltage. This is called the third order intercept point. Having defined the point, the difference level between the two components, for any signal input level, can be worked out by extrapolating down the linear and cubic law curves from this point.

The level of third order products relative to the desired signal products is a measure of cross modulation in the mixer. To minimise cross modulation, we must ensure that the third order products are well below the desired output signal and for amateur radio purposes, I would suggest a figure of at least 40 dB. To satisfy this requirement our signal into the NE602 mixer should not exceed minus 33 dBm which into its 1500 ohm input resistance is 27 millivolts. (Compare this to the XR2208 package I have previously used as a VLF/LF mixer which can tolerate several volts before third order

products become excessive). The consequence of all this is that the level of signal input and pre-amplification (if used) must be carefully controlled to prevent driving the mixer into a state of serious cross modulation.

At the other end of the scale, the minimum level of signal into the mixer is set by its noise floor. The rated noise figure is 5 dB and this works out to around 0.3 microvolts of noise at a 1000 hertz bandwidth across the 1500 ohm input resistance of the mixer. For good signal to noise ratio, the minimum signal level should be somewhat above this figure. Combining this with the previous paragraph, we can deduce that the input signal range should be between a few microvolts and 27 millivolts.

The NE602 can be operated balanced or unbalanced and many of the receiver circuits I have seen in journals have used the unbalanced input form. From my own experience, the mixer performs much better in its balanced form and I don't recommend operating it any other way.

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Dual band co/linear 2M&70cm	\$ 95
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Another point worth noting is that the NE602 is fully biased internally. If a connection is made to earth or other point with a defined DC level, couple via a capacitor.

The package I obtained was an NE602A which apparently is an upgraded version of the NE602. In examining the application sheets, there doesn't appear to be much difference between the performance of the two. They are both available in different packages and temperature ranges defined by an additional letter code. For example, the N package is the 8 pin plastic DIP in a temperature range of 0 to 70 C.

### The Converter Circuit

The complete LF converter circuit including the NE602 mixer (N2) is shown in figure 2. The same loop antenna and loop tuning system is used as in the previous circuit. The high Q loop circuit is tuned to resonance at the incoming frequency. This increases the loop sensitivity and provides selectivity to reduce the level of strong signals at other frequencies. If not attenuated, these could cross modulate the selected frequency in the mixer and hence some form of selective tuning is essential in the front end. If you have any ideas of using a broadband front end with this mixer, then I suggest you forget it.

The high impedance input circuit of the LF353 JFET operational amplifier (N1A) prevents loading and degrading the Q factor of the loop. The LF353 has a satisfactory noise figure and has a gain-bandwidth product of 4 MHz, which makes it suitable for the LF frequency range. If you examine my previous circuit, you will see that the loop interface amplifier had a considerable gain. Not so in the new circuit where the gain is set to 1, limited to prevent excessive signal drive to the mixer. Even with the low signal sensitivity of the loop, the mixer can be easily overdriven. For example, Adelaide Airport Non Directional Beacon (NDB) is around 8 km from my location and this gives a signal output across the tuned loop of 100 millivolts. This level is too high and I have provided a potentiometer RV1 at the output of the loop to reduce level if required. The converter is normally operated with

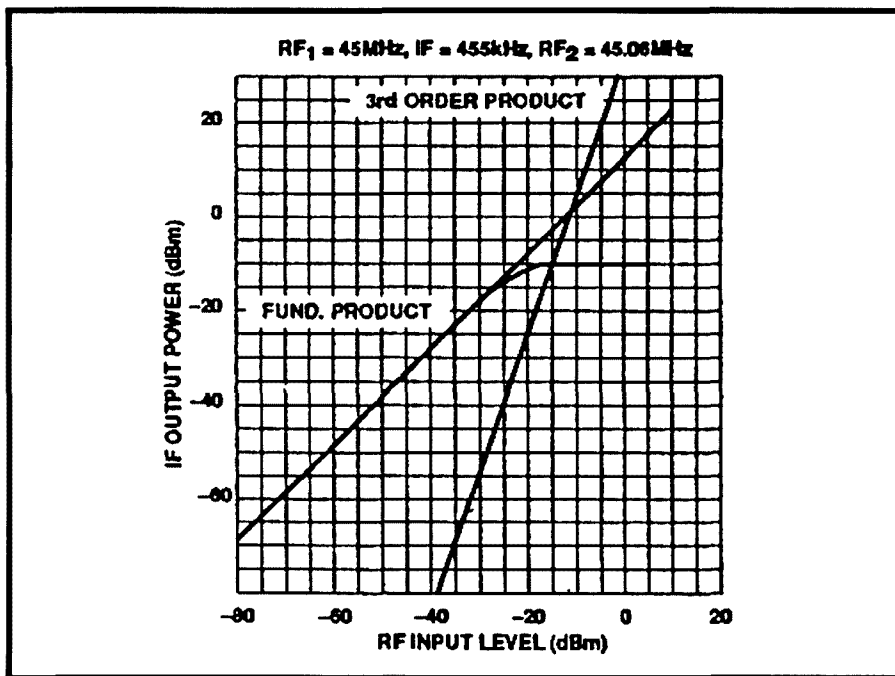


Figure 1 — NE602A — Fundamental and third order products showing third order intercept.

this control set maximum as the loop tuning provides adequate attenuation of strong signals. It is sometimes necessary to adjust the potentiometer down a little when tuning on to the strong station or when tuning to a weak one close in frequency to the strong station.

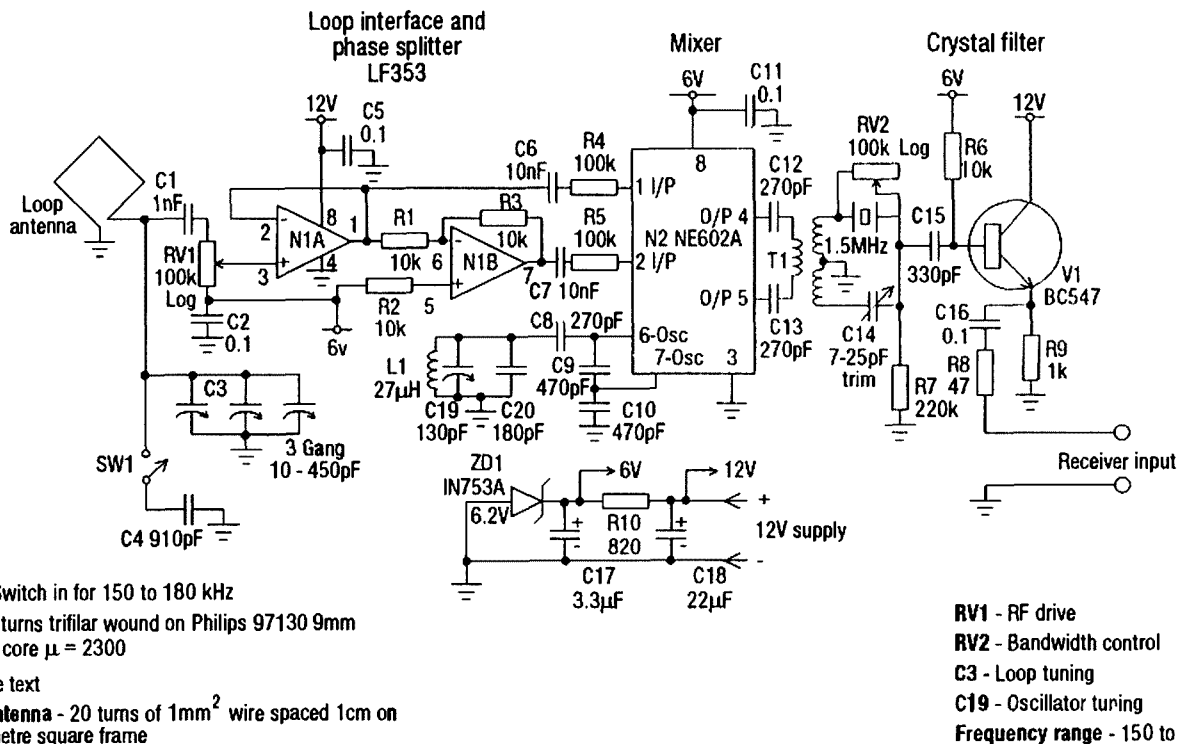
As discussed earlier, the mixer works best in a balanced mode and a transformer can be used at the mixer input to achieve this. Because we are operating down to 150 kHz, we ideally need a primary inductance of 2 mH or more. This is difficult to achieve with the usual toroidal core and is more easily achieved with a small pot core. In my previous circuit, the mixer input was fed via a small toroidal core transformer and I have to confess that there was signal loss due to lack of primary inductance. This loss was made up by extra gain in the drive amplifier. The LF353 has two amplifiers in a single package and in the new circuit I eliminated the need for a transformer by connecting the second amplifier (N1B) as a phase splitter to provide the second half of the balanced input. With the phase splitter provided, the gain from loop output to balanced mixer input is doubled to a value of 2.

No problems were encountered in setting up the oscillator. As in the

previous converter, the oscillator is set to tune from 1.65 to 1.87 MHz so that with a first IF frequency of 1.5 MHz, the converter operates from 150 to 370 kHz. Using the Colpitts arrangement shown in figure 2, a 27 microhenry inductor (L1), a 130 pF variable capacitor (C19) and a number of fixed capacitors achieve the tuning range. The form of inductor is not important but I wound 28 turns of 28 B & S wire on a Philips 97170 toroidal core and juggled the fixed series and shunt capacitors to get the precise range. A 27 microhenry miniature choke also worked OK but I thought the toroid, with its confined magnetic field, might be preferable.

The crystal filter is the same as used in the previous circuit with a 1.5 MHz crystal frequency selected to achieve a minimum bandwidth of around 200 to 250 Hz for narrow band signals. The precise frequency is not important provided the oscillator used in the mixer is adjusted accordingly for the difference frequency. The logarithmic law potentiometer (RV2) across the crystal allows bandwidth adjustment and this was explained more fully in the previous article. The potentiometer must be connected for maximum resistance when set fully clockwise.

The circuit is designed around a 12



**Figure 2 — The complete LF converter circuit including the NE602 mixer (N2).**

volt power rail although the precise voltage is not too important. The maximum voltage on the NE602 is specified as 8V, hence a lower 6V rail for the mixer has been derived from zener diode ZD1. The 6V rail is also used to set the operating points of the LF353 amplifier and the crystal filter interface emitter follower V1. This saves a few resistors.

Tests on the converter were carried out with the loop antenna indoors and connected through 1.5 metres of RG58 coax. The 0.8 metre square loop is a bit cumbersome inside the radio shack but it works very well in this environment. The only precaution I have had to take is to turn off the fluorescent lights as they radiate quite a bit of RF noise. The loop can be operated outdoors with a longer length of cable but every bit of cable adds capacity across the loop and reduces its maximum tunable frequency. This can be corrected by taking off a turn or so on the loop with a penalty of reduced loop sensitivity.

### Assembly

My main aim has been to produce a workable circuit for the converter and at this stage of writing, my test

rig is in experimental form with sections of the circuit separately hard wired and fitted together with the tuning capacitors on a base board. So if you are interested in this converter, the layout is now left in your hands. I don't anticipate any layout problems at these low frequencies. A geared drive is essential for the oscillator tuning and desirable, although not essential, for the loop tuning. A shielded lead between the converter output and the receiver is essential to prevent pick up of signals at 1.5 MHz.

### Operation

In setting up the receiver, it is first tuned as close as possible to the crystal filter frequency as indicated by the receiver calibration. An NDB signal is tuned in by the converter and the receiver is then finely tuned for maximum signal, preferably indicated on an S meter if fitted. The signal can be located with the crystal filter set for wideband but it is important that final adjustment be made with minimum bandwidth.

Tuning of the loop is fairly sharp and must be set for maximum signal. Manual adjustment of tracking

between the loop tuning and the oscillator tuning is simplified if both tuning dials are calibrated for frequency. Some misleading cross modulation effects can occur if the loop is wrongly peaked to a strong signal not selected by the oscillator tuning. In searching for signals, rotation of the loop is part of the tuning ritual.

### Performance

Applying a signal generator directly to the LF353 input and using the receiver beat oscillator as for CW reception, the minimum discernible signal level is less than 1 microvolt. For a 30% amplitude modulated signal with the receiver in AM mode, the minimum discernible signal level is 3 microvolts.

The loop Q factor is around 20 to 30, depending on frequency. Using a Q of 20, the calculated loop sensitivity is close to 1 microvolt per microvolt/metre. Minimum discernible field strength is therefore derived as 1  $\mu$ V/metre for CW and 3  $\mu$ V/metre for AM. In operation, weak signals just riding above the ambient atmospheric noise have been found to be well

above the minimum discernible level of the loop-converter combination.

Conversion gain from the LF353 input to the crystal filter output is approximately 2 for the widest band setting and 0.5 for the narrowest band setting. Most reasonable receivers can handle signal levels in the order of microvolts and should be comfortable with this conversion gain.

Operated as described so that the mixer is not overdriven, the loop-antenna/converter unit seems free of the odd birdies, often experienced with some superhet receivers which have been extended to tune down to the LF band.

## Conclusion

Adding this converter to an existing receiver is a simple way to extend band coverage down to the LF region. Its design was aimed at the reception of experimental signals around 200 kHz such as those recently transmitted from Gordon, Victoria and recent experiments in New Zealand.

The article is an extension of my previous article where I introduced the idea of controlling the received bandwidth within the LF converter. Use of the NE602 mixer has simplified the circuitry. A few notes which I have given concerning the application of this mixer might be of help to others making use of this versatile package. To follow on, I might have look at extending operation down to the VLF range and see how well I can make it work. If it looks OK, a third article in the series might be forthcoming.

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1. Lloyd Butler VK5BR — A Bandwidth Limiting LF UP Converter for Frequencies around 200 kHz — *Amateur Radio*, December 1993.
2. Lloyd Butler VK5BR — A Discussion on Mixers — *Amateur Radio*, April 1988.
3. Signetics Product Specification, NE602 & NE602A.
4. Lloyd Butler VK5BR — VLF-LF and the Loop Aerial — *Amateur Radio*, August 1990.

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## WIA News

### Special Event Station

To commemorate the 50th anniversary of the battle of Kwajalein Atoll in the Pacific Republic of the Marshall Islands, special event station V73AX will be on the air, courtesy of the Kwajalein Amateur Radio Club (KARC).

Starting at 1745 UTC on 31 January, the station will operate through to 1920 UTC on 5 February, 1994. Look out for V73AX on the HF bands and six metres (conditions permitting), operating SSB, CW and RTTY.

If you manage to make contact, QSL (with SASE or IRC) to:

KARC

PO Box 444

APO AP 96555 USA

Thanks to John A Taylor V73JT, Vice President of the KARC, for that item.

### Region 1 Digital Bandplan Changes

At the International Amateur Radio Union (IARU) Region I Conference late last year, the HF RTTY mode bandplan allocations were renamed "Digimode", to cover all digital transmission modes, including RTTY, AMTOR, FACTOR, Clover and Packet. Some band allocations were increased.

November last's issue of the RSGB's journal *Radio Communications* carried a report on the Conference decisions; the RSGB's 1994 *Call Book* carries updated bandplans.

### Direction Finder Ducks Back After China Success

Wally Watkins VK4DO, intrepid amateur radio direction finding (ARDF) expert and international traveller, has returned from the wilds of Huairao County in the Peoples' Republic of China, enthusiastic about his Australian team's showing at the IARU Region III contest, held over 5-10 October.

The Federal WIA supported Wally's effort to compete in the ARDF contest in China with a

donation of \$1000 towards the team's expenses, made earlier in the year.

Other countries taking part in the Region III International Amateur Radio Union's ARDF contest included: Bulgaria, China, North and South Korea, Japan, New Zealand and Taiwan.

Interviewed by the *Sunshine Coast Daily* on his return Wally, a resident of Proserpine Old, said, "Taking into consideration that the Asian countries have been taking part in amateur radio direction finding for some 30 years, the Australian team performed quite well for its first effort."

Wally and Frank Sleep VK4CAU teamed up to enter the old timers' section of the ARDF contest. Now it must be understood that these direction finding contests are not like the foxhunts we know and love in Australia. They're more a cross between a pedestrian (hah!) foxhunt, orienteering and a cross country foot race. Not for the faint hearted or unfit.

From the start line, you have to charge off — up hill and down dale — to find and record on a card a series of hidden transmitters (all five of them!), before reaching the finishing line. And your time for the hunt/race is recorded — to the nearest second!

Each race is refereed. Before the contest, a training course for international class referees was held in Huairao County and Wally is now Australia's first international referee.

Well done, Wally and team.

### Licence Exam Pass Rates Improve

Since the WIA Exam Service started in October 1991, the average per annum pass rate of candidates has climbed from 46.9% in 1991-92, to 57.52% for 1992-93.

Over the period from October 1991 through October 1993, 4063 candidates sat for 7102 subjects. Altogether, 3886 achieved a pass, 54.72% of candidates who sat.



# EQUIPMENT REVIEW

## Timewave DSP-9 and DSP-59 Audio Digital Signal Processors

Ron Fisher VK3OM and Ron Cook VK3 AFW



The DSP-9 and DSP-59 sitting on top of the Kenwood TS-430S transceiver used in the evaluation of the filters.

The latest device to fight interference in radio reception is the digital signal processor. Of the several being produced in the United States, Daycom (the new name of Stewart Electronics) have selected the Timewave DSP-9 and DSP-59 audio noise reduction filters. I must admit that I am not an expert in digital electronics, so I have asked my good friend Ron Cook VK3AFW to write a few words on just how these things work. Before handing over to Ron, I intend to report on the operation of these units connected to typical amateur equipment and used in a quieter than normal location.

The first illustration shows them sitting on my TS-430S transceiver which was used throughout the tests. Both filters are contained in neat black plastic cabinets with the

controls on the front panels and the input/output and power connectors at the rear (see the second illustration). The input to both units comes from the external speaker output of the associated transceiver and an inbuilt audio amplifier drives the speaker. Both units require 12 to 14 volts DC at about 500 ma. Of course a reasonable quality external speaker is also needed to complete the setup. For some strange reason, Timewave seem to be confused as to which type of connector to use. The DSP-9 uses phono sockets for both input and speaker output while the larger DSP-59 has 6.5 mm phone sockets for the same functions plus an extra 6.5 mm socket for line output. Seems odd that they didn't use a 3.5 mm socket for at least the speaker output. Both use a standard DC

connector with the centre pin for positive. A DC connector is supplied with the processors.

So what do Timewave claim their processors will do? Firstly, they are designed to reduce all types of residual noise. Secondly, they will eliminate any number of heterodynes audible within the band pass, and finally they have very steep sided audio filters useable on both voice and CW signals. In the case of the DSP-9, voice filters are provided for 1.8, 2.4 and 3.1 kHz and for CW, 100, 200 and 500 Hz filters are selectable. The larger DSP-59 has basically the same features but with much greater flexibility and a wider range of filter selections. All functions on the DSP-9 are selected via six front panel push buttons plus a normal rotary audio gain control which also has an off position to cut the 12 volt power supply. The DSP-59 uses three rotary controls to select the various functions plus an audio gain/on/bff control.

Two LEDs help to set the input audio level, one flashing with normal input and the second flashing to indicate an overload condition. A 3.5 mm socket is also included on the front panel to take a pair of headphones. This is compatible with stereo phones so you will be able to borrow a pair from your teenager's Walkman and plug in.

### The Timewave DSP-9 & 59 in Use

As all of my speakers terminate in 3.5 mm plugs, I used adaptors to connect into the two Timewave processors. Another lead with a 3.5 mm plug and either a phono plug or 6.5 mm single circuit plug is needed to get the audio into the processors. The 12 volt DC supply needs to be well filtered and regulated. I tried a 500 mA plug pack power supply but it caused all sorts of funny hum problems.

A reasonably high audio output level from the transceiver is needed to get the "normal" LED to flash and it is very important that this should happen. When I first hooked the unit up, I thought I would take a short cut and feed the processor from the headphone socket on the TS-430. It proved impossible to drive the processor hard enough so a quick



The rear panels of the filters with the DSP-9 on top.

change was made to the speaker output.

First, I had a play with the filters. Changing from the 3.1 to the 2.4 kHz band pass produced a just perceptible change in audio quality but heterodynes and noise above 2.4 kHz disappeared like magic. Changing to 1.8 kHz brought an even greater reduction in off frequency noises with a slight reduction in top audio response.

The effect on CW with the narrow band pass is equally dramatic. The larger DSP-59 allows not only the choice of selectivity but also the choice of the centre frequency which makes it very suitable for digital modes.

Next on to the noise and heterodyne reduction features. As I mentioned earlier, I live in a very quiet location. There is only one thing that makes life on the air difficult. Rain static. Well, I had to wait to test that one out. Reduction of general noise, such as static, was interesting. With a moderately strong signal, the effect was often amazing. The signal would take on a slight synthesised sound, the noise would fade into the background and make the audio really stand out. However, as the signals became weaker the effect diminished with it. Enough to say that I could not find a case where I could make a totally unreadable signal readable. By far the best effect was to remove noise on moderately strong (about S6 to 7) signals. At long last the rain came (you don't have to wait too long in the Melbourne area) and

with it S9 rain static. I regret to say that the processors made no improvement at all.

The heterodyne reduction facility is startling in its effectiveness. Just push the button on the DSP-9 or select the switch position on the DSP-59 and the whistles go. What more can be said? Ron VK3AFW tells me that he uses his DSP-9 for weak two metre CW use and claims that it really does make almost unreadable signals readable. I also noted that use of the transceiver noise blanker in conjunction with the DSP can add to the effectiveness of the processor.

### The DSP-9 and DSP-59 Conclusions

Are these units worth while or not? The answer to this is a very definite yes. If you are a keen CW operator it would be hard to live without one. I don't doubt that in time, perhaps a short time, these units will come built into transceivers. Crystal IF filters will become a thing of the past and step sided digital filters will become the norm. In the meantime, enjoy the advantages of digital signal processing with the DSP-9 and DSP-59.

I hope that when Timewave update these models they might sort out the connector problems and maybe even have time to write a better instruction book. The DSP-9 is priced at \$339 and the DSP-59 at \$629 from Daycom Electronics.

Now over to the other Ron to tell us just how these little electronic marvels work.....

## How Does a Digital Filter Work?

We are all familiar with analog filters, an example of which is shown in Fig 1. This is a single section RC low pass filter. DC and low frequency AC signals are not attenuated but as the frequency is raised, so the output falls. That is, the attenuation increases with frequency. The phase of the output signal also lags behind the input signal, the phase difference being greater at higher frequencies. Cascading several of these circuits gives both a sharper band edge roll-off and a greater phase shift.

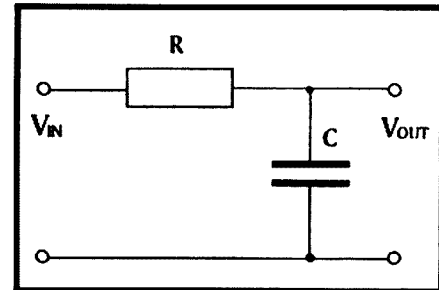


Figure 1 — Simple analog low-pass filter circuit.

We also know that if a DC voltage is suddenly applied to the input, the output rises slowly to the input value, the rate of rise being determined by the product of R and C. In other words the circuit in Fig 1 is also a delay circuit. We already know this as RC networks are used for the basis of many timing circuits. Further study would reveal that an analog delay circuit using discrete components usually has a bandwidth which is inversely proportional to the delay.

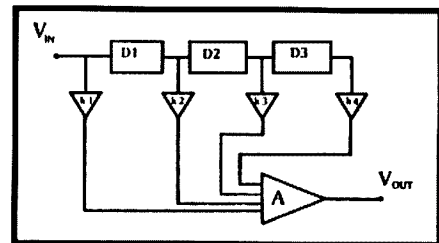


Figure 2 — Filter using a tapped delay line. D1, D2, D3, incremental delays K1, K2, K3, K4 multiplication constants A summing amplifier.

Fig 2 shows a series of delays. This could be an analog system with taps. The input signal and the delayed signals from the taps are amplified or

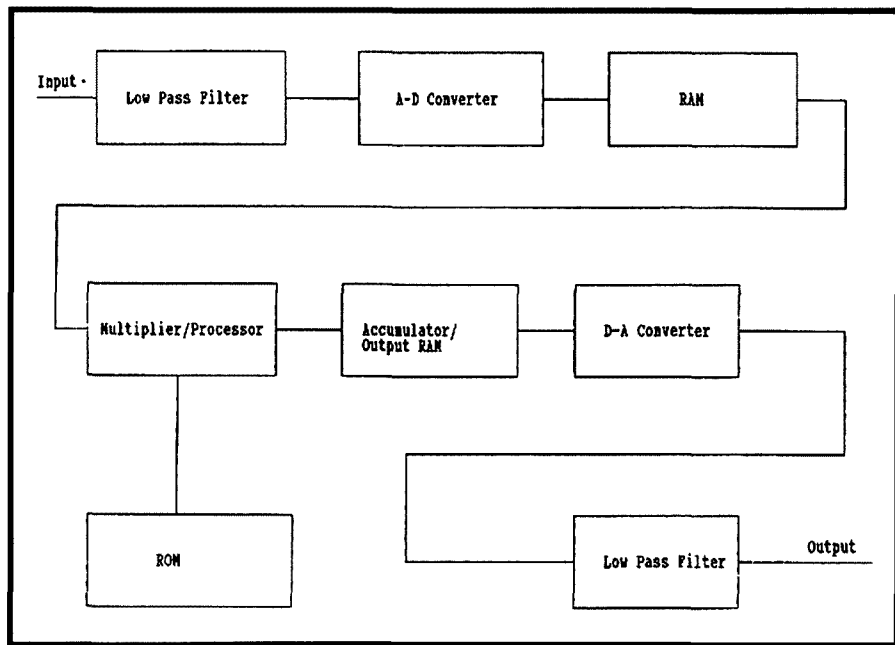


Figure 3 — Block diagram of a digital filter.

attenuated and added together to produce the output signal. With the proper components and values this will give exactly the same response as three RC cascaded filters. The circuit can be implemented using analog components or with digital circuitry.

Fig 3 shows a digital version of Fig 2. Firstly, the analog signal is passed through a low-pass filter to avoid a problem called aliasing. An analog to digital converter (A-D) then converts instantaneous values of the analog input signal to a digital number. The effect is like a picket fence where a solid fence is approximated by many thin pieces of the same height (see Graph 1). Sampling allows reproduction of frequencies up to half the sampling rate. It can down convert even higher frequencies to ones less than the sampling rate, a situation not wanted in this application. This creation of new frequencies is called aliasing and is avoided by filtering out all frequencies above half the sample rate.

Each digital sample is stored in digital memory (RAM). Each memory location represents a tap on our delay line. We select the stored value when we read the memory location. The delay is generated by reading memory locations at specified rate. A multiplier chip accepts the stored values and multiplies them by

predetermined constants which are stored in digital memory (ROM). The results are added into an accumulator. The digital number in the accumulator is converted into an analog voltage by a digital to analog converter (D-A) and the digitising noise removed by a simple low-pass filter.

The resultant output signal will be filtered in exactly the same way as would have occurred in the analog circuit of Fig 2. A digital filter may have more than 25 taps in even a cheap system, resulting in very sharp roll-off at the band edges.

Having implemented a low-pass filter with only a few readily available chips, the question arises, can high-pass filters be constructed? The answer is yes, and what is more they can be combined to form a band-pass filter with linear phase response and very sharp roll-off. The circuit connections remain the same, however the constants used in combining the delayed samples can be changed for each calculation if required.

A system where the input signals only are used implements what is called a Finite Impulse Response filter (FIR filter) and a system that takes the processed signal and subjects it to delays and combines it with the input can be used to implement an Infinite Impulse

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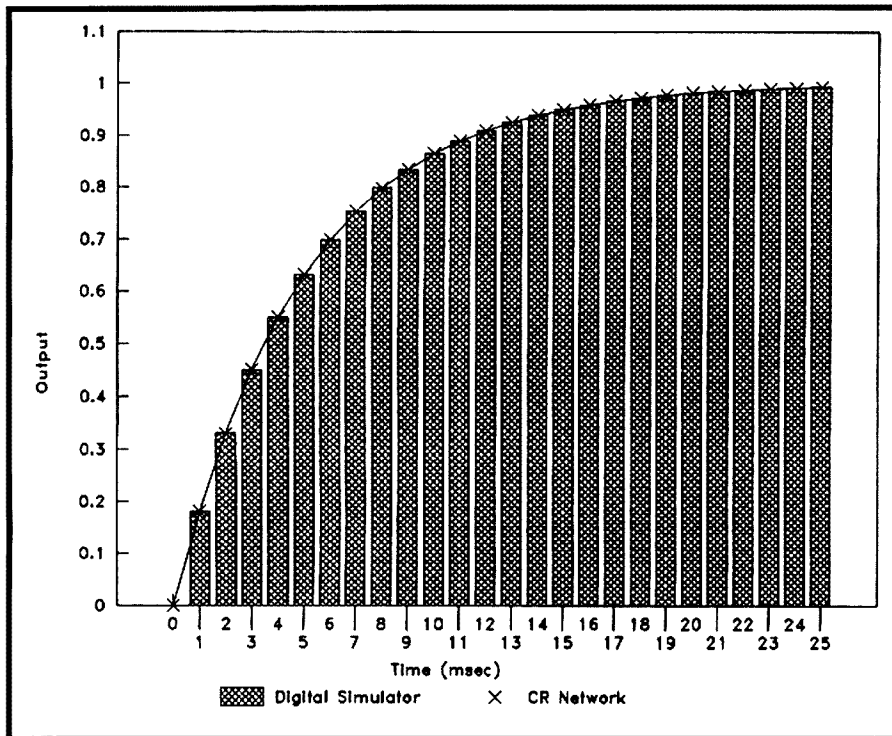
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**Graph 1 — Simulation of CR network.**  
**The output of a CR network as in Fig 1 is compared to a digital simulation of the same network. The time constant is 5 milliseconds and the digital algorithm is:**  
 $V_{out} = 0.18127 V_{in} + 0.81873 V_{out}$

Response (IIR) system. The DSP-9 used the FIR implementation partly because it provides a linear phase response which gives the minimum amount of ringing for narrow filters.

There are of course some compromises. The multiplier must read each memory location, do the multiplications and transfer results to the accumulator before the A-D takes its next sample and the D-A puts out the next signal. The speed required limits inexpensive digital filters to the audio range but military receivers are using digital filtering at an IF of 1.6 MHz.

The DSP-9 uses a special chip which performs both A-D and D-A conversion and includes all necessary filtering. It uses a 16 bit process. The processor contains sufficient RAM to accommodate all the samples. The program and all constants are stored in a 256 k EPROM. The results of each computation are placed in a quad flip-flop for the D-A to convert back to audio. A 5 watt amplifier drives an external speaker.

Digital filters in the amateur radio market are mostly using 16 bit word

lengths and combined multiplier accumulator chips. A 16 bit word allows a dynamic range of 96 dB but the band reject attenuation is around 60 dB for most digital filters on the amateur market. This is usually very adequate.

One problem that appears is the small number of bits available to represent weak signals. Consequently they sound like a strangled Dalek. Faster systems with higher resolution D-As and 32 or 64 bit processors will no doubt appear eventually and give improved weak signal recovery, increasing the fidelity and out of band attenuation.

Having converted to digital form many samples of the signal, plus noise and interference, there is an opportunity to perform other functions as well as filtering. Notching of constant tones can be achieved by

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various means, depending on the computing power available. Reduction of random noise can also be achieved by comparing delayed samples with the present sample. Audio signals show a high degree of correlation but noise does not, so the noise can be rejected. This provides a basis for implementing a noise reduction scheme in addition to that obtained by bandwidth reduction.

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## WIA News

### "Instant licences" for US Hams?

A US amateur radio society has petitioned the Federal Communications Commission (FCC) seeking a rule change that would permit "instant" amateur radio licensing.

The Western Carolina Amateur Radio Society (WCARS), based in Knoxville, has asked the FCC to allow amateur operating privileges to start immediately someone passes the required exam, without having to wait for a licence to be issued.

When licence exam candidates in the US pass their exam, they're issued with a Certificate of Successful Completion, with which they can apply for their first licence. WCARS' instant licensing scheme would save the frustrating waiting period for new hams, the protagonists claim, as well as saving the FCC time and money as the impatient new hams keep calling them for news of their licence.

WCARS proposed a callsign structure based on the US Class D Citizen's Radio Service (CRS) precedent, set a few years ago when the FCC deregulated the CRS.

From the *Westlink* Report.

# Technical Abstracts

Gil Sones VK3AUI

## The Green Dipper

An intriguing title for an article which appeared in Short Wave Magazine for May 1993 and described a different Dip Oscillator. The author, Bill Wilson, described a useful Dip Oscillator with a very simple circuit and which used a tuning capacitor from an AM/FM transistor radio. The case was a cut down sutures box.

The AM/FM tuning capacitor provides a number of sections ranging from around 20 pF for the FM sections up to a couple of hundred pF for the AM sections. The appropriate sections are selected by links in the coil sockets. The coil sockets used were six pin edge connectors.

Coils were attached to the edge connector and a card dial scale so that the scale was changed with the coil. The coil details and coverage are dependent on the actual capacitor used. For a guide try the use of all capacitor sections for the low ranges up to 10 or 11 MHz. Then use both FM sections in parallel up to 30 MHz. At VHF just one section of the FM gang should suffice. The band

coverage and the bandsread of the tuning are up to the constructor.

The circuit is given in Fig 1 and a neat package for soldering the FETs together is shown in Fig 3. Whilst the original used a PCB, direct wiring using a copper laminate as a ground plane and panel would be quite suitable. The components are listed in Fig 2. Whilst C6 appears twice on the circuit in Fig 1 it is fairly non critical and the same value capacitor can be used in both positions.

The circuit used for the oscillator is a negative resistance design using a pair of FETs. Note that one FET is an N channel and the other is a P channel. The supply of the FETs may be difficult but a quick ring around Daycom, RS Components, Farnell and your other suppliers should turn them up. The 2N3820 is likely to be the hardest to obtain.

Bypasses C5 and C6 across D5 should have very short leads. The connections from Tr1 and Tr2 to both C5, C6 and to the tuning capacitor and coil should be very short. By short I really mean zero lead length as these components are all part of

an oscillator circuit extending into the VHF region. C4, whilst listed, can be a gimmick capacitor made by twisting two short insulated wires together for a capacitance known as enough. R7 can be included or omitted as it is only to damp oscillation and so make the dip more apparent. R7 could be included only on those coils where it is needed and its value varied to suit.

A more complex circuit with provision for modulation and recharging NICADs was also given. The complex circuit is not reproduced here as the basic circuit is quite adequate as a Dipper. There is some virtue in the KISS approach in such projects.

After all that you are probably wondering about the green title. Well, the green comes from the re-use of parts from the scrap bin such as the sutures box used for the case. Have a look around and there are probably many alternatives for cases. Similarly, the AM/FM tuning capacitor can be salvaged from a radio that is heading for the bin.

### Fig 2 Parts List.

#### Resistors 1/4 W

R1 1M $\Omega$   
R2 1K $\Omega$   
R3 1K $\Omega$   
R7 10K $\Omega$

#### Potentiometer

R8 5K $\Omega$

#### Capacitors Disc Ceramic

C1, C2, C3

AM/FM Gang Film Dielectric

C4 4p7

C5 1nF

C6 1nF

C6 1nF

#### Semiconductors

##### Diodes

D1, D2 OA81 or sim.

D5 5.1 V 400 mW Zener diode

TR1 2N3819

TR2 2N3820

TR3 2N3710

(try BC108 or sim)

Battery B1 9 V

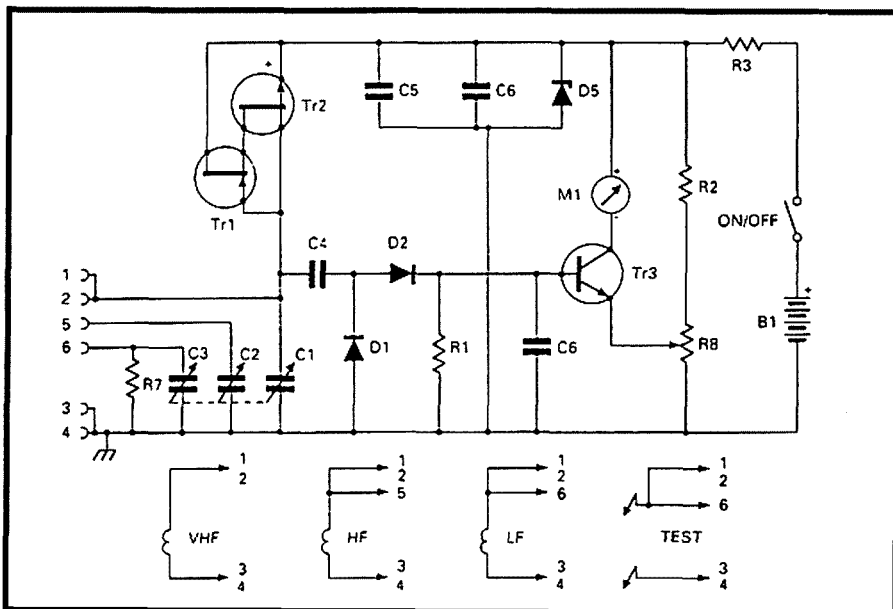
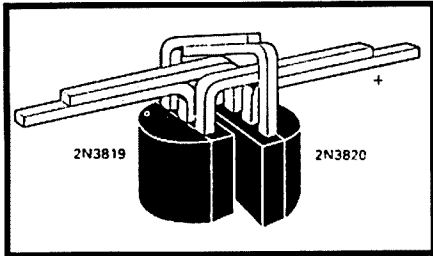


Fig 1 Basic Circuit.

## Mobile Supply Switch

The high DC drain of mobile rigs, together with the sort of car battery capacity used, can lead to embarrassing situations. The DC drain of many mobile rigs is enough to significantly drain many car



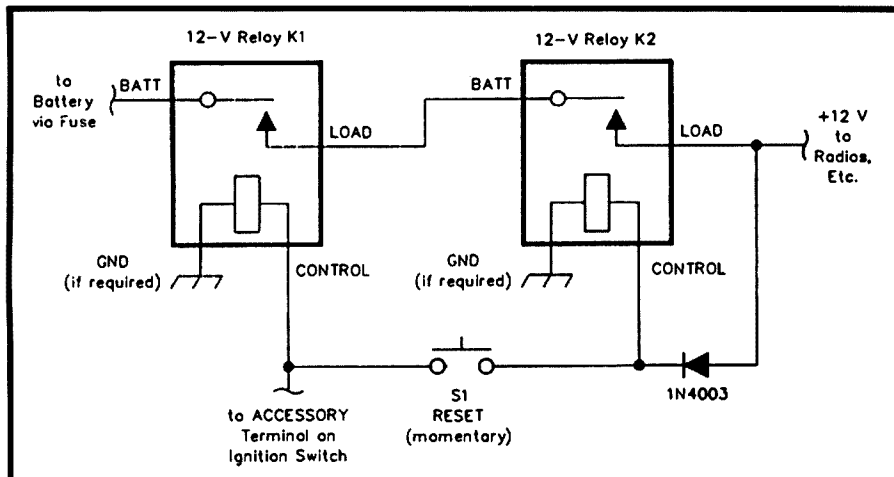
**Fig 3 Connection of Tr1 and Tr2.**

batteries over a day or two. Modern car batteries are designed to start the engine and do not have much in reserve for running your rig over an extended period with the motor stopped. The radio is also designed for use with the engine running and hence the 13.8 V supply requirement.

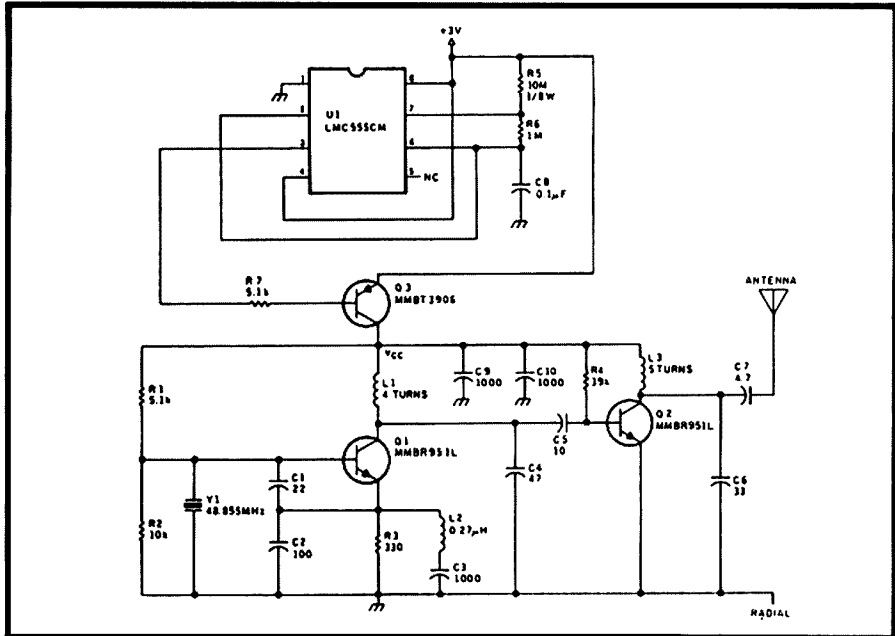
One solution is to run the radio off the accessory line but the transmit drain may make this not viable. Bill Wells KA5DMY provided a solution in *Hints and Kinks*, in QST for July 1993. The solution was to use a couple of automotive lighting relays to switch the line to the battery. Provision was made to postpone switch-on until the motor had started in order to avoid transients. The relays are held in by the accessory line.

The circuit is shown in Fig 4. The radio goes off when the ignition is turned off. The radio will not come back on until S1 is depressed after the ignition switch has been turned on. S1 is a momentary action switch. The diode isolates the radio from the accessory line.

In running the leads to the battery make sure to fuse both leads. Take the negative lead from the car chassis or engine block. This is to



**Fig 4 Mobile Supply Switch.**



**Fig 5 Toony Weeny Tx.**  
Caps are pF unless otherwise noted.

ensure that part of the starting current does not pass through your radio. The radio is also grounded via the antenna and the possibility of a high stray current path exists. Hence the fuse often found in the negative lead. Better replacing a fuse than a radio.

### Teeny Weeny Tx

Here is a small two metre Tx for hidden transmitter hunts which should be very easy to conceal. The original measured 32 mm x 13 mm and could be powered by a 3 V Lithium button cell to give a couple of milliwatts.

The design appeared in *73 Amateur Radio Today* for May 1993 in the *Homing In* column of Joe Moell K0OV. The Tx was developed by Ken Bauer KB6TTS who used it to track gliders. There are smaller designs but not many. The units used to track birds in flight are really tiny but this design, using surface mount bits, is capable of home construction.

The circuit is given in Fig 5. The circuit board layout is given in the original article but would suffer in reproduction. The original used a double sided board and, provided short, direct paths are used, you should be able to make a suitable one of your own.

Circuit boards were available in the USA direct from the original designer. If you are really keen, then obtain a copy of the magazine and you may be able to order a PCB direct.

For surface mount parts you may have to search around a bit. They are available but you do have to look for them. The larger and more professional suppliers can probably help.

The coils are wound on a .060 inch drill bit. Try a 1.5 mm drill bit as it is close to this size.

With a little bit of fiddling you should be able to make a close enough copy. The fun then starts when you use it in some really sneaky transmitter hunts.

# Some Further Notes on Interference Cancelling

Lloyd Butler VK5BR\* adds some further notes on cancelling interfering noise.

## Introduction

In the September 1992 and January 1993 issues of *Amateur Radio* magazine, I discussed how interference could be cancelled at the antenna input and introduced two circuits which could be used to achieve cancellation. I have a few notes to add to the original discussion and will also comment further on the SEM QRM Eliminator briefly mentioned in the September 1992 article.

## Earth Noise

In the previous discussions it has been assumed that interfering noise is induced into the antenna wire from a radiated noise source. When the antenna is partly formed by an earth system, such as in the Marconi antenna, this is not always the case. Sometimes the noise is conducted in through the earth system rather than via the sky wire. In this case, signal pickup from another auxiliary antenna might not provide sufficient noise voltage for cancellation. If interference cancellation cannot be achieved using an auxiliary antenna, try connecting the auxiliary antenna input to the main antenna ground connection. On a number of occasions I have had success using the ground connection when the auxiliary antenna did not provide a satisfactory result.

## Receiver Input Matching

In my circuit published in the September 1992 issue of *Amateur Radio* magazine, I used a matching transformer to face the receiver input. In the circuit published in the January 1993 issue I simplified this by using a matching resistor (R8 in the circuit). This arrangement introduced a drop in receiver input level when

interference cancelling was switched in. The drop in received signal heard annoyed me a little and I eventually deleted R8 and modified the circuit to include the original transformer arrangement. With the circuit changed, I also found it necessary to add a resistor (a new R8) to isolate V2 emitter from transformer T1. This improved circuit stability and reduced a tendency for signal cross modulation apparently caused by the interface. The modified circuit detail is shown in figure 1.

## SEM QRM Eliminator

The interference cancelling unit made by SEM called a QRM Eliminator can be found in some radio shacks. I thought it would be of interest to further discuss its operation and possible performance. Apparently no circuit diagram is supplied with the unit but I have learnt a little about its operation.

A block diagram of the interference cancelling arrangement is shown in figure 2. The auxiliary antenna signal is fed via a phase control network to the gate of an FET stage. The phase of the auxiliary signal is set by the adjustment of two potentiometers in the network. The main antenna is fed via a gain control potentiometer to the gate of a second FET stage. The two adjusted signals are combined by parallel connection of the FET amplifier drains. There is no tuning of any resonant circuits and the amplifiers operate in a broad band mode. Relays are provided to switch out the unit from the main antenna and earth the auxiliary antenna circuit when transmitting.

According to the advertised specification, the mark 2 SEM unit has a frequency range of 100 kHz to

60 MHz. I pointed out in my first article that, to achieve a universal adjustment over a range of frequencies, 360 degrees of phase adjustment was required over all of the frequency range. Just how this is achieved over such a wide frequency range in the SEM unit seems a mystery. I understand that the phase control network is similar to that shown in figure 3.

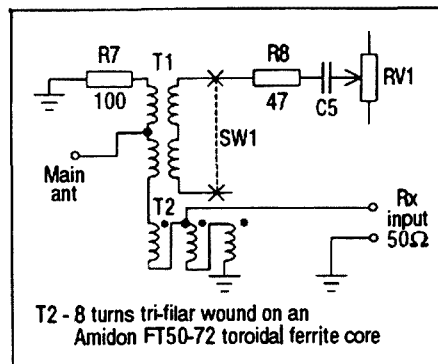


Figure 1 — Modifications to receiver input circuit.

A theoretical study of this network for all possible settings of the two potentiometers looked a bit tedious so I made an assessment of its range of

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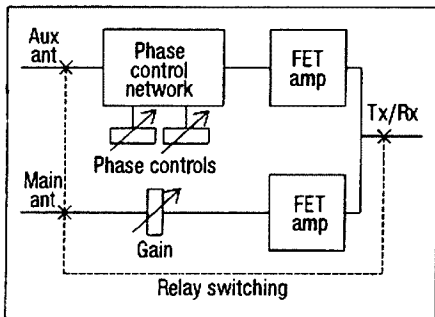


Figure 2 — Block diagram of SEM unit.

phase control by empirical means. I wired up the circuit of figure 3 and carried out tests with a signal generator fed to the input of the network. Phase shift and attenuation through the network was monitored using a dual trace CRO with one of its inputs connected across the network input and the other across the network output.

Whilst various adjustments were accompanied by considerable variation in attenuation, I found that by twiddling the two pots I could achieve 360 degrees of phase variation for a range of frequencies between 1.3 and 18 MHz. This of course covers 1.8 MHz and the noisiest end of the HF band. I could not achieve a complete 360 degrees of adjustment below 1.3 MHz or above 18 MHz. From this result one must conclude that, whilst interference cancellation might be possible outside the range of 1.3 to 18 MHz, complete cancellation might not always be achievable for certain conditions of phase between the two antennas.

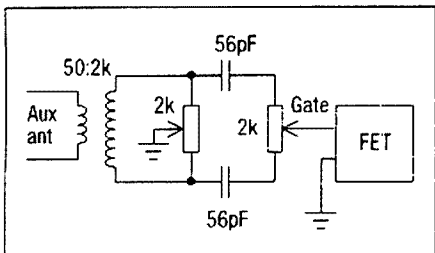


Figure 3 — Phase control network similar to that used on the SEM unit.

I must say that I am not too impressed with the idea of the wide band untuned FET stages. Amplifiers are never perfectly linear and, from my own experience, this provides an invitation for cross modulation by strong signals operating at any

frequency within the range of the amplifier. Noting that the amplifiers are designed for operation down to 100 kHz, there is also the chance of cross modulation by localised noise which often reaches quite high levels in the LF-MF spectrum. There is not much point in cancelling out one lot of noise if, in doing so, another is introduced.

I suggest that if you own one of these units and you experience any form of cross modulation, you might improve its performance by tuning the two antenna input circuits. It might only be necessary to tune the auxiliary circuit if adequate pretuning is provided in the main antenna circuit by the ATU or other transmitter matching device.

In my own interference cancelling system, I certainly found pretuning of the auxiliary circuit was necessary to stop the odd birdies. In my case, pretuning the main circuit was

unnecessary because it was not fed via an amplifier stage.

I have heard that the untuned FET amplifiers in the SEM unit introduce noticeable inherent noise. Here again is where pretuning the inputs can provide an advantage. Injecting the antenna signal via a parallel tuned circuit provides a signal voltage gain approaching the value of circuit Q and hence the signal to noise ratio referred to the amplifier input is improved by this gain factor.

I must emphasise that my discussion on the wide band amplifier design is given in the light of experience with my own noise cancelling circuits and not on any practical testing of an SEM unit. Further comments would be welcomed from any reader who has had experience with the SEM QRM Eliminator.

\* 18 Ottawa Avenue, Panorama, SA 5041

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## WIA News

### One Pizza Supreme, Hold the Anchovies

You might wonder if your 2 m handheld has turned into a cellphone when you hear food orders, weather forecasts and business appointments being relayed via repeaters as you travel the United States in future.

In mid-September last, the Federal Communications Commission (FCC) changed the rules for US amateurs "Relaxing Restrictions on the Scope of Permissible Communications in the Amateur Service".

The new rules permit limited business communications on the ham bands — hence the reference to weather information, business appointments and the ordering of food.

"Fears that the VHF bands would become a pizza ordering service so far appear to half-baked," said the *W5YI Report*.

### New WIA Members

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of November 1993.

L50320	DR R M DOUGLAS
L50322	MR L J KELLY
VK1MIA	MR G NAIRN
VK2KDH	MR D W HARDING
VK2MCC	MR C COOL
VK2TJ	MR L E SIMMONS
VK2TRB	MR R M BROWN
VK2XGM	MR G P MAIZELS
VK2ZKB	MR K C BARNES
VK3AUR	MR M WIMBOURNE
VK3EVK	MR A J GILBERT
VK3TRK	MR B SCHRAPE
VK3TRT	MR R SMALLWOOD
VK5EB	MR C J MCCARTHY
VK5KDI	MR C F MACKINTOSH
VK5ZAI	MR J A HUTCHISON
VK5ZJP	MR J P MALUSA
VK6NLB	MR C L BAKER
VK6YBQ	MR H WUNDERLICH
VK6ZWY	MR J W YEO
VK7ZRJ	MR R J GRACE



# Amateur Radio Annual Index 1993

What a tremendous amount of absorbing reading was provided in *Amateur Radio* magazine during 1993, much of it the accounts of WIA members' experiments, construction projects and experiences, and all to do with this most fascinating of all hobbies, amateur radio.

If you see an item in this index which you want to read, and you cannot locate,

or do not have, that particular copy of *Amateur Radio*, back issues of the magazine are available from the Federal Office to current WIA members at \$4.00 each, which includes postage in Australia.

If a back issue is no longer in stock, photocopies of articles are available to members at \$2.50 each (plus \$2.00 for

each additional issue in which the article appears).

And remember. The WIA is always on the lookout for technical and general interest articles from members. Have you submitted your contribution lately? For further details on how to write an article about your latest construction project, or amateur radio experience, for your magazine, please refer to the August 1992 issue of *Amateur Radio* (page 18), or contact the editors at the Federal Office of the WIA.

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# DICK SMITH ELECTRONICS



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## FT-5200 2m/70cm Mobile Transceiver

The FT-5200 carries the latest innovations in compact cross-band full-duplex and detachable front-panel design for brilliant mobile performance. It has 32 tuneable memories, a built-in antenna duplexer, dual full-frequency LCD screen (with signal strength/power output bargraphs for each band), 8-level automatic display/button lighting dimmer and dual external speaker jacks (one for each band). A thermally-activated fan allows up to 50 watts output on the 2-meter band and 35 watts on the 70cm band. What's more, scanning features include programmable scan limits, selectable scan resume modes, memory skip, priority monitoring and one-touch recall CALL channels. In addition, 6 user-selectable channel steps are provided and a FRC-4 DTMF paging/selcall option lets you program a three-digit ID code so you can be paged by other transceivers, or page up to 5 other stations yourself. An optional YSK-1 remote mounting kit lets you relocate the main rig (under the front seat, for example) and mount the control panel on the dash. The FT-5200 comes with hand-mic, mobile mounting bracket and DC power lead.

### Specifications

#### General

Frequency Range: 144-148MHz, 430-450MHz  
Channel Steps: 5, 10, 12.5, 15, 20 & 25kHz  
Current Consumption: Receive: 600mA  
Transmit: 2m, 11.5/4.0A (high/low)  
70cm, 9.0/3.5A (high/low)  
140 x 40 x 155mm (w/o knobs)

#### Dimensions:

#### Receiver

Intermediate Frequencies:

2m, 17.7MHz & 455kHz;  
70cm, 22.5MHz & 455kHz  
Better than 0.158uV (12dB SINAD)  
Better than 65dB

#### Sensitivity:

Image Rejection:

Maximum AF Output:

3.0W into 4 ohms @ 5% THD

#### Transmitter

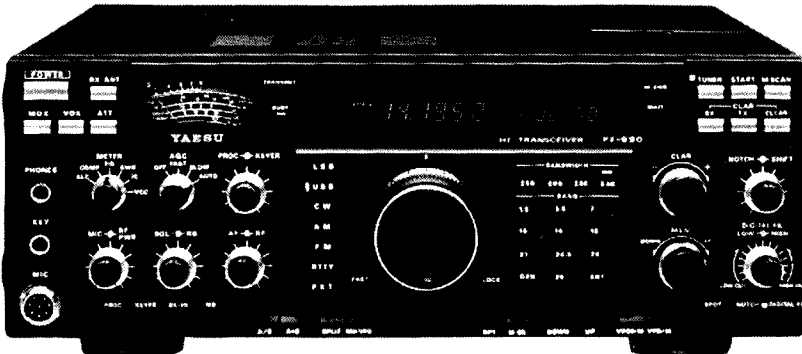
RF Output Power:

2m - 50/5W (high/low)  
70cm - 35/5W (high/low)

Cat D-3310

**2 Year Warranty**

**\$1499**



## FT-990 H.F. All-Mode Base Transceiver

The FT-990 offers many of the features of the legendary FT-1000 in a more compact and economical base-station package. Its excellent front-panel layout, together with clear labelling, a large back-lit meter and an uncluttered digital display provides very straight-forward operation. The receiver uses a wide dynamic range front-end circuit and two DDS's to provide a very low noise level and excellent sensitivity over the 100kHz to 30MHz range. Transmitter output is 100W on all HF Amateur bands (SSB, CW, FM), with high duty cycle transmissions allowed. The internal auto antenna tuner and inbuilt AC power supply are standard features, while the customizable RF speech processor

and Switched Capacitance Audio filtering facilities are unique to the FT-990. Other features include IF Shift and IF Notch filters, IF bandwidth selection, 90 memories and one-touch band selection.

Cat D-3260

**2 Year Warranty**

**\$3995**

**BONUS**

**Deluxe desk microphone (MD-1),  
valued at \$199**

\*Offer extended to 31st January 1994

# Deluxe Handheld FM Transceivers

The superb FT-415 and FT-815 hand-held FM transceivers are compact and rugged with dual-microprocessor control, a range of new automatic battery-saving (ABS) features and power output which is selectable in up to 4 levels at 12V. A die-cast rear case, polycarbonate front panel and battery case ensure reliability in the most demanding of environments. The display and keypad can both be backlit, and the top panel DC supply jack can be used to power the transceiver and charge a NiCad battery pack. A 36mm speaker provides low distortion audio, while in-built VOX circuitry is included for use with the optional YH-2 headset. Advanced features include two independent VFOs, keypad frequency entry, 41 tunable memories, instant recall CALL channel and various scanning modes. The FT-415 has Automatic Repeater Shift (Australian version), which can be activated whenever you tune to a standard repeater sub-band, plus extended receive coverage. Both have DTMF-based selective calling and paging facilities and come with a high-capacity 7.2V, 1000mA/H NiCad battery, belt-clip, carry case and approved AC charger.

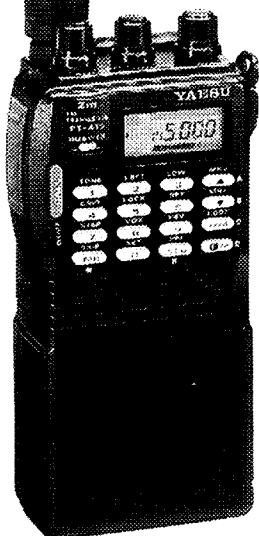
**FT-415** Cat D-3610 **\$599**  
**FT-815** Cat D-3615 **\$699** (Limited stocks)

## Specifications:

Frequency range: FT-415 144-148MHz  
 (140-174MHz extended receive)  
 FT-815 430-450MHz  
 55 x 146 x 33mm

Size:  
 Transmitter:  
 Power output: FT-415 2.0W (at 7.2V)  
 FT-815 1.5W  
 5.0W at 12V

Both models:  
 Receiver:  
 Sensitivity: better than 0.158uV, (12dB SINAD)  
 both models, Ham bands only



## BONUS

Purchase any 2m or 70cm handheld during January, and we'll give you a 25% discount on any matching speaker/mic or NiCad battery pack purchased at the same time. Not applicable to dualband or portable transceivers.

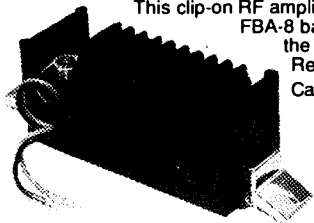


## FL-2025 Amp

Turn your FT-290RII into a powerful 25watt mobile/base transceiver with the FL-2025 amplifier.

This clip-on RF amplifier replaces the FBA-8 battery holder on the FT-290RII.

Requires 13.8V DC.  
 Cat D-2863



**\$299**

## FT-290RII 2M Multi-Mode Transceiver

The multi-mode, transportable transceiver for serious field or mobile operations! The FT-290RII features FM, SSB (USB/LSB), and CW operation with 2.5W output, twin VFOs and 10 memories. Selectable tuning rates are provided for SSB/CW and FM, while mode-specific features such as noise blanker and clarifier control for SSB/CW, plus a full set of functions for FM repeater operation make this unit very simple to operate. Comes with an FBA-8 battery holder for nine "C" size standard or NiCad batteries (not supplied), antenna and hand-held microphone.

Cat D-2875

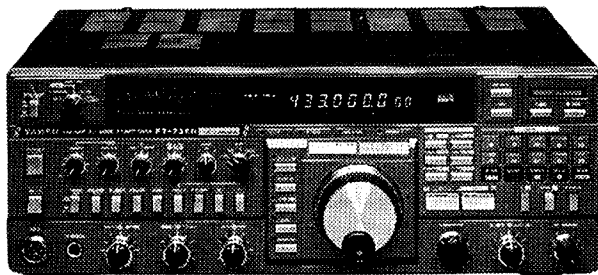
**2 Year Warranty**

**\$999**

## FT-736R VHF/UHF Base-Station Transceiver

The FT-736R is Yaesu's best VHF/UHF transceiver! Designed for the serious VHF/UHF operator, this high-performance transceiver provides 25W output (SSB, CW, FM) on the 2 metre and 70cm (430-450MHz) bands and can easily be expanded to cover the 6 metre and 23cm (1240-1300MHz) bands as required. Features include keyboard frequency entry, 115 memories, 2 independent VFOs per band, separate FM Channel knob with selectable channels steps, 2 full duplex VFOs for Satellite operation, IF shift and Notch filters, noise blanker, all-mode VOX, SSB speech processor, GaAs Fet front-ends (430, 1200MHz) high-stability TCXO reference oscillator & an inbuilt AC power supply. Microphone optional extra.

Cat D-2920



**2 Year warranty**

**HURRY! BEAT THE PRICE RISE! \$2995**

# Great technology from



## FT-911 23cm Handheld

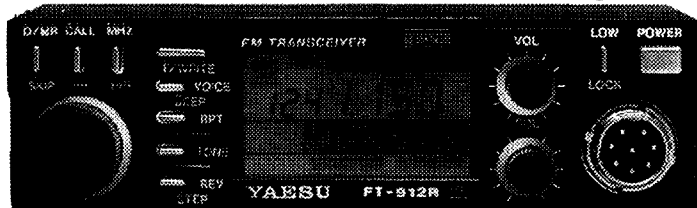
The compact FT-911 23cm handheld provides great performance, long battery life, and rugged construction, at an incredibly low Dick Smith Electronics price. If you've been thinking of getting a 23cm hand-held, now's the time to do it.

The FT-911 provides 1240-1300MHz coverage, 2 VFO's, keypad frequency entry, 7-digit LCD screen, 1000 mA/H NiCad pack, carry case, belt-clip and approved AC charger.

Cat D-3380

**Only \$599**  
**Save \$200**  
**2 Year Warranty**

## FT-912R 23cm Mobile



Great value! The FT-912R is an easy-to-use, solidly built transceiver that provides 10 watts output on the 23cm band (1240 - 1300MHz), and comes complete with mobile mounting hardware and hand microphone. Features include 21 memories, selectable tuning steps, inbuilt CTCSS encode, various scanning modes, and a large back-lit LCD screen. At this great price, you've got no excuse for not using the vast 23cm band.

Cat D-3390

**2 Year Warranty**

**Save \$200 \$799**

## FT-2400H Rugged 2m 50W Mobile



Our toughest 2m mobile! The FT-2400H is the first 2m amateur rig to meet the USA MIL-STD 810C shock and vibration requirements, so you know you're getting a transceiver that will provide really reliable long-term operation. It's one-piece diecast chassis allows 50W output without forced air cooling, while the large back-lit LCD screen and major controls are well spaced for easy access. A customised microprocessor also provides selectable Auto Repeater Shift (Australian band plan), plus extended 140-174MHz receiver coverage with a track-tuned front-end and dual FET mixer for improved receiver performance. CTCSS encode, 31 tunable memories, scanning modes, and an MH-26 hand microphone are also provided.

Cat D-3630

**2 Year Warranty**

**\$699**

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	Two Metre & 70 cm Wavemeter	Technical Abstracts	Dec	19
<b>Transceivers</b>				
	"TCF" Sideband/CW Transceiver for 80 Metres	Drew Diamond VK3XU	Oct	04
	123 Hz Access Tone for the Dick Smith 430 MHz Explorer	A M Crewther VK3SM	Mar	26
	A Low Noise Pre-Amp for the ICOM IC-275A/H	Albert Gnaccarini VK3TU	Sep	17
	AWA 25M — Some Further Thoughts	Ian Keenan VK3AYK	Jun	33
	Enhanced Receiver Performance of the FT-411E	Lew Whitbourn VK2ZJP	Jul	10
	ICOM IC-737 All Mode HF Transceiver (Review)	Ron Fisher VK3OM	Aug	15
	Modifying the Philips FM-828 to Auto Scan	Ron Graham VK4BRG	Apr	21
	Repeater Reverse Switching for the Dick Smith Explorer	VK3SM & VK3XIS	Nov	16
	The DSE Commander Mk1 "Thoughts and Experiences"	Dave Kent VK2BJI	Jan	23
	The Kenwood TS-50S All Mode HF Mobile Transceiver (Review)	Ron Fisher VK3OM	Jun	17
	ZS5L QRP Transceiver	Technical Abstracts	Dec	21
<b>Transmitters</b>				
	"Simplex" Sideband Transmitter for 3.580 MHz	Drew Diamond VK3XU	Jun	24
	160 Metre AM Transmitter	Technical Abstracts	Aug	20
	SSB and Audio Quality	Jon Lindstad VK2WF	Nov	24
<b>WICEN</b>				
	Report on WICEN/NTES Exercise	Trevor Connell VK8CO	Sep	45

## ALARA

Robyn Gladwin VK3ENX\*

### YL Contests

There are two DX contests early in the New Year which may interest radio amateurs with time on their hands over the holidays.

MEET THE NOVICES AND TECHNICIANS DAY, sponsored by YLRL, the United States YL Association, will be held on Saturday, 15 January 1994 from 1500 to 0500 UTC. All licensed women operators throughout the world are invited to participate. Only frequencies in the HF bands that are open to novices and technicians may be used. A station may be worked once for credit. Net contacts do not count. Frequencies are CW: 21.120-21.150 28.150-28.185 SSB: 28.300-28.500 MHz.

Scoring is as follows:- 3 points for each YL novice or technician worked; 2 points for each YL general or advanced class worked; 1 point for each YL extra class worked. Total score = total number of points. Mail logs to Vice President YLRL, Carla Watson W06X, 473 Palo Verde Drive, Sunnyvale CA94086, USA. Logs must be postmarked no later than 30 days after the contest and must be signed by the operator.

The second contest will be conducted by the British YL association. It is the ELEVENTH BYLARA CONTEST, to be held on two dates:- Thursday, 10 February from 1900 to 2200 UTC and Saturday, 12 February from 1000 to 1300 UTC. Frequencies are 14.250-14.280, 21.350-21.400, 28.350-28.410 and 28.650-28.700. Scoring is as follows:- 5 points per YL BYLARA member; 3 points

per YL non-member; 2 points per OM Associate member; 1 point per other OM contact. EACH DAY IS A SEPARATE ENTRY TOTAL. Logs must be received by 4 April 1994. They should be sent to Ella Tugwell G0FIP, 67 Upper Kingston Lane, Shoreham-By-Sea, Sussex BN43 6TG, England.

ALARA has many sponsored members in the US and the UK and it would be great if Australian YLs could support these contests.

### YLs on the Air

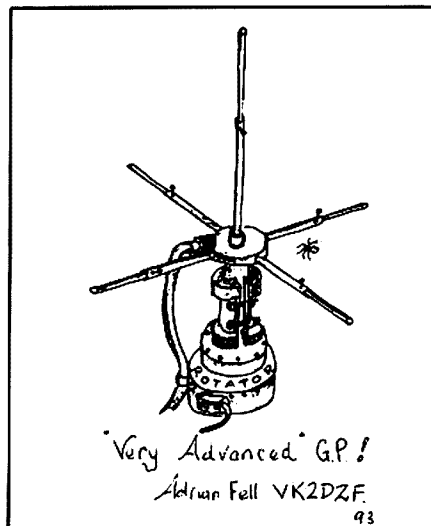
This is the title of the YL column which appears in the US radio magazine "World Radio". The articles are written by Kay Eymann WA0WOF. In her August 1992 column she published a poem written by Raymond Cotton W1BTY, almost 40 years ago. I hope that OMs who read the poem may be inspired to encourage their partners to join the wonderful hobby of amateur radio.

### My Gal

The final's plates may seem to drip  
From running too far off the dip;  
The modulator makes with chatter  
For loading is a minor matter.  
The bath's hung full with lingerie  
That somehow wasn't put away;  
I don't ask why, "cause I can guess  
This was her day as NCS.  
My wilted shirt will have to do  
Me, for another day or so.  
"I would have fixed one for you, pet,  
But today the YL ham club met."

Tonight I dined on beans and bread,  
Did the dishes, made the bed;  
She'd taken off just after dawn  
To get the CD station on.  
But when I spend a wad of cash  
On mobile gear and such like trash  
That might have bought an evening dress  
Or a new coat — sure, nothing less  
She smiles and strokes her VFO  
And says in voice both sweet and low,  
"Its okay, dear, the old things will do."  
God bless her soul — she means it, too!  
And when I sit up till the dawn,  
When the annual SS is on,  
She never scolds or spoils my plans  
Because the good gal understands.  
So I've no cause the day to rue  
I taught her the code and theory, too.  
We now see all things eye to eye;  
A lovely gal, a lucky guy.

\*PO Box 438 Chelsea 3196





# AMSAT Australia

Bill Magnusson VK3JT\*

National co-ordinator  
Graham Ratcliff VK5AGR  
Packet: VK5AGR@VK5WI  
AMSAT Australia net:  
Control station VK5AGR  
Bulletin normally commences at 1000 UTC, or 0900 UTC on Sunday evening depending on daylight saving and propagation. Check-ins commence 15 minutes prior to the bulletin.

Frequencies (again depending on propagation conditions):  
Primary 7.064 MHz (Usually during summer).

Secondary 3.685 MHz (Usually during winter).

Frequencies +/- 5 kHz for QRM.  
AMSAT Australia newsletter and soft-ware service

The newsletter is published monthly by Graham VK5AGR. Subscription is \$25 for Australia, \$30 for New Zealand and \$35 for other countries by AIR MAIL. It is payable to AMSAT Australia addressed as follows:

AMSAT Australia  
GPO Box 2141  
Adelaide SA 5001

## Welcome in the New Year

By now you will all have welcomed in the new year, hopefully in a way beneficial to your amateur radio satellite activities. I'd like to be able to give you a run-down of our efforts at Mt Skene but that'll have to wait until next month as this is being written in November due to the deadline.

## Moon-bounce Tests

I wonder if anyone else heard the signals from Algoquin via EME. Ray VK3YPY and I sat up until the wee small hours and heard the 70 cm signals on the Saturday night. However, despite twice the antenna gain on 1296 MHz, we heard nothing on the next night.

## APRS

I'm still collecting info on this subject. I have been offered a copy of the program by our local sysop who found it in his BBS files so, hopefully, I'll have more to report next month.

## "S" mode

I had my first QSO on OSCAR-13 mode "S" the other day. Predictably a JA. Good signals from a home brew converter (no pre-amp) and a copy of James Miller's "minimum helix" as described in various magazines. The system works well and I'm looking forward to using it in a (very) portable situation. The eclipse season means that squint angles are going to be a bit high for a month or so but, even so, signals are more than adequate. Pity that the "S" mode schedule is so short on MA counts. Next step is a pre-amp at the feed point and maybe a longer helix. (To balance the 70 cm beam -Hi!).

## Current Amateur Radio Satellite Status

As promised, here is a list, to the best of my knowledge, of the frequencies of all the currently operational amateur radio satellites. Please do not hesitate to make me aware of any inaccuracies or omissions.

SATELLITE	UPLINK (MHz)	DOWNLINK (MHz)	SATELLITE	UPLINK (MHz)	DOWNLINK (MHz)
Oscar 10 (AO-10)			Mode A (SSB,CW-Inverting)	145.91-145.95	29.410-29.450
General Beacon (Carrier only)		145.810	Robot Mode A (CW)	145.83	29.407 or 29.453
Engineering Beacon (irregular and garbled)		145.987	Beacon/Robot (CW)		29.407
Mode B (SSB,CW-Inverting)	435.030-435.180	145.825-145.975	Beacon/Robot (CW)		29.453
Note: AO-10 is out of control but still provides good communications via mode "B" when the batteries are charged by the solar cells.			Mode K (SSB,CW-Inverting)	21.210-21.250	29.410-29.450
Oscar 11 UoSAT-2 (UO-11)			Robot Mode K (CW)	21.130	29.407 or 29.453
Beacon (1200 AFSK, FM)		145.826	Beacon/Robot (CW)		145.907
Beacon (1200 AFSK, FM)		435.025	Beacon/Robot (CW)		145.953
Beacon (1200 AFSK, FM)		2401.500	Mode T (SSB,CW-Inverting)	21.210-21.250	145.91-145.95
Note: UO-11 has recently returned to service after a short shut-down during which time new soft-ware was uploaded. It is currently being reconfigured by Surrey.			Robot Mode T (CW)	21.130	145.907 or 145.953
Radio Sputnik 10 (RS-10)			Radio Sputnik 12 (RS-12)		
Platform = COSMOS 1861			Beacon/Robot (CW)		29.408
Beacon/Robot (CW)		29.357	Beacon/Robot (CW)		29.454
Beacon/Robot (CW)		29.403	Mode A (SSB,CW-Inverting)	145.91-145.95	29.410-29.450
Mode A (SSB, CW-Inverting)	145.86-145.90	29.360-29.400	Mode A (CW)	145.831/840	29.408 or 29.454
Robot Mode A (CW)	145.82	29.357 or 29.403	Beacon/Robot (CW)		29.408
Beacon/Robot (CW)		29.357	Beacon/Robot (CW)		29.454
Beacon/Robot (CW)		29.403	Mode K (SSB,CW-Inverting)	21.210-21.250	29.410-29.450
Mode K (SSB,CW-Inverting)	21.160-21.200	29.360-29.400	Mode K (CW)	21.129	29.408 or 29.454
Robot Mode K (CW)	21.120	29.357 or 29.403	Beacon/Robot (CW)		145.912
Beacon/Robot (CW)		145.857	Beacon/Robot (CW)		145.959
Beacon/Robot (CW)		145.903	Mode T (SSB,CW-Inverting)	21.210-21.250	145.910-145.950
Mode T (SSB,CW-Inverting)	21.160-21.200	145.86-145.90	Mode T (CW)	21.129	145.912 or 145.959
Robot Mode T (CW)	21.120	145.857 or 145.903	Radio Sputnik 13 (RS-13)		
Radio Sputnik 11 (RS-11)			Beacon/Robot (CW)		29.458
Platform COSMOS 1861			Beacon/Robot (CW)		29.504
Beacon/Robot (CW)		29.407	Mode A (SSB,CW-Inverting)	145.96-146.00	29.460-29.500
Beacon/Robot (CW)		29.453	Mode A (CW)	145.84	29.458 or 29.504
			Beacon/Robot (CW)		29.458
			Beacon/Robot (CW)		29.504

SATELLITE	UPLINK (MHz)	DOWNLINK (MHz)	SATELLITE	UPLINK (MHz)	DOWNLINK (MHz)
Mode K (SSB,CW-Inverting)	21.260-21.300	29.460-29.500	Mode J	144.30-144.50	
Mode K (CW)	21.138	29.458 or 29.504	ATV (TV,AM)	1265.000	
Beacon/Robot (CW)		145.862	AMSAT-OSCAR-19 (LO-19) (Lusat)		
Beacon/Robot (CW)		145.908	(1200 AFSK,FM-SSB)	145.84/86/88/90	437.15355 or 437.1258
Mode T (SSB,CW-Inverting)	21.260-21.300	145.960-146.000	FUJI-OSCAR-20 (JAS-1b) (FO-20)		
Mode T (CW)	21.138	145.862 or 145.908	Beacon JA (CW,Analog)		435.795
AMSAT-OSCAR-13 (AO-13)			Mode JA (SSB,CW)	145.90-146.00	435.80-435.90
General Beacon (400 BPSK,CW,50 Baud RTTY)		145.812	Beacon JD (CW)		435.910
Engineering Beacon (PSK,CW,RTTY)		145.985	Mode JD (1200 BPSK,FM-SSB)	145.85/87/89/91	435.910
Mode B (SSB,CW-Inverting)	435.420-435.570	145.825-145.975	OSCAR-21 (AO-21), Radio Sputnik 14 (RS-14)		
General Beacon (400 BPSK,50 Baud RTTY)		435.651	Beacon (CW)		145.822
Engineering Beacon (PSK,RTTY)		435.677	Beacon (BPSK,FM)		145.952
Mode J (SSB,CW-Inverting)	144.423-144.475	435.940-435.990	Beacon (BPSK,SSB)		145.983
Beacon (PSK,RTTY)		2400.325	Mode B (SSB,CW-Inverting)	435.022-435.102	145.852-145.932
Beacon (PSK,RTTY)		2400.664	Rudak 2 (A/BPSK,FM)	435.016/155/193	145.983 or 145.987
Mode S (SSB,CW,FM)	435.601-435.639	2400.711-2400.747	Rudak 2 (Various Modes)	435.041	145.983 or 145.987
Mode Rudak	1269.71	435.677	Beacon (CW)		145.948
Note: Mode "L" is no longer operational on AO-13.			Beacon (BPSK,FM)		145.838
UOSAT-OSCAR-14 (UO-14) (Taken out of amateur service)			Beacon (BPSK,FM)		145.800
Note: This (Surrey) satellite is now given over to the "SatelLife" organisation and is being used to deliver humanitarian medical aid to developing countries. DO NOT attempt to communicate with or via this satellite. It is no longer available to the amateur service and the amateur transponders have been turned off.			Mode B (SSB,CW-Inverting)	435.043-435.123	145.866-145.946
AMSAT-OSCAR-16 (AO-16) (Pacsat)			UOSAT-OSCAR-22 (UO-22)		
Mode J (1200 BPSK BBS,FM-SSB)	145.90/92/ or 94/96	437.025 437.050	Mode JD (9600 Baud FSK,FM)	145.90/975	435.120
Mode S (1200 BPSK BBS,FM-SSB)		2401.1 or .1428	KITSAT-OSCAR-23 (KO-23)		
AMSAT-OSCAR-17 (DO-17) (Dove)			Mode J (9600 BPSK BBS)	145.85/90	435.175
Beacon 1 (1200 bps AFSK,Digital Voice,FM)		145.82516	KITSAT-OSCAR-25 (KO-25)	145.870	435.175
Beacon 2 (1200 bps AFSK,Digital Voice,FM)		145.82438	ITAMSAT-OSCAR-26 (IO-26)	145.980	436.500
Beacon 3 (1200 BFSK,Digital Voice,SSB)		2401.2205		145.875	435.867
AMSAT-OSCAR-18 (WO-18) (Webersat)			AMRAD-OSCAR-27 (AO-27)	145.900	435.822
Mode J (1200 BPSK,RC,SSB)		437.075 or 437.10	POSAT-OSCAR-28 (PO-28)	145.925	435.250
				145.975	435.275

The ARSENE satellite has failed and has been removed from the list.

The last four satellites are new and are currently in various phases of commissioning. Their technical make-up is quite complex. I will feature them one by one in complete detail each month in future columns.

\*359 Williamstown Rd Yarraville VIC 3013

Packet: VK3JT @ VK3BBS

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## WIA News

### Publicity for JOTA

The Queensland *Sunshine Coast Weekly* carried a story and photograph on Jamboree of the Air (JOTA) activities at Woombye in the last week of October. Headed "Scout groups talk via satellite", the story told how the JOTA opening address was broadcast round Australia using the Optus satellite.

The paper opened the story with a strong link between amateur radio and the scouts and guides, saying, "The Jamboree of the Air is the largest event in the annual

calendars of the scout and guide movements and the Amateur Radio fraternity — especially in Australia."

Woombye Rover Advisor and amateur, Ian Hart (no callsign quoted), was credited with organising Woombye Scout Group's participation and supplying the equipment. The picture accompanying the story showed Ian with a very young scout cub.

"Many long conversations were had by the Woombye youth with members of groups from Noosa,

Mapleton, Caloundra, Loganlea (Brisbane), Ballarat (Victoria), Guildford (Sydney) and Cradle Mountains (Tasmania)," the *Sunshine Coast Weekly* reported.

All good, positive publicity for amateurs and amateur radio involvement in the community. Remember, it's always good to contact your local media whenever you have an event of this sort, a club function, a field day or whatever. Public exposure does much to dispel public mistrust and misunderstanding of "those nuts/CBers with the radios."

## AWARDS

John Kelleher VK3DP — Federal Awards Manager\*

Happy New Year to all. Your Interest and encouragement has allowed me to achieve success during this past two and a half years. Please keep it up, as I relish the thought of providing more service to you in the future. Some long standing and Honour Roll members have personally thanked me for my efforts.

On the subject of DXCC upgrades. The same message keeps coming up. "It has taken a long time to finally gather these ten plus countries." In this present period of depressed DX activity, I WILL ACCEPT ANY NUMBER OF ADDITIONAL COUNTRIES to upgrade your totals, and to keep you on the active DXCC listings. I have found it necessary to transfer quite a few stations to the inactive list. This has come about because most have not upgraded their active totals since 1 December 1987, or their totals have dropped below 100 due to deletions, etc.

So, if your call sign is not shown in the next DXCC listings, which should be published next month, then that is the reason why.

### Canadaward

Confirm two-way contact with all Canadian Provinces and Territories. Endorsements for any band 6 to 160 metres, and on any mode via Oscar satellite. Modes may be Mixed, all CW, SSB, or RTTY. Contacts after 1 July 1977 qualify. Send cards OR GCR list, plus US\$8.00, or 10 IRC to.... CARF Awards Manager PO Box 356, Kingston, Ontario, Canada K7L 4W2. Provinces and Territories needed are....

VO1/VO2 Newfoundland & Labrador  
VE1 Prince Edward Island  
VE1 Nova Scotia  
VE1 New Brunswick  
VE2 Quebec  
VE3 Ontario  
VE4 Manitoba  
VE5 Saskatchewan  
VE6 Alberta  
VE7 British Columbia  
VE8 North West Territory  
VY1 Yukon Territory

### Stampede City Award

Contact 10 stations in the City of Calgary, Alberta, after 1 January 1962. All Calgary ARA members qualify. All bands and modes. A contact with VE6AO, AP, GO, HE, MX, NQ, RH, RQ, SA, VK, VO and VE7DE, OK count double points. The award is free, but please include sufficient return postage. Apply with log extract to

Russ A Wilson VE6VK, 1235 Richland Road NE, Calgary Alberta Canada T2E 5M5.

### The Canary Islands Diploma

Work 10 different EA8 stations since 29 April 1971. GCR list plus 15 IRC, or equivalent to Diploma Islas Canarias, Apartado 860, Las Palmas de Gran Canaria, Canary Islands.

### Copenhagen Award

Contact 5 stations in the Copenhagen area. Available for CW, SSB or Mixed. All bands. SWL OK. GCR list and 5 IRC to Allis Anderson OZ1ACB, Kagsaavej 34, DK-2730, Herlev Denmark.

### The J28 Award

Contact J28 stations after 27 June 1977. Expedition and other special call signs are acceptable. For 1st Class award, contact 8 stations in Djibouti on any modes, but on two bands. For 2nd Class award, 15 QSOs on at least 2 bands, 5 of which must be CW. The same station may be

counted once on each band. GCR list and a fee of US\$6.00 to Award Manager J28DM, ARAD, PO Box 1076, Djibouti, Djibouti Republic.

### DXCLA

For the Short Wave Listeners, from the Radio Society Great Britain (RSGB) we have the DX listeners Century Club (DXCLA). This award can be claimed by any SWL who can produce evidence of having received signals from amateur radio stations located in 100 plus DX countries. The fee is US\$4.00. Applications go to Awards Manager, S Emlyn-Jones GW4BKG, PO Box 20, Bridgend, Mid-Glamorgan CF35 6EP, United Kingdom.

### Special Event

V73AX, commemorating the 50th anniversary of the Battle for Kwajalein Atoll, operating from the Kwajalein Amateur Radio Club, Republic of the Marshall Islands, during 1745 UTC 31 January 1993 to 1920 UTC 5 February 1994; SSB, CW and RTTY on HF and 6 metres; conditions permitting. For QSL, send your QSL and SASE or IRC to KARC, PO Box 444, APO AP 96555, USA.

\*PO Box 300 Caulfield South 3162

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## QSP News

### 160 Metre "Have a Go" Activity

Hastings Branch of the NZART (the New Zealand sister society to the WIA) is arranging this recreational activity again this year.

Use this non-competitive opportunity to experiment with aerials and populate the 160 m band. Try a group effort.

In previous years this event has proved very popular without problems of band crowding. Based on previous years experience, DX results are likely.

CW or LSB on approx 1840 kHz from 2000 NZT on 18 March 1994 to 0200 NZT on 19 March 1994; and the same times 24 hours later.

If you want more information, contact David Walker ZL3DK, 36 Ardrossan Avenue, Flaxmere, Hastings, NZ.

## ELECTRONIC DISPOSALS

03 723 2699

Magnetic antenna mounts	\$35.00 ea
PL259 Crimp plugs	\$ 1.00 ea
Mirror antenna mounts	\$ 8.95 ea
Tension egg insulators	\$18.95 ea
Gutter mounts	\$19.90 ea
Bull bar antenna mounts	\$ 8.60 ea
Base and antenna leads	\$ 9.95 ea
Top quality VU meters	
Large	\$26.50 ea
Small	\$19.95 ea
Assorted electrolytic capacitors	
Bag of app 100	\$ 6.00
Assorted green caps	
App 150	\$ 9.00
9v 200 mA plug packs	\$ 3.00 ea

Come and look at the range of stock at

27 The Mall  
Cnr Eastfield & Bayswater Roads  
South Croydon Victoria 3136

## Club Corner



The "hounds" line up at the start of the one of the BARG Hamvention "fox hunts".

### BARG Hamvention '93

Isn't it a great feeling when you plan to do something on a grand scale and when you carry out the task everything just falls into place in line with the details that you have spent weeks sorting out and arranging?

Tom (VK3DMK) must have experienced that great feeling on 31 October at the Bray Raceway in Ballarat.

You see, Tom was the Co-Ordinator for the BARG Hamvention which proved to be an outstanding success, due in no small measure to the many weeks of effort he put in planning and arranging the details. Of course Club Members also pitched in to help out, and what a magnificent effort by the XYLs who catered for the scrumptious lunch.

The writing was on the wall on the Sunday morning when we woke up, for the WX could not have been better for the occasion. We should not have been concerned of course because after all this is Ballarat, and it's renowned for its WX.

930 other radio orientated people must have agreed with our prediction, as they started to roll up as soon as the gates opened, and what a great day they had!

The 8 commercial tables were set up with all of their goodies, the 25 private tables had an amazing array of pre-loved "bitz'n pieces"; the coffee was on tap and the foxhunting hounds were straining at the co-ax ready to pursue the hapless fox.

Train travellers had been picked up at the station and brought to the venue and VK3RBA was busy as travellers called in for directions to the venue. The BARG Hamvention was in full swing.

All day the fervour continued as mate greeted mate and new mates were welcomed, but QSOs really took hold over the lunch tables in the well appointed dining area. Sausages and hamburgers together with appropriate trimmings and a dessert were gratefully consumed, and the QRM built up as stories were swapped, or the performance of that new rig or antenna was extolled into the receptive ear of a willing listener.

Meanwhile, at the commercial and pre-loved tables, housekeeping budgets took a hammering as that elusive piece of gear that "I've wanted for ages" or "I reckon I can get going" or "Joe's got one of these — they're great" disappeared into coat pockets or the boot of the car so it would be out of sight of the XYL until it could be furtively positioned on the bench in the shack so that it looked like it had been there for years.

And yet at the end of this great day I couldn't help feeling sorry.

I felt sorry for those who, for whatever reason, couldn't get along to share this wonderful day with us. But never mind, rest assured that it's on again next year, for sure, and Tom and the Club are determined that the BARG Hamvention

for 1994 will be BIGGER and BETTER than ever. Put it in your Diary NOW!

Norm VK3LBA  
Publicity Officer BARG

### 1994 Gosford-Central Coast Field Day

The Gosford Field Day is one of the longest running events in the Australian amateur radio calendar. The next Gosford Field Day will be held on Sunday, 27 February 1994 at Wyong Racecourse and this will be the 37th year of this popular and growing event.

As usual the large contingent of well known suppliers of electronic equipment, components and books will be attending. These companies will have their latest products on display and many traders will have items on sale at very special Gosford Field Day prices.

Last year the popular "Flea Market" attracted a large number of people who traded an enormous amount of surplus electronic equipment to eager buyers from trestles, their trailers or from the boot of their car. The organisers expect the flea market to boom with even more vendors than last year.

The organisers, the Central Coast Amateur Radio Club Inc, have kept the format for the field day in line with the changing face of amateur radio. In recent years seminars on a wide range of topical subjects, ranging from packet radio to satellite communications, have been a popular attraction. This year an even bigger program of interesting lectures and equipment displays has been arranged. Some attractions, however, have remained unchanged and ever popular. Among these is the so called disposal sale of thousands of new and used items of surplus equipment, many bargains going up for grabs. This year the minimum value of \$20 per lot will apply to disposals sales.

More than two thousand people attended last year's Gosford Field Day. The next one at Wyong racecourse will be bigger and better than ever, so mark 27 February 1994 down in your calendar now! Gates will open at 9.00 am in wet or fine weather and all displays are under cover.

Bob Fitzgerald VK2XRF,  
Publicity Officer  
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**Sign up a new WIA member today — we need the numbers to protect our frequencies and privileges.**

# Contests

P. Nesbit VK3APN — Federal Contest Coordinator\*

## Contest Calendar Jan — Mar 94

Dec 26/	Jan 16 Ross Hull Memorial	(12/93)
Jan 1	ARRL Straight Key Night	(12/93)
Jan 1/2	ARRL RTTY Roundup	(12/93)
Jan 15/16	VHF/UHF Field Day	(12/93)
Jan 16	HA DX CW Contest	(12/93)
Jan 28/30	CQ WW 160 m CW Contest	(12/93)
Jan 29/30	UBA (Belgium) SSB DX Contest	
Feb 12/13	PACC CW/SSB DX Contest	
Feb 12/13	Spanish RTTY Contest	
Feb 19/20	ARRL DX CW Contest	
Feb 25/27	CQ WW 160 m SSB Contest	(12/93)
Feb 26/27	RSGB 7 MHz CW Contest	
Feb 26/27	UBA (Belgium) CW DX Contest	
Mar 5/6	ARRL DX SSB Contest	
Mar 12/13	BERU CW Contest	
Mar 19/20	WIA John Moyle Field Day	
Mar 19/20	Bermuda Contest	
Mar 19/20	BARTG RTTY Contest	
Mar 26/27	CQ WPX SSB Contest	

Here we are at the start of another year. I hope everyone is having a pleasant Christmas break, and managing to remember the family in the midst of antenna refurbishment, contests, DXing etc. The reference to "antenna refurbishment" is actually a gentle reminder because, like many people, I tend to put antenna chores off until two weeks before the big one, then I decide there's too much to do and put it off for the following year. Using this technique, one can defer antenna refurbishment almost indefinitely, at least until the system falls down or the house is sold. This is, of course, definitely not the right attitude.

After all, when our favourite contests are on, we warn the family in advance, put off social engagements and, unless something life threatening happens, we commit ourselves to the contest. This means spending up to 48 hours in the shack, losing sleep, not eating properly, using heaps of electricity, and generally convincing the family that at best we are eccentric, and at worst complete social misfits. Well, if we are going to suffer all this, at least make it worthwhile! This means doing those antenna chores now, including anything else which makes your station more competitive. Try and avoid doing what one top overseas contester planned to do recently, which was to erect two towers, put up a 40 m beam, a vertical, extra dipoles/slopers, and organise a multiop effort *only a week before the CQWW contest!* Even assuming such things are possible, the drain on one's physical and mental resources

before a big contest is definitely not recommended.

Many thanks to the following for help, information, and inspiration: VK2BQS, VK6NK, VK8AV, CQ, QST, and *Radio Communications*. Please keep the letters coming, including any spare copies of results. Until next month, good contesting!

73,

Peter VK3APN

## Contest Details

The following contest details should be read in conjunction with the "General Rules & Definitions" published in April *Amateur Radio*.

### UBA SSB/CW HF Contest

SSB: 1300z Sat to 1300z Sun, Jan 29-30  
CW: 1300z Sat to 1300z Sun, Feb 26-27

This contest runs on the last full weekend of Jan and Feb each year (SSB & CW respectively). Any station may work any other worldwide. Categories are: single operator (single & all band); multioperator single transmitter; QRP max 10W O/P; SWL. Frequencies: CW 3500-3560, 7000-7035, 14000-14060, 21000-21060, 28000-28060; SSB 3600-3650, 3700-3800, 7040-7100, 14125-14300, 21175-21350, 28400-28700.

Exchange RS(T) plus serial number. Belgian stations will add their province code. Score 10 points for contacts with Belgian stations, 3 points with other European stations, and 1 point with others. The multiplier is the total of Belgian provinces, Belgian prefixes, and European countries. Total score is QSO points times multiplier. Send log, summary sheet, declaration etc. within 30 days to: UBA HF Contest, Oude Gendarmeriestraat 62, B-2220 Heist Op Den Berg, Belgium. Logs on disk in K1EA or ASCII format also welcome.

### PACC CW/SSB DX Contest

1200z Sat 12 to 1200z Sun, Feb 12-13

The PACC is another popular European contest, with phone and CW held on the same weekend. The object is to work as many Dutch stations as possible on 160 to 10 m, excluding the "WARC" bands. Use CW only on 160 m. Stations may be worked only once per band, regardless of mode. Categories are single and multioperator; SWL.

Exchange RS(T) plus serial number. Dutch stations will also send a 2 letter code indicating their province. Possible

codes are: DR FR GD GR LB NB NH OV UT FL ZH ZL. Score 1 point per Dutch QSO. Final score is total QSO points times total Dutch provinces worked on each band (max 72). Mail logs by 31 Mar to: PACC Contest, PO Box 499, 4600 AL Bergen op Zoom, The Netherlands. Certificates will be awarded to the top scoring stations in each category, in each country and call area of VK, ZL etc.

### Spanish RTTY Contest

1600z Sat to 1600z Sun, 12/13 Feb

The object is to contact as many stations worldwide as possible, on RTTY, 80 to 10 m. Categories are single operator (single/multiband); multioperator single transmitter; SWL.

Exchange signal report and CQ zone. Spanish stations will send signal report and province. On 10/20 m score 1 point per QSO with stations inside your WAC continent, and 2 points with stations outside your WAC continent. On 40 and 80 m, the QSO points are tripled. QSOs between stations in the same country can be claimed for multiplier credit, but not QSO points. The multiplier is the sum of the DXCC countries and Spanish provinces (max 52) per band. The final score is the total QSO points times the multiplier.

## 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 (NSW Division) conducts a Bridging Correspondence Course for the AOCB and LAOCB 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, Paramatta)  
Phone: (02) 689 2417  
Fax: (02) 633 1525

11am to 2pm Monday to Friday  
7 to 9pm Wednesday

Send log, summary, declaration, by 9 April to: EA RTTY Contest, c/o EA1MV Antonio Alcolado, PO Box 240, 09400 Aranda de Duero (Burgos), Spain.

### ARRL DX Contest

CW: 0000z Sat to 2400z Sun, Feb 19-20  
SSB: 0000z Sat to 2400z Sun, Mar 5-6

The CW section of this contest is on the 3rd full weekend in February each year, and the phone section on the 1st full weekend in March. The object is to work as many W/VE amateurs as possible on 1.8-30 MHz. Categories are single operator (single band, all band, all band QRP max 5 W O/P, and all band assisted); Multioperator (single TX, two TXs, and unlimited). In the single and 2 TX categories, once a transmitter has begun operation on a band it must remain on that band for at least 10 minutes. Listening time counts as operating time.

Exchange RS(T) and a 3 digit number indicating approx output power. W/VE stations will send RS(T) and state/province. Score 3 points per W/VE QSO. The multiplier is the sum of US states and District of Columbia (DC) (except KH6/KL7), NB (VE1), NS (VE1), PEI (VE1 or VY2), PQ (VE2), ON (VE3), MB (VE4), SK (VE5), AB (VE6), BC (VE7), NWT (VE8), YUK (VY1), NF (VO1), and LAB (VO2) worked to a maximum of 62 per band. The final score equals the total QSO points times the multiplier.

Entries with more than 500 QSOs must include crosscheck (dupe) sheets. Logs on DOS disk are welcome. Include a paper summary sheet showing usual info. Multioperator entries must list all operators. Entries must be postmarked by 6 April 1993 or will be classed as checklogs (no exceptions)! Mark the envelope CW or phone and send the log to: "ARRL Contest Branch, 225 Main Street, Newington, CT 06111, USA". Certificates will be awarded to the top scoring stations in each country and category, and plaques to the top worldwide and continental stations.

### RSGB 7 MHz CW Contest

1500z Sat to 0900z Sun, Feb 26-27 1993.

The object of this contest is to contact as many British Isles stations as possible on 40 m CW. Exchange RST plus serial number starting at 001; UK stations will add their county code (see this column Sept 93 for list). Oceania stations score 30 points per QSO, and the final score is the total QSO points times the number of UK counties worked. Include a summary sheet showing all standard details, plus a checklist if more than 80 QSOs are

made. Send logs to arrive by 18 April 1993 to "RSGB HF Contests Committee, c/o S. V. Knowles G3UFY, 77 Bensham Manor Road, Thornton Heath, Surrey, CR7 7AF, England". Airmail is recommended, as late logs may be treated as check logs. Certificates will be awarded to the leading entrants in each overseas section.

### Results of 17th West Australian Annual 3.5 MHz Contest

CW		SSB	
VK6AFW	3520	VK6WJH	14250
VK6BN	3222	VK6XG	13528
VK6AF	2970	VK6BN	8576
VK6XG	2096	VK6RG	4172
VK6BWI	1780	VK6YY	3521
VK6ARI	1620	VK6AR	3096
VK2AYD	1026	VK6KRA	2736
VK2QF	720	VK6SMH	2054
VK6RG	684	VK5UE	378
VK4OD	672	L40018	120
VK3XB	504		
VK4XW	420		
VK5UE	150		

Conditions for both contests were very good with some DX. The combination of both contests in conjunction with the VK4 Jack Files Contest encouraged more activity from the other states. A very pleasing result.

More participation by VK6 stations would have been appreciated by all, especially for the SSB contest "so how about it for the next time", it's a very friendly contest of only 3 hours duration.

73, Cliff Waterman VK6NK

### Results of 1993 World Wide ANARTS Contest

Participation this year was higher than last, with logs up 62%. Logs averaged 109 QSOs each, and the total QSOs recorded was 5115. Approx 450 to 600 stations exchanged numbers in the contest, including only 12 VKs! The standard of logs was very high, and the efforts of some stations who were unable to obtain a copy of the Points Table were outstanding. One in particular had tabulated what information he had so carefully that his log was easier to check than many who had full facilities available! However, some difficulties still arose, and many scores had to be adjusted, although not to the extent of affecting Certificates.

Some comments from operators: Great contest! Sure wish I had even heard Africa (K7WUW)... Band conditions bad year by year, but enjoy contest very much every time. I really want more VK participants (JA3DLE/1)... It is a very friendly contest (SM6BSK)... 73 & QRO to all HAMS and SWLs in VK (ONL383)... Am probably the first China station in ANARTS contest (BT2000BJ)... Had fun; it was a great contest but conditions were very poor (W9FFQ)... Weather wet and windy, open wire feeder broke Saturday, repaired on Sunday in rain, but Sunday evening the centre link broke and it fell down. Never mind, there is always next year (G4SKA)...

We hope to see you and your friends next year.

73, Jim VK2BQS  
(ANARTS Contest Manager)

### 1993 World Wide ANARTS Contest Results

Callsign	Total Pts	QSOs	QSO Pts	Mult	Conts	VK Bonus
<b>Classification A: Single Operator</b>						
1. VK2KM*	4,487,616	224	8904	84	6	--
2. UL9P	1,928,580	196	3030	106	6	1500
3. OH2LU	1,673,202	235	2343	119	6	300
4. VK5HB	1,619,700	135	5399	60	5	--
5. 4X6UO	1,273,032	194	3166	67	6	300
6. JA3DLE/1	1,206,000	142	3540	68	5	2400
7. AB5KD	1,037,712	230	2188	79	6	600
8. K8UNP	964,664	237	2264	71	6	200
9. W1BYH	824,676	173	2081	66	6	600
10. SV2BFN	813,540	163	3188	51	5	600
11. KA5CQJ	629,954	240	1719	61	6	800
12. AH6JF	625,460	132	2599	48	5	1700
13. VC7SAY	525,790	196	2283	46	5	700
14. YU7AM	494,625	119	1521	65	5	300
15. VK6GOM	490,728	99	2921	42	4	--
16. G5LP	467,934	140	1321	59	6	300
17. BT2000BJ	324,792	98	1842	44	4	600
18. SM6BSK	248,080	77	645	64	6	400
19. W2JGR/0	239,695	104	1113	43	5	400
20. G4SKA	218,960	89	841	52	5	300
21. GM0/WN1J	213,392	104	658	54	6	200
22. K7WUW	212,225	88	1145	37	5	400
23. SM5FUG	202,365	77	859	47	5	500
24. WA8FLF	165,250	69	785	35	6	400

### 1993 World Wide ANARTS Contest Results (continued)

Callsign	Total Pts	QSOs	QSO Pts	Mult	Conts	VK Bonus
<b>Classification A: Single Operator</b>						
25. A45ZW	145,700	51	910	40	4	100
26. SP3SUN	128,325	52	625	41	5	200
27. ZL2JON	115,200	39	1140	25	4	1200
28. KI4MI	111,980	76	621	36	5	200
29. JA3BSH	48,424	26	667	18	4	400
30. W9FFQ	44,935	46	389	23	5	200
31. VE7VP	40,080	31	470	21	4	600
32. VK2BQS	39,368	26	703	14	4	--
33. ON5SV	35,832	45	262	34	4	200
34. WA4MCZ	25,320	20	314	16	5	200
35. VK2CTD	10,494	16	318	11	3	--
36. SP3BGD	10,000	11	198	10	5	100
37. OM3CPS	9,126	22	169	18	3	--
38. OH6UP	2,806	13	82	11	3	100
39. DF5BX	384	12	32	12	1--	

Check Log: LA9FFA

#### Classification B: Multi Operator

1. VK2RT*	4,836,000	300	12090	80	5	--
2. VE3FJB	1,366,844	253	3076	74	6	1100
3. WF5E	220,660	129	1024	43	5	500
4. OM3RJB	28,790	32	334	17	5	400

#### Classification C: Short Wave Listener

1. ONL383*	639,480	156	1210	88	6	600
2. ONL4335	86,500	76	384	45	5	100
3. ONL3997	60,940	75	338	45	4	100
4. DE0GMH	13,992	29	159	22	4	

\*World Plaque Winners

Certificates were awarded to the 1st, 2nd and 3rd placegetters in each country. The few who miss out will receive "Participation Certificates" in appreciation for their entry.

### Results of 1992 IARU World HF Championship

Call/Score/QSOs/Mult/Category

(A = mixed, B = phone, C = CW, D = multiop)

VK2APK	584,218	1023	118	C
VK2AYD	169,998	408	87	C
VK2AYK	137,724	414	69	A
VK4TT	12,954	164	17	C
VK6AJ	109,311	277	83	C
VK6ANC	(VK6s JIP, TKR, TVA)			
	93,692	276	59	D
VK6BWI	1,188	24	11	C
VK8AV	146,124	390	81	C
P29DX	801,600	1392	120	B

### Results of 1993 ARRL DX Contest

Single band leaders for Oceania are VK4s TT & XA (20 & 10 m CW respectively), and VK3s DZM & EW (80 & 40 m phone respectively). VK2APK was 6th world outright on DX Low-Power CW.

#### CW

(Call/Score/QSOs/Mult/Band)

VK2APK	1,074,708	1674	214	A
VK8AV	532,170	1095	162	A

VK2NV	17,328	76	76	A
VK8BE	2,280	38	20	A
VK6HG	10,788	116	31	40
VK3APN	3,864	56	23	40
VK4TT	27,183	221	41	20
VK4XA	75,852	516	49	10

#### Phone

VK5GN	918,450	1570	195	A
VK3DZM	12,342	121	34	80
VK3EW	123,090	746	55	40
VK2VM	3,366	51	22	40
VK2GAH	79,713	521	51	10
VK8BE	5,538	71	26	10
P29DX	182,589	503	121	A

#### Phone (Multioperator)

VK1DX (VK1s PJ, ST; VK2s ILK, IVK)	661,878	1442	153
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### Results of 1993 ARRL RTTY Roundup

Call/Score/QSOs/Mult/Hours

VK4SSB	1,134	54	21	24
VK8BE	84	14	6	24

## QSP News

### World Fox Hunting Championships 1994

The world amateur radio direction finding contest will be held in Loka Brunn, Sweden during the week starting 12 September 1994, under international rules.

The organisers are the IARU Region 1 committee.

The first Region 3 contest was held in China early in October 1993. A two member Australian team, VK4CAU and VK4DO, took part in the old timers section, coming fourth in both the 2 metre and 80 metre events. Frank VK4CAU was fourth in the 80 metre individual section.

A total of 57 competitors from nine countries took part in the events in rather rough terrain.

A seminar on "radio sport" will be held near Brisbane early next year to promote the sport.

Any enquiries, or a request for a copy of the rules, should be sent to Wally Watkins VK4DO, PO Box 432, Proserpine QLD 4800.

### VK3OT Century on Six

Steve Gregory VK3OT has done it again! Not EME this time, but QSOs on 6 metres to the Antarctic ice-cap.

This gives Steve officially 100 countries on 6 metres, so he becomes the first VK station to make DXCC on this band.

The contacts made during the DX opening on 19 November 1993 were with Mark VK0AQ (whose home call is VK5AVQ) located at Casey Base. Mark also worked VK3LK and VK5NC. All stations reported heavy QSB with signals from S1 to S5 on 50.12 MHz SSB.

(Steve also has a letter of appreciation in the Over to You column elsewhere in this issue. Ed.)

**Have you advised the WIA Federal Office of your new callsign? Use the form on the reverse side of the Amateur Radio address flysheet.**

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## Divisional Notes

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### Forward Bias — News from the VK1 Division

*Christopher Davis VK1DO*

I hope that all our local amateurs have had an enjoyable Christmas break and are ready to implement their numerous and radical new year's resolutions. I trust, that if you have had what might be a rare opportunity to do some operating, that band conditions have been good for you.

Our weekly broadcasts, just to refresh your memory, are still in recess until Monday January 17th which is one week before our first monthly meeting for 1994. Please remember that there is no broadcast on a monthly meeting night. At our January meeting we hope to present an edited compilation of the January 1993 and January 1994 VHF UHF field day which will have taken place just ten days before the meeting. I hope that our tireless film crew will find the required time to put together a tantalising insight into the world of VHF.

Someone asked me at the Christmas BBQ, back in November, when I intended to drop the subject of our February annual general meeting. Considering that the question was asked in polite company I chose to treat the matter with the characteristic light heartedness for which I am renowned. However, returning to matters of grave importance, the AGM is not just a topic that attracts my interest as a way of padding out this column. The difficulties various Divisions, and indeed almost all volunteer groups outside of our hobby, experience in co-opting members for positions on a committee of management is a subject deserving of a text book in its own right, not just brief coverage in this column.

Having strayed dangerously close toward an observation that could be misconstrued as cynicism, let me applaud what appears to be a stunning resurgence of enthusiasm within our Division. Recent arrivals within the Division, and indeed the hobby, are looking like a force to be reckoned with. Early nominations already represent a substantial percentage of the available positions on our 1994 committee. Perhaps your reluctance in the past has been borne out of the reluctance of others. A little bit like mutual reluctance, I guess. This deleterious negative influence does not exist, according to my recent observations. Adequate notice has been given for you to complete knitting that arctic sweat suit, resign from the young liberals and so on. We look forward

to your nomination, or your being nominated by fellow committee persons, in the very near future.

On my own local scene, I have been plagued by numerous sources of power line noise for some time. The difficulty involved in detecting, reporting and rectifying these problems has been a long term problem. Shortly, I hope to be able to report on what is an imminent success in sorting out these headaches. The techniques, including the innovative role of local amateurs professionally involved in the field, the procedures in terms of dealing with the authorities, will make fascinating reading, I am certain, to anyone who has, or has had, similar difficulties. Stay tuned.

Returning, for a moment, to another topic which amply demonstrates the enthusiasm which can prevail when we egg each other on. John Moyle National Field Day. The three teams, previously mentioned, sound like they are well equipped, well trained and positively dangerous in their capacities to storm the weekend in March. So, be there or be a rhombic!

If you haven't previously tried your hand at VHF, even on the FM frequencies, the VHF UHF field day would be an excellent opportunity to grab a beam and take to the nearby hills. You might be pleasantly surprised by what you are able to work. Consult the rules for the Ross Hull contest. There is provision for a novice entry, competing against similarly equipped stations. Give it a go!

During 1993, we ran an examination early in the year to accommodate candidates who had supposedly spent some productive time studying during their holidays. The results in this particular exam rather brought into question whether the study had been fruitful. Although we are happy to run exams of the number previously seen, I suspect that so early in the year isn't as beneficial as compressing the same number of exam events into the more concentrated regions of April through November. This offers some potential to courses and classes students who have barely scratched the surface in February.

We will always welcome your expressions of interest in running additional exams providing the numbers justify the demands then placed on our volunteers. Small exams are simply not feasible unless you are prepared to individually cover all associated overheads on your own, and that would be prohibitive. Based on continued

demand, we would intend to run some four or five exam sessions this year. These would be scheduled approximately in April, May, July, September and November.

No doubt, our new committee, which takes office in February, will have its own plans and provisions for weekly broadcasts. I hope that the provision of material for inclusion in each week's effort is a little more forthcoming to make the task less of a chore. Are you able to assist with the provisions of station facilities or announcing duty? Spreading the load among many ensures a fresh and vital approach.

As a small Division without club rooms or fixed station facilities, the sharing of the broadcast is crucial otherwise the imposition on spare time and hospitality leaves a nasty taste in one's mouth. If you have not been involved in the broadcast and feel that the whole job, even on a roster basis, is too foreboding, consider carrying out one of the associated ancillary tasks. Preparation of material; local news; band conditions; news of visitors; a technical or humorous article seen in another journal. Could you reliably, with others on a roster, take call backs on one of the broadcast frequencies. The expressions of appreciation expressed on the callbacks become meaningless platitudes in supporting the continuation of this large undertaking unless the job involves a wider dynamic group.

Enough precarious soap box work for another month. See you at the January general meeting on Monday the 24th.

### VK2 Notes

*John Robinson VK2XY*

The VK2 Notes return! Do you remember the Division's recruitment and retention promotion campaign which ran from December 1992 to February 1993? Well, it was a huge success and it's on again — in case you missed the announcement we inserted in December's *Amateur Radio*.

Members who renew, or non-members who join up between 1 December 1993 and 28 February 1994, will be eligible to win a brand new rig. First prize will be a Kenwood TM-241A 2 m, 50 watt mobile rig, while second prize will be a TH-28A 2 m, 5 watt handheld rig. Total value of the prizes is over \$1400.

All you have to do is renew if you're a member or join if you're a non-member. If your renewal does not fall within this period, no matter — you can renew early! Early renewals must be sent to the Divisional Office, NOT to the Federal Office. All grades of membership are



eligible. Members currently on a three-year term are included, as are life members. Both prizes will be awarded by way of a draw and presented to the winners early this year following the close of the promotion. Thanks go to Kenwood Electronics Australia who have again generously sponsored the promotion by donating the prizes.

For our numerous country members, the Division has installed a new Freecall telephone service. Outside the Sydney metropolitan area, you can call the Divisional office on 1800 817 644. Free calls to this number can only be made from within NSW. It is only open for calls between 11 am and 12 noon Mondays to Fridays (the hour before 689 2417 is open), and 7 pm to 9 pm on Wednesday evenings. If you are calling, please remember that there may be others trying to get through too, so keep your calls to the minimum length necessary to conduct your business. We particularly welcome country members using this new facility to order books, for example. You can pay for your purchases by quoting your credit card as the Division has credit card merchant facilities.

For those who don't manage to catch the Division's Sunday news broadcasts, we have re-established the "voice mail box recorded news highlights", but on a new number. The previous voice mail box was a member's private arrangement and he withdrew it following the AGM last May. The new mail box number is 02 724 8793. You can call the service and hear pre-recorded Divisional news highlights — a shorter version of the Sunday news broadcasts. At the end of the recording you are prompted to leave a message. At that point you can wait to be disconnected or simply hang up. Organised by Peter Vernon VK2JPJ, it uses a digital voice messaging technology called OCTELNET, by Exicom Communications.

There's a new book in stock in the Divisional bookshop, "Practical Filter Design", written by Jack Middlehurst and edited by Roger Harrison VK2ZTB. It's written in an easy to understand style and covers just about everything you ever wanted to know about the subject of filters — and then some. The drudgery of filter design calculations is banished by a series of computer programs, all listed in the book. Better yet, the book comes with a disk containing all the programs for owners of IBM-type PCs. If you don't have that type of computer, all the programs are written in the BASIC language so you might translate them to the BASIC used on your machine.

A subcommittee of Bob Lloyd-Jones VK2YEL, Eric Fossy VK2EFY and Pixie Chappie VK2KPC is working on a draft of

Divisional operating policies and procedures. Their first progress report was due to be presented to Council in December. Their proposals should go a long way to improving the Division's operations, putting the ridiculous laissez-faire attitudes of the past behind us and placing the Division's functions and operations on a proper, business-like footing — for everyone's benefit.

And just a reminder. Our Constitution says the AGM (and thus Council elections) must happen in April, or as near as possible to it. If you're thinking of standing for Council for 94-95, better get your nominations in pronto.

### 5/8 Wave — VK5 Notes

Rowland Bruce VK5OU

I am afraid this will be one of the shortest 5/8 Wave columns ever written. Due to a combination of events at work, illness and an early deadline due to the Christmas period, I find myself isolated near the South Australia/Northern Territory border

without access to a keyboard of any sort. Not even a battered old typewriter. The same combination of events has caused me to miss the November meetings (Council and General) of the South Australian Division of the WIA.

Such notes as I do have, and they are very few, are down in Adelaide.

Firstly, though, let me express Council's greetings and felicitations for the New Year. May it be possible for you to say in twelve months time, "that was a good year".

Secondly, and I know it seems early, but time has a habit of accelerating as a date approaches, give a thought to nominating someone, possibly yourself, to a position on Council. I am writing this on 23 November, the 30th anniversary of the assassination of John Kennedy. One could well paraphrase his well known challenge, and apply it on a smaller scale to our own organisation. Do you remember it? "Ask not, then, what your country can do for you, but rather, what you can do for your country".

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## How's DX

Stephen Pall VK2PS\*

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A happy and a healthy New Year to you all. Now that we have all made our secret New Year's resolutions, let me help you with the calculation of your local time in relation with the time in VK2. This is the season of the year when the "burden of confusion" descends on this great country of ours.

On 30 October the majority of the Australian states, VK1, VK2, VK3, VK5 and, earlier, VK7 advanced the clocks one hour. VK4, VK6 and VK8 did not move with the summer. They stayed with their old standard time. As a result, Australia now has five distinct time zones instead of three. When it is noon in Sydney, Canberra, Melbourne and Hobart the clock in Brisbane shows 11.00 am, it is 11.30 am in Adelaide, 10.30 am in Alice Springs and 9.00 am in Perth. Consequently, New Zealand is two hours ahead of Sydney, Port Moresby is one hour behind, Tokyo is two hours behind Sydney time, Hong Kong three hours behind, South Africa and Moscow nine hours behind, Europe 10 hours behind, Britain 11 hours behind, the US east coast 16 hours behind and the US west coast 19 hours behind Sydney time.

In March this year we will wind the clock back one hour and hopefully things will become normal again.

It is interesting to note that the following

countries, just to name a few, do not have daylight saving schemes: China, Fiji, Hong Kong, India, Indonesia, Japan, Malaysia, PNG, Philippines, Singapore, South Korea, Taiwan and Thailand.

This time change during the Australian Summer should not affect whatsoever the thinking of a "true" DXer. He knows that the Co-ordinated Universal Time (UTC, formerly GMT) did not change. It stayed constant.

### Pitcairn Island — VR6

I have a QSL card before me from Meralda VR6MW. It says *Taking command of the ship Bounty from Capt Wm Bligh on the 28th April in 1789, Fletcher Christian returned briefly to Tahiti enlisting 6 Tahitian men and 12 Tahitian women to join the small group of 9 mutineers in their search for a safe haven from the long arm of the British Navy. On January 23rd in the year of 1790 the mutineers landed on Pitcairn Island, burned the Bounty and began their small colony hidden from the eyes of the outside world.*

Pitcairn Island (25° 4' South and 130° 6' West) is not hidden any more from the outside world. The island has a regular supply shipping schedule every four months. The next ship leaves Auckland, New Zealand, in March this year, so get your QSL card on its way to reach



**Photo 1** The ZS0PI team (l to r) James DJ0WQ, Peter DJ2ZS, Roland DJ4LK and Gunter DK2WH.  
*Photo: DK2WH*

Auckland at the latest by February. Pitcairn Island has no harbour or jetty. The cargo of the ship is offloaded in about eight hours on the open sea into long boats with about 4-5 bags of mail, and the ship departs. Reply to your QSL card will be picked up by the next ship four months later. It will take at least 12 months before you get a reply to your card, so be patient.

Of course, you can always phone Pitcairn Island via the satellite link, but a one minute call from New Zealand to Pitcairn will set you back about \$18.

The easiest way to contact Pitcairn is by amateur radio. There are now at least 14 licensed amateurs on the island (six more are in training this year) of which 12 amateurs were very active on 28-30 November 1993 for 48 hours.

The Pitcairners were celebrating, with a special callsign, the signing of the so called "Pitcairn Island Constitution" (the administration rules of the island) drawn up, at the Pitcairners request, by Commander Russel Elliott Esq, captain of the sloop HMS Fly on board ship on 29 November 1838. These rules gave the women on the island the same voting rights as the men. It can be assumed that the Pitcairners were the first in the world to obtain women's suffrage 155 years ago.

The special event station used the callsign VR6FLY plus the actual operator's suffix. The following Pitcairn stations took part in the celebrations: Tom VR6TC, Betty VR6YL, Brian VR6BX, Kari VR6KY, Irma VR6ID, Meralda VR6MW, and the new generation of amateurs Trent VR6TA, Shawn VR6SC, David VR6DB, Mark VR6ME, Clarice VR6CN and Dave VR6DR.

To obtain a special QSL card you must state the operator's suffix, ie VR6FLY/TC, if your contact was with VR6TC. QSL, direct only, to Brian Young, Private Bag, Pitcairn Island, South Pacific via New Zealand. Please enclose a SAE and one "green stamp". IRCs are not used on the island. Be patient and wait on the reply.

### **Penguin Island — ZS0 & Walvis Bay — ZS9**

This German DXpedition took place from 28 July to 4 August last year (see *Amateur Radio* June and September

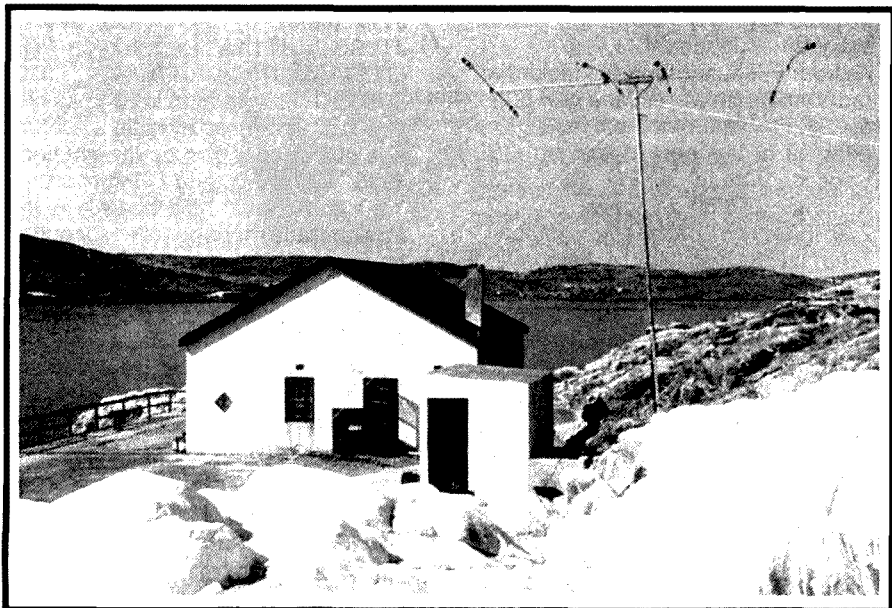
issues). Gunter DK2WH, one of the participants, has written me a letter about the Penguin Island adventure. The four team members, Roland DJ4LK (licensed also as V51LK), Peter DJ2ZS, James DJ0WQ and Gunter DK2WH left Windhoek, the Namibian capital, on 26 July for Luderitz, an old German-looking harbour town, 800 km north on the Atlantic coast. The fishing boat "Mirandic" carried them to the island on 28 July.

The island is uninhabited and is very small, about 1500 by 500 metres. The old buildings are in disrepair. The expedition's first task was to clean out one dilapidated house of the strong smelling guano, the "white gold of the cormorants", which is still produced by more than a half million seagulls, cormorants and all sorts of other birds. After many hours of hard work the house became a shack, kitchen and sleeping area. Activity started early afternoon with a vertical antenna. Next day they put up a Yagi for 20, 15 and 10 metres, and the WARC bands. Soon after that they installed a second station in another house about 150 metres away. Propagation from the island was not the best. Early mornings favoured VK and the Pacific. At a very low QSO rate, the afternoon produced big pileups from Europe and Japan. Weather conditions changed, fog set in and even rain, which is a rare occurrence in winter.

Everything was wet and water came through large holes in the roof. Windspeed increased with a heavy storm which prevented the team leaving the island on the scheduled day. They eventually left the island at daybreak on



**Photo 2** Gunter DK2WH operating SSB from Penguin Islands ZS0PI.  
*Photo: DK2WH*



**Photo 3 Penguin Islands ZS0PI. Houso No 1 with 4 el Yagi. The white on the rocks is not snow, it is strong smelling guano. Photo: DK2WH**

5 August. After a 12 hour drive back to Windhoek, the team split up. James DJ0WQ and Peter DJ2ZS continued DXing in Walvis Bay, Roland DJ4LK had to catch a plane, and Gunter met his family and went on a safari to the Angolan border, operating as V51/DK2WH/p. The expedition made a total of 10,000 QSOs (SSB, CW and RTTY). Incidentally, it is quite possible that this was the last DXpedition from Penguin Island ZS0PI, because South Africa will hand over the sovereignty of Walvis Bay and the 12 guano islands back to Namibia on 1 March.

### **Christmas Island — VK9X — Update**

In the 1993 survey conducted by "The DX Magazine", Christmas Island ranked 35 as one of the most wanted countries. It is anticipated that the successful operation of VI9XN and VK9XO in December will have reduced the demand below the 50 mark by the time the next survey comes around.

Christmas Island has changed quite a lot lately. There is now a twice a week regular air service from Perth, a daily service from Indonesia, and regular services from Singapore.

The reason for this sudden interest in this 135 square kilometre island, which is 1400 km from Perth in the Indian Ocean, is gambling. On 18 December the Christmas Island Casino Resort was officially opened. Invited guests of the casino from Indonesia can stay up to five days at the resort without undergoing normal immigration procedures (no visa required). Amateur radio will not be the same again on this island where, in

December, hundreds of millions of red crabs emerge from the forest to lay eggs on the island's cliffs, and millions of dollars will be lost at the casino tables.

### **Peter I Island — 3Y0PI**

As announced previously, this DX operation will commence on 1 February 1994. As at 14 November all the equipment was crated in Florida, USA and flown to Uruguay where it will be loaded aboard the icebreaker that will take the group to Peter I Island. In addition, another three tonnes of equipment, from European sources, is also to be loaded on the ship. In mid-January the whole team will fly to Port Stanley in the Falklands to board the ship. En route to their destination, they will operate /MM.

### **Latvia — YL75**

Several Latvian stations used the special prefix YL75 to commemorate the founding of the Latvian Republic 75 years ago on 18 November 1918. The Latvian QSL Bureau is not currently active, therefore only direct mail will produce a special reply QSL card. Do not indicate callsigns or any reference to amateur radio on the envelope, otherwise your QSL card might get "lost". QSL to YL75DX (see QSO schedule), YL75R J Baltins, PK 100, Riga-7, LV-1007, Latvia; YL75Z S Hochberg, PK22, Jelgava, LV-3000, Latvia.

### **Leones and Blanca Island — L4**

Members of the LU4DKK Radio Club were active in November from Leones and Blanca Islands, Argentina. As quite a number of VKs have worked them, here

is the QSL address. The Manager, Box 134, 9 de Julio — 6500, Prov Bs As, Argentina, South America.

### **Northern Cyprus — 1B1NCC**

This station was on the air from 15 November for two weeks. The station operated from the Turkish (northern) part of Cyprus, administered by Turkey since 15 November 1983. The DXCC status of this station is not known. Direct QSL to G0ITX with one IRC (donations are not requested). Bureau cards will be answered by G0ITX, the QSL manager, via the bureau.

### **Future DX Activity**

- N2CQR/HI8. Bill is an economics officer with the US Foreign Service and is stationed in Santo Domingo until 1998. QSL to William R Meara, 55 Waters Edge, Congers, NY 10920, USA.
- A71AN — Rashid — a new amateur licensed only since July 1993 is on 21190 kHz every day around 1100 UTC. QSL c/o Qatar Amateur Radio Club, PO Box 22199, Doha, State of Qatar.
- It was reported by various DX sources that JA3PFZ, in a QSO to G3HJC, said "At the recent visit to Mount Athos, due to a difficult situation, they were only able to make about sixty QSOs (CW, SSB, RTTY)". JA3MNP went back to Mount Athos and has obtained further permission to operate all modes. This activity might eventuate in April this year.
- It is rumoured that the planned expedition to the Andaman and Nicobar Islands VU4 by VU2SMN and VU2NTA had the promise of financial support from the government. However, in the meantime, government money was spent on areas hit by the recent earthquakes. The earliest promised date for the VU4 activity is not before the end of March.
- It was reported on several packet DX bulletins that the proposed Iranian activity by EX0A and others had to be postponed because the border was closed due to several cholera cases.
- Jean J28JJ will be active from Djibouti for the next three to four years. QSL to Jean Jacques Chatclard, Box 1076, Republic of Djibouti, Africa.
- Scott N7TNL is now active from Midway Island as N7TNL/KH4 and was worked from VK2 with a signal strength of 9. He will be active until 6 January. He is with the US Fish & Wildlife service. QSL to W100 or via the W7 Bureau.
- 9K2ZZ Bob is nearing the end of his stay in Kuwait. He is active from 160 to 40 metres. QSL to W8CNL.

- 3X0DEX in the Republic of Guinea is quite active on several bands. QSL to Box 104, F-22650, Ploupalay, France.
- A61AF is a new club station operated by three foreign hams in a Technology College. It is operational around 1300 UTC on Tuesday nights only. QSL to the club station A61AF C/o Dubai Mens College, PO Box 15825, Dubai, United Arab Emirates.

### Interesting QSOs and QSL Information

- BA4AD — Davy — 14180 — SSB — 0957 — Sept — QSL to Davy, PO Box 085-227, Shanghai — PR of China.
- YL75DX — Yuri 0 14180 — SSB — 1206 — Nov. QSL to Yuri Baltin, PK 265, Riga 50, Latvia LV-1050, Europe.
- WH0AAV — Jun — 14226 — SSB — 1159 — Nov. QSL to Jun Mercado, PO Box 1914, Saipan MP 96950 USA.
- 9X/DL6OBY — Gisa — 14215 — SSB — 0544 — Nov. QSL to Hartmut Gumpert, C/o D Welle, Box 420, Kigali, Rwanda — Africa.
- VR6DB — David — 14277 — SSB — 0499 — Nov. QSL to David Brown, PO Box 13, Pitcairn Island, South Pacific, via New Zealand.
- VR2BH — Martii — 14195 — SSB — 1126 — Nov. QSL to KA6V Joan E Branson, 93787 Dorsey Lane, Junction City, OR 97448 USA.
- 8R1AK — Esmond — 14222 — SSB — 0549 — Nov. QSL to Esmond Jones, PO Box 10868, Georgetown, Guyana, South America.
- VR6ME — Mark — 14180 — SSB — 0443 — Nov. QSL to Mark Ellmos, PO Box 24, Pitcairn Island, South Pacific, via New Zealand.
- ET3BH — Bert — 14222 — 0611 — Nov. QSL to SM3EVR, Tord Julander, Box 547, S-86020, Njuranda, Sweden.
- SU2MT — Mohamed — 7056 — SSB — 1927 — Nov. QSL to Mohamed Tartousieh, PO Box 1616, Alexandria, Egypt.
- VR6CB — Clarice — 7043 — SSB — 0609 — Oct. QSL to Clarice, PO Box 11, Pitcairn Island, South Pacific, via New Zealand.
- VE8GO — Brian — 14243 — SSB — 0633 — Oct. QSL to Brian McKay, PO Box 565, Rankin Inlet, NWT X0C 0G0 Canada.

### From Here There and Everywhere

- Yasuo "Zorro" Miyazawa JH1AJT advised me that he is the QSL manager for the following stations: XW8KPV, S2IU, JA7OWD/JD1, FK8EJ, ET3DX, 9E2A, E31A, ZK1XH, A35ST, 5W1IB, YJ0AST, VE0MEA/KH, VE0MEA/FK8, VE0MEA/KH2 and others. His address is Yasuo Z

Miyazawa, PO Box 8, Asahi, Yokohama, Japan 241.

- As from 1 January 1994, the Moldavian radio amateurs will use the new prefix of "ER" instead of the old "UO". The address of the new Moldavian QSL Service Bureau is PO Box 6637, Kishinev, 277050, Moldova.
- ZL6RFA was a special event station in Taranaki/New Plymouth celebrating the Rhododendron Festival. QSL to NZART Branch 27, c/o 45 Robe St, New Plymouth 4601, New Zealand.
- Tony, A35UZ was on a four week vacation on various Tongan Islands. QSL to G0HUZ.
- For a few days Willis Island was activated by Michael as VK9WC. QSL to VK4AZM.
- Valery ER1A (formerly UO5ODA) wants his cards to be sent to FD1J.
- LZ1HA Todor Dikov advises that all direct QSLs for YA5MM were confirmed. Anybody who has not received a card yet, should write again (with return postage) to PO Box 321, 1000 Sofia, Bulgaria.
- According to the "1993 Most Wanted Countries" survey conducted by Chod Harris VP2ML, Editor of The DX Magazine, the first ten most wanted countries are 1 — Peter I Island, 2 — Bhutan A5, 3 — Libya 5A, 4 — Andaman VU4, 5 — Heard Island VK0, 6 — Tunisia 3V, 7 — Yemen 4W, 8 — Tromelin FR/t, 9 — Macquarie Island VK0, 10 — Mount Athos SV/A.
- The ARRL DXAC (DX Advisory Committee) will vote on "QSL Guidelines" in January 1994.
- According to DXCC specialist Bill Kennauer K5FUV, the 3V8PS activity was the last known legal operation from Tunisia. 3V8AA in 1983 was also good.
- Due to the increase in German postal rates it appears that the most economical way is to send two IRCs instead of "green" stamps for a direct QSL.
- HG27BCS was celebrating 275 years of the town of Bekescsaba. QSL to Janos Kulish HA8PO at PO Box 257, Bekescsaba, H-5601, Hungary.
- CQ8C is a special Portugese call, in operation until 16 January. QSL to CT1EGW.
- John VK3KVO has passed on to me a letter received from Tom Tomorbaatar JT1BY, Box 470 Ulan Bator, 13, Mongolian Republic. Tom appears to be the QSL manager for a number of Mongolian stations. He requests a SAE with one "green stamp" for direct reply. He has the logbooks for the following Mongolian stations: JT1KAA (club), JT1T (used in contests), JT1AO, JT1CO,

JT1V (club), JT1BV, JT1BS, JT1CS, JT1BG, JT1KAI (club), JT7AA (JT7KAA), JT8AA (JT7KAA), JT1CD, JU83OC (1992-3). Tom is 26 years old, married, interested in radio since the age of 16 and active on the air since 1985. Tom's wife is a CBER and they have an 8 months old son. He is the foreign trade manager of a Mongolian trading company.

- Francis FT5YE leaves the French Antarctic station, Terre Adelie at the Dumont D'Urville Base, at the beginning of February. He will return to France to reply to the thousands of QSL cards which are waiting for him.
- Please note. The correct address of the Italian QSL Bureau is ARI, Via Scarlatti 31, 20124, Milano, Italy.

### QSLs Received

Z31PK (4W YU5XVD) — OM3EY (3 W op) — BA4AD (5 W op) — A71BM (5 W op) N9NS/KH5K (6 M N9NS) — VE8GO (4 W op) — ZK1AT (6 W op) — ZK1DT (6 W op).

### Thank You

Many thanks to the contributors to this column. All of you were very helpful, especially VK2DSL, VK2KCP, VK2KFU, VK2LEE, VK3DD, VK3KVQ, VK4CY, VK4OD, VK4OH, VK6PY, VK9ND, JH1AJT, VK6MW and publications QRZ DX, The DX Bulletin and DX News Sheet.

\* PO Box 93 Dural NSW 2158  
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## WIA News

### New UHF DX Record

Two US amateurs, Paul Lieb KH6HME and Chip Angle N6CA, set a new terrestrial distance record of 3973 km for the (US-allocated) 902 MHz band, working between Hawaii and California (a legendary path for this sort of activity).

Making contact on CW at 0136 UTC on 23 August last, signals were reported as "just out of the noise". Two metres was used for liaison. They made an unsuccessful attempt to span the same path on 2304 MHz. The 902 MHz equipment used for the record-breaking achievement was designed by N6CA, according to the *Westlink Report*, No. 658, of 30 September.

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## Silent Keys

Due to space demands obituaries should be no longer than 200 words.

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The WIA regrets to announce the recent passing of:-

A H (Aub)	MILLER	VK2EEX
R C (Bob)	SMITH	VK3YU
R H (Dick)	TURRIN	W2IMU

### C R (Russ) WATT VK2WT

Russ was born in London in 1904, where his father was studying to become a doctor, and came to Australia in 1907 following his father's graduation.

Dr Watt set up his practice in Tenterfield and became one of the best known and revered doctors in the north of NSW, where he purchased a property "Warrenfels".

From an early age Russ accompanied his father on his rounds which included trips into the surrounding country for distances up to 50 or 60 miles at all times of the day or night. When old enough he was the driver for his father, firstly by horse and sulky and later by the early model cars.

Russ eventually took over the management of Warrenfels and, together with his two sons, produced some of the finest wool in Australia, from their Merino sheep, topping markets on many occasions.

Russ married Margaret Kennedy in 1937 and in 1940, Anthony was born followed by David in 1946. There are three grandchildren, Andrew, Felicia and Christopher. Christopher hopes to qualify for and eventually use his grandfather's call sign VK2WT.

Amateur radio was a prime interest of Russ from his school years and in 1925 he obtained his amateur operator's licence and became a member of the Wireless Institute of Australia. Using home brew equipment Russ worked the world with four watts collecting many thousands of QSL cards, having at one stage contacted every country in the world. In later years he attended many call back sessions and was present on many regular nets.

Among his home-brew achievements was the construction of a metal lathe, which he frequently used. He built his own variable condensers, cutting sheet metal from the early petrol containers. A burnt out generator was worked over and rewound to provide, as required, 50 volts DC for the home lighting plant, 240 volts AC for the pump on the dam and 110 volts DC for the home washing machine and electric iron, for Margaret. When the 240 volt AC was provided from the town, Russ continued to run the house from a 110 volt transformer, for reasons of safety.

For years he helped install, service and maintain two-way equipment for the local council, ambulance and other local users. Russ was loved and respected by all who knew him and will be sorely missed in the world of radio.

He died while watching Anthony and David rounding up the sheep on 18th October last.

Max Reid VK2EMX

### Richard Herbert (Dick) Turrin W2IMU 1925-1993

Dick W2IMU, who passed away on 11 November, was one of my (and many others) greatest friends and advisers on technical matters, especially EME communications. Dick was born and died in New Jersey, USA and was employed by Bell Telephone Labs.

He was an extra class licensee, as well as a BSc and an MSc in electrical engineering and a truly compassionate person who always went out of his way to help others.

Due to his encouragement, help and advice I won the ARRL Technical Merit Award in 1967 for EME two way contacts on 2 m, initially with Crawford Hill VHF Society K2MWA/2 operated by Dick! On my visit to the USA in 1968, Dick, Society members and a live kangaroo greeted me.

Apart from many technical articles in

American magazines, Dick wrote his classical EME notes, starting 25 years ago, and they are still an important information source. Many amateurs worldwide received lengthy answers to their many questions on moonbounce operation, including VK and ZL 144, 432 and 1296 MHz problems.

Dick visited VK in 1979 to solve an antenna problem for the CSIRO and was guest speaker at a packed EMDRC meeting. His XYL Noranne K2OJO predeceased Dick in 1978. He is survived by one daughter and two sons. Dick was partially crippled by a stroke in February 1993.

Vale a true gentleman and friend.

Ray Naughton VK3ATN/VK3NA

### R C (Bob) SMITH VK3YU

My father died recently following a tragic accident. He was an active radio amateur in both voice and Morse code.

He enjoyed the 10 metre band and won quite a number of competitions for the Oceania and Australasia regions.

Many years ago he lectured at night classes at the Marconi School of Wireless for 14 years, and his knowledge was self taught.

On 30 September he was delivering Meals on Wheels. As he was standing at the back of his car getting out the next meal he was hit by another car illegally travelling in the parking lane. He died in intensive care at the Box Hill hospital on 7 October 1993.

Barbara Pallot

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## Repeater Link

Will McGhie VK6UU\*

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### FM 828-2

This is the second circuit drawing of the popular FM 828 used in the majority of repeaters in Australia.

This month's circuit is of the intermediate frequency preamp, limiter amplifier and coincidence detector. The circuit provides the 10.7 MHz selectivity, 10.7 MHz amplification and demodulation to audio.

If the circuits are printed to the same scale in *Amateur Radio* then they will line up and could be placed end to end, inputs, outputs, power and earth all meeting. If space requirements do not permit this, I can make the circuits available to you at the same scale.

All these circuits were produced on

computer using the CAD program *Draft Choice*. If you would like a copy of this CAD program and the FM 828 computer circuits let me know. Not all the FM 828 circuits are completed yet, as they take considerable time to draw onto computer. These circuits can also be made available via packet in 7 Plus format.

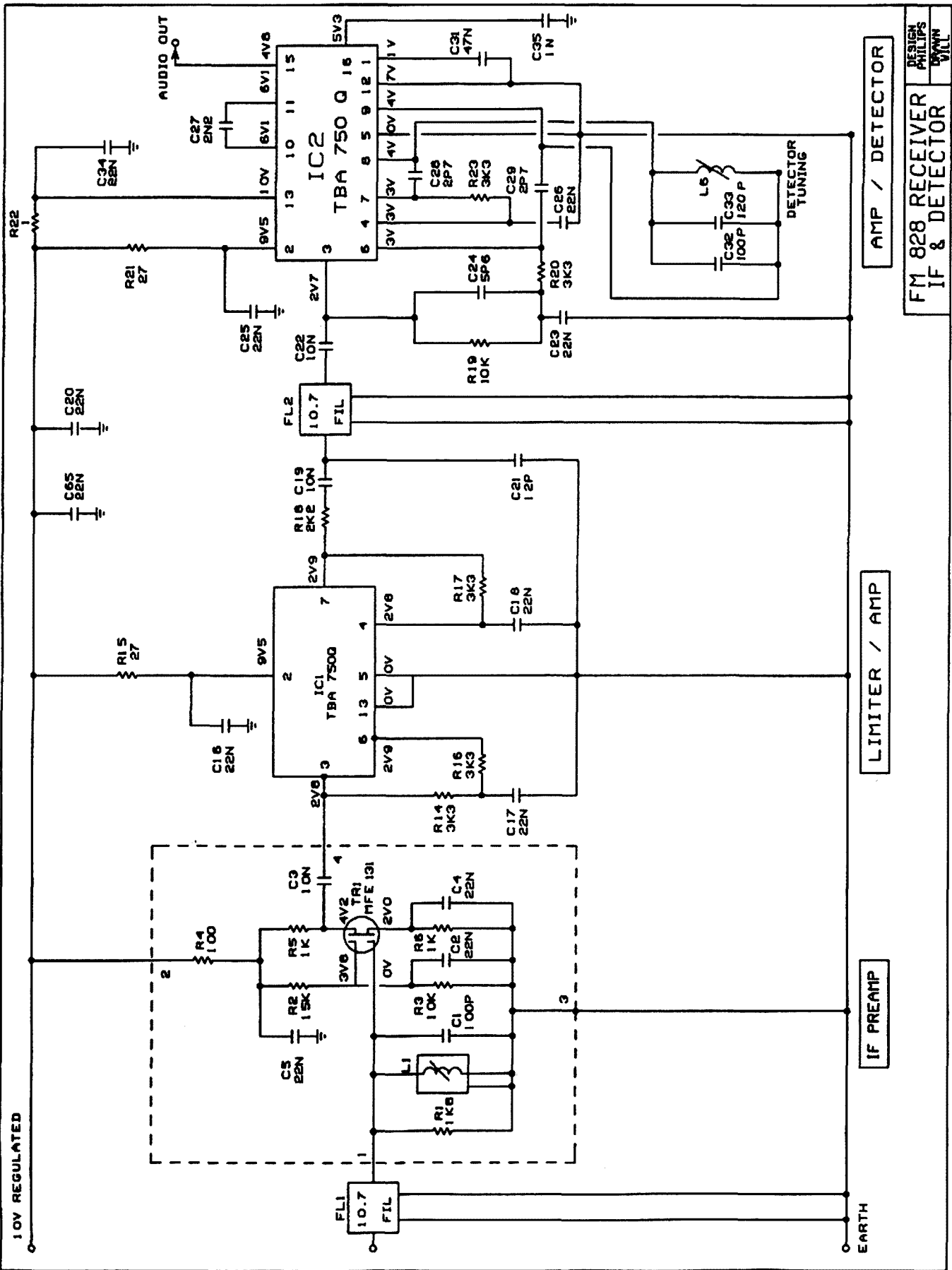
The CAD program *Draft Choice* is an excellent circuit drawing program and being shareware is easy and cheap to obtain. If ever amateurs were to agree on a CAD program for circuit exchange, this would be my recommendation.

If there are any errors in the circuits, please let me know.

\*21 Waterloo Cr Lesmurdie 6076

VK6UU @ VK6BBS

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FM 828 RECEIVER  
IF & DETECTOR

AMP / DETECTOR

LIMITER / AMP

IF PREAMP

DESIGN  
PHILIPS  
DWM

# International Amateur Radio Union Monitoring Service (IARUMS) — Intruder Watch

Gordon Loveday VK4KAL\*

## The International Amateur Radio Union Monitoring System

This comprises the three Regional Monitoring Systems. In turn the RM Systems are made up from the national society monitoring systems.

The present IARU MS is the culmination of many years of work by a few dedicated amateurs. They had struggled on, often in the face of apathy and sometimes hostility. These few "intruder watchers", as they were then known, had the support of a few far-seeing administrators in two or three societies and in the IARU, who realised that the amateur bands were not a limitless resource.

We have to protect the frequencies allocated for our use. With the increasing demands for spectrum space, and the tendency of some administrations to ignore their responsibilities under the ITU Convention, it is evident that the Amateur Service must have a strong, unified and effective monitoring system, if it is to retain its frequency allocations. It must present factual, authoritative information about "intruders" for further action.

The monitoring system is made up of volunteers, whether they be amateurs or SWLs. Experience will range from a few weeks to many years. Regardless of their level, all monitors are capable of providing useful input to the monitoring service. Being volunteers, monitors must be free to dedicate a minimum of two to three hours each week. It would be advantageous for monitors to cover only one band, resulting in an intimate knowledge of that band. Likewise, some may wish to specialise in A1A or F1B modes only. This is encouraged for the same reason as above.

Basic equipment is just that. A receiver (or transceiver), an antenna (beams are handy as are beam headings), a pair of ears plus the operator's ability to learn the limitations of each. Observers please note, your Maidenhead grid square location would be much appreciated, or your Latitude and Longitude (this should be available from your local council). This gives the Spectrum Management Agency (SMA) Monitoring personnel a starting point to re-check our observations, so the necessary action can be taken.

Signal strengths are also a help. For those without a beam, I would appreciate

a drawing of your antenna set up showing the direction of, for instance, a dipole. This will only be needed once, unless you use a new dipole. The national co-ordinator will note this and your locator for further logs. I do require advice of your type of receiving equipment, for various reasons. Not all receivers have the same IF frequencies.

Of course I want frequency, time in UTC, date, mode, and an ID if you're so lucky. Frequency preferably should be measured against a recognised frequency standard if available or a crystal calibrator to check dial accuracy. Do not use your clarifier.

It is preferable that reports be typewritten. If this is not possible, hand

written CAPITAL LETTERS should be used. This assists in correct information being transferred to the summary, which is forwarded to the IARU Region 3 co-ordinator, the SMA, the state co-ordinators and WIA Federal.

The monitoring system in VK has plenty of opportunity for observers to contribute some worthwhile assistance to the world wide organisation. The IARU Monitoring Service defines a route by which the ordinary radio amateur in any country has a means of access to the international bodies in cases of harmful interference. The system is not perfect but it represents the best we have at this time. It does provide a reporting means when the normal procedure of appealing to a national administration is found not to work.

When can I see your first log??

\*Federal Intruder Watch Co-Ordinator,  
Freepost No 4 Rubyvale QLD 4702  
or VK4KAL @ VK4UN-1  
ar

## QSLs from the WIA Collection

Ken Matchett VK3TL\* Honorary Curator WIA QSL Collection

### Wake Island

If we were to draw a line between Hawaii (which is just about in the middle of the Pacific) and the Philippines, Wake Island would be approximately half way. It, like many Pacific islands, is an atoll. The island, with an area of only 8 square miles, was discovered by Mendana in 1568 and "re-discovered" by Capt William Wake of the British schooner "Prince William Henry" in the year 1776. Commodore Wilkes, an American, fixed its position in 1840. The island,

uninhabited when discovered, was annexed by the USA in 1899 and used as a cable station. Later it was used as a stop-over for Pacific flights between Honolulu and Guam. In fact, Pan American Airways developed the airstrip in 1935 and used it for its China Clipper Service. One QSL in the WIA collection goes so far as to describe Wake Island as the "Aviation Hub of the Pacific". (It was for a QSO dated Dec 1964).

The island was proclaimed a Naval Defence Area in 1941, many workers

WAKE ISLAND  
Report VK3XB RST-459 Time 1105 Date 9/7/87 Freq 14mc

**K6LHA**

XMTR 616/10-90Watts R.M. Hansen  
QSL R.M. HANSEN, C-O PAN AMERICAN AIRWAYS.  
73 OM. Tx for QSO. QSL ? ALAMEDA, CALIF.


WTWP PRINT

being sent there to build up the air facilities and the submarine base. However, no sooner had several facilities been established than the Japanese attacked, actually only a few hours after the bombing of Pearl Harbour, Hawaii on the 7th December 1941. A few hundred marines and airmen on the island repulsed a Japanese naval task force and even sank an enemy cruiser, but the resistance did not last. Over 1000 Japanese troops landed on Christmas Eve 1941 and took control of the island. Lt Col W L J Bayler and Cecil Carnes give an interesting account of the experiences of the Wake Island personnel under Japanese air attack (and later, naval bombardment) in their book "The Last Man off Wake Island" just before the island's surrender. The island remained under Japanese occupation for the duration of the Pacific War since there was no attempt by Allied Forces to re-take the island. Although in Feb 1942 Wake Island was raided by US Navy aircraft, there was none of the bloody fighting with which we associate some of the other Pacific islands such as Iwo Jima and the Solomons. The island of Wake passed into Allied hands upon the surrender of the imperial Japanese forces on 4 September 1945.

**K6LHA**

The letter K was originally allocated by the ITU to both German and United States ship and land stations during the years before World War 1, but was not used by amateur (experimental) stations at that time. These generally used their own initials for their unofficial call-signs. Although the system of "intermediates" (See *Amateur Radio* August 1988 and August 1989) did include a few US

# W7KHN / KH9



**WAKE ISLAND – MID PACIFIC**  
**WHERE AMERICA'S DAY REALLY BEGINS**

MBR SAN DIEGO DX CLUB    73, TOM MORTON

possessions such as Hawaii (OH), Canal Zone (NZ), and Alaska (NA), there was no allocation to Wake Island. The modern prefix system, introduced in early 1929, assigned the letter K to American possessions other than mainland USA (to which the letter W was assigned). Thus we had KA (Philippines), K4 (Puerto Rico), K6 (Territory of Hawaii) and K7 (Alaska).

By the outbreak of World War 2, several K prefixes had an identifying letter, eg KG6 (Jarvis Is) and KF6 (Baker Is) but several "countries" such as Alaska, Hawaii and Puerto Rico retained their earlier prefixes. Up to the year 1938 the prefix K6 was shared by both Hawaii and Wake Is. The January 1939 edition of QST lists KC6 as the prefix for the Wake Group (sic). There could have been very few stations using such a prefix from Wake Is. The magazine "Radio" in the June 1939 edition does, however, mention activity by

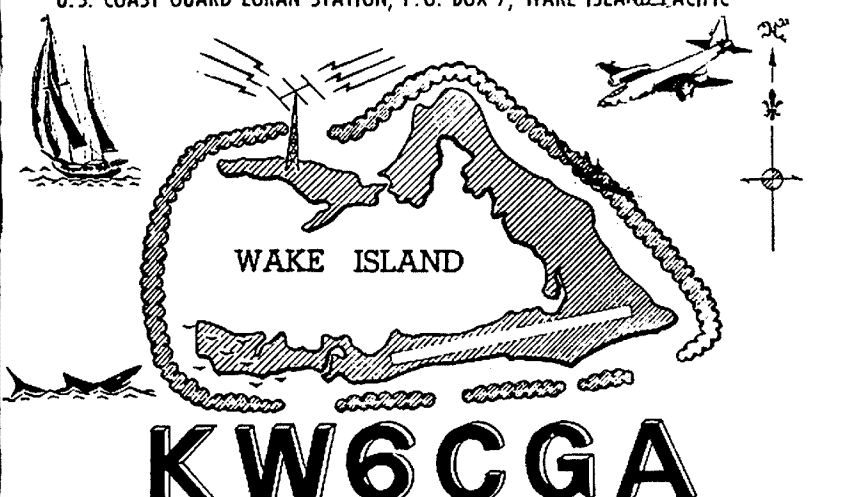
station KC6BNL on Wake. After the war the KC6 prefix was allocated to the Caroline Islands.

After the outbreak of war, US hams were permitted to conduct QSOs with US external possessions but from June 1940 were forbidden by the FCC to contact foreign stations (although the US was not then at war). The accompanying QSL, K6LHA, was one received by well-known DXer, Ivor Stafford VK3XB on CW for a QSO in 1937. The sender was an employee of Pan American Airways.

**KW6CGA**

After the war, so great had the numbers of US hams increased that K prefixes had to be used for mainland US stations. By then, all US external possessions having also the K prefix were further identified by an accompanying letter, eg K6 (Hawaii) changed to KH6. Alaska (K7) changed to KL7, and so on. At the same time, Wake Island assumed the KW6 prefix. The accompanying QSL KW6CGA sent to the author directly from the island in early 1961 clearly shows the geography of the island. The island is in reality three islets. The largest one is Wake and is the site of the large and strategic airstrip. To the north lies the small islet of Peale on which Pan American Airways built its hotel and was the QTH of amateur station KW6CGA. The other islet to the south is Wilkes Is. All the islets are protected from ocean movements by a coral reef that almost circumscribes the island group. Peale Is owes its name to the naturalist who accompanied Wilkes on his exploration of the Pacific. One of the islands has been investigated fairly recently as a possible home for the natives of Bikini Atoll which at present cannot be re-occupied because of radiation hazard.

U.S. COAST GUARD LORAN STATION, P.O. BOX 7, WAKE ISLAND, PACIFIC



KW6CGA



## W7KHN/KH9

The prefix KW6 and the rare WW6 (for US novice licensees) remained in use until the mid 1970s when KH9 was allocated. (Prefixes NH9 and AH9 have also been used). The first KH9 was Dan Lynch WD6CDU portable on Wake Is. The accompanying QSL, W7KHN/KH9, was for a QSO in February 1980 and was received by that well-known Old Timer (since a "SK"), George Luxon VK5RX. The significance of the words "Where America's Day really begins" lies in the fact that Wake Is, having a longitude of 166 degrees east, is just west of the International Date Line where a new day begins.

Since 1974 the island has only been used as an emergency stop-over for commercial aircraft. Today the US uses the island as a weather station. It is occupied principally by US Air Force personnel and some civilians engaged in special projects such as oceanographic and meteorological surveys. Prior permission is necessary before any landings on Wake can be made.

## Author's Note

If you enjoy reading this series of articles on the history of amateur radio through QSL cards, perhaps you would like to make a donation of cards to the WIA collection. All cards are welcome but rare DX, pre-war cards, special issue (commemorative) QSLs are most sought after. Please contact the author of these articles who is also the honorary curator of the collection. Club secretaries should note that displays of QSLs are available on loan for club meetings, conventions, etc.

The WIA would like to thank the following for their kind contribution towards the collection (supplementary list): Neil VK6NE, Tom VK5TL, Dick VK4KEZ, Jim VK3AZT, Mike VK6HD, Hervey Bay Amateur Radio Club, and Austin VK5WO.

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## VHF/UHF An Expanding World

Eric Jamieson VK5LP\*

All times are UTC

### Beacons

In response to my requests for the beacon network to be completed, I have been advised by John VK3KWA (VK3ZJC) that Ron VK3AFW is testing the installation of a two metre beacon at the Monash University to provide a signal from the Melbourne area. The beacon will run 15 watts to a halo antenna 80 m asl. Details later.

Steve VK3OT advised me he would be willing to provide a tower and site for a beacon in western Victoria if someone will provide him with the beacon as he doesn't have the time to build one. Any offers?

Trevor VK5NC reports that the Mount Gambier beacon on 144.550 is receiving its final test run and should be operational before Christmas and certainly by the time you read this information. The beacon will sign "de VK5RSE Mount Gambier QF02" followed by key-down for 30 seconds after which the minute cycle will be repeated.

So it appears that it won't be long before southern Australia will again have access to propagation warning devices and that's good news.

A consistent six metre beacon into VK3 and VK5 has been VK4RGG on 50.058, obviously a satisfactory Es distance. Of course, Channel 0 from Toowoomba continues to destroy large sections of 50 MHz with its massive signal under Es conditions.

Whilst not a beacon, a station to keep in mind when beaming inland is Fred Baker VK2YZU at Peake Hill, 412 km west of Sydney and near Dubbo. Fred is operational on six metres with 50 watts and two metres with 100 watts and using DL6WU antennas.

### Six metres

Responding to my request, Steve VK3OT has provided me with an overview of activity on six metres for November, the

following being typical. 4/11: 0330 43/44 MHz Asian telephones with afternoon TEP flutter and 49.748 MHz TV video by scatter; 0345 JA2IGY/b to 419 by scatter; 0350 49.750 TV 59; 0700 46.240 TV auroral scatter; 1100 VK2QF, VK2GP; 1150 VK4RGG/b 559. 5/11: 0345 JA2IGY/b by scatter; 0400 JH8ZND 319 on 50.480; 0423 beacon 43.520 drift net fishing KX320 339; 0436 Thailand TV 48.2602/48.2604; 0440 Laos TV 49.7604; 0450 JA2IGY/b 559; 0700 telephones 43-45 MHz; 0730 Chinese telephones 49.730 and 50.076.

6/11: 0138-0600 VK4BRG/b, VK4IAM, heard VK4AMK, LR, HK, VK2ZXC, VK3LK/4, VK4ABP/b, JA2IGY/b, JJ1WKX, 49.750 TV, VK4SIX Mt Isa, JA9LTD, JE3EJC, JH4JPO, JR2ENV, JA7s. 7/11: 0200-0545 VK4ABP/b, VK4RGG/b, VK4 stations working VK6RO, VK6YU, VK6JJ, VK6LK; JR0YEE/b, JH1WHS, JA7ZMA/b, JA2IGY/b, JA5GJN/4, JA7ODY, JA5CMO, 49.750 TV, VK4SIX/b, JH4JPO, at 0545 55.250 TV E3 from north west — Philippines/Malaysia. 8/11: 1000 to 1122 ZL2, ZL3. 9/11: 1000 HL9UH (also to VK2 and VK7). 12/11: 0300 to 0330 JA1,2,6 and HL9UH.

It has also been noted that VK9YQS on Lord Howe Island has been worked by a number of stations including as far south as to VK3DUT, VK3AMK and VK5BC. I am of the opinion we will be hearing stations from the Pacific islands quite frequently during the next few years as the Es improves on the downside of Cycle 22.

### Six metres EME

With F2 conditions deteriorating, Steve VK3OT looked for other conquests and turned to six metres EME using his M<sup>2</sup> antenna. On 6/11 at 1515 W6JKV was heard calling VK3OT at 519, 1535 Oscar report from W6JKV but unable to conclude QSO due to QRM. On 7/11 at 1530 Steve kept a sked with W6JKV on 50.0535 MHz and at 1533 copied callsign sequence "VK3OT de W6JKV." For 17 minutes Oscars and Roger Oscars were exchanged. At 1554 K6QXY called in sequence with Oscars and Rogers copied both ways. On 8/11 at 1617 QSO K6MYC 529. 9/11: 1701 K6QXY. 10/11: 1716 K6QXY.

So the first contact was on 7/11 with Jim W6JKV, followed by Bob W6QXY and then Mike K6MYC. Moonset sked with OH2BC on 12/11 but although Steve could copy OH2BC, the reverse was unsuccessful. Steve's equipment consisted of a TS670 to a Mirage A1015

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WIA Amateur Radio Magazine.**

and a pair of 4/400A at 1 kw with high power permit, mast-head pre-amp on receive.

As far as I am aware these are the first six metre EME contacts from Australia. It will be interesting to see how many countries Steve can work using EME as that mode of operation is on the increase in overseas countries. Good work.

### WORLD FIRST

In what is believed to be a world first, six metre contacts have been made with mainland Antarctica from another continent, Australia. Three SSB contacts occurred on 19/11/93 to Mark VK0AQ at Casey Base with the first being by Steve VK3OT at 1209 UTC with signals 5x5, followed by Ray VK3LK at 1215 5x2 and Trevor VK5NC at 1218 5x2, all on 50.120 MHz. The beam heading from Australia was between 195 and 200 degrees.

Credit for the initiation of these contacts must go to Hugh VK5BC who was in contact with a ZL station around 0938 and mentioned he was copying a beacon VK0AQ on 50.200 and thought it was originating from Macquarie Island. Apparently this information was heard by Mike VK3BDL and Jim VK3AZY, then by the ever watchful Steve VK3OT, who found the beacon and began to tape record its 559 to 579 signals. Unfortunately, Hugh did not work VK0AQ.

Then followed a great flurry to try and organise Mark VK0AQ to come on air but one of the few people to have Mark's telephone number was me, and where was I — out at a meeting! Eventually Steve tracked down a number and phoned Mark and a two-way contact resulted at 1209. So the beacon had remained audible for two and a half hours with its strongest signals between 1000 and 1100. Attempts were made to raise other stations on the air but for various reasons, it seemed people were not available, so there were few to alert. Had I been home I could have saved about two hours of wasted time by alerting Mark myself.

According to Hugh VK5BC the band had been open most of the day to all of Australia except VK8. In addition contacts had been made with VK9YQS on Lord Howe Island and ZL2, 3, 4. The beacon signal from Casey appeared to have some auroral content and probably arrived in Australia with the assistance of Es. Australia has maintained six metre beacons on the Antarctic continent for more than 20 years and there have been occasional reports of hearings when the beacon was located at Mawson, but no

actual contacts. Unless there have been unreported contacts from South Africa or South America to Antarctica, then these contacts must rank as the first on six metres. Congratulations to all involved.

Incidentally, for the purposes of receiving the Worked All Continents Award, it is just as well that a contact is not required with Antarctica or none would have been issued for six metres. With the above contacts, Steve VK3OT and Trevor VK5NC now qualify as having worked a seventh "continent," and would appear to be the only operators in the world to do so. It's a humbling thought.

### From Europe

Ted Collins G4UPS in his monthly report says he has been conducting daily six metre tests with G3CCH at 350 km and SM7AED at 1200 km with some surprising results. Although Arne SM7AED is not active every morning, on each morning that he is available they have completed QSOs. Ted believes they are communicating via extended tropo or forward scatter mode. Signal reports are usually around 559 to 579. The Swedish contact seems quite a good effort to me as it is roughly the distance between Sydney and Rockhampton. Perhaps Mike VK2FLR and Lyn VK4ALM could try the path for regular contacts!

It appears from Ted's October report that either six metre stations are losing interest or conditions have been poor, although there appear to be at least ten beacons heard. Prefixes mentioned include 4N1/b, 5T5, 7Q7, 9A3FT, 9H1, 9H1/b, 9H5, A22, CQ7CBI, CT0/b, CT1/b, DF7, DL4, EA3/b, EH1, EH3, EH6, EH7, EH8, EH9, F5, F6, I2W, IC8, IK0, IK8, IT9, OE4, OM3, OZ4, OZ6/b, OZ7/b, S55/b, S59, SM7, SV1, SV9/b, YO2, YT1, YU1, YU1/b, Z23, ZS6 for a total of 41 which would be excellent by Australian standards!

### The Perth Scene

Graham VK6RO reports that September and October 1993 was a poor period for Perth. 49.750 TV was heard on 19/8, 10/10, 18/10, 20/10, 24/10, 28/10. 48.250 TV on 13/10, 14/10, 27/10. On 14/9 57.250 TV from Port Pirie.

A reasonable opening occurred on 28/10 at 0728 with JA beacons on .008, .017 and .027, 0818 phones from Asia on 50, 52, 53 and 55 MHz, 0828 48.239.6 and 48.260.4 TV, 0829 HL9UH, 0833 JK1PUI, 0841 VK6RJ at Broome, which Graham says is DX for Perth! Other stations on during the 28/10 opening included VK6YU, VK6HK, VK6KRC and VK6JJ. Graham comments that in Perth a few years ago, they would hear the 49.750 TV for up to 12 hours a day, but not now.

Graham also says that he has a 1993 Japan Repeater Directory in which details are given for 2 repeaters on 29 MHz, 792 on 70 cm, 632 on 23 cm and 95 on 2400 MHz. That's a lot of repeaters!

### Microwaves

Information I had to carry over from last month was contained in November *OST* and "The World Above 50 MHz" by Emil Pocock W3EP. Details were given of the Trans-pacific Record contact on 902 MHz.

Shel N16E/KH6 observed that the tropo path to California was good early in their summer and for the first time in seven years he heard FM broadcast stations from northern California and these signals were strong on 18/19 June, 9/10 July and 4/5 August. It is believed many two metre contacts were made between Hawaii and the mainland during those periods.

Chip N6CA on top of Palos Verdes near Los Angeles decided that 23/8 was the day, so Paul KH6HME went to the 2500 metre operating site on top of Mauna Loa and found signals strong on 144 and 432 MHz across the Pacific. At 0136 the pair made a marginal contact on 902 MHz CW with the distance being 3982 km. Congratulations. The pair tried for four hours to bridge the gap on 2304 MHz but were unsuccessful.

N6CA designed and built the identical stations used at each end, consisting of 12 watt transverters, receivers with a 0.6 dB noise figures and four metre loop yagis. For them, the remaining challenge is 2304 MHz, and it seems only a matter of time before they wrench that record away from Reg VK5QR and Wally VK6WG, the present record-holders.

### 24-241 GHz Work In Denmark

Emil Pocock W3EP writes that during the annual Danish GHz Activity Week, June 6-12, northern European microwave enthusiasts recorded numerous firsts, according to Steen Gruby OZ9Z1. Steen estimates that more than 400 QSOs were made on 10 GHz and up, including Danish firsts on 145 and 241 GHz. Skagen, which sits near the end of a peninsula on the Danish far northern coast, served as the centre of operations.

Most of the activity was on 24 GHz, because 18 members of the GHz North Zealand Work Group and the PROCOM Amateur Radio Club had just completed 24 GHz transverters. Built from designs developed by OZ1UM, the narrow-band transverters run about 50 mW with 6 dB noise figures and small dish antennas. The results were spectacular. OZ/DB6NT and OZ1UM made a 208 km SSB QSO with 53/56 reports on the first day of the tests, and by the end of the week most of the 24 GHz stations had made contacts in the

200 km range. Attempts to complete paths to Norway and Sweden failed, even though LA/OZ4PV and OZ5UJ made a 355 km contact on 10 GHz.

OZ1UM and OZ/DB6NT made an 8.8 km SSB QSO on 76 GHz, but there were no other 4.4 mm stations and the weather was poor. Both stations ran a few microwatts to 25 cm dish antennas.

Two pairs of operators, DB6NT and DF9LN at one station and OZ9ZI and DJ5HN at the other, completed several 145 GHz contacts on June 9, including a 3.1 km QSO across open water. These were Danish firsts on that band. Equipment resembled Gunn oscillators running about 5 microwatts. DB6NT and DF9LN used similar transverters on 241 GHz to complete a 0.5 km contact across the Dunes at the Skagen site. DF9LN and DJ5HN assisted.

These tests represented remarkable achievements, not just for the distances achieved (which are quite commendable for average weather conditions), but also for assembling gear on four bands above 24 GHz!

I have included the above information in some detail because it informs Australian microwave operators of trends overseas and this should spur them on to move further into the microwave region than 10 GHz. I am happy to include reports of any such activity in these columns. Due to my physical limitations I need help to do it, but I am eagerly looking forward to the day when I can operate on narrow-band 10 GHz. My QTH is well situated as an anchor point for stations operating portable.

### First Worked from Australia

Ever so slowly, as more gaps are filled, this list is nearing completion. The previously published lists, although pro tempore, are already creating interest and in addition to *Amateur Radio* will eventually appear in the *UK Six Metre Group News Magazine*, so I have to get it right. My one regret is that I know of several operators, who, for their own reasons, have declined to add their call signs to the list, which means we are missing details of certain essential contacts; but that is their prerogative and I respect their decision.

### General News

I note from *CQ ham radio* sent to me by Graham VK6RO that, during the northern hemisphere summer, JA stations had a much restricted number of prefixes to work in comparison with a few years ago under F2 conditions. During June, July and August, prefixes contacted/heard included: 9M-TV on 53.740 and 53.760, AL7, BT4, BV0, BV2, BV6, BV7, BV8, EK0,

HL0, HL1, HL2, HL3, HL4, HL5, HL9, JD1, JT1, KC6, P29, VK-TV, VK4, VK6, VR2, VS6, VS6/b. That's 13 countries and 25 prefixes.

What I do find interesting are the seven HL areas worked whereas about the only station we hear is Louis HL9UH. Possibly Korea is within single-hop Es distance from Japan and most antennas are pointed there. Also, I was unaware there were so many BV prefixes.

Keep in mind that the Ross Hull Contest extends until 1800 on 16/1/94 and on that last weekend the VHF Field Day Contest runs in parallel with the Ross Hull. Details were in December *Amateur Radio*.

For those who live in southern climes, remember that the last week or so in January or early February are recognised as periods when enhanced conditions often prevail across The Great Australian Bight, allowing contacts to Wally VK6WG at Albany (and any others who might appear), on the bands 144 through to 2304 MHz and possibly higher if conditions and equipment permit. Also remember that such conditions can work both ways, ie from Adelaide to the west and also to the east.

Watch the weather maps for a large, relatively stationary, high pressure system with a centre pressure reading of 1032 hectopascals or higher, the centre situated well down in the Bight with the upper isobars extending right across Australia, and these having pressure gradients of around 1024 hectopascals, even better if that figure is higher. With such a system some of the bands can remain open for up to four days.

### Closure

I hope that 1994 will provide plenty of DX openings and six metres will produce some new countries for you — don't write the band off, its fascination comes from its unpredictability.

Closing with two thoughts for the month:

1. Real religion is a way of life, not a white cloak to be wrapped around us on the Sabbath and then cast aside into the six-day closet of unconcern, and
2. Ever notice that in some shops you have to serve yourself and in others they hire salespeople to ignore you?

*73 from The Voice by the Lake.*

*\*PO Box 169 Meningie South Australia 5264*

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## Pounding Brass

Stephen P Smith VK2SPS\*

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### Part two of "How the Telegraph Came to Australia"

The colony of NSW was the next in line to adopt the telegraph. Tenders for construction of the line from Liverpool to Albury were arranged in May 1857, while the NSW Government undertook the erection of the twenty mile line from Sydney to Liverpool itself. The line opened on the 30th December 1857.

Under Governor Denison's watchful eye the first message was sent "Can you read my writing?" No answer was received for several minutes. Again the message was repeated. An answer finally arrived that the pen of the recording instrument at Liverpool had broken and had to be repaired with great haste.

Despite human inexperience, NSW was soon ringed with telegraph systems, covering a wide area of countryside.

Queensland, as an independent Colony and separated from NSW, adopted the telegraph in 1861. A tender for the construction of a line from Brisbane to NSW was undertaken by Messrs Brown at a cost of 38 pounds 5s and 6d a mile, and the line was ready for operation at Ipswich, twenty five miles down route from

Brisbane in April 1861. The line to the border was completed that same year.

Eleven years after McGowan's initiative, several thousand miles of Morse's lightning lines silhouetted the Australian countryside. Over long distances repeaters were installed. Initially, human operators read the incoming Morse signals and re-transmitted them on to their destination.

Tasmania had a telegraph line from Hobart to Launceston (internal communications) which was completed in 1857 by a firm of Canadian contractors, Messrs Butcher, Estage & Carroll, and funded by the Government. The major concern was how to link the continent with Tasmania. Technology of submarine cabling, formidable and expensive, was in its infancy at this stage. It would be the only means of linking Tasmania to the continent. Many soundings were taken in Bass Strait over the following months until a suitable route for the laying of the cable was found.

Meantime, the Victorian and Tasmanian colonies agreed upon sharing costs for this mammoth task. Cost for cable was set at 45,000 pounds, and provided for 240 miles of cable with a single copper

conductor armoured by iron wire. This was being manufactured in England by J H Henley. The cable was completed in 1858, and reached Melbourne, aboard the ship SS "OMEQ" in 1859.

In July, the SS "OMEQ" and the SS "VICTORIA" left Victoria from Cape Otway and began laying the three quarter inch thick telegraph submarine cable over the stern of the vessels. Paying out of the cable was halted at intervals to join the cable ends. The vessels laid just over 117 miles of cable stretching from Cape Otway to King Island, Three Hummock Island, to Circular Head, Low Head and finally to Launceston. This was the

longest laid cable at the time anywhere in the world. The line was officially opened on the 18th August 1859, a great engineering feat taking just over 6 weeks to complete.

The last colony to adopt the telegraph was Western Australia. A Perth newspaper proprietor Edmund Stirling approached the Colonial Secretary Barlee, offering to build a line from Perth to Fremantle, if the Government would supply and erect the telegraph poles. Barlee agreed and would provide convict labour for the erection of poles and wire. Western Australia became the only colony to employ convict labour in the construction of the telegraph line.

The first telegraph pole was erected in Perth on 19 February 1869. The first message sent was by James Flemming (an ex convict) on 21 June 89, congratulating the inhabitants of Fremantle on this annihilation of distance between the capital and the port (distance was only 12 miles). Further private initiative would push the lines outward from Perth.

This concludes the series on early Australian Telecommunications. Next month we will cover different types of code.

\*PO Box 361 Mona Vale NSW 2103  
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## Over to You — Members' Opinions

*All letters from members will be considered for publication, but must be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.*

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### Why Do I Bother?

As the VK9/0 QSL Manager, many and varied are the ways of forwarding cards to operators that I use. Mostly I seem to have been very unsuccessful in receiving any response from the receivers of the packets of cards that I forward to them. My pleadings for information about their operations, or requests to prepay postage, or in some cases to repay postage costs incurred, fall on deaf ears.

But this week I received a card via the VK6 Bureau which almost turned me off. QSLing in general.

In December 1987 a Canadian operator on Cocos Island made a good number of world-wide contacts. Eventually, by September 1988, a small bundle of cards had accumulated in the VK9/0 Bureau for him. These were duly despatched to his QSL manager in Canada, with a QSL card from me and a request for an indication whether he wanted Bureau cards or not.

No reply was received.

Later, and possibly this is where I made an error of judgement, two further bundles of cards were sent, the last in March 1991. No further exchange took place until this week, when a card arrived for me via the VK6 Bureau, nearly six years later.

But should he have bothered at all with the Bureau? After all, he probably said, "QSL direct to my manager VE3MMB", which I probably have overlooked. Should I have posted back to the various Bureaux those cards which the VK9/0 Bureau received? Who pays what cost?

What do you glean from this? If the operator says "QSL via manager or direct", then DO NOT use the Bureau!

When did you last check to see if your Bureau manager has done anything with your cards for V85, 6V, 9G, BY, C9, and many others too?

Neil Penfold VK6NE  
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### 6 Metre First!

May I thank all of those involved in successfully making two-way 6 metre contact with the continent of Antarctica on November 19th. Two other local amateurs, VK3LK and VK5NC share the privilege and, of course, Mark VK0AQ the operator at the other end (Casey Base) who, once alerted, was at the 6 metre station immediately. I would like to thank Eric VK5LP, who is involved as both Mark's QSL manager and as my personal friend. Eric undertook to telephone Mark after the opening died down and confirm that the contacts had taken place and then transfer those details to the VK0AQ cards which were issued the same week. Eric's involvement effectively legitimises the contacts.

Soon after the contact both the VHF and DXCC desks had received enquiries as to whether contacts from Antarctica counted as a country, because VK0 Antarctica does not appear in the listing of the '93 callbook. I can assure you that the continent of Antarctica is a separate country for DXCC purposes and is mentioned in the footnotes on page 43 of the callbook.

Working Antarctica is the culmination of 20 years of effort on 6 metres for me and is officially country number 100, occurring just 4 days short of 20 years,

when I worked Ron VK0WW at Macquarie Island on 23/11/73.

There have been many letters and packet messages of support from overseas, both to me and to Australian 6 m operators generally. Trevor VK5NC and I have joined an exclusive club of TWO, to actually work every continent on 50 MHz and, together with Ray VK3LK, we are the only operators to have successfully worked Antarctica from anywhere. This information is based upon the 200 or so applications for DXCC on 50 MHz submitted to the DXCC desk.

From an Australian perspective, it is a fitting end to Cycle 22 for us all and puts us well in the forefront of 50 MHz development, with the highest number of countries contacted on the band in the world. Good one Australia.

Stephen R Gregory VK3OT  
PO Box 622 Hamilton VIC 3300  
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**Repeaters —  
additions, deletions,  
alterations. Have  
you advised the  
WIA of changes  
needed to the  
repeater list?**

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## Spotlight on SWLing

Robin L. Harwood VK7RH\*

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A New Year has started and I do wonder what will happen during the next 12 months on the Spectrum. Already several HF coastal Stations have deleted their CW service in line with the decision to phase out this mode within the Maritime Service. The Canadian Coastguard, who operates stations VAR and VCS, did drop Morse at the end of last September, and the Naval stations at Halifax (CFH) and Vancouver (CKN) have probably done likewise by now.

One reliable HF signal has disappeared altogether. This was ZLB/ZLW at Awarua on the South Island of NZ. Other HF coast stations throughout NZ closed down as well on 30 September. A network of VHF stations has been established to cover the Dominion and the Royal New Zealand Navy will be maintaining an HF watch until a private enterprise service is established. This will be located near Lake Taupo and reportedly close to the current Radio New Zealand International site, in six month's time. Awarua, which is near to Invercargill, was the main HF site. Mainly because of the excellent soil conductivity it was well heard throughout the world. Sadly, another part of our radio history has gone off the airwaves.

And while we are on historical sites, I was recently in Hobart, attending a WIA branch meeting. This branch now meets at the former site of VIH, Hobart Radio, on the Queens Domain, overlooking the picturesque Derwent River. VIH, I believe, commenced at this site around 1912-13 and continued till it closed in February 1992. The local WIA branch leases the site from the Hobart City Council and once again, radio signals have been emanating from the site. Sadly, the original antennas have been pulled down but the local branch has erected some more suitable to amateur radio needs. Listen out for VK7SB on the bands, particularly on the Tuesday evening Tasmanian Devil Net.

While listening on the 40 metre band early in November, I came across the "Voice of Nigeria" on 7255 kHz. It was in English with reasonable signals. When first heard, the signal was mixed in with a European broadcaster in Spanish but after this went off at 0630, the channel was clear. Signals only lasted for 20 minutes before rapidly fading out which, I presume, was due to sunrise in Lagos. In tropical areas there is no twilight as in temperate zones and this, the Gray-line effect as it is known, is very short. I sent off a report and now am wondering if they will reply. For I continued to monitor the

station daily and there was a bloodless coup on the 17th, which changed the way the programs were presented. It was interesting to hear history being made on shortwave.

Thanks to Mick Power VK4NGW, of Rochedale (Qld) who kindly wrote to confirm that I have been indeed hearing KCWW in Arizona. Apparently it is easily heard there near Brisbane and is regarded as a propagation marker for trans-Pacific signals. KCWW is not the only one on that frequency but is very dominant because of its 50 kW sender which comes over well on this relatively free channel here. And while I think about it, I note that 2RPH has moved from 1539 to 1224 kHz, permitting us to hear that Californian station 1 kHz higher. It is apparently right on the Pacific coast at Azle and although rated at 5 kW, propagates well across the vast ocean.

Jim VK2BGG, in Wauchope also writes

to inform me that he remembers hearing American stations around 1500 kHz in the forties. One station in particular stood out — Radio KGEI with Willis Conover and Jazz. This station, Jim, is still on-air on 9615 kHz but signs off earlier at 0500Z. It is now a religious station and broadcasts exclusively to Latin America in Spanish. Willis Conover is still heard with "Music USA" over the VOA at rare times and I have a feeling that they may be replaying tapes of past programming. I too can recollect hearing him over the VOA, when I started out listening in the mid fifties. He must be an old man now.

Well, that is all for now. If you have any comments or news, please feel free to send them to the addresses below. Until next time the very best of monitoring and 73 — Robin VK7RH.

\*52 Connaught Crescent West Launceston TAS 7250  
VK7RH @ VK7BBS  
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## Education Notes

Brenda M Edmonds VK3KT\*

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I would like to begin by wishing all readers a happy and prosperous New Year.

Although most of us have learnt from experience not to expect a sudden increase in health, wealth or happiness simply because the calendar has flipped over to another year, many of us still find the start of a new year an appropriate time to evaluate both past performance and future plans.

For administrative and financial purposes, the WIA is structured on a calendar year basis rather than the traditional financial year of July to June, so it will soon be time to think of Annual Reports.

Many groups and clubs will be busy planning activities for 1994, and deciding whether or not to run classes this year. From comments I have heard, there seems to be a very wide range of opinions on the place of classes in the clubs. Some see the classes and examinations as their major income earner for the year, others provide the service at little or no cost to the students. I doubt if anyone has collected any data on either the success rates of the students or the continuing club or WIA memberships of students according to the cost of the courses. It would be an interesting topic to examine. I realise, of course, that there are very many other factors involved besides the cost.

What is a "successful class"? Is it the number of passes, the percentage, the number of new recruits to club activities, the fellowship developed within the

group? From some reports I have received, there is developing an awareness that some classes are consistently "good", while others have a lower reputation. When the numbers of students in an area each year is small, there is little chance of the "poor" classes being taken over by the "good" as would happen if market competition ruled. So it is up to the clubs and individuals to ensure that the classes run are the best possible.

Perhaps this is another area where sharing of information and ideas would benefit both students and lecturers. We do not have a convenient forum where lecturers can meet and share ideas as schoolteachers would at a subject conference day, but I understand that some areas have tried bringing a number of clubs together for discussions of both classes and examinations.

If there are lecturers who would like to offer their ideas, or recent students who have constructive suggestions for classes, I would be very pleased to receive them, and perhaps collate them for publication in this magazine. There must be many lecturers who feel a bit isolated and would appreciate the support of knowing that others have used a similar approach. There may even be amateurs who would volunteer to assist with classes if they felt there was some support available.

To close, I offer you two New Year Resolutions to adopt and keep:-

1. to introduce at least one new person to amateur radio this year.
2. to recruit one new member of the WIA this year.

My best wishes to you all for 1994.

\*WIA Federal Education Co-ordinator  
PO Box 445 Blackburn VIC 3130. ar

# HF PREDICTIONS

Evan Jarman VK3ANI

## The Tables Explained

The tables provide estimates of signal strength for each hour of the UTC day for the five bands from 14 to 28 MHz. The UTC hour is the first column; the second column lists the predicted MUF (maximum useable frequency); the third column the signal strength in dB relative to 1 μV (dBU) at the MUF; the fourth column lists the "frequency of optimum travail" (FOT), or the optimum working frequency as it is more generally known.

The signal strengths are all shown in dB relative to a reference of 1 μV in 50 Ohms at the receiver antenna input. The table below relates these figures to the amateur S-point "standard" where S9 is 50 μV at the receiver's input and the S-meter scale is 6 dB per S-point.

μV in 50 ohms	S-points	dB(μV)
50.00	S9	34
25.00	S8	28
12.50	S7	22
6.25	S6	16
3.12	S5	10
1.56	S4	4

0.78	S3	2
0.39	S2	-8
0.20	S1	-14

The tables are generated by the GRAPH-DX program from FT Promotions, assuming 100 W transmitter power output, modest beam antennas (eg three element Yagi or cubical quad) and a short-term forecast of the sunspot number. Actual solar and geomagnetic activity will affect results observed.

The three regions cover stations within the following areas:

**VK EAST** The major part of NSW and Queensland.

**VK SOUTH** Southern-NSW, VK3, VK5 and VK7.

**VK WEST** The south-west of Western Australia.

Likewise, the overseas terminals cover substantial regions (eg "Europe" covers most of Western Europe and the UK).

The sunspot number used in these calculations is 39.5. The predicted sunspot numbers for February and March are 37.6 and 37.2 respectively.

## VK EAST — MEDITERRANEAN

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	9.0	-7	6.9	0	-13	-29	...	...
2	8.5	-16	6.6	-2	-13	-27	...	...
3	11.6	-6	9.0	0	-3	-12	-26	...
4	17.7	3	13.6	-2	3	2	-4	-14
5	23.5	6	18.0	-6	5	7	5	0
6	25.2	8	19.1	-7	6	8	8	4
7	25.0	9	19.6	-7	6	9	9	5
8	24.3	9	19.8	-4	7	10	9	4
9	23.4	11	19.4	1	10	12	9	4
10	22.3	13	18.0	10	15	14	10	3
11	21.2	16	17.0	19	20	16	10	1
12	20.2	20	16.1	27	23	18	9	-2
13	19.8	23	15.6	33	26	19	9	-1
14	18.9	24	15.0	35	27	18	7	-5
15	18.2	26	14.7	35	26	17	5	-9
16	17.1	27	13.4	35	24	14	0	-14
17	18.1	28	12.5	33	21	10	-4	-21
18	15.0	28	11.5	31	18	5	-11	-30
19	14.0	29	10.7	29	14	1	-18	-38
20	14.3	27	10.8	28	13	-1	-20	...
21	13.6	25	10.0	23	8	-6	-26	...
22	11.6	20	8.9	14	-1	-18	...	...
23	11.6	14	9.0	10	-2	-16	-37	...
24	11.1	6	8.4	6	-5	-18	-39	...

## VK EAST — SOUTH PACIFIC

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	26.2	27	21.7	34	35	33	29	22
2	26.8	27	22.1	35	36	34	30	24
3	26.9	27	22.1	36	37	34	30	24
4	26.6	27	21.8	38	37	35	30	24
5	26.0	28	21.2	39	38	35	30	23
6	25.2	29	20.4	42	40	36	30	22
7	24.1	31	19.5	46	42	37	29	21
8	22.9	33	18.4	48	42	36	28	19
9	21.7	34	17.4	48	41	35	25	15
10	20.6	35	16.4	48	40	33	23	12
11	19.9	35	15.8	48	40	32	21	10
12	19.2	36	15.2	47	39	30	19	7
13	18.3	37	14.4	46	37	28	16	3
14	17.2	37	13.4	45	35	25	12	-1
15	16.2	38	12.5	44	32	22	7	-7
16	15.0	39	11.5	42	29	17	2	-14
17	14.0	40	10.7	40	26	13	-3	-21
18	14.3	39	10.8	39	26	14	-2	-19
19	16.6	34	12.5	38	30	21	8	-5
20	19.9	30	15.2	37	33	28	18	8
21	22.5	29	17.4	37	35	31	24	15
22	23.4	28	18.4	35	34	31	25	17
23	24.0	27	19.2	34	34	31	26	18
24	25.0	27	20.3	34	35	32	27	20

### VK EAST — AFRICA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	11.1	2	8.6	1	-4	-16	-34	...
2	10.5	-6	8.1	1	-6	-17	-35	...
3	14.3	1	10.8	0	1	-3	-14	-27
4	21.0	6	16.3	-3	6	6	2	-4
5	22.7	7	18.5	-8	4	7	6	6
6	22.6	6	18.5	-10	3	6	5	0
7	22.3	6	18.2	-10	3	6	5	0
8	22.0	6	17.8	-8	4	6	5	0
9	21.3	7	17.6	-4	6	7	4	-1
10	20.3	9	16.4	1	8	8	4	-2
11	19.3	11	15.5	7	11	9	3	-5
12	18.2	14	14.5	14	14	10	2	-8
13	17.5	18	13.9	20	17	10	0	-12
14	16.8	23	13.3	27	20	11	-1	-15
15	16.2	25	13.1	30	20	10	-4	-20
16	15.4	27	12.0	30	19	7	-8	-25
17	14.6	28	11.3	30	17	4	-13	-32
18	13.9	29	10.6	28	14	0	-18	-39
19	13.4	30	10.2	27	12	-2	-21	...
20	14.0	29	10.5	29	14	1	-17	-37
21	16.1	26	12.7	30	20	10	-4	-20
22	15.9	23	12.3	26	17	8	-4	-20
23	14.4	19	11.1	19	11	2	-12	-28
24	14.1	12	10.8	12	6	-3	-17	-35

### VK EAST — EUROPE

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	9.4	-4	7.4	0	-11	-26	...	...
2	8.6	-13	6.7	0	-12	-27	...	...
3	8.4	-17	6.6	-1	-11	-25	...	...
4	9.7	-13	7.5	0	-7	-18	-35	...
5	12.6	-4	10.0	0	-1	-8	-20	-36
6	16.1	2	12.8	-1	2	4	-1	-19
7	19.0	5	15.3	-1	5	4	-1	-19
8	21.1	8	17.0	1	8	8	4	-3
9	22.6	11	18.3	8	14	13	8	1
10	22.1	17	17.8	20	21	18	12	4
11	21.0	21	16.8	28	25	20	12	3
12	20.0	23	16.0	33	27	20	11	0
13	19.5	25	15.5	36	28	21	10	-1
14	18.9	23	15.0	35	25	16	4	-10
15	16.9	24	13.4	32	20	9	-7	-24
16	14.4	26	11.8	27	11	-3	-23	...
17	12.5	27	9.9	20	1	-16	...	...
18	10.9	28	8.6	13	-10	-32	...	...
19	9.9	29	7.8	7	-19	...	...	...
20	9.4	29	7.3	3	-25	...	...	...
21	9.2	24	7.1	1	-26	...	...	...
22	9.1	16	7.0	1	-21	...	...	...
23	9.6	8	7.4	2	-15	-34	...	...
24	9.8	2	7.6	2	-11	-27	...	...

### VK SOUTH — AFRICA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	14.2	13	10.3	13	7	-1	-14	-30
2	14.4	9	10.8	9	6	-1	-13	-28
3	16.7	9	13.2	7	8	4	-4	-15
4	19.7	9	14.0	4	9	8	2	-6
5	19.6	7	14.0	1	7	6	1	-6
6	19.7	7	14.0	0	6	6	1	-6
7	19.6	6	14.0	0	6	6	1	-6
8	19.6	7	13.9	0	6	6	1	-6
9	19.7	7	13.9	1	7	6	1	-6
10	19.1	8	13.5	4	9	7	1	-7
11	18.3	10	12.9	8	10	7	0	-10
12	17.2	12	12.1	11	11	6	-3	-14
13	16.2	14	11.3	15	11	5	-6	-20
14	15.2	17	10.6	18	12	3	-10	-26
15	14.6	22	10.1	23	13	1	-14	-32
16	13.9	26	9.6	25	12	-1	-19	-39
17	13.4	27	9.3	25	10	-4	-24	...
18	12.8	29	9.0	24	8	-7	-28	...
19	12.6	30	8.9	24	7	-9	-31	...
20	12.8	29	9.1	24	8	-7	-29	...
21	13.0	26	9.0	23	8	-6	-26	...
22	12.7	22	8.8	19	5	-8	-28	...
23	12.7	19	8.9	16	5	-8	-27	...
24	13.5	15	9.5	15	6	-4	-21	-39

### VK EAST — ASIA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	24.4	14	19.3	16	20	18	13	7
2	24.8	12	18.9	14	18	17	12	6
3	25.3	12	19.7	14	19	18	14	8
4	26.0	13	19.7	15	20	19	14	8
5	26.8	13	20.4	17	21	20	16	10
6	27.1	16	21.3	20	24	23	19	13
7	26.1	17	21.3	25	26	24	19	12
8	24.9	19	20.8	31	29	25	19	9
9	23.8	21	19.2	37	32	27	18	9
10	22.6	22	18.2	39	32	25	16	9
11	21.7	23	17.3	40	32	24	13	2
12	21.3	23	16.9	40	32	23	12	0
13	20.7	24	16.3	41	31	22	10	-2
14	19.8	23	15.3	39	28	18	5	-9
15	18.5	23	14.2	36	24	13	-2	-19
16	17.2	23	13.1	34	20	7	-10	-29
17	15.7	25	12.1	30	15	0	-20	...
18	13.8	25	10.6	23	3	-15	...	...
19	10.8	27	8.4	7	-22	...	...	...
20	10.2	27	7.9	1	-30	...	...	...
21	14.0	20	10.6	19	3	-13	-36	...
22	20.5	16	15.9	25	21	14	4	-8
23	23.2	16	18.5	22	23	19	13	5
24	23.7	15	19.2	18	21	18	13	5

### VK EAST — EUROPE (Long Path)

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	9.5	-9	7.2	0	-7	-18	-35	...
2	9.9	-4	7.5	2	-6	-18	-37	...
3	10.1	0	7.7					

VK SOUTH — EUROPE										VK WEST — AFRICA										VK WEST — MEDITERRANEAN										
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5		UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5		UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5		
1	10.0	1	7.8	2	-9	-24	...	...		1	13.1	18	9.8	16	5	-7	-25	...	...	1	8.3	5	6.3	-6	-31	...	...	...		
2	9.1	-8	7.1	0	-11	-26	...	...		2	13.4	14	10.2	13	6	-4	-20	-39	...	...	2	7.8	-6	6.0	-8	-30	...	...	...	
3	8.9	-14	7.0	0	-9	-22	...	...		3	15.6	11	12.3	11	9	2	-9	-23	...	...	3	10.8	-1	8.0	0	-9	-23	...	...	
4	10.4	-11	7.9	0	-5	-14	-30	...		4	19.1	11	14.6	9	11	8	1	-8	...	...	4	16.5	5	12.8	4	4	0	-11	-23	...
5	13.7	-3	11.0	-2	0	-5	-15	-28		5	20.2	9	14.9	6	10	8	3	-5	...	...	5	21.6	7	16.2	1	8	8	3	-4	...
6	17.7	2	14.2	-5	2	1	-4	-12		6	20.2	9	16.6	4	9	8	2	-6	...	...	6	22.0	7	16.8	-1	7	8	4	-2	...
7	20.7	5	16.6	-7	3	5	2	-4		7	20.1	8	16.4	3	8	7	2	-6	...	...	7	22.0	7	17.5	-2	7	8	5	0	...
8	20.8	7	16.9	-6	5	7	4	0		8	20.0	8	16.3	3	8	7	1	-6	...	...	8	21.9	8	17.7	-2	7	8	5	-1	...
9	20.6	8	16.7	-3	6	8	5	0		9	19.8	8	16.1	4	9	7	1	-7	...	...	9	21.5	8	17.6	0	8	8	5	-1	...
10	20.0	10	16.1	3	10	9	5	-1		10	19.6	9	15.9	6	10	7	1	-7	...	...	10	21.1	9	17.1	3	9	9	5	-2	...
11	19.1	14	15.3	12	14	11	5	-4		11	19.0	10	15.7	9	11	8	0	-9	...	...	11	20.4	11	16.9	8	12	10	4	-3	...
12	18.1	19	14.5	22	19	13	3	-8		12	18.1	12	14.6	13	12	8	-1	-12	...	...	12	19.5	15	15.7	17	16	12	4	-6	...
13	17.1	23	13.6	28	21	12	0	-13		13	17.2	15	13.7	18	14	7	-4	-17	...	...	13	18.5	20	14.8	26	20	13	2	-10	...
14	16.3	26	12.9	31	21	11	-3	-19		14	16.2	19	12.9	21	14	5	-7	-23	...	...	14	17.6	23	14.0	31	21	12	0	-15	...
15	15.7	27	12.4	31	20	8	-6	-24		15	15.4	23	12.2	26	15	4	-11	-29	...	...	15	17.0	24	13.5	31	21	11	-3	-19	...
16	15.0	27	11.8	29	16	2	-15	-35		16	14.8	26	11.7	27	14	2	-15	-35	...	...	16	16.4	25	13.0	32	20	9	-6	-23	...
17	13.4	27	10.5	24	7	-9	-31	...		17	14.2	27	11.4	27	13	-1	-20	...	...	17	15.8	26	12.8	31	18	6	-10	-28	...	
18	11.7	28	9.1	17	-3	-23	...	...		18	13.5	29	10.5	26	10	-4	-25	...	...	18	14.9	26	11.7	29	15	1	-17	-37	...	
19	10.6	29	8.2	12	-12	-35	...	...		19	12.9	30	9.5	25	8	-8	-30	...	...	19	14.1	27	10.9	27	11	-3	-24	...	...	
20	10.0	29	7.7	8	-18	...	...	...		20	12.4	30	9.5	23	5	-12	-35	...	...	20	13.2	28	10.2	24	7	-9	-31	...	...	
21	9.7	28	7.4	6	-21	...	...	...		21	12.2	30	9.2	22	4	-13	-37	...	...	21	12.6	27	9.6	21	2	-16	...	...	...	
22	9.6	20	7.4	4	-19	...	...	...		22	12.8	30	9.6	24	7	-9	-31	...	...	22	12.4	27	9.3	19	-1	-21	...	...	...	
23	9.6	13	7.5	3	-16	-37	...	...		23	12.9	27	9.9	23	7	-7	-29	...	...	23	11.2	26	8.6	13	-8	-29	...	...	...	
24	10.4	8	8.0	5	-9	-25	...	...		24	12.5	22	9.5	18	4	-10	-31	...	...	24	10.4	18	7.9	5	-15	-37	...	...	...	

VK SOUTH — MEDITERRANEAN										VK WEST — ASIA										VK WEST — SOUTH PACIFIC									
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5		UTC	MUF	dBU	FOT	14.2	16.1	21.2	24.9	28.5		UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5	
1	9.0	-4	6.9	-1	-15	-33	...	...		1	22.6	15	17.9	18	20	17	11	2	3	1	21.3	13	16.9	12	15	13	7	-1	
2	8.4	-14	6.5	-2	-15	-31	...	...		2	22.9	14	18.5	16	19	17	11	3	2	2	21.5	13	17.4	12	15	13	7	-1	
3	11.8	-4	8.8	0	-3	-12	-27	...		3	23.9	13	18.3	15	18	17	12	4	7	3	21.7	13	16.1	13	16	14	8	0	
4	18.4	4	14.2	-2	4	3	-3	-12		4	24.5	13	18.6	14	19	17	12	5	4	4	21.7	14	17.8	14	17	14	8	0	
5	21.8	7	17.9	-8	5	7	5	0		5	25.2	13	19.1	15	20	18	14	7	4	5	21.6	14	17.7	17	18	15	8	0	
6	21.7	6	17.8	-8	4	6	4	0		6	26.0	14	19.8	17	21	20	16	10	10	6	21.5	16	17.5	20	20	16	9	0	
7	21.6	6	17.6	-8	3	6	4	0		7	26.2	16	20.7	20	24	22	18	12	12	7	21.3	18	17.3	26	23	18	10	0	
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9	21.2	6	17.2	-7	4	6	4	-1		9	24.7	19	20.1	31	29	25	19	11	9	9	20.3	23	18.3	35	28	20	9	-2	
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13	17.5	21	13.9	27	20	12	0	-13		13	20.5	24	16.4	40	31	22	10	-3	3	13	16.6	28	13.2	35	23	11	-4	-22	
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7	17.3	23	14.1	31	21	10	-4	-21		7	22.0	6	17.8	-4</															

# HAMADS

## TRADE ADS

● **AMIDON FERROMAGNETIC CORES:** For all RF applications. Send business size SASE for data/price to RJ & US Imports, PO Box 431, Kiama NSW 2533 (no enquiries at office please ... 14 Boanyo Ave Kiama). Agencies at: Geoff Wood Electronics, Sydney; Webb Electronics, Albury; Assoc TV Service, Hobart; Truscotts Electronic World, Melbourne.

● **WEATHER FAX programs for IBM XT/ATs \*\*\* "RADFAX2"** \$35-00, is a high resolution short-wave weatherfax, morse and RTTY receiving program. Suitable for CGA, EGA, VGA and Hercules cards (state which). Needs SSB HF radio and RADFAX decoder. \*\*\* **"SATFAX"** \$45-00, is a NOAA, Meteor and GMS weather satellite picture receiving program. Needs EGA or VGA & WEATHER FAX PC card, + 137 MHz Receiver. \*\*\* **"MAXISAT"** \$75-00 is similar to SATFAX but needs 2 MB of expanded memory (EMS 3.6 or 4.0) and 1024 x 768 SVGA card. All programs are on 5.25" or 3.5" disks (state which) plus documentation, add \$3-00 postage. ONLY from M Delahunty, 42 Villiers St, New Farm QLD 4005. Ph (07) 358 2785.

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● **KENWOOD TS-520S** with manual, matching VFO-520 remote VFO, external SP-520 spkr \$600; **YAESU FT-101Z** with manual \$650; **YAESU FL-2100B** linear amp with manual \$600; **YAESU FRG-7** comm rcvr with manual \$250; all in ex cond. Allan VK2PT QTHR (049) 43 1308.

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● **UNIDEN HR2510** 25W/10m mobile in original packing with service manual, as new \$325; **SCANNER PRO 2022** 210 channel desk-top/mobile, mains + 12V, in original packing, as new, cost \$550, sell \$390. Can ship interstate if necessary. Brad VK2KQH day/early evening (02) 906 5855, AH (018) 64 0377.

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## FOR SALE VIC

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● **YAESU FT7 HF** pristine condition instruction manual original in every way \$450; **YAESU FT26 2m HT** perfect condition instruction manual charger protective case belt clip \$325. John VK3CJA (059) 64 7520.

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● **PACCOM TINY:Z TNC**, fitted with MK2 upgrade eeprom, \$200; also **UNIDEN HR2510 10 metre monobander**, 25 watt all-mode xcvr \$240; all exc condition, (orig owner) suit new buyer. Frank VK4DFM QTHR (071) 29 4311.

● **VALVES** transmitting, receiving, renovators, collectors, some unused, tested. Octals, early and later types, rectifiers, sockets. Send SAE A4 envelope for latest increased list. Ted VK4YG PO Box 245, Ravenshoe, QLD 4872 (070) 97 6387.

● **TS520S** in excellent condition with DC-DC converter \$500; **DG5 digital readout** \$150; **SP250 speaker unit** \$50; **VFO520 external VFO** \$75; **MC50 microphone** \$30; **CODAN HF Marine transceiver model 6180** very good condition complete with antenna tuning unit \$650. Bernie VK4IB (071) 25 1930.

## FOR SALE SA

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## FOR SALE TAS

● **KENWOOD TS120S** transceiver + AT120 tuner \$600; **KENWOOD external VFO type VFO** \$50; **HYGAIN TH3 junior tri bander** good condition \$250. John VK7WJ (004) 23 1128.

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● **YAESU FV400S VFO, FT560 ext speaker, FV200 VFO; YAESU FT101E work shop manual.** Michael VK2VFT QTHR (066) 47 3271.

● **KENWOOD desk microphone type MC-85 or MC-80.** Malcolm VK2BMS QTHR (02) 257 4583 BH or (02) 958 1114 AH.

● **VALVES** type 211, 2A3, 50, KT88; **OLD valve audio equipment** in any condition. Bob VK2ZHS QTHR (02) 567 5390.

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## WANTED WA

● **VZ200 DATA CASSETTE recorder** or circuit diagram with component values. Stanley VK6LV QTHR (098) 41 5040.

● **YAESU Mobile Antenna Resonator RSL-14 (14 MHz).** Bill VK6LT QTHR (09) 457 1080.

## MISCELLANEOUS

● **PLEASE SEND** your donation of QSL cards, old or new, to the Hon Curator of WIA QSL Collection, 4 Sunrise Hill Road, Montrose Vic 3765, Tel (03) 728 5350. Let us save something for the future.

ar

## UPDATE

### 1994 Membership Fees

The 1994 Membership Fees for the VK5 and VK7 Divisions of the WIA were incorrectly listed in the WIA Divisions directory published on page 3 of the December 1993 issue of *Amateur Radio* magazine.

The 1994 fees for those Divisions are as follows:

<b>VK5</b>	
(F)	\$70.00
(G) (S)	\$56.00
(X)	\$42.00
<b>VK7</b>	
(F)	\$69.00
(G) (S)	\$55.65
(X)	\$40.00

Make sure you correct your December *Amateur Radio* now!

ar



# Technical Correspondence

## Reluctant Oscillator

The EDK Multi 7 is a 23 channel crystal controlled rig which I have been using for years, in the car at one time, but now as a base station unit.

When a friend of mine was looking for equipment to get on the air I had no qualms in recommending one when he heard of one advertised at a modest price. Limited by the use of crystals certainly, but more versatile rigs would come later.

My friend's Multi 7 gave him good service, too, with the frequencies it carried, but when he obtained his full call and decided to give packet a go, the problems began. He ordered a set of crystals for the local BBS and duly collected them. The "fun" was about to start. There were problems with the modem arrangement too, but that is another story.

When the crystal supplier heard about the problems he invited my friend back with his transceiver as he wanted to verify the quality of the crystals. After checking the crystals as being OK it was eventually possible to activate the Multi 7 to receive

some packet signals. However, while the transmitter did work, the output was down on that compared with that person's own Multi 7, and he declared the unit very sick and in need of a "doctor".

Once home again my friend's unit worked briefly, but would not function at next switch-on. In fact, from then on it would work perhaps once in ten or more tries.

Feeling partly responsible, as the recommender of the unit in the first place, I contacted the previous owner, who said he had never modified it in anyway, but was aware that it did not like operating below 146 MHz. He also observed that there may have been a number of versions to satisfy world markets. In fact, my own unit's dial carried numbers only, while this unit had a mixture of letters and numbers. The previous owner said he understood that this particular set was designed for 146-148 MHz operation. Our local BBS is on 144.85 MHz.

At home I studied my own unit's circuit diagram and found that the receiver used an overtone oscillator and that the

handbook quoted a frequency range of 144-146 MHz.

On my next visit, my friend and I opened up his unit and found that the oscillator tank circuit coil slug was fully in. Now, to make an already long story a bit shorter, we found that by adding some 22 pF of capacitance across this coil worked wonders.

A permanent fix required getting at the under side of the receiver board (not the board carrying all the crystals) and soldering in the small capacitor.

No more problems!

Hope these findings may be of some use to others.

Murry Burford VK5ZQ

\*261 Belair Road Torrens Park SA 5062  
ar

**Help stamp out stolen equipment. Always include the serial number of your equipment in your Hamad.**

# 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 per issue 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.

\*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.

\*WIA policy recommends that Hamads include the serial number of all equipment offered for sale.

\*Please enclose a self addressed stamped envelope if an acknowledgement is required that the Hamad 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: \$25.00 for four lines, plus \$2.25 per line (or part thereof) Minimum charge — \$25.00 pre-payable.

State: .....


**Not for publication:**

Miscellaneous

For Sale

Wanted

Name:..... Call Sign: ..... Address: .....

## 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.

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### MAIL DISTRIBUTION:

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## CONTRIBUTIONS TO AMATEUR RADIO

Amateur Radio is a forum for WIA members' amateur radio technical experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for possible publication. Articles on computer disk are especially welcome. The WIA cannot assume responsibility for loss or damage to any material. "How to Write for Amateur Radio" was published in the August 1992 issue of AR. A photocopy is available on receipt of a stamped, self addressed envelope.

## BACK ISSUES

Available only until stocks are exhausted. \$4.00 to members, which includes postage within Australia.

## PHOTOSTAT COPIES

When back issues are no longer available, photocopies of articles are available to members at \$2.50 each (plus \$2.00 for each additional issue in which the article appears).

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.

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## 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:.....

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## VK QSL Bureaux

The official list of VK QSL Bureaux. All are Inwards and Outwards unless otherwise stated.

VK1	GPO Box 600 Canberra ACT 2601
VK2	PO Box 73 Teralba NSW 2284
VK3	40G Victory Boulevard, Ashburton VIC 3147
VK4	GPO Box 638 Brisbane Qld 4001
VK5	PO Box 10092 Gouger Street Adelaide SA 5000
VK6	GPO Box F319 Perth WA 6001
VK7	GPO Box 371D Hobart Tas 7001
VK8	C/o H G Andersson VK8HA Box 619 Humpty Doo NT 0836
VK9/VK0	C/o Neil Penfold VK6NE 2 Moss Court Kingsley WA 6026





## Ham heaven.

Some days Duncan thinks that he must have died and gone to heaven. Whichever way he turns he is surrounded by the finest ham radios around. What's a guy to do? He plays with them all day. And if that wasn't good enough, he gets paid for it as well.

Duncan Baxter...well VK 3LZ actually, let's call him by his 'real' name, is our resident ham radio expert. No one knows the Icom range better than VK 3LZ. He's been with us virtually from the start, some ten years in fact.

Now, if you'd like to find out about the latest in base stations, or virtually anything else to do with amateur radio operation, why not give VK 3LZ a call. Or you could simply drop in and see him at ham heaven ... err ... our head office that is.

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# RADIO AMATEUR

FEBRUARY 1994  
Volume 62 No 2



Journal of the Wireless Institute of Australia



## IN THIS ISSUE:

Review of the ICOM IC-707 HF Transceiver  
Making Air Wound Coils for HF  
Up-to-date Amateur Examiners Listing

and lots more

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HF is going places—thanks to the smallest transceiver of its kind in the world. Providing high-performance wherever convenience, the freedom. And whether used in DX-peditions, or in a fixed installation, this rig packs a powerful punch. Maximum output is 100W, and there's a full range of advanced features—including 100 memory channels, DDS with innovative "fuzzy" control, and AIP for superior dynamic range IF shift and CW reverse mode help reduce interference, while a noise blanker improves clarity. For user-friendly operation on the move, there's a multi-function microphone and powerful menu system. And the TS-50S is fully equipped for split-frequency operations. Test drive one today.

**TS-50S**  
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*Amateur Radio* is published by the Wireless Institute of Australia, ACN 004 920 745 as its Official Journal, on the last Friday of each month.

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**Business Hours:** 9:30 am to 3 pm weekdays

**Deadlines** Editorial Hamads

March 07/02/94 09/02/94

April 07/03/94 09/03/94

May 11/04/94 13/04/94

Delivery of AR: If this magazine is not received by the 15th of the month of issue, and you are a financial member of the WIA, please check with the Post Office before contacting the registered office of the WIA. ©

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### Cover

Are you ready for the 1994 John Moyle Memorial Field Day (see page 43 for the date and rules)? The front cover shows John Bennett VK3ZA operating during the 1993 contest. Set up inside his ex Ambulance, affectionately known as "The Beast", John operated from Macarthur, in south western Victoria, in the portable, six hour, single operator, HF, phone section.

## Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

## Wireless Institute of Australia

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Representing the Australian Amateur Radio Service

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## Federal QSP

As I write this the bush fires in NSW are still burning and, while the initial danger has passed, if there is a change in the weather then the situation can rapidly worsen. It is at times of natural disaster such as this that WICEN often comes to the fore. You may have noticed that the January issue of *Amateur Radio* featured a WICEN operator on the cover. The event featured in the photo was the 1992 Murray River Canoe Marathon, an event for which communications is provided by WICEN operators, primarily from Victoria.

As part of its preparation and training for emergency operations, WICEN in all states mounts training exercises, usually by providing communications in support of events of various kinds, although sporting activities seem to be the primary source of suitable events for training purposes. For many members of the public, WICEN, through its presence at these events, is often the visible face of amateur radio. The community service provided by WICEN operators during times of emergency is invaluable in those situations but often goes unheralded in the community at large. We within the amateur radio movement hear of the WICEN involvement, through articles in *Amateur Radio* and items on our Divisional news broadcasts, but in many instances the general public hears very little, if any, of the involvement of amateur radio in these situations.

Neil Penfold wrote in the Federal QSP column of the November issue of *Amateur Radio* of how we should be able to overcome the impediments which are put in our path. Part of that process will be through the support of the community. We must become more visible to them and let them see that we can make a worthwhile contribution to the community and are thus deserving of their support.

One way in which we can do this is to become involved in WICEN and, through its activities, promote amateur radio as being a valuable part of Australian society. From my own experience I can tell you that it is an enjoyable experience participating in these exercises and one feels better suited to be able to positively contribute in the event of an emergency.

If this looks like a plug for WICEN then it is meant to be in part. But WICEN is just one example of how amateur radio can be given a public face. As we all look for new challenges in amateur radio this year, give some thought to how you can help give amateur radio a more discernible public face and good public image. Think of how amateur radio can be seen to contribute to our society for the benefit of all. Having thought of what you might do, it is then the time to act and put your ideas into practice. Get the help of your local radio club, other fellow amateurs or your local Division. Let's all help amateur radio, and ourselves as amateur radio operators, to be recognised in the wider community for the good citizens we are.

Kevin Olds VK1OK  
Federal President  
ar



# Editor's Comment

## Centenatorial

My sincere apologies for the title! How else can one describe a one-hundredth editorial? The first effort by your present editor was back in July 1984, entitled "New Faces". It referred to the illness of the previous editor (Gil Sones VK3AUI) which had caused the job to land in my lap, and the numerous changes in Federal Councillors and others which had occurred at the 1984 Federal Convention. I am happy to confirm that Gil, hale and hearty, is still a member of the Publications Committee, but has no wish to be

Editor again! There must be a reason for that!

Those of you with a mathematical bent will have observed that in nine and a half years it should have been possible to write 114 editorials. Why only 100 until now? The reason is simple. In most years there was at least one guest editorial by someone of note, and in August 1984 there was no editorial. New to the job, I hadn't written one, so soon after the first! More recently there was discussion as to whether I should write any more at all! But here we are, with the one-hundredth Comment and, maybe, still

yet more to come! It seems certain that no previous editor of *Amateur Radio* has scored such a century.

What have those 100 Comments had to say? One theme that cropped up more than once was the FUTURE of the WIA. Would you believe that four editorial headings even included the word "Future"? Perhaps more than half of my editorial verbiage has been directed towards the well-being of the WIA, and THEREFORE of amateur radio in Australia. Some people might suggest that I am obsessed by the need for a strong WIA. Certainly I am convinced of its necessity.

Since the age of 18, I have been a member of the WIA; without a break, since 1945! Next year I will have been a member for 50 years. It will be two

Continued on page 49

## 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.

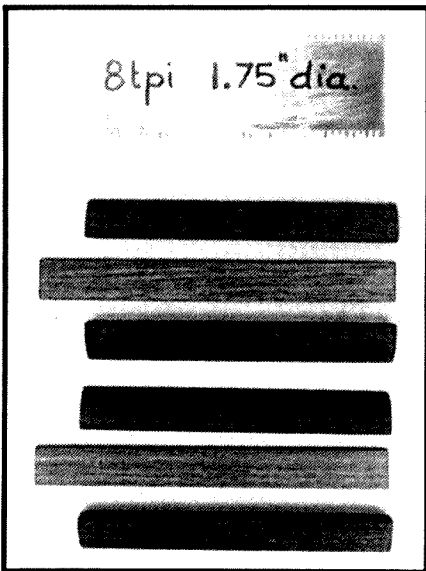
Division	Address	Officers	Weekly News Broadcasts	1994 Fees
VK1	ACT Division GPO Box 600 Canberra ACT 2601 Phone (06) 247 7006	President Christopher Davis Secretary Hugh Blemings Treasurer Don Hume	VK1DO 3.570 MHz LSB, 146.950 MHz FM, 438.525 MHz FM each VK1YYZ Monday evening (except the fourth Monday) commencing at 8.00 pm. VK1DH	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK2	NSW Division 109 Wigram Street Parramatta NSW (PO Box 1066 Parramatta 2124) Phone (02) 689 2417 Fax (02) 633 1525	President Terry Ryeland Secretary/ Treasurer Roger Harrison (Office hours Mon-Fri 11.00-14.00 Wed 1900-2100)	VK2UX VK2ZTB From VK2WI 1.845, 3.595, 7.146*, 10.125, 24.950, 28.320, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 (*morning only) with relays to some of 14.160, 18.120, 21.170, 584.750 ATV sound. Many country regions relay via a local 2 metre repeater. Sunday 1000 and 1915. Highlights included in VK2AWX Newcastle Monday 1930 on 3.593 plus 10m, 2m, 70cm, 23cm. News headlines by phone (02) 552 5188. Some broadcast text can be found on the Packet network.	(F) \$66.75 (G) (S) \$53.40 (X) \$38.75
VK3	Victorian Division 40G Victory Boulevard Ashburton Vic 3147 Phone (03) 885 9261	President Jim Linton Secretary Barry Wilton Treasurer Rob Hailey Office hours Tue & Thur 0830-1530	VK3PC VK3XV VK3XLZ 1.840MHz AM, 3.615 SSB, 7.085 SSB, 53.900 FM(R) Mt Dandenong, 146.700 FM(R) Mt Dandenong, 146.800 FM(R) Mildura, 146.900 FM(R) Swan Hill, 147.225 FM(R) Mt Baw Baw, 147.250 FM(R) Mt Macedon, 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday.	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK4	Queensland Division GPO Box 638 Brisbane QLD 4001 Phone (07) 284 9075	President Ross Marren Secretary Lance Bickford Treasurer David Travis	VK4AMJ VK4ZAZ VK4ATR 1.825, 3.605, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, 28.400 MHz. 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday. Repeated on 3.605 & 147.150 MHz. 1930 Monday	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK5	South Australian Division 34 West Thebarton Road Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Bob Allan Secretary Maurie Hooper Treasurer Bill Wardrop	VK5BJA VK5EA VK5AWM 1820 kHz 3.550 MHz, 7.095, 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 34 579.000 Adelaide, ATV 444.250 Mid North Barossa Valley 146.825, 438.425 (NT) 3.555m 146.5000, 0900 hrs Sunday	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK6	West Australian Division PO Box 10 West Perth WA 6872 Phone (09) 388 3888	President Cliff Bastin Secretary Ray Spargo Treasurer Bruce Hedland-Thomas	VK6LZ VK6RR 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 3.582, 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 146.700 at 1900 hrs.	(F) \$60.75 (G) (S) \$48.60 (X) \$32.75
VK7	Tasmanian Division 148 Derwent Avenue Lindisfarne TAS 7015 Phone (002) 43 8435	President Andrew Dixon Secretary Ted Beard Treasurer Peter King	VK7GL VK7EB 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, 144.150 (Hobart) Repeated Tues 3.590 at 1930 hrs	(F) \$69.00 (G) (S) \$55.65 (X) \$40.00
VK8	(Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).		Membership Grades Full (F) Pension (G) Needy (G) Student (S) Non receipt of AR (X)	Three-year membership available to (F) (G) (X) grades at fee x 3 times.

Note: All times are local. All frequencies MHz.

# Making Air-Wound Coils for HF

*Drew Diamond VK3XU\* describes how to make high-Q coils that are as good as commercial coils.*

We have all admired those photographs of antenna couplers and power amplifiers with Air-Dux (TM) or B&W (TM) air-wound coils. By using the minimum amount of former for support material, they look, and are, efficient. Not many years ago we could order Australian made equivalents from the William Willis Co who, sadly, are no longer trading. At the time of writing, there is no known local supplier. Although they may be ordered from overseas, the landed cost can be rather high.



**Template and mandrel assembly**

For larger coils of perhaps 10 turns of 12 gauge wire, a perspex rectangle may be drilled with the number of holes necessary to accommodate the helix. The coil is wound onto a slightly undersized mandrel, then removed, and threaded or 'screwed' onto the former (see Ref 1). However, when a larger inductance involving tens of turns of smaller gauge wire is required, this technique is rather awkward and time consuming, and the results are not always as good as one would wish.

Here is a method that allows the home brewer to fabricate high-Q coils to requirements. The coil is supported upon a rectangle of perspex, or other low-loss material, such as fibre-glass circuit board with the copper removed. Rather than have the turns running through holes they are fixed upon a rack or comb cut along each edge of the former. In the example shown we make a near equivalent to the B&W type 3022, which is a  $20\mu\text{H}$  coil of 40 turns of number 16 B&S, 8 turns per inch, 1.75 inches diameter. A template is recommended if you plan to make more than one coil of a specific diameter. Use brass sheet if you can get it, otherwise steel of about 18 gauge. Carefully, and as accurately as you can, mark out the cutting points for the two racks. A black felt-tip pen makes a good background medium for marking out. Remember to offset one rack by exactly one half of the pitch. In this example the pitch is 8 tpi, so the offset must be  $1/16$ ".

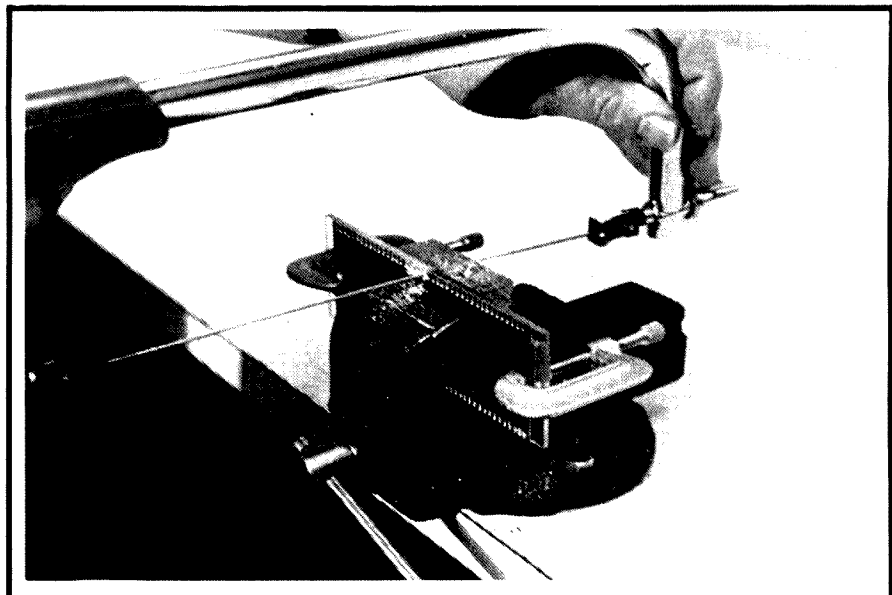
A hack-saw frame fitted with one or two blades, according to wire size or,

better still, an Abrafile rod-saw (available from engineer's tool suppliers and comes with three blades and clips to suit an ordinary hacksaw) may be used to cut the rack. Take your time and cut each slot to exactly the same depth, as evenly spaced as possible. Clean up the burrs with a smooth file. Cut a rectangle of perspex to size, then sandwich the perspex and template together. Fix in place with two small G-clamps (cramps?). Then mount the work in a vice, and carefully cut each rack into the perspex.

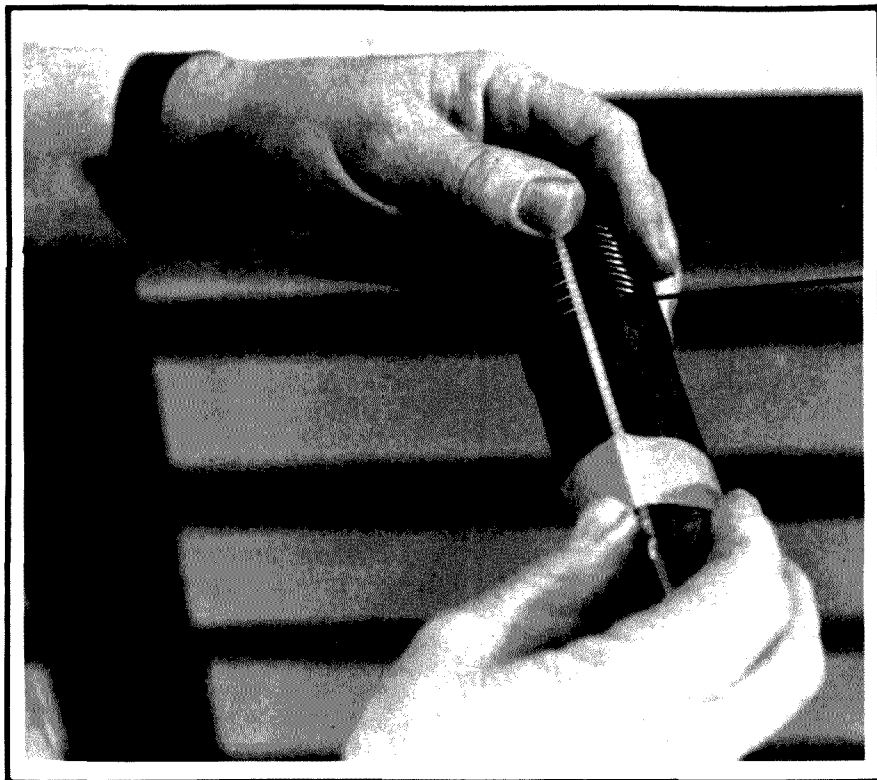
*"Here is a method that allows the home-brewer to fabricate high-Q coils . . ."*

Cut a length of suitably sized quad timber into four equal pieces, slightly longer than the planned coil length. Plane a small bevel along each edge. From thin plywood make a pair of spacers to fit between the quads. The spacers should be about an inch longer to provide a 'handle' and so allow you to remove them when the coil is wound. Rub a little linseed oil into these parts to make them more slippery.

When you are ready to wind the coil, position the four quads and their spacers onto the perspex former, then



**Cutting the rack**



Winding the coil

temporarily wrap a length of tape around the assembly to hold the job intact in order to receive the coil. Roughly calculate the length of wire required. In the example above it will be pi times the coil diameter times the number of turns;  $3.14 \times 1.75 \times 40 = 220$  inches. Unwind, say, 240 inches (20') of wire and clamp the spool in your vice. With a suitable tool grip the far end of the wire and give it a firm stretch to remove any small wrinkles. The ends of the winding must be anchored by passing the wire through a hole, or simply by bending the wire into a U and seating it firmly down into a spare groove for the purpose.

Whilst maintaining tension on the wire, wind the coil onto the former by walking towards the vice. Remember to observe the winding sense. Make sure the wire seats nicely down into each groove of the rack. When a few turns have been wound on you can remove the tape and complete the winding. Apply a narrow fillet of epoxy glue along the two racks to cement the winding in position. Take



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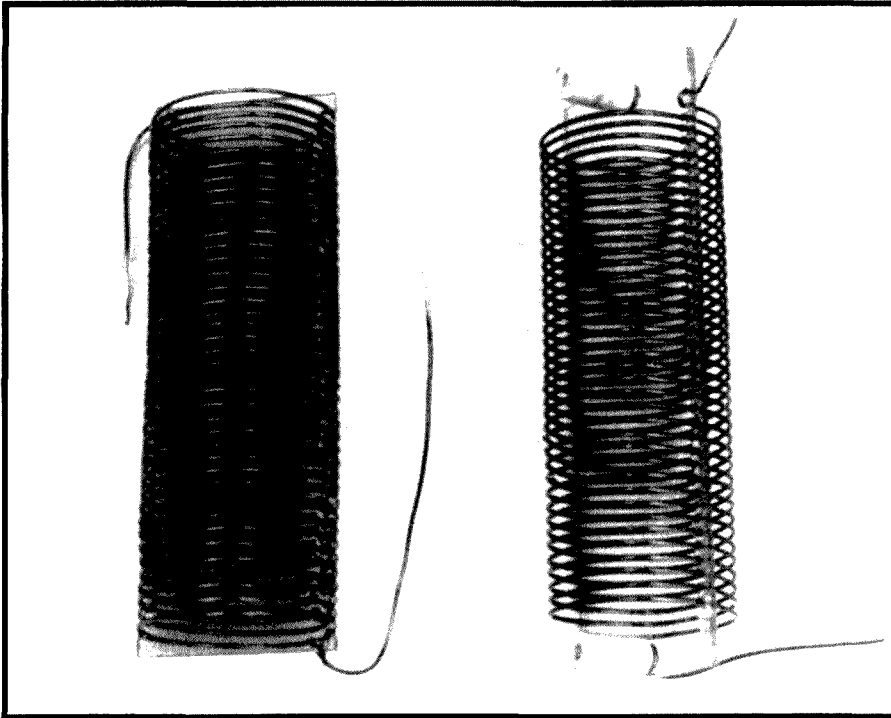
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#### Completed coils

care that no glue finds its way onto the quad (the bevel on each of the quads should dodge this problem). Immediately hang the assembly in the vertical position. Finally, when the glue has set, grip the spacers in a

vice and carefully pull one out, then the other.

If taps are required, form a spade on the tapping wire by flattening the end with a hammer. With pointed long-nose pliers bend a loop in the

spade to match the coil wire diameter. The wire may now be hooked and soldered onto the coil at the requisite spot without risk of shorting adjacent turns (Ref 2).

The enamelled wire coil shown in the example has a measured Q of 350 at the 2.5 MHz test frequency. Unless it is done properly silver plating the coil wire has little benefit and may actually increase coil losses (Ref 3). Plain, enamelled or tinned copper is entirely satisfactory for amateur applications. Wire of 12, 16 or 18 B&S may be obtained from wire and insulation merchants, auto electricians and some electronics suppliers. Ordinary single-strand electrician's wire, stripped of insulation, or 'junked-but-good' power transformers, are also a good source.

#### References

1. Radio Communication Handbook; RSGB, 4th edition, P13. 36.
2. Tapping Air-wound Coils; Technical Topics, Rad Comm, May '93.
3. RF Performance of Electroplated Conductors; Fowler, A.M., EA July 1970.
4. Constructing Air-wound Coils; Johnson, W7KBE, Ham Radio (USA), Aug. '84.

\* 'Nar Meian' Getters Road, WONGA PARK, 3115.

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## WIA News

### JOTA '93

More than 15,000 Scouts and more than 8000 Guides took part in the 36th Jamboree of the Air (JOTA) last October, with the assistance of more than 1300 amateurs putting some 650 stations on the air.

These statistics come from the report on Australian participation in the 36th JOTA over 16-17 October 1993. Compiled by Peter Hughes VK6HU, the 30-page report has been distributed to the National Chief Commissioner, the World Bureau, the International Commissioner, the Department of Transport & Communications, National JOTA Coordinator for New

Zealand, the Federal WIA and various JOTA coordinators and consultants.

For the 36th Jamboree, a total of 652 stations around Australia participated, up from 604 in 1992 and one down from 653 in 1991. The best participation in recent years was 676 stations in 1990. A total of 1339 callsigns participated.

Of Scout Groups around Australia, 974 took part, while 833 Guide Units joined in, with a total 15,367 Scouts and 8181 Guides taking part. While Scout Group and Guide Unit figures are slightly down on 1992 participation, the numbers of Scouts and Guides who participated are much greater than in 1992.

The total number of contacts made was 6878, with Queensland topping the score at 1628 contacts, just ahead of NSW with 1615. Victorian JOTA stations managed a total of 1345 contacts, ACT 291, South Australia 584, Western Australia 952, Tasmania 305 and the Northern Territory 158.

Overseas contacts were made with Antarctica, Indonesia, New Zealand, USA, Hong Kong, Saudi Arabia, England, Poland, Malaysia, Phillipines, Russia, Italy, Japan and the Pacific Islands.

Contacts were made by almost every mode available to amateurs, including SSB, CW, FM, ATV, RTTY and packet.

# More Unbelievable VHF/UHF Propagation?

*Gordon MacDonald VK2ZAB\* tells us about his recent mysterious experience.*

Now that the credibility of Amateur VHF/UHF contacts via reflections from aircraft seems to have been reluctantly accepted by the amateur fraternity, it seems like a good time to test the reaction to yet another example of odd(?) propagation at VHF.

## The Happening

On Sunday evening, 2 January 1994, I was tuned to 144.1 MHz, turning the beam and calling CQ in various directions in the hope of making contacts which would add to my score in the Ross Hull contest.

It had been a good day. Earlier in the afternoon I had made a couple of 2 m SSB contacts with ZL via what seemed to be sporadic E and there had been contacts to Lismore, Brisbane and Tottenham as well as several at distances up to about 300 km.

Rod VK4KZR had told me earlier that there had been 2 m tropospheric contacts made from southern VK4 to as far north as Cairns and Henry VK2ZHE in Port Macquarie had noted

the presence of a coastal duct extending down the south coast of VK2.

At about 1120 UTC, with my beam south west, I heard snatches of conversation with the magic sounds VK4 and ZL! I turned the beam to align it for best strength in the direction of these signals.

I was surprised to find that this was on an indicated bearing of 65 degrees East of North. That is neither in the direction of VK4 nor in the direction of ZL! (I found later that the bearing was 75 degrees because my beam had shifted in the rotator clamps by 10 degrees due to strong winds earlier. A fairly common occurrence at this location).

The point was, of course, that the signals, which turned out to be those of Rick VK4HF located some 70 km north of Brisbane, were arriving from somewhere out in the Pacific and not from VK4. I turned the beam to check this point. I couldn't hear the ZL he was in contact with, but it was Nick ZL1IU whom I had contacted earlier in the day. The beam was turned to

check this point also. Could this be a hoax? I thought it might be but I couldn't risk not finding out for sure, so I called VK4HF on the indicated bearing.

## Contact Made

After several attempts contact was established with VK4HF at 1131 UTC. (He thought I wanted to contact the ZL and had to be convinced that I was after him!). He was S4 [16-18 dB above the noise] and steady. He gave me S4 also. I emphasised the unique nature of the contact and asked Rick to stick around while Henry VK2ZHE, who could hear him weakly, attempted to make contact from Pt Macquarie. However, this attempt failed. Henry couldn't turn his beam out to sea.

Rick called Bruce VK4BOO to see if he could contact me. We couldn't make it. I phoned Ross VK2ZRU at this end but he had no luck either. VK4HF and I remained in contact off and on until 1150 UTC and exchanged a few words after that. He was still in contact with ZLs. I continued to monitor his signal which remained quite steady apart for a couple of short sharp fades, until it slowly faded out at 1243 UTC. The following night [Monday] ZLs were again in contact with VK4s and I heard a VK4, albeit weakly, on the same beam heading of 75 degrees. I think it may have been VK4HF again.

## Propagation Mode?

This contact was so unusual that it demands an explanation and no doubt there will be many theories. Let's hear them by all means, but first consider mine. Here it is with some history and statistics first:

- ★ This is not the first time that this phenomenon has been observed. Several times during the past 13 years, when it has become known that VK4s were working ZL on 2 m, I have turned my beam towards ZL to see if I could hear them. On passing through a heading somewhat north of east I have heard VK4s, albeit fleetingly. On each occasion I have turned my beam on VK4 and called but to no avail.
- ★ VK4HF runs 100 watts PEP to a 10 element Yagi and is located about

## WIA News

### Amateur History

The development of a comprehensive oral history of amateur radio in Australia has been given approval in principle by the Federal WIA Board.

As a service to the Institute, John Edmonds VK3AFU/VK3ATG has undertaken to collect and compile historical information as we approach our centenary as a hobby. It is early days yet for John as it will be a lengthy and arduous task. Good luck, John!

### Advertising on Packet

The Federal Office notes that advertising equipment for sale has appeared on the amateur packet radio network. The 1993 Call Book, under DoTC information on the Use of Stations (a) P.4, was corrected by the Department in the 1994 Call Book under Use of Stations (a) P.4, which does NOT allow for stations to be used for "financial gain" and this has been confirmed by the Department.

70 km north of Brisbane at an elevation of about 1000 ft with a good take off to ZL.

★ VK2ZAB runs 400 watts PEP to four 13 element Yagis from Berowra Heights, a northern suburb of Sydney. The antenna is about 750 ft ASL and the take-off to the east is good.

★ Coastal ducts had been observed in both VK2 and VK4 and ZLs were in contact with VK4 via a duct at the time the VK2/VK4 contact was made.

★ ZLs could not be heard at the time. This may be a red herring since they could be heard the next night at the time when VK4 was heard on the same strange bearing.

So what is the propagation mode? Ross VK2ZRZ suggested an ionospheric "hot spot" out over the Pacific presumably giving rise to "backscatter". This idea seemed plausible at the time but after thinking about it I find that I cannot accept this idea because there was no sporadic E evident at the time, although it had been earlier in the day. The evidence of past observations would require that any hot spot form in the same place each time. An unlikely happening.

In my view all the facts suggest the presence of a large static reflector located in the Pacific Ocean at a bearing of 75 degrees east of north from my location and on a line from southern VK4 to ZL.

Such an object does exist, in the form of Lord Howe Island. Check your own map to verify.

Lord Howe is about 780 km from me and would not normally be illuminated by my signals. This would require a duct which was there at the time in question. It would also be illuminated by signals from VK4 in contact with ZL via a duct since it is on the way. Lord Howe is mountainous with large sheer rock faces. An ideal reflector and much bigger than an aeroplane.

So there's my theory, a Bistatic Radar type of reflector all over again, just like reflections from aircraft only much bigger. Curse me, but I simply cannot resist pointing out that there are no known active volcanos in the area either!

\*59 Wideview road, Berowra Heights, NSW 2082

# EQUIPMENT REVIEW

## ICOM IC-707 HF All Band Transceiver

Ron Fisher VK3OM

With the introduction of the IC-707, ICOM now has the largest range of HF transceivers on the market. The IC-707 is also the lowest priced HF transceiver in the ICOM range with a retail price of \$1867.

It is interesting to see that ICOM have chosen not to miniaturise their latest model to compete with Kenwood's TS-50S but to keep to the standard ICOM size that started with the IC-735 and continued through the IC-725/728 series. The 707 is, however, slightly lighter with a weight of 4.1 kg as against 4.6 kg for the 728 and 5 kg for the IC-735.

So, just what do you get and what don't you get in the IC-707? First off, you get a 100 watt output transceiver that covers all amateur bands up to 29.7 MHz. You also get a full general coverage receiver that tunes from 30 kHz to 30 MHz. Modes included as

standard are CW, USB & LSB and AM (both reception and transmission). FM can be included in the IC-707 by installing the optional UI-9 FM unit. One interesting feature of the transceiver is a front panel mounted speaker. Not a common thing in HF transceivers. I can think of only four others that have had front mounted speakers over the years. How many can you come up with? The answer is at the end of the review.

Next, you get two VFOs, and 32 memory channels, which include five split operation channels and two band scan limit frequencies. You also get ICOM's great band stacking register which brings you back to the same frequency you have used on each band. As is usual all memories are fully tunable so, in effect, you have 34 separate VFOs. You get a big, bright multi-function LCD display



Operator's view of the compact ICOM IC-707.

which incorporates a bar-graph meter indicating "S" units on receive and relative power output on transmit. Frequency readout is to 100 Hz but there is no indication for RIT offset; not even the main frequency readout shifts. The RIT gives an offset of +/- 1.2 kHz. The receiver front end has a 10 dB pre-amp and a 20 dB attenuator.

Now to the "what you don't get" department. The first thing noted when I put the transceiver on my desk was the lack of a tilt bail to lift up the front of the transceiver. Now I think that's really stingy. You can actually buy a carry handle to screw onto the side of the cabinet but a tilt bail isn't even offered as an option. Compared to the next level of ICOM transceiver, the IC-728, there is no transmitter speech compressor, no receiver pass-band-tuning and no AGC fast/slow selection. There is no RF gain control but then there is none on the 728 or even on the next up again, the 737.

The noise blander is non-adjustable. The metering is very basic with only relative power showing on transmit. There is no ALC or SWR metering. Well, I guess if you purchase a basic priced transceiver you have to give something up.

### The IC-707 On The Air

After propping up the front of the rig to get a better view, I started to tune around. Might I suggest that a couple of rubber buffers glued under

the front feet would make an enormous improvement, but on with the tests. The first thing noticeable at switch-on is the bright display. The numerals of the main frequency are rather different from what we have become used to. They are quite artistic. Have a close look at the front panel photo. The front mounted speaker sounds quite good but, as usual, a high quality external speaker sounds better.

The internal speaker handled the full audio power output of the transceiver very well with no discernible rattles. The tuning control is typical ICOM, superb! Tuning rate in SSB and CW is ten Hz per step or two kHz per knob revolution. This gives very smooth and effortless resolution of signals. With the AM or FM mode selected the tuning step increases to one kHz or 200 kHz per knob revolution. I believe this is too fast and that AM and FM should tune in 100 Hz steps thereby giving 20 kHz per knob revolution. It is possible to select 10 Hz steps for AM tuning via the TS button but then this is too slow.

The memory system is simple to use and most effective. In the usual ICOM style all memories are fully tunable and the mode can also be changed. This, along with the Band Stacking Register, makes for a very versatile tuning system.

Received audio quality was very acceptable on SSB and reasonable on AM. I thought the AGC decay time on SSB was too fast and, without an

RF gain control to set a threshold level, there is not a lot you can do to improve things. Also, with no band-pass-tuning there is not a lot you can do about interference. Perhaps a thought. Where the cost of fitting band-pass-tuning exceeds the budget on a low priced transceiver, why not include an old fashioned tone control? It would need to provide a very sharp cut from 3 kHz down but with the availability of active filters these days, I doubt that the cost would be excessive.

The bar-graph "S" meter worked well, within its capabilities. If the number of "bars" was doubled it would, however, be better. As we will later see, the "S" meter is quite generous but, at the same time, very vague.

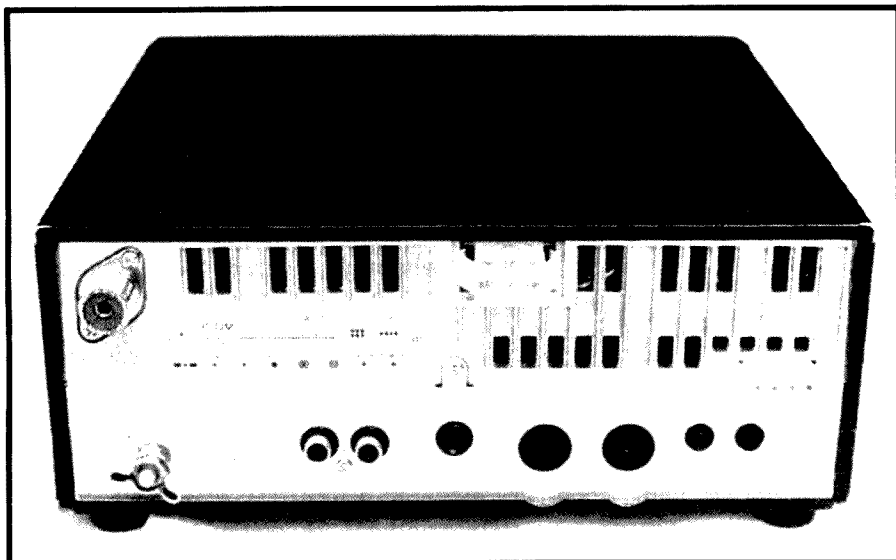
CW reception with the standard SSB filter was good. Unfortunately, none of the optional CW filters was included with our review transceiver.

Mode selection has returned to the old IC-745 system. There is one button and pushing it brings up each mode sequentially. While this saves a few buttons on the front panel, I found that the mode I needed always required several button pushes to get to. You do get used to it, though.

RIT on the IC-707 is very basic. When selected, an "RIT" indicator comes up on the main display but there is no frequency display to show the amount of offset and even the main frequency display stays put. There is no transmitter offset tuning.

The noise blander is also basic. You can either have it on or off. However, it works very well on car ignition noise which is no doubt what it will be mainly used on. Its effect on power line noise appeared to be minimal. There was no noticeable effect on receiver performance with the blander switched in.

Overall, the receiver performance would have to be rated as excellent. Tuning is very smooth, band changing simple and straightforward, received audio quality through the internal speaker is good and, through a good quality external speaker, is excellent. There is plenty of gain and, even on a small antenna, the receiver sounds lively although I found that I preferred to have the preamp in most of the time and the attenuator was not



Rear panel view of the IC-707.

used at all. Receiver front end performance was rated as excellent particularly from the strong signal handling point of view.

## Connectors

Rear panel interfacing is very complete. There is a socket for the AT-160 or AH-3 automatic antenna tuners. Two DIN sockets, one seven pin and one eight pin, allow connection to, and control of, ICOM linear amplifiers, etc. Control of home-made or other commercial linears is from two phono sockets, one for relay control, the other ALC input. A standard 6.5 mm jack is used for Morse key connection. Two 3.5 mm jacks connect to an external speaker and to a computer interface unit. A standard six pin plastic connector is used for the 13.8 volt DC input.

Now, over to the transmit side. The IC-707 is supplied with an HM-36 microphone. This appears to be the same as the old HM-12 that has been supplied with ICOM equipment for the last ten years or so. The only control that requires setting for SSB operation is the microphone gain control and I must say that the instruction manual is not all that helpful in doing this. I will quote what they say. "Adjust the (MIC) control to the 10 — 12 o'clock position when using the supplied hand microphone. Suitable position differs according to the connected microphone. When rotated too far counterclockwise, output power becomes too low. When rotated too far clockwise, transmit audio may distort." So there you are, good luck.

After carrying out many on air tests, I found that good punchy audio was produced with the gain control as high as the three o'clock position but this would depend on your actual voice level. When adjusted correctly, the audio quality was reported as slightly restricted but quite good. I also tried my SM-6 desk microphone with good results but, as this has a built-in pre-amplifier with adjustable gain, it was a little tricky to get things right.

After extended transmit tests, the transceiver was still cool. The internal cooling fan is very effective. The photo shows this under the final unit sucking air from under the cabinet and blowing it out at the rear.

Frequency stability and dial readout accuracy were right up to the usual ICOM standards. Total drift did not exceed 50 Hz at any time and the dial readout was well within the resolution of 100 Hz.

Finally, the transmitter was checked out in the CW mode. There is, of course, no built-in keyer as with some of the more expensive models. You will have to supply your own. Also, the IC-707 does not have full break-in operation. However, there is an excellent semi break-in system. Unfortunately, the break-in time delay is not externally adjustable. You will need to remove the bottom of the cabinet and adjust a rather small preset potentiometer. The side tone level preset is near the break-in control but, once set, the level is controlled with the normal front panel audio gain control. CW keying was very clean with no clicks audible on a very strong signal. With either of the optional CW filters installed, the casual CW operator should be very happy

## The IC-707 On Test

The usual series of tests was carried out starting with transmitter power output. Power output can be set at any level between full power and about five watts minimum with the RF PWR control.

### Power Output CW Mode.

Band	Power	Current
160	115 watts	17.0 A
80	120 watts	16.5 A
40	120 watts	16.0 A
30	120 watts	15.5 A
20	120 watts	16.0 A
18	120 watts	18.0 A
15	122 watts	17.5 A
13	122 watts	15.5 A
10	115 watts	17.0 A

PEP output in SSB mode was about the same as above, as indicated on my monitor scope. Minimum power output was spot on five watts. Power output on AM was 25 watts and 100% modulation could be achieved at this level.

The specification does not give a figure for SSB IMD, so our usual tests were carried out. We came up with a figure of -30dB which is actually a shade better than the IC-737 tested last year. I wonder why ICOM have dropped these figures from their

specs as it seems that they really haven't anything to hide. All of the above tests were carried out using a 13.8 volt regulated power supply.

## Receiver Tests

The "S" meter calibration was checked first. There are eight bars so it was difficult to come up with exact levels as there was quite a bit of overlap.

	Preamp Out	Preamp In
S1	2.2/2.8 $\mu\text{V}$	1.2/1.5 $\mu\text{V}$
5	6.0/15 $\mu\text{V}$	2.0/3.0 $\mu\text{V}$
9	30/140 $\mu\text{V}$	7.0/80 $\mu\text{V}$
+20	220 $\mu\text{V}$	85 $\mu\text{V}$
+40	1300 $\mu\text{V}$	600 $\mu\text{V}$
+60	10mV	1.5 mV

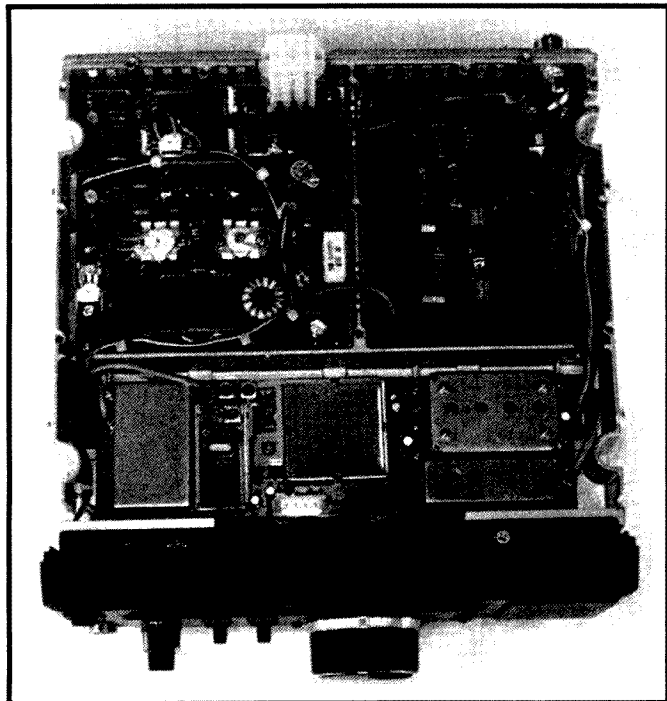
As can be seen from the above, "S" meter readings need quite a bit of interpretation but then I guess that applies to most "S" meters anyway. The above tests were carried out on 14.2 MHz. Preamp gain was measured at 11 dB and the attenuator at -20dB. AGC threshold was about 1  $\mu\text{V}$  and the receiver could produce maximum audio output with an input of 0.8  $\mu\text{V}$ .

Next the receiver sensitivity was checked. The ICOM specification is a little confused, stating less than 0.16  $\mu\text{V}$  for 10 dB S/N in the handbook and 0.16  $\mu\text{V}$ , but no S/N mentioned, in the colour advertising leaflet. Assuming the 10 dB figure, I measured 8 dB signal to noise at 0.16  $\mu\text{V}$  input. Interestingly this is the same figure that came up with the IC-737 reviewed in the August 1993 issue of AR.

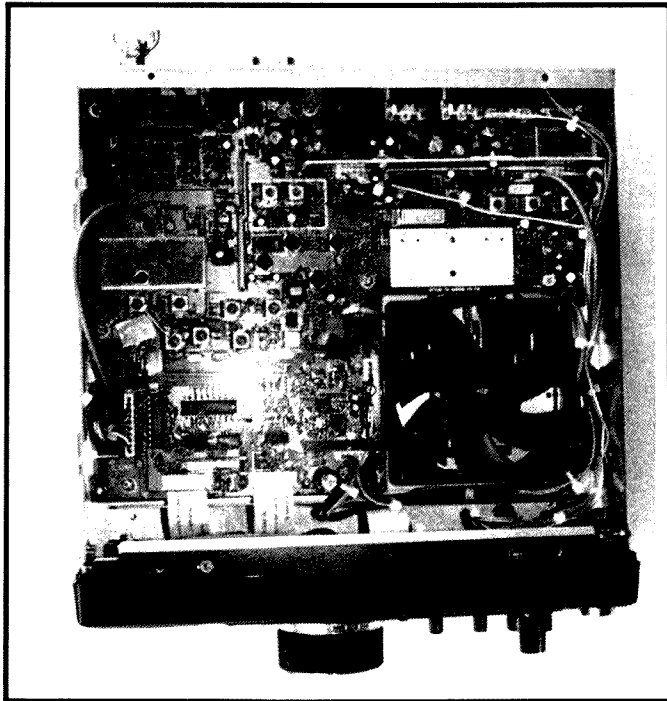
AM sensitivity measured an excellent 1  $\mu\text{V}$  for 14 dB S/N with 30% modulation, bettering the specified figure by a wide margin. Again, all these measurements were taken at 14.2 MHz. SSB bandwidth at the -6dB points was 2.2 kHz with these occurring at 300 Hz and 2.5 kHz. The AM bandwidth was only slightly wider although, of course, there are two sidebands involved here. AM audio response -6dB points were at 150 Hz and 2.6 kHz. At 3 kHz this was down to -15 dB. It appears that the response of the audio amplifier is cut sharply above 2.6 kHz.

My next test was audio power output and distortion on both SSB and AM. Maximum power output into 8 ohms was 2.9 watts and into 4 ohms, 4.7 watts. However, this was





Top view of the IC-707 with the top cover removed.



Bottom view of the IC-707 showing the effective cooling fan.

with around 25% distortion. At 2 watts output distortion was down to 10% and with 0.25 watts this was down again to a very creditable 0.5%. ICOM specify audio output at "more than 2.6 watts with an 8 ohm load" but do not mention distortion. On this basis the specification is met, but at 25% distortion.

Distortion on AM varied with frequency and modulation depth with higher distortion occurring at lower frequencies and high modulation depth. With 80% modulation at 200 Hz, distortion was 10% but with 30% modulation at 1 kHz this was down to 1.5%.

Finally, the current drain on receive was measured. With no audio output this was 1.05 amps and with full audio output it was 1.4 amps. Generally, these tests showed that the IC-707 performed very well.

I would like to see better quality AM reception both in terms of distortion and frequency response from Japanese transceivers. In this respect, the IC-707 is no worse than average but all could be a lot better. In terms of weak signal reception, the IC-707 would be very little behind its higher priced relatives. It would only be when interference became a problem that the 707 would be left behind.

### The IC-707 Instruction Manual

In my review of the IC-737 I stated that most manuals seem to run to about 60 pages. With the IC-707, ICOM have proven me incorrect. This one is only 45 pages. However, I guess with a basic transceiver, there is less to cover. That said, they do cover the subject quite well. I like the numerous little explanation boxes such as "What is the Preamp", "What is the attenuator", "What is the RIT function", etc. New amateurs should find these most enlightening. Operating instructions are in the main well covered. However, there is some strange English in some sections.

Note my earlier comments on the microphone gain control setting procedure. Again there is no technical description and not even a circuit diagram. The manual does have a full list of the wide range of options available for use with the IC-707. These range from power supplies, and external speakers to automatic antenna tuners and linear amplifiers.

### The IC-707 Conclusions

The new ICOM 707 is in direct competition with the Kenwood TS-50S and, to a lesser extent, the lower priced Yaesu FT-747. This is

possibly the most competitive section of the amateur market. If you are looking for a normal sized transceiver with excellent ergonomics and good quality transmitted and received signal, the IC-707 must come into consideration. It would be ideal as a mobile/portable rig, a first HF transceiver or a second rig as a backup in the home shack. In any situation the 707 would perform in an excellent manner. Don't forget you may need a 20 amp DC power supply which would add to the cost. My thanks to ICOM Australia Pty Ltd for the loan of the review transceiver.

Ah, yes. The answer to our little quiz. Which transceivers have front mounted speakers?

1. The Yaesu FT-747 (bet you all got that one).
2. The SBE 33. An American partly solid state transceiver of the early 1960s.
3. The SBE 34. A later model of the above.
4. The Swan 400. An unusual American transceiver that had a front panel speaker but no VFO. You had to add an external unit.

Well, who won the prize? Perhaps there are others with front speakers I haven't heard about.

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# Technical Abstracts

Gil Sones VK3AUI

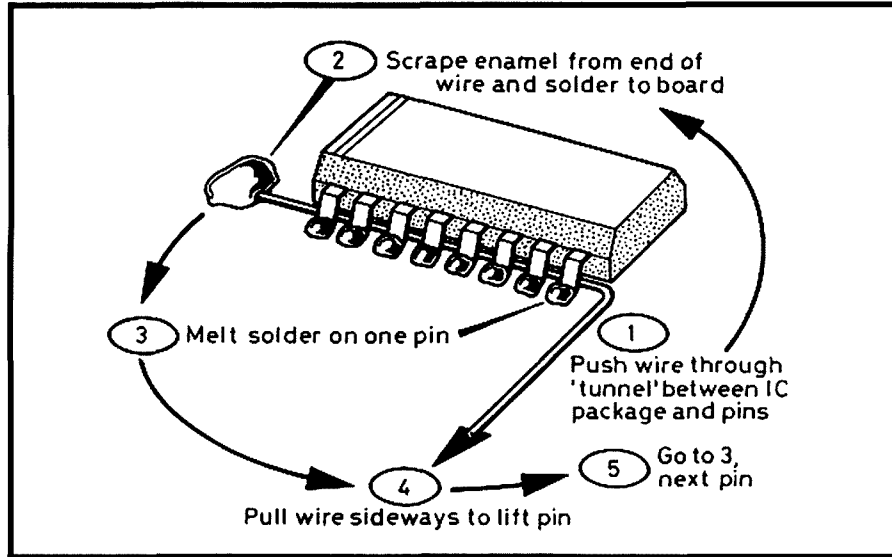


Fig 1 How to remove a surface mount IC without breaking the pins.

## Removing a Surface Mount IC

A neat way of removing a surface mount IC was published in *Radio Communications* for October 1993 by Ian White G3SEK. The item came via DF7IT in the VHF/UHF DXer who learnt the trick from a "Polish Guy". All you need is a length of thin enamelled copper wire — the old-fashioned brown kind with solder resistant enamel. Fig 1 shows exactly how to use the wire to "unzip" each side of the IC without breaking the fragile pins.

Faulty transmissions are graphically displayed with key clicks and splatter immediately obvious.

## Mower Generator

Ron Mathers ZL2AXO in *Break-In* for September 1993 revived an old idea and used a surplus electric motor driven by a surplus motor mower engine to generate 230 VAC. Capacitive excitation of an induction motor used as a generator, or should I say alternator, is an old idea.

Ron mounted a plate vertically beneath the mower handle in the

area normally occupied by the grass catcher. On this plate he mounted the induction motor with the shaft running vertically and parallel to the motor mower engine shaft. A vee belt was used to couple the mower engine to the induction motor. This was essentially shielded by the mower base plate. The mower wheels allowed the device to be moved easily.

The system relies on the residual magnetism of the rotor to initiate the build up of the magnetic field. The residual magnetism can, if necessary, be provided if needed by :-

1. Running the motor as a motor from the AC Mains;
2. Discharging a charged capacitor across the generator terminals while the machine is in operation; or
3. Momentarily connecting a six or twelve volt battery across the generator terminals with the machine at rest.

The third method is probably the easiest in most cases.

The capacitor must be made up out of AC rated capacitors such as are used for motor starting, etc.

The throttle is used to obtain the desired output voltage under load. The value of the capacitor must also be adjusted to set the frequency under no load. The value required for the motor to achieve unity power factor when running as a motor is a good starting point.

A suitable motor may be found in a surplus washing machine.

Ron was able to obtain 500 Watts from the setup. Regulation is not brilliant but is adequate for fairly constant loads.

## Tx Finger Printing

A screen photo that was almost an abstract painting attracted my attention in *QST* for November 1993. The photo was of the screen display of Hewlett Packard's HP89440A Vector Signal Analyser. The display had frequency displayed on the X axis with time as the Y axis. The colour of the display was a measure of the signal strength. This results in what is virtually the fingerprint of all transmissions within the band being displayed.

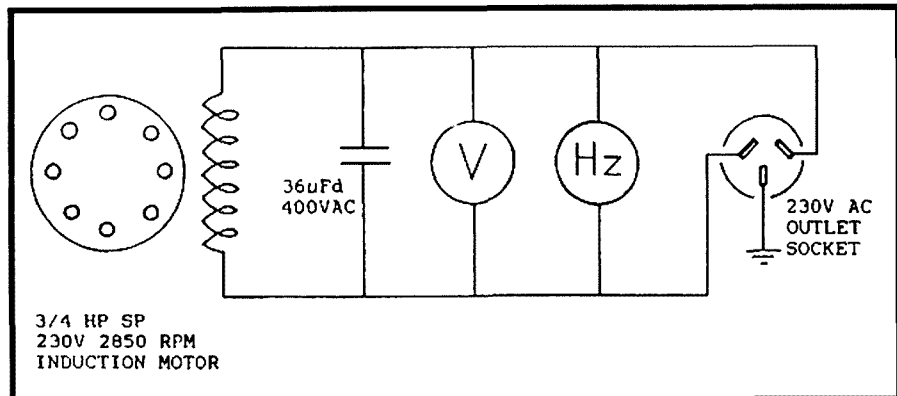


Fig 2 The Induction Generator

For those wishing to learn more a reference was given:- Basset, E. D., and Potter, F. M. "Capacitive Excitation for Induction Generators" Trans AIEE, May 1935, Vol 54, p 540.

The circuit of the Induction Generator is given in Fig 2. An alternative to using a motor as a generator may be an old alternator from a car. Those wishing to follow this route should be aware that automotive alternators are not intended for this sort of service and the output achieved may be disappointing. Car alternators require a considerable amount of power input at fairly high revs in order to achieve their rated output. This would be unlikely to be available from a lawn mower motor even in excellent condition. However, do not be daunted, as you may still obtain a useable output even if it is far below the maximum which the car alternator can deliver in automotive service.

#### Iron On PCB Resist

The item in November Technical Abstracts concerning the use of

photocopier toner as PCB resist has brought news of a commercial product. Claude Palm of Palmtech wrote with information concerning a new product designed to do the job with a minimum of fuss:-

"Palmtech have a new product specifically designed for the purpose. It is called Toner Transfer System or TTS and significantly simplifies the process described in Technical Abstracts for November 1993. So much so that a ready to etch PCB can be produced in a few minutes rather than hours.

TTS consists of a paper substrate with a water soluble coating. Basically the principle is as described in Amateur Radio. A copy is made to the TTS instead of ordinary paper or fed through a laser printer. The TTS sheet can be cut to the size of the artwork and then attached to a sheet of plain paper before feeding through the copier/printer. In this way the cost is under 7 cents per square inch of board produced.

The TTS is placed against the blank PCB which is heated with an iron and then immersed in water. After a minute

the TTS will release from the board and float to the surface. The board is then ready to etch. Total time 3 minutes (double for aluminium irons). Track density of 40 tpi can easily be achieved with no retouching required once the technique is mastered.

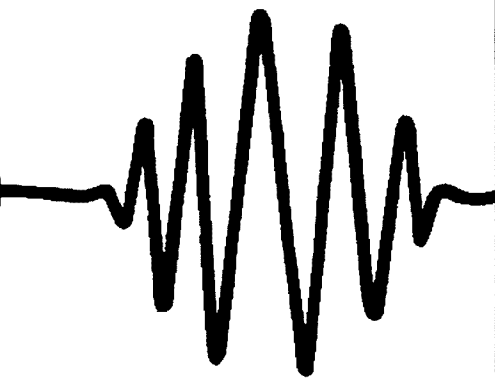
The same process can also be used with metal front panels, PCB component overlays, etc. Another method is to spray the TTS directly with a few coats of clear lacquer. When dry the TTS is soaked in water so that the lacquer film with the toner adhering to it can slide off the paper onto almost any non porous surface as a decal. As this does not involve any heat it can safely be used on plastics.

TTS retails for \$29.90 in packs of five A4 size sheets with full instructions. It is available from Palmtech, cnr Moonah and Wills Streets, Boulia, Qld 4829. The phone number is 077 463 109 and the fax number is 077 463 198."

Thank you to Claude Palm of Palmtech for that information which should be of interest to readers.

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# amateur radio action



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*If all this looks Greek to you, perhaps it's because you're not reading the authoritative source — Amateur Radio Action magazine... at your local news outlet every fourth Tuesday.*

member CC 0019

# Random Radiators

with Ron Fisher VK3OM and Ron Cook VK3AFW

## An 80 Metre Beam

Well, it is and it isn't an 80 m beam. This article describes a compact 80 m antenna that can out-perform a full size dipole.

One of the keener novices has been working with various antennas for 80 metres, including dipoles at 50 ft (1 ft = 0.305 m). [Imperial measurements are used in this article because that's what was supplied.] He has come across an antenna that he has found to be "a weapon". Judging by the stations worked and heard and the reports given it is a very good 80 m antenna. Our correspondent, who wishes to remain anonymous, claims that this antenna is 10 dB better than an inverted vee with the same centre height.

The configuration is a loop of wire in a "bow tie" arrangement with the centre held up by a central support and the four corners held by short masts. See Figs 1 and 2.

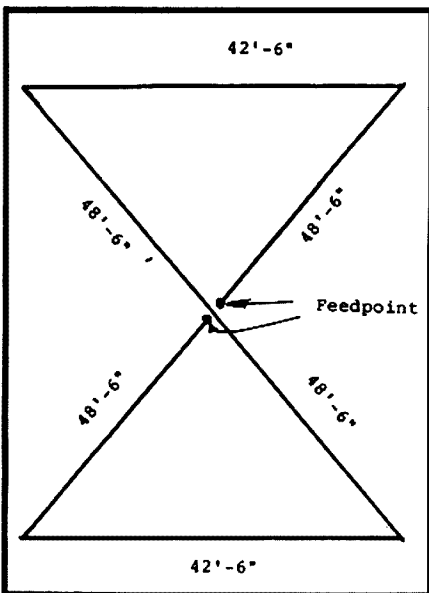


Fig 1 — Wire dimensions and layout.

The total length of wire is  $1005/f$  where the length is in feet and  $f$  is the required frequency in MHz. The centre should be 40 ft or more high

and the ends not less than, say, 10 ft. Our correspondent has the peak at 62 ft. The antenna covers an area 50 by 43 ft and is built using clothes line wire due to its ready availability and low cost. Hard drawn copper wire would be better, but it just goes to show that improvisation lives on.

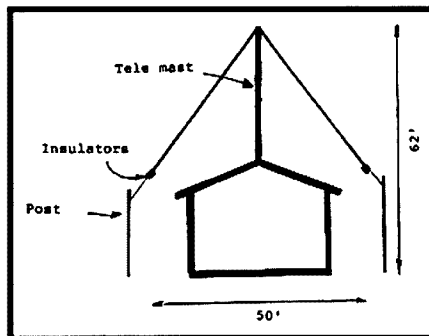


Fig 2 — Support arrangements.

The antenna was originally described in CQ magazine for February 1961. The dimensions given for 3.8 MHz were 42 ft for each side of the triangles with 42 ft spacing between the bottom wires. In CQ for July 1980, William WB0AOF describes several variations in his article, "The 80 Meter Pyramid Antenna".

It is a full wave loop, fed at the apex and gains some enhancement of signal strength at lower radiation angles by using sloping radiators. It also has less of a null off the side as compared to a dipole. WB0AOF points out that the shape of the triangles can be altered to suit the available space and central mast height. He used 46 ft sloping wires

**Sign up a new WIA member today — we need the numbers to protect our frequencies and privileges.**

with 33 ft horizontal wires for a 50 ft mast.

Our correspondent obtained a good match from 3.500 to 3.65 MHz with a direct connection of 50 ohm line but WB0AOF recommends using a quarter wave length of 75 ohm line to match into 50 ohm line.

I decided to use a computer program, MN by Brian Beezley K6STI, to compare the pyramid with a dipole. The results are as follows:- The radiation pattern is within 2 dB of omnidirectional at a 5 degree elevation angle, whereas a dipole at 50 ft has weak nulls of 6.5 dB at the same elevation angle. The dipole has a gain of 5.2 dB straight up while the pyramid has a gain of about 4.5 dB straight up. So the pyramid wastes a little less signal in the vertical direction. Its pattern is a bit more squashed, so it has a better low angle radiation performance. The dipole is 12.4 dB down on a free space dipole at 5 degrees elevation while the pyramid is about 10 dB down, almost equivalent to doubling the transmitter power.

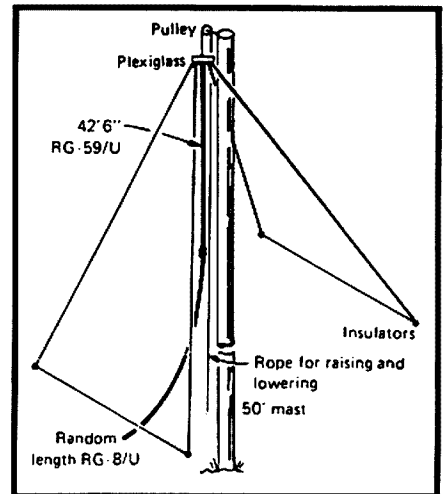


Fig 3 — An oblique view of the WB0AOF version of the pyramid antenna for 3.8 MHz.

The feedpoint impedance was calculated to be much higher than 50 ohms and some matching arrangement seems advisable. It must be said that all calculations make assumptions which may not apply in practice so the discrepancy between calculated results and those found in practice by our

correspondents could probably be explained if carefully investigated.

What the computer program and practice have shown are:

### Advantages

- ★ The antenna requires less ground area than a full size 80 m dipole.
- ★ The radiation pattern provides better local and DX signals because the radiation pattern is "squashed" from the top.
- ★ There is little directivity in the horizontal plane, giving no holes in the pattern.

- ★ Requires only one mast at least 40 ft high.
- ★ Could be used on several bands with an ATU.
- ★ Broader banded than a dipole, ie less variation of parameters with frequency changes.

### Disadvantages

- ★ Requires a mast of significant height, ie one for which a permit would be required.
- ★ Requires a matching stub or balun for optimum matching. (Open wire line and an ATU could be used.

This would almost be essential for multiband operation.)

- ★ Is more visible than a simple dipole, having 4 wires and requiring 4 short ancillary masts. Most of us would see the advantages far outweighing the disadvantages, so if you want to have a big signal on 80 m but don't have a lot of real estate, then this could be for you.

73 from me and 73 from him.

ar

## WIA News

### UK Morse Code Survey

Through late-1992 to March 1993, the *Radio Society of Great Britain* conducted a survey concerning the requirement of Morse Code as part of the British licensing examinations, particularly canvassing opinions on a "Code-free" HF licence. The RSGB has published a detailed, three-page report in its December 1993 issue of the society journal, *Radio Communication*. It makes fascinating reading.

By the closing date of March 8 last year, the survey had generated a total of 1413 replies from the UK and 86 from outside the country. The report, titled "To Key or Not to Key?", noted that the raw data, "...shows that on this occasion there is a two-to-one majority in favour of retaining the Morse test as a means of access to the amateur bands below 30 MHz."

The report further noted that the majority of those wishing to retain the Morse test were Class A licensees (who have full privileges, equating to our full licensees), while the majority of those wanting to do away with it were Class B licensees (who have full privileges, and up). In addition, "...of the 86 letters received from overseas there is a much higher proportion in favour of retaining the Morse test," the report noted.

Of those replies expressing a

view, 67.5% voted "no" to a code-free HF licence, while 32.5% voted "yes". More shortwave listeners replying to the survey voted "yes" to retaining the Morse test than voted "no".

In summing up, the report said, "*Gone are the days when a knowledge of Morse code was considered essential for communication between radio amateurs.*"

"*However, CW has been used, even in recent years, by other Services to communicate with amateurs and it is used, for example, to identify marine and aviation beacons.*"

"*For a long time, it has been accepted that the Morse test does provide a limiting effect on the number of radio amateurs using the finite resource of the HF amateur bands.*"

Further, the report concluded that Morse code proficiency demonstrates a practical skill, "...which is certainly relevant to amateur radio, but acquiring this skill will put some at a disadvantage."

"*However, few would dispute the fact that practical skills are an important facet of amateur radio.*"

Noting that relevant knowledge and practical skills are required, the report said, "*There are some useful arguments both for and against a Code Free Licence.*"

"*It is primarily up to the amateur community World-wide, and its representatives, to determine what qualifications are necessary and what standards need to be met to gain different types of transmitting licence.*"

The RSGB pointed out that the views expressed in the report do not represent RSGB policy. A ten-point table of "perceived benefits of Morse Code" was included with the report in *Radio Communication* magazine and cited the mode's narrow bandwidth advantages; its ideal nature for low power communications; advantages for beginners in simple, low cost equipment; the use of Morse in developing nations; lack of language difficulties and its advantage as the lowest common denominator for emergency communications.

### South African Call Book

The Federal Office recently received a copy of the *South African Call Book* from the *South African Amateur Radio League* (SARL), published last August.

The 121-page, small-format (paperback size) book includes the usual callsign-name-address index as well as a name-to-callsign index. Cover price is R50.00, from the SARL.

# WIA Accredited Examiners

(Listed in Postcode order)

Below is a list of examiners accredited by WIA Exam Service to conduct radio examinations using WIA Exam Service examination materials. The list is published in postcode order to assist candidates to determine the examiner closest to their location. This list was up-to-date as at 13 January 1994, but more applications to become an accredited examiner are still being received.

Accredited examiners will not only be able to provide advice and assistance in relation to examinations, but also about "how to become a radio amateur", to all interested enquiries in their locality. The SMA and WIA Exam Service direct all such enquiries to accredited examiners in the area in which the enquirer lives.

Examiner	Group/Club	Address	Telephone
Terry Hine VK8TA	Darwin Amateur Radio Club Inc	PO Box 753, Darwin,	0801. Tel 089 81 5516
Jim Jones VK5JF	Darwin Amateur Radio Club Inc	GPO Box 3583, Darwin,	0801. Tel
Barrie Burns VK8DI	Darwin Amateur Radio Club Inc	1 Kerin Pl, Rapid Creek,	0810. Tel 089 85 1068 (AH)
Spud Murphy VK8ZWM	Darwin Amateur Radio Club Inc	139 Lee Pt Rd, Wagaman,	0810. Tel 089 46 5887 (BH)
Trevor Connell VK8CO	Darwin Amateur Radio Club Inc	PO Box 40441, Casuarina,	0811. Tel 089 45 3373 (AH)
Ken Glasson VK8KG	Darwin Amateur Radio Club Inc	PO Box 42908, Casuarina,	0811. Tel 089 45 3653 (AH)
Jeff Farmer VK8GF	Alice Springs ARC	PO Box 2953, Alice Springs,	0871. Tel 089 52 2388 (BH)
Graham Heller VK8GR	Alice Springs ARC	PO Box 2953, Alice Springs,	0871. Tel 089 52 4536
Terry Murphy VK8TM	Alice Springs ARC	PO Box 2953, Alice Springs,	0871. Tel 089 52 5249
Grant Hinchcliffe VK2GIX	WARS Examinations	72 Vine St, Chippendale,	2008. Tel 02 319 1913 (AH)
Eric Van De Weyer VK2KUR	WARS Examinations	PO Box 131, Watsons Bay,	2030. Tel 02 318 6138 (BH)
Rick Cummins VK2QU	WARS Examinations	1493 Anzac Pde, Little Bay,	2036. Tel 02 661 3816 (AH)
David Bloodworth VK2KQV	Hornsby Amateur Radio Club	24 Wambool St, Turramurra,	2074. Tel 02 44 4080 (AH)
Graham Sommer VK2DWL	Hornsby Amateur Radio Club	PO Box 362, Hornsby,	2077. Tel 02 875 2273 (AH)
Tony Williams VK2DJW	Hornsby Amateur Radio Club	PO Box 362, Hornsby,	2077. Tel 02 489 3312 (AH)
Marque Crozman VK2ZLZ	Manly-Warringah Radio Society	PO Box 186, Brookvale,	2100. Tel 02 450 2757 (AH)
Vic Joyce VK2EJW	Manly-Warringah Radio Society	PO Box 186, Brookvale,	2100. Tel 02 971 9537
Richard Murnane VK2SKY	Manly-Warringah Radio Society	PO Box 186, Brookvale,	2100. Tel 02 971 4431 (AH)
Gordon Vick VK2JGV	Manly-Warringah Radio Society	PO Box 186, Brookvale,	2100. Tel 02 913 3874 (AH)
Wally Jones VK2GTO		26 Donald St, Carlingford,	2118. Tel 02 871 5190 (AH)
Patricia Parniczky VK2SUS		28 Hill Rd, West Pennant Hills,	2120. Tel 02 873 1588 (AH)
Barry Gammage VK2GAM	WIA NSW Division	PO Box 1066, Parramatta,	2124. Tel 02 727 7338
Cec Purvis L20997	WIA NSW Division	PO Box 1066, Parramatta,	2124. Tel 02 649 9234
Terry Ryeland VK2UX	WIA NSW Division	PO Box 1066, Parramatta,	2124. Tel 02 689 2417 (BH)
Barry Goldsmith VK2GQD	WIA NSW Division	PO Box 220, Homebush,	2140. Tel 02 763 4111 (BH)
Garry Carter VK2TLA	WIA NSW Division	91 Sixth Ave, Berala,	2141. Tel 02 644 7448 (AH)
Jim Goodger VK2JO		2 Fullam Rd, Blacktown,	2148. Tel 02 622 6268
Jim Walker VK2XJW	WIA NSW Division	PO Box 2391, Nth Parramatta,	2151. Tel 02 683 1112 (AH)
James Rodgers VK2DXM	ROADS	119 Showground Rd, Castle Hill,	2154. Tel 02 680 1404 (BH)
Bob Girdo VK2RG		13 Iris St, Sefton,	2162. Tel 02 743 7555 (AH)
Miles Burkitt VK2GOJ	Miles Communications P/L	1 Conrad St, Wetherill Park,	2164. Tel 02 727 7338 (AH)
Hoss Bernhard VK2ICE	Fishers Ghost ARC	PO Box 34, Catherine Field,	2171. Tel 046 28 3839 (AH)
Trevor Smith VK2TBK	Bankstown Amateur Radio Club	PO Box 251, Greenacre,	2190. Tel 02 743 8417 (BH)
Wayne Brack VK2WDL	Bankstown Amateur Radio Club	54 Hillard St, Wiley Park,	2195. Tel 02 743 8417 (BH)
Stephen Porter VK2BU		43 West Botany St, Arncliffe,	2205. Tel 02 567 7590 (AH)
Stewart McCarthy VK2MX	St George ARS Inc	PO Box 530, Engadine,	2233. Tel 02 520 8662 (AH)
Barry McNeil VK2FP	Sydney Amateur Television Gp	3 Bella Vista St, Heathcote,	2233. Tel 02 520 2867 (BH)
Paul Smith VK2ZSA	St George ARS Inc	PO Box 530, Engadine,	2233. Tel 02 520 7323 (AH)
Tom Thornton VK2CJT	St George ARS Inc	PO Box 530, Engadine,	2233. Tel 02 520 5843
Ean Young VK2FSO	St George ARS Inc	PO Box 530, Engadine,	2233. Tel 02 580 (AH)
Leon Brett VK2BLV	Central Coast ARC Inc	87 Albany St, East Gosford,	2250. Tel 043 24 169
Bruce Holland VK2ZAD	Central Coast ARC Inc	12 Greenoaks Rd, Narara,	2250. Tel 043 28 3148 (AH)
Len McNab VK2ABD	Central Coast ARC Inc	1 Shortland St, Gosford,	2250. Tel 043 25 2860 (AH)
Bill Scovell VK2FKE	Central Coast ARC Inc	13 Tulani Ave, Daleys Point,	2257. Tel 043 43 2339
Greg Jackson VK2GJWJ		26 Harding Ave, Lake Munmorah,	2259. Tel 043 58 8479 (AH)
Peter King VK2GPK	Southlakes Computers	6 Macnamir Close, Morisset,	2264. Tel 049 73 3688 (AH)
Jim Wing VK2MSB		10 Victory Street, Cooranbong,	2265. Tel 049 77 1507 (AH)
Peter Browne VK2GFE		PO Box 77, Warners Bay,	2282. Tel 049 58 2832 (AH)
Maurice Jones VK2CD		PO Box 77, Warners Bay,	2282. Tel 049 49 8786
Fred Lawler VK2SI	Westlakes Amateur Radio Club	PO Box 77, Warners Bay,	2282. Tel 049 64 8018 (BH)
Paul Lorentzen VK2ATR	Westlakes Amateur Radio Club	PO Box 77, Warners Bay,	2282. Tel 049 59 1788 (BH)
Greg Smith VK2GJS	Westlakes Amateur Radio Club	PO Box 77, Warners Bay,	2282. Tel 049 41 3468 (BH)
Dave Myers VK2DFL	Wicen (NSW) Inc	61 Fern St, Arcadia Vale,	2283. Tel 049 75 1136
Frederick Eade VK2AEE	Frederick William Eade	276 Park Ave, Kotara,	2289. Tel 049 57 5131
Geoff McGrorey-Clark VK2JUG	Newcastle/District Packet RG	5 Monmouth St, Stockton,	2295. Tel 018 66 7162 (BH)
George Hombsch VK2FCC	Tamworth Radio Club Inc	PO Box 4, Tamworth,	2340. Tel 067 65 9351 (BH)

Examiner	Group/Club	Address	Telephone
Neville Pratt VK2FNP	Tamworth Radio Club Inc	PO Box 4, Tamworth,	2340. Tel 067 65 4099
Allan Walker VK2ZJW	Tamworth Radio Club Inc	PO Box 4, Tamworth,	2340. Tel 067 64 1878
Shane Rae VK2XRR		73 Cowper St, Wee Waa,	2388. Tel 067 95 3075 (AH)
Brent Paull VK2ZOO		18 Boundary St, Narrabri,	2390. Tel 067 92 3386 (AH)
Kevin Dockrill VK2GVE		12 Warrina Cres, Moree,	2400. Tel 067 52 4699 (AH)
Trent Sampson VK2KTS		PO Box 1440, Moree,	2400. Tel 067 52 1523
Brian Steel		309 Chester St, Moree,	2400. Tel 067 52 1472
Dick Andrew VK2KRA	Taree Amateur Radio Club	RMB 110 Old Lansdowne Rd, Cundletown,	2430. Tel 065 53 9888
Karl Bilger VK2DYX	Taree Amateur Radio Club	Lot 187 Allumba Cl, Taree,	2430. Tel 065 51 2024 (AH)
Roy Brewer VK2VRB	Taree Amateur Radio Club	36 George St, Cundletown,	2430. Tel 065 53 9786
Dick Zimic VK2BOT	Taree Amateur Radio Club	RMB 100 Old Lansdowne Rd, Cundletown,	2430. Tel 065 53 9506
Keith Hanlon	Oxley Region ARC	PO Box 712, Port Macquarie,	2444. Tel
Larry Lindsay VK2CLL	Oxley Region ARC	PO Box 712, Port Macquarie,	2444. Tel 065 87 1155 (AH)
Bill Stofmeel VK2WST	Oxley Region ARC	PO Box 712, Port Macquarie,	2444. Tel 065 85 3971
Trevor Thatcher VK2TT	Oxley Region ARC	PO Box 712, Port Macquarie,	2444. Tel 065 85 2278
Bob Colsell VK2AWA	Coffs Harbour & District ARC	PO Box 655, Coffs Harbour,	2450. Tel 066 52 6135
Peter McAdam VK2EVB	Coffs Harbour & District ARC	PO Box 655, Coffs Harbour,	2450. Tel 066 52 7160
Hans Schumacher VK2DGV	Coffs Harbour & District ARC	PO Box 655, Coffs Harbour,	2450. Tel 066 51 2020 (AH)
John Williams VK2BUI	Coffs Harbour & District ARC	PO Box 655, Coffs Harbour,	2450. Tel 066 53 8313
Gerry Cresswell VK2IGC	Summerland Amateur Radio Club	PO Box 524, Lismore,	2480. Tel 066 63 1410 (AH)
Ken Hore VK2HE	Summerland Amateur Radio Club	PO Box 524, Lismore,	2480. Tel 066 21 8242 (BH)
Leith Martin VK2EA	Summerland Amateur Radio Club	PO Box 524, Lismore,	2480. Tel 066 24 2550 (AH)
Peter Richens VK2FSD	Summerland Amateur Radio Club	PO Box 91, Lismore Heights,	2480. Tel 066 24 3211 (BH)
John Toland VK2KXK	Summerland Amateur Radio Club	101 College St, Lismore,	2480. Tel 066 21 2933 (AH)
Rick Virtue VK2EJV	Summerland Amateur Radio Club	90-92 James St, Dunoon,	2480. Tel 066 89 5137 (BH)
James Glenn VK2AIQ		78/122 Dry Dock Rd, Tweed Heads South,	2486. Tel 075 24 9772
Errol Chittick VK2EGC	Tweed Valley ARC	C/- 9 Grevillia Ave, Bogangar,	2488. Tel 066 72 3237 (AH)
Phil Evans VK2KEV	Tweed Valley ARC	C/- 9 Grevillia Ave, Bogangar,	2488. Tel 066 76 1671 (AH)
LLoyd Martin VK2BYU	Tweed Valley ARC	C/- 9 Grevillia Ave, Bogangar,	2488. Tel
Graham Denney VK2GID	Illawarra ARS Inc	2/2A Macquarie St, Wollongong,	2500. Tel 042 29 4170
Jim Hayes VK2EJH		1 Kathleen Cres, Woonona,	2517. Tel 042 84 9317 (AH)
Mike Keech VK2DFK		54 Park Rd, Woonona,	2517. Tel 042 83 2438
Barry Sullivan VK2BZ		20 Narelle Cres, Woonona,	2517. Tel 042 85 2223 (AH)
Ken Goodhew VK2TKE		3 Hendricks Pde, Mt Warrigal,	2528. Tel 042 97 3037 (AH)
Darrel Nelson VK2USA	Illawarra ARS Inc	PO Box 341, Dapto,	2530. Tel 042 61 8636
Roiely Brown VK2GFO	Mid South Coast ARC Inc	8 Cheddar St, Moruya,	2537. Tel 044 74 3361
Derek Holyoake VK2DRK	Mid South Coast ARC Inc	166 Hector McWilliam Dve, Tuross Head,	2537. Tel 044 73 8596
Frank Hill VK2HQ	Mid South Coast ARC Inc	PO Box 113, Milton,	2538. Tel 044 55 1077
Stan Bourke VK2EL	Mid South Coast ARC Inc	49 Parson St, Ulladulla,	2539. Tel 044 55 5825
Dave Parry VK2CDP	Mid South Coast ARC Inc	49 Garside Rd, Mollymook,	2539. Tel 044 55 1311
Jennifer Cox		41 King George St, Callala Beach,	2540. Tel 044 46 5728 (AH)
Peter Madden VK2XXS		30 Catherine St, Myola,	2540. Tel 044 46 5196
David Blunn VK2DDJ	Shoalhaven Amateur Radio Club	PO Box 230, Nowra,	2541. Tel 044 64 1056
John Bogdanski VK2FEX	Shoalhaven Amateur Radio Club	PO Box 230, Nowra,	2541. Tel 044 21 0670
James O'Brien VK2BHU	Far South Coast ARC	PO Box 46, Bega,	2550. Tel 064 94 1286
David Plumb VK2DRP	Far South Coast ARC	PO Box 686, Bega,	2550. Tel 064 92 2220
Ray Price VK2AWQ	Far South Coast ARC	26 Bay St, Tathra,	2550. Tel 064 94 1347
Robert Demkiw VK2ENU		18 Ettalong Place, Woodbine,	2560. Tel 046 26 4776 (AH)
David Medcalf VK2GDM	Fishers Ghost ARC	9 Buffalo Way, Campbelltown,	2560. Tel 046 27 1025
Les Simmons VK2TJ	Fishers Ghost ARC	8 Raymond Ave, Campbelltown,	2560. Tel 046 28 3839
Michael Turner VK2WMT	Bankstown Amateur Radio Club	PO Box 375, Ingleburn,	2565. Tel 02 334 0023 (BH)
Noel Flynn VK2WHY		3226 Hume Hwy, Bargo,	2574. Tel 046 84 2134
Dennis Peake VK2ADW		29 Wattle St, Colo Vale,	2575. Tel 048 89 4518
Ian Jeffrey VK2AIJ	Goulburn Amateur Radio Soc	144 Kinghorne St, Goulburn,	2580. Tel 048 21 6806 (AH)
Alex Thuma VK2ATY	Goulburn Amateur Radio Soc	26 William St, Goulburn,	2580. Tel 048 21 9256 (AH)
Mike Morrissey VK1RI		32 Lonsdale St, Braddon,	2601. Tel 06 248 9600 (BH)
Neil Pickford VK1KNP	WIA ACT Division	GPO Box 600, Canberra,	2601. Tel 06 274 8422 (BH)
Mal Cooper VK1MC		PO Box 652, Jamison,	2604. Tel 06 226 3440 (AH)
Nevil Eyre VK1NE	Tidbinbilla ARC	PO Box 4350, Kingston,	2604. Tel 06 201 7800 (BH)
Bob Quick VK1ZQR	Tidbinbilla ARC	PO Box 4350, Kingston,	2604. Tel 06 201 7800 (BH)
Len Ricardo VK1ALR	Tidbinbilla ARC	PO Box 4350, Kingston,	2604. Tel 06 201 7867 (BH)
Christopher Davis VK1DO	WIA ACT Division	123 Hawkesbury Cres, Farrer,	2607. Tel 018 62 5027
Rob Apathy VK1KRA	WIA ACT Division	5 Wrixon St, Latham,	2615. Tel 06 254 2982
Barry Busch'l VK2GDV	Twin Cities R & E Club Inc	355 Wilson St, Albury,	2640. Tel
Alan James VK2ACN	Twin Cities R & E Club Inc	PO Box 396, Albury,	2640. Tel 060 25 1117 (AH)
Greg Sargeant VK2EXA	Twin Cities R & E Club Inc	PO Box 396, Albury,	2640. Tel 060 21 5438 (AH)
Graeme Scott VK2KE	Twin Cities R & E Club Inc	PO Box 396, Albury,	2640. Tel 060 21 3655 (BH)
David Ashley VK2JDA	Wagga Amateur Radio Club Inc	PO Box 294, Wagga Wagga,	2650. Tel
Harley Davison VK2AHD	Wagga Amateur Radio Club Inc	18 Warrawong St, Wagga,	2650. Tel 069 21 1004 (AH)
John Eyles VK2BXD	Wagga Amateur Radio Club Inc	PO Box 294, Wagga Wagga,	2650. Tel 069 22 2363 (BH)
Mike McDonnell VK2DAI	Wagga Amateur Radio Club Inc	PO Box 294, Wagga Wagga,	2650. Tel
Peter Watson VK2APW	Wagga Amateur Radio Club Inc	PO Box 294, Wagga Wagga,	2650. Tel

Examiner	Group/Club	Address	Telephone
Leon Boneham VK2DLN	Griffith ARC Inc	PO Box 1804, Griffith,	2680. Tel 069 62 4534 (BH)
Graeme Watkins VK2DGV	Griffith ARC Inc	PO Box 1016, Griffith,	2680. Tel 069 62 4577 (BH)
Don Smith VK2BDU		34 Fowler St, Deniliquin,	2710. Tel 058 81 1267
John Goodall VK2ESP		RMB 850, Moama,	2731. Tel 058 89 5121
Eric Fossey VK2EFY	Blue Mountains ARC	45 Gascoigne St, Penrith,	2750. Tel 047 31 5885
Garry Cottle VK2AGC		SGTS Mess, RAAF Base, Richmond,	2755. Tel 045 70 2192 (BH)
Pixie Chapple VK2KPC	Blue Mountains ARC	231 Shepherd St, St Marys,	2760. Tel 02 623 5663 (AH)
Brett Hazell VK2CBH	Chifley Amateur Radio Club	PO Box 280, Mt Druiitt,	2770. Tel 02 671 2035 (AH)
Leon McHugh VK2FLI	Chifley Amateur Radio Club	PO Box 280, Mt Druiitt,	2770. Tel 02 625 9646
Ralph Simmons VK2GRS	Chifley Amateur Radio Club	PO Box 280, Mt Druiitt,	2770. Tel 02 671 4756
Perce Garbutt VK2GAI		10 Tygh St, Lapstone,	2773. Tel 047 39 3866
David Barry VK2CFB	Blue Mountains ARC	6 Murray Ave, Springwood,	2777. Tel 047 58 5175
Julie Kentwell VK2XBR	Sydney Amateur Television Gp	34 Raymond Rd, Springwood,	2777. Tel 047 51 1219
Alan Whitmore VK2YYJ		32 Greens Pde, Valley Heights,	2777. Tel 02 625 1388 (BH)
Adrian Clout VK2BFN		137 Lower Valley Rd, Hazelbrook,	2779. Tel 047 58 6797
John Dudley VK2GXZ		PO Box 52, Hazelbrook,	2779. Tel 047 58 6131 (BH)
Peter Van Gemert VK2ALL	Bathurst Amateur Radio Club	291 Durham St, Bathurst,	2795. Tel 063 31 2464
Neville Wilde VK2DR	Bathurst Amateur Radio Club	22 White St, Bathurst,	2795. Tel 063 31 5809 (AH)
Bruce Carroll VK2DEQ	Orange Amateur Radio Exams	PO Box 128, Orange,	2800. Tel 063 62 8703
Peter Carter VK2ETK	Orange Amateur Radio Exams	7 Ophir Rd, Orange,	2800. Tel 063 61 3439 (AH)
Carl Palmer VK2BSD		PO Box 392, Wellington,	2820. Tel (AH)
Ken Bird VK2GDK	Orana Amateur Radio Club	213 Alagalath St, Narromine,	2821. Tel 068 89 1308
Frank Wall VK2CWL	Orana Amateur Radio Club	"Westbrook", Narromine,	2821. Tel 068 89 0535
James Armytage VK2CJA	Orana Amateur Radio Club	"Kelburn", Gilgandra,	2827. Tel 068 48 1062
Bruce Chung VK2WWW	Orana Amateur Radio Club	26 Myrtle St, Gilgandra,	2827. Tel 068 47 2522
John Hams VK2JH	Orana Amateur Radio Club	Lot 28 Bencubbin Estate, Dubbo MS7,	2830. Tel 068 87 8241 (AH)
David Walters VK2AYO	Orana Amateur Radio Club	"Carramar" Burraway Rd, Dubbo MS 4,	2830. Tel 068 88 5265
Walter Field VK2NNF	Parkes & District ARC Inc	C/- 4 William St, Parkes,	2870. Tel 068 62 1776
Peter Hughes VK2MLG	Parkes & District ARC Inc	39 Orange St, Parkes,	2870. Tel 068 62 4217 (AH)
Dave Kent VK2BJI	Parkes & District ARC Inc	PO Box 564, Parkes,	2870. Tel 068 62 2154
Lindsay Richmond VK1NDM	Tidbinbilla Tracking Station	21 Buckley Cct, Kambah,	2902. Tel 06 231 4182 (AH)
Jan Burrell VK1BR	WIA ACT Division	20 Currey St, Gowrie,	2904. Tel
Ross Peters VK1DZ	Tidbinbilla Tracking Station	14 Mehaffey Cres, Theodore,	2905. Tel 06 292 5477 (AH)
John Beverin VK3CMO	RMIT School of Electrotech	GPO Box 2476V, Melbourne,	3001. Tel 03 660 4455 (BH)
Graham Cottew VK3DPC	ARA Exam Service	GPO Box 628E, Melbourne,	3001. Tel 03 601 4203 (BH)
Neil Duncan VK3OK	ARA Exam Service	GPO Box 628E, Melbourne,	3001. Tel 03 601 4203
Chris Edmondson VK3YID	ARA Exam Service	GPO Box 628E, Melbourne,	3001. Tel 03 601 4203 (BH)
Graham Judge VK3YGG	ARA Exam Service	GPO Box 628E, Melbourne,	3001. Tel 03 601 4203 (BH)
Ralph Parkhurst VK3ZIP	ARA Exam Service	GPO Box 628E, Melbourne,	3001. Tel 03 601 4203 (BH)
Rob Whitmore VK3ESE	RMIT School of Electrotech	GPO Box 2476V, Melbourne,	3001. Tel 03 660 4479 (BH)
Alan Foulstone VK3ECZ	RAAF Williams ARC	PO Box 161, Laverton,	3028. Tel 03 368 3600
Bruce Kendall VK3WL	RAAF Williams ARC	8 Walwa Place, Werribee,	3030. Tel 03 741 7654 (AH)
Jumbo Kennedy VK3BIG	RAAF Williams ARC	26 Tarneit Rd, Werribee,	3030. Tel 03 741 2856
Dixie Lee VK7HP	RAAF Williams ARC	5/24 Salisbury St, Werribee,	3030. Tel 03 742 3786
Joe Aprile VK3GFA		19 Scotia St, Moonee Ponds,	3039. Tel 03 370 7697
Brian Purcell VK3BQP		27 Kathleen St, Pascoe Vale South,	3044. Tel 03 386 7750
Howard Rider VK3ZJY		232 Cumberland Road, Pascoe Vale,	3044. Tel 03 306 8484
John Wright VK3AJL	J Wright & Associates	72 Ramsden St, Clifton Hill,	3068. Tel
Les Cardilini VK3BLC	RMIT School of Electrotech	PO Box 418, Craigieburn,	3064. Tel 03 305 6297
Kevin Gilbert	Xavier College Radio Club	59 Hawthorn Rd, Northcote,	3070. Tel 03 854 5411 (BH)
Pino Glessi VK3WU		184 Clarke St, Northcote,	3070. Tel 03 489 0817 (AH)
Bernie Neumann VK3AXL	Xavier College Radio Club	59 Hawthorn Rd, Northcote,	3070. Tel 03 489 9732 (AH)
Jim Baxter VK3DBQ	NERG Exams	1 Pamela Crt, Bundoora,	3083. Tel 03 467 1253 (AH)
Graham Gall VK3ZS		76 Greenwood Dve, Bundoora,	3083. Tel 03 467 2697
Gary Greer VK3KBL	NERG Exams	54 Corowa Cres, Greensborough,	3088. Tel 03 434 3687
Chris McLaughlin VK3CHR		24 Collendina Cres, Greensborough,	3088. Tel 03 322 6104 (BH)
Ewen Templeton VK3BMV	NERG Exams	45 Cairns St, Greensborough,	3088. Tel 03 434 6071 (AH)
Greg Williams VK3VT	NERG Exams	1 Noorabil Crt, Greensborough,	3088. Tel 03 634 5532 (BH)
Harry Lodder VK3AXJ	Camberwell Grammar Radio Club	PO Box 151, Baiwyn,	3103. Tel 03 836 6266 (BH)
Des Bird VK3EDB	Electrotechnology RMIT	8 Queen St, Surrey Hills,	3127. Tel 03 836 1837 (AH)
Philip Adams VK3JNI	Scout R & E Service Unit	PO Box 311, Box Hill,	3128. Tel 03 438 3013 (AH)
Len Atyeo VK3DXM	Scout R & E Service Unit	PO Box 311, Box Hill,	3128. Tel 03 890 3580
Craig Cook VK3CMC	RMIT School of Electrotech	33 Haig St, Box Hill South,	3128. Tel 03 890 2117 (AH)
Peter Fraser VK3ZPF	Scout R & E Service Unit	PO Box 311, Box Hill,	3128. Tel 03 895 9617 (AH)
Rob Carmichael VK3DTR		PO Box 200, Forest Hill,	3131. Tel
Jim Linton VK3PC		PO Box 200, Forest Hill,	3131. Tel
Geoff Atkinson VK3YFA	EMDRC	PO Box 87, Mitcham,	3132. Tel 03 791 7988 (BH)
Jack Bramham VK3WWW	EMDRC	PO Box 87, Mitcham,	3132. Tel 03 873 2459 (AH)
Joe Magee VK3BKI	EMDRC	PO Box 87, Mitcham,	3132. Tel 03 729 8579 (AH)
Dave Neville VK3JUC	EMDRC	PO Box 87, Mitcham,	3132. Tel 03 802 7492 (AH)
David Nisbet VK3XDA	EMDRC	PO Box 87, Mitcham,	3132. Tel 03 420 2035 (BH)
Len Vermeulen VK3COD	EMDRC	PO Box 87, Mitcham,	3132. Tel 03 808 5350 (AH)



Examiner	Group/Club	Address	Telephone
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Craig McMillan VK3CRA	VK3CRA Amateur Exams	5 Sunview Crt, Dingley,	3172. Tel 03 551 5635
Ross Northmore VK3TMP		35 Oak Ave, Doveton,	3177. Tel 018 99 1982 (BH)
Frank Robinson VK3DDK		PO Box 173, Prahran,	3181. Tel
Keith Forbes VK3ENR	Moorabbin College of TAFE	Private Bag 19, Moorabbin,	3189. Tel 03 556 9600 (BH)
Roderick Wall VK3BKO	Moorabbin College of TAFE	Private Bag 19, Moorabbin,	3189. Tel 03 556 9600 (BH)
Brian Fairless VK3ES	Moorabbin & District RC Inc	PO Box 58, Highett,	3190. Tel 03 592 7536
Jerry Viscal VK3MQ	Moorabbin & District RC Inc	PO Box 58, Highett,	3190. Tel 03 704 6355 (AH)
Mark Diggins VK3JMD		1 Pembroke Cres, Cheltenham,	3192. Tel 03 583 7692 (AH)
Brett Leslie VK3JHP		35 Evesham Rd, Cheltenham,	3192. Tel 03 584 4230 (AH)
Shirley Johnson VK3NKN	FAMPARC	54 Scotch Pde, Bonbeach,	3196. Tel 03 772 8457 (AH)
Gordon Buchanan VK3BGB	FAMPARC	PO Box 38, Frankston,	3199. Tel 03 789 7710
Jessie Buchanan VK3VAN	FAMPARC	4 Milford Cres, Karingal,	3199. Tel 03 789 7710
Gordon Dawe VK3GAD	FAMPARC	C/- 4 Milford Cres, Frankston,	3199. Tel 03 783 7717
Audrey Gibson VK3FI		94 Kars St, Frankston,	3199. Tel 03 783 8714
Len Gibson VK3SI		94 Kars St, Frankston,	3199. Tel 03 783 8714
Peter Johnson VK3NPJ	FAMPARC	PO Box 38, Frankston,	3199. Tel 03 772 8457 (AH)
Graham Wallington VK3BGL	FAMPARC	13 Milford Cres, Frankston,	3199. Tel 03 789 2972 (AH)
Ian Stowe VK3GA	FAMPARC	20 Norfolk Cres, Frankston North,	3200. Tel 03 785 2976 (AH)
Barry Watts VK3BRW	Only Tomorrow	36 Mountain St, South Melbourne,	3205. Tel
Valerie Watts VK3CVW	Only Tomorrow	36 Mountain St, South Melbourne,	3205. Tel
Chas Gnaccarini VK3BRZ	Geelong Amateur Radio Club	66 Smeaton Close, Lara,	3212. Tel 052 82 3167 (AH)
John Collins VK3TKH	Geelong Amateur Radio Club	22 Elinbank Dve, Grovedale,	3216. Tel 052 43 0075
Keith Vriens VK3AFI	Geelong Amateur Radio Club	204 Myers St, Geelong,	3220. Tel 052 21 3658
Lee de Vries VK3PK	Geelong Amateur Radio Club	215 Swan Bay Rd, Wallington,	3221. Tel 052 50 1105 (AH)
Tom Evans VK3EGM	Colac Amateur Radio Club	PO Box 3, Cororooke,	3254. Tel 052 33 1412
Maggie Iaquinto VK3CFI	Colac Amateur Radio Club	PO Box 3, Cororooke,	3254. Tel 052 32 1118 (AH)
Rob Spalding VK3ERS	Colac Amateur Radio Club	PO Box 3, Cororooke,	3254. Tel 052 33 1412
Bill Bell VK3WK	Warrnambool R & E Club	PO Box 724, Warrnambool,	3280. Tel 055 65 9348 (BH)
Bill Dennis VK3XE	Warrnambool R & E Club	5 Karana Dve, Warrnambool,	3280. Tel 055 62 9132
Ian Durston VK3VID	Warrnambool R & E Club	8 Enterprise Crt, Warrnambool,	3280. Tel 055 62 8684
Joe Morgan VK3CDX	Warrnambool R & E Club	44 Merrivale Dve, Warrnambool,	3280. Tel 055 62 7140
Mona Swinton VK3BRE	Warrnambool R & E Club	PO Box 724, Warrnambool,	3280. Tel 055 62 6016
Trevor Dyson VK3DTV	Warrnambool R & E Club	RMB 5280, Yambuk,	3285. Tel 055 68 4228 (AH)
Ian Mason VK3DNQ	Warrnambool R & E Club	PO Box 10, Yambuk,	3285. Tel 055 68 4214
Harold Benson VK3VSX	Hamilton & District RC	PO Box 188, Hamilton,	3300. Tel 055 23 4773
Steve Curtis VK3CAX	Hamilton & District RC	PO Box 188, Hamilton,	3300. Tel 055 72 1355 (BH)
Ray Downes VK3ERD	Hamilton & District RC	PO Box 188, Hamilton,	3300. Tel 055 78 6352
Keith Heemskerk VK3AIH	Hamilton & District RC	PO Box 188, Hamilton,	3300. Tel 055 23 1977 (BH)
Reg Carter VK3CAZ	BARG	PO Box 216E, Ballarat East,	3350. Tel 053 41 7585 (AH)
Gordon Cornell VK3FGC	BARG	PO Box 216E, Ballarat East,	3350. Tel 053 39 2427 (AH)
Tom George VK3DMK	BARG	PO Box 216E, Ballarat East,	3350. Tel 053 32 7234 (BH)
Ian McDonald VK3AXH	BARG	PO Box 216E, Ballarat East,	3350. Tel 053 31 1317 (BH)
Charlie Stewart VK3DCS	BARG	PO Box 216E, Ballarat East,	3350. Tel 053 31 7425
Ian Wyndham VK3EF	BARG	317 Eureka St, Ballarat,	3350. Tel 053 32 7234
Geoff Smith VK3ADB	BARG	PO Box 1249, MC Ballarat,	3354. Tel 053 33 2112 (AH)
Bob Terrill VK3BNC	BARG	7 Locksley St, Wendouree,	3355. Tel 053 39 5317
Eric Froude VK3FRO	BARG	Post Office, Linton,	3360. Tel 053 44 7448
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Andy Squires VK3DIO	Horsham Amateur Radio Club	PO Box 720, Horsham,	3401. Tel 053 82 1439 (BH)
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Mark Weaver VK3KZZ	Horsham Amateur Radio Club	PO Box 720, Horsham,	3401. Tel 053 81 1711 (BH)
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John Nunan VK3IC	Sunbury ARC Inc	PO Box 915, Sunbury,	3429. Tel 03 744 2506 (AH)
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Ron Atkins VK3BYM		Old Drummond Rd, Taradale,	3447. Tel 054 23 2409
George Loft VK3AGM	Midland ARC Inc	28 Lawrence Street, Castlemaine,	3450. Tel 054 72 3476 (AH)
Denis Charlesworth VK3DWC		Majorca Rd, Carisbrook,	3464. Tel 054 64 2309 (AH)
Peter Rafferty VK3ITI		49 Majorca Rd, Maryborough,	3465. Tel 054 60 4387 (AH)
Allan Greening VK3PA		PO Box 67, Dunolly,	3472. Tel 054 68 1088
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Maurie Milani VK3CWB	Sunraysia Amateur Exams	PO Box 30, Mildura,	3502. Tel 050 22 2120 (AH)
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Daryl Manley VK3AMJ	Swan Hill & District ARC	PO Box 682, Swan Hill,	3585. Tel 050 32 1427
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Barrie Halliday VK3KBY	Shepparton & District ARC	37 Gourlay St, Shepparton,	3630. Tel 058 21 5756
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Reg Jones VK3GC	Wodonga TAFE	Electronics Dept, 15 McKoy St Wodonga,	3690. Tel 057 56 2230 (AH)
Chris Solly	Wodonga TAFE	Electronics Dept, 15 McKoy St Wodonga,	3690. Tel 060 55 6517 (BH)
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Ian McInnes VK2XXW	Army College of TAFE	Radio Trades Latchford Bk, Milpo Bonegilla,	3693. Tel 060 55 4340 (BH)
Malcolm McRae VK3BXJ	Army College of TAFE	Radio Trade Wing, Latchford Milpo Bonegilla,	3693. Tel 060 55 4340 (BH)
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Bob Neal VK3ZAN	WIA East Gippsland Zone	76 Langford Pde, Paynesville,	3880. Tel 051 56 7654
John Piovesan VK3GU	WIA East Gippsland Zone	15 Gilsenan St, Paynesville,	3880. Tel 051 56 6110
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Vic Vickery VK3DEA	Southern Peninsula Radio Club	11 Flamingo Rd, Rosebud West,	3940. Tel 059 86 1327
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Colin Thomson VK3VBU	Community D/L Wonthaggi Inc	20 Fuller Rd, Wonthaggi,	3995. Tel 056 72 3144
Ted Trinder VK3JMT	Community D/L Wonthaggi Inc	1 Campbell St, Wonthaggi,	3995. Tel 056 72 2307
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Peter Breed VK4PB	Redcliffe Radio Club	PO Box 20, Woody Point,	4019. Tel 07 284 1960
Nigel Marsh VK4EEE	Redcliffe Radio Club	PO Box 20, Woody Point,	4019. Tel
John Presotto VK4WX	Redcliffe Radio Club	PO Box 20, Woody Point,	4019. Tel 07 283 1329 (AH)
Laurie Pritchard VK4BLE	Redcliffe Radio Club	PO Box 20, Woody Point,	4019. Tel 07 284 8859 (AH)
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Ron Everingham VK4EV	Brisbane ARC	30 Hunter St, Everton Park,	4053. Tel 07 355 4308 (AH)
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Garry Hawgood VK4KE	Radio Amateurs Group	9 Ararat St, Riverhills,	4074. Tel 07 279 0278
Murray Kelly VK4AOK	WIAQ Examinations Service	29 Molonga Tce, Graceville,	4075. Tel 07 379 3307
Steve Vaughan VK4YEK	Brisbane ARC	PO Box 300, Darra,	4076. Tel 07 849 8156
George Nelson VK4WZ	Brisbane ARC	96 Ekibin Rd, Annerley,	4103. Tel 07 848 2456
Greg O'Grady VK4TJUX	Department of Education OLD	33 Koala Rd, Moorooka,	4105. Tel 07 848 0081 (AH)
Brian Knowles VK4CBK		4 Glen St, Browns Plains,	4118. Tel 07 809 2778 (AH)
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Cathie Cooper VK4FG	Bayside District ARS Inc	PO Box 411, Capalaba,	4157. Tel 07 245 5432 (AH)
Roy Mahoney VK4BAY	Bayside District ARS Inc	PO Box 411, Capalaba,	4157. Tel 07 396 1655
George Roberts VK4BSH	Bayside District ARS Inc	PO Box 411, Capalaba,	4157. Tel 07 206 7298 (AH)
Dennis Waugh VK4ALL	Bayside District ARS Inc	PO Box 411, Capalaba,	4157. Tel 07 209 9365 (AH)
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John Harvey VK4XJH	Gold Coast ARS Inc	PO Box 5159, Gold Coast Mail Centre,	4217. Tel 075 32 0400 (BH)
Robert White VK4TRW	Gold Coast ARS Inc	5 McCubbin Crt, Burleigh Heads,	4220. Tel 075 35 2222 (AH)
George Walters VK4VGW	Gold Coast ARS Inc	64 Bateke Rd, Mt Tamborine,	4272. Tel 075 45 2148
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Greg Walker VK4TDR	Ipswich & District ARC	48 Siemon St, One Mile,	4305. Tel 07 281 1370 (AH)
Denis Bill VK4XDB	Ipswich & District ARC	43 Coal Rd, Chuwar,	4306. Tel 07 281 8658
Peter Ormerod VK4CPW		PO Box 114, Amberley,	4306. Tel (BH)
Mal Beck	Concordia College Toowoomba	154 Stephen St, Toowoomba,	4350. Tel 076 36 1700 (BH)
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Graham Rayner VK4GDR	Cunningham Radio Club	PO Box 93, Glen Aplin,	4381. Tel 076 83 4336 (AH)
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Reg Kerslake VK4AAU	Dalby & District ARC	88 Patrick St, Dalby,	4405. Tel 076 62 2193
Margaret Schwerin VK4OE	Dalby & District ARC	"Rosedale" MS 902, Dalby,	4405. Tel 076 62 3934
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Bill McDermott VK4AZM	WIAQ Examinations Service	8 Panorama St, Bray Park,	4500. Tel 07 260 1366 (BH)
Nev Mills VK4KOP	WIAQ Examinations Service	49 Viscount St, Bray Park,	4500. Tel 07 205 4532 (AH)
Bill Yates VK4YWY	QRV Exam Service	29 Brittainy St, Petrie,	4502. Tel 07 285 1462 (BH)
Brian Berry VK4BDB	WIAQ Examinations Service	42 Laver St, Morayfield,	4506. Tel 074 98 5754 (AH)
Charlie Strong VK4YZ	Redcliffe Radio Club	St M's Old Toorbul Pt Rd, Caboolture,	4510. Tel 074 95 1565
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Max Vincent VK4ZMV		PO Box 10, Golden Beach,	4551. Tel 074 92 2710
Mike Mallett VK4CCA	Sunshine Coast ARC	4 Seaview Crt, Maroochydore,	4558. Tel 074 79 1078
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Roy Winchester VK4IRW	Gympie Amateur Radio Club Inc	Lot 4 Jeremy Rd, Gympie,	4570. Tel 074 82 7823
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Geoff Hosking VK4ZGH		4 Buckingham St, Kingaroy,	4610. Tel 071 62 5924
Ian Mowat VK4ZS		MS 648, Yarraman,	4614. Tel 071 63 8261
Trevor Clement VK4YH		14 Gipps St, Nanango,	4615. Tel 071 63 2565
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Reg Wheller VK4ARW	Hervey Bay Amateur Radio Club	PO Box 829, Hervey Bay,	4655. Tel 071 28 1383
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Tony Dorrrough VK4NAD		15 Memory Blvd, Innes Park,	4670. Tel 071 59 3474
Gerard Feerick VK4YK	BARC Inc Exam Service M/S	108 Hoffmans Rd, Burnett Heads,	4670. Tel
Kev Meredith VK4LQ		36 Tarakan St, Bundaberg,	4670. Tel
Bob Millgate VK4ADZ	BARC Inc Exam Service	9 Chapman St, Booloolah Bundaberg,	4670. Tel 071 52 7482
Bernie Smallman VK4BFS		6 Williams St, MS 108 Burnett Heads,	4670. Tel 071 59 4483
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Clive Sait VK4ACC	WIAQ CQ Branch Rockhampton	265 Carpenter St, Rockhampton,	4701. Tel 079 28 1173 (AH)
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David Christmas VK4DJC		27 Dee St, Mt Morgan,	4714. Tel 079 38 1263
Don Blanch VK4ZFB	Biloela ARC	109 Grevillea Street, Biloela,	4715. Tel
Hank Hahn VK4VCD	Biloela ARC	25 Don Street, Biloela,	4715. Tel 079 92 1386
Mark Haseman VK4CMH	Biloela ARC	PO Box 315, Biloela,	4715. Tel 079 92 2491
Graeme Martin VK4KGM	Biloela ARC	PO Box 291, Biloela,	4715. Tel 079 92 3919
John Petersen VK4AXA	Central Highlands ARC	48 Littlefield St, Blackwater,	4717. Tel 079 82 5126
Jim Storch VK4JVS		PO Box 147, Blackwater,	4717. Tel 079 82 6279
James West		41 Blain St, Blackwater,	4717. Tel 079 82 6756 (AH)
Lloyd West VK4QE		41 Blain St, Blackwater,	4717. Tel 079 82 6756 (AH)
Geoff Bonney VK4GI	TAFE College Emerald	Capricorn Hwy, Emerald,	4720. Tel 079 82 3699 (BH)
Bob Lee VK4CWL	Central Highlands ARC	PO Box 617, Emerald,	4720. Tel 079 82 1096 (BH)
Pete Foster VK4COU		Cardbeign St, Springsure,	4722. Tel 079 86 1882
Allan Abbott VK4ABP	Central Highlands ARC	PO Box 493, Longreach,	4730. Tel 076 58 3111 (BH)
Lyle Farrarher VK4XMX	Central Highlands ARC	PO Box 75, Longreach,	4730. Tel 076 58 3793 (AH)
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John Gillespie VK4MTF	Mackay Amateur Radio Assoc	PO Box 1065, Mackay,	4740. Tel 079 55 2006 (AH)
George Glendinning VK4AJL	Mackay Amateur Radio Assoc	PO Box 1065, Mackay,	4740. Tel 079 59 2436 (AH)
John James VK4CMA	Mackay Amateur Radio Assoc	PO Box 1065, Mackay,	4740. Tel 079 55 2333 (AH)
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Rex East VK4MIA	Thursday Island ARC	PO Box 418, Thursday Island,	4875. Tel 070 69 1679
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Ron Goodhew VK4EMF	Tableland Radio Club	PO Box 253, Mareeba,	4880. Tel 070 92 2888 (BH)
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Doug Carruthers VK5KCC	Elizabeth Amateur Radio Club	PO Box 8, Elizabeth,	5085. Tel 08 287 2868
George Lindop VK5BGL	Port Adelaide Radio Club	28 Dyott Ave, Hampstead Gardens,	5086. Tel 08 261 5910
Peter Watts VK5ZFW	North East Radio Club	18 Bendigo Cres, Modbury,	5092. Tel 08 265 3332 (AH)
Rick Grivell VK5GV	North East Radio Club	43 Lincoln Cres, Pooraka,	5095. Tel 08 262 5152 (AH)
Rob Gunnourie VK5FI	WIA (SA Div) INC	99 Maxwell Rd, Ingle Farm,	5098. Tel 08 264 6581
Charlie McEachern VK5KDK	North East Radio Group	56 Wright Rd, Ingle Farm,	5098. Tel 08 396 1131 (AH)
Carl Minerds VK5CHM	Elizabeth Amateur Radio Club	16 Dale Dve, Paralowie,	5108. Tel 08 283 0304 (AH)
Ron Booth VK5ADQ	Elizabeth Amateur Radio Club	PO Box 8, Elizabeth,	5112. Tel 08 258 6579 (AH)
Ron Martin VK5KOB	Elizabeth Amateur Radio Club	PO Box 8, Elizabeth,	5112. Tel 08 287 2868
Dallas Taylor VK5WA	Elizabeth Amateur Radio Club	PO Box 8, Elizabeth,	5112. Tel 08 259 6166 (BH)
Don Martin VK5AEY	Elizabeth Amateur Radio Club	268 Midway Rd, Elizabeth Downs,	5113. Tel 08 287 1049
Don Wilton VK5KDW	WIA (SA Div) INC	PO Box 40, Littlehampton,	5250. Tel 08 388 6966
Joe Nebl VK5PWC		9 Callington Rd, Strathalbyn,	5255. Tel 085 36 2665
Ivan Huser VK5QV	South East Radio Group Inc	PO Box 1103, Mount Gambier,	5290. Tel 087 25 5514
Trevor Niven VK5NC	South East Radio Group Inc	PO Box 1103, Mount Gambier,	5290. Tel 087 25 5593 (AH)
Kevin O'Rorke VK5QA	South East Radio Group Inc	PO Box 1103, Mount Gambier,	5290. Tel 087 25 3079
Bert Trupp VK5BVN	South East Radio Group Inc	PO Box 1103, Mount Gambier,	5290. Tel 087 24 9826 (AH)
Clive Harman VK5ACH	Riverland Amateur Radio Club	PO Box 628, Renmark,	5341. Tel 085 86 4204
John Ruston VK5ARK	Riverland Amateur Radio Club	PO Box 98, Renmark,	5341. Tel 085 86 6127
Hugh Lloyd VK5BC	Riverland Amateur Radio Club	PO Box 743, Berri,	5343. Tel 085 82 2690
Ron Godden VK5LAG	Goyder TAFE	120 Queen St, Peterborough,	5422. Tel 086 51 2158
Peter Henderson VK5KDX	Goyder TAFE	24 Jervois St, Peterborough,	5422. Tel 086 51 3061
Graham Johnston VK5SU	Mid North Repeater Group	25 Square St, Port Pirie,	5540. Tel 086 32 4122 (BH)
Keith Pettman VK5NAX	Mid North Repeater Group	31 Henry St, Port Pirie,	5540. Tel 086 32 3273 (AH)
Leo Vette VK5SO		36 Ferme St, Port Pirie,	5540. Tel 086 33 0485 (AH)
David Bice VK5QU	Moonta Scout Group ARC	PO Box 133, Moonta,	5558. Tel 088 25 2263
John Wayne VK5BL	Moonta Scout Group ARC	PO Box 133, Moonta,	5558. Tel 088 25 2798
Jack Kleinrahm VK5AJK	Lower Eyre Peninsula ARC Inc	11 Luke St, Port Lincoln,	5606. Tel 086 82 1466 (BH)
John Plevin VK5AEP	Lower Eyre Peninsula ARC Inc	18 Wandana Ave, Port Lincoln,	5606. Tel 086 82 3161
Peter Baker VK5BWI	WHYCOM SA	49 Bastyan Cres, Whyalla Stuart,	5608. Tel 086 45 2460 (BH)
Stuart Crowther VK5BWC	Whyalla Amateur Radio Club	68 Acacia Dve, Whyalla Stuart,	5608. Tel 086 45 4331 (AH)
Alan Gilchrist VK5BWG	Port Augusta ARC	6 Kinnear Street, Port Augusta,	5700. Tel 086 43 6455 (AH)
Peter Horgan VK5BWH	Port Augusta ARC	6 Kinnear Street, Port Augusta,	5700. Tel 086 42 2363 (AH)
Bill Ofler VK5BWO	Port Augusta ARC	6 Kinnear St, Port Augusta,	5700. Tel 086 42 2855 (AH)
Phil Jamieson VK6ZPP	Northern Corridor Radio Group	11 Bromley Place, Kingsley,	6026. Tel 09 409 1156 (AH)
Bryce Erskine VK6KBE	Northern Corridor Radio Group	90 Balga Ave, Balga,	6061. Tel 09 349 9489
Phil Street VK6KS	Northern Corridor Radio Group	PO Box 97, Mirrabooka,	6061. Tel 09 344 5241 (AH)
Rob Lamb VK6VP		10 Butterworth Ave, Koondoola,	6064. Tel 09 247 3009
Des Kinnersley VK6ZJ	Northern Corridor Radio Group	34 Lalina Way, Wanneroo,	6065. Tel 09 405 4215
Dianne Cousins VK6BC		2 Nottingham St, East Victoria Park,	6101. Tel 09 361 3985
Glenn Cousins VK6AUZ		2 Nottingham St, East Victoria Park,	6101. Tel 09 361 3985
Clyde Hillsdon VK6ZCH		3 Youngs Place, Parmelia,	6167. Tel 09 419 5764 (AH)
Pat Haywood VK6PH	Peel Amateur Radio Group Inc	9 Baudin Way, Singleton,	6175. Tel 09 537 1289
Rod Harrod VK6BRH	Peel Amateur Radio Group Inc	PO Box 1010, Mandurah,	6210. Tel 09 535 7178 (AH)

Examiner	Group/Club	Address	Telephone
Rex Hickling VK6SN	Peel Amateur Radio Group Inc	PO Box 1010, Mandurah,	6210. Tel 09 535 7992
Frank Langford VK6BLA	Peel Amateur Radio Group Inc	10 Clipper Way, Halls Head,	6210. Tel 09 581 5028
Rev Suter VK6SA	The Amateur Radio Exam Centre	PO Box 261, Mandurah,	6210. Tel
Con Murphy VK6PM		PO Box 88, Yarloop,	6218. Tel 097 33 1978
Allen Byrne VK6OT	Bunbury Radio Club Inc C/-	PO Box 31, Bunbury,	6230. Tel
Bill Harrison VK6WJH	Bunbury Radio Club Inc	PO Box 31, Bunbury,	6230. Tel 097 34 4374 (AH)
Barry Mitchell VK6HX	Bunbury Radio Club Inc	9 Henley Dve, Bunbury,	6230. Tel 097 91 1599 (AH)
Murray Peacock VK6YD	Bunbury Radio Club Inc	PO Box 31, Bunbury,	6230. Tel 097 21 5442
John Thornborough VK6AJJ	Bunbury Radio Club Inc	PO Box 31, Bunbury,	6230. Tel 097 97 1126
Peter Havord VK6BRN	Southern Electronics Group	PO Box 1491, Albany,	6330. Tel 098 41 8028 (AH)
Bill Hoare VK6YWH	Southern Electronics Group	3 Finlay St, Albany,	6330. Tel 098 41 6315
Aubrey Keightley VK6XY	Southern Electronics Group	242 Serpentine Rd, Albany,	6330. Tel 098 41 3104
Tom Reed VK6TR	Southern Electronics Group	Lot 25 Shellbay Rd, Lower King,	6330. Tel 098 447395
Ron Howrie VK6ANR	Goldfields ARG	PO Box 1281, Kalgoorlie,	6430. Tel 090 91 4457
Alan Ransley VK6AJO	Goldfields ARG	214 McDonald St, Kalgoorlie,	6430. Tel 090 21 7746 (AH)
Keith Gadsby VK6MKG	Esperance ARS	13 Westmacott St, Esperance,	6450. Tel 090 71 2708 (AH)
Allan Juggins VK6QJ	Esperance ARS	PO Box 965, Esperance,	6450. Tel 090 71 3090 (AH)
Graeme Smith VK6ATS	Esperance ARS	12 Young Place, Esperance,	6450. Tel 090 71 2801 (AH)
Peter Zwarecz VK6APZ	Esperance ARS	PO Box 1116, Esperance,	6450. Tel
Bob Hollingshead VK6KI		PO Box 1651, Geraldton,	6530. Tel 099 64 2246 (AH)
Bob Marlow VK6PJ	Geraldton Amateur Radio Club	PO Box 2004, Geraldton,	6530. Tel 099 21 1367 (AH)
Gordon Williams VK6IU		PO Box 259, Northampton,	6535. Tel 099 34 1259
Steve Hill VK6PA	ARS Northwest Australia Inc	PO Box 410, Wickham,	6720. Tel 091 85 4510 (AH)
Dave Holt VK6YA	ARS Northwest Australia Inc	PO Box 410, Wickham,	6720. Tel 091 87 1926
Peter Dowd VK7PR	WIA Tasmanian Division 1	2 Susan Pde, Lenah Valley,	7008. Tel
Andrew Dixon VK7GL	WIA Tasmanian Division	Faulkners Rd, Glenlusk,	7012. Tel 002 39 0249 (AH)
Mike Jenner VK7FB	WIA Tasmanian Division	PO Box 641, Rosny Park,	7018. Tel 018 12 1755
Bill Reid VK7JWR	WIA Tasmanian Division	40 Wentworth St, Bellerive,	7018. Tel 002 44 4089 (AH)
Reg Emmett VK7KK	WIA TAS DIV Southern Branch	PO Box 26, Rokeby,	7019. Tel 002 48 6824 (AH)
Graeme Reardon VK7ZGG	WIA TAS DIV Northern Branch	2 Trent St, Youngtown,	7249. Tel 003 44 6636 (AH)
Bill Bower VK7AV	WIA TAS DIV Northern Branch	40 Amy Rd, Launceston,	7250. Tel 003 44 1584 (AH)
Mike Collinson VK7MA	WIA TAS DIV Northern Branch	PO Box 986, Launceston,	7250. Tel 003 26 0751 (BH)
Barry Hill VK7BE	WIA TAS DIV Northern Branch	611 West Tamar Rd, Riverside Launceston,	7250. Tel 003 27 2096
Gary Hammond VK7KYZ	WIA TAS DIV Northern Branch	PO Box 82, Beaconsfield,	7270. Tel 003 83 1275
Ron Churcher VK7RN	WIA Tasmanian Division	PO Box 277, Devonport,	7310. Tel 004 24 6366 (AH)
Tony Clayton VK7AH	WIA Tasmanian Division	10 Wrenswood Dve, Quoiba,	7310. Tel 004 24 5375 (AH)
David Spicer VK7ZDJ	WIA Tasmanian Division	5A Helen St, Ulverstone,	7315. Tel 004 25 2030
Phil Harbeck VK7PU	WIA Tasmanian Division	14 Kennedy St, Burnie,	7320. Tel 004 31 3020
Clarrie Hilder VK7HC	WIA Tasmanian Division	5 Speed St, Cooeee,	7320. Tel 004 31 8211
Shane Lynd VK7KHZ	WIA Tasmanian Division	14 Read St, Tullah,	7321. Tel 004 73 4256 (AH)
Steve Bush VK7EQ	WIA Tasmanian Division	PO Box 123, Somerset,	7322. Tel 004 35 1043
Dick Van Beek VK7KVB	WIA Tasmanian Division	31 Beech Dve, Rosebery,	7470. Tel 004 73 1693 (AH)

## WIA News

### World Radio Conferences Planned

The World Radiocommunication Conference held last November in Geneva (WRC 93) finalised planning for the next two World radiocommunication conferences which will be held in 1995 and 1997.

According to a release from the International Telecommunications Union, the 1995 WRC is expected to simplify international radio regulation procedures, including new, less complex, processes for coordinating and registering radio frequency assignments. WRC 95 is also expected to look at

frequency bands for satellite mobile communications services as a follow-up to the decisions made at WARC 92 (the last of the old World Administrative Radio Conferences held every decade or so).

The bi-annual conferences are expected to speed up decisions as technologies and market pressures drive changes in radio communications. This will mean more work for radio amateur organisations in having a say in international radiocommunication regulations.

The draft agenda for WRC 95 includes a look at alternatives to

the way in which radio spectrum is allocated, review technical constraints associated with allocations for mobile satellite services below 3 GHz to facilitate using those bands (which will likely bring some pressure on UHF amateur allocations below 3 GHz) and the use of HF bands newly allocated to broadcasting, among other things.

The provisional draft agenda for WRC 97 includes such items as examining spurious emission issues, wind profiler radars, the use of HF bands allocated to broadcasting and various satellite service matters.

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# Stolen Equipment Register

The Stolen Equipment Register is one of many services offered to members by the WIA. It has been in operation since 1980, and is maintained on a computer database in the Federal Office.

Members wanting to take advantage of the Register, either to publicise the theft of their equipment, or to check equipment they are about to purchase, may write, fax, or telephone the Federal Office.

Any telephone reports of stolen equipment **MUST** be followed by written confirmation of the details.

For maximum efficiency, these details should include Manufacturer's name, model, type of equipment, serial number, date stolen, owner's name, address and callsign, any distinguishing features or modifications and the police contact (if any).

When equipment is recovered it is important that you advise the Federal Office as soon as practicable.

The following list is the most up-to-date information available at the time of going to press, but is based entirely on information received from you, the member. Would all members please check this list and immediately advise if there are any amendments.

Only those items stolen in the past five years are included in this list.

Manufacturer	Model	Description	Serial Number	Owner	Date Stolen	Comment
AEA	PAKRATT	MULTIMODE TNC	19092	VK3XBE	28.07.91	
ALINCO	ALD24T	2M/70CM MOBILE RIG	10107310	VK2TPH	21.01.91	DIPLEXER FITTED 2 ANTENNA CABLES
	DJ-100T	H/HELD & RD ANTENNA	0005049	VK2KIQ	17.10.93	CALLSIGN PAINTED ON BODY
	DR112T	2M FT TRANSCEIVER	0006697	VK1DA	13.09.93	PART OF MOUNT BRACKET & MICROPH
AMSTRAD	PC700	LAPTOP COMPUTER	532-872380	VK5ALE	16.04.92	ENGRAVED LEPARC OR VK5ALE
BELCON	LS-202E	2M M/MODE H/HELD	401992	VK3YYD	07.11.90	
BWD	804	DC-10MHZ SCOPE	51767	VK2ZQW	11.01.90	-
CHIRNSIDE		5 MOB HF ANTENNAS		VK3AMM	26.03.92	
COMMODORE	1541 II	DISK DRIVE		VK5ALE	03.04.91	ENGRAVED L.E.P.A.R.C.
	64	COMPUTER		VK5ALE	03.04.91	ENGRAVED L.E.P.A.R.C.
DAIWA	2M 70 CM	CROSSNEEDLE SWR MTR		VK3XBE	28.07.91	
	CN-620A	SWR/POWER METER	-	VK2DQP	16.09.91	
	CNW-419	ANTENNA TUNER		VK3XBE	28.07.91	
DICK SMITH		2M 5/8 MOBILE WHIP		VK3AMM	26.03.92	
	T-2000	SOLDERING STATION	-	VK2DQP	16.09.91	
DRAKE	TR-7	HF TRANSCEIVER	2333	VK2AML	16.05.90	OWNERS NAMES ENGRAVED
EMTRONICS		NOISE BRIDGE	EM342	VK4AAE	27.10.89	-
FDK	MULTI 7	2M TRANSCEIVER		VK5XY	06.03.92	ENGRAVED D/LICENCE S 415 265 O
GCOL	GV-16	2 M FM HANDHELD		VK3JDO	17.11.89	WITH ANTENNA
GME	TX472S	40 CH UHF T/CEIVER	912 48058	VK3KLF	14.06.90	-
	TX472S	40 CH UHF T/CEIVER	006-62229	VK7GO	15.02.93	NO DISTINGUISHING FEATURES
	TX830	40 CH AM CB	8770556	VK4IS	15.08.90	-
GOODWILL	GFC8055F	DIGITAL FREQ COUNTER	2020452	VK2IT	07.08.91	
HOME BREW	-	ANTENNA TUNING UNIT	-	VK2DQP	16.09.91	
	-	ELECTRON MORSE KEYS	-	VK2DQP	16.09.91	
Homebrew		6M 60W LINEAR AMP		VK3AMM	26.03.92	
ICOM	2410H	MOBILE RADIO	2668	STEWART ELEC	25.04.92	
	2SAT	HAND HELD	1367	STEWART ELEC	25.04.92	
	2SRA	HAND HELD	3299	STEWART ELEC	25.04.92	
	735	MULTI-MODE HF RADIO	38065	STEWART ELEC	25.04.92	
	HM4G	SPEAKER MIC	-	VK5ZGB	16.12.89	-
	IC02A	2 M FM HANDHELD	29906249	VK5ZGB	16.12.89	-
	IC02A	2M FM HANDHELD	23186	VK2FZH	09.06.89	WITH BP3 AND BC25E
	IC02AT	2 M HAND HELD	406070630	VK2OG	08.10.91	
	IC044	70 CM FM HANDHELD	-	VK5ZGB	16.12.89	-
	IC1271A		001398	VK3XBE	28.07.91	
	IC211	2 M TRANSCEIVER	-	VK2IT	07.08.91	WITH MICROPHONE
	IC22	2M FM TRANSCEIVER	12467	VK1TR	06.02.90	NO POWER PLUG/DIAL LAMP UNUSUAL
	IC22	2M FM TRANSCEIVER	10918	VK3XD	08.02.90	-
	IC225	2M MOBILE	62015291	VK5ZFW	30.08.93	SLIGHT HUM IN BACKGROUND
	IC22S	2M FM TRANSCEIVER	15674	VK2CIB	11.02.89	-
	IC255A	VHF TRANSCEIVER	10308425	VK3KLF	14.06.90	-
	IC271A	2M ALL MODE TRCVER	27402603	VK3XBE	28.07.91	
	IC27H	2M MOBILE TRANSCEIV		VK2KFK	20.04.93	REAR HEATSINK BROKEN/EPOXIED
	IC290A	ALL MODE TRANSCEIVER	001532	VK3YFA	01.11.90	-
	IC2GAT	2M FM HANDHELD	08616	VK3JDO	17.11.89	WITH BP70, BC36, BPSA X 2
	IC471A	70 CM TRANSCEIVER	20801900	VK3XBE	28.07.91	
	IC560	6M TRANSCEIVER	01153	VK3MT	01.02.90	ENGRAVED SECURITY NO. T-00510
	IC560	6 M TRANSCEIVER	02057	VK2IT	07.08.91	WITH MICROPHONE
	IC701	HF TRANSCEIVER	02318	VK5ALE	16.04.92	ENGRAVED LEPARC OR VK5ALE
	IC721	HF TRANSCEIVER	003663	A. WOJNAR	02.07.90	TRANSCEIVES ALL RFDS FREQUENCIES
	IC730 HF	TRANSCEIVER	13814689	VK3MT VK3COT	05.11.92	DC POWER CORD NOT TAKEN
	IC735	HF TRANSCEIVER	#06196	RMIT	06.12.92	ENGRAVED HEATSINK & TOP COVER



Manufacturer	Model	Description	Serial Number	Owner	Date Stolen	Comment
STC	MT36	SWR BRIDGE		VK2RDX	27.05.91	
	MTR25 191B	VHF TRANSCEIVER		VK2RDX	27.05.91	CTCSS AND TIMER UNITS FITTED
	MTR25 191D	UHF TRANSCEIVER		VK2RDX	27.05.91	CTCSS AND TIMER UNITS FITTED
SWAN	MB40	40 M MOBILE TCEIVER	16471	VK2IT	07.08.91	
TELEQUIPT	551	OSCILLOSCOPE		VK4AAE	27.10.89	—
TONO	THETA 550	KEYBOARD TERMINAL	821485	VK3XBE	28.07.91	
UNIDEN	PC122	SSB/AM CB TRANSCEIVR	NOT KNOWN	VK3HY	23.04.92	PHILIPS MICROPHONE
VIBROPLEX	—	MORSE KEY	—	VK2DQP	16.09.91	
WELZ	—	SWR/POWER METER	—	VK2AZI	16.12.92	
YAESU	FC 700	A T U	4J090473	VK5ALE	16.04.92	ENGRAVED LEPARC OR VK5ALE
	FC700	ANTENNA TUNER		VK2NVS	16.12.93	LIC NO N674522 ON BACK
	FC707	ANTENNA TUNER	1L170086	VK2CFC	06.09.91	
	FC707	ANTENNA TUNER	1N180265	VK4AAE	27.10.89	—
	FP700	POWER SUPPLY	3C-020584	VK4BWG	11.03.92	
	FP707	POWER SUPPLY	1L150596	VK2CFC	06.09.91	
	FP707	POWER SUPPLY	4C050487	VK4AAE	27.10.89	—
	FRG7	HF RECEIVER	8HH210862	VK2IT	07.08.91	
	FRG7700	RECEIVER	3M260983	VK2XPU	01.08.89	—
	FRG9600	SCANNING RECEIVER	5 N 120767	DICK SMITH	01.11.91	STOLEN FROM BENDIGO VIC STORE
	FT-280R	2M TRANSCEIVER	2F22898	VK3XCE	05.10.92	
	FT101B	HF TRANSCEIVER	320376	VK2IT	07.08.91	WITH DESK MICROPHONE
	FT101E	HF TRANSCEIVER	8J361432	VK2DQP	16.09.91	
	FT101E	HF TRANSCEIVER	7K/301042	VK5EZ	08.07.89	—
	FT102	HF TRANSCEIVER	3K090835	VK2FLM	23.12.90	ENGRAVED NO B62075 YM-36 MIC
	FT208R	2M FM HANDHELD	4E382078	VK2PJ	29.03.89	FAULTY VCO
	FT208R	2M HANDHELD TRCVR		VK3XBE	28.07.91	
	FT209RH	2M FM HANDHELD	6E-260229	VK4BWG	11.03.92	FNB4 & FBA10 BATTERY PACKS
	FT209RH	2M FM HANDHELD	NOT KNOWN	VK6KAD	08.02.93	BROKEN BATTERY RETAINING CLIP
	FT211RH	2 M MOBILE TX	8M180306	VK2UP	09.07.92	FROM MOTEL HURSTVILLE
	FT212RH	2 M TRANSCEIVER	1C630020	VK2XMM	01.07.91	
	FT230R	2M FM TRANSCEIVER	2M120897	VK2JCC	10.02.93	
	FT23R	2M FM HANDHELD	OD071763	DSE BOX HILL	18.09.91	
	FT2700RH	VHF/UHF TRANSCEIVER	5L121354	VK2AGB	28.05.92	
	FT290R	2M FM TRANSCEIVER SF	280702	VK4AAE	27.10.89	COMPLETE WITH NICADS
	FT290R11	2M FM TRANSCEIVER	8G130128	VK3YNB	04.06.92	WITH BATTERY BOX
	FT290RII	2M FM TRANSCEIVER	9F240010	VK2BVR	10.03.93	
	FT415	2 METRE HAND HELD	2I 172773	DICK SMITH	05.05.93	
	FT415	2 METRE HAND HELD	2I 173633	DICK SMITH	05.05.93	
	FT470	DUAL BAND HAND HELD	9L150788	DICK SMITH	31.08.90	STOLEN FROM BOURKE ST MELB STORE
	FT470	DUAL BAND HAND HELD	1 K 430817	D SMITH ELEC	31.12.92	
	FT4700RH	VHF/UHF TRANSCEIVER	9C212240	VK3EMJ	16.07.91	NO MICROPHONE OR POWER LEAD
	FT7	HF TRANSCEIVER		VK5XY	06.03.92	ENGRAVED D/LICENCE S 415 265 O
	FT7	HF TRANSCEIVER	—	VK2PRK	25.07.91	ID "NSW 718610" ENGRAVED ON BACK
	FT707	HF TRANSCEIVER	0G030440	VK3AMM	26.03.92	
	FT707	HF TRANSCEIVER	—	VK4AAE	27.10.89	—
	FT708R	70CMS FM HANDHELD	2J181463	VK2PJ	29.03.89	—
	FT712	UHF TRANSCEIVER	81120576	GOULBURN ARC	27.11.92	
	FT757	HF TRANSCEIVER	4E-071058	VK4BWG	11.03.92	
	FT757GX	HF TRANSCEIVER	4J121785	VK2CFC	06.09.91	RF AMP NOISY — REQUIRES SERVICE
	FT757GX II	HF TRANSCEIVER	1L590102	DICK SMITH E	13.05.92	STOLEN FROM PARRAMATTA STORE
	FTV707	6M TRANSVERTER	1H010331	VK3AMM	26.03.92	
	FV707DM	EXTERNAL DIGITAL VFO	0L060097	VK4AAE	27.10.89	—
	SP4	EXTENSION		VK2AZI	16.12.92	—
	YC355D	200MHZ FREQ COUNTER	—	VK2ZQW	11.01.90	—
	YM24A	MIC/SPEAKER		VK3XCE	05.10.92	
	YP150	DUMMY LOAD/PWR METER		VK3XBE	28.07.91	

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## WIA News

### Federal Council Matters

The next quarterly meeting of the Federal WIA Council and Board is scheduled to be held on the weekend of 19-20 February. A topical item of interest on the agenda will be the first report of the Board subcommittee appointed to

examine issues relating to the publication of *Amateur Radio* magazine.

David Wardlaw VK3ADW attended a seminar on "Access to the Spectrum and the New Radiocommunications Act" last

November. The IREE's Communications Conference 93, which was to be attended by one Board director, was cancelled at the last minute. The IREE cited poor registrations as the reason for cancelling.



# WIA Videotape Library

c/- Bob Godfrey VK4BOB

20 Buckra Street, Bracken Ridge, QLD 4017

Phone (07) 269 5380 — home

Now every radio club can provide its members with quality technical lectures on subjects covering the whole range of Amateur Radio activities by taking advantage of the WIA Federal Videotape Library. You'll find this a boon particularly if yours is a country club which often has difficulty obtaining a variety of expert lecturers for its regular meetings. (Individual Amateurs and Librarians should take note of the duplication fees at the end of this article.)

For radio clubs affiliated with the WIA it's inexpensive and easy. Here's how it works. For those titles which the WIA has placed in the public domain, all you have to do is supply the WIA Video Co-ordinator (address above) with...

- a list of requested titles,
- a blank video cassette,
- a "VCB" Postpak,
- and enclose your address and stamps for return postage.

The program is then free for your use in the support of amateur radio in your area, including duplication and transmission over Amateur Television if you wish.

Those programs which are copyright are indicated by the C symbol and are available only ON LOAN. To obtain any Loan Item supply the WIA Video Co-ordinator (address above) with...

- your requested title,
- information about your preferred VCR format,
- enclose your address and stamps for postage to you,
- and a statement signed by a responsible member of your club that "I undertake that while (program title) is assigned to me, I will not allow it to be copied or transmitted by any means whatsoever, and that I will return the same promptly after showing".

Note: the WIA does not hold a licence from the copyright owners of certain titles; therefore no loan or copy service is available for those so marked; they are held for WIA Archive purposes only.

The present "preferred VCR format" is Standard Play VHS. For estimation of postage, a 3 hour VHS cassette measures 200x100x30 mm and weighs 350 gm.

**New Air-Mail Postal Regulations.** To avoid disappointment by lack of arrival of late-minute requests, this important change in Postal Regulations should be allowed for by Club Activity Organisers. All packages being sent by Airmail *MUST* now carry a declaration sticker certifying that the contents are not dangerous or prohibited. For items weighing less than 500 gm. (ie one VHS cassette) pink stickers are obtainable from any Post Office. Items weighing

more than 500 gm can only be posted at an official Australia Post Office and a complete declaration of contents must be made. Any item not carrying the correct sticker will not be transported by air, regardless of whether the correct value of stamps for Air Mail have been affixed.

**A note to individual amateurs.** From the inception of the WIA Federal Video Service cassettes were freely available to all comers. However, in order to stem the rising tide of requests for copies of programs from individual amateurs (some of whom asked for over 10 hours of programs at a time) there is now a duplication fee (payable in advance) of \$2 per hour or part thereof to individuals. Isolated or disadvantaged individual amateurs will however continue to receive free concession.

**A note to librarians.** A number of educational institutions have already availed themselves of the of the WIA technical lecture tapes. A duplication fee of \$10 per hour or part thereof is payable in advance by all institutions not affiliated to the WIA.

**A note regarding cassette quality.** The WIA Videotape Co-ordinator reserves the right to refuse to copy onto inferior quality video tape. Video dubbing is a real-time, one-at-a-time operation and in the past low quality tape has been the cause of many lost hours due to clogged heads, etc. Libel laws prevent publication of a list of manufacturers of suspect tape, however, most of the well known brand names are acceptable; in particular use only those tapes bearing the official "VHS" logo.

**Finally a note to all radio clubs.** No new titles have been added to the library during the last 12 months. Has your club video taped any interesting lectures that would be of interest to other amateurs? If so, please contact me at the above address so that I can arrange for a suitable copy to add to the library.

## WIA Videotape Program Title Listing as of 1/1/94

NOTE  
 "c" = Copyright; no copy service  
 "\*" = Optically Converted to PAL from NTSC by WB2LLB; noticeable flicker.  
 "w" = available ONLY to Radio Clubs Affiliated with the WIA as per agreement with OTC  
 "o" = program now out of date  
 Standard Format: "VHS" Standard Play.

See Note	Title	Lecturer	Producer	Approx Duration	COL/BW	Year Produced	Description
<b>Amateur Radio — Historic Interest</b>							
c	Wireless Telegraphy -circa 1910		?	10mins	B&W	1910	Archive material courtesy David Wardlaw VK3ADW
c	Amateur Radio — TV Pilot		WIA NSW	30mins	B&W	1968	Archive material courtesy TEN channel 10
—	Opening of Burley Griffen Bldg SA HQ		VK5KG	45mins	Col	1977	Archive material
—	ATV in Australia 1978 made for British ATV Club		VK5KG	30mins	Col	1978	Archive material
—	ATV in United Kingdom 1978 reply from BATC		G8CJS	30mins	Col	1978	Archive material
—	ATV in Australia 1980/81 Made for British ATV Club		VK5KG	60mins	Col	1980	Clips from ATV Groups in VKs 2,3,4,5 & 7
—	History of ATV in South Australia		VK5KG	30mins	Col	1980	Archive material, still building
—	ATV in United Kingdom 1978/81		G8CJS	30mins	Col	1981	Remake of their previous effort
o*	CQ ATV DX International 1983		WB2LLB	60mins	Col	1983	ATV in USA and Europe
—	High Definition TV Tutorial	Don Fink	WB2LLB	60mins	B&W	1983	A look at what is to come in Broadcast TV
—	ATV Hamfest, York Pennsylvania Sept.'83	Various	WB2LLB	6hrs	Col	1983	Various ATV technical lectures from USA

See Note	Title	Lecturer	Producer	Approx Duration	COL/BW	Year Produced	Description
—	Opening of Amateur Radio House — NSW HQ		VK2BDN	102mins	Col	1983	Archive material
—	ATV in Victoria, 1984		VK3AHJ	54mins	Col	1984	Courtesy of "The Roadshow Gang"
c	"Journey to the White Volcano" The Heard Island Dxpediton				Col	1983	
c	Heard Island Dxpediton		ch 2,7,9,10	20mins	Col	1984	Archive material; NO LOAN OR COPY AVAILABLE
—	Keynote speeches by Fed Pres David Wardlaw & State DOC Manager John Milton		WIA NSW	135mins	Col	1985	From WIA 75th Anniversary Seminar
—	Heard Island Dxpediton	VK2BCC	WIA NSW	60mins	Col	1986	Raw Unedited; from 1986 VK2 Seminar
<b>Amateur Radio — Promotional</b>							
o	The Ham's Wide World		ARRL	27mins	Col	1969	Superseded by "The World of Amateur Radio"
—	This is Amateur Radio		ARRL	15mins	Col	1970	Pitched at teenagers
—	Moving Up to Amateur Radio		ARRL	11mins	Col	1975	Pitched at CBers
c	7J1RL DXpedition		JARL	60mins	Col	1976	General Amateur Radio interest; LOAN ONLY
—	This Week has 7 Days looks into Amateur Radio		HSV7	25mins	Col	1978	Pitched at teens; includes some ARRL footage.
o	The World of Amateur Radio		ARRL	26mins	Col	1978	Superseded by "The New World of Amateur Radio".
—	Amateur Radio — The National Resource of Every Nation		VK5KG	6mins	Col	1979	Encapsulates AR; good for public exhibitions
—	Amateur Radio — The National Resource of Every Nation		VK5KG	60mins	Col	1979	Continuously running version available ON LOAN
—	The New World of Amateur Radio		ARRL	28mins	Col	1988	Supersedes "The World of Amateur Radio"
<b>Antennas</b>							
c	G6CJ's Aerial Circus	G6CJ	WIA	90mins	B&W	1977	THE Definitive Antenna Lecture; LOAN ONLY
—	Wire Antennas	VK5RG	VK5KG	40mins	B&W	1978	Antennas for HF and Antenna Tuners
—	Loaded Wire Antennas	VK5NN	VK5KG	50mins	Col	1980	Using Inductive and Capacity loaded Antennas
w	Antennas and Directivity	VK2BBF	OTC	73mins	Col	1985	Lecture given to a group of Radio Amateurs
—	Antenna Rotator Systems	VK5AIM	VK5KG	50mins	Col	1986	Servicing the several different types
—	Broadband Antennas	VK5RG	VK5KG	62mins	Col	1986	Includes terminated antennas
<b>ATV — Activity</b>							
—	ATV Item from UK (via Doug VK6ER)				Col	1984	Unedited clips
—	Hello from America!						
—	Made for British ATV Club'		WB0-QCD	100min	Col	1988	Clips from ATV Groups in the USA
—	VK5 ATV Call-in		VK5ZBD		Col	1990	Made for VK4XRL who had recently visited
<b>ATV — General Interest</b>							
—	Low Definition Television	Chris Long	VK5KG	25mins	Col	1982	Re-creation of TV as transmitted by Baird.
—	Model Aero-Nautical Mobile ATV	VK5GO	VK5KG	6mins	Col	1983	ATV camera & TX mounted in a model aeroplane.
—	VK5RCN — Aust.'s first wind powered ATV repeater.	VK5KAU	VK5KG	61mins	Col	1986	Tour of VK5RCN by Barrey Bryant (silent key).
—	Australian TV History The Untold Story	Chris Long	VK5KG	56mins	Col	1988	Lecture to Radio Amateurs Old Timers Club.
—	Australian TV History — Part 2	Chris Long	VK5KG	49mins	Col	1988	Technical slides not used in the above.
—	The Development of the TV Test Card	George Hersee	G8PTH	43mins	Col	1988	Made for BATC by the BBC Training Dept.
—	TV for Amateurs		BATC	19mins	Col	1990	Excellent introduction to ATV
—	The first nation-wide ATV AUSSAT TV	Gladesville ARC	2hours		Col	1990	Noisy off-satellite but interesting.

See Note	Title	Lecturer	Producer	Approx Duration	COL/BW	Year Produced	Description
<b>ATV — Technical</b>							
o	The Signal to Noise Story	VK3ATY	VK3AHJ	45mins	Col	1982	Superseded by "UHF Pre-amplifiers" (below).
—	UHF Preamplifiers	VK3ATY	VK3AHJ	45mins	Col	1983	Explanation and demo. of low noise preamps.
—	Getting Started in Amateur Television	VK5KTV	VK5KG	55mins	Col	1983	How to set up an ATV station
—	Testing ATV Transmitters	VK5KG	VK5KG	50mins	Col	1983	How to correctly measure ATV systems.
<b>Computers</b>							
—	Demo. of VK5RTV's Micro-Computer Controller #1	VK5KG	VK5KG	10mins	Col	1979	First u-Computer controlled repeater in VK.
o	Understanding Micro-Processors	VK5PE	VK5KG	60mins	Col	1980	A somewhat dated technical description.
o	An ATV Hamshack Micro-Computer	VK3AHJ	VK3AHJ	10mins	Col	1981	Describes now unavailable microcomputer kit.
—	Getting Started in Amateur Micro-Computers	VK5IF	VK5KG	33mins	Col	1983	Demo of hard & software for Amateur Radio.
<b>Data Transmission</b>							
—	Getting Started in Amateur RTTY	VK5JM	VK5KG	85mins	Col	1983	RTTY using teleprinters and Micro-Computers.
—	Amateur Packet Radio	VK5AGR	VK5KG	60mins	Col	1984	Theory and Demonstration.
—	Packet Radio				Col	1984	From WIA Seminar
—	Lecture by Jim Swetlikoe Packet Radio — 10 months on	VK2KYJ VK2AAB	WIA NSW	65mins	Col	1985	Raw Unedited; from 75 aniv. VK2 Seminar.
w	X25 Protocols and Packet Switching	VK2ZXB	OTC	47mins	Col	1986	Lecture given to a group of Radio Amateurs.
New	Amateur Satellites and Packet Radio	VK5AGR	Gladesville ARC	130 mins	Col	1989	
<b>Microwave Techniques</b>							
—	Introducing Microwaves	VK5ZO	PJ Video	74mins	Col	1988	Des Clift gives a "Nuts & Bolts" expert technical lecture
<b>Propagation</b>							
—	Getting Started in Understanding the Ionosphere	VK5NX	VK5ZBD	50mins	Col	1983	How the Ionosphere aids HF communication
—	Moonbounce EME				Col	1984	From WIA Seminar
—	lecture by Lyle Patison VHF Signal Enhancement by Aircraft	VK2ALU VK2ZAB	WIA NSW	70mins	Col	1986	Raw Unedited; from 1986 VK2 Seminar
New	HF DX Seminar with Iris & Lloyd Colvin		Gladesville ARC	74 mins	Col	1990	
<b>Satellites</b>							
o	Getting Started in Amateur Satellites	VK5HI &	VK5KG VK5AGR	60mins	Col	1983	Superseded (see below)
o	An Introduction to Amateur Satellites (Pt 1)	VK5AGR	VK5KG	60mins	Col	1984	An overview of Amateur Satellite working
o	Micro-Computer Aids to Satellite Tracking (Pt 2)	VK5AGR	VK5KG	30mins	Col	1984	Programs for tracking & decoding telemetry
—	Using Phase III Amateur Satellites	VK5HI	VK5KG	90mins	Col	1984	History, construction & use of high orbit satellites.
—	The Amsat Oscar Phase 3 Story	DJ4ZC	VK5KG	80mins	Col	1985	Dr. Karl Meinzer "The Father of Oscar" includes film of launch.
—	Antennas for Satellites		WIA NSW	75mins	Col	1986	Raw Unedited; from Dr Trevor Bird's 1986 VK2 Seminar
New	Amateur Satellite Service What it has to offer	VK5AGR	Gladesville ARC	190 mins	Col	1989	
New	Amsat Ground Control What is involved	VK5AGR	Gladesville ARC	130mins	Col	1989	
<b>Space — General Interest</b>							
—	Apollo 13 Disaster	VK5JM	VK5KG	90mins	Col	1980	Australian tracking procedure saved Apollo 13
o	SSTV Pictures from Space — Voyager		VK5KG	15mins	Col	1983	SSTV pix converted from Saturn fly past
—	Aussat — Australia's Domestic Communications Satellite	VK5JM	VK5KG	62mins	Col	1984	Technical description of services offered

See Note	Title	Lecturer	Producer	Approx Duration	COL/BW	Year Produced	Description
—	Amateur Radio's Newest Frontier		ARRL	26mins	Col	1985	Amateur Radio in Space; General PR.
—	Working W5LFL in orbit from VK1ORR	Richard Elliot		23mins	Col	1986	Raw Unedited actuality footage
<b>Miscellaneous</b>							
—	An Auxiliary Battery Charger	VK5NX	VK5KG	30mins	Col	1981	Charging a second mobile battery
—	Lecture — Winning Foxhunts	VK5TV	VK5KG	45mins	Col	1981	How to do it from one who has!
—	Getting Started in Amateur Construction	VK5AIM	VK5KG	50mins	Col	1983	Mechanical hints for novice constructors
—	The Communications. Consequences of Nuclear War	Dr John Coulter	VK5ZBD	60mins	Col	1983	Why your gear may not survive even if you do!
—	The Far Eastern Broadcasting Company		VK5KG	60mins	Col	1984	How a Short Wave Broadcaster operates
—	The Australian "Over the Horizon Radar"	Dr Phil Whitham	VK5KG	60mins	Col	1984	How the "Australian Woodpecker" works
—	What to Expect when the RI Calls!		VK5KG	34mins	Col	1984	by Geof Carter — a Dept of Communications Field Officer
—	A Future Shock — Lecture by Roger Harrison				Col	1984	From WIA Seminar
—	Radio Comm. Act — Lecture by Colin Oliver				Col	1984	From WIA Seminar
—	Doppler Direction Finding for Foxhunters	VK2BYY	WIA NSW	43mins	Col	1985	Raw Unedited; from 75 aniv VK2 Seminar
w	Fitting BNC Connectors		OTC	7mins	Col	1985	Correct Assembly of Crimp type BNC plugs
w	Handling Static Sensitive PCBs	Paul Tardent	OTC	6mins	Col	1986	Improving reliability of Printed Ccts.
—	Extra License Grades	VK2ZTB	WIA NSW	70mins	Col	1986	Raw Unedited; from 1986 VK2 Seminar
—	Thick Film Modules	VK5DI	VK5KG	45mins	Col	1988	Description of modules available from VK5 WIA
—	Quartz Crystals	VK5GL	VK5GL	106min	Col	1988	Clem Tilbrook gives a "Nuts & Bolts" expert technical lecture
New	How to survive in a Dog Pile	VK2DEJ	Gladesville ARC	148 mins	Col	1989	
New	Making Friends on DX	VK2SG	Gladesville ARC	28 mins	Col	1990	

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## WIA News

### IARU Memberships

The Ukrainian Amateur Radio League (UARL) has applied for International Amateur Radio Union (IARU) membership after registering with the Ukrainian Justice Ministry in September last. According to UARL President Nikolai Gostry UB5UT, the UARL is the first amateur radio organisation to be recognised in the independent Ukraine, formerly part of the now disbanded USSR.

The IARU Region 1 Executive Committee has passed the UARL's membership application as complying with the bylaws and the membership is to be considered by other IARU member societies around the world, including the Federal WIA.

Meanwhile, the *Cesky Radioklub* (CRK) and the *Slovak Amateur*

*Radio Association* (SARA), representing the Czech and Slovak Republics, have become members of the IARU, along with the *Anguilla Amateur Radio Society*, representing Anguilla. The Federal WIA voted last year in support of all three memberships.

### Arthur Milne G2MI Silent Key

Former RSGB President and well-known amateur on the international scene, Arthur Milne G2MI, died on 6 October 1993, according to a December bulletin from the *Radio Society of Great Britain*. His obituary was published in the December issue of the RSGB's journal, *Radio Communication*.

Arthur was born in 1907 in Croydon, Surrey. Licensed in 1924, he was employed with the British Post Office Telephones until his retirement in 1968. He was a member of the RSGB Council for more than 30 years. He looked after the QSL Bureau for well over 40 years, run from his home in Bromley, Kent, assisted by his wife, Lucy. Handling over one million cards a year the Post Office even gave him his own Post Code!

Arthur held many certificates and awards and was a member of the A1 Ops Club, RAOTA and the RAIBC, among many other organisations. Apart from amateur radio, he had interests in lepidoptera, church architecture, steam railway engines, trams and airships. His obituary was written by his son, Geoffrey Milne G3UMI.

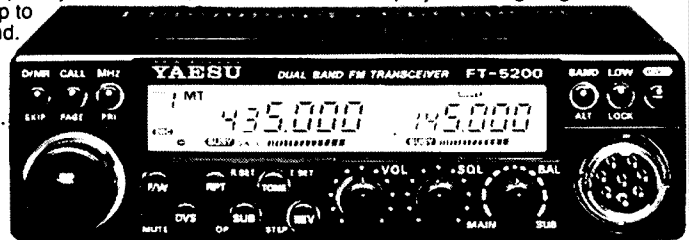
# DICK SMITH ELECTRONICS



## Get Your Hands On A Top-Quality Transceiver!

### FT-5200 2m/70cm Mobile Transceiver

The FT-5200 carries the latest innovations in cross-band full-duplex and detachable front-panel design for brilliant mobile performance. It has 32 tuneable memories, a built-in antenna duplexer, dual full-frequency LCD screen, 8-level automatic display/button lighting dimmer and dual external speaker jacks. A thermally-activated fan allows up to 50 watts output on the 2-meter band and 35 watts on the 70cm band. Plus, scanning features include programmable scan limits, selectable scan resume modes, memory skip, priority monitoring, one-touch recall CALL channels, and 6 user-selectable channel steps. Comes with hand-mic, mounting bracket and DC power lead.



#### Specifications:

**General**  
 Frequency range: 144-148MHz, 430-450MHz  
 Channel steps: 5, 10, 12.5, 15, 20 & 25kHz  
 Dimensions: 140 x 40 x 155mm (w/o knobs)  
**Receiver**  
 Sensitivity: Better than 0.158uV (12dB SINAD)  
 Maximum AF output: 3.0W into 4 ohms @ 5% THD

**Transmitter**  
 RF Output Power: 2m - 50/5W (high/low)  
 70cm - 35/5W (high/low)

Cat D-3310

2 Year Warranty

**\$1499**

#### YSK-1 Remote Panel Kit

Allows remote mounting of the FT-5200 front panel.  
 Cat D-3311

**\$9995**

### Yaesu FT-530 2m/70cm Hand-Held

A deluxe 2m/70cm FM dual-band hand-held transceiver offering easier operation and more features than ever before! The FT-530 provides a flexible dual receiver facility with separate volume and squelch controls, allowing you to listen on two frequencies in the same band, or one frequency on both bands! Plus, the exclusive Australian version features full 70cm coverage (420-450MHz), Auto Repeater Shift on 2m and 70cm (Australian band plan), and extended receiver coverage as standard. Two VFOs and 41 tuneable memories per band are provided, together with keypad or dial frequency entry, seven tuning steps and a one-touch CALL channel. The dual 5.5-digit back-lit LCD screen includes functional indicators plus separate signal/P.O. bargraphs for both receivers. An LCD voltmeter is provided so you can even monitor your battery's performance under load and estimate remaining battery life.

Other top features include: Inbuilt dual CTCSS encode/decode, CTCSS scanning, an auto battery saver for extended battery life, a cross-band repeater facility and an inbuilt clock with alarm and snooze functions. Also provided is VOX circuitry for use with the optional YH-2 headset, a user-replaceable Lithium back-up battery, and DTMF selective calling and paging. A DC supply jack allows transceiver powering and NiCad charging, with RF output in four steps up to 5W at 12V. For enhanced battery life, an auto power-off function turns the radio off after a preset period of inactivity, so you won't return to a flat battery. The FT-530 comes complete with a high-capacity 1000mAh NiCad battery, belt clip, carry case and approved AC charger.

Cat D-3620

2-Year Warranty

**\$999**

#### Specifications

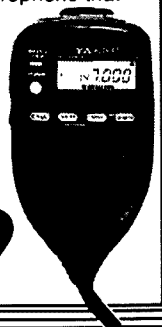
Frequency range: Transmit 144-148MHz, 420-450MHz  
 Receive 130-174MHz, 420-500MHz, 800-950MHz  
 Current consumption:  
 Auto power off: 150uA  
 Standby (saver on): 16.8mA (both bands)  
 Dimensions: 55(W) x 163(H) x 35mm (D)  
**Transmitter:**  
 Power Output: 5, 3, 1.5, 0.5 (at 12V)  
 RF Power Output: 2.0W (2m)  
 (With 7.2V NiCad) 1.5W (70cm)  
**Receiver:**  
 Sensitivity: 2m: < 0.158uV  
 (12dB SINAD) 70cm: < 0.18uV  
 Audio Output (12V): 300mW at 8 ohms



### MH-29A2B Remote Control Mic.

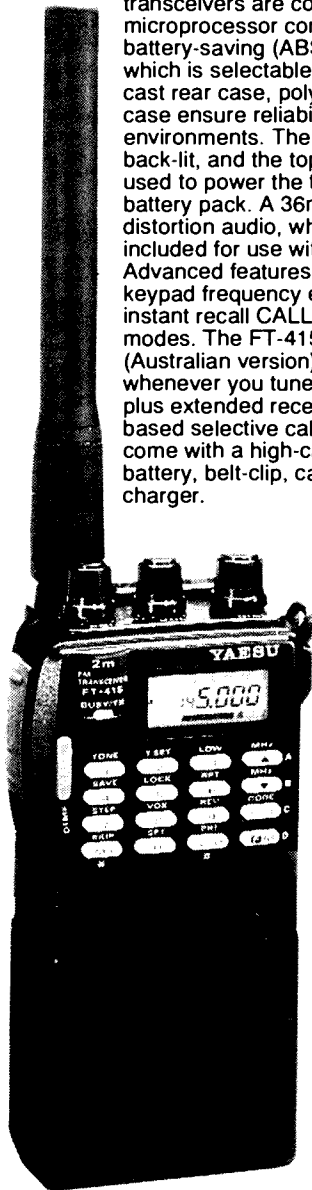
A compact speaker/microphone that provides a remote LCD screen with backlighting! Has duplicate keys for Call channel, VFO and memory selection, plus busy/Tx LED. Suits FT-530 only.  
 Cat D-2119

**\$199**



# Deluxe Handheld FM Transceivers

The superb FT-415 and FT-815 hand-held FM transceivers are compact and rugged with dual-microprocessor control, a range of new automatic battery-saving (ABS) features and power output which is selectable in up to 4 levels at 12V. A die-cast rear case, polycarbonate front panel and battery case ensure reliability in the most demanding of environments. The display and keypad can both be back-lit, and the top panel DC supply jack can be used to power the transceiver and charge a NiCad battery pack. A 36mm speaker provides low distortion audio, while in-built VOX circuitry is included for use with the optional YH-2 headset. Advanced features include two independent VFOs, keypad frequency entry, 41 tunable memories, instant recall CALL channel and various scanning modes. The FT-415 has Automatic Repeater Shift (Australian version), which can be activated whenever you tune to a standard repeater sub-band, plus extended receive coverage. Both have DTMF-based selective calling and paging facilities and come with a high-capacity 7.2V, 1000mA/H NiCad battery, belt-clip, carry case and approved AC charger.



## Specifications:

Frequency range: FT-415  
144-148 MHz  
(140-174MHz  
extended receive)  
FT-815 430-450MHz  
Size: 55 x 146 x 33mm  
Transmitter:  
Power output: FT-415  
2.0W (at 7.2V)  
FT-815 1.5W  
Both models: 5.0W at 12V  
Receiver:  
Sensitivity: Better than  
0.158uV, (12dB SINAD),  
Ham bands only.

### FT-415

Cat D-3610

**\$599**

### FT-815

Cat D-3615

**\$699**

**2 Year Warranty**



# FT-26 2m Handheld

The easy-to-use FT-26 is an ultra-compact FM hand-held with microprocessor controls giving you more features and greater convenience. It's solidly constructed with a die-cast rear case, a high-impact polycarbonate front panel and rubber gasket seals around the controls for added protection against the elements. It has a 6-digit LCD screen and a bargraph meter for signal-strength and power output. A 36mm low distortion speaker provides clear audio, while VOX circuitry provides hands-free operation with the optional YH-2 headset. It also features 53 tunable memories, programmable band-scanning limits, priority monitoring, scan resume and an instant recall CALL channel. Plus, it offers an inbuilt battery charger circuit and Yaesu's Automatic Power-Off (APO) timer. DTMF-based selective calling and paging facilities let you select a 3-digit ID code which allows you to be paged and also page up to 5 other stations. Complete with a high-capacity 7.2V 700mA/H NiCad battery, belt-clip, carry case and approved AC charger.



## Specifications:

General  
Frequency range: Transmit  
144-148 MHz  
Receive 140-174MHz  
Channel steps: 5, 10, 12.5,  
15, 20, 25kHz  
Supply Voltage: 5.5 to 16V DC  
Current Consumption- Stand-by  
(with 1-sec save): 19mA  
Receive: 190mA  
Dimensions: 55 x 125 x 33mm  
Receiver  
Sensitivity  
(12dB SINAD): Better than  
0.158uV  
Selectivity: >60dB  
(adjacent channel)  
Transmitter  
Power Output: 2.0W at 7.2V  
5.0W at 12V

Cat D-3600

**\$469**

**2 Year Warranty**

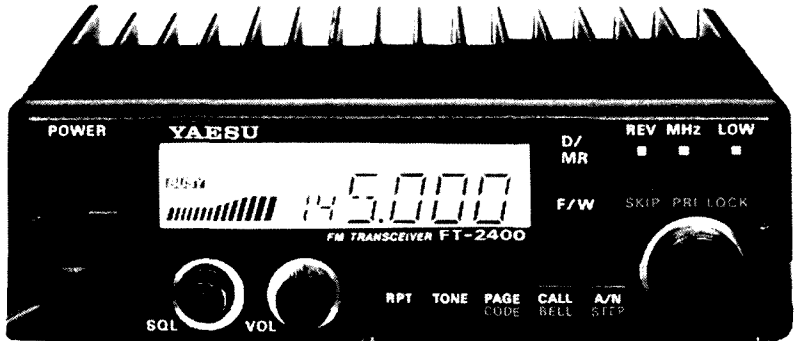


**BONUS**

Purchase any 2m or 70cm handheld during February, and we'll give you a 25% discount on any matching speaker/mic or NiCad battery pack purchased at the same time. Offer not applicable to dualband handhelds.

# FT-2400H Rugged 2m Transceiver

The ultimate in dependability and reliability! The FT-2400H is built using high-grade mechanical and electronic construction techniques and meets the tough USA MIL-STD-810C shock and vibration requirements, so you know you're getting the highest quality. A one-piece die-cast chassis/heatsink allows three-step output of up to 50 watts without forced air cooling. Plus, fibreglass circuit boards and chip components provide professional-grade reliability. It has a large backlit LCD screen, backlit knobs and 31 tuneable memories (which can store frequency and a four-character name of your choice). A customised microprocessor also provides Auto Repeater Shift to suit Australian conditions. Two stage track-tuning and a dual FET mixer improve receiver intermod performance. Scanning functions include programmable scan limits, selectable scan resume modes, memory skip, priority monitoring and one-touch recall CALL channel. Seven selectable channel-steps and CTCSS encode are standard features. Comes complete with MH-26 hand mic, mobile mounting bracket and DC power lead.



## Specifications

<b>General</b>	
Frequency range:	Transmit 144-148 MHz Receive 140-174MHz
Channel steps:	5.10, 12.5, 15, 20, 25 & 50kHz
Current Consumption:	Receive - 400mA Transmit - 12 Amp (Hi power)
Dimensions:	160 x 50 x 180mm (w/o knobs)
Receiver	
Intermediate Freq:	21.4MHz & 455kHz
Sensitivity:	Better than 0.2uV for 12dB SINAD
Image Rejection:	Better than 70dB
Maximum AF Output:	2.0 watts into 8 ohms @ 10% THD
Transmitter	
RF Output Power:	50/25/5 watts (Hi/Med/Low)



Cat D-3630

**\$699** 2 Year Warranty

### With Accurate PEP Reading! HF/6m Power/ SWR Meter

A quality wideband SWR/power meter with accurate PEP metering. Manufactured in Japan, and exclusive to Dick Smith Electronics, it's very well constructed with an all-metal case. Features include a large back-fit meter, 1.8-60MHz coverage with less than 0.1dB insertion loss, 20W, 200W, and 2kW power scales, and LED indicators for Average/PEP operation. Requires 13.8VDC at 200mA. Revex model W502 Cat D-1360



**\$199**

### **NEW** Revex W560N

#### HF/VHF/UHF SWR/PWR Meter (Not Illustrated)

Another quality Revex wideband SWR/PWR meter, offering 2 inbuilt sensors for 1.8MHz to 525 MHz coverage! Provides measurement of 3 power levels (3w, 20w, 200w), SWR (at low and high power levels) and uses an N-type socket for the VHF/UHF sensor to ensure minimal loss. Measures 120 x 80 x 85mm. Cat D-1375

**\$369**

## PICK UP A BARGAIN AT THE 'GOSFORD CENTRAL COAST FIELD DAY'!

We'd like to invite you to visit our display of Communications equipment at the 'Gosford Central Coast Field Day' on Sunday, 27th February 1994. It's a great opportunity for all radio enthusiasts to see the latest Yaesu transceivers, and pick up lots of great bargains on new and ex-demo gear. See you there in our stall at the Wyong Racecourse!

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\*MAJOR AMATEUR STOCKIST STORES SHOWN IN RED

# ALARA

Robyn Gladwin VK3ENX\*



## ALARAMEET

Memories of the wonderful weekend in Castlemaire still keep emerging. In the December edition of the New Zealand "WARO" Bulletin, Dawn Young ZL2AGX, reports: "Official photos were taken together with uncountable personal photos. We all started to feel we knew what it is to be film stars." Not even Dawn, the WARO President, could have realised how precious those personal photos would be. The official films were taken to be developed early in October and have never been seen again. Our thanks go to Gwen Tilson VK3DYL, for this group photo taken on the Saturday morning after the welcome by Maria McLeod VK5BMT, President of ALARA.

## Silent Key

Olive Couch, an ALARA member since October 1977, passed away on 26 December 1993, after being in poor health for some time. Although not licensed, Olive, with OM David VK6WT, showed the real amateur spirit by extending friendship and hospitality over the years to many local, interstate and overseas amateurs. They also visited amateurs on their overseas trips. Olive was always interested in ALARA and members extend deepest sympathy to David and his family. David has been an AOCPL lecturer for many years and taught Poppy Bradshaw VK6YF. Thank you Poppy for preparing this tribute to Olive.

## Puzzle Corner

Dorothy Bishop VK2DDB, editor of the ALARA Newsletter, is always coming up with interesting items for ALARA members to ponder. Perhaps other amateurs may like to try her Word Chain.

### Clues:

1. A western telegram
2. Odd wires around a ham's house
3. Person who adjusts the tone of a piano
4. Change from one track to another
5. Not the front
6. The natural agent that stimulates the sense of sight
7. A radiant smile
8. Sensory organs found in pairs on heads of insects
9. A device to make things go round and round
10. An internal combustion engine

11. Suburban pollution propagator
12. A room for a car often filled with junk
13. Used to keep children in...or out
14. The instrument used to operate a lock
15. A hollow space
16. Enough evidence to establish a fact
17. Understanding rows of words on a page
18. Spectacles
19. Lawyer Perry Mason never lost one
20. Portable sheets of paper fastened together
21. Conceal by throwing material over the top
22. A large piece of material used as an aid to escape a burning building
23. An old boiler in the laundry.

The solution to the puzzle will appear in this column next month.

\*PO Box 438 Chelsea 3196

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**WORD CHAIN**

Each word pairs up with the word before it and the word after it.

## WIA News

### Callsign Choice for US Hams

The US Federal Communications Commission (FCC) has proposed that American amateurs will be able to get a callsign of their choosing by paying a fee. It depends on a new automated processing system being installed at the Commission's Private Radio Bureau.

Under the proposed system, says the December issue of the *ARRL Newsletter*, amateurs wishing to apply for an available callsign would be required to file a form and pay a fee. Trustees of US club and military recreation stations would also be able to apply.



# AMSAT Australia

Bill Magnusson VK3JT\*

## National co-ordinator

Graham Ratcliff VK5AGR

Packet: VK5AGR@VK5WI

## AMSAT Australia net:

Control station VK5AGR

Bulletin normally commences at 1000 UTC, or 0900 UTC on Sunday evening depending on daylight saving and propagation. Check-ins commence 15 minutes prior to the bulletin.

Frequencies (again depending on propagation conditions):

Primary 7.064 MHz. (Usually during summer).

Secondary 3.685 MHz. (Usually during winter).

Frequencies +/- 5 kHz for QRM.

## AMSAT Australia newsletter and software service

The newsletter is published monthly by Graham VK5AGR. Subscription is \$25 for Australia, \$30 for New Zealand and \$35 for other countries by AIR MAIL. It is payable to AMSAT Australia addressed as follows:

AMSAT Australia  
GPO Box 2141  
Adelaide SA 5001

## Festive Season Activity.

As usual there was a general increase in satellite activity over the festive season. AO-13 activity was curtailed a little by the eclipses and rather unfavourable sun angles. This necessitated some unusual management strategies by the control stations and will continue to do so for some time. On 27 December the following telemetry message block from AO-13's general beacon spelled out the problem:

*M OST de G3RUH/VK5AGR. 1993 Dec 27. Battery performance during the recent long eclipses indicated that the charging curve set points may need adjustment. Over the next few weeks the battery is being carefully monitored to determine this. In order to maintain stable measurement conditions, the transponders remain OFF from MA 250 to MA 180.*

And a few days later:

*N de VK5AGR — After collecting baseline values for the Main Battery Temperature (channel no. #1E) and Battery Charge Current (channel no. #13) over the last 4 days. The battery set point has been increased from 80 to 85 on Orbit no. 4247 MA 234. The Whole Orbit Data collection in the K block has been restarted to monitor any changes in the Main Battery*

*Temperature. Tomorrow the WOD will be restarted again to monitor the Battery Charge Current. All this is to ensure AO-13's good health. [30 Dec 93].*

So please be patient. With AO-13's apogee slowly coming south we can look forward to some great conditions once the current series of eclipses is over and the controllers can return to a more favourable attitude and schedule. In the meantime "S" mode has been providing low squints and good signals for periods of up to an hour or more most days. I've heard quite a few stations claiming good results from simple antennas like helices and loop yagis. This mode should be very interesting when the eclipses are over and the attitude and mode schedule are returned to normal for this time of the year.

With an attitude of 180/0, "S" mode should be scheduled on, at or near apogee, giving large footprints and really testing one's equipment with ranges between 30,000 and 40,000 km.

As is often said by Graham and James, "Do not rely on rumours". Monitor the beacon and you will be sure you have the whole story. I'll include some information on beacon telemetry monitoring over the next couple of months. I've always found it one of the most fascinating parts of satellite operation.

Activity on the digital birds has been hectic with lots of festive season related mail, pictorial Christmas cards, etc .

## End-of-Year Expedition

Our little group encountered the most unfavourable weather on record for this year's expedition to the high country. We had extreme cold, heavy rain, sleet, high winds and a 36 hour snow-fall. Despite all that, the dozen or so participants (claimed to have) had a good time. The sun did manage to shine for a couple of days and that was very pleasant. We had some reasonable results on the satellites but nothing to write home about. Unfortunately my efforts on "S" mode were frustrated by the weather on the first four or five days of the expedition when operating times were most favourable. It just wasn't possible to set up any equipment outside the tents or caravan and when the weather did improve enough to set up the tracking antennas, the "S" mode times were at un-socialable hours.

It would have been pushing my luck to start the generator in the pre-dawn hours

with the rest of the camp asleep. And with the weather the way it was I didn't really feel like it anyway. Ah well, maybe next year! We had quite good results in other ways. Ray VK3YPY managed to have several 1296 MHz contacts back to Melbourne and Geelong and 6 metres provided some good DX as did 70 cm and 2 metres. The Ross Hull contesters were out in force as usual and many numbers were exchanged.

## New Satellites In Orbit

Last year was quite an exciting one for amateur radio satellite activity, in particular new launches. 26 September saw the launch of four new micro satellites with amateur radio capability. Of these, three have already been put into amateur service. The fourth, POSAT, has been commissioned into its commercial service and we are awaiting news of activation of the amateur radio package. As promised last month, here are details to hand of the three so far available for the amateur user. Some details are still a little sketchy.

## KITSAT-B now KITSAT-OSCAR-25 (KO-25).

A 50 kg satellite similar to the UoSats and built by the Korean Advanced Institute of Science and Technology (KAIST). Or is that the Korean Advanced Institute of Space Technology? I saw the latter title recently in a publication from Amsat-NA. Whichever it is, the satellite was built entirely by a Korean team who trained at Surrey and in fact built KO-23 under the supervision of the Surrey team. KO-25, however, is a totally Korean effort and completes the educational technology transfer from Surrey to Korea. Its purpose, to take CCD images, to process numerical information, measure radiation and to receive, store and forward digital messages.

KO-25 uses uplink frequencies of 145.87 and 145.98 MHz and downlink frequencies of 435.175 and 436.5 MHz. The 9600 baud store and forward operation is similar to KO-23 and uses the now (almost) standard PB/PG software. KO-25's downlink power can be varied from 2 to 5 watts.

## ITALY-AMSAT-A now ITAMSAT-OSCAR-26 (IO-26).

This Italian amateur radio satellite will offer both 1200 baud PSK and 9600 baud G3RUH compatible modes. It contains a five channel VHF receiver and two UHF transmitters. User frequencies are as follows. Uplink, 145.875, 145.9, 145.925 and 145.95 MHz. Its downlink frequencies

are 435.87 MHz (Primary) and 435.82 MHz (Secondary). Built on a micro-sat bus, the satellite is a 25 cm cube weighing 10 kg. The transmitter output is variable up to 4 watts.

The UHF antenna is a 4 element canted turnstile, ie 4 monopoles set at about 45 degrees to the main structure and fed via a phasing harness. The VHF antenna is a whip. Ground stations currently equipped to work the PSK micro-sats (AO-16 and LO-19) and the 9600 baud UoSats (UO-22 and KO-23/25) are already setup to use IO-26. Once again the PB/PG software will work.

### **EYESAT containing AMRAD-OSCAR-27 (AO-27).**

This commercial satellite was put together by Interferometrics (USA). It carries an amateur radio payload on behalf of AMRAD (Amateur Radio Research and Development, a technically oriented club in the Washington DC area). It will be capable of 1200 baud AFSK and up to 9600 baud FSK and will also have an analog FM transponder. User frequencies are 145.85 MHz uplink and 436.8 MHz downlink. It is primarily an experimental platform for new modulation types and protocols and is not planned at present for routine communications service.

The hardware necessary for the 1200 baud AFSK link will simply be any standard TNC that has KISS mode. The usual G3RUH type modems will be able to use its 9600 baud FSK mode. Ground station software has yet to be developed but will NOT be the standard Pacsat PB/PG program.

### **Next month**

From time to time I receive queries like "What do I need to work the Oscars?" A virtually impossible question to answer in a few minutes. Most of these questions come via telephone and in many cases the newcomer doesn't even own a computer. I usually manage to sort things out by sending off some reading material (or a disk) and referring them to various publications containing the basic information.

I've received a number of queries lately from more advanced users, questions like "How do I work the digital birds?" So next month I'll take readers through a typical UO-22/KO-23 digital store and forward ground station. A word of warning though. There isn't any easy way to work these birds. You need to gird up your loins and give it your best shot. More next month.

\*359 Williamstown Rd, Yarraville VIC 3013  
Packet. VK3JT@VK3BBS

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## **WIA News**

### **US and VK Amateurs to Head IARU**

Prominent US amateur Richard L Baldwin W1RU, has been nominated for re-election to the presidency of the *International Amateur Radio Union* for a period of five years, commencing May 9, 1994.

Richard Baldwin has previously served as IARU Secretary, from 1976 to 1982, while employed as General Manager of the *American Radio Relay League* (ARRL). He retired from the ARRL in 1982 and since then has devoted much of his time to the IARU as a volunteer, travelling to ITU and IARU conferences and teaching training courses in Amateur Radio Administration to telecommunications administrators in more than 50 countries.

Well-known Australian amateur Michael Owen VK3KI, has been nominated for re-election as Vice-President, also for a five-year-term. Michael Owen has been involved in IARU affairs for 25 years. He was Federal President of the WIA for four years in the 1970s and a member of the Australian delegation to WARC 79. He served as Director of IARU Region 3 from its inception. He has lived in London for several years, where the Australian law firm in which he is a partner established an office, but is now in the process of returning to Melbourne.

The next IARU Region 3 Conference is to be held in Singapore in early September. WIA Federal has plans and papers under way for Australian representatives to attend.

### **Telecom Freecall**

Just to clarify the item on the possibility of Divisions using Telecom's Freecall 1-800 service, this now replaces the old 008 Freecall service. All previous Freecall 008 customers now move to the 1-800 prefix, the last six digits remaining the same. Both 008 and 1-800 Freecall calls will be "double trunked" by Telecom for at

least two years until customers change their listings in directories, advertising, letterheads etc.

The 1-800 service can be limited, at the customers' request, to receive calls only from the customer's state. This is known as "Statewide Freecall", which is what the NSW Division has chosen for its 1-800 number (1800 817 644). Callers outside the Sydney metropolitan area can use this number to make free calls to the Division's office at Amateur Radio House in Parramatta.

### **New WIA Members**

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of December 1993.

- L20961 MR M BULMER
- L30873 MR F KOSTER
- L30874 MR F JEFFERY
- L30875 MR L J PADLEY
- L40331 MR E G SUMMONS
- L40332 MR K M BYRNE
- SM4AIQ D A G LARSSON
- VK1MGT MR G F TRAYNOR
- VK2APW MR P R WATSON
- VK2DX MR J L JONES
- VK2JXI MR M HART
- VK2WRJ MR R A WALKER
- VK3BXX MR S ADLER
- VK3GRW MR G WAINWRIGHT
- VK3ITI MR P J RAFFERTY
- VK3JUM MR B G APLIN
- VK3LDS MR D SPEEDIE
- VK3PHS MR R B SMITH
- VK3TCA MR C APPLEBY
- VK3TYN MR R F BALLANTYNE
- VK4ALK MR B B SMEATON
- VK4CMS MR M D'ATH
- VK4FX MR M W THORLEY
- VK4GNN MR G N NIELSEN
- VK4LJT MR J E TUCKER
- VK4WSS SOUTHSIDE ARS
- VK4ZAS MR F A SMITH
- VK4ZTF MR T F ARMSTRONG
- VK5ADX MR O SZEMIS
- VK5CJC MR J T BUGNO
- VK5NLK MR R L KING
- VK6APZ MR P ZWARECZ
- VK6VM MR E C MACHIN
- VK6WOG MR P G FERGUSON
- VK6ZAK MR N B SANDERS
- VK7AM MR A E WILLIAMS
- VK7LJS MR J SERINO

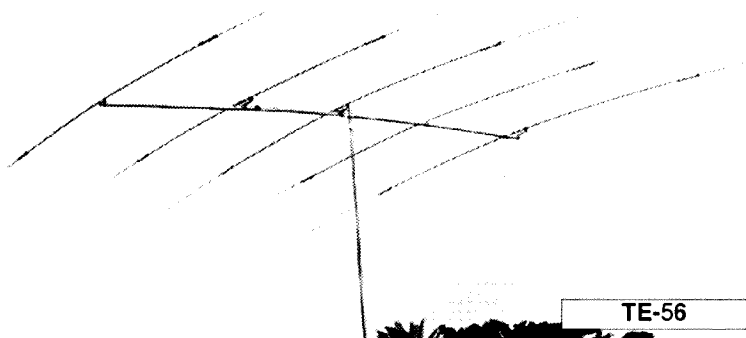
# BEAT THE SUN SPOTS

For the next few years, you can almost forget DX-ing on 10 & 15 metre bands. Tremendous deterioration of DX-ing will also occur on 20 metre band. So what is the answer? There is only one and only one answer! **THE NEW FOUR BAND (7-14-21-28 MHz) BEAM ANTENNAS** from TET-EMTRON the INNOVATORS in HF antenna systems, **TET-EMTRON IS AN AUSTRALIAN PRODUCT!**

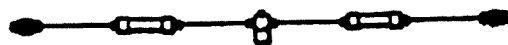
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- \* Completely factory assembled ready to use
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\* Handles 2 kw PEP & covers 80 through 10 metres **\$179**

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EV-3, 14-21-28 MHz, \$149  
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UNIQUE NEW ANTENNA - \$299

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TE-33 3 element 3 band 14/2/28	\$575.00
TE-43 4 element 3 band 14/21/28	\$750.00
HB-35C 5 element trapless 14/21/28	\$990.00
<b>TE-7 BAND SERIES</b>	
TE-47 3 elem 14/2/28 1 elem 10/18/25 1 elem 7MHz	\$995.00
TE-57 3 elem 14/21/28 2 elem 10/18/25 1 elem 7MHz	\$1200.00

##### TE-4 BAND SERIES

TE-34 3element 14/21/28 1 element ZMHz	\$695.00
TE-44 4 ELEMENT 14/21/28 1 ELEMENT ZMHz	\$870.00
TE-433HB 3 element 14/21/28 2 element ZMHz	\$850.00
TE-443HB 4 element 14/21/28 3 element ZMHz	\$1100.00
<b>TE-6 BAND SERIES</b>	
TE-26 1 elem 14/21/28 1 elem 10/18/25	\$380.00
TE-46 3 elem 14/21/28 1 elem 10/18/25	\$750.00
TE-56 3 elem 14/21/28 2 elem 10/18/25	\$1075.00

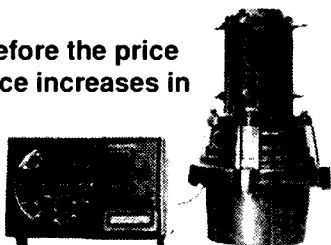
## ROTATORS GALORE

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**\$149**

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## ANTENNA CENTRE INSULATOR

- \*Small rugged lightweight weatherproof
- \*Replaces centre insulator
- \*Handles full legal power and more
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**\$20**

#### ANTENNA ROTATOR PACKAGES - ONLY UNTIL 31/11/93

	RRP	SPECIAL
KR-400 + TE-33	\$1,175.00	\$1,100.00
KR-400RC + TE-33	\$1,250.00	\$1,175.00
KR400 + TE-23M	\$1,100.00	\$1,025.00
KR1000 + TE-HB-35C	\$2,135.00	\$1,950.00

#### COAXIAL SWITCHES

CX201 - \$45  
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CD401 - \$99  
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D70 Morse Tutor  
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# EMTRONICS

**MAIL ORDERS  
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## Club Corner

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### Western Australian HamFest 1993

The Northern Corridor Radio Group are very pleased to report that the Western Australian HamFest 1993 was a resounding success, with the largest attendance in its 5-year history.

Over 600 people attended HamFest, the premier amateur radio, CB and electronics show in WA, on Sunday 4 November. This year, HamFest was held for the first time in a covered venue in Perth and visitors and traders alike were pleased with the pleasant, cool environment.

Local traders were well represented by Tower Communications, Terlin Aerials, Upsonic and Halk Air, with large stands showing their latest products. Stands and demonstrations were put on by the WA Amateur Digital Communications Association (WAADCA), the Vintage Radio Association of WA, the Australian CW Operator's QRP Club, the VK6WT Morse Key Collection and the NCRG, including its popular "Bring and Buy" stall.

On show at the NCRG stand, alongside a packet radio demonstration by VK6BDJ and a collection of homebrewed 10 and 24 GHz microwave equipment, was a complete ATV repeater, VK6RTX, for 625-line AM transmissions on 444 MHz. Some of the monies raised at HamFest will be used for the commissioning and installation of VK6RTX during early 1994.

In addition to the activities inside the Len Hansman Hall, the Car Boot Sale attracted a record number of small traders, with almost all available space being sold and regular attendees full of praise for the sometimes frantic attention of visitors.

A very special thanks must go to Kenwood Australia/Tower Communications, Terlin Aerials, and Upsonic and Halk Air for providing the wonderful prizes for the HamFest Grand Raffle. Carl VK6XW was rapt to win the latest Kenwood TH28A dual-band 2 m/70 cm handheld, donated by Kenwood Australia and Tower Communications, while Keith, VK6XH ecstatically carried off the fabulous Terlin Outbacker 80-10 m helical whip, made here in WA and donated by Terry Terlin and Terlin Aerials.

Similarly, you could not keep the smiles off the faces of Fred VK6FRE, and Bill VK6WJH, who won the Upsonic computer uninterruptible power supply (UPS) and the Halk Air 6 m HB9CV yagi antenna, respectively, donated by Upsonic and Halk Air.

The competition for the Hamfest Homebrew Competition was even keener than usual, with some visitors to the show even rushing home to bring back their latest creations and enter them. The winner was Phil VK6YBV, with his incredible 2 m "QRP-Killer", a linear amplifier using a single 4CX250B and capable of the legal limit for SSB. In a contest of very high standards indeed, VK6YBV scored very highly with the judges, with even the amplifier's silver plating being "homebrew". A worthy runner up was Wayne VK6BDP, with a 12 V 12 A regulated power supply. Peter Parker VK6BWI, took out the third prize with a 80-20 m T-match ATU, made entirely from the junk box and a piece of kitchenware!

Thanks to all who attended HamFest — from all over WA and farther afield — and to the members of the NCRG and their families who worked tirelessly behind the scenes. See you all next time!

### ANARS Activates MV "Spirit of Tasmania"

In another first, the Australian Naval Amateur Radio Society was able to conduct operations from the Radio Room of Australia's latest passenger ship, the mv "Spirit of Tasmania", whilst the ship was alongside at Devonport, Tasmania. The ANARS chairperson Glenn Dunstan VK1XX/MM was able to spend the afternoon of Monday 22 November 1993 working 40 and 20 metres giving many Australian and New Zealand amateurs a unique and rare opportunity to contact the actual vessel.

The Society held a very successful stand at this year's Gold Coast Hamfest with many former seafarers making themselves known to the ANARS representatives present. Our thanks to the Gold Coast ARS Inc for organising a superb hamfest.

The ANARS, which was launched on 9 August 1993, is pleased to announce that the "HMAS Canberra Memorial Award" is now available to all radio amateurs and shortwave listeners. The attractive certificate measures 300 mm by 250 mm, is printed in two colours and features a photograph of the original HMAS Canberra which was lost at the Battle of Savo Island on 9 August 1942. Award rules are as follows:

1. The award shall be available to ALL radio amateurs and shall also be available to ALL shortwave listeners on a heard basis.
- 2a. Australian claimants shall be required to score fifty points to qualify for the award.
- 2b. Overseas claimants shall be required to score fifteen points to qualify for the award.
3. Contacts made after the official launch of the ANARS on 9 August 1993 (51st Anniversary of the loss of HMAS Canberra) are valid towards the award.
4. Points shall be scored on the basis of one point per ANARS member per band per mode for two-way contacts, including those via terrestrial VHF or UHF repeaters. Packet contacts do NOT count towards this award.
5. ANARS members located in Canberra or the ACT shall count double points. This includes any VK1 operating portable outside the ACT.
6. All ANARS Club or Special Event stations with "AX.00x" numbers shall count double points.
7. Any ANARS member operating maritime mobile shall also count double points.



Western Australian HamFest 1993 inside the Len Hansman Community Centre.

8. The Headquarters station of ANARS, VK1SEA/VK1VHP shall count double-double (4) points per band per mode.
9. The award custodian shall be Barry Bennetts VK2BBE, 6 Gibingbell Close, Ocean Shores, NSW 2483.
10. The decision of the award custodian shall be final in all matters concerning the issuing of the awards.
11. A log extract countersigned by two other amateurs shall accompany all award claims. No QSL cards need be sent.
- 12a. A fee of \$AUS5.00 shall be charged for all Australian claims (cheques/money orders payable to ANARS).
- 12b. Overseas claimants to include six International Reply Coupons (IRCs).

Membership of the ANARS continues to grow and is well past 100. Any amateurs or interested shortwave listeners who have professional naval or maritime backgrounds are invited to join Australia's Own naval amateur radio society. Further information on the ANARS can be obtained by checking into the Australian Naval Net on 3620 kHz from 0930 UTC every Wednesday, or by packet from the ANARS station VK1SEA @ VK1KCM. Or by contacting the Hon secretary Terry Clark VK2ALG, QTHR in the 1994 Call Book, or by telephone on (060) 253 293, or fax on (060) 257 715.

### Summerland Amateur Radio Club

All computer and electronic buffs please note that the Summerland Amateur Radio Club is putting together a show of the latest in computers and electronics.

More than 20 commercial displays have been organised. Communications gear will also be demonstrated.

An amateur radio station will be functional on HF, VHF and on packet radio. Bring and Buy (or swap) stalls will be set up. Food and refreshments will be on sale.

This event will take place on Saturday, 26 February 1994 from 9.30 am until 4.30 pm in the Churchill Auditorium of the Lismore City Hall.

Further information from Peter VK2FSD on 066 252 334, Ric VK2EJV on 066 895 137, Graeme VK2GJ on 066 851 336, or check out a local BBS via VK2RPL-2 668900.

Graeme VK2GJ,  
Publicity Officer

### Goulburn Amateur Society

From David Thompson VK2BDT, on behalf of the Goulburn Amateur Society, we have received a thumbnail biography of one their leading members Jim Andrews VK2BO. Jim has been a member since the Society was formed in the 1950s, and is a very keen participant each year in the RD Contest. VK2BO has many times been "top of the list" in the VK2 results. He is also a notable rifle-shooter. The "Goulburn Post" gave him the whole front page of its sporting section on 11 November 1993

### Moorabbin & District Radio Club Inc.

Club Natter Nights will resume on Friday, 4 February and General Meetings on Friday, 18 February.

Tuesday "Hobby and Trouble Shooting" nights will also start up again this month. The ever popular Tuesday morning coffee meeting started up again on 18 January.

The club provides an approved examination service for all grades of licence. Enquiries about this service should be directed to Jerry Viscaal VK3MQ phone (03) 7046355.

The Club "Net and Award" night over club station VK3APC will resume on Monday, 7 February. The M & DRC Hamfest on 14 May will be bigger and better than ever and will now include a home brew section for several categories

and with valuable prizes. This will be open to all comers so we invite you to be in it.

Visitors to any club meetings are always assured of a warm welcome.

The Club has made a donation of \$100.00 to the Lord Mayor of Sydney's Bushfire Relief Fund.

Allan Doble VK3AMD

### Radio Amateurs Old Timers Club

Club broadcasts and call backs will resume on Monday, 7 February and the following one will be on Monday, 7 March. Both of these series of broadcasts will be based on Melbourne daylight saving time, ie:-

2 metres, 40 metres and 80 metres	10.00 am
20 metres beaming North	11.00 am
20 metres beaming West	12.00 noon
80 metres	8.30 pm

We have some very interesting material prepared for the February broadcast so make a note to listen to whichever of our six transmissions is most convenient at your OTH.

### RAOTC QSO Parties

The first QSO Party this year will be held on Monday, 7 March between the hours of 0300 and 0500 UTC. Preferred frequencies are CW 14.050 MHz and USB 14.120 MHz.

Allan Doble VK3AMD  
ar

## AWARDS

John Kelleher VK3DP — Federal Awards Manager\*

### GCR List

An explanation. Many countries, including Australia, rely on an Awards verification system commonly known as a GCR or General Confirmation Rules list. Basically it is a list of qualifications for an award, in the order required by that particular country.

Some countries require that you send QSL cards, or photocopies, along with your list, but the majority only require a list certified by two other amateurs or a member at national level. The latter system is now generally used, so that when applying for an award, our list of qualifiers now becomes a general

confirmation list, according to the rules of the country involved.

### DXCC Listings

As mentioned in the January issue of Amateur Radio, an abbreviated listing for WIA DXCC would be published. This shortening of these listings is indeed a sad state of affairs caused by members who have:

(a) Not added to their achievements since December 1987; or

(b) Allowed their numbers to fall below the required 100 countries, per deletions, etc. Here, now, are the WIA DXCC listings current as at 13 January 1994.

WIA DXCC STANDINGS			
PHONE		VK4LC	327/371
Honour Roll		VK5WO	327/362
CALLSIGN	COUNTRIES	VK6LK	327/349
VK3QI	328/339	VK4RF	327/344
VK3DYL	328/331	VK6HD	327/342
VK4KS	327/371	VK3AKK	326/336
		VK5QW	326/329

VK4OH	325/329	VK5BO	218/222	<b>General Listing</b>		<b>General Listing</b>	
VK1ZL	324/327	VK1PS	211/212	VK2QL	312/359	VK3AMK	313/329
VK5MS	321/373	VK3DD	201/204	VK3XB	311/343	VK7BC	311/318
VK6RU	320/373	ON6DP	201/202	VK4RF	305/330	VK3JI	307/333
VK5XN	320/338	VK4KRP	199/201	VK3YL	302/340	WA3HUP	306/330
VK5EE	319/322	VK2VFT	198/201	VK3KS	297/322	VK3XB	301/340
VK6NE	318/332	VK6BQN	186/190	VK5WO	282/295	VK4DP	295/307
VK2FGI	317/320	VK3CIM	179/182	VK2APK	274/304	VK3DP	293/296
VK3OT	316/327	KA1TFU	176/178	VK6RU	273/317	VK2APK	292/328
VK3YJ	316/320	VK2BQS	162/165	VK3AKK	268/272	VK6PY	292/298
VK3CSR	314/320	VK3DVT	159/161	VK3JI	257/280	VK4BG	291/309
		VK4BAY	154/156	VK3DP	221/224	VK2SG	289/314
		7J1AAL	149/150	VK4DA	217/219	VK2AKP	289/294
		VK4DMP	147/148	VK7BC	210/219	VK6RO	288/290
		VK4ICU	143/145	VK2CWS	210/212	VK3CYL	283/290
<b>General Listing</b>		VK3DNC	141/142	VK4LV	200/207	VK4OD	280/282
VK3AMK	313/329	VK6LC	139/140	VK4DP	199/210	VK3VQ	271/287
VK6AJW	312/317	VK4VJ	135/137	VK4OD	179/182	VK5BO	264/301
VK3RF	304/311	VK6LG	135/135	VK6PY	178/181	VK2ETM	239/240
VK5WV	303/322	VK2SPS	130/132	VK3CIM	173/174	VK3CIM	224/225
VK3AWY	303/310	VK2NO	128/	VK5BO	159/184	VK4DA	218/220
VK3WJ	303/308	LU5EWO	125/	VK3DNC	154/157	VK2CWS	214/216
VK7BC	301/309	SM6PRX	124/126	VK6MK	147/149	VK4LV	212/219
VK3JI	292/304	VK7YP	122/124	EA6AAK	138/	VK2VFT	202/205
VK2WU	292/296	VK4LV	115/117	VK7DQ	137/138	VK4CY	200/212
VK6PY	291/295	VK7WD	115/116	VK2SG	136/148	VK3DNC	185/187
VK2AKP	289/294	VK3BRZ	114/116	VK4KS	126/134	VK2BQS	176/179
VK2DTH	287/289	VK4CY	112/	VK6BHW	124/126	PR7CPK	174/175
VK6VS	286/288	VK4NJQ	111/115	VK2TB	123/125	VK4ICU	159/161
VK2APK	285/313	VK4ARB	110/111	VK3AGW	119/120	VK6NV	154/156
VK6RO	285/289	VK5AGM	105/107	VK2AKP	115/117	VK6MK	152/154
VK4BG	284/299	VK4AU	105/	VK5QJ	107/109	VK6LC	142/144
VK3CYL	283/290	N4JED	104/105	VK4CY	100/	VK4NJQ	133/139
VK4DP	282/292	VK2EQ	104/			VK4CHB	129/131
VK3DU	282/290	VK3EHP	103/105	<b>WIA DXCC STANDINGS</b>		VK2CXC	128/130
VK5OU	281/286	VK4BJE	102/104	<b>OPEN</b>		VK4EZ	122/131
VK3VU	272/275	VK3YH	102/103	<b>Honour Roll</b>		VK5BWW	111/112
VK4OD	270/272	VK5ZH	100/104	<b>CALLSIGN COUNTRIES</b>		VE7BS	106/107
VK3GI	261/264	VK2CMV	100/102	VK3QI	328/340	VE7BS	106/107
ZS6IR	259/262	VK3TI	099/101	VK3YL	327/372	VK3COR	102/104
VK3VQ	256/272	VK4KGE	099/101	VK4KS	327/365	VK7TS	101/102
VK2SG	253/274			VK4RF	327/360	SM7WF	101/
VK2AVZ	251/257			VK6HD	327/349	VK7DS	099/102
VK4QO	251/255			VK3AKK	327/337	<b>WIA DXCC STANDINGS</b>	
VK2PU	238/240			VK5WU	325/328	<b>RTTY</b>	
VK6YF	237/240			VK6RU	320/373	<b>General Listing</b>	
PS7AB	235/237			VK3OT	319/330	<b>CALLSIGN COUNTRIES</b>	
VK3DP	234/237	<b>WIA DXCC STANDINGS</b>		VK3JA	317/363	VK3EBP	168/170
VK3DS	226/336	<b>CW</b>				VK2SG	157/160
VK2ETM	226/227	<b>Honour Roll</b>				VK2BQS	115/117
VK2BCH	223/226	<b>CALLSIGN COUNTRIES</b>					
VK2CKW	223/225	VK3QI	326/335				
VK5IE	219/221	VK6HD	322/341				

\*PO Box 300 Caulfield South 3162  
ar

## WIA News

### ALARA History

Much time and effort has been contributed by a number of ALARA members in compiling the history of the Australian Ladies Amateur Radio Association.

It is good to see such matters being recorded and preserved. Congratulations to Marilyn Syme VK3DMS and her sources of information.

Support the  
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# Contests

P Nesbit VK3APN — Federal Contest Coordinator\*

## Contest Calendar Feb-Apr 94

Feb 12/13	PACC CW/SSB DX Contest	(1/94)
Feb 12/13	Spanish RTTY Contest	(1/94)
Feb 19/20	ARRL DX CW Contest	(1/94)
Feb 25/27	CQ WW 160 m SSB Contest	(12/93)
Feb 26/27	RSGB 7 MHz CW Contest	(1/94)
Feb 26/27	UBA (Belgium) CW DX Contest	(1/94)
Mar 5/6	ARRL DX SSB Contest	(1/94)
Mar 12/13	BERU CW Contest	
Mar 19/20	WIA John Moyle Field Day	
Mar 19/20	BARTG RTTY Contest	
Mar 26/27	CQ WPX SSB Contest	
Apr 1	Poisson d'Avril Contest	
Apr 2/3	SP DX Contest	
Apr 9/10	JA DX CW Contest (High Bands)	
Apr 9/10	Israel DX Contest	
Apr 23/24	Helvetia DX Contest (Switzerland)	

## RD Contest Revisited

Judging from enquires received recently, interest in the RD Contest runs high, particularly in the method used to determine the winning Division. Therefore, this month I decided to spend a few minutes explaining how the system works. To determine the winning Division, the following statistics are collected for each Division: (a) the total number of logs submitted for all sections of the contest; (b) the total number of points from those logs; (c) the total number of licensees at the time of the contest (contact your Federal Councillor); (d) the weighting factors (WF) for the preceding 3 years of the contest. The following calculations are then performed for each Division:

Raw Score = Total Points x No. of Logs ÷ No. of Licences

Raw WF = Highest Raw Score (all Divisions) ÷ Raw Score (this Division)

WF (this year) = [Raw WF + WF (last year) + WF (year - 2) + WF (year - 3)] ÷ 4

Final Score = Raw Score x WF (this year)

I can assure you the calculations are simpler than they might initially appear, and are easily programmed into a spreadsheet. If anyone is interested I would be happy to send them a copy of a spreadsheet in Quattro/Pro, Lotus or Excel format (please specify), which contains the equations and data for the 1993 RD Contest, upon receipt of a disk and stamp for return postage. This program will calculate the final score for all Divisions given the raw input data for any year, and contains a macro to sort the Divisions into winning order.

Why is such an elaborate scoring system used? The reason is to attempt to

provide the fairest possible competition between Divisions, and also to encourage less active amateurs to join the contest. This scoring system has evolved over many years, and probably represents the best system to date, although it is not perfect. For instance, after the last RD Contest rumours were circulating that some members of one Division had agreed, prior to the contest, not to work members of another Division which had been identified as a significant threat. Now these sorts of things are heard after nearly every RD Contest and, considering that the rules have traditionally emphasised competition between the Divisions, one should not be too immediately judgemental. After all, strategies designed to maximise the chances of one's own team winning exist in virtually every team endeavour ranging from football, through motor sport, to business. Why should the RD Contest be any different, where the Divisions represent teams?

This would be OK if entrants were all on the same footing. However, such is not the case with the RD. In practice many possess modest stations, have no wish to become contest diehards, and take part simply to help others out with a few numbers and maybe get a reasonable score themselves. In particular, some are enjoying their first ever contest. I doubt that they would enjoy being forced to choose between forsaking hard earned QSOs, or breaking ranks and risk being ostracised by other members of their Division. Furthermore, members of the Division which is being "boycotted" would not be terribly pleased at having their calls ignored and, in particular, the newcomers (being unaware of these behind-the-scenes machinations) may well decide

that contesting is not for them, and make this their first and last RD. And who could blame them for that?

More attention certainly needs to be drawn to the efforts of individual entrants in the RD, and astute readers will have noticed that certificate winners are once again being highlighted in the results. Perhaps we should consider re-introducing the old scoring system which allocated QSO points according to difficulty. Although not perfect, I recall thinking at the time what a good idea it was. What are your views on this, or any other aspect of the contest? The RD is the first contest which most VKs enter and, for this at least, it deserves our full support. I believe there are many readers with good ideas to contribute; please write, call or whatever! We'd love to hear from you!

## Attention Contest Managers!

I wish to thank all the contest managers who have been forwarding rules and results on disk, as it makes my life so much easier. As I now have soft copies of all the VK contests, there is no further need to send rules on disk and from now on I would prefer to receive rules photocopied from the previous year's AR, with changes marked up (except for radical rule changes of course). This will eliminate the risk of errors, and ensure that minor editing changes (as necessary) are retained. On the other hand, disk copies of results are always appreciated, at least for the larger contests for which retyping and checking are extremely time consuming. A return stamp will secure the return of the disk.

## Thanks To...

Phil VK1PJ for handling the John Moyle Field Day Contest, Sid VK2DID for forwarding information on a forthcoming DX contest, and also CQ, QST, and *Radio Communications*. Until next month, good contesting!

73,  
Peter VK3APN

## ATN ANTENNAS

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We manufacture a comprehensive range of HF, VHF and UHF antennas, baluns, power dividers etc. Log periodicals provide continuous coverage from 13-30MHz (incl. WARC) and replace outdated tri-banders. Now in use in 38+ overseas countries and six continents. 10-30 MHz & 7-30 MHz extra heavy duty available late 1993.

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## Contest Details

The following contest details should be read in conjunction with the "General Rules & Definitions" published in April 1993 AR.

## Commonwealth Contest (BERU)

CW only: 1200z Sat to 1200z Sun, March 12-13

This annual event is always very popular in this part of the world. It runs each year on the second full weekend in March, and its purpose is to promote contacts between stations in the British Commonwealth and Mandated Territories. Categories are single operator, single and multiband; and receiving. The use of spotting nets, packet clusters, etc. is precluded. Contacts may be made with any station using a British Commonwealth prefix, except those within the entrant's own call area. Bands are 80-10 m, using the bottom 30 kHz of each band, except when contacting novice stations above 21030 and 28030 kHz.

Exchange RST and serial number commencing with 001. Score 5 points per QSO, with a bonus of 20 points for each of the first 3 QSOs with each Commonwealth call area on each band (note that for the purpose of this contest, the entire UK area counts as one call area).

Several "headquarters" stations will be active during the contest, and will send "HQ" after their serial number to identify themselves. Each HQ station counts as an additional call area and therefore attracts the 20 point bonus. Entrants may contact their own HQ station for points and bonuses.

Show duplicate contacts in the log with zero points. Entrants making more than 80 QSOs should include an alphabetical checklist of the callsigns appearing in the log, together with either the serial number sent or the time of contact beside the callsign. Separate logs and lists of bonuses claimed are required for each band (new requirement). Include a cover sheet showing standard details, and send the log to arrive by April 17th to: RSGB HF Contests Committee, c/o S. Knowles G3UFY, 77 Bensham Manor Road, Thornton Heath, Surrey, CR7 7AF, England. Airmail is advised, as late logs may be treated as check logs. The Senior and Junior Rose Bowls will be awarded to the overall leader and runner-up respectively, and Certificates of Merit to the leading stations in each category and call area on each band.

The following call areas are recognised for the purpose of scoring in the 1994 Commonwealth Contest:

A2, A3, AP, C2, C5, C6, CY9, CY0,

G/GB/GD/GI/GJ/GM/GU/GW (all one area), H4, J3, J6, J7, J8, P2, S2, S7, T2, T30, T31, T32, T33, V2, V3, V4, V5, V8, VE1, VE2, VE3, VE4, VE5, VE6, VE7, VE8, VK1, VK2, VK3, VK4, VK5, VK6, VK7, VK8, VK9C, VK9L, VK9M, VK9N, VK9W, VK9X, VK0 (Heard Isl), VK0 (Macquarie Isl), VK0 (Antarctica), VO1, VO2, VP2E, VP2M, VP2V, VP5, VP8 (Falkland Isl), VP8 (S Georgia), VP8 (S Sandwich Isl), VP8 (S Shetland Isl), VP8 (S Orkney Isl), VP8 (Antarctica), VP9, VQ9, VR6, VS6/VR2 (Hong Kong), VU, VU4 (Andaman & Nicobar Isl), VU7, VY1, YJ, Z2, ZB2, ZC4, ZD7, ZD8, ZD9, ZF, ZK1 (N Cook Isl), ZK1 (S Cook Isl), ZK2, ZK3, ZL0 or /ZL (NZ reciprocal calls), ZL1, ZL2, ZL3, ZL4, ZL5, ZL7, ZL8, ZL9, 3B6/7, 3B8, 3B9, 3DA, 4S, 5B4, 5H, 5N, 5W, 5X, 5Z, 6Y, 7P, 7Q, 8P, 8Q, 8R, 9G, 9H, 9J, 9L, 9M2, 9M6/8, 9V, 9Y, GB5CC (RSGB HQ station), various other HQ stations.

The results of the 1993 contest will appear next month.

## BARTG RTTY Contest

0200z Sat to 0200z Sun, March 19-20

The object of this contest, which is sponsored by the British Amateur Radio Teleprinter Group, is to work as many amateurs worldwide as possible on RTTY, on 3.5-30 MHz (no WARC bands). Categories include single operator (all band & single band), multioperator, and SWL. Operation is limited to 30 hours out of the 48 hour contest period. Rest periods must be at least 3 hours each.

Exchange RST plus a 3 figure contact number and time in GMT (full four figures). SWLs must show the callsign of the station heard, report of message sent, and callsign of station being worked. Score 1 point per contact. Multipliers are the total number of countries worked on each band, and the number of continents worked on all bands (counted once only). Call areas within W/K, VE/VO, and VK count as separate "countries", and continents are as defined for WAC. The final score equals QSO points x country multiplier x continents. Use a separate log for each band, and include a summary sheet showing all usual details. Send logs to be received by 27 May to: John Barber G4SKA, 32 Wellbrook Street, Tiverton, Devon, EX16 5JW, England.

## CQ WPX Contest

SSB: 0000z Sat to 2400z Sun, March 26-27

CW: 0000z Sat to 2400z Sun, May 28-29

This contest is sponsored by CQ Magazine, and the objective is to contact as many stations worldwide as possible on 1.8-30 MHz (except 10, 18 & 24 MHz). Categories include: single operator (either single or all band), subdivided according

to power (unrestricted, low power max 100 W O/P, and QRPp max 5 W O/P); and multioperator (either single or multitransmitter, all band only). Single operator stations are where one person performs all operating, logging, and spotting functions. The use of DX spotting nets places the station in the multioperator single transmitter category. Multi-multi stations must have all transmitters located within a 500 m diameter circle or within the property limits of the licensee's address, whichever is greater. All antennas must be physically connected by wires to the station transmitters and receivers.

Exchange RS(T) plus a 3 digit number starting at 001. Continue to 4 digits if past 1000. Multitransmitter stations must use separate numbers for each band. Score 3 points (14-30 MHz) or 6 points (1.8-7 MHz) for contacts with stations on different WAC continents, and 1 point (14-30 MHz) or 2 points (1.8-7 MHz) for contacts with stations within the same WAC boundary. Contacts with stations in the same country are permitted for multiplier credit but have zero point value.

The multiplier is the total number of prefixes worked on all bands (each prefix is counted only once regardless of the number of different bands on which it is worked). A "prefix" is the unique letter/numeral combination forming either the first part of the callsign, or else the normal country identifier for stations using their home callsigns in another DXCC country. For example: N8, W8, AG8, Y22, Y23, HG7, HG73 are all separate prefixes. The prefix for both N8ABC/KH9 and KH9/N8ABC is KH9. KH6XXX operating from Ohio could sign /W8, /N8, /K8, or any other prefix authorised for that district. Portable designators without numbers will be assigned zero after the letter prefix, eg N8ABC/PA becomes N8ABC/PA0. Any calls without numbers will be assigned a zero after the first two letters, eg RAEM becomes RA0EM. Suffixes indicating maritime mobile, mobile, portable, alternate location, and licence class do not count as prefixes (eg /MM, /M, /P, /A, /E, /J). The final score is QSO points x multiplier.

Logs must show times in GMT, with breaks clearly marked. Show prefix multipliers only the first time they are worked. Logs must be checked for duplicates, correct points, and prefix multipliers. Logs must be accompanied by a sorted alphanumeric list of prefix multipliers, and a summary sheet showing call, name, address, category, power, scoring information, and a signed declaration that all contest rules and radio regulations were observed. Logs may also be submitted on 3-1/2 or 5-1/4 DOS disk



in ASCII format (.BIN, .RES, .DBF, .WKS also acceptable), providing a sorted multiplier file and a paper summary sheet are included. Send logs postmarked by 9 May (SSB) or 8 July (CW) to: WPX Contest, 76 N. Broadway, Hicksville, NY 11801, USA. Indicate SSB or CW on envelope.

A comprehensive range of trophies and plaques is offered, and certificates will be awarded to the highest scoring station in each category, country and VK call area. To be eligible for awards, single operator stations must show at least 12 hours operation, and multioperator at least 24 hours operation. Single band entries showing points claimed for more than one band will be judged as multiband unless otherwise specified. Where returns justify, 2nd and 3rd place awards will also be made.

### Results of 1992 CQWW DX Contest

In the CW section VK6LW had the top 7 MHz score worldwide at 533,696 points, and set a new band record for Australia. Leaders for zones 29 and 30 were VK8AV and VK2BIR (SSB), and VK8AV and VK3DXI (CW) respectively.

Most top entrants submitted disks with their logs, which the organisers say makes the checking process easier and is much appreciated. The organisers have however requested that even when logs are submitted on disk, a paper copy of the log is also required. They prefer the following file formats: K1EA.BIN, N6TR.DAT, and DBASE.DBF. However, they also ask that K1EA files NOT be submitted in .RES or .10 through .160 formats.

The CQ contest organisers continue to enhance their log checking procedures, much of it now centring on the percentage of unique callsigns in each entrant's log. These typically range around 2-3%, although the CW contest showed uniques as low as an incredible 0.2% for K1ZZ (ie 5 calls out of 2300), and 0.9% for W1KM, K8GL, EA8EA, and 8P9Z. If you are interested in receiving a list of uniques in your log, contact Bob Cox K3EST, 1816 Poplar Lane, Davis, CA 95616, USA. For a comprehensive report on your log, include a DOS disk plus US\$6.00 to cover mailing costs. A more detailed discussion of uniques appears in CQ Magazine for September and October 1993.

### SSB (Single Operator, High Power Category)

Call/Band/Score/QSOs/Zones/Countries				
* = Certificate Winner				
VK2BIR* A	983,235	1057	102	201
VK5GN* "	862,278	1110	95	179
VK3TZ "	414,425	540	103	172

VK8AV "	251,340	346	102	193
VK5FOX "	148,830	451	38	72
VK4DDK "	21,216	119	36	50
VK8SD "	20,460	96	34	59
VK2GAH 10	30,226	307	15	19
VK3DZM 80	15,678	134	18	21
P29DK* A	738,183	1101	93	148

### SSB (Single Operator, Low Power Category)

VK4UA* A	468,958	565	73	197
VK3PU "	358,154	504	86	176
VK2ARJ "	239,070	454	71	124
VK2AYK "	215,586	435	66	111
VK8BE "	11,925	75	26	27
VK4NJQ 10	68,834	301	26	52
VK4NAD "	50,688	264	25	41
VK4NEF* 15	149,513	583	30	61
VK3SM 20	28,105	153	23	54
VK6BHL "	25,782	112	30	58
VK2XT 40	15,012	51	25	29
P29KH* A	2,140,792	2163	112	234
P29JA "	89,640	296	43	65

### SSB (Multioperator Single Transmitter)

VK6YS	3,847,408	3477	118	270
VK4DMP	361,608	580	85	159
P20A	3,448,484	2877	134	308

### CW (Single Operator, High Power Category)

VK8AV* A	1,730,814	1625	116	250
VK4TT* 20	100,560	421	25	55
P29DK* A	398,738	712	79	114

### CW (Single Operator, Low Power Category)

VK3DXI* A	1,867,762	1706	120	254
VK2BQQ* "	355,384	500	90	158
VK2VM "	218,094	463	61	101
VK3VT "	70,680	213	40	74
VK8SD* "	44,070	216	36	42
VK2NV "	28,122	120	38	48
VK2SU "	3,645	45	13	14
VK4XA* 10	251,120	1014	26	60
VK8BE "	7,548	74	15	19
VK6BB* 15	49,714	263	24	43
VK6LW* 40	533,696	1453	31	93
VK3APN "	88,176	334	26	62
P29JA A	1,300	18	12	13

### 1994 JOHN MOYLE CONTEST

Well, once again those who enjoy a weekend in the bush should be planning for the John Moyle Field Day. Last year's feedback showed there is nothing basically wrong with the rules, so this year they remain much the same. However, I still suggest that operators read and familiarise themselves with these rules, and also read the comments printed with last years results. I hope to be on air the weekend prior to the contest, family and work commitments permitting, to help anyone with rule interpretations etc. My planned schedule is 14.275 MHz at 1200 EST and 3.570 MHz 2030 EST (approx) Sunday 13 March. For those without HF callsigns, perhaps you can join one of the

nets as a second operator. If anyone wishes to contact me privately, my home phone number is 06 292 3260, and my address is shown in the Log Submission section below. Best of luck and see you on air, hopefully as one of the operators of VK1DX (Canberra DX Group). Complaints, if any, are best submitted by phone or with your entry.

### OVERVIEW

1. The aim is to encourage and provide familiarisation with portable operation, and provide training for emergency situations. The rules are therefore designed to encourage field operation.

2. The contest takes place on the 3rd weekend in March each year, and this year (1994) runs from 0100 UTC Saturday to 0759 UTC Sunday, 19-20 March.

3. The contest is open to all VK, ZL and P2 stations. Other stations are welcome to participate, but can only claim points for contacts with VK, ZL and P2 stations.

4. Entries shall consist of one choice from each of the following (eg 6 hour, portable, single operator, phone, VHF/UHF):

- 24 or 6 hour;
- Portable, Home, or Receive;
- Single or Multiple operator;
- Phone, CW, or Open mode;
- HF, VHF/UHF, or All Band.

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6 ele 6M	\$188
Duo 10-15M	\$259
3 ele 15M	\$179
3 ele 20M	\$289
M B Vert NO TRAPS 10-80 M	\$249
Tri band beam NO TRAPS	\$665
30M linear loaded 2 ele	\$360
40M linear loaded 2 ele	\$449
13-30M logperiodic 12 ele	\$865

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(054) 285 134

## SCORING

5. Home stations for all sections shall score:

- a. 2 points per QSO with each portable station;
- b. 1 point per QSO with other home stations.

6. Portable HF stations shall score 2 points per QSO.

7. Portable stations shall score the following on 6 m:

- a. 0-49 km, 2 points per QSO;
- b. 50-99 km, 10 points per QSO;
- c. 100-149 km 20 points per QSO;
- d. 150-199 km 30 points per QSO;
- e. 200-499 km 50 points per QSO;
- f. 500 km and greater, 2 points per QSO.

8. Portable stations shall score the following on 144 MHz and higher:

- a. 0 to 49 km, 2 points per QSO;
- b. 50 to 99 km, 10 points per QSO;
- c. 100 to 149 km, 20 points per QSO;
- d. 150 km and greater, 30 points per QSO.

9. For each VHF/UHF QSO where more than 2 points is claimed, either the latitude and longitude of the station contacted or other satisfactory proof of distance must be supplied.

## LOG SUBMISSION

10. Each log must be accompanied by a summary sheet showing: callsign, name, mailing address, section entered, number of contacts, claimed score, location of the station during the contest, and equipment used. For multioperator stations, the callsigns and signatures of all operators should be included. If any VHF/UHF QSOs have been made which qualify for more than 2 points, the latitude and longitude of the station during the contest must be included.

11. The summary sheet must include the following declaration signed by the operator, or in the case of a multiple operator station, one of the licensed station operators: "I hereby declare that this station was operated in accordance with the rules and spirit of the contest".

12. Logs must be postmarked no later than 30 April 1994, and forwarded to: John Moyle Contest Manager, 33 Willoughby Cres, Gilmore, ACT 2905, Australia. An ASCII text copy on a MS-DOS floppy disc would be most helpful, with the following alternative data formats also acceptable: Wordstar, Word5, WordPerfect, dBase3 & 4, Lotus 123.

## CERTIFICATES AND TROPHY

13. At the discretion of the Contest Manager, certificates will be awarded to the winners of each portable section. Note that entrants in a 24 hour section are ineligible for awards in a 6 hour section.

14. The Australian station with the highest CW score will be awarded the President's Cup, a perpetual trophy held at the Federal Office, and will receive an individually inscribed wall plaque as permanent recognition.

## DISQUALIFICATION

15. General WIA contest disqualification criteria, as published in *Amateur Radio* from time to time, apply to entries in this contest. Logs which are illegible or excessively untidy are also liable to be disqualified.

## DEFINITIONS

16. A portable station comprises field equipment operating from a power source independent of any permanent facilities, eg batteries, portable generator, solar power, wind power.

17. All equipment comprising a portable station must be located within an 800 m diameter circle.

18. A single operator station is where one person performs all operating, logging, and spotting functions.

19. A single operator may only use a callsign of which he/she is the official holder. A single operator may not use a callsign belonging to any group, club or organisation for which he/she is a sponsor except as part of a multioperator entry.

20. A multioperator station is where more than one person operates, checks for duplicates, keeps the log, performs spotting, etc.

21. A multioperator station may use only one callsign during the contest.

22. Multiple operator stations may only use one transmitter on a given band at any one time, regardless of the mode in use.

23. Multiple operator stations are to use a separate log for each band.

24. A station operated by a club, group, or organisation will be considered to be multioperator by default.

25. None of the portable field equipment may be erected on the site earlier than 24 hours before the beginning of the contest.

26. Single operator stations may receive moderate assistance prior to and during the contest, except for operating, logging and spotting. The practice of clubs or groups providing massive logistic support to a single operator is, however, totally against the spirit of the contest. Offenders will be disqualified, and at the discretion of the manager, may be banned from further participation in the contest for a period of up to 3 years.

27. Phone includes SSB, AM and FM.

28. CW includes CW, RTTY, and packet.

29. It is not expected that any other modes will be used in the contest, but if they are, they shall be classed as CW.

30. All amateur bands may be used except 10, 18 and 24 MHz. VHF/UHF means all amateur bands above 30 MHz.

31. Cross-band and cross-mode contacts are not permitted for contest credit.

32. Contacts made via repeaters are not permitted for contest credit. However, repeaters may be used to arrange a contact on another frequency where a repeater is not used for the contact.

33. Portable stations may make repeat contacts and claim the appropriate points providing that at least three hours have elapsed since the previous valid contact with that station on the same band and mode.

34. Home stations may not claim points for repeat contacts.

35. Stations must exchange ciphers comprising RS(T) plus a 3 digit number commencing at 001 and incrementing by one for each contact.

36. Portable stations shall add the letter "P" to their own cipher, eg. 59001P.

37. Multiple operator stations are to commence each band with 001.

38. Receiving stations must record the ciphers sent by both stations being logged. QSO points will be on the same basis as for Home Stations, unless the receiving station is portable.

39. The practice of commencing operation and later selecting the most profitable operational period within the allocated contest times is not in the spirit of the contest, and shall result in disqualification. The period of operation commences with the first contact on any band or mode, and finishes either 6 or 24 hours later.

73,  
Phil VK1PJ  
ar

## WIA News

### Whoops, Mr not Mrs

A new member listed in the November WIA News, VK4CQH, was incorrectly listed as Mrs H A Lehto, when the listing should have read Mr.

Apologies from the Divisional Membership Secretary for that little typographical error which, in biological terms, is somewhat more significant.

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## Divisional Notes

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### Forward Bias — News from the VK1 Division

Christopher Davis VK1DO

I hope that all our local amateurs have survived the school holidays and are back into the swing of things. I hope you managed to enjoy some of the outstanding conditions that prevailed during January at least on VHF.

The much mooted annual general meeting of the ACT Division takes place this month on Monday, 28 February commencing at 8.00 pm in the studio room, upstairs in the Griffin Centre. Bear in mind that nominations are only taken on the evening of the AGM if there are insufficient persons already nominated to fill the available positions. Please make certain that you are financial, as only current members are entitled to vote.

This will be the second last column that I write on behalf of the ACT Division. Because of the three week or so lead time required for each *Amateur Radio*, I will have written and dispatched the material for the March edition even before our AGM. A touch confusing. However, the point is that this will be the last column appearing while I am in the chair.

The past three years have been thoroughly interesting for me, both in terms of learning about the bigger picture, and realising just how difficult a task it is to stimulate, motivate and generally organise a local Division. The people who did these jobs twenty years ago, either had more enthusiastic support or simply more talent and/or time.

We are living in times that specialise in high speed communications, vast data transfer, massive expectations and lifestyles abounding with labour saving devices and yet we have too little spare time. I have given a little of mine for the last three years and step aside hoping that I have put something back into a hobby which has given me a lot during my life in terms of technical skills, hobby pastime and indeed, in terms of friends.

Our late esteemed colleague, Ron Henderson VK1RH, himself a tireless and dedicated committee member, was the author of an amendment to our rules some years ago instituting a sunset clause to encourage committee members to step aside every three years. Having had the experience of a three year stint of fairly demanding proportions, I can now heartily endorse the concept of serving on a committee for a sensible duration. I am

certain, that given a break, the possibility of my contemplating another job in a few years will remain palatable, having stood aside prior to burn-out.

I hope that you will attend our AGM. The various reports that are tabled at this meeting are the only written guides to the state of our Division. Complaining behind the scenes that you don't know what is going on is unforgivable if you don't bother attending at least this one meeting per year. Demonstrate your membership commitment by participating actively in the democratic process.

I look forward to seeing you there!

### VK2 Notes

John Robinson VK2XY

The Division's recruitment and retention campaign offering a dual-trace oscilloscope as a prize, which ran between March and November last year, closed on 30 November. The prize draw will take place at the Central Coast Field Day at Wyong on Sunday 27 February. Be there, or be square!

The current recruitment and retention campaign, which began on 1 December last year, ends on Monday 28 February. Non-members who join (join up a friend!) or members who renew between those two dates are eligible to win a TM-241A 2 m, 50 watt mobile rig (first prize), or a TH-28A 2 m, 5 watt handheld. Total prize value is over \$1400.

All grades of membership are eligible, plus 3-year and life members. If your renewal falls outside this period, no matter — you can renew early! If you do, please do it through our Administrative Secretary, Margaret Morris, NOT through the Federal Office in Victoria. The draw for the prizes is planned for the AGM in April. Thanks to Kenwood Electronics Australia for sponsoring the promotion again.

### Another EGM

Following a petition from more than 35 members last December, another EGM has been called. Council set the date as Saturday 26 February, 1994. It will be held at Doonside Community Centre, Cnr Hillend Rd and Graham St, Doonside, commencing at 2.00 pm. Note that this is the day before the Central Coast Field Day.

The notice of motion on the petition seeks to pass a motion of no confidence

in Council and call a ballot for elections. The AGM will be five weeks after the EGM when a new Council will be elected anyway. Closing date for nominations is 27 February, the day after the EGM.

### Donation from Telecom

Telecom has donated more than 500 FM828 VHF transceivers to the Division, announced at Council's January 4 meeting in Wollongong. The official handover took place on 21 December. Dick Smith VK2DIK accepted the donation on behalf of the Division, from Mr Charles Zoi from Telecom corporate marketing. A significant quantity has, by now, been passed to various volunteer emergency service groups, including WICEN and bushfire brigade services. The rest are being sold to members on a "first come, first served" basis. Valuable publicity about the donation appeared in the January 10 issue of *The Australian* newspaper, page 16, following a press release issued by Roger Harrison VK2ZTB, and on ABC Radio 2BL on the Bob Hughes morning show the next day. Bob (VK2YOW) is a member — natch!

### Dural Closed

Following two unrelated incidents, the Dural transmitting station has been closed until further notice. On 2 January, three people (including one Councillor) put to air a broadcast without the knowledge or authority of the Council or Divisional executive. This was not the first occasion in recent times. As the incidents breached the Division's licences, and following considerable discussion among the President, Vice-President, Secretary and two other Councillors, being a majority of the Council, the equipment at Dural was disabled on 2 January and the building secured. A notice was posted on the building's door.

An incident involving the Division's packet BBS, VK2RWI, in which member David Horsfall VK2KFU was alleged to have published defamatory bulletins on 28 December, brought threatened legal action for breach of the licence and defamation from Val Bergman, who is the wife of Roger Harrison, Divisional Secretary. As a result, the packet BBS has been closed down until further notice, also. No further legal action ensued. I was delegated to handle this legal business for the Division as Secretary Roger Harrison declined owing to his relationship with the plaintiff.

This latter incident has serious repercussions. A packet BBS operator is a "knowing publisher" of whatever is posted to the packet BBS under his or her control. All BBS operators in a network, who carry defamatory bulletins are liable

as anyone who may be knowingly involved in the publication of defamatory material can be enjoined in a defamation action. And juries in recent defamation cases in NSW have awarded astonishingly high sums in damages. All BBS operators have a duty to exercise control of what's "published" on their BBS. "Freedom of speech" may be a right, but it does not include the right to defame. Even the truth can be defamatory. This is a complex issue, which needs wide discussion and I've only just touched the tip of the iceberg here.

Notes: NTAC Chairman, Cesar VK2TCM, resigned in January. Council accepted the resignation but not his reason, which related to "control". Councillor John Simon VK2XGJ has replaced him. Broadcast Coordinator Steve Pullan VK2QZ resigned in January. The Ch 7000 Dural voice repeater was restored to service for WICEN on 8 Jan.

As Dural is temporarily closed, Sunday broadcasts now originate from Parramatta on 40 m (morning) and 80 m (evening) and 70 cm, with relays. A reminder: the Division's AGM is on Sunday April 10. That's NOT early, as the rumours going around assert. The Articles quote April, or the nearest practicable date.

### 5/8 Wave — VK5 Notes

*Rowland Bruce VK5OU*

Christmas has been and gone; so has the new year. Hope you got the goodies you hoped for. What did you think of the Christmas get-together held at the BGB headquarters on 7 December? The Council would like to know.

Is your Club sending representatives or delegates to the Clubs Convention over the weekend of February 27/28? If not, why not? There are twenty-four WIA affiliated groups which are entitled to be represented. They are ACBRO, Adelaide Hills, Alice Springs, Barossa, Darwin, Elizabeth, Lower Eyre Peninsula, Lower Murray, Mid North, Moomba, Naracoorte, North East, Port Adelaide, Port Augusta, Riverland, SA ATV, SAPUG, Scout Association, South Coast, South East, Southern Cross DX Group, Whyalla and Yorke Peninsula Repeater Group.

For those still aspiring to a licence (or upgrade) you will find an examination is being held in Adelaide each month of 1994. Besides the WIA, services are provided by Adelaide Hills ARC, Elizabeth ARC, North East RC and the Taylor Radio Group. The WIA Divisional Examinations Officer, Don Wilton, tel 388 6966, will be able to tell you which month's exam is being run by which group. If you are still

chasing the Morse component, don't forget the WIA practice session each night of the week on 3.550 MHz +/- QRM.

And one final reminder for the New Year. HAVE YOU SENT OFF YOUR SUBSCRIPTIONS? Fees this year remain at \$70 for the third year running.

### VK6 Notes

*Cliff Bastin VK6LZ*

### Notice of Annual General Meeting

It is hereby notified that the Annual General Meeting of the West Australian Division of the Wireless Institute of Australia will be held on 19 April 1994 following the General Meeting which commences at 8 pm. 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.

Notice 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.

Nominations 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 200 words outlining his or her case for election, and experience. Each nomination shall be signed by two members proposing the candidate. Candidates must possess 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 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:

### QRM from VK7

*Ted Beard VK7EB, VK7. Divisional Secretary*

The Annual General Meeting of the VK7 Division will be held at the Southern Branch Activity Centre, Queens Domain, Hobart on 26 March 1994 commencing at 1400 hours sharp.

All Notices of Motion for the AGM must be received by the Secretary not less than 28 days prior to the meeting, and must be signed by at least three (3) currently financial members.

Nomination of Candidates for election to the Divisional Council must be received by the Secretary, in writing, not less than 21 days before the AGM.

Proxies are to be deposited at the Registered Office of the Institute, Town Hall, Macquarie Street, Hobart, 7000 at least 24 hours before the time appointed for the meeting.

All the above items are in accordance with the Articles of Association.

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## QSP News

### NSW Bushfires

The Federal QSP from Kevin Olds VK1OK refers to the VK2 bushfires. Our Production Editor, Bill Roper VK3BR, who was visiting friends in Newcastle, had near first-hand experience of them. Due to emergency closing of highways, Bill was three days late in returning to Melbourne for production of this issue,

necessitating considerable overtime work to "catch up"!

We hope no amateurs are among those who lost homes and equipment in the fires. We are sure many amateurs have helped with WICEN support of emergency communications for the firefighters.

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## How's DX

Stephen Pall VK2PS\*

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There is no doubt that conditions are worsening as the solar activity is diminishing. Mid December saw the solar flux number 84 and, accordingly, the high band activity was very irregular and sometimes just non-existent. In contrast, the 2 metre band, due to the atmospheric changes on the east coast of Australia, has produced good DX possibilities to New Zealand.

When the magnetic field of the Earth was quiet there were excellent opportunities for DXing on 40 and 80 metres. As a result of changing band conditions more and more DXers are moving to the lower bands.

Just recently a new net has emerged around 7062 kHz at 1030 UTC. Kerry VK4MZ, Dave TI5RLI and other helpers, are conducting the activity which calls itself the "Pacific Rim 40 DX Group". Besides the VK and ZL participants the following countries are almost regulars: AH6, C6, F04, FM5, FT5, HC, HH, HL, JA, JT, KP2, LU, PJ2, PZ, PY, P43, TI, T32, YB, YV, VE, W.

The 80 metre band is also very active. USA and South American contacts are quite common with some choice DX popping up from time to time. Eric S21ZG made quite a number of VK and ZL operators very happy when he appeared in the 80 metre "DX window" on New Year's Day.

### Silent Key — Lloyd Colvin W6KG

The well known "Yasme" DXer Lloyd Colvin died of a massive stroke and heart attack on 14 December whilst on a DXpedition in Turkey. His wife Iris W6QL was at his side when he passed away. The Colvins are well known DXers. They have activated more than 200 DX countries since World War 2 when they started their DX activity under the auspices of the "Yasme Foundation". In January 1990 they visited Australia and met many of their Australian radio amateur friends in person (see "The Colvins in Australia", AR Jan 1991). The Colvins were the old style DXers travelling together, with little publicity and always using their own funds, never asking for any donations. The DXing world of radio amateurs will sadly miss Lloyd W6KG for many decades to come.

### Peter Island 3Y0PI

As you read this, the long awaited DX activity from this remote, uninhabited

island near the Antarctic continent in the Bellinghausen Sea, is in full swing and hopefully you were able to have had a contact with them. This is the expedition which was "almost cancelled". In European packet DX bulletins circulating world-wide and issued by K0IR and ON6TT, the full story of the almost cancelled expedition was told for the first time on 21 December 1993. Here is the condensed version of the four pages of the bulletin:-

The expedition is using two Russian polar ships converted for the tourist trade and equipped with helicopters, which are plying a tourist route from the East to the West and from the West to the East on a tight, simultaneous schedule around the Antarctic continent. By previous arrangement the two ships were to detour further south to land and later to pick up the expedition members from the island.

At the beginning of November the expedition learned that, due to the uncertain economic situation in Russia, the Russian Antarctic Research Institute, which is in charge of the pick-up vessel, "could not guarantee" the transport of the expedition members back to South America. On 4 December it was evident that the Russians pulled out of the deal. Nothing could change their mind, not even more money. An urgent worldwide enquiry by the organisers by telephone and fax was not able to find a suitable replacement charter vessel.

A few days passed in complete desperation and confusion. The charter company responsible for the ship going to Peter Island wanted to unload the expedition's equipment, which was already on board, in the last port of call in South America. Time was ticking away. Finally a contact was made with the director of the Russian Antarctic Research Institute who by now was fully briefed of the importance of the DXpedition by Jukka OH2BR a Finn radio amateur who lives in St Petersburg. On 7 December the Russians advised the DXpedition that they would "guarantee the pick-up" and requested a personal meeting with the expedition organisers. This took place on 17 December when the technical details of the pick-up/departure were discussed and agreed upon. The pickup vessel will be the "Akademik Fedorow" with freight helicopters able to lift 3.5 tons at one time. The boat will arrive at Peter I Island around 12 February and will depart after a stop over of 36 hours.

During this time the expedition has to pack-up and depart with the many tonnes of equipment brought onto the island. Once more, it is needless to say, all these unforeseen extra efforts mean an enormous hidden cost in the expedition's budget. Just the phone bills in the month of December amounted to well over \$2000! Once again they call on the amateur fraternity for financial support as the expedition members have reached the limit that each of them can personally contribute to this expedition. Send your financial help to AA6BB Jerry Branson, 93787, Dorsey Lane, Junction City, OR 97448, USA.

As reported earlier the expedition plans to make 70,000 to 90,000 QSOs. QSL for SSB contacts to AA6BB (above address). For CW and RTTY contacts, send to KA6V Joan Branson of the same address. Separate envelopes please with return postage.

### St Peter & St Paul Rocks — PY0S

According to a press release dated at the end of November, the Natal DX Group in Brazil is planning to activate these rocks with four operators running two stations 24 hours a day in CW and SSB on all bands and modes. The intended stay on the rocks is three weeks giving everybody the opportunity to work this rare DX country. The callsigns will be PY0SK and PY0SP. QSL for SSB, RTTY, 6 m, packet and satellite goes to Karl PS7KM, and for CW to PT7WA. The operation was planned for the end of January or during February 94. However, no further news has been received since. One only hopes that they will appear on the bands as predicted.

### Pratas Island — BV9P

The "on again, off again" saga of Pratas island is continuing (see AR Nov 93). Early December had the news that the Taiwanese authorities are reluctant to allow foreigners to go to Pratas Island, but they agreed to allow OH2BH, OH1NYP and 9V1W to take part in the proposed activity. The new date was to be 15 December for 10 days. Nothing happened because Taiwan had elections at that time and the military was too busy with other things to provide assisted transport to the island. Besides all this the aeroplane servicing the island can carry only 11 passengers. Later news reversed the previous situation. The final new commencing date was mentioned around the end of February or around 6 March. Early January brought the latest news. A four and a half hour operation on 5 January by a number of Taiwanese

operators. It appears that they will be active during a return plane stopover on the IOTA frequencies to establish a new IOTA island. By the time you read this we will know whether this latest news became a reality or not?

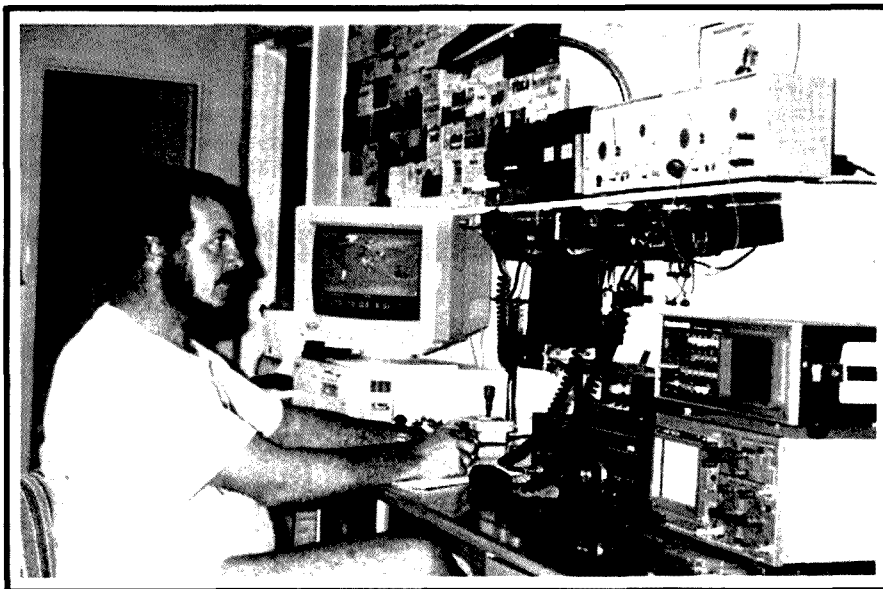
### The VK9 & VK0 QSL Bureau

Neil Penfold VK6NE, who manages the VK9 and the VK0 QSL Bureau on behalf of the WIA, reminds everybody that, when QSLing with VK9 and VK0 stations, one should follow the following simple rules:- If the station requests direct QSLs, either to a Callbook address or via a nominated direct QSL manager, please follow that instruction and do not QSL via the Bureau. Use the VK9/VK0 Bureau only as a last resort, bearing in mind that there is a very long delay getting a card turn-around, and that not all the VK9/VK0 operators are collecting cards from the Bureau or have established a credit for forwarding the incoming cards. The following operators do not collect Bureau cards:- VK9NS, VK9NL, VK9ND, VK9NI, and VK9NP.

Here is a list of operators who maintain a credit with the Bureau for forwarding of their incoming cards: VK9CB, VK9CK, VK9CL, VK9LA, VK9LH, VK9MM, VK9WW, VK9XK, VK9XL, VK9TR, VK9XN, VI9XN, VK9XM, VK9XZ, VK9XO. In the last few years no VK0 station has instructed Neil as to what to do with their cards.

### Future DX Activity

- The next radio amateur to be active from the French Antarctic Base, Adelie Land, Petrels Island (IOTA AN-017) starting March 94 is Robert FT5YF. Robert was at this base once before in 1988. QSL to F3CJ (ex-F6ESH) Joel Cathelain, 11 Rue De Buiry, 62156 Vis en Artois, France.
- STOK club station in Khartoum, Sudan was reported to be working on 18085, 21001 and 24895 kHz, between 1230 and 1430 UTC. QSL to Box 617, Khartoum, Sudan, Africa.
- Kiyoko, the popular lady operator on the various Pacific islands early in 1990 is now in Nepal for the next one or two years. She called into the Southern Cross DX Net on 18 December (14226.5 at 1100 UTC) and made many contacts with VK, ZL and others. QSL direct only (she is not a member of the JARL) to Kiyoko Yamakami, PO Box 3, Tokaimura, Ibaragi, 319-11, Japan.
- Changes in the ANZA net schedule (21205 kHz at 0500). Due to the poor propagation, if no check-ins are heard by 0515 the net will move to 14164 kHz.



Terry VK8KTC in his well equipped "shack" on Grootte Eylendt NT.

- Belize, V31. Art NN7A and Mike NG7S will operate as V31JZ from South Water Cay (IOTA NA-180) starting February 13 for one week.
- Lars LA5EBA will be active for the next 6 months from Svalbard Islands as JW5EBA.
- Peter XT2BW left Burkina Faso at the end of January to go to Ghana for 3 months. He intends to be operational from there. QSL to WB2FQH.
- 3X0DEX can be heard on 18123 kHz at around 0800 on Sundays. QSL to FD1RUQ, PO Box 24, F-22190 Plerin, France.
- HC1JOL Keith can be heard quite often on various nets. He has been connected with the Christian Broadcasting Station in Ecuador (which developed the "Quad" antenna) for the past eight years. QSL to Keith Clukey, PO Box 17-17-691, Quito, Ecuador, South America.
- My crystal ball says that 1994 could see activity from one or two very rare DX countries.
- Niko SV2WT reports that Monk Apollo from Mount Athos is active again on the HF bands and would like to be active on most DX nets.
- 28 February will probably see the handing back of Walvis Bay by South Africa to Namibia (what about Penguin Islands?). This could mean the deletion of one or two DX countries from the DXCC list.
- HP1XVH — Gunter — 14238 — SSB — 0432 — Dec. QSL to Radio Ocelot Contadora Island, Gunter S Hamacher, AP6 7413, El Dorado, Panama 6A, Republic of Panama, Central America.
- ZC4KS — Kevin — 14226 — SSB — 1223 Dec. QSL to G0PWR, K E Staley, 11 West Lawn, Findern, Derbyshire DE6 6BB, UK.
- LU9XPP — Fer — 14260 — SSB — 0651 — Dec. QSL via the Bureau.
- YJ0AFEU — Daniel — 14190 — SSB — 0639 — Dec. QSL to N4SA, Michael L Thomas, 5717 Puerto Vallarta, North Richland Hills, TX 76180 USA.
- T15RLI — Dave — 7062 — SSB — 1107 — Dec. QSL to WA4JTK, Alan E Strauss, 17401 NW 47th Ave, Carol City, FL 33055 USA.
- JT1BV — Naran — 7060 — SSB — 1114 — Dec. QSL to JT1BY Tom Tomorbaatar, Box 470, Ulan Bator 13, Mongolian Republic.
- HH7PV — Pat — 7060 — SSB — 1052 — Jan. QSL to AA5DW James L Greene III, 2409 Maxwell, Midland, TX 79705 USA.
- T32BB — Bob — 7060 — SSB — 1209 — Jan. QSL to DF6FK Norbert Willand, Leipzieggerring 389, D-6054, Rodgau-3, Germany.
- S21ZG — Eric — 3795 — SSB — 1209 — Jan. QSL to W4FRU John H Parrott Jr, PO Box 5127 Suffolk, Virginia — 23435 USA.

### From Here There and Everywhere

- Alan VK4SS, commenting on the CW activity of Roger ZD9SXW, advises me that he worked him on 19 October 1993 and was very happy having worked

### Interesting QSOs and QSL Information

- 9M8DB — Jonny — 14187 — 1153 - Nov. QSL to Jonny Tan, PO Box 1549, 98008 Miri, Sarawak, East Malaysia.

Tristan Da Cunha again after so many years. He sent his request for a QSL card direct to Roger G3SXW, and was more than disappointed when he received the reply from the man himself — he was not in the log! Here are some details of Roger's letter to Alan: "Just back from ZD9...I knew VK/ZL was going to be very tough...a 7000 ft mountain stands in the way...I listened carefully for VK/ZL...and stopped the pile-up to listen for openings...and called VK/ZL only...Nothing doing...Only two VK's were worked and not one ZL. The two VK stations worked were VK6HD on 15 October and VK2BJ on 16 October. Sorry Alan, but I tried hard..." End of quote from the letter. There was some rumour on the bands in October that a "slim"? was also posing as ZD9. How many of our readers were duped by this "slim"? Roger's letter supports this possibility.

- Sergey Tsybizov advised Bill VK2XT that he will be on Dickson Island (73°N and 80°E) for the next 2 — 3 years. From time to time he will also visit Franz Joseph Land. The callsigns used will be 4K4/UA0KBZ (Dickson Island AS-005) and 4K2KBZ (Franz Joseph Land EU-019). QSL direct only as he is not a member of the Russian QSL Bureau. Send SAE and one "green" stamp. He says he has no problems with the mail at the local Post Office. Address is PO Box 2, Dickson Island 6632441, Russia.
- Following is the Slovak QSL Bureau's Address: SARA, PO Box 1, 85299 Bratislava 5, Slovak Republic, Europe.
- According to the newsletter of the Dragon Amateur Radio Club (Wales, UK) the special event station GB2VK made 300 contacts on 22 September commemorating the first "wireless message" between the UK and VK.
- For those who worked the two Christmas Island stations in December here are the QSL addresses:- V19XN to W5KNE, Bob Winn, 635 Williams Way, Richardson, TX 75080, USA. VK9XO to VK4CRR, Bill Horner, 26 Iron St, Gympie, QLD 4570. Returning from Christmas Island to Perth (WA), Bob W5KNE phoned me and gave some news of the V19XN activity. Bob made about 7500 QSOs under very poor conditions, especially on reception. Surprisingly Christmas Island has a high noise level on all bands except 15 metres. The noise is generated by atmospheric, commercial RTTY (30 metres), interference from the north by mobile radiophones (10 and 40 metres) and interference by a local radio beacon. As far as antennas are

concerned, the tribander beam lent to him (10-15-20 metres) was not useable, but he used a minibeam on 12 and 17 metres. The rest were dipoles for 15-20-30-40 and 80 metres. The noise level sometimes reached S9 which made DX operation very challenging and also very frustrating. Their location on the top of the highest hill gave them an operating room and shelter from the elements, but very little else as far as personal comfort was concerned. First contact made was with AA6TT on 27 November at 1356 UTC, and the last on 14 December at 0820 UTC, CW with JA4AHV. The last day was spent dismantling the wire antenna system and putting away miles of coax cable and rope.

There was a third activity from the Island at the beginning of November. Stephen VK6VZ was active as VK9XZ and made 500 QSOs in eight days from 6 to 14 of November. His location near the beach favoured propagation to Europe and as a result he had no contacts with North America and only 16 contacts with VK. His QSL cards are now in the mail.

- The station ST2/G40JW reported in Dec 93 AR has written now to Austin VK5WO and has given his postal address as c/o STOK, PO Box 617, Khartoum, Sudan. According to Abdusalam, an operator of STOK, the station is the first official Club Station and is located in the capital city of Sudan and not in Southern Sudan as some had anticipated. Abdusalam said there are only three licensed amateurs in Sudan as ST2. Club stations in Sudan will all be given the ST0 prefix. ST2/G40JW is now QRT because he had only a temporary licence which has to be renewed. He is now waiting for a new permission to operate.
- VK0MC was reported being active. He is a pirate. Do not waste your time and money and do not QSL.
- FT4WD and 5Z4BI closed down in November.
- VR6JJ and VR6BB in February 1993 made 35,000 QSOs on 160 to 10 metres. The QSL cards are now arriving via JF2KOZ.
- As reported in DX Bulletins the recent Libyan activity with the callsign 5AOA was a pirate, according to SP6BZ.
- The DX Advisory Committee has voted 13 to 3 in favour of establishing an RRTY Honour Roll. The ARRL Awards Committee voted 6 "yes" and 1 "no" in favour of establishing such an award.
- The prefix X5 used by some stations declaring their locations as The Republic of Serbia is used by illegal

Serbian operations in the disputed territory of the war-torn Republic of Bosnia-Herzegovina.

- Andy ZD8VJ leaves Ascension Island on 26 January to return to the UK.
- It has been reported that 12 amateurs on Pitcairn Island (pop 59 residents) decided to form themselves into an amateur radio club with the callsign VR6PAC.
- According to ON7GB, FT4WD on Crozet said to him that there could be an activity from Kerguelen Island (FT-X) or from Amsterdam & St Paul Islands (FT-Z).

### QSLs Received

A71AN (4W op) HC2TI (4W op) 9MOS (5M W4FRU)

### Thank You

Thanks to all of you who kept me informed and assisted me in compiling these notes, especially to VK2KCP — VK2KFU — VK2XT — VK2LEE — VK4CY — VK4MZ — VK4OD — VK4OH — VK4SS — VK4XW — VK5WO — VK6NE — VK6VZ — GB2VK — W5KNE, and the publications *QRZ DX*, *The DX Bulletin*, and the *DX News Sheet*.

\*PO Box 93 Dural NSW 2158

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## Update

Neil Penfold VK6NE advises that the 1993 Remembrance Day Contest results, as published on page 32 of the December 1993 issue of *Amateur Radio*, have been amended to include VK4HF with a score of 635, and VK4BB with a score of 405.

Make sure you amend your copy of the results now!

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## Editor's Comment

### Continued from page 3

more years before my licence is 50 years old! I have dedicated much of my life to the future of the WIA. Anything which renders that future less viable must be opposed. Anyone who, motivated by their own personal ambition, encourages not just healthy dissent and debate, but factional violence and suppression of the truth, must be made to realise that the organisation is greater than any one of us. United we may be able to stand, but divided we will disintegrate beyond recall.

Bill Rice VK3ABP  
Editor  
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# International Amateur Radio Union Monitoring Service (IARUMS) — Intruder Watch

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Gordon Loveday VK4KAL\*

## New Ideas for Observers In 1994

The monitoring service in Region 3 has been slowly reshaping the "method of attack". Firstly to save wasting precious listening time. Secondly, to get more information from the observations sent in by our observers in those States participating in Intruder Watch. This may also induce amateurs in other States to join the ranks. No medals, other than the knowledge that "I HELPED GET RID OF THAT PEST"; and that is a nice feeling.

Now to the ideas:

1. DO NOT LOG A STATION ONLY HEARD ONCE. Check it on at least three different days. If still present, THEN LOG IT.  
REASON. Many signals come and go just as quickly and looking for them at a later date is just wasting time all round.
2. I will be "tasking observers" with both PRIMARY AND SECONDARY observations. The MORE important PRIMARY should concentrate on NO MORE THAN THREE consistent intruders.  
REASON. With ALL observers looking out for the same intruders over a longer period, I'm sure much more important data, eg traffic content, propagation info, multiple bearings, can be verified by the larger number of observations taking place.
3. Secondary tasks of observers can be the independent reporting of "other" intruders, which by their presence may be selected as primary at some later date. If we can get the results of such concentrated coordinated observations we should be able confidently to produce ITU Harmful Interference complaints much quicker.

Both the SMA monitor and myself have looked at a number of intruder stations' frequencies, only to find no sign of the reported intrusion, possibly because the time delay has been too great. Not much can be done between observer and co-ord in this matter. The time factor between the SMA or Region 3 co-ordinator needs to be reduced. Measures are being investigated to correct this. We could have quick 3-way, then.

The triennial IARU Region 3 will be meeting in Singapore in 1994. I hope to have sufficient information about

regularity of intruders' frequencies used, directions of signals and their proof of origin, so I'm looking for positive results from the above new ideas!

The frequencies for a trial run are those which still lack a lot of information. Maybe others are more appropriate, but it would be a good idea to get the reactions of

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## Pounding Brass

Stephen P Smith VK2SPS\*

Commemorating the 140th Anniversary of The Official Opening Of The First Morse Telegraph Circuit In Australia Between Melbourne And Williamstown On 7 April 1854

Remember our series on early Australian Telecommunications, and how the telegraph brought significant changes to the lives of our early pioneers of this great nation? Well, I have recently been informed that Mr Gordon Hill, President of the Sydney Morsecodians Fraternity, and members will be commemorating the 140th Anniversary of the official opening.

It has been decided that this great event will take place on Thursday and Friday, 7 and 8 April 1994. Some of the members participating in this historical event will include the following, all ex-PMG Telegraphists and active amateurs: VK1AL Alan Moore, VK1RY Fred Ryan, VK1AD Gordon Brown, VK2DHM Frank Mike, VK2NJ Ivan Thomas, VK3ED Geoff Butterworth, VK3EK Jack Paruscio.

The Victorian sites chosen, yet to be ratified, are the old Chief Telegraph Office on the corner of Bourke and Elizabeth Streets, Melbourne, and the old Williamstown Post Office, which is presently occupied by TAFE. I would like to quote part of the information bulletin, sent out by Mr Gordon Hill, President of the Morsecodians Fraternity, to prominent organisations and members.

*The Morse telegraph system gave birth to a very talented group of men and women, the pioneer telegraphists and postal clerks who were, in time, scattered the length and breadth of Australia in all its Chief Telegraph and Post Offices and operated over a vast network of lines. This wonderful system endured for 110 years in its original form until about 1964 but its use gradually diminished with the introduction*

observers around Australia both from seasoned observers and newcomers. Here they are:

14.060 MHz, 14.210 MHz & 7.020 MHz. For those unable, because of propagation, to hear any of these, listen on 21.305 MHz. Spend most of your time with these. I will excuse a smaller log return on this month's effort. Please add your comments one way or the other on bottom of log sheet.

\*Federal Intruder Watch Co-Ordinator,  
Freepost No 4 Rubyvale QLD 4702 or VK4KAL@VK4AUN-1  
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*of mechanised, and later computerised, telegraph equipment. Many telegraphists and postal clerks who formed part of the old Post Master General's Department until its dismantling almost 20 years ago, are members of the Morsecodians Fraternity, today.*

*It is over 35 years since the last junior telegraphist or postal clerk-in-training learned Morse code using the key and sounder system in a manner identical to that depicted in many black and white films, and yet many old timers can still read Morse as though they had used it yesterday. Many operators were individually capable of sending and receiving thousands of words a day by Morse code at speeds exceeding 40 words per minute on occasions.*

*Although the 150th Anniversary of the opening of the first telegraph line is an obvious milestone to celebrate, our ranks of operators with the old skills will undoubtedly be slender when this occurs in the year 2004. With this in mind the Morsecodian Fraternity based in Sydney, but with members scattered over Australia, wishes to celebrate the 140th Anniversary of the first Australian telegraph circuit together with former telegraphists and postal clerks wishing to participate. The Fraternity is hopeful of obtaining support from a number of prestigious organisations such as Telecom, Australia Post, Historical Societies and newspapers. The National Science and Technology Centre in Canberra has been a valued supporter of the Morsecodians Fraternity for several years and has provided generous support and an invaluable venue and assistance with publicity in Canberra.*

*Former Victorian operators will doubtless be well represented. The group wish to establish a physical Morse link*



between Melbourne and Williamstown (with the venues at each end to be identified). The Science Centre in Canberra would be linked with both terminals so that messages may be exchanged between the three centres. Members of the public visiting the venues would be able to view the proceedings or send brief telegrams to relatives or friends without charge. Official messages could be exchanged between the Lord Mayor of Melbourne and the Mayor of Williamstown. Perhaps telegrams from the Prime Minister and the Minister for Communications to both dignitaries to celebrate the occasion may be forthcoming. Authentic and nicely restored telegraph equipment of the time will be provided through the Morsecodians Society and its membership.

A number of Morsecodians have

volunteered their services to man the telegraph lines at the three venues, Melbourne, Williamstown and Canberra. It is hoped that this small part of early Australian technological history may be prolonged just a little longer.

I will keep you informed of any changes that may occur, as we approach this historical event. To conclude this month's issue, I am seeking information on the following Morse keys. If anyone can assist it would be appreciated. Admiralty Pattern 1271 Buzzer Repeater and Key Unit, year 1940 made by AGI Ltd and, Admiralty Pattern No 7681, Key Morse. I am QTHR or can be contacted on 02 992 933 any time after 1800 hrs.

Until next month 73 Steve.

\*PO Box 361 Mona Vale NSW 2103

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## Over to You — Members' Opinions

All letters from members will be considered for publication, but must be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.

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### Membership Renewal Date

Once again the Festive season has come and gone, with the usual lists of gifts to buy, Christmas and greeting cards to be sent, and the inevitable need to dig ever deeper into wallet, purse or pocket.

With recession upon us, and the possibility of some relief seeming quite distant, it might be that the average family is finding it more and more difficult to find the funds for necessities. Some may be forced to forgo luxuries such as club or organisation membership, especially during Christmas and the New Year. Being single and still employed (for the moment anyway!) I can manage the WIA subs when the statement arrives in December, but it occurs to me that in recent years, maybe some now ex-members of the WIA dropped out, never to rejoin, simply because the funds just weren't available at Christmas?

With the above in mind, I'd like to canvas the idea of WIA subs falling due at another time of the year, perhaps in July or even around tax return time (for those lucky enough to get one!).

Whilst I'm not suggesting that this may be the main reason for any decline in membership in recent years, is it not possible it may have been a contributing factor? What do other members think?

Bob Faravoni VK3EL  
81 Jenkins St  
Northcote VIC 3070

(This mainly applies to old-timers, Bob, as with cyclic billing for more recent members the renewal date is the anniversary of the original joining date. Ed)

### Letter from Krenkel Radio Club about QSLs

To clarify the "Box 88" uncertainties, here is a letter that I received from UV3BW:-

*The Krenkel Central Radio Club of the Russian Federation wishes Happy New Year for 1994 and subsequent improvement in our many years good connections. We confirm that the QSL bureau of the Krenkel Central Radio Club of the Russian Federation (PO Box 88, Moscow, Russia) as before shares QSL card and radio amateur diploma exchange between national radio amateur societies and radio amateurs of the whole world.*

Sincerely Yours and 73

Chief of the Krenkel Central Radio Club  
V Bondarenko UV3BW  
Neil Penfold VK6NE  
2 Moss Court  
Kingsley WA 6026

### Those Delayed Amateur Regulations — A Sense of Deja Vu!

After World War 1 the Royal Australian Navy was reluctant to allow anyone back on the airwaves but after continued pressure from the WIA and leading amateurs the government once again took control of licensing and promised new regulations for mid-1922, to allow amateurs to transmit and receive. Receiving-only licences were made available in August 1922 at a cost of two pounds but the promised new transmitting regulations were not forthcoming. This led to a heated debate

in Parliament in October 1922 where Major CWC Marr, who had commanded a wireless squadron during WW1, and later entered federal politics, asked Prime Minister Billy Hughes some very pointed questions about the government's commitment and competence. Hughes promised the regulations would be released "any day now." (Does this sound familiar?)

Still there was no sign of the regulations with all manner of excuses, including the gem that one couldn't rush the Government Printer. This led one despairing anonymous amateur to pen the following ditty which appeared in Wireless Weekly:-

*"Every morn at the break of dawn, my heart fills with palpitations,  
As I search for a line and long for a sign of the new Wireless Regulations.*

*If the Govt Printer was only a sprinter, we might get some news, so they say*

*So lets form a band to give him a hand, to end this distressing delay!"*

The Regulations were finally released in December 1922. Come to think of it that was still a much shorter gestation period than the current Regulations debacle!

Colin McKinnon VK2DYM

52 Mills Rd

Glenhaven NSW 2156

### Democracy?

I refer to the December 1993 editorial. Article 30 of the WIA Articles of Association requires the Divisional "Committee of Directors or other governing body to authorise such person as it thinks fit to act as its representative either at a particular Convention or at all Conventions..."

That clause is deliberately contrary to the foundation principle of our brand of "Democracy" which insists that the people's representatives be chosen by a ballot of the people. That principle is of course openly and legally flouted by corporation directors and managers who prefer that their "business acumen" be unhampered by the wishes of the owners.

Now that there is no chance that the WIA corporation will be delegated Spectrum Management responsibilities, it could concentrate less on business and more on being a member's institute. An amendment to Article 30 requiring Federal Councillors to be elected by a ballot of Division members would be a good beginning.

Lindsay Lawless VK3ANJ

PO Box 760

Lakes Entrance VIC 3909

(Some will argue against this on grounds of cost, others that it would be cumbersome to operate. As writer of the editorial I tend to support your viewpoint,

Lindsay, but cost from member's funds could be significant, particularly if extended to cover all appointments presently nominated. Ed)

## Non Members

I have been meaning to write for a long time on the subject, BLUDGERS IN THE SYSTEM.

Why CAN'T the WIA Membership fees be a part of the LICENCE FEES? If the licence fees were structured that way, then everybody would contribute to at least some of the expenses. What I object to is the BLUDGERS who use the repeaters, beacons, slow Morse sessions, packet (in particular) and other facilities provided by the members, then write abuse, rubbish on air and otherwise, generally, KNOCK THE WIA and its MEMBERS. They ignore the fact that any POLITICAL, MONEY MAKING, ABUSIVE or OTHER UNSAVOURY and UNSATISFACTORY BEHAVIOUR ON AIR is STRICTLY FORBIDDEN under current LICENCE CONDITIONS.

How many times have other LICENSED (Non Member) Amateurs deliberately and maliciously "Dropped Carriers" on repeaters users? I would say countless.

A while ago, the WIA printed the call book with a "\*\*\*\*" against members' names. I for one, agreed to this. Apparently it shamed some non members no end. It was said to have shamed members too. I can't see why. You don't get FREE service from your Automobile club (RAA, RACV etc) which is advertised to MEMBERS ONLY.

The WIA could devolve licensing the same as the examinations were devolved. I am sure many other members feel the same way.

Mervyn Millar VK5MX  
31 Rickaby St  
Croydon Park SA 5008

## VK2 Elections

As a result of a meeting of concerned members of the WIA which was held in Sydney recently, a committee has been formed to encourage independent candidates to seek election to the council of the NSW Division of the WIA at the forthcoming council elections.

The committee consists of Peter Naish VK2BPN, Bob Meyer VK2BMU, John Brook VK2FUR, Alan Dark VK2XAT and Roger Henley VK2ZIG. No member of the committee will stand as a candidate.

The committee can be contacted at the address below.

Alan Dark VK2XAT  
PO Box 372  
West Ryde NSW 2114  
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## Repeater Link

Will McGhie VK6UU\*

### FM 828-3

This is the third circuit drawing of the popular FM 828 used in the majority of repeaters in Australia.

This month's circuit is of the audio pre-amp and mute circuit. The mute circuit in the FM 828 is a particularly good one, showing little sensitivity drift with temperature or supply voltage. The one complaint I have with the mute is the hysteresis which is about 5 dB. This means a 5 dB stronger signal is required to open the mute than close it. The end result is poor mute sensitivity for amateur service. The solution is to add a 10  $\Omega$  resistor in parallel with R66 (27  $\Omega$ ) or increase the value of R69 (470  $\Omega$ ) to around 2 k $\Omega$ .

The audio out from this part of the circuit is not muted. For repeater use audio from pin 26 (de-emphasised) or pin 25 (emphasised) are useful but not muted. Connecting pin 33 to pin 25 through a 2 k $\Omega$  resistor mutes the audio by applying 10 volts to the emitter of TR4 when muted.

All these circuits were produced on computer using the CAD program "Draft Choice". If you would like a copy of this CAD program and the FM 828 computer circuits let me know. Not all the FM 828 circuits are completed yet, as they take considerable time to draw onto computer. These circuits can also be made available via packet in 7 Plus format.

The CAD program "Draft Choice" is an excellent circuit drawing program and being shareware is easy and cheap to obtain. If ever amateurs were to agree on a CAD program for circuit exchange, this would be my recommendation.

If there are any errors in the circuits, please let me know.

### FM 828 E BAND

A large number of E Band FM 828s are becoming available to the amateur at low

prices. These 828s are the low band version and, as such, cover 68 to 88 MHz. Conversion to 6 metres is not as easy as the A and B band are to convert to 2 metres. I have just completed the conversion of an E Band 828 to 6 metres and will present the conversion information in a later edition of *Repeater Link*.

The receiver is easy. Just add 8.2 pF to each of the four front end RF tuned circuits to ground. This then allows the front end to tune down to 6 metres. The local oscillator multiplier coils require the addition of a ferrite slug in each. That is all that is required to convert the 828 E Band receiver to tune down to 6 metres.

The exciter requires several capacitors to be added to various parts of the circuit. Likewise, the transmitter PA requires capacitors to be added, but no rewinding of coils. Most important, however, is modification to the transmitter output harmonic filter. This filter has little attenuation at 100 MHz and the second harmonic of 6 metres is only about 30 dB down. I found that adding 2 turns to L1 and L3, and 1 turn to L2, attenuated the second harmonic by 60 dB. However, the transmitter modifications are not yet finalised, but if you want to make a start on an E Band 828 to 6 metres then the above information may be of help.

If anyone out there has converted an E Band 828 to 6 metres I would like to hear from you so I can compare my results to yours. With so many E Band 828s coming onto the market at very cheap prices, this could be a start to populating 6 metres.

The possibility of converting an E Band 828 to 10 metres is also under consideration with the crystals already ordered, more on that latter.

\*21 Waterloo Cr Lesmurdie 6076  
VK6UU @ VK6BBS

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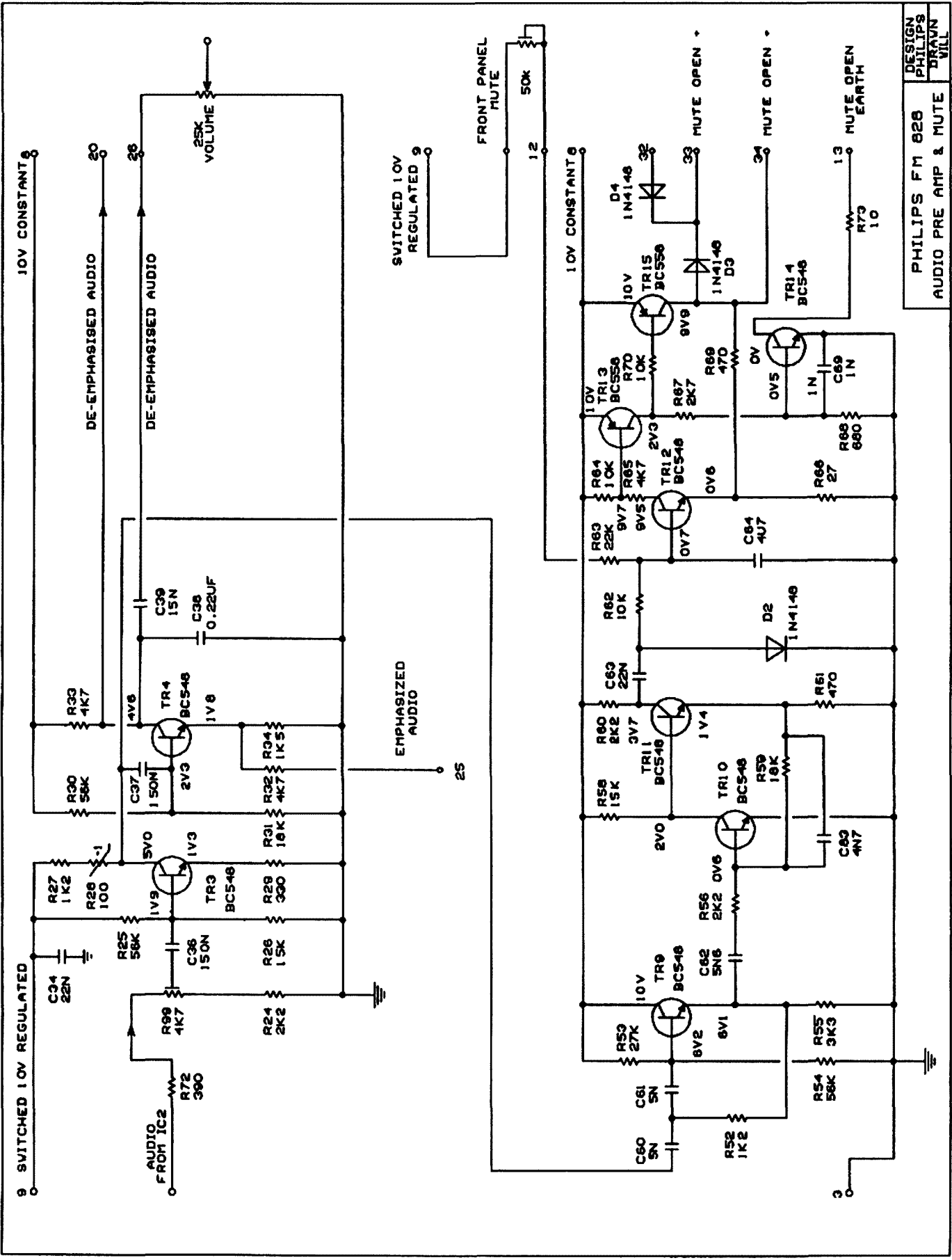
## QSP News

### Old Timer's Recollections

Last December *Amateur Radio* published a letter from VK4YFF of Cairns, formerly of Geelong, suggesting a need for someone to interview people who have had a lifetime in radio and could add greatly to our historical knowledge of the early days.

John Bennett VK3ZA has

generously volunteered to help in this activity. He will probably begin with the old timers named in the 4YFF letter but, if anyone else would like to contribute their own recollections, John would be pleased to hear from them, by letter at first. His postal address is PO Box 48, Dunkeld, VIC 3294. John, himself, has had an interesting career in broadcasting, AWA, and the army.



DESIGN PHILIPS  
DRAWN  
WILL

PHILIPS FM 628  
AUDIO PRE AMP & MUTE

# Spotlight On SWLing

Robin L Harwood VK7RH\*

One new development on the Spectrum has been the appearance of a new broadcasting station, which commenced on Christmas Eve 1993 at 1200 UTC. It is located on the island of Hawaii, close to its southern tip. As you have probably surmised it is a religious broadcaster and is an extension of World Harvest Radio who operates WHRI in Noblesville Indiana. Signals from KWHR, which are the call letters of the station, are consistently strong here, mainly because of their choice of frequencies out of the normal broadcasting allocations. Programming is very similar to WHRI but is separate, although I believe that a satellite feed is available from South Bend, Indiana. The full schedule for this broadcasting period for KWHR is as follows:

0200 — 0200 17555  
 0200 — 0600 17510  
 0600 — 1600 9930  
 1600 — 1800 7425  
 1800 — 2000 13625  
 2000 — 2200 13720  
 2200 — 2400 17510

The address is the same as WHRI, that is PO Box 12, South Bend, Indiana.

"Monitor Radio International" in Boston, MA, have sold their WCSN transmitter at Scott's Corner, Maine to another religious broadcaster for reportedly 5 million dollars. This will assist them in purchasing an additional sender at their Cypress Creek, South Carolina site. The purchaser of WCSN is believed to be an Adventist group and Adventist World Radio are emphasising that it's not part of their operations. A start up date has not yet been announced for the new station.

On 17 December at 1400 UTC, a piece of Australian broadcasting history came to an end, when the ABC in Brisbane closed down their shortwave service to the Outback. 4920 and 9660 kHz are now vacant frequencies. On the same day it had been planned that VLW, which carries the ABC in Western Australia on 15425, 9610 or 6140 kHz, would join them, but a last minute decision meant that they would continue on for a short period but would definitely close down soon.

Just as Brisbane went off shortwave, Papua-Nuigini inaugurated their 100 kW sender, relaying the "Karai" service on 9675 kHz. This replaced another 90 meter frequency and a 10 kW sender and now has a much stronger signal, which covers most of the SW Pacific region. The

program is on the above channel from 1900 to 1400 daily, mostly in English and puts in a reasonable signal here all day until mid-evening, when it is swamped by the numerous broadcasters on the 31 metre band allocation.

In my job as VK7 Intruder Watch Co-ordinator, I have been hearing numerous non-amateur stations passing traffic, over the past six months. These stations usually congregate around the band edges, where there are numerous contacts going on simultaneously. Now, I am also noting that there is a similar trend going on in the exclusive

aeronautical and maritime allocations and I very much doubt that these stations are engaged in traffic related to these allocations. Signals seem to be based north-west from here. Most of the traffic is in Indonesian but I have also noted some traffic in Japanese, Indochinese languages plus Taiwanese dialects. The appearance of these stations, especially in the exclusive aeronautical and maritime allocations, does pose more problems than we are having on our exclusive amateur allocations, I would think.

Well, that is all for this month. In conclusion, please note that there has been an alteration to the mailing address. It is now as follows: 5 Helen Street, Newstead TAS 7250. Until next time, the very best of 73 and good listening!

\*5 Helen Street, Newstead TAS 7250  
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## VHF/UHF An Expanding World

Eric Jamieson VK5LP\*

All times are UTC

### 50 — 54 MHz DX Standings

DXCC Countries based on information received up to 20 December 1993. Crossband totals are those not duplicated by two-way contacts. A callsign cannot be displaced from its existing position except by another with a higher confirmed number.

Column 1: 50/52 MHz two-way confirmed contacts

Column 2: 50/52 MHz two-way claimed as worked but not confirmed

Column 3: Crossband 50/52 MHz to 28 MHz confirmed \*

Column 4: Crossband 50/52 MHz to 28 MHz worked \*

Column 5: Countries heard on 50/52 MHz \*

CALL SIGN	1	2	3	4	6
VK4KK	93	93			4
VK4BRG	86	90			
VK2QF	83	85			
VK2BA	69	69			
VK4ALM	68	70			
VK4ZAL	68	68			
VK2BBR	54	64			
VK4JSR	53	56			8
VK4TL	51	54			
VK6HK	47	47			3
VK8ZLX	45	60		1	
VK3AMK	45	47			
VK8GB	42	42		3	
VK5RO	39	48			3
VK6RO	39	39		1	1
VK1RX	39	39			9
VK6PA	36	57			

VK5LP	35	36			9
VK3AUI	35	36			
VK3AWY	34	36			
VK3BDL	32	32			
VK3NM	31	34			
VK5BC	29	63			
VK2DDG	25	26		2	3
VK4KHZ	23	34			
VK3XQ	23	25			2
VK2KAY	21	23			
VK2BNN	20	21			
VK9LG	20	20			
VK7JG	20	22			2
VK4BJE	19	25			
VK4KAA	19	20			
VK3TU	17	19			
VK2ZRU	16	19			4
VK4ZSH	16	16			
VK2ZSC	16	29			
VK9LE	14	14			
VK3ALM	13	15			7
VK3KTO	11	11			
VK6OX	10	10			1
VK5KL	06	11			6

### Overseas

JA2TTO	48	48			6
YJ8RG	25	25			

\* In view of the overall success of Cycle 22, these three columns now appear to have outlived their purpose. Consideration is being given to their deletion as from the next list which is planned for the August 1994 issue. Copy, additions or alterations to me by 20 June please.

### Contact of the Month

On 21/194 at 0400 Trevor VK5NC worked ZL1IU on 144.100 with 5x7

signals. At 0405 ZL1IU was worked by Colin VK5DK. Trevor said he had been attempting to work New Zealand on two metres for 29 years and finally his dedication paid off. Good work.

As a lead-in to the above, Trevor said he had earlier been monitoring New Zealand FM on 91 MHz and the Auckland VOR transmitter on 112.5 MHz plus 144.100 when out of the noise came ZL1IU! About the same time six metres was open to Kalgoorlie and there were a few VK2s. VK3OT had earlier spoken to a ZL1 on six metres but signals were not strong.

The last time a ZL was worked on two metres from VK5 was on 15 January 1986 when VK5ZEE at Woomera worked ZL1HH for a VK5 record of 3458.8 km. This VK5 record will be very difficult to better unless it is achieved by an operator at Ceduna in the far west of South Australia.

On 3/1 Doug VK4OE phoned to say that during the morning he had worked ZL1 on two metres tropo as did many other stations in VK2 and VK4. Tropo on that path would occur less often than Es. Also a two metre signal path had extended from Brisbane to Mackay. Conditions were obviously very good in the western Pacific as Guy FK8DH again worked several states on six metres including the long haul of 4800 km to Perth. I managed to work him at 0056 but my path was only 3000 km. Guy's signals were very good considering his use of a vertical antenna!

### Beacon News

As one of the respondents to my recent request for information regarding the status of various beacons, Charlie VK3BRZ indicates that, on behalf of the Geelong Amateur Radio Club, he installed their two metre beacon on Mt Anakie on 27/11, details as follows: 144.530 MHz, 15 watts at the single turnstile (crossed dipoles) antenna, using FSK Morse code, key down is 750 Hz above the nominal carrier frequency, ident sequence — "de VK3RGL VK3RGL GF22DC VK3RGL VK3RGL GF22DC" followed by approximately 20 seconds of unkeyed carrier. CW speed is about 10 wpm. The rig is a readily modified Philips FM 828 and gives a very clean output. The ident controller was designed and constructed by Lee VK3PK. It has been frequently heard by VK5LP.

Charlie also advises that if anyone wants to duplicate their beacon they can supply the details and an EPROM with the ident sequence of their choice.

Meanwhile, they seek beacon reception reports, particularly from interstate and these can be sent via Packet either to VK3PK or VK3ATL or

communicated directly to VK3BRZ via the nightly VHFers net on 3.695 MHz minus QRM. Charlie says the VHF net is very useful and proved its value during the big inland opening between VK1, 2, 3 and 5 which I reported in the October issue.

Ron Cook VK3AFW phoned to say that the former VK3RTG beacon on 144.430 was installed on 20/11 at Clayton for continuous operation.

John Martin VK3ZJC/KWA writes in support of the information above re the two Victorian beacons. It certainly is good to know they are now operating, just in time for the better than usual summer tropo conditions.

Andrew Perkins VK7KAP reports that they now have a beacon operating from Lonah in the north-west of Tasmania, between the towns of Ulverstone and Penguin on the coast at 150 m asl. It signs VK7RNW on 144.474 with ten watts to a crossed dipole antenna. Joe VK7JG supplied the transmitter and Andrew VK7XR and VK7KAP added the keyer, filters, antenna and installation. A report to hand says the beacon is being heard in Melbourne and Mount Gambier almost on a daily basis. The same applies here at Meningie. Whenever I look for the beacon it's usually there at signal levels from S1 to S5. Just for good measure I worked Andrew VK7KAP at 1030 on 30/12.

By the time you read this the former VK7RNT six metre beacon will be installed at Lonah, operating on 50.057 MHz, the frequency of the former VK7RSB beacon and with its new callsign of VK7RNW. A beacon licensed for 432.474 will follow about February/March. Andrew VK7KAP says he has almost completed a 1296.470 MHz beacon to be located on the coast at Devonport and signing VK7RAE.

All the above is great news for operators in the southern areas of VK3, 5 and 6. The news will be even better if the Adelaide 1296 MHz beacon can be re-installed during January.

Via a message issued by Rex VK8RH news has just filtered through to me indicating that the Darwin beacon VK8VF has been moved to a better location and the power raised to 100 watts.

### First Worked from Australia List

The list has almost reached the stage when it can be published. Following the last interim list a few letters were received with details of times of working certain stations on the same date as published — a few were earlier but most a little later than those I hold here. In a few cases I am sure there are amateurs who have worked stations earlier but if these people do not lodge their claims soon then it will

be too late — once the final list appears that's it as far as history is concerned and I do not propose publishing any errata.

However, it has pleased me immensely that the list was still open so that the world-first six metre contact to Antarctica by VK3OT could be included. At the risk of appearing parochial, it gave me much pleasure to be able to announce that for once Australian amateurs had done something outstanding before any others in the world, that of three stations working the Antarctic continent on 19 November 1993. As I write, our list of countries worked on six metres stands at 170.

### Antarctica

As Mark VK0AQ has returned to South Australia from Casey at Antarctica I have been able to confirm that on 26/11 around 0920 he received a phone call which indicated ZL3TIC, ZL3TPY and ZL3TY were hearing his beacon. He immediately went on air but was unable to make contact with the Kiwis. On 2/12 he received a further call this time from a VK2 and despite calling no contacts were made.

Mark says there is little likelihood of any further six metre activity from that continent, at least in the short term. So that leaves the field wide open for some one to mount a six metre DXpedition to the area.

Incidentally, some time ago Mark said in a letter that at Casey, from time to time, he could hear Australian broadcast band stations over the 3950 km water path, in particular mentioning the 2 kilowatt commercial station 5AD operating from Adelaide!

### Sporadic E Contacts

The six metre band has been its lively self with Es contacts available to all parts of Australia. JAs were still available during the latter part of November together with increasing numbers of VK4s.

Trevor VK5NC at Mount Gambier reports JAs on 3-4/12 around 2240 which is early. On 7/12 at 2047 he worked VK6AS at Esperance then VK4s APG, ACE, CV, KAB, CEM, SEA, PZ, JRC/m, heard BRG — all on two metres Es. 8/12: VK6AS and VK3s on two, then VK4s on six. 10/12: 0000 VK6AS, who then worked to Melbourne 5x9 on two metres Es. VK5NC worked VK2ZAB on both bands followed by FK8DH at 0239 and P29CW at 1020, both on six. 11/12: from 0712 on two metres VK4APG, VK4ZWB, VK2YLO, VK4RH, VK2DVZ and several VK3s. On six and two metres VK2XN, VK4QV, VK6AS, then for good measure FK8DH 5x9 at 0736 on six metres.

On 16/12 VK6AS on two. 17/12: VK2, 3 and 4 on six. 18/12 VK3s on six and two. 23/12: Melbourne stations had a very

good opening to ZL and VK5NC copied the VK3s at S5 via backscatter. Trevor said there were New Zealand FM broadcast stations at S9 up to 100 MHz but it appeared the MUF did not reach 144 MHz. VK7s were 5x9.

On 25/12 there were VK2 and VK4 stations on six. On 30/12 at 0110 Doug VK4OE worked FK8DH at Noumea 5x8/9 on 144.100 over the 1550 km path and VK4DH almost completed a QSO; Jim VK9NS on Norfolk Island was heard working ZL4AAA and VK2s on six. On 31/12 VK9NS was again working VK2s and was heard briefly by VK5NC.

Just for a change of scenery, on 18/12 at 0827 VK5NC operated 10 GHz wide-band FM from Cape Banks to VK3ZQB/p at Bridgewater Lakes near Portland for a distance of 102.1 km which exceeded the distance of an earlier contact at 70 km.

On 8/12 Phil VK5AKK had a two metre bonanza when at 1042 he worked VK6AS in Esperance, then from 1208 VK6ZFY, VK6KRC, VK6AO and VK6KDC all in Perth via Es. On 17/12 from 1026 he worked VK6AS and VK6YAU on two metres and VK6WG and VK6YAU on 70 cm.

Des VK3CY at Wedderburn sent a DX Report Form stating that on 22/12 from 1100 to 1200 he copied the Wellington ZL2UHF beacon on 145.202 MHz at 519 over the 2200 km path. At the time there were very strong six metre signals between VK5 and VK7 plus Adelaide Ch 2 TV strong into Devonport, Tasmania.

The VK5LP establishment was involved in a deadline for another project

on 8/12 when all the two metre Es activity was taking place between VK3, 4, 5, 6 and 7 so I had to turn my back on it! True, I really did! On 9/12 I tried to work P29CW on six at 1045 without success even though he was 5x4 here. Es contacts on six most days until 29/12 when Ron VK3AFW telephoned to say that the Adelaide two metre beacon was 599 so we had a contact at 2301, then followed VK3BRZ, VK3CY and VK3DLM. On six VK4s for the remainder of the day with Lyn VK4ALM saying he had worked ZL4, VK2, 3 and 7. On 30/12 more two metres tropo at 1030 to VK7KAP, VK3DLM, VK3CY and a good try with Roger VK3XRS but he was too far away for the available propagation.

Bob Elms VK6BE at Albany says VK6 has been enjoying the best six metre conditions for 30 years. From 2/12 to 11/12 inclusive he had a total of 67 contacts on six metres to VK1 (5), VK2 (20), VK3 (19), VK4 (2), VK5 (19), VK7 (1) and ZL3TY. Albany has never been renowned for extensive Es openings so to make it to VK4 and ZL, both very long distance paths, has helped to make 1993 memorable. There were five 144 MHz contacts all to VK5 and one heard report to VK3AOS.

Ron VK4BRG at Sarina has had some good openings on both six and two metres. On 4/12 between 0120 and 0241 he worked VK6RO, VK8ZCU, VK8ZLX, VK6PA and VK4SIX at Mount Isa. 5/12: 0151 FK8DH. 8/12: 0210 P29CW, 0214 FK8DH, 0219 ZL1MQ, all on six metres.

Alerted by Norm VK3DUT that he was copying the Brisbane two metre beacon at S9, Ron went on to work VK7ZMF at 2315 and during the two metre opening which lasted until 0137 he worked VK2 (1), VK3 (23), VK5 (3) and VK7 (1) all around 144.100. Ron said it was obvious who were the "big gun" stations but he was impressed with the S5 signal from VK3ALM who used 25 watts to an X-500 vertical antenna! Also, the Sarina repeater on 146.675 was accessed at 0135 by Bill VK5ACY on Kangaroo Island.

1994 got off to a good start. From 2100 on 1/1 (actually 31/12 UTC day) Wally VK4DO at Proserpine worked many ZLs in their four districts. As it was his birthday I called him and he advised me that on 28/12 he had copied the FO5DR beacon on 50.049 for over 2 hours.

Steve VK3OT also copied the above beacon and did so again on 2/1 as did Trevor VK5NC where it was received at 579 for 25 minutes at 0340. The operator's name is René and his telephone number is 689 4816 12. The distance to Tahiti from Melbourne is about 7500 km or 4500 miles but the signals still arrive in Australia. All this leads me to say once again, if you have moth-balled your six metre gear until the next cycle, then you are going to miss some good contacts.

## EME News

John Martin VK3ZJC/KWA stayed up late for the November EME weekend and

## QSP News

### 1993 Amateur Radio Awards

*Amateur Radio* magazine, as members know, is a magazine of the members, for the members of the organisation which represents the Australian amateur service both nationally and internationally.

Some of the interesting and original articles which appear in *Amateur Radio* are republished in overseas publications but this is not the only tribute which authors of articles submitted to the *WIA* magazine receive. Every year the *WIA* Publications Committee selects winners of three annual magazine awards. The task of the Publications Committee was not an easy one this year considering

the wide range of quality articles published in our magazine over the past 12 months.

However, at the Publications Committee meeting held on 6 December 1993 the annual *Amateur Radio* awards were allocated. The eventual winners were selected after much consideration by that committee.

The Al Shawsmith Journalistic Award, presented for an article on a radio theme considered best to display journalistic merit, was awarded to George Neilson VK3TES for his series of articles on the history of Kingsley Radio which appeared in the June, July and August issues of *Amateur Radio*.

George receives an engraved wall plaque as well as a cheque for \$100.00.

The Technical Award, for the best technical article(s) published during the year, was awarded to Lou de Stefano VK3AQZ for his articles on Packet Radio which were published in the July and November issues of *Amateur Radio* magazine. Lou receives a cheque for \$100.00.

The Higginbotham Award, for meritorious service to amateur radio generally, was awarded to Ken Matchett VK3TL for his continuing contribution as Honorary Curator of the *WIA* QSL Card collection. Ken also receives a cheque for \$100.00. Congratulations to George, Lou and Ken on winning these *Amateur Radio* Awards for 1993!

heard VE3ONT on both 432 and 1296 MHz. Signals seemed to be about 10 dB over the noise on 432 and slightly less on 1296. John made several calls but the heavy QSB left him with the uncertainty of whether he was heard — nevertheless, he considered it a worthwhile experience.

### From the UK

The November report from Ted Collins G4UPS indicates a considerable reduction in activity as they enter their winter. He continues his daily CW propagation skeds with G3CCH and SM7AED and is most times successful.

Other contacts for the month were with areas covered by SM3EQY, 9A3FT, IK0FTA, F5LHI, EH3MD, EH1DVY and ES0SIX/b. It seems the European stations have put the dust covers on their six metre equipment while they wait for the next round of summer Es contacts, but what about the usual mid-winter Es, January there, July here?

### Other News

An interesting snippet from Scott Watson VK4JSR who says he has recently installed a DSP9 filter by Timewave and highly recommends it for those interested in weak-signal VHF DXing. As an example he said that on 28/11 he was clearly able to copy the VK1s but with the unit switched out of line they were not there.

### Closure

Everytime I start to end this month's columns some fresh news arrives — eg the VK5NC two metre contact to ZL1IU and VK4OE to ZL1. Don't forget to send in your Ross Hull and Field Day logs.

Closing with two thoughts for the month:

1. Those who fight fire with fire usually end up with ashes, and
2. We give advice by the bucket but take it by the grain.

73 from The Voice by the Lake.

\*PO Box 189 Meningie SA 5264

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**Sign up a new  
WIA member  
today — use the  
form on the  
reverse side of  
the AR address  
flysheet.**

## Silent Keys

*Due to space demands obituaries should be no longer than 200 words.*

The WIA regrets to announce the recent passing of:-

Arthur	MEAD	EX VK2JM
J E	BURGESS	L40340
C A J	MALONEY	VK1NCX
P J	MCGRUDDY	VK1ZV
K M (Keith)	HUTCHISON	VK2DNA
B J (Basil)	BYRNE	VK2FRU
I W	ARCHIBALD	VK2KU
R V (Reg)	BULMAN	VK2YL
M J (Max)	MAUJEAN	VK4BCA
J N (John)	MARR	VK6BBR
P J	GROUSE	VK6XPG
D	MARCH	VK6ZN

### Arthur MEAD ex VK2JM

Arthur obtained his AOC in 1924 and then, due to licensing age requirements, had to wait until 1925 to gain his first licence A2JA and later OA2JA and VK2JA.

In 1929 he became interested in racing motor cycles with notable success, assisting in the site selection and formation of the current Mt Panorama circuit at Bathurst.

Arthur was again re-licensed at the end of WW2 with the call sign VK2AJA and subsequently VK2JM which he held just prior to his death. He was not very active in recent years, but after WW2 was an active experimenter on 2 and 6 metres and to a lesser extent 580 MHz. He was an inaugural member of the Croydon Radio Club from 1924 until its demise after WW2 and a member of the WIA from 1945. Greatest interest has always been CW as that was virtually the only means of communication from 1918 until he obtained his licence. He had an interest in the John Moyle National Field Day and took part every year for about 25 years mostly in the CW 6 Hour Single Operator and Emergency Powered Home Operator Sections.

Arthur planned and carried out the installation of the first masts on the NSW Divisions property at Dural. Arthur passed away 11 December 1993.

Allan Hennessy VK2RX

### Reginald V Bulman VK2YL

Reg VK2YL (previously VK7RL/VK4YL) passed away suddenly after an extended illness in Armidale Hospital on 16 December 1993.

Reg was born in Mathinna Tasmania (1912) where his father kept a General Store. The family later moved to Legana (near Launceston) where Reg started his early school days and where the family became orchardists for many years. He became interested in radio when he was 9 years old (1921) due to an uncle who was a World War I veteran. The uncle was an Infantry Signaller, but learnt much of the progress of radio up to that time.

After leaving Legana school he went to the Launceston Grammar School to further his education and whilst there he built his first crystal set.

1930: After leaving College he was employed installing and servicing radio receivers, mainly Browning-Drake type, including radio sets of the Autodyne type. Apart from radio he did electrical wiring of homes and businesses while studying and building radio equipment in his spare time.

1938: Attended a Radio Mechanics Course, plus a course for Amateur Operators Certificate of Proficiency during evenings.

1940: Enlisted with the Citizen Military Forces as Signaller, carrying out duties pertaining to that section, later being transferred to the RAAF as Radio Mechanic.

1942: Posted to Richmond (NSW) for Radar training.

1943: Reg embarked for New Guinea (Port Moresby) where they set up and tested the assigned AW/LW Radar Unit. In Dec was posted to Goodenough Island Radar Station No 315.

1945: Reg returned to Civil occupation taking up an appointment with the PMG department (now known as Telecom), for 22 years.

1947: Was transferred to the Radio Telephone Link at Stanley on the NW Coast of Tasmania where he lived for many years. I am enclosing a small tribute to Reg written by one of his many friends and Scout Master of the District: *I shall always cherish many happy memories of Reg's generous help, with his technical skills, to me and the community at large — unforgettable times with the Scouts and Jamboree of the Air, he must have made a multitude of friends in the "ham world".*

Elsie Bulman

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## Technical Correspondence

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### Vertical Antennas

I found Doc's (VK4CMY) article on vertical antennas to be quite interesting and generally correct. I also have a high regard for this type of antenna. However, I would like to make one or two comments. In part one, open wire line was suggested along with a tuner. Well, that might work, but seems a bit like feeding a dipole without a balun. Being an "unbalanced" antenna I think co-ax would be better, at least in theory anyway. (*Not so, Felix! "Balance" refers purely to how, or whether, the line is connected to ground. Tech Ed.*)

Secondly, Doc omitted to mention a simple method of increased radiator efficiency, the use of a folded quarter wave radiator. In a similar way to a simple folded dipole, this provides a four times step up in radiation resistance which, in turn, improves overall efficiency by reducing the loss effects of an imperfect ground system. A folded quarter wave radiator is easily made using open wire line on iron pipe, with a bit of mechanical ingenuity. It works! A 40 m antenna built on these lines (with only two slightly above ground resonant radials) worked consistently well.

**Felix Scerri VK4FUQ**  
9 Garbutt Street  
Ingham 4850

### "UPDATE" in December AR

I became a little concerned about the reference to the AAPRA MODEM ADAPTOR in the above segment so checked again the circuit printed in November *Amateur Radio*.

I have written to Helmut VK3CHN confirming that the circuit is OK for my C64 but it now appears that all C64s are not precisely the same. The 9 V supply is floating in some, and referenced to ground in others.

Quite a trap and rather scary when one's computer suddenly stops working!

**Murray Burford VK5ZQ**  
261 Belair Road  
Torrens Park 5062

### Hand-Held Problems

My Belcom LS202 two metre hand-held has been going nicely for a number of years but recently stopped, receive OK but no transmit. Investigation revealed that the RF output transistor 2SC1947 was defective with collector open circuit. A 2SC1947 could not be obtained but an equivalent NTE488 (NTE Electronics Inc, Bloomfield NJ USA) was available from a local supplier.

While on equivalents, the Motorola MRF237 is also quoted as an equivalent for the 2SC1947, but the MRF237 has the collector to case while the 2SC1947 (and the NTE488) has the emitter to case. This makes the MRF237 almost impossible to heatsink in the LS202 with a "hot" heatsink.

Having got the unit back working, what caused the failure? Using the rubby ducky aerial supplied with the LS202, I was surprised to find the VSWR well in excess of 3:1, the last graduation on the VSWR meter. Continuity of the aerial winding (150 mm long) from the connector to the top of the sealed winding showed less than one ohm, so the aerial was not open circuited. I did not have the equipment to find where the aerial was resonant but set

about changing its resonant frequency by applying iron dust and brass rings.

A brass sleeve 10 mm long, 0.5 mm thick, and of a diameter just sufficient to go over the aerial insulation, was located 30 mm from the top of the BNC connector. This reduced the VSWR to 1.25.

The conclusion is that, although the transceiver has only ever operated on a 7.8 V battery (the manual allows 12 V maximum to be used), the peak RF voltage generated across the mismatched aerial was sufficient to blow the transistor. The lesson from this must be to check the VSWR of rubby ducky aerals; something that I had not done before. It was assumed that the hand-held manufacturer would ensure that the aerial characteristics would be compatible with his products.

**Rod Torrington VK3TJ**  
4 Thistle St  
Pascoe Vale Sth VIC 3044  
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## Young Radio Operator Speaks to the World

*Norm D'Angri VK3LBA tells of some good local publicity for amateur radio.*

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Dean Speedie literally has the world at his fingertips through his unusual hobby.

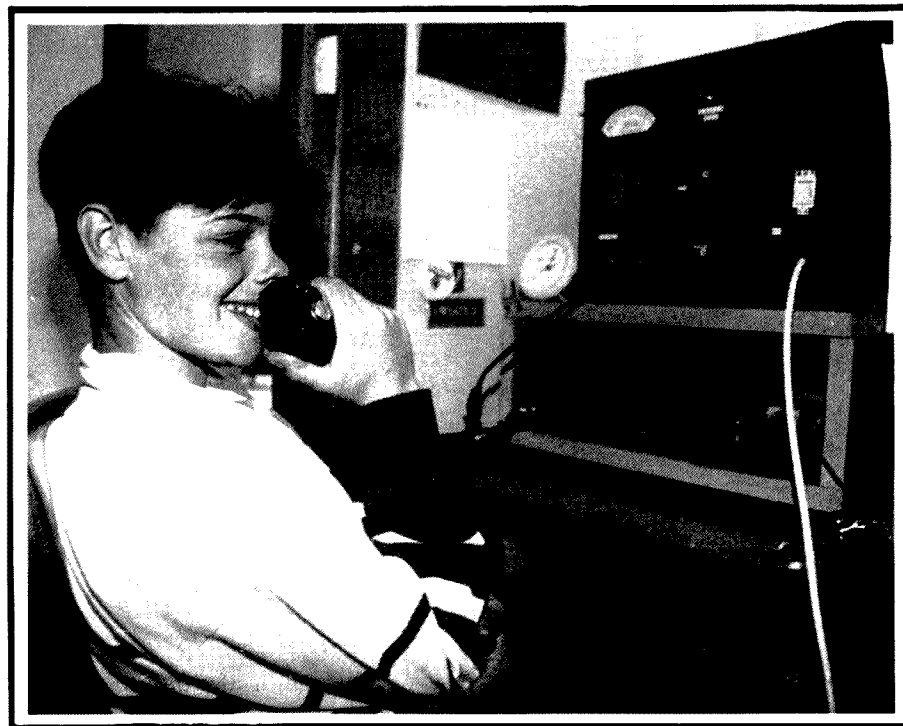
Dean (age 13) is believed to be the youngest amateur radio operator in Ballarat.

He was introduced to amateur radio a

year ago by a friend and is now a member of the Ballarat Amateur Radio Group.

His call-sign is VK3LDS. He has already worked countries such as America, Japan and England.

*Photo courtesy "Ballarat Courier"*  
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# The "L" Network Aerial System Coupler

Lindsay Lawless VK3ANJ makes a technical point.

Many words have been written recently about "L" Network aerial couplers. The following information is derived from the theory.

Refer to Figure 1. The terminals b-b are the high resistance (R2) terminals and the terminals a-a are the low resistance terminals. If the ratio R2/R1 is N, and greater than unity, then:

$$\text{Reactance A} = (\sqrt{N-1}) \times R1$$

Ohms.....(1)

$$\text{Reactance B} = (N \times R1 / \sqrt{N-1})$$

Ohms.....(2)

If the Tx load resistance is higher than the aerial resistance, connect the Tx to terminals b-b and the aerial system to terminals a-a.

If the Tx load resistance is lower than the aerial system resistance, connect the Tx to terminals a-a and the aerial system to terminals b-b.

Here is some less practical information:-

$$Q = \sqrt{N-1}$$

$$A \times B = R1 \times R2 = N \times (R1)^2.$$

The L network, the T network, the PI network and the T-PI network are the basic networks for most aerial system couplers and date from the 1920's. The mathematical reasoning which justifies their operation is simple, about ARRL Handbook level, and illustrates the power of even simple maths to discover useful, practical things, which can never be discovered by empirical dabbling.

The "L" network usually cannot be used without a supplementary network, inserted between aerial system and coupler, because most aerial systems present a complex impedance at the input terminals. The role of the supplementary network is to correct the power factor to unity at the system input terminals

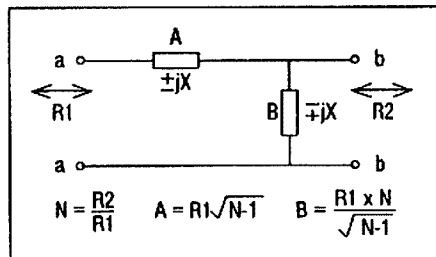


Fig 1 Basic L Network.

(ie to cancel any reactive component — Ed). The other networks can be used without the supplementary network and all can be used in a balanced form.

The original Collins "Universal Coupler" (circa 1935) was a balanced PI network. The capacitor C1 in both versions of the "Z" Match is the series reactance (A in Fig. 1) of an "L" network. The useful resistance matching range of C1 can be calculated using Statement (1). The networks following C1 must transform the coupled resistance to a value within that range and correct the coupled impedance power factor to unity.

PO Box 760 Lakes Entrance Vic 3909.

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# The Fiddler (The anguish of an XYL)

By Marilyn Williams (XYL of VK2BUI). Some of us may recognise ourselves in this heartfelt lament!

He's a child, he's an infant,  
a kind of jackeroo.  
He's got to have a fiddle,  
a look at all you do.  
It's endless curiosity  
that drives this fellow on,  
as he twists and turns and fiddles  
in his search for what is wrong.

He spots a new appliance  
and must figure how it works.  
He pokes away in silence,  
solving all the mysteries first.  
And then he studies detail,  
the subtleties and gears,  
emerging with the pieces  
deemed unnecessary. Cheers!

"Y'see the darn thing can work  
without those other bits".  
It's just as well it is so,  
since he can't find where they fit!  
So they go into the big box  
which overflows with junk.  
I'm loathe to dump it at the tip  
lest something else goes clunk!

So when another fails,  
I hope that bit's in stock.  
Starting in his box of tricks  
he ends back at the shop!  
It's a never ending story  
though I hope the time is near,  
one day he might just use those bits  
and then perhaps I'll cheer.

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11am to 2pm Monday to Friday  
7 to 9pm Wednesday

# HF PREDICTIONS

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## The Tables Explained

The tables provide estimates of signal strength for each hour of the UTC day for the five bands from 14 to 28 MHz. The UTC hour is the first column; the second column lists the predicted MUF (maximum useable frequency); the third column the signal strength in dB relative to 1  $\mu$ V (dB $\mu$ ) at the MUF; the fourth column lists the "frequency of optimum travail" (FOT), or the optimum working frequency as it is more generally known.

The signal strengths are all shown in dB relative to a reference of 1  $\mu$ V in 50 Ohms at the receiver antenna input. The table below relates these figures to the amateur S-point "standard" where S9 is 50  $\mu$ V at the receiver's input and the S-meter scale is 6 dB per S-point.

$\mu$ V in 50 ohms	S-points	dB( $\mu$ V)
50.00	S9	34
25.00	S8	28
12.50	S7	22
6.25	S6	16
3.12	S5	10
1.56	S4	4

0.78 S3 2  
0.39 S2 -8  
0.20 S1 -14

The tables are generated by the GRAPH-DX program from FT Promotions, assuming 100 W transmitter power output, modest beam antennas (eg three element Yagi or cubical quad) and a short-term forecast of the sunspot number. Actual solar and geomagnetic activity will affect results observed.

The three regions cover stations within the following areas:

**VK EAST** The major part of NSW and Queensland.

**VK SOUTH** Southern-NSW, VK3, VK5 and VK7.

**VK WEST** The south-west of Western Australia.

Likewise, the overseas terminals cover substantial regions (eg "Europe" covers most of Western Europe and the UK).

The sunspot number used to make these calculations is 36.4. The predicted sunspot number for March is 36.0.

VK EAST — MEDITERRANEAN									
UTC	MUF	dB $\mu$	FOT	14.2	18.1	21.2	24.9	28.5	
1	9.9	-3	7.5	1	-9	-23	...	...	
2	9.4	-11	7.2	0	-9	-22	...	...	
3	12.5	-4	9.7	0	-1	-8	-21	-37	
4	18.6	4	14.3	-3	4	3	-2	-10	
5	24.2	7	18.5	-7	5	7	6	2	
6	26.4	8	20.0	-8	5	9	9	6	
7	26.0	9	20.6	-7	6	9	9	6	
8	25.0	9	20.4	-4	7	10	9	5	
9	23.7	10	19.7	2	11	12	9	4	
10	22.2	12	17.9	9	14	13	9	2	
11	20.6	15	16.5	17	18	14	7	-1	
12	19.2	18	15.3	23	20	14	5	-6	
13	18.4	21	14.6	29	22	14	3	-10	
14	17.6	24	13.9	32	23	13	0	-14	
15	16.8	25	13.6	32	22	11	-3	-18	
16	15.9	27	12.4	32	20	8	-7	-25	
17	15.1	28	11.7	30	17	5	-12	-31	
18	14.0	28	10.8	28	13	-1	-20	...	
19	12.9	29	9.9	24	8	-8	-29	...	
20	13.0	29	9.8	25	8	-7	-29	...	
21	14.6	26	11.1	28	14	1	-17	-37	
22	11.8	21	9.1	15	0	-16	-39	...	
23	11.6	15	9.0	11	-2	-16	-38	...	
24	12.1	9	9.1	8	0	-12	-30	...	

VK EAST — SOUTH PACIFIC									
UTC	MUF	dB $\mu$	FOT	14.2	18.1	21.2	24.9	28.5	
1	27.3	26	22.6	35	36	34	29	23	
2	27.9	26	23.0	36	37	35	30	25	
3	28.0	26	23.0	37	37	35	31	25	
4	27.7	26	22.7	38	38	36	31	25	
5	27.1	27	22.1	41	39	36	31	24	
6	26.0	29	21.1	44	41	37	31	23	
7	24.5	31	19.8	48	43	37	30	21	
8	22.9	32	18.4	49	42	36	27	17	
9	21.1	33	16.9	48	40	33	23	12	
10	19.6	35	15.6	47	38	30	19	7	
11	18.7	36	14.8	46	37	28	16	3	
12	17.8	36	14.1	45	36	26	13	0	
13	17.0	37	13.4	44	34	23	10	-4	
14	16.1	38	12.5	43	31	20	5	-9	
15	15.2	38	11.8	41	29	17	1	-15	
16	14.1	40	10.8	39	25	12	-4	-23	
17	12.9	41	9.9	36	20	6	-12	-33	
18	13.0	40	9.8	36	20	6	-12	-32	
19	15.5	34	11.6	37	27	16	2	-13	
20	19.5	30	14.9	38	33	26	16	5	
21	22.8	28	17.6	37	35	31	24	15	
22	24.2	27	19.0	36	35	32	26	18	
23	24.9	26	20.0	35	35	32	27	19	
24	26.1	26	21.2	35	35	33	28	21	

VK EAST — AFRICA									
UTC	MUF	dB $\mu$	FOT	14.2	18.1	21.2	24.9	28.5	
1	12.7	8	8.9	8	1	-9	-26	...	
2	12.5	4	9.6	5	1	-7	-22	-39	
3	12.3	-1	9.3	2	0	-8	-22	-38	
4	14.7	1	11.1	0	2	-2	-11	-23	
5	18.8	5	13.6	-1	5	4	0	-8	
6	19.7	5	13.8	-2	4	4	0	-8	
7	19.9	5	13.9	-2	5	4	0	-8	
8	19.9	5	13.9	-1	5	5	0	-8	
9	18.9	7	13.9	2	7	5	-1	-10	
10	17.7	8	13.9	6	7	4	-4	-15	
11	16.3	9	13.0	8	7	2	-8	-21	
12	14.9	11	11.9	11	7	-1	-14	-29	
13	14.0	14	11.2	14	6	-3	-19	-37	
14	13.3	18	10.5	17	5	-6	-24	...	
15	12.7	23	10.0	19	4	-10	-31	...	
16	12.2	26	9.5	19	2	-14	-37	...	
17	11.6	28	9.0	18	0	-18	...	...	
18	11.1	30	8.5	17	-3	-23	...	...	
19	10.8	30	8.2	16	-5	-26	...	...	
20	11.4	30	7.9	18	-2	-21	...	...	
21	11.0	27	7.5	14	-5	-24	...	...	
22	10.6	20	7.3	10	-8	-26	...	...	
23	10.4	14	7.3	7	-8	-25	...	...	
24	11.1	10	7.8	7	-5	-19	...	...	

VK EAST — EUROPE									
UTC	MUF	dB $\mu$	FOT	14.2	18.1	21.2	24.9	28.5	
1	9.7	-4	7.6	1	-9	-23	...	...	
2	8.9	-12	7.0	0	-10	-24	...	...	
3	9.0	-15	7.1	0	-9	-21	...	...	
4	10.5	-11	8.1	0	-4	-13	-29	...	
5	13.5	-3	10.8	-2	0	-5	-15	-29	
6	16.8	2	13.4	-3	2	0	-6	-15	
7	19.4	5	15.6	-3	4	0	-7	...	
8	21.1	7	17.0	0	7	7	4	-3	
9	22.4	11	18.1	6	12	12	7	1	
10	22.2	15	17.9	16	19	16	11	4	
11	20.6	18	16.6	23	22	17	9	0	
12	19.2	21	15.4	28	23	16	6	-5	
13	18.5	23	14.7	31	24	16	4	-8	
14	17.7	25	14.0	33	24	15	2	-12	
15	16.9	26	13.3	33	23	12	-1	-17	
16	16.0	27	12.5	32	20	9	-7	-24	
17	14.7	26	11.6	28	13	-1	-20	...	
18	12.8	27	10.0	22	3	-13	-37	...	
19	11.3	28	8.8	15	-6	-27	...	...	
20	10.5	29	8.2	11	-13	-36	...	...	
21	10.1	26	7.8	7	-16	...	...	...	
22	9.6	19	7.4	5	-15	-36	...	...	
23	10.0	9	7.8	4	-12	-30	...	...	
24	10.1	3	7.9	3	-10	-25	...	...	

VK EAST — USA/CARIBBEAN									
UTC	MUF	dB $\mu$	FOT	14.2	18.1	21.2	24.9	28.5	
1	21.0	7	15.9	0	7	7	2	-4	
2	18.7	8	14.1	5	8	5	-1	-11	
3	16.5	10	12.4	9	8	2	-8	-21	
4	14.8	12	11.1	13	7	-2	-16	-32	
5	13.9	16	10.4	16	6	-5	-22	...	
6	13.3	21	10.0	19	5	-8	-28	...	
7	12.9	25	9.8	20	4	-11	-33	...	
8	12.7	26	9.5	21	3	-13	-36	...	
9	12.5	28	9.4	21	2	-14	-39	...	
10	11.5	29	8.7	17	-3	-23	...	...	
11	9.9	30	7.6	9	-16	...	...	...	
12	9.6	31	7.4	7	-19	...	...	...	
13	12.0	29	9.0	20	0	-18	...	...	
14	11.8	28	9.1	18	-1	-20	...	...	
15	10.6	20	8.2	10	-9	-28	...	...	
16	14.1	16	10.8	16	8	-2	-18	-36	
17	12.8	9	9.8	9	2	-8	-24	...	
18	12.7	2	9.6	4	0	-8	-22	-39	
19	15.2	2	11.4	0	3	-1	-10	-22	
20	19.2	5	14.7	-4	4	4	0	-7	
21	22.3	6	17.3	-7	4	6	4	0	
22	23.6	7	18.6	-8	4	7	6	2	
23	24.3	7	19.1	-7	5	8	7	3	
24	23.4	7	17.7	-4	6	8	5	0	

VK EAST — ASIA									
UTC	MUF	dB $\mu$	FOT	14.2	18.1	21.2	24.9	28.5	
1	26.2	13	20.0	16	20	19	15	9	
2	25.9	13	19.7	15	19	18	14	8	
3	26.5	13	20.6	15	20	19	15	9	
4	27.2	13	20.7	16	21	20	16	11	
5	28.2	13	21.5	18	22	22	18	13	
6	28.5	15	22.6	21	25	24	21	15	
7	27.3	16	22.3	25	27	25	20	14	
8	25.8	18	21.6	31	30	26	20	12	
9	24.4	20	19.7	38	33	27	19	9	
10	22.7	21	18.2	39	32	25	15	4	
11	21.3	22	17.0	39	30	22	11	-1	
12	20.6	22	16.4	39	30	21	8	-5	
13	19.8	23	15.7	39	29	19	6	-9	
14	18.9	24	15.4	38	26	16	1	-14	
15	17.7	24	13.9	36	23	11	-4	-22	
16	16.6	25	13.0	33	19	6	-11	-31	
17	15.2	26	11.7	29	13	-2	-23	...	
18	13.5	27	10.4	23	4	-14	...	...	
19	11.5	27	8.8	11	-15	...	...	...	
20	10.4	27	8.0	3	-28	...	...	...	
21	14.3	20	10.8	21	5	-11	-33	...	
22	21.4	16	1						

VK SOUTH — AFRICA								
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	20.0	11	16.0	11	13	10	2	-7
2	20.5	11	16.7	10	13	10	3	-5
3	21.0	11	17.4	9	13	11	5	-4
4	21.1	11	17.4	10	13	11	5	-3
5	21.1	12	17.3	11	14	12	5	-3
6	21.0	13	17.2	13	15	12	5	-3
7	20.6	14	16.8	17	17	13	5	-4
8	20.0	16	16.2	22	19	13	4	-7
9	18.9	21	15.3	31	23	14	1	-12
10	17.7	22	14.2	32	21	10	-4	-21
11	16.3	23	13.1	30	17	4	-13	-33
12	15.1	24	12.0	27	12	-3	-24	...
13	14.3	25	11.4	25	8	-9	-31	...
14	13.6	25	10.8	23	4	-14	-39	...
15	13.1	26	10.3	20	0	-20	...	...
16	12.5	26	9.8	18	-5	-26	...	...
17	11.9	26	9.3	14	-9	-32	...	...
18	11.3	26	8.7	10	-16	...	...	...
19	10.1	25	7.8	-2	-36	...	...	...
20	9.2	26	7.1	-12	...	...	...	...
21	12.7	20	9.6	13	-7	-27	...	...
22	15.9	16	12.1	18	10	0	-15	-33
23	18.3	13	14.2	16	13	7	-3	-15
24	19.5	12	15.4	13	14	9	1	-9

VK SOUTH — USA/CARIBBEAN								
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	22.7	8	17.1	0	8	9	6	0
2	20.2	9	15.3	5	10	8	2	-5
3	17.9	11	13.5	10	11	6	-2	-14
4	16.1	13	12.2	14	10	3	-9	-23
5	15.1	16	11.4	18	10	0	-14	-31
6	14.5	20	10.9	21	10	-1	-18	-37
7	13.9	24	10.6	24	9	-4	-24	...
8	13.5	26	10.2	24	8	-7	-27	...
9	13.2	27	10.0	23	7	-9	-31	...
10	11.9	29	9.1	19	0	-19	...	...
11	10.1	30	7.7	10	-14	-38	...	...
12	9.7	31	7.5	8	-18	...	...	...
13	12.4	28	9.3	21	2	-15	-39	...
14	12.6	27	9.7	22	5	-10	-33	...
15	12.3	21	9.4	17	2	-12	-33	...
16	12.4	13	9.4	11	1	-11	-29	...
17	11.9	4	9.0	5	-1	-12	-29	...
18	12.4	0	9.3	2	-1	-9	-23	...
19	14.6	0	11.5	0	1	-2	-12	-24
20	17.7	2	13.3	-4	3	2	-3	-11
21	20.5	4	15.6	-7	3	4	2	-4
22	22.0	5	17.1	-9	3	5	4	-1
23	22.6	6	17.9	-8	4	6	5	0
24	23.0	8	18.6	-5	6	6	6	1

VK WEST — EUROPE (Long Path)								
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	9.2	-19	7.0	-3	-8	-19	-35	...
2	9.2	-15	7.1	-2	-10	-21	-39	...
3	9.1	-11	7.0	-2	-12	-24	...	...
4	8.8	-8	6.9	-2	-15	-29	...	...
5	8.2	-6	6.4	-4	-20	-36	...	...
6	8.2	-1	6.5	-4	-22	...	...	...
7	9.6	8	7.6	1	-16	-34	...	...
8	11.9	13	9.5	9	-4	-18	-38	...
9	14.7	15	11.7	16	6	-4	-19	-37
10	13.3	16	10.3	14	4	-7	-24	...
11	10.6	10	8.2	6	-7	-22	...	...
12	10.5	3	8.0	3	-7	-20	-39	...
13	13.8	2	9.4	3	1	-5	-17	-31
14	13.0	-5	8.8	-2	-2	-7	-17	-31
15	12.3	-11	8.5	-5	-4	-8	-18	-30
16	11.8	-16	8.0	-6	-4	-9	-18	-30
17	11.2	-19	7.7	-7	-5	-9	-18	-31
18	10.8	-24	7.4	-8	-6	-10	-20	-33
19	10.7	-26	7.4	-9	-7	-12	-22	-35
20	11.4	-20	7.9	-7	-5	-8	-17	-29
21	11.7	-17	8.9	-7	-5	-9	-18	-30
22	10.4	-28	8.1	-10	-10	-16	-29	...
23	9.7	-32	7.5	-11	-13	-21	-35	...
24	9.2	-29	7.1	-8	-12	-22	-37	...

VK SOUTH — EUROPE								
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	10.4	2	8.1	3	-7	-21	...	...
2	9.5	-7	7.4	0	-9	-23	...	...
3	9.5	-12	7.5	0	-7	-19	-38	...
4	11.3	-8	8.6	0	-3	-11	-25	...
5	14.7	-2	11.7	-3	0	-2	-11	-22
6	18.4	2	14.7	-6	2	2	-2	-10
7	21.0	5	16.9	-8	3	5	2	-3
8	21.7	7	17.7	-7	4	7	5	0
9	21.1	7	17.1	-3	6	7	5	-1
10	20.0	9	16.2	3	9	9	4	-3
11	18.7	12	15.0	10	12	9	2	-7
12	17.2	16	13.8	18	15	8	-2	-14
13	15.8	20	12.6	23	15	6	-8	-24
14	14.9	24	11.9	26	14	3	-13	-32
15	14.2	26	11.2	26	12	0	-19	...
16	13.6	27	10.7	25	10	-4	-24	...
17	13.1	29	10.2	24	8	-8	-30	...
18	12.5	29	9.7	23	5	-12	-36	...
19	11.9	29	9.1	19	0	-19	...	...
20	11.2	29	8.6	15	-7	-28	...	...
21	10.7	29	8.2	13	-11	-33	...	...
22	9.7	24	7.5	5	-19	...	...	...
23	9.6	15	7.5	3	-17	-38	...	...
24	10.9	10	8.4	7	-7	-22	...	...

VK WEST — AFRICA								
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	11.8	18	8.8	13	-1	-17	-39	...
2	12.4	14	9.4	12	2	-10	-28	...
3	14.9	12	11.7	12	8	0	-13	-28
4	19.1	11	14.7	11	12	9	1	-9
5	21.0	9	15.5	8	11	9	3	-5
6	21.0	9	17.1	5	10	8	3	-5
7	20.9	8	17.1	4	9	8	2	-5
8	20.9	8	17.0	4	9	8	2	-6
9	20.6	8	16.8	5	10	8	2	-6
10	20.1	9	16.3	7	10	8	1	-8
11	19.1	10	15.7	10	11	7	0	-11
12	17.8	12	14.3	14	12	6	-4	-16
13	16.4	16	13.1	18	12	4	-9	-24
14	15.0	19	12.0	21	11	0	-16	-35
15	14.1	23	11.2	23	10	-3	-23	...
16	13.4	26	10.6	23	7	-7	-29	...
17	12.8	28	10.3	22	5	-12	-35	...
18	12.2	29	9.5	21	2	-16	...	...
19	11.7	30	9.1	19	-1	-20	...	...
20	11.2	30	8.6	17	-4	-25	...	...
21	10.9	31	8.2	16	-6	-28	...	...
22	11.5	30	8.6	18	-2	-22	...	...
23	11.9	29	9.1	20	0	-18	...	...
24	11.3	23	8.6	14	-3	-21	...	...

VK WEST — MEDITERRANEAN								
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	9.1	9	7.0	-1	-23	...	...	...
2	8.6	-2	6.6	-4	-23	...	...	...
3	11.6	1	8.6	2	-6	-18	-37	...
4	17.3	6	13.4	4	6	1	-7	-19
5	22.5	7	16.9	1	8	8	4	-2
6	22.8	8	18.1	-1	8	9	6	0
7	22.9	7	18.8	-2	7	8	5	0
8	22.8	8	18.7	-2	7	8	5	0
9	22.4	8	18.3	0	8	9	5	0
10	21.7	9	17.6	3	10	9	5	-2
11	20.6	11	17.1	9	12	10	4	-4
12	19.3	14	15.5	17	15	10	2	-9
13	17.8	18	14.3	24	17	9	-2	-16
14	16.5	23	13.2	29	18	7	-8	-25
15	15.8	24	12.5	29	16	4	-12	-31
16	15.1	25	11.9	28	14	1	-17	-37
17	14.5	26	11.7	27	12	-2	-22	...
18	13.8	27	10.8	25	9	-7	-28	...
19	13.1	27	10.2	23	5	-11	-34	...
20	12.3	28	9.5	20	0	-18	...	...
21	11.5	28	8.8	16	-5	-26	...	...
22	11.7	28	8.9	17	-3	-23	...	...
23	11.5	27	8.8	15	-6	-26	...	...
24	11.2	21	8.6	11	-8	-27	...	...

VK SOUTH — MEDITERRANEAN								
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	9.9	1	7.6	2	-10	-26	...	...
2	9.2	-9	7.1	0	-11	-26	...	...
3	12.6	-2	9.4	1	-1	-9	-22	-38
4	19.2	5	14.8	-1	5	4	-1	-9
5	22.7	7	18.6	-6	5	7	5	0
6	22.7	6	18.6	-8	4	6	5	0
7	22.6	6	18.4	-8	4	6	5	0
8	22.3	6	18.1	-7	4	7	5	0
9	21.7	7	17.6	-3	6	7	4	-1
10	20.6	9	16.7	3	9	8	4	-3
11	19.2	11	15.5	10	12	9	2	-7
12	17.7	15	14.2	17	14	8	-1	-14
13	16.2	19	13.0	23	15	6	-7	-23
14	15.3	23	12.1	26	15	3	-13	-31
15	14.5	25	11.5	26	13	0	-18	-39
16	13.9	27	10.9	25	10	-4	-24	...
17	13.3	28	10.4	24	8	-7	-29	...
18	12.7	28	9.8	23	5	-11	-35	...
19	12.2	29	9.3	20	1	-16	...	...
20	11.8	29	8.9	19	-1	-20	...	...
21	12.3	28	9.2	21	2	-15	-39	...
22	14.0	25	10.7	24	11	-1	-20	...
23	13.5	20	10.4	19	8	-4	-22	...
24	12.4	14	9.4	12	0	-12	-32	...

# HAMADS

## TRADE ADS

- **AMIDON FERROMAGNETIC CORES:** For all RF applications. Send business size SASE for data/price to RJ & US Imports, PO Box 431, Kiama NSW 2533 (no enquiries at office please ... 14 Boanyo Ave Kiama). Agencies at: Geoff Wood Electronics, Sydney; Webb Electronics, Albury; Assoc TV Service, Hobart; Truscotts Electronic World, Melbourne.
- **WEATHER FAX** programs for IBM XT/ATs \*\*\* "RADFAX2" \$35-00, is a high resolution shortwave weatherfax, Morse and RTTY receiving program. Suitable for CGA, EGA, VGA and Hercules cards (state which). Needs SSB HF radio and RADFAX decoder. \*\*\* "SATFAX" \$45-00, is a NOAA, Meteor and GMS weather satellite picture receiving program. Needs EGA or VGA & WEATHER FAX PC card, + 137 MHz Receiver. \*\*\* "MAXISAT" \$75-00 is similar to SATFAX but needs 2 MB of expanded memory (EMS 36 or 4.0) and 1024 x 768 SVGA card. All programs are on 5.25" or 3.5" disks (state which) plus documentation, add \$3-00 postage. ONLY from M Delahunty, 42 Villiers St, New Farm QLD 4005. Ph (07) 358 2785.

## FOR SALE NSW

- **KENWOOD 830S** 500 kHz filter MC50 desk mike external speaker spare tubes original carton vgc \$950. David Bell VK2BBT (043) 67 6688 evenings only.
- **VHF DIPLEXER**, 240 V 70 110 V @ 15 amp transformer, FRG-7, TH2 ant, PRC-9, PRC-10, B41, VTR5R. Neville VK2QF QTHR (063) 73 8624.
- **HEWLETT PACKARD** counter model 5245L \$449; SCIENTIFIC devices counter model 1100 \$89; HP VTVM model 410b \$149; HP Signal generator model 618C \$349; HP Sweep oscillator model 8690A \$749. Peter VK2CPK (02) 605 4790.
- **TOWER** free standing professionally made, 22 metre with pole includes rotator \$1200. Ron VK2BKN QTHR.
- **BWD** model 141 sine and square wave generator \$40; BWD model 603D mini lab \$100. Both as new. George VK2AHJ (02) 878 2278.

## FOR SALE VIC

- **ICOM 24AJ** dual band handheld extras include BP84 powerpack 1/4 wave telescopic antenna CP12 CIG lighter pack \$495; WELZ SP425 SWR power meter 140-525 MHz 150 w \$50. Ted VK3TG (052) 59 3225.

- **ICOM IC-275H** 100 watt 2 m ssb base station in mint condition not a mark on it \$2800 new, sell for \$1500; CT-16 SATELLITE interface to suit Icoms \$100; MFJ-1278 Multi-mode TNC \$400. Paul VK3EPD (059) 83 1771.

- **ICOM IC475H** 70 cm allmode, brand new; **ICOM IC720A** HF with ICPS-15 power supply; **KENWOOD TR751A** 2 m allmode; **SATELLITE** Antennas and rotators. Heaps of other items. Urgent Sale open to offers. Theo VK3CTK (03) 543 3517.

- **SATELLITE** Receiver new in box, capable of receiving K or C band, Satellite TV supplied with K band low noise converter and feedhorn \$250. Neil VK3BCU (03) 390 2609.

- **KENWOOD TS850S** current model HF xcvr with inbuilt ATU hand mic in vgc \$2600; **KENWOOD TS940S** HF xcvr with in built ATU and hand mic in vgc \$2600. Jim VK3NR (03) 367 6920.

- **ICOM IC-725** HF all band transceiver mint \$1250; **ICOM AH-2** automatic remote antenna tuner with controller \$525. Bill VK3WK (055) 65 9348 BH.

- **KENWOOD TS930S** HF xcvr excellent condition, great DX and CW rig \$1650; **KENWOOD 520S** HF xcvr good condition \$450. All mics and manuals. Geoff VK3ACZ QTHR (050) 24 5987.

- **KENWOOD TS940** topline HF xcvr 6 years old in vgc with inbuilt ATU hand mic \$2680. Jim VK3NR (03) 367 6920 Licensed amateurs only.

- **PHILIPS FM321** 435 MHz FM, 80 channel with owners manual \$250; **YAESU FT227R** 144 MHz, 10 watt mobile, scanning microphone, good condition \$275; **YAESU RGM** HF whips, 144, 28, 21, 27, gutter mount \$80. K Clayton VK3KFC 6 Curtis Crt, Cranbourne Vic 3977.

- **YAESU FT102** HF transceiver 150 w with new finals and YM38 desk microphone \$1100; **MATCHING FC-102** 1.2 kW ATU with inbuilt FAS-4R 4-way antenna switch \$400; **MATCHING SP-102** external speaker with audio filters \$150 or \$1500 the lot. Craig VK3CRA (03) 551 5635.

- **100 FOOT** fold down radio tower, dismantles into 22 ft sections and comes complete with a heavy duty winch \$3000; **50 FOOT** Southern Cross windmill tower, converted to a radio tower \$500; **NUMEROUS** other pieces of amateur radio equipment. Richard Haggblom, 6 Avondale Ave, St Albans Vic 3021 (03) 366 4605.

## FOR SALE QLD

- **SWAP** Ratcliffe RF sig gen 205 ex-DCA 0-180 MHz, Techtron sine wave gen ex-DCA, Philips EV 4436A pa 4x6 cms plus spares, hundreds HF valves, octals, miniatures for radio control aircraft or bits and pieces thereof. "Doc" VK4CMY (076) 85 2167.

- **KENWOOD TS140** mobile rack \$15; **TANDY DMP105** printer with manual and cables \$50; **DATA** Recorder suit C64 \$20; **VALVES**, transmitting, receiving, renovators, collectors, tested, rectifiers, sockets, shields. Send A4 sase for list. Ted VK4YG QTHR (070) 97 6387.

- **KCT & T** card and software, never used \$350. John VK4JON QTHR (070) 61 6904.

- **YAESU FTDX401** outboard VFO FV401 speaker YD844 Yaesu desk mike all ec plus 35 spare new valves also 4 Toshiba used ok 6KD6 valves, valves value \$600, Whole lot equip plus valves \$700. Robby VK4YV (074) 43 8414.

- **2 x 12 El** 2 m and **2 x 22 el** 70 cm crossed yagis, c/w 9913 coax and fitting phasing harnesses. Relays. Six metre hinged tower and winches, good condition. Excellent performers \$475 the lot. VK4PO QTHR (07) 843 0505.

- **DSE PSU** 138 V, 25 A peak capacity \$100. **HYGAIN 18AVT/WB** 5 band vertical antenna \$120; **KENWOOD ATU AT-200** \$150; **MOSLEY** HF trapped vertical antenna w/radials, data sheet \$75; **RADIO RECEIVER MANUALS** -1937, 38, 39, 40/42, 46 \$25 ea or \$100 all; **SHURE** model 450 desk mic w/data sheet. VGC \$85 or exchange ICOM SM-8 desk mic; **VALVES** 2 new 6JB6A (Drake C-line TX) \$70; **WAVE METER** ex DOD gc \$50; **YAESU FT-1** xcvr ec with vg UA723-HB PSU \$450. VK4SZ QTHR (070) 61 3286.

- **LODESTAR** signal generator model SG4160B 100 kHz 450 MHz exc cond no further use \$250 posted Australia. Gordon VK4KAL QTHR (079) 85 4168 evenings.

## FOR SALE SA

- **YAESU FT-107DM** 140 w HF xcvr WARC. Memories, ext VFO, gc \$800; **KENWOOD TS-520S** HF xcvr DC-DC converter gc \$450 ono. Dale VK5AFO (08) 391 2330.

- **ICOM W2A** 2 m/70 cm dual band hand held xcvr c/w s/case and extra battery \$600; **YAESU FT-726R** 6 m, 2 m, 70 cm all mode xcvr c/w satellite module, MD-1 desk mic \$1800 ono. VK5KCX (085) 22 4528.

**FOR SALE TAS**

● STANDARD AX-700 scanner receiver. professional quality, built in spectrum analyser, covers 50-905 MHz. W/FM, N/FM, AM. Mint cond. Cost \$1075, sell \$585. Allen VK7AN OTHR (003) 27 1191.

**WANTED NSW**

● 3-500Z Tk triode. VK2DM QTHR (049) 46 7674.  
 ● COLLECTOR wants old and new Morse keys, magazines, books relating to Morse code. Need as much material as possible for future book. Top prices paid. Steve VK2SPS (02) 99 2933 aft 6pm.  
 ● KENWOOD TS-120S or TS-130S in gc. Keith VK2AXN OTHR (02) 489 0304.

**WANTED VIC**

● YAESU FT-101ZD (with WARC bands) or Kenwood TS-830S. I will be disposing of an FT-101B. Ken VK3NJ OTHR (03) 561 4124.  
 ● YAESU FT-747 or ICOM IC-735 or similar HF xcvr. Ron VK3OM QTHR (059) 44 3019.  
 ● QSL cards. Please help along the WIA QSL collection with your donation. We need special issue card and USA counties but all are welcome. Ken VK3TL (03) 728 5350. Pickups can be arranged.

**WANTED OLD**

● CKT and OPERATING data for Palec industrial VTVM type TVM. Ckt & discription Plus alignment data for Heathkit Mohican GC1-A comm rx. Photocopy costs reimbursed. Dick VK4GOR QTHR (07) 379 1600.  
 ● Wrecked FT-201 or VOX gain knob Q4 MFC6034, Q3 MFC 6020 IC's. work shop manual, ARs, Handbooks, Tech books, Substitution books, IC morse tutor, IC-211 or similar, two metre all mode. VK4YFF 1/124 Sheridan St, Cairns Old 4870.  
 ● CONDENSER, tuning, 150 pF/4000 V for linear construction; ICOM SM5 desk mike in gc; ICOM FL30, FL45 filters; RADIAL capacitor 400 V, 4.7 μF (13 mm dia). VK4SZ QTHR (070) 61 3286.  
 ● AOR 2001 (25-550 MHz) or AOR 2002 Scanner. Send details to VK4JHM, 379-391 Middle Rd, Greenbank Old 4001, (07) 800 6798.  
 ● DIGITAL frequency counter for Yaesu FT101E. Henry VK4CQH (070) 92 1994.

**MISCELLANEOUS**

● PLEASE SEND some of your QSL cards to the WIA collection. Especially special issue call signs, pictorial cards and rare DX. Contact Ken VK3TL 4 Sunrise Hill Road, Montrose Vic 3765, Tel (03) 728 5350.

**Stolen Equipment**

*The following equipment has been reported stolen. If you have any information that may lead to the recovery of the equipment, please get in touch with the advised contact as soon as practicable.*

**Make:** Kenwood  
**Model:** TS-120V  
**Serial Number:** —  
**Type:** HF Transceiver  
**Modifications:** Engraved on back N674522  
**Stolen from:** Randwick NSW  
**Date:** 16 December 1993  
**Reported to:** Randwick Police  
**Owner:** Albert Solomon  
**Callsign:** VK2NVS  
**Contact details:** 02 398 5846

**Make:** Yaesu  
**Model:** FC-700  
**Serial Number:** —  
**Type:** HF Antenna Tuner  
**Modifications:** Engraved on back N674522  
**Stolen from:** Randwick NSW  
**Date:** 16 December 1993  
**Reported to:** Randwick Police  
**Owner:** Albert Solomon  
**Callsign:** VK2NVS  
**Contact details:** 02 398 5846

**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 per issue 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.  
 \*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.

\*WIA policy recommends that Hamads include the serial number of all equipment offered for sale.  
 \*Please enclose a self addressed stamped envelope if an acknowledgement is required that the Hamad 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: \$25.00 for four lines, plus \$2.25 per line (or part thereof) Minimum charge — \$25.00 pre-payable.

State: .....


Not for publication:

Miscellaneous  For Sale  Wanted

Name:..... Call Sign: ..... Address: .....

## 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.

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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.

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Industrial Printing, 122 Dover Street, Richmond, 3121. Telephone: 428 2958

### MAIL DISTRIBUTION:

R L Polk & Co Pty Ltd, 96 Herbert St, Northcote, Vic. 3070. Tel: (03) 482 2255

## CONTRIBUTIONS TO AMATEUR RADIO

Amateur Radio is a forum for WIA members' amateur radio technical experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for possible publication. Articles on computer disk are especially welcome. The WIA cannot assume responsibility for loss or damage to any material. "How to Write for Amateur Radio" was published in the August 1992 issue of AR. A photocopy is available on receipt of a stamped, self addressed envelope.

## BACK ISSUES

Available only until stocks are exhausted. \$4.00 to members, which includes postage within Australia.

## PHOTOSTAT COPIES

When back issues are no longer available, photocopies of articles are available to members at \$2.50 each (plus \$2.00 for each additional issue in which the article appears).

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.

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## 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:.....

# WIA Morse Practice Transmissions

VK2BWI Nightly at 2000 local on 3550 kHz

VK2RCW Continuous on 3699 kHz and 144.950 MHz 5 wpm, 8 wpm, 12 wpm

VK3COD Nightly (weekdays) at 1030 UTC on 28.340 MHz and 147.425 MHz

VK3RCW Continuous on 144.950 MHz 5 wpm, 10 wpm

VK4WIT Monday at 0930 UTC on 3535 kHz

VK4WSS Tuesday at 0930 UTC on 3535 kHz

VK4WCH Wednesday at 1000 UTC on 3535 kHz

VK4AV Thursday at 0930 UTC on 3535 kHz

VK4WIS Sunday at 0930 UTC on 3535 kHz

VK5AWI Nightly at 1030 UTC on 3550 kHz

VK6WIA Nightly at 1930 local on 146.700 MHz and nightly (except Saturday)  
at 1200 UTC on 3.555 MHz.

# WIA Divisional Bookshops

The following items are available from your Division's Bookshop  
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	Ref	List Price		Ref	List Price
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Ant. Compendium Vol 3 1st Ed. 1992	BR455	\$37.00			
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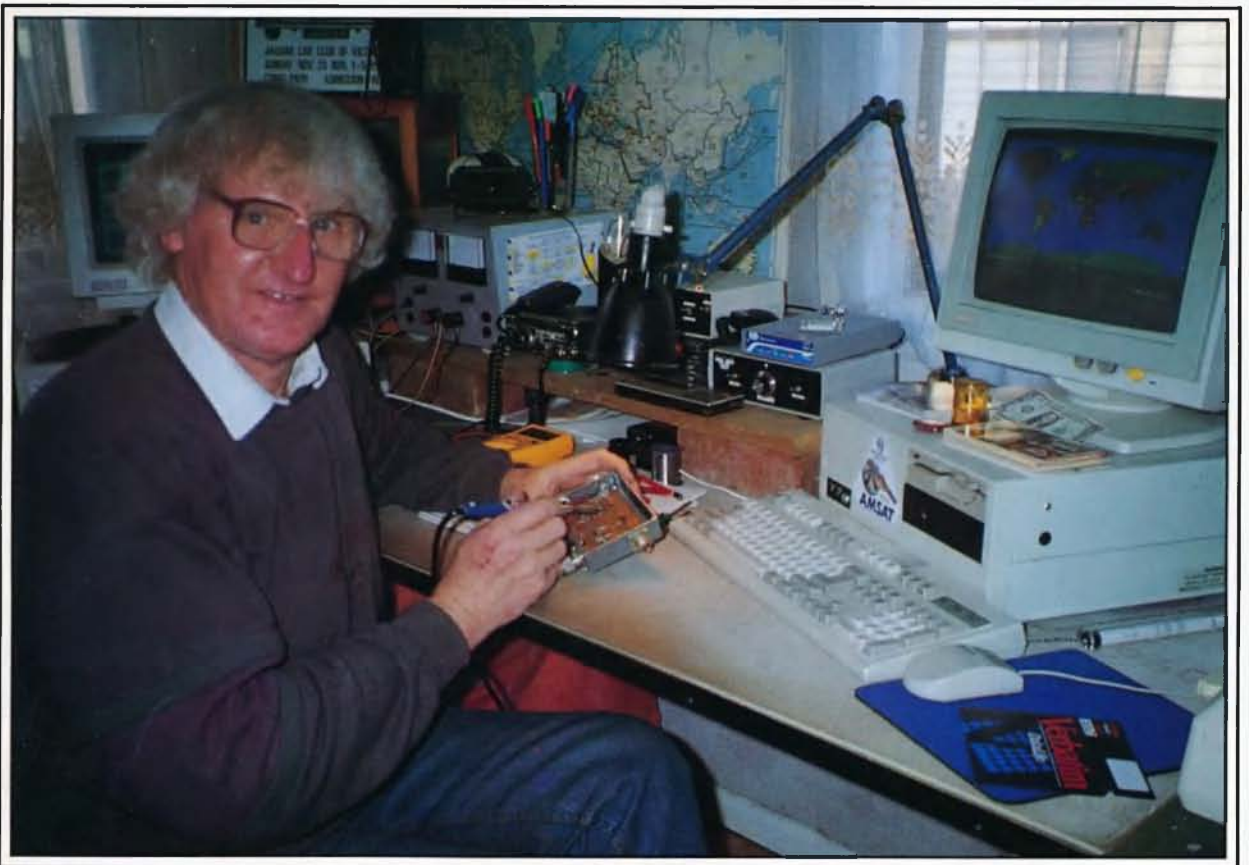


# RADIO **AMATEUR**

MARCH 1994  
Volume 62 No 3



Journal of the Wireless Institute of Australia



## **IN THIS ISSUE:**

**Once upon a Sweep Tube**

**QSLing — a necessary evil**

**Bandwidth limiting LF Converter to include VLF**

**plus more articles and regular columns**





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*Amateur Radio* is published by the Wireless Institute of Australia, ACN 004 920 745 as its Official Journal, on the last Friday of each month.

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#### Deadlines Editorial Hamads

April 07/03/94 09/03/94

May 11/04/94 13/04/94

June 09/05/94 11/05/94

Delivery of AR: If this magazine is not received by the 15th of the month of issue, and you are a financial member of the WIA, please check with the Post Office before contacting the registered office of the WIA. ©

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Bill Magnusson VK3JT distracted in his shack prior to yet another foray into the exotic world of amateur satellites. Bill is the popular editor of the AMSAT Australia column on page 25.

# Amateur Radio Service

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# Federal QSP

In the February issue of Amateur Radio magazine, information was published concerning the Spectrum Management Agency (SMA) inquiry into apparatus licensing. You may have wondered what this has to do with amateur radio.

Under the new Act and Regulations which established the SMA, several categories of licence were established, one of which is the apparatus licence. All amateur radio licences fall into this category, which is a category that the SMA would like to reduce in number. This inquiry is therefore of interest to all amateurs as what happens with apparatus licences (and amateur licences in particular) will determine the future fees and conditions which will be applied to our licences. Needless to say, the WIA at all levels is taking an interest in this inquiry and will be developing a response to the SMA paper.

One of the factors which is likely to influence how we will fare in this inquiry and its outcomes, is our relationship with the SMA and the impact amateur matters have on the SMA. The SMA, in determining licence fees for the various categories of licence, take into account the cost to them of administering each licence group. It may come as a surprise to many that the cost of administering the amateur licence group tends to be out of all proportion to the number of licensees.

It seems that, in many ways, we are not good neighbours and citizens and that we generate much work for the SMA, either from letters direct to the SMA or via Ministerials. Ministerials are where people have written to their Member of Parliament, or to the Minister direct, concerning some matter relating to the amateur fraternity.

Unfortunately, most of these matters relate to complaints concerning amateurs, in many cases from other amateurs and often for the most trivial matters. Many cases, where the letter is from a non-amateur, concern matters which have arisen from us neither being good neighbours and citizens nor trying to get along with our fellow citizens. While there are always two sides to every complaint, we need to work better and smarter with the non-amateur community to ensure that such matters are resolved before they reach the stage of letters to the Minister.

Some amateurs believe that the SMA should be undertaking a major policing role and be expected to investigate any and every breach of the regulations, whether real or imagined, big or small. All these events create the impression that these amateurs are more trouble than they are worth. If such an attitude continues and grows, then it will be to the detriment of the amateur service, both financially, in terms of increased licence fees, and in terms of the enjoyment we are able to derive from the hobby. We may well find very restrictive regulations being forced upon us.

The new licence conditions, which the SMA has been considering for some time, move the amateur service very firmly into the realm of de-regulation. Whether we like it or not, we are expected to be taking a more responsible attitude to our operations, both individually and collectively. We must become a self regulating group, able to resolve issues from

within our own resources, able to live with our neighbours and also get along with each other. The SMA will not be forever playing the role of policeman.

The ball is very squarely in our court. Although we will probably be little affected by this current inquiry, if we don't clean up our act, co-operate with one another, accept each others' foibles and become better citizens, we can expect that in the future we may not be treated as kindly. The actions of a few will sour the relationship for us all.

So, it's over to you. Can you become the good operator and good neighbour which will help to ensure amateur radio continues as the enjoyable hobby that we have had in the past?

**Kevin Olds VK1OK**  
Federal President  
ar

## Editor's Comment

### More Centuries

It is something of an anti-climax to be faced with the need for a 101st editorial. So much more would have been appropriate last month but could not fit within our fairly strict 500 word limit.

Now, as Kipling says, "*The tumult and the shouting dies. The captains and the kings depart.*" Not that many captains or kings crossed our doorstep last month; or ever, for that matter!

But there is one topic which seems

to fit the context very well. Back in December 1991 we featured on our front cover a fellow-amateur who had indeed scored a century. In that month Harry Angel VK4HA celebrated his 100th birthday. We asked, in the story supporting the photo, whether there were any other active amateurs in the world who were 100 or more. Could Australia be home to the world's oldest amateur?

Since then the question has been repeated in several overseas amateur magazines, but no claims seem to have been made. At 102 and a bit, it still seems that VK4HA is the world's oldest amateur, perhaps not as active now as he was, but still currently licensed. Does anyone, anywhere, want to contest the title?

Further to develop the theme, the activity we call amateur radio may

**Continued page 55**

## 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	1994 Fees
VK1	ACT Division GPO Box 600 Canberra ACT 2601 Phone (06) 247 7006	President Christopher Davis VK1DO Secretary Hugh Blemings VK1YYZ Treasurer Don Hume VK1DH	3.570 MHz LSB, 146.950 MHz FM, 438.525 MHz FM each Monday evening (except the fourth Monday) commencing at 8.00 pm.	(F) \$70.00 (G) (S) \$50.00 (X) \$42.00
VK2	NSW Division 109 Wigram Street Parramatta NSW (PO Box 1066 Parramatta 2124) Phone (02) 689 2417 Fax (02) 633 1525	President Terry Ryeland VK2UX Secretary/ Roger Harrison VK2ZTB Treasurer (Office hours Mon-Fri 11.00-14.00 Wed 1900-2100)	From VK2WI 1.845, 3.595, 7.146*, 10.125, 24.950, 28.320, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 (*morning only) with relays to some of 14.160, 18.120, 21.170, 584.750 ATV sound. Many country regions relay via a local 2 metre repeater. Sunday 1000 and 1915. Highlights included in VK2AWX Newcastle Monday 1930 on 3.593 plus 10mx, 2mx, 70cm, 23cm. News headlines by phone (02) 552 5188. Some broadcast text can be found on the Packet network.	(F) \$68.75 (G) (S) \$53.40 (X) \$38.75
VK3	Victorian Division 40G Victory Boulevard Ashburton Vic 3147 Phone (03) 885 9261	President Jim Linton VK3PC Secretary Barry Wilton VK3XV Treasurer Rob Hailey VK3XLZ Office hours Tue & Thur 0830-1530	1.840MHz AM, 3.615 SSB, 7.085 SSB, 53.900 FM(R) Mt Dandenong, 146.700 FM(R) Mt Dandenong, 146.800 FM(R) Mildura, 146.900 FM(R) Swan Hill, 147.225 FM(R) Mt Baw Baw, 147.250 FM(R) Mt Macedon, 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday.	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK4	Queensland Division GPO Box 638 Brisbane QLD 4001 Phone (07) 284 9075	President Ross Marren VK4AMJ Secretary Lance Bickford VK4ZAZ Treasurer David Travis VK4ATR	1.825, 3.605, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, 28.400 MHz. 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday. Repeated on 3.605 & 147.150 MHz, 1930 Monday	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK5	South Australian Division 34 West Thebarton Road Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Bob Allan VK5BJA Secretary Maurie Hooper VK5EA Treasurer Bill Wardrop VK5AWM	1820 kHz 3.550 MHz, 7.095, 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 34 579.000 Adelaide, ATV 444.250 Mid North Barossa Valley 146.825, 438.425 (NT) 3.555m 146.5000, 0900 hrs Sunday	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK6	West Australian Division PO Box 10 West Perth WA 6872 Phone (09) 388 3888	President Cliff Bastin VK6LZ Secretary Ray Spargo VK6RR Treasurer Bruce Hedland-Thomas 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 3.582, 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 146.700 at 1900 hrs.	(F) \$60.75 (G) (S) \$48.60 (X) \$32.75
VK7	Tasmanian Division 148 Derwent Avenue Lindisfarne TAS 7015 Phone (002) 43 8435	President Andrew Dixon VK7GL Secretary Ted Beard VK7EB Treasurer Peter King VK7ZPK	146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.750 (VK7RNA), 3.570, 7.090, 14.130, 52.100, 144.150 (Hobart) Repeated Tues 3.590 at 1930 hrs	(F) \$69.00 (G) (S) \$55.65 (X) \$40.00
VK8	(Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).		Membership Grades Full (F) Pension (G) Needy (G) Student (S) Non receipt of AR (X)	Three-year membership available to (F) (G) (X) grades at fee x 3 times.

Note: All times are local. All frequencies MHz.

# Modifications to the Bandwidth Limiting LF Converter to Include VLF

Lloyd Butler VK5BR\* further extends the usefulness of his low frequency converter.

## Introduction

In my second article on the bandwidth limiting LF converter (ref 2), I indicated that I would examine the possibility of extending tuning down to the VLF region. Circuit modifications are now described to achieve this and provide continuous tuning between 10 kHz and 420 kHz.

To extend the frequency range downward it has been necessary to expand the frequency range of the local oscillator and provide a means to tune the loop antenna at very low frequencies. I also found a need to modify the loop interface amplifier and the reason for this will be explained further on. No changes were needed in the mixer or crystal filter circuits

## The Local Oscillator

The original oscillator tuned between 1.65 and 1.87 MHz for an input signal tuning range of 150 to 370 kHz. To extend the signal range downward to 10 kHz, the oscillator tuning was altered to start from 1.51 MHz. The upper limit was also altered to 1.92 MHz so that the signal tuning range could be extended upward a little further to 420 kHz. This was done because the self resonant frequency of my loop, with its 1.5 metres of cable, was found to be a little higher than the 370 kHz initially assumed. The changes to the oscillator tuning range were easily achieved by replacing the variable tuning capacitor C19 (130 pF) with a 200 pF unit and replacing fixed capacitor C20 (180 pF) with 150 pF.

## Loop Tuning

The main complication in extending operation down to the VLF region is tuning the loop at these low

frequencies. The loop antenna has an inductance of around 500 microhenries and at the lowest frequency of 10 kHz a capacitance as large as 0.5 microfarads is needed for resonance. Below 100 kHz, the high capacitance required inhibits use of continuous tuning with the variable gang capacitor and we have to resort to switched fixed capacitors. This means that at VLF the loop may be a little off tune for certain frequencies but I have used the switched capacitor idea before and in practice it works reasonably well.

The modified front end of the converter, including loop tuning, is shown in figure 1. Tuning capacitance is controlled by fixed capacitors C22 to C32, switched in by a 12 position rotary switch S1 and a variable 3 gang capacitor C3. For frequencies below 100 kHz, continuous tuning is achieved with C3 in conjunction with the first three switch positions of S1. Below 100 kHz, the variable capacitor has little effect and the switch position is set for a fixed capacitance nearest to resonance as indicated by maximum signal or noise.

One factor I have had to consider is that the loop sensitivity falls as the frequency is decreased. Firstly this occurs because, for a given field strength, induced voltage is directly proportional to frequency. Secondly, the output voltage from the loop is multiplied by the loop Q factor which falls as frequency is lowered. At 300 kHz the loop Q is around 45 but at 10 kHz it falls to around 14. Because of these factors, I found a need to increase the gain of the loop interface amplifier N1A at the lower frequencies. This is achieved by

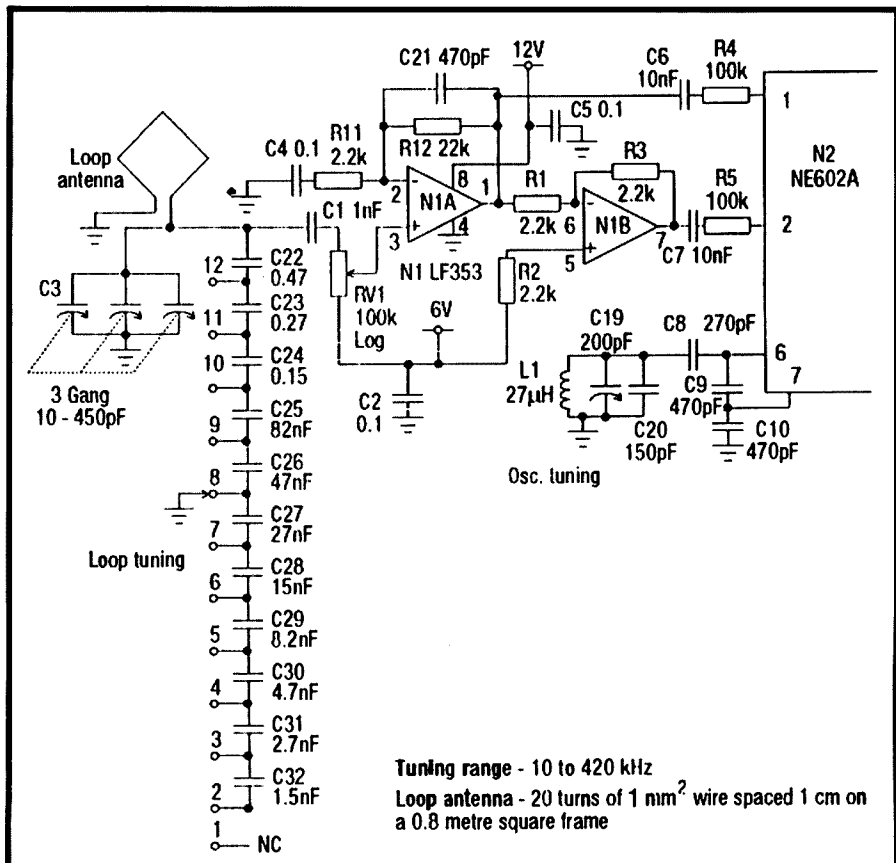


Figure 1 LF converter front end modified for operation to extend to the VLF band.

network R11, R12, C21 connected in the amplifier feedback path. At the upper end of the LF band, the gain of the amplifier is close to unity, but at 10 kHz this increases to nearly 10.

Another modification to the original circuit is a change in the value of resistors R1, R2 & R3 in the phase splitter circuit formed around amplifier N1B. I discovered that this circuit was contributing more than its fair share of inherent noise and to improve the noise performance, these resistors were reduced from their original value of 10 kΩ to 2.2 kΩ. This modification is not specifically related to the VLF modifications as it improves performance at all frequencies.

Whilst I am on the subject of modifications, you might be interested in extending the frequency of the converter in the other direction above 420 kHz. The upper frequency limit is set by the self resonant frequency of the loop connected via its cable. The upper frequency can be extended a little by reducing the capacity of the cable or to a greater

extent reducing the loop inductance. This is achieved by switching out a few turns on the loop when operating at high frequencies.

### Assembly

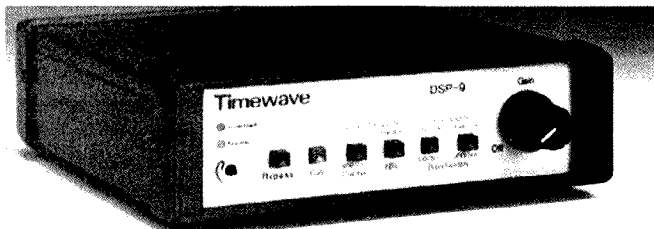
All the experimental work was carried in breadboard fashion on the test bench but, having finalised the circuit design, the components were assembled in a small aluminium box.

*... the gain of the amplifier is close to unity, but at 10 kHz this increases to nearly, 10.*

The oscillator and loop variable tuning capacitors were each coupled to a dial via an Eddystone 10:1 reduction drive. I happened to have these on hand from some other equipment which was dismantled. For the loop tuning, this gearing is probably an "overkill" but it is essential for finely setting the oscillator when the signal bandwidth is limited to a few hundred hertz. The

dials consist of a 6 cm circular metal plate to which paper is glued for marking of the frequency calibration. The oscillator dial is finely calibrated over the whole frequency range of 10 to 420 kHz. The loop dial is calibrated for loop resonant frequency with the loop fixed capacity switch set at its first position. With the switch in this position, the variable loop tuning capacitor covers a range of 200 to 420 kHz. The fixed capacity switch positions are marked with the approximate loop resonant frequency for that setting assuming the variable capacitor is set to minimum. Calibration was carried out with the aid of two signal generators and a frequency counter but in the absence of these, the multitude of NDB stations available and the VLF stations mentioned, provide useful markers. With the calibration in place, tracking of the loop tuning with the oscillator tuning is simplified. Having set loop tuning to near resonance using the calibration, a fine adjustment can be made to peak the signal level.

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SSB signals often have a high signal-to-noise ratio but have interference from other signals that overlap the desired signal. The steep skirts of the speech bandpass filters allow the interference to be eliminated with minimal impact on the desired signal.

**INSTALLATION** The DSP-9 is compatible with all amateur radio transceivers and receivers. Just connect the DSP-9 between the radio and its speaker or headphones. Connect 12-16 VDC to the DSP-9 and turn it on!

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The loop interface amplifier, the mixer and the crystal filter were mounted on separate hard wired cards, the result of three stages of separate experimental development. In duplicating the circuitry, the three circuit elements could be fitted on a single card, perhaps a printed circuit. A 12 position rotary switch was used for the fixed capacitor loop switching. To minimise interwiring, the fixed capacitors were mounted around the contact lugs of the switch.

The front panel controls are the two geared tuning dials, the loop tuning switch and the two potentiometers, one (RV1) to regulate signal level from the loop and the other (RV2) to control bandwidth. The only other external fittings are two BNC connectors at opposite sides of the box, one to connect the loop and the other the receiver input. 12 V DC is picked up from an external supply via a twisted pair.

## Operation

For general notes on the operation of the converter, I refer you to my two previous articles (refs 1 & 2). Additional to that, I must emphasise that, in setting the oscillator to receive a given frequency, it is important to first resonate the loop as close as possible to that frequency. If the loop is off resonance, possibly nothing will be heard. Furthermore, if the loop is wrongly resonated to a strong local station frequency, a false condition of cross modulation by that station can occur. With the loop properly tuned, stations such as Omega on 11 to 13 kHz, the North West Cape on 23 kHz, and Belconnen on 43 kHz, feed signals into the attached receiver at S9 level. To detect these signals, the attached receiver BFO is needed. With the BFO on, Omega is heard as changing audio tones as its carrier frequency is switched in slow sequence. The other two signals are frequency shift teletype and also require the BFO. On the other hand, the ident on the NDB stations is modulated CW (MCW) and received in AM mode.

If the local oscillator is tuned down a little further than Omega, a strong carrier will be found. This means that tuning has been taken so far that the local oscillator frequency is close to

1.5 MHz and a signal is fed through the mixer at the 1.5 MHz first IF frequency.

All in all, the VLF converter performs very well over its whole frequency range. At VLF, the loop Q varies between 14 and 25. At these frequencies, frequency separation between stations is very small and my only comment is that a small improvement in the ability of the converter to separate stations at VLF could be achieved if a higher Q front end tuning system was somehow incorporated. Notwithstanding that comment, it pulls in the VLF signals very nicely.

## Summary

This concludes my third and final article in the band limiting LF converter series. In my first article I discussed some receiver features which could improve the reception of narrow band mode signals in the LF band including limiting the received bandwidth and use of the loop antenna. I followed on with a description of how some circuitry on hand was used to apply these principles in an LF converter including the use of a crystal filter for limiting the bandwidth. In the second article I refined the circuitry by making use of the NE602 mixer to minimise the component count. The

two articles were aimed at providing a converter circuit design for reception of experimental signals around 200 kHz. Having gone that far, I felt compelled to investigate the possibility of extending the tuning range down to the VLF region and the third article introduces circuit modifications which allow operation of the converter right down to 10 kHz.

In concluding, I must emphasise that results achievable with this converter are dependent on loop sensitivity and loop Q. If the loop has a smaller area, lesser turns, or lighter gauge wire (and hence lower Q) than I have specified, the converter will be less sensitive. Furthermore, the loop provides the only front end selectivity and, if the loop Q is lower, there is a reduction in its ability to reject strong out of band signals which might cause cross modulation in the mixer.

## References

1. Lloyd Butler VK5BR — A Bandwidth Limiting LF Up Converter for frequencies around 200 kHz — Amateur Radio, December 1993.
2. Lloyd Butler VK5BR — The Bandwidth Limiting Converter Simplified — Amateur Radio, January 1994.
3. Lloyd Butler VK5BR — VLF-LF and the Loop Aerial — Amateur Radio, August 1990.

\*18 Ottawa Avenue Panorama SA 5041

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## WIA News

### WICEN in NSW Bushfires

Members of WICEN (NSW) were active in providing support for bushfire fighting operations during the serious bushfires in various regions of NSW in January.

WICEN members were called out on the South Coast, in Sydney South, Sydney North, in the Hunter region, the Central Coast and the Mid-North Coast.

State Emergency Services (SES) communications facilities failed in the Central Coast and WICEN was asked to completely take over communications for them.

Thanks to John Howard, WICEN State Coordinator, for that news.

### Packet Radio for Student Training

A packet radio system has been installed by the Royal Melbourne Institute of Technology, Department of Applied Science, to be used as a training tool for students, by staff wishing to access information worldwide, and staff researching the potential of the technology itself.

A Commonwealth grant helped the Department buy antenna equipment, VHF, UHF and 23 cm transceivers, as well as packet equipment required to set up a station for contacting amateur radio satellites, according to a report in RMIT's "Campus Review".



# QSLing — A Necessary Evil?

Neil Penfold, VK6NE\*

Over the 80 years or so since Ham Radio began, the QSLing of radio contacts has been carried out in one form or another. Just as they still do today, QSLs in the infancy of our hobby contained information about the operator, his or her station and its location, along with grateful thanks for the QSO.

However, the numbers of QSLs sent in those early days were very limited. Operators didn't make hundreds of contacts in a year. There were not the opportunities for the numbers of contacts we make today because of the much smaller number of operators.

In fact, making a QSO appears to have been a really big event. If you read the operator's comments on old QSLs, you get the feeling they were giving out a "certificate of merit".

Some direct QSLing took place in those days, with some old cards I've seen having a "one penny" stamp attached to them for the purposes of return postage, instead of the International Reply Coupon (IRC) we use today. However, there certainly wasn't the huge number of QSL cards flooding through national radio society bureaux throughout the world and, in some cases, frequently choking these to a virtual standstill.

The tide of QSLs has risen steadily since ham radio started, in particular over the last twenty years or so. The initial reason, I venture to suggest, was the worldwide chase for the DXCC (DX Century Club) award, hugely popular since its inception. However, in the last 20 years, large numbers of awards, requiring ever larger numbers of QSLs — 5 Band DXCC and Islands On The Air, for example — have appeared.

Swelling the QSL supply and demand even further are those operators who simply must have a card for every contact. Radio society QSL bureaux which offer essentially free services fuel the situation even further, providing the only

economically viable means for the aforesaid QSL-mad operator.

Bureaux have become mini mail exchanges, rivalling the local post office in the number of cards handled. Some national amateur radio organisations, such as the Wireless Institute of Australia, have begun to feel the ever increasing costs of their QSL bureau operations and have been forced to impose a small levy per card to keep them viable.

To put this into perspective, one VK WIA Division reported an expenditure of \$3756 for its bureau operation. This doesn't include all the man hours actually spent handling the cards, these being provided on a "free" voluntary basis.

Where is the QSL situation heading? Is the QSL card really necessary? Could it be replaced? These are serious questions the amateur radio community should be looking at worldwide.

My opinion, one shared by other DXers of my acquaintance, is that the "market forces" operating in DX world have allowed and, in fact, dictate what is really happening and no "code of practice" drawn up by radio amateurs will change it. When it comes down to it, radio amateurs really want that rare QSL and will do whatever the QSL manager, the latter day linchpin of DX QSLing, asks to get the card, even if this takes a fair amount of ready cash.

One DX publication lists 45,600 QSL managers, which suggests there must be something in this QSL business. Business is now perhaps the best word to describe the world of direct QSLing. When a lot of people all have a strong desire for a limited commodity, the process of acquiring the object inevitably becomes a business.

This brings me to a set of guidelines which were adopted by the International Amateur Radio Union (IARU) Region I conference in 1990. Titled *Code of Practice for QSL*

*Management (RSGB)* — apparently submitted by the Radio Society of Great Britain — this contains eight recommendations, six of which impinge on the activities of the QSL Manager.

Let us look critically at the eight points of the IARU code:

1. Any DX station appointing a QSL Manager must ensure that satisfactory arrangements are in place for receiving and responding to incoming bureau as well as direct cards. Adequate publicity should be given to such arrangements.

Imagine a manager receiving 1000 cards every three months via the local QSL bureau. What is the cost of responding? 1000 cards at 7 cents each, plus bureau costs if applicable, say \$100.

Do you think the manager should foot the bill? I hear you say he or she makes up for the cost of the bureau cards with the IRC's, \$US "green stamps" and suchlike, received with the direct cards.

This a popular conception, so let's examine the figures. A single card,

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6 ele 6M	\$188
Duo 10-15M	\$259
3 ele 15M	\$179
3 ele 20M	\$289
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providing these are of a simple design and bought in quantity, costs around 10c. Postage averages out at 80c for "Economy Air — card only". Wow, that's only 90c and as the Dixer sent \$US1, with a favourable rate of exchange, that leaves 30 — 40c left over from the single card exchange. But how long did it take to answer this QSL?

First there is opening of the envelope and checking of the details on the QSL with the log. If all in is in order, there is the making out of the return QSL card, putting it into the self addressed envelope that was enclosed by the Dixer and, finally, going to the Post Office and getting it stamped.

Doesn't sound too bad, does it, especially the taking out and putting into envelopes bit. Unfortunately, the checking of details can take a bit of time, especially if they aren't quite right, and the going to post office, even if you are doing quite a few cards, isn't a five minute job. Is the envelope truly an SAE, or, was an SAE actually included at all? Does it actually fit the QSL card you want to send in return? Replying to QSLs is not so straightforward, in practice, I'm afraid.

So, for the 1000 direct cards received, our DX station or QSL Manager made \$350, but don't forget the \$100 to get rid of 100 bureau cards. Our "profit" is now down to

\$250. Now, it took approximately 2 minutes to answer each bureau card and 4 minutes — don't forget about the envelope/post office factors — to answer each direct card. How much, therefore, did the QSL writer earn per hour?

The answer is the princely sum of \$2.50 per hour. In many cases, the poor soul has already paid all the expenses for the trip to the DX location him or herself. In the case of a boat charter to a Pacific Island, these would have been running over \$2000 a day! Some DX organisations and clubs do help DXpeditions, but to a variable and often random extent.

Why, then, should a QSL card be "free" to everyone who wants one?

2. QSL Managers must respond to incoming SWL cards.

Why? Anyone who has participated in a DX operation will know just what quantities of SWL cards are received, especially from Russia and its satellite countries. If the country from which the SWL operates — as is the case in the old USSR — requires that, in order to gain an amateur radio transmitting licence, the SWL must receive some number of QSL cards, so be it. The QSL Manager is not responsible for actions of other country's radio societies.

This may sound harsh, but it is realistic. Hundreds of SWL cards are received by each DXpedition and, in my experience, up to 60% of these

are incorrect reports. It costs at least 10c to reply to each SWL and, remember, QSL cards from them are of no use to DXpeditioners who wish to apply for awards, such as DXCC, etc.

3. A Dixer appointing a QSL Manager must accept responsibility for that manager's performance.

What happens if the Dixer won't or doesn't or can't?! Many DXers won't let this activity out of their hands, in the belief that acting as their own QSL Manager is vital in order to maintain the integrity of their QSL procedures. However, the Dixer has then to do all the work.

4. QSL Managers must respond "direct" and within a reasonable period of time as long as sufficient funds?/IRCs/stamps to cover the exact cost of return postage and a return envelope (if one is not supplied) are enclosed with the request. Airmail must be used if sufficient funds/IRCs/stamps are enclosed.

Strangely enough, this is usually exactly what happens, in my experience. If you send sufficient funds, you get what you paid for.

5. QSL Managers must not insist on separate envelopes/applications for different QSOs of different stations. They must establish internal procedures to handle such multiple requests.

Let's be reasonable, if an insistence on separate envelopes/applications from DXers for QSLs from two different DX stations the QSL Manager just happens to be representing speeds up the QSLing, so be it, I say. How does a manager cope with checking when working for several DX stations and getting one return envelope for several QSLs?

On the whole, there are not many instances when DX stations you work at around the same time use the same Manager. Why begrudge the QSL Manager separate applications?

6. Recognising that mistakes of time and/or date are frequently made, QSL Managers must make a reasonably diligent search for QSLs that cannot be immediately found in the log.

Mistakes do occur, but what is meant, practically, by a diligent

## WIA News

### NSW President on Parade

President of the NSW Division, Terry Ryeland VK2UX, who is a member of the Blue Mountains Volunteer Bushfire Brigade Communications Section, joined the thousands of volunteers who marched through Sydney in late January in the parade to honour those who battled the NSW bushfires earlier that month.

Terry was on active duty at Katoomba Bushfire Communications Control Centre for various times over a period of almost three weeks in January. He is a Life Member of the Blue Mountains Amateur Radio Club.

Bushfire Controller Phil Koperberg received the keys of the City of Sydney from the Lord Mayor on behalf of all the bushfire volunteers, some of whom came from every State around the country.

### Omani QSL Bureau

The Royal Omani Amateur Radio Society (ROARS), in the Sultanate of Oman (A41), has notified a new postal address for their QSL Bureau. It is:  
ROARS QSL Bureau  
PO Box No. 981  
Muscat 113  
Sultanate of Oman

search? Look at the dozen entries in the logbook either side of the nominated time and date, or the previous/following day or two? At a possible 1000 log entries per day for an average DXpedition, a search is often not justified.

7. In particular it is unacceptable to demand a specific number of IRCs or "green stamps" (\$US1 bills) if a smaller number would cover the costs mentioned in Point 4. It is unacceptable to return QSLs via the bureau if they were received direct with sufficient funds/IRC/stamps as defined in Point 4.

Expecting, or even demanding, more postage than it costs the DX station/QSL Manager to mail out the return QSL is normal practice today. Why make yet another rule that is impractical to apply? Most operators chasing the DX card include "extra postage" to defray the expenses of the DX station or QSL Manager. I suggest that the numbers and keenness of the chaser has caused the cost of the card to reach the price it has today.

8. There should be no time limit

for applying for QSL cards. Old logbooks should be passed to responsible DX Clubs when the Manager no longer wishes to retain them.

I suggest a reasonable time limit after making a DX contact is two years. After this time, if the DXer hasn't applied, he really doesn't want the card badly enough. This is acknowledging there are probably exceptions to this, such as when a DXer's collection of cards is lost or burnt or accidentally destroyed.

The thrust of this "rule" implies that the log keeper is looking after history and has unlimited time and space to keep and check the logs. I've moved twice in the last ten years and paperwork is the first thing to be consigned to the dust or recycling bin. Each new house seems to have less storage space than the last, as well. My conclusion is that these guidelines seem to have been drawn up without any regard to what really happens in the world of chasing DX QSLs today. To propose a code of practice which is not only unrealistic but totally unenforceable is ultimately drawing ridicule on the IARU.

No code of practice is going to change the fact of life that direct QSLing has essentially become a badly paid business. It is about time the worldwide DX fraternity opened its eyes and admitted it.

*\*Neil Penfold is a DX chaser and manages the VK9 and VK0 bureau cards for the WJA. He is also WJA Federal Councillor for Western Australia. He was involved with the organisation of the 1983 Heard Island Expedition and later project Blizzard and was QSL Manager for VK0HI and VK0CW.*

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## WIA News

### New President for the RSGB

On 15 January, Ian Suart GM4AUP, was installed as the 60th President of the *Radio Society of Great Britain (RSGB)* at a ceremony in Glasgow.

A new Executive Vice President was also elected at the meeting. He is Clive Trotman GW4YKL, the RSGB's Zonal Council member for Wales. (RSGB Press Bulletin).

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X-510M 8.3db/11.7db \$349.00

#### TRI BAND BASE ANTENNAS 2m/70cm/23cm

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X-7000 8.3db/11.7db/13.7db \$399.00  
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# Once Upon A TV Sweep Tube

*"Doc" Wescombe-Down VK4CMY/VK5HP\**

For those amateurs who would like to build their own RF power amplifier, a question often arises — which valve/tube shall I use?

Obviously, if the bank balance is not an issue, then 8877, 3-500 and 572B units are readily obtainable.

Transformers for the power supply may not be so easily procurable these days. However, another option exists and was quite popular in the 1970-85 era. Horizontal output tubes (sweep tubes) which had their heyday in earlier TV sets. Some manufacturers of amateur equipment (Galaxy 6HF5, Swan 8950, 6HF5 and Yaesu 6KD6 etc) used 2, 3 and 4 of these tubes in their commercially made HF rigs. GALAXY even produced an amplifier using 10 such tubes in parallel as I recall.

Sweep tubes are still available new today. Stewart Electronics in Melbourne have them. They also crop up at flea markets, in old TV sets and at Hamfests.

Would-be constructors should be aware of two theories surrounding these "bottles":

- \* Thermal fragility
- \* Efficiency as linear amplifiers

The thermal fragility issue stems from a shorter key down (continuous) period than for, say, 6146Bs. An excessive key down period (ie over 30 seconds) is likely to cause excessive heat generation and resultant tube damage. By design these devices were intended for pulse service with high peak currents but not for CONTINUOUS high current.

They are very suitable for amateur use, however. If you build a sweep tube amplifier, try to use the LOWEST IDLING CURRENT (high bias) that you can. This will maximise tube life. To achieve this, increase the bias until the output just starts to fall off (using a wattmeter or SWR meter as an indicator). This is assuming that the transmitter is pretuned and drive is being applied as usual for full CW carrier. The bias setting so obtained

is usually the optimum and linearity is excellent.

If an output indicator is not available increase the bias from a very low value while the tubes are idling with no drive until the plates cool off from a cherry red to a no-colour condition. Plates will show a blood red colour after a no-drive idle of 30 seconds if the idling current is too high.

***"TV sweep tubes work well up to 30 MHz."***

In any case CW operators may rejoice in the fact that sweep tubes revel in Class C operation. Parallel tubes operating Class C telegraphy will deliver the full legal limit of 120 watts with ease.

A good amplifier should have a fan included in the RF deck and another in the power supply. Most commercial units have a restricted airflow around the PA area and heat is the biggest killer of any tube. A fan sited above the PA tubes and pulling the air out is best. If this is not possible a small fan blowing across/through the PA area is much better than no fan.

Mount the fan on felt washers under the mounting flanges or brackets to reduce vibration and directly over the PA tubes.

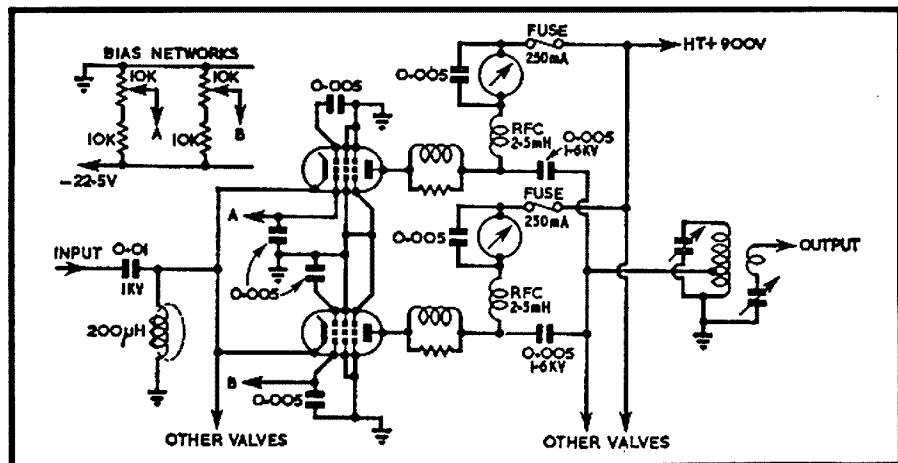
A second fan in the HV Power supply will keep the transformer and diodes cooler.

TV sweep tubes work well up to 30 MHz and the limits are determined by internal lead length and the input and output capacitances. The high output capacitance makes tuning the output matching network difficult as the valve plate capacitance approaches that required to tune the network. The high off-tune currents possible due to the valve characteristics can lead to failure whilst tuning up. Similarly the high input capacitance makes input matching difficult and obtaining sufficient drive can be difficult.

The lesson to be learned here is to select tubes with —

1. Short Internal Leads
2. Minimum Terminal Capacitance.

No matter which tube type is used for the amplifier, with tube paralleling come design problems. Dynamic plate current balance in the parallel tubes is vital. Imbalance here will result in failure of the tube with the highest transconductance (gm). The 6KD6 for example has a gm of 14000 micromhos. A matched set of tubes will solve this problem but the amplifier circuit in Fig 1 using four 6KD6 sweep tubes has a simple balancing method. The circuit originally appeared in QST July 1968 and the author was Doug De Maw W1CER. The diagram, however, comes from a reprint in the RSGB



**Fig 1 Simplified circuit diagram of high power linear amplifier using four 6KD6 line-output valves in parallel indicating the form of individual bias networks and the separate anode current metering.**

publication *Amateur Radio Techniques 3rd Edition* by Pat Hawker G3VA.

With full drive to the amplifier, set the bias adjust control for each tube for equal plate currents. The resting plate currents may be unequal as a result but this will not affect amplifier linearity. A single 0-1 amp meter can be used although the circuit shows four such meters. Tube balance may be measured by fitting a 10 Ω 1 W resistor in series with each cathode lead. The individual bias pots are then adjusted to obtain equal voltages across the 10 Ω resistors at peak drive.

When selecting sweep tubes to use in grounded grid configuration, such as in Fig 1, you must select those with beam forming plates connected to a separate base pin. This pin should be connected to RF earth together with both screen and control grids. Self oscillation of the amplifier will result if this is not followed.

A plate voltage of 900 V is typical for amateur built amplifiers and constructors should know that most of these tubes have element spacings and insulation rated to 1000 V.

If using CW operation, use minimum drive, ie insert less carrier and not lighter rig loading. About 50% of the SSB rating, unless you operate around 18 wpm, and then 66% of the SSB rating would be optimum. The SWR is very critical on CW and even 1.5:1 will cause sweep tubes to glow more under key down situations. Record your actual control settings of plate and load tuning on all bands to prevent off-resonance condition in tune up. Since a scope is immediately accurate this is a better tuning indicator than a meter.

In summary, Table 1 is hard proof of TV sweep tube suitability for RF amplifier use on amateur HF frequencies. Table 1 is from *Amateur Radio Techniques 3rd Edition* by Pat Hawker G3VA published by RSGB. The original data for this table was produced by Sylvania in the USA. If the operator chooses to push the plate volts to elicit an elevated power output then enjoy the results but be prepared to replace the tubes more often than if the operating condition are kept to a more modest level.

Interested parties would benefit from studying VK2BQQ's excellent

article "Vintage Transceiver as a 500W Linear Amplifier" which appeared in the April 1991 issue of *Amateur Radio* magazine.

Undoubtedly many suitable designs exist and it is up to the individual to decide on the format to be used to suit the situation. In the meantime, off to the flea markets and happy hunting.

\*via PO Dalveen Qld 4374

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## WIA News

### Hot work for US hams

US hams did more than just talk at the scene of the bushfires in California last November. They put their lives on the line staffing a mobile communications van at Pepperdine University at the height of the fire threat, according to a news item from the *Westlink Report No. 622*, reported in the February issue of *73* magazine.

They also handled the firehoses as flames assaulted the Malibu Sheriff's Station, the report stated.

### Class C Operation (ICAS) 30 Mc/s

Type	Vg1 V	Vg2 V	Vb V	R.F. g1 peak V	Ig1 mA	Ig2 mA	Ia mA	Drive (grid) watts	g2 dissip- ation watts	Anode Input watts	R.F. Output watts	Effi- ciency %	Anode dissip- ation watts	Circuit Loss watts	Probable upper Frequency (Mc/s)
6GJ5	-75	200	500	61	5.0	14.9	180	0.43	2.99	90	62.7	69.5	22	5.3	150
6HF5	-85	140	500	67	8.0	12.5	232	0.76	1.75	116	77.0	66.0	35	4.0	60*
6JB6	-75	200	500	61	5.0	13.3	180	0.43	2.66	90	62.7	69.5	22	5.3	145
6JE6	-85	125	500	72	8.0	17.2	222	0.82	2.15	111	76.3	69.0	30	4.7	60
6JM6	-75	200	500	57	4.0	13.7	180	0.32	2.72	90	61.1	67.9	22	6.9	150
6JG6	-80	150	450	67	8.0	20.0	202	0.75	3.0	91	63.0	69.3	21	7.0	150

\* One grid connection (75 Mc/s with two connections).

### Class AB1 Operation (ICAS) 30 Mc/s

Type	Vg1 V*	Vg2 V†	Vb V†	Ia zero signal mA*	Ig2 mA	Ia mA	Anode Power zero signal watts	G2 dissip- ation watts	Anode Input Power watts	Power Output R.F. watts	PEP watts	Effici- ency %	Anode dissip- ation watts	Circuit Loss watts
6GJ5	-43	200	500	30	3.8	85	15	0.76	42.5	17.5	35.0	41.5	22	3.0
6HF5	-46	140	500	40	4.5	133	20	0.63	66.5	28.8	57.6	43.0	35	2.7
6JB6	-42	200	500	30	4.2	85	15	0.84	42.5	17.5	35.0	41.5	22	3.0
6JE6	-44	125	500	40	3.9	110	20	0.49	55.0	23.4	46.8	42.6	30	2.6
6JM6	-42	200	500	30	4.4	85	15	0.88	42.5	18.3	36.6	43.1	22	2.2
6JG6	-35	150	450	30	4.5	98	13.5	0.67	44.0	18.9	37.8	43.0	21	4.1

\* Grid adjusted to indicated zero signal anode current.

† Optimum conditions for providing best linearity and efficiency

Table 1 Characteristics of some Line Output Valves in RF Service.

## Equipment Review

# The TEN-TEC Scout 555 HF Transceiver

Ron Fisher VK3OM

TEN-TEC I hear you say, who are they? Well, a few words about the Company before I tell you all about the Scout. First off, this will be the second TEN-TEC HF transceiver that I have reviewed in *Amateur Radio*. The first was the Omni C way back in August 1981.

TEN-TEC have produced a steady stream of equipment since then but, until recently, they have not had representation in Australia. Daycom (Stewart Electronics) now import TEN-TEC and will provide a full back-up service. Over the years, TEN-TEC are perhaps best known for their low power (QRP) equipment with such rigs as the Argonaut 509 and 515. These are highly prized by their owners and when the odd one appears on the second hand market, it is always snapped up very quickly.

As you might gather, TEN-TEC equipment is different from the usual run of Japanese-made gear. TEN-TEC is the only remaining American manufacturer of a full line of HF transceivers.

So what is the Scout 555? Basically, it's a simplified HF SSB and CW transceiver. I often hear amateurs complaining about the complexity of modern equipment. "Who wants all of those bells and whistles?" they say. "Can't we get back to a straightforward, no-frills transceiver?"

Well, here you are. Maybe we could even call this a 1994 version of the famous FT-7. So, if you want 200 memories with telephone numbers included, then the Scout 555 is not for you. But if your needs are for simple operation, excellent performance and very compact size, then read on. You won't be disappointed.

### Scout 555 Features and Facilities

The two most important features of the Scout are the compact size and the unique band changing system. On the first score, the Scout measures 6.4 cm high, 18.4 cm wide and 24.8 cm deep. As a comparison, this is just a whisker larger than the

Kenwood TS50S. The weight of the Scout is 2.4 kg which is 0.5 kg less than the TS50S. The band changing system is new and different (unless you can remember the HRO and AR-7 receivers).

There is a plug in box for each band, 160 to 10 metres, including all the WARC bands. This includes the appropriate heterodyne crystal oscillator and a band pass filter for the transmitter output and receiver input. The basic price of the Scout, which is \$1199, includes one box of your choice. Boxes for other bands are available as options at \$62 each.

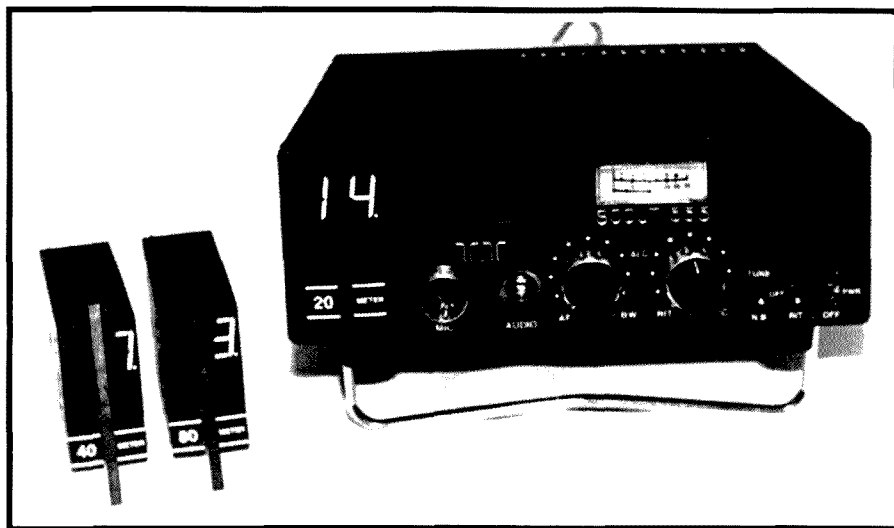
The basic Scout includes a number of very nice features that could well be options on your typical Japanese transceiver and some that are quite unique to TEN-TEC.

Included amongst these is a special variable band-width IF filter with front panel control. This is continuously variable from 500 Hz to 2.5 kHz. Called the "Jones" filter, it is covered by patents held by TEN-TEC. As we shall see, it works very well.

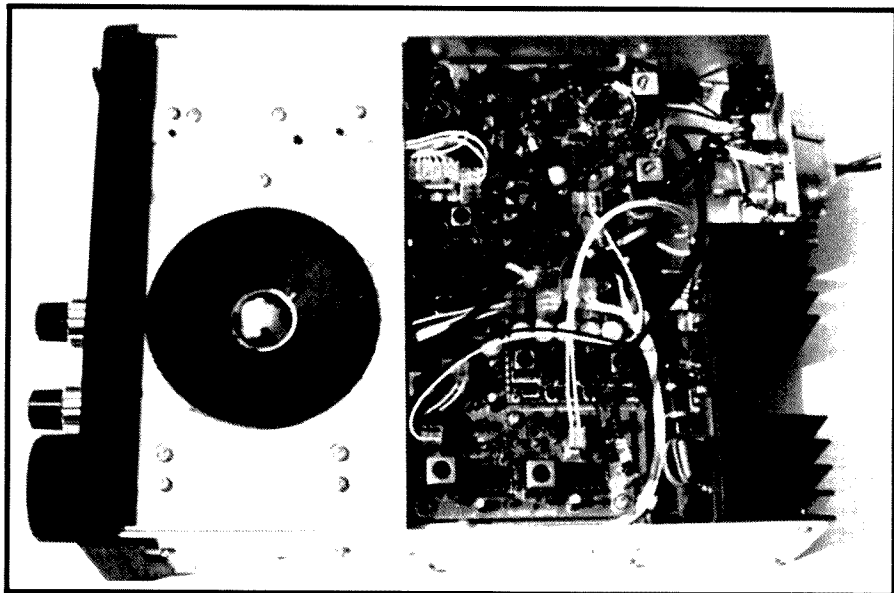
Also included in the Scout is an iambic keyer with an adjustable speed range of 5 to 50 words per minute. Transmitter power output is 50 watts both CW and PEP on SSB which TEN-TEC claim is an excellent compromise between power consumption and relative signal strength. It also means that the transmitter does not require a cooling fan.

Frequency readout is via a four digit LED display with the MHz figure printed onto the front of the plug-in module. The digits are about 1.5 cm high. Controls are very simple and straight forward. From left to right, we have a four pin microphone connector which is wired to the TEN-TEC standard system which is, in turn, different from all other manufacturers. By the way, a microphone is not supplied with the Scout but is offered as an option.

The "audio" jack next in line is a 6.5 mm stereo connector. It provides a multi purpose audio output for headphones, external speaker or even a connection to a tape recorder. Later I will describe how it works. The first concentric control is for receive audio level and the IF band-width control described earlier. Between the



The TEN-TEC Scout 555 with the 80 and 40 metre band boxes.



**Top view of the Scout with the cover removed.**

two rotary controls is a small LED to indicate ALC action. The second concentric control is for transmit microphone level and RIT. There are three small toggle switches in line under the tuning control and these are for, in turn, noise blanker, tune, and power.

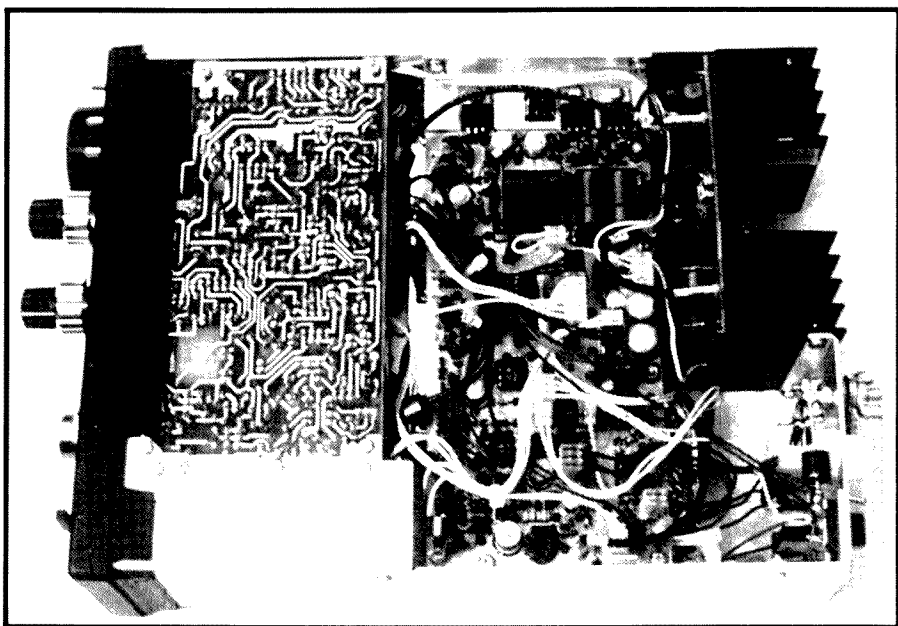
In the tune mode a 15 watt carrier is transmitted for antenna tune, etc. The noise blanker "on" works so long as the optional noise blanker module has been purchased and installed. The second switch also has two functions. Firstly it switches the RIT on, with its second function being to switch in the speed selection function for the built-in keyer. The actual speed selection is carried out with the key itself.

The last switch is the power on/off. The meter is well illuminated and carries scales for "S" meter, power output and SWR. The selection between power and SWR is via another toggle switch on the rear panel. The tuning control at the right is about 3.5 cm in diameter and, as TEN-TEC point out in the manual, it requires a slight effort to rotate as it drives a variable inductor in the VFO unit.

The rear panel carries connectors for DC power input, an SO239 for antenna connection, two 3.5 mm jacks for key connection, one for a paddle to couple to the built-in electronic keyer, the other of an independent key or keyer. A

concentric DC output connector provides 13.8 volts at a maximum current drain of 2 amps and, to complete the rear panel, there is a ground terminal with a good, solid wing nut to hold it down.

A 7.5 cm speaker is mounted under the top cover and two preset controls are accessible through holes in the bottom of the cabinet. They allow adjustment of sidetone volume and RF power output. Maximum output can be reduced from the 50 watt level down to about five watts. There is no external switching for a linear amplifier, however the manual



**Bottom view of the Scout with the cover removed.**

describes how this can be enabled if needed.

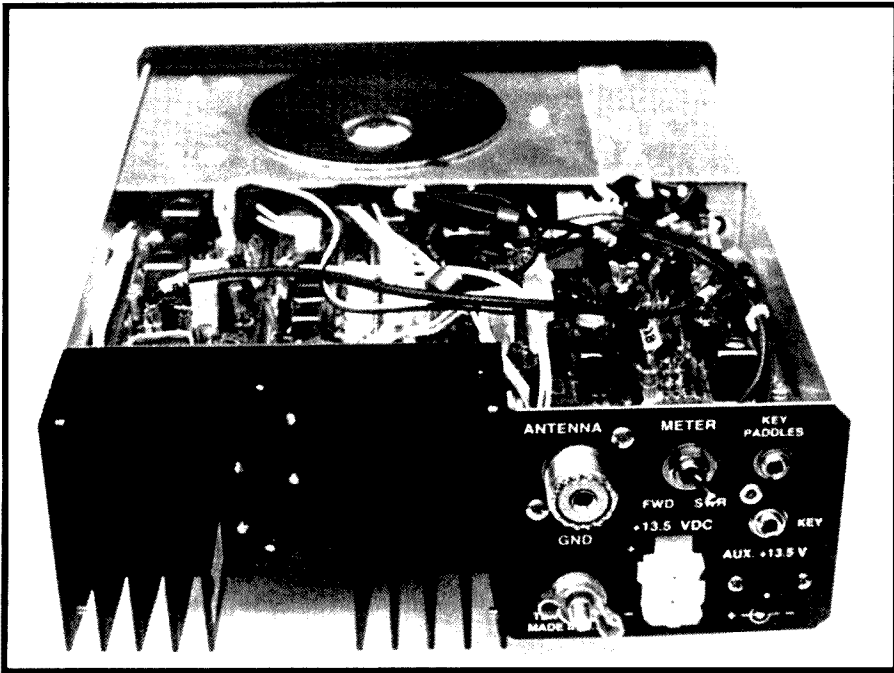
An interesting note in the handbook states "the power output of 50 watts drive is marginal for most linear amplifiers on the market". With a typical American linear you would only get eight or nine hundred watts output. Clearly not worth while!

### **The Scout 555 on the Air**

The first thing needed to put the Scout on the air is a microphone. In due course Daycom will have matching TEN-TEC microphones available but these were not available at the time of the review. I wired up a spare Shure 401 hand microphone to suit. I figured that the American Scout might prefer a genuine American microphone.

Next thing needed is a suitable power supply and something with 10 amps output is suitable. It appears that TEN-TEC do not produce a matching AC power unit. Getting the Scout on the air is very simple. Connect a suitable microphone, antenna and power supply and away you go. But the first thing to try is the receiver.

The operator's manual warns that the tuning control is stiff and indeed it is. It's definitely a thumb and forefinger job. The other problem is that some of the other controls are very close and get in the way. I found that I kept knocking the RIT control



Rear view of the Scout with the cover off.

(often unnoticed). Pity the RIT knob doesn't have a detent. The display is large and clear and the green LEDs look great. However, when you take the Scout outside, even in subdued light, the display disappears. This is a typical result with LEDs. Why not an LCD display?

In spite of all of this, the receiver sounds very good. There is enough sensitivity to make it sound really lively and the variable selectivity gives excellent QRM rejection. There is no sideband selection on the Scout. The conversion setup gives you lower sideband on low frequency bands and upper sideband on the higher frequencies.

While tuning around, I happened to have my two metre handheld operating listening to a vacant simplex channel. Every so often I heard strange signals emanating from the hand held. It turned out that the Scout was the culprit. The signal sounded like the old Woodpecker. It was worst with the 14 MHz box installed and with the Scout tuned to 14.175 the interfering signal appeared on 147 MHz. As the Scout was tuned up or down, the interference moved up and down the two metre band. Strange!

The optional noise blanker was most effective on ignition noise. I believe it would be essential for mobile operation. Its use appeared to

have no effect on the receiver performance. There was no noticeable cross modulation even on 80 metres at night with lots of strong signals about.

Now a few words about the front panel "audio" jack. It gets you straight into the receiver audio output at four ohms impedance. Plug your stereo headphones straight in and hear the output in both ears. Great, except you might find the level too high. Most transceivers have an attenuator in their headphone output. Plug in a single circuit plug half way and you will get output with the internal speaker still operating. Handy to connect to a tape recorder. I think I would prefer a 3.5 mm external speaker jack on the rear panel and a normal headphone socket on the front, but TEN-TEC's idea does have merit.

Transmit is easy. You either talk into the microphone or press the key. There is no switch to select either mode. The Scout knows which one you want. Very neat. In the CW mode, flip the middle switch under the tuning control to "speed". The figure 25 will appear on the digital display. This is the default speed of the built-in keyer. Change the speed by holding either the dot paddle or the dash paddle. There is no back up for this so when you switch off, and then back on, you will need to go through

the process again.

On CW, the Scout operates full break-in only. Sidetone is fixed at 750 Hz and the level is adjustable through a hole in the bottom of the cabinet. It is not adjustable with the normal receiver audio gain control.

For SSB operation, push the PTT and bring up the Mic gain until the small green LED marked "ALC" flashes on peaks. Quality reports using the Shure microphone were quite satisfactory. There is no speech processor, but the transmitted audio had plenty of punch.

I am concerned about the durability of the plastic levers on the front of the band boxes. They actually lever the boxes out of the Scout by pulling at the bottom. I didn't manage to break one so my fears might be unfounded. I hope so.

Finally, the Scout does have a very nice bail to lift the front of the rig up to present an excellent view of the front panel.

### Scout on Test

Our usual series of tests started with the transmitter. Three band modules were supplied with the review transceiver. They were for 3.5, 7 and 14 MHz. Power output on the three bands was essentially the same at 50 watts. This was both for CW and PEP on SSB. The current drain with no output, SSB mode, was 1.5 amps. With full output of 50 watts it was 9.4 amps and in the "tune" position with 15 watts output it was 6 amps.

TEN-TEC do not specify transmitter intermodulation distortion, but we carried out our usual tests and came up with a figure of -25 dB compared to full 50 watts SSB output.

### Receiver Tests

The "S" meter calibration was checked first. The meter is calibrated at S1, 3, 5, 7, 9 and half way between 9 and the end of scale is "+". There are no dB calibrations above S9. I recorded the following results. There is no preamp switching or attenuator on the Scout so there is only one way to go.

S1	3	5	7	9	+
0.7 $\mu$ V	1.4 $\mu$ V	2.0 $\mu$ V	4.0 $\mu$ V	30 $\mu$ V	2000 $\mu$ V

The specification states that S9 is calibrated at 50  $\mu$ V.

The difference between 30  $\mu$ V and 50  $\mu$ V at S9 is actually less than the



width of the pointer on the meter and a slight amount of parallax error in reading the meter could result in an even greater change. These figures were taken at 14.2 MHz. Measurements at 7 and 3.5 MHz were within a dB or so of the above figures.

Receiver sensitivity was checked at 14.2 MHz. It was  $0.35 \mu\text{V}$  for 10 dB SINAD which exactly meets the specified figure.

Receiver audio output was measured into a four ohm load. The specified 1 watt with 2% distortion was met exactly, but with a maximum output of 2.7 watts and 2 watts at 10% distortion.

A signal of  $17 \mu\text{V}$  was needed to produce maximum audio output.

The AGC action was very good for SSB with a decay time from S9 of about three seconds. There is no switchable time constant, so the same three seconds is there for CW also. This could be a bit on the slow side for quick break-in operation.

Audio output versus signal input, taking  $1 \mu\text{V}$  as 0 dB: was  $3 \mu\text{V} +7\text{dB}$ ,  $10 \mu\text{V} +9\text{dB}$  and  $30 \mu\text{V} +13 \text{dB}$ . From there up there was a 1 dB increase in audio up to  $3000 \mu\text{V}$ . This is a fair result. Receiver band-width was measured at maximum and minimum setting of the band-width control.

300 Hz	600 Hz	1.0 kHz	1.5 kHz	2.0 kHz	2.5 kHz	2.9 kHz
Maximum B/W						
-6dB	0 dB	0 dB	-1 dB	-2 dB	-3dB	-6 dB
Minimum B/W						
-6 dB	0 dB	-6 dB	-20 dB			

The tuning rate of the Scout varied somewhat from one end of the band to the other. At the low frequency end it was about 20 kHz per tuning knob revolution. At the 300 kHz point it was 18 kHz, at the 400 kHz point 14 kHz and at the 500 kHz point 6 kHz per knob revolution. The RIT offset was about  $\pm 1.6$  kHz. The main tuning readout shifted to indicate this.

Receiver current drain was measured at 450 mA with no audio output and peaking at 800 mA with maximum audio output. It was noted that the transmitter power output as indicated on the Scout's meter was spot on. The meter also indicates full PEP output.

However, I could not make much sense of the SWR readings. There are two calibration points above the 1:1.1 or zero meter position. The



Ron's hand holding the Scout 20 metre band box shows the small size of the unit.

handbook states the first indicates a 2:1 SWR and anything further up scale indicates an SWR greater than this. In most cases the 1:1 point coincided with my standard meter but the 2:1 point on the Scout meter was often a higher or lower reading than my normal meter. I guess the main thing is that the 1:1 point is right and it appeared to be so.

The instruction manual states that users might experience some trouble from images and IF breakthrough. These problems appear on certain bands under certain conditions. It seems there could be a problem on 18 MHz from broadcast stations on the 16 metre band getting through the receiver front end filtering. I did not have an 18 MHz box with our review Scout so could not check this. Another potential problem mentioned in the manual is the possibility of images from the 31 metre broadcast band (9.6 to 10 MHz) getting into the 14 MHz band. During our tests no sign of this was noted.

Frequency stability was checked and found to be very good. TEN-TEC use a microprocessor to look after several transceiver functions. One of these is to correct the VFO frequency when any drift occurs. This quite ingenious system holds the frequency to within about  $\pm 20$  Hz. When a correction is taking place, an LED dot is illuminated to the right of the last

digit of the frequency readout. There is, however, no VFO correction when CW operation with the internal keyer is taking place as the micro-processor is then looking after the keyer and not the VFO. But, during normal short transmissions, drift should be minimal.

## Scout 555 Operators Manual

Ah, I wish they were all like this one. The Scout manual is actually an instruction and workshop book combined into one volume. It's divided into three sections, installation, operation, and circuit descriptions and illustrations. The quality of the illustrations is poor and there is no illustration of the rear panel included. Even with a few faults, I award it  $9\frac{1}{2}$  out of 10. Japanese manufacturers please take note.

## Scout 555 Conclusions

I guess the first question to ask is whether the Scout is good value for money. The answer to this is yes and no.

Let's take the "yes" answer first. At the basic price of \$1199 for one band operation it is excellent value. Add a couple of extra bands and it's still good value, but add all band options and I would have to say maybe not. The above estimates take into account that you have a suitable microphone to connect up and that you do include the optional noise blanker in your budget. I find it strange that TEN-TEC make this an option at all. Anyhow this would take the price up to close to \$1400.

There are also a couple of things that TEN-TEC need to look at when they update the Scout. The most important of these is to substitute an LCD for the LED display. I cannot see that this would add much, if anything, to the price but it would improve the versatility of the rig out of sight. Other minor changes, such as improved tuning action, should also be considered. Last, but by no means least, a detent should be added to the RIT control.

I must say that I have enjoyed using the Scout over the last three weeks. My thanks to the gang at Daycom for the loan of the Scout 555. ar

# Technical Abstracts

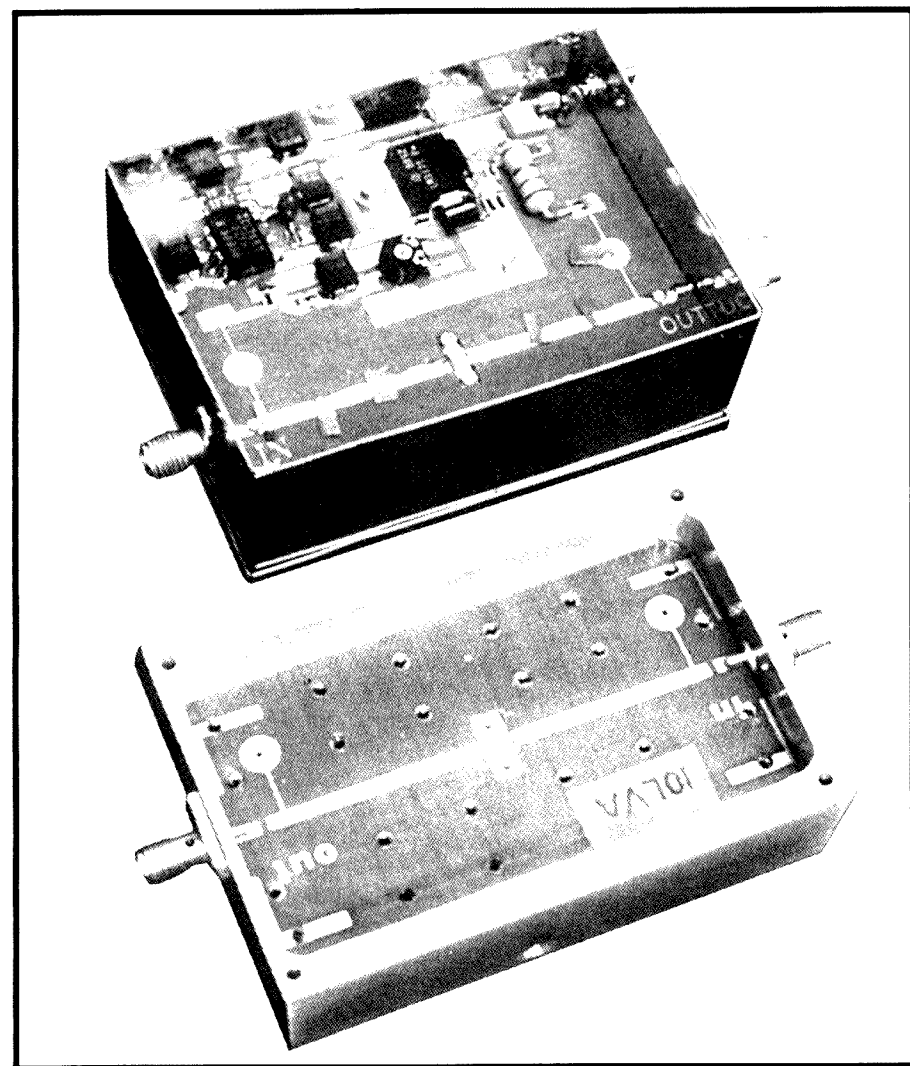
Gil Sones VK3AUI\*

## A 1 Watt GaAsFet Linear Amplifier for 10 GHz

By Ricci di Silvano I0LVA

Translated by G Cranby VK3GI

Originally published in Radio Rivista June 1993



The circuit as shown in Fig 1 is standard. It uses a printed circuit board of 0.79 mm Duroid 72 x 37 mm. This is a Teflon substrate. The measurements allow mounting in a standard size box of either tinplate or of silver plated aluminium. This gives

best results with regard to electrical and mechanical stability. One prototype was built on a larger board of 72 x 53 mm with success. This version is shown in the component layout in Fig 3.

The power supply components are

arranged on the same board. An LM317 is used for the 10 volt Drain voltage regulator. A 78L05 and an ICL7660 provide the negative Gate voltage. All components are surface mounted except the LM317. The component values shown provide exactly 10 volts and a negative voltage variable from 0.8 to 3.5 Volts. The BC337 transistor Q1 protects the drain voltage against loss of gate voltage and thus prevents any nasty surprises for the GaAsFet.

The component layout is shown in Fig 3 for the 72 x 53 mm PCB. Constructors capable of building this device should have no problem with the 72 x 37 mm PCB. The input and output capacitors are 1 pF ATC porcelain chips. The circuit board is trimmed to fit into the box. It is fixed to the bottom with 2 mm screws. Prepare the positions for the LM317 regulator and the MGF2430 GaAsFet. They are fitted through holes in the board direct onto the bottom of the box.

Drill the holes for the input and output connectors as required. Drill the hole for the 1000 pF feed through capacitor C1.

Drill 1.1 mm holes and thread them for 1.4 mm screws to fix the GaAsFet. Alternatively, drill 1.5 mm holes and use 1.5 mm brass screws. These screws are available from watchmaker's suppliers.

Now mount the circuit board with 2 mm screws at the bottom of the box, mount the SMA coax connectors, the feed through capacitor and the power supply components. At this stage make the first check that the voltages are correct.

Now the most delicate part of assembly begins with the mounting of the MGF2430. Ground the soldering iron to the box. (A wrist strap would be wise also. Tech Ed.) Mount the MGF2430 with screws as discussed previously. Quickly solder the Gate and Drain using a minimum of solder. At this stage the amplifier is completed and testing and tuning may commence.

First check again that all voltages are correct and that nothing has been overlooked. Make up 4 or 5 small tags

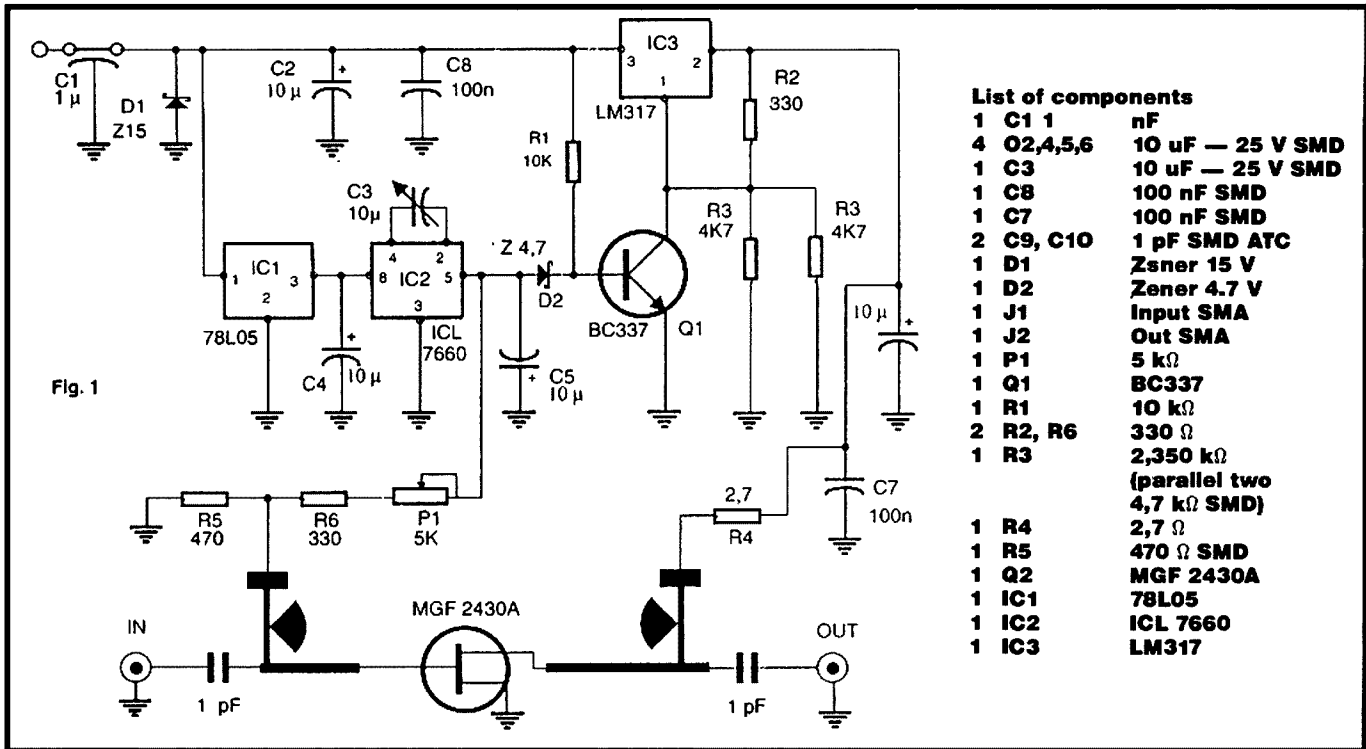
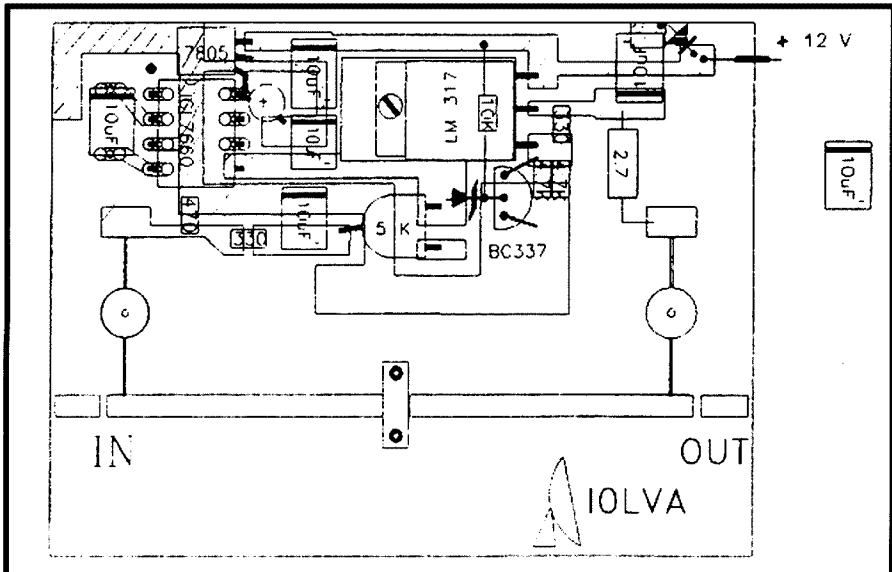
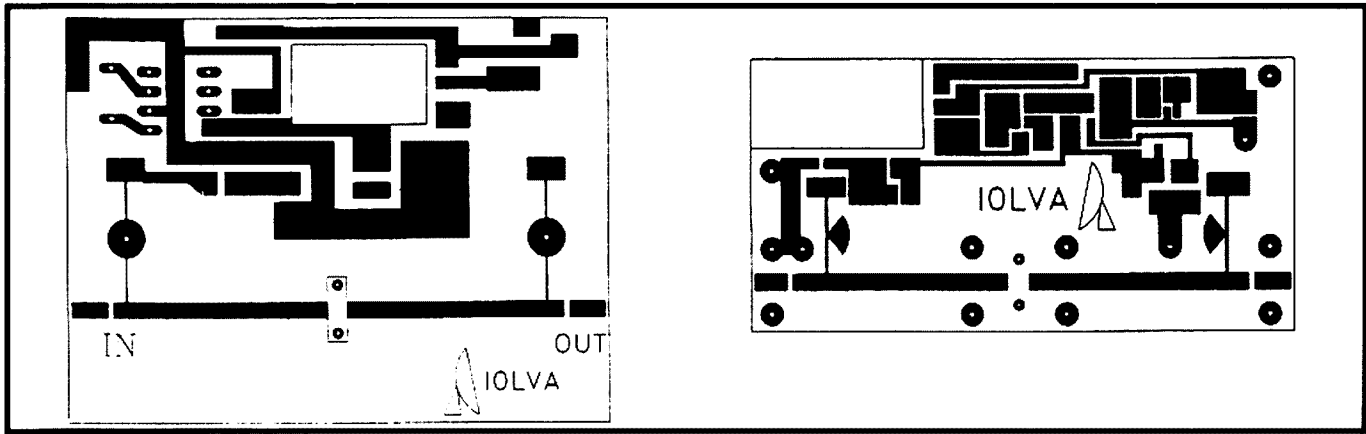


Fig. 1

- List of components**
- 1 C1 1 nF
  - 4 O2,4,5,6 10 uF — 25 V SMD
  - 1 C3 10 uF — 25 V SMD
  - 1 C8 100 nF SMD
  - 1 C7 100 nF SMD
  - 2 C9, C10 1 pF SMD ATC
  - 1 D1 Zener 15 V
  - 1 D2 Zener 4.7 V
  - 1 J1 Input SMA
  - 1 J2 Out SMA
  - 1 P1 5 kΩ
  - 1 Q1 BC337
  - 1 R1 10 kΩ
  - 2 R2, R6 330 Ω
  - 1 R3 2,350 kΩ
  - 1 R4 2,7 Ω
  - 1 R5 470 Ω SMD
  - 1 Q2 MGF 2430A
  - 1 IC1 78L05
  - 1 IC2 ICL 7660
  - 1 IC3 LM317



of copper or brass sheet — 5 mm, 4 mm, or 3.5 mm by 2 mm. Drive the amplifier with 100 to 200 mW and start tuning by moving the metal tags along the 50 ohm line starting at the input connector. Check the output with a power meter and adjust for maximum. Once the maximum has been obtained switch the power off and solder the tags in position. If everything has gone as it should the power meter will read about 1 Watt.

The results obtained with the two prototypes are:-

	1	2
Input	105 mW	180 mW
Output	630 mW	930 mW
I Drain	300 mA	300 mA
Gain	7.78 dB	7.13 dB

ar

# First IARU Region 3 ARDF Championships

Wally Watkins VK4DO\* describes an important "radio sport" event.



The championships were held in Huairao County, 60 km north east of Beijing the capital city of China, from 6-9 October 1993. The contest was fully supported by Wu Shaozu, Minister in charge of the State Physical Culture and Sports Commission. The Chinese Radio Sports Association organised the event and the sponsors were the Japan Amateur Radio League (JARL) and the Korean Amateur Radio League (KARL).

The first day was for practice and the official opening by Wu Shaozu and other dignitaries from IARU.

Day two saw the two metre event get under way at 0830 hrs from the grounds of an elementary school. The whole school came out and ARDF was explained to them. They then became the cheer squad for each competitor as they started. A total of 57 competitors from 9 countries took part. They were from Mongolia, North Korea, South Korea, Japan, China, Taiwan, Australia, New Zealand and Bulgaria.

## Results — 2 metres — individuals

Seniors	CRSA	1, 2 and 3.
Juniors	CRSA	1, 2 and 3.
Women	CRSA	1, 2 and 3.
Old timers	JARL-1, CRSA-2, JARL-3, VK4CAU-7, VK4DO-8.	

## Teams

Seniors	CRSA-1, KARL-2, JARL-3.
Juniors	CRSA-1, JARL-2.
Women	CRSA-1, JARL-2.
Old timers	JARL-1, CRSA-2, KARL-3, WIA-4.

If the WIA team had been 13 minutes faster then they would have taken third place! In the friendship section of the competition the WIA were placed fifth in the team event. The friendship section was to allow countries outside Region 3 to be eligible for awards.

The time limit in the event was 130 minutes for each competitor. The 2 metre course was over hilly terrain with a maximum difference in elevation of 200 metres. All transmitters were in a valley adjacent to the valley where the start was located. Once into the valley proper, strong reflections gave misleading

readings. Low brush and thorn bushes on the hills took their toll on arms and legs. The doctor at the finish was a busy person. The fastest time for finding the 5 transmitters was 48.26 minutes.

In the afternoon everyone went to Mu Tian Yu where a cable car was available for the journey up to the Great Wall. This part of the wall is more spectacular than the usual tourist spot at Badaling.

Day three was a rest day with visits to Gu Gong (Palace Museum or Forbidden City) and Tian Tan (The Temple of Heaven).

Day four was the 80 metre contest, starting at 0830 hrs but this time from Honglousi Buddhist temple. The course was again in a valley with a walled military establishment in the centre. The terrain was rough and hilly with large thickets of thorny scrub. The time was once again 130 minutes.

## Results — 80 metres — individuals

Seniors	CRSA	1, 2 and 3.
Juniors	CRSA	1, 2 and 3.
Women	CRSA	1, 2 and 3.
Old timers	CRSA-1, KARL-2, JARL-3, VK4CAU-4, VK4DO-10.	



The Australian team Frank VK4CAU and Wally VK4DO with the standard bearer for the opening.



**Krzystof Slomczynski SP5HS explains some fine points of 80 metre equipment during the referees course.**



**The JARL team with president Shozo Hara JA1AN.**

## Teams

Seniors	CRSA-1, KARL-2, JARL-3.
Juniors	CRSA-1, JARL-2.
Women	CRSA-1, JARL-2.
Old timers	KARL-1, JARL-2, CRSA-3, WIA-4.

In the evening, after a meal, medals were presented to placegetters. A jovial, friendly atmosphere prevailed and many gifts were exchanged between societies and individuals.

It cannot be stressed enough that events of this kind are excellent vehicles for extending new friendships and developing understanding between nations.

With the backing of WIAQ "radio sport" is going to be promoted with the object of having a full team of 12 for the IARU Region 3 championships.

If Australia is going to be serious about ARDF, then some thought must be given to the financing of teams to future events. The next Region 3 games looks like being in 1996 and both North Korea and Australia have been suggested as alternative hosts.

Meanwhile the next world championships will be held at Loka Brunn, Sweden on 12-17 September 1994. Already Frank VK4CAU has shown interest, and as Australia's first and only international referee for ARDF I will be attending the event in Sweden.

Frank VK4CAU proved that his homebrew equipment was suitable, more so his 80 metre gear which was superior to anything else at the



**The CRSA team.**

contest. In addition to good equipment competitors must be fit and able to run and climb hills.

Being part of the first ARDF contest in IARU Region 3 has been an unforgettable experience. The bringing together of teams from North and South Korea and from Taiwan and China is, in itself, heartwarming. During meals ten people sat at a table and seven languages were being spoken, but the buoyant friendly atmosphere was always evident.

Once competitors were in the starting area awaiting their call the mood became more serious as warm-up exercises were performed and last minute instructions were given by the various coaches and managers.

ARDF is a sport, a foot race with

a difference, and a sport that is taken seriously. At the recent All China games in 1993, which is run along Olympic lines, ARDF was a demonstration sport. It was indicated to me that when China gets the Olympic games (2004?) then ARDF will again be a demonstration sport.

I would like to thank the Chinese Radio Sports Association especially Chen Ping BZ1HAM, and his team for the flawless organisation, Frank VK4CAU and my number one son Glenn, the video and still photographer, for being there and also the WIA for financial support and the Townsville Amateur Radio Club for raising funds for the trip.

*\*PO Box 432, Proserpine QLD 4800*

**ar**

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## SMA Inquiry

As you are no doubt already aware from the insert in the February issue of *Amateur Radio*, the Spectrum Management Agency, the authority which administers the Amateur Radio Service, is conducting a far-reaching inquiry into the Apparatus Licence System.

During February, the SMA held a series of information seminars around the country, as part of the inquiry process. The final seminars in this series will be held this month.

If you take a look at your licence, you will have noticed that it is headed: Apparatus Licence.

The SMA's inquiry into the Radiocommunications Apparatus Licence System was quietly announced by the Agency between Christmas and New Year.

The SMA is looking at overhauling commercial and recreational radio licensing — which includes amateur radio, CB and in-shore boating radio, etc. This inquiry is the first stage in the plan.

So far as amateur radio is concerned, the results of the inquiry may ultimately affect our licence fees and the regulations. Changes are in the wind and we, as amateur operators and users of the radio frequency spectrum, have an opportunity to influence the outcome.

The SMA has released a discussion paper on the Radiocommunications Apparatus Licence System, which can be obtained free of charge from all area offices. Check your local telephone directory, or the 1994 Call Book.

The terms of reference for the inquiry include such things as opportunities to provide for different licence periods, flexibility in payment arrangements, and the framework for organisations providing public or community services.

At the seminar held in Sydney on 8 February, attended by Federal Media Liaison Officer Roger Harrison VK2ZTB, it was revealed that the SMA earned some \$82 million from licence fees in its first year of operation, to the end of June 1993, while operating costs were \$45m, returning some \$37m to consolidated revenue.

The SMA has to administer 94 types of transmitter licences, 10 types of receiver licences and 131 fees for all sorts of licences.

The enormous number of categories has, like Topsy, "just grown" over the years. The time has come to rationalise the system, and this was driven by a number of considerations, the SMA presenters revealed at the seminar. These were: new technologies, (spectrum) management policies, licensing policies and (licence fee) pricing policies.

Of the current 94 types of transmitter licences, 71 related to station licences, while 23 related to class-of-service. There is enormous complexity in definitions of licence categories owing to the ad hoc creation of categories up to now.

The SMA proposes three options for consideration and public comment:

- (1) Service-based categories, which are defined according to a well-defined concept for a service. The SMA has identified 16 categories, of which the Amateur Radio Service is one and CB radio another;
- (2) Categories based on international (ITU) definitions. The SMA identifies 21 categories on this basis, again based on a defined concept. Twenty of these categories are straight from the ITU list, adding one for "unassigned services". The *Amateur Satellite Service* has a category of its own under this option, *Amateur*

being another, but incorporating CB radio;

- (3) The third option is "no categories", with an apparatus licence system having only one type of transmitter licence and one type of receiver licence. All users would simply apply for and operate under a transmitter licence, and perhaps a receiver licence may not be needed.

The first option, according to the SMA, provides a rational category structure, but that serves pretty much as an administrative convenience for users and the SMA, or whoever else works with the apparatus licence system.

The second option has some disadvantages as some of the categories are not currently relevant to Australia, but its major advantage is that the category structure would be in line with international definitions, which are, by and large, used in the Australian spectrum plan (particularly with regard to amateur radio). So this option has advantages for amateurs.

Having no categories, as in the third option, provides the greatest flexibility for users as well as the SMA, we were told. Licences are simply issued in accordance with the spectrum plan and according to the required purpose. Licences would only be classified internally by the SMA. This would allow different licence conditions to be attached to different licences, which also has advantages in automating of the apparatus licence system.

An interesting issue raised in the discussion paper, and at the seminar, was the possibility of classifying amateur radio as a Class Licence. Currently, aircraft and marine safety beacons (EPIRBs), 27 MHz handphones, cellular telephones, spread spectrum computer networking and garage door opening devices

(amongst others) operate under a Class Licence system.

Class Licences cover specific, individual frequency or frequency band assignments. The cost of ensuring compliance and managing spectrum allocations by the SMA is minimal, but the value of the spectrum foregone (for other uses) is a consideration.

It was stated that Class Licensing for CB and perhaps in-shore marine (27 MHz) would release substantial resources for the SMA, in terms of staff numbers and time. Of the 880,000 licences on issue, 360,000 are for the CBRS.

It was also suggested by an SMA presenter that the Amateur Service could operate under a Class Licence system. While a certificate of proficiency would still be necessary for amateurs, the issuing of CB and amateur call signs could then be handled by outside organisations in place of the SMA — perhaps the "peak bodies" representing users, it was stated. In our case, that means the WIA. Government subsidies could assist in funding this service, it was suggested.

Licence fees were covered in depth at the seminar. Issue involved in the method of how licence fees, which are a tax, might be determined, licence periods and terms of payment were canvassed in detail.

The Minister has directed the SMA, among other things, to look at the licence fees framework. The aim of the new framework, according to the SMA, is to create a licence system which provides a fair return to the government for managing access to this community resource (the RF spectrum), is equitable for users, is rational, transparent (ie users can see for themselves how it works), and flexible (to meet changing needs).

The licence fee, the SMA said, has two components: a charge to cover the ongoing costs of spectrum management, and a tax for access to a valuable

community resource; that is, it's a tax related to the "scarcity value" of the spectrum. Fees for VHF mobile users in the densest population areas (Sydney and Melbourne), would be higher than elsewhere.

Apart from that, the SMA is to charge for services provided directly to clients at their request and at the time the service is rendered. This might mean, for example, charging commercial customers for frequency assignments, or charging for interference investigations.

The SMA is devising a licence fee formula (a bit too complex to go into here) that takes into account factors such as: spectrum location (frequency band), bandwidth, geographic location, geographic area coverage, number of users and SMA costs.

Whether this formula will apply to the Amateur Radio Service or not is unclear at this stage. The issue of licence fee exemptions for public or community services (however defined) was covered at the seminar and is detailed in the SMA's discussion paper. While some aspects of amateur radio operation fall into this definition (self instruction, communications for community events, emergency and disaster communications, etc), our service straddles this and other areas as the Amateur Service is a non-commercial user.

In future, SMA might charge for services in the following way:

- (a) charge an individual for issue of a licence;
- (b) charge an annual licence fee comprising a tax component and a component for on-going SMA costs;
- (c) charge for renewing licences; and
- (d) charge for services requested as needed.

In some instances, users may not be required to pay the tax component of a licence fee.

Some licence fees would be expected to increase, other would be expected to fall, the SMA told the Sydney seminar. Either way,

changes would be phased-in over a period.

It seems that perhaps there is some room for argument in examining amateur licence fees with a view to lowering them.

In regard to payment of licence fees, the SMA is looking at opening up the options. Currently, fees are paid up-front and the SMA can only accept cash or cheque (with very limited exceptions, eg for large users, like Telecom).

In future, the SMA is looking at users being able to pay-by instalment (for a slightly higher cost), while up-front payment might be discounted! There is also the possibility of having terms of two, three, four or five years for licences. Mind you, there'd be penalty charges for late payment. It was revealed at the Sydney seminar that, currently, some 40% of all licensees pay late.

Payment by credit card or electronic funds transfer, and payments through outside agents, such as Post Offices and banks is being considered. A trial carried out recently in Perth proved beneficial, the SMA said.

Flexible licence options covered in the seminar and discussion paper include licences for special events of short duration — such as the Adelaide Grand Prix, or the Olympic Games, as well as licences for overseas amateurs visiting Australia "...for a few weeks or even days."

This short summary covers only a limited number of the issues canvassed. If you're interested in learning more about it, get a copy of the Discussion paper from your local SMA area office (see the 1994 Call Book or your telephone directory).

If you're interested in putting in a written submission, send it to: Paul Palmer  
Commercial Activities and Pricing Team  
Spectrum Management Agency  
PO Box 78  
BELCONNEN ACT 2616

Please also send a copy to your Division's Federal Councillor.



# ALARA

Robyn Gladwin VK3ENX\*

## Results of the 13th ALARA Contest, November 1993

1.	V85BJ	Barbara	864	Top score overall, top DX YL trophy, top phone, top Pacific Is, ALARA member.
2.	VK3CYL	Kim	525	Top VK YL trophy, top VK YL CW, top VK ALARA member, top VK3 ALARA member.
3.	FK8FA	Aimee	487	
4.	VK4RL	Robyn	464	Top VK4 ALARA member
5.	VK5NYD	Nora	458	Top VK novice, top VK5 ALARA member.
6.	VK3DYL	Gwen	332	
7.	VK8AV	Alan	297	Top VK OM
8.	VK6DE	Bev	291	Top VK6 ALARA member.
9.	VK4VR	Val	289	
10.	ZL2AGX	Dawn	208	
11.	ZL1ALK	Celia	205	
12.	VK4AOE	Margaret	131	
13.	VK5BMT	Maria	116	
14.	VK3MDR	Jenny	110	
15.	VK7HD	Helene	89	Top VK7 ALARA member
16.	VK6YF	Poppy	86	
17.	VK5AOV	Meg	85	
18.	VK3DVT	Valda	81	
19.	VK5CTY	Christine	81	
20.	VK3WAB	Andrew	78	
21.	ZL1WA	Alma	72	
22.	VE7YL	Elizabeth	70	Top Canadian ALARA member
23.	VK2DDB	Dorothy	66	Top VK2 ALARA member
24.	VK5ANW	Jenny	65	
25.	JA8GTA	Yohko	64	Top Japan YL non-member
26.	VK5AYD	David	60	
27.	VK3ALD	Len	44	
28.	JA8XJF	Tadakatsu	43	Top Japan OM
29.	VK3ENX	Robyn	42	
30.	VK4DRL	District	40	Top VK Club Station Radio Ladies Club
31.	L40018	Charles	29	Top SWL
32.	RZ9WM	Rimma	26	Top European YL non-member
33.	VK3DYF	Bron	24	
34.	RW9WA	Andrey	22	Top European OM
35.	DF2SL	Anny	13	Top European ALARA member
36.	VK3KS	Mavis	Checklog	
37.	VK3XB	Ivor	Checklog	
38.	VK3DMS	Marilyn	Checklog	
20	VK	ALARA members		
7	DX	ALARA members		
2	VK	non-members (disqualified)		
2	DX	YL non-members		
5	VK	OMs		
2	DX	OMs		
1	SWL			
1	Club station			

## A Note From The Contest Manager

I am not sure whether it was because it was the 13th contest but, after lulling us with quite good conditions during the day, 80 m decided to be positively horrendous in the evening just when some of us have our only chance to make contacts! I

congratulate those who stayed on air and continued despite the conditions.

Congratulations to Kim VK3CYL, for being the only participant to attempt the CW section. It is a pity that there was no novice to qualify for the Florence McKenzie trophy.

Barbara is our outright winner this year

and Nora VK5NYD, again put in a tremendous effort and took out top Novice spot again. I congratulate you both.

Comments from everyone were, in general, favourable, but there was one unfortunate result this year. Two logs had to be disqualified as complaints were received from SWLs as well as members that the calling procedure had not been properly followed. As our rules are well publicised and of long standing, this could not be let pass, but I was very sorry to have to do it.

It was lovely to have a log again from our Japanese entrant, Yohko JA8GTA. Anny DF2SL, and Elizabeth VE7YL, also took part. There were other VK ALARA members heard during the day who did not submit logs. Remember that any log, however small, should be counted and included. Sometimes, even a small score can win a certificate! So now we have next November to look forward to — Saturday, 12 November is the date. No guarantee about the bands, but I suspect that they will not be brilliant. Let us all make a promise that each will try to encourage a novice YL to have a shot at CW next time.

33 and 73  
Marilyn Syme VK3DMS  
Contest Manager

## 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 (NSW 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  
Fax: (02) 633 1525

11am to 2pm Monday to Friday  
7 to 9pm Wednesday

## DX Visitors

Aimee FK8FA, and Michel FK8GO, from New Caledonia, have recently spent time in VK4 and VK3. Aimee is pictured with Gwen VK3DYF, Pat VK3OZ, and myself, when they were in Melbourne. They were also warmly welcomed by the Gold Coast Amateur Radio Club. They have bought land in Surfer's Paradise and are beginning to make plans to have their house built. Aimee, an ALARA DX member, was thrilled to learn that she had come third in the recent ALARA contest.

## Newsflash! Couple Save Their Ham Radio Gear First!

Marjorie VK2AMJ, and her OM Laurie VK2PZX, were evacuated from their home in the Retirement Village at Narrabeen during the Sydney bush fires. As they listened to radio reports, they decided it might be prudent to pack a few things in case that far-away fire did manage to come closer. The most important things were packed first — the amateur radio gear, the sewing machine, then clothes and other basic essentials. Marjorie looked back up the hill and "it was just like the molten lava moving down the side of a volcano; like treacle sliding down a hot, steamed pudding." They spent a few days with their daughter and then returned to find their unit untouched by the actual fire, but covered in a thick layer of soot.

Dorothy VK2DDB was also very close to the recent bushfires but her home was spared. Her family spent much of the time watching helicopters use the local oval.



Their road was closed to all traffic. Dorothy still managed to prepare the January ALARA Newsletter and we thank her for keeping us up to date under such trying conditions.

*\*Box 438, Chelsea, 3196 VK3ENX@VK3FRS ar*

## WIA News

### Indian Hamvention

The All India Amateur Radio Convention will be held in Bangalore this year, over the weekend of April 9 and 10.

The National Institute of Amateur Radio (NIAR) invites hams and shortwave listeners to participate. A detailed brochure and registration form is available from:

All India Amateur Radio Convention  
NIAR  
PO Box 1129,  
BANGALORE-11

**Support the WIA in order to protect Amateur Radio frequencies.**

See Cow, See Cow, See Cow Dairy Xylophone...



*VK2SK4 - with apologies to Gary Larson ..*

**Dumb Animals never use the proper ITU phonetics...**

# AMSAT Australia

Bill Magnusson VK3JT\*

## National co-ordinator

Graham Ratcliff VK5AGR

Packet: VK5AGR@VK5WR

## AMSAT Australia net:

Control station VK5AGR

Bulletin normally commences at 1000 UTC, or 0900 UTC on Sunday evening depending on daylight saving and propagation. Check-ins commence 15 minutes prior to the bulletin.

Frequencies (again depending on propagation conditions):

Primary 7.064 MHz. (Usually during summer).

Secondary 3.685 MHz. (Usually during winter).

Frequencies +/- 5 kHz for QRM.

## AMSAT Australia newsletter and software service

The newsletter is published monthly by Graham VK5AGR. Subscription is \$25 for Australia, \$30 for New Zealand and \$35 for other countries by AIR MAIL. It is payable to AMSAT Australia addressed as follows:

AMSAT Australia

GPO Box 2141

Adelaide SA 5001

## Working the Digital Satellites

The count rises! PacSat AO-16, LUsat AO-19, JAs 1b (Fuji) FO-20, UoSAT UO-22, KitSat KO-23, KitSat KO-25, ITamsat IO-26, POSat PO-28. These are the current amateur radio satellites with digital store and forward capability. They present to the potential user a somewhat bewildering array of frequency combinations, operating modes and protocols. Some would call this the cutting edge of amateur radio. Others would call it a nightmare!

Last month I mentioned a number of queries I'd had regarding working these satellite BBSs. Setting up such a station isn't easy and it certainly is NOT an option for the newcomer to amateur radio satellite operation. There are a number of reasons for this:

1. You need quite a bit of experience with computers.
2. You need to have had experience with terrestrial digital comms.
3. You need to have had quite a bit of experience working LEO (Low-Earth-Orbiting) amateur radio satellites.
4. You need a well equipped station.
5. You must not be afraid to get inside that expensive shiny new black box to do some modifications.

All this represents a formidable hurdle for even the relatively experienced satellite user. If you are one of those souls who believe that amateur radio holds no more challenges, here's one you can get your teeth into, one that will really test your persistence. Let's look at the above points one by one.

## Computer experience

It's surprising the number of calls I get from people who want to "work the birds" but are dismayed or disbelieving when I tell them they'll be hard pressed to get past square one without a computer. However, it doesn't have to be an expensive, latest model super PC. My shack computer is an old XT. You can pick them up for a song. Most hackers wouldn't be seen dead with one in their shack. They work fine for most amateur radio applications. The only limiting factor is the 20 meg (or so) hard drive and that only limits the amount of files you can store, not how well the system works.

To handle the software you will need to have had some experience with DOS systems but once again not necessarily the latest DOS 6.2. My XT runs DOS 3.3 and it does the job.

Looking back at the list of digital birds there is some common ground but still you will need to specialise. This isn't a bad idea anyway and most of the successful station operators that I know don't even try to operate more than one or two of the digital satellites. The only really practical thing to do is to customise your station to work with a small sub-group and leave it there. Besides that you won't have TIME to do much more and you certainly won't have time to go about changing the configuration of your station, the inter-connection of the various bits of equipment, between passes of differing satellites. You probably won't even want to do that from day to day or week to week.

The most popular and useful software is called PB/PG from the University of Surrey. It is freeware and is readily available. You will need to configure it to your station requirements and that's where the next bit of previous experience comes in.

## Terrestrial Digital or Packet Radio Experience

To fully understand the purpose and operation of the software and how it interacts with your computer and radios, a bit of experience with terrestrial packet

won't go astray. To know the difference between simplex, half-duplex and full duplex operation is an advantage in setting up the various timing parameters and at least the terminology will be familiar if you've dabbled with packet or similar. If not you will have to lean heavily on some experienced local who is already up and running. You will do well to take advantage of any local help available to avoid re-inventing various shaped wheels in the process.

Because of some fundamental differences between fixed terrestrial systems and satellite born systems a protocol referred to as "broadcast protocol" is used rather than a "one-on-one" protocol like AX.25 or similar. This involves a more or less continuous round robin or loop of material (files) being broadcast by the satellite. Your system can be commanded to intercept all or part of these files as required.

The loop time should ideally be less than the time of a typical satellite pass so you have a reasonable chance of getting it all in one go. But even if you don't, the software is very clever and it picks up from where you left off, even if the bird goes over the horizon in the middle of a download. You can upload files or messages which are then "queued in" to the broadcast. This brings us to point 3.

## Working with LEOs (Low-Earth-Orbiting Satellites)

Repeaters did amateur radio something of a disservice by making it so easy that a lot of people stopped trying. (I'll probably get into trouble for saying that but there are examples all around us). In a similar way the high orbit birds like AO-10 and AO-13 have nurtured a generation of satellite users who now find it quite difficult to operate with LEOs. What a pity.

Those operators who were brought up on OSCARs 6, 7 and 8 have a distinct advantage here. Just knowing what can be expected to work and what not to waste time on can save a lot of hair pulling. As an example, I've seen "all-sky" or non-tracking antenna systems described in various magazines and in my enthusiasm I've tried most of them. Sadly, they all fall short of the mark when working the digital birds. The signals are just too weak to receive on a vertical or an egg-beater or a Lindenblad or a co-linear or a turnstile or whatever.

You need some GAIN in your antenna and therefore you have to track the satellite. You also begin to rely heavily on that computer again. You need a good tracking program. The industry standard seems to be InstantTrack. It will run on an XT with an EGA screen and does all that is required of a tracking program.

Of course ANY tracking program is only as good as the latest set of "keps" and you have to keep up to date. Packet radio or phone BBSs are the best sources. You have to realise that not all passes go right over your QTH. Most LEOs will provide at least one and usually two good passes each morning and again each evening. Keeping track manually can be managed but is quite a chore if you have any serious operating to do at the same time, an extra pair of hands can come in handy.

Don't build TOO much gain into your antennas if you're going to try manual tracking. An auto-track system is the ultimate luxury and brings us to point 4.

### Station Equipment — What are You up For?

Well, the sky's the limit really but let's be practical. We'll begin by following the incoming signal. First the antenna. As mentioned before, this needs to have a bit of gain. Around 10 dB or so is adequate but gain is not the only feature our antenna system must have.

If you've had some experience with amateur radio satellites you will have noticed the tendency of signals to sometimes go into quite deep fades. There may be various reasons for this but the two main sources of the problem are tumbling of the satellite and rotational fading (Faraday rotation) as the signal passes through the unstable ionosphere. For this reason most satellite antennas are circularly polarised.

To take advantage of the cancellation effect of circular polarisation your ground station antennas need to be similarly circularly polarised. And the circularity needs to be switchable from right to left hand. This is best handled manually whilst watching the "S" meter for the start of a deep fade. To get the best results from the digital birds circular polarisation and circularity switching are very desirable.

Now, tracking. There are a number of auto-track systems about. One of the most popular is the Kansas City Tracker. The KCT works in conjunction with the InstaTrack program mentioned earlier. It is a well tried and tested system. I use a device called SATTRACK-3. It is a free standing box which does not need to be hooked up to your computer. It works well and is hassle free. It, like the KCT, also has the capability of taking care of doppler shift variations automatically if hooked up to your rig(s). This is real luxury but gives you a totally free hand to do the operating.

So now we've captured the signal. It'll still be weak even with a bit of gain and don't forget the losses in your co-ax. A pre-amp at the feed point is not absolutely essential but it takes out a lot of the pain.

I'd include it in my own list of essentials just to make sure you present your receiver with a good signal to noise ratio. Remember, if you are tempted to put the pre-amp in the shack rather than at the feed point there are two penalties to be paid. One is a not so good signal to noise ratio and the other is noise generated by the computer(s) in the shack. You can do without both of these.

Now we have to make the assumption that you are going to specialise in (say) two or three satellites with similar operating parameters. Let's pick UoSAT-22 and the Kitsats-23/25. You will need tracking antennas and transceivers on 2 metres and 70 cm. You really only need a receiver on 70 cm and a transmitter on 2 metres but most users would opt for transceivers on both bands as it allows for opposite mode operation. The mode used by these birds is FM but once again most serious satellite operators will have begun by obtaining all mode gear. More on the transceivers in the next section.

Now you have an audio signal to present to your modem. The baud rate is 9600 baud and the most popular modems are based around the now famous James Miller G3RUH design. The satellites we have picked use FSK so we don't need a PSK modem (yet). The G3RUH modem feeds your TNC and this presents an RS-232 signal to your computer and hopefully the software does the rest. This brings us to point 5.

### Transceiver Modifications (Oh dear, and we were going along so well)

This is the stumbling block for most faint hearted folk. The thought of getting inside that new, beaut expensive black box with a soldering iron is what keeps most people away from the digital birds. As yet it is difficult to come up with a transceiver in the popular range with the bandwidth necessary to cope with 9600 baud operation. So there isn't any alternative, you just have to carry out some mods. These can be quite small, merely adding a connection to the reactance modulator and discriminator in some cases or changing IF transformers and retuning in other cases. The latter is further complicated by the difficulty in obtaining components. There are reams of information on these mods circulating on the packet radio systems and on the birds themselves and you don't really need to be afraid of them.

### Summing up

Looking back on this article I recall what I said at the beginning. It is a formidable business and the last bit will put many people off. All I can say is that it can be

done and has been done very successfully by numerous operators looking for a real challenge. It's no mean feat to get it all together but you'll be able to sit back and make yourself a nice cup of tea and give yourself a pat on the back when the 9600 baud info starts to flow through onto your computer screen. The main reward is access to a reliable world wide BBS system that does exactly what it's supposed to do, it works!

The best of British luck to all who try.

\*359 Williamstown Rd Yarraville VIC 3013

Packet: VK3JT@VK3BBS

ar

## WIA News

### Lifetime Licenses?

The American Radio Relay League (ARRL) petitioned the US Federal Communications Commission early in January to make amateur radio operator licences valid for a lifetime.

The ARRL, in their January 10 "ARRL Letter" said that there is nothing in the US Communications Act that would prevent such a licence term for US amateurs.

It would allow inactive amateurs to return to operation with the same licence class instead of having to be retested, as is required at present.

Currently, US amateurs get a licence for 10 years, with a two-year "grace period". It is already possible for US amateurs who are relatively inactive to remain licensed for long periods of inactivity.

The League said they were not proposing to make the rule change retroactive but, rather, to extend currently held operator licences from 10 years to lifetime.

The ARRL's argument is that there is no practical difference between such a person and one who allows their licence to expire and later wants to take up involvement in the hobby again. Station licences would still, by law, be limited to a 10 year term. The US amateur operators licence is equivalent to our Amateur Operators Certificate of Proficiency.

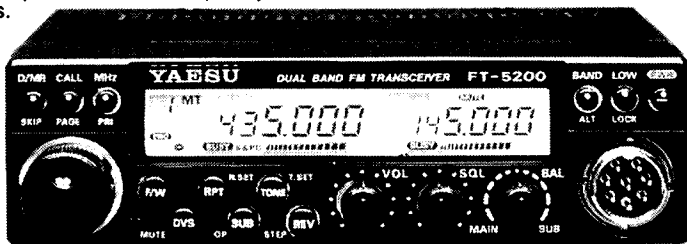
# DICK SMITH ELECTRONICS



## We've Got The Right Transceiver For You!

### FT-5200 2m/70cm Mobile

The Yaesu FT-5200 carries the latest innovations in cross-band full-duplex and detachable front-panel design for brilliant mobile performance. It has 32 tuneable memories, a built-in antenna duplexer, dual full-frequency LCD screen, 8-level automatic display/button lighting dimmer and dual external speaker jacks. A thermally-activated fan allows up to 50 watts output on the 2m band and 35 watts on the 70cm band, whilst keeping the transceiver very compact yet fully featured. Other features include: Programmable scan limits, selectable scan resume modes, memory skip, priority monitoring, one-touch recall CALL channels, and 6 user-selectable channel steps. Comes with hand-mic, mounting bracket and DC power lead.



#### Specifications:

<b>General</b>	
Frequency range:	144-148MHz, 430-450MHz
Channel steps:	5, 10, 12.5, 15, 20 & 25kHz
Dimensions:	140 x 40 x 155mm (w/o knobs)
<b>Receiver</b>	
Sensitivity:	Better than 0.158uV (12dB SINAD)
Maximum AF output:	3.0W into 4 ohms @ 5% THD
<b>Transmitter</b>	
RF Output Power:	2m - 50/5W (high/low) 70cm - 35/5W (high/low)

Cat D-3310

2 Year Warranty

**\$1499**

#### YSK-1 Remote Panel Kit

Allows remote mounting of the FT-5200 front panel.  
Cat D-3311

**\$99.95**

### Yaesu FT-530 2m/70cm Hand-Held

A deluxe 2m/70cm FM dual-band hand-held transceiver offering easier operation and more features than ever before! The FT-530 provides a flexible dual receiver facility with separate volume and squelch controls, allowing you to listen on two frequencies in the same band, or one frequency on both bands! Plus, the exclusive Australian version features full 70cm band coverage (420-450MHz), Auto Repeater Shift on both 2m and 70cm (Australian band plan), and extended receiver coverage as standard. Two VFOs and 41 tuneable memories per band are provided, together with keypad or dial frequency entry, seven tuning steps and a one-touch CALL channel. The dual 5.5-digit LCD screen includes many functional indicators plus separate signal/P.O. bargraphs for both receivers. An LCD voltmeter function is provided so you can even monitor your battery's performance under load and estimate remaining battery life.

Other top features include: Inbuilt dual CTCSS encode/decode, CTCSS scanning, an auto battery saver (ABS) for extended battery charge life, a cross-band repeater facility and an inbuilt clock with alarm and snooze functions. Also provided is VOX circuitry for use with the optional YH-2 headset, a user-replaceable Lithium back-up battery, and DTMF selective calling and paging. A DC supply jack allows transceiver powering and NiCad charging, with RF output in four steps up to 5W at 12V. For enhanced battery life, an auto power-off function turns the radio off after a preset period of inactivity, so you won't return to a flat battery. The FT-530 comes complete with a high-capacity 1000mAh NiCad battery, belt clip, carry case and approved AC charger.

2 Year Warranty **\$999**

#### Specifications

Frequency range:	Transmit 144-148MHz, 420-450MHz Receive 130-174MHz, 420-500MHz, 800-950MHz
Current consumption:	
Auto power off	150uA
Standby (saver on)	16.8mA (both bands)
Dimensions:	55(W) x 163(H) x 35mm (D)
<b>Transmitter:</b>	
Power Output:	5, 3, 1.5, 0.5 (at 12V)
RF Power Output:	2.0W (2m) 1.5W (70cm)
(with 7.2V 1000mAh NiCad)	
<b>Receiver:</b>	
Sensitivity:	2m: < 0.158uV 70cm: < 0.18uV
(Ham bands only, 12dB SINAD)	
Audio Output (12V):	300mW at 8 ohms

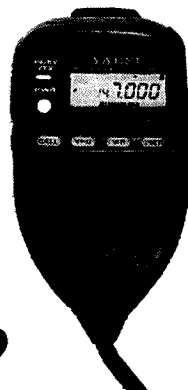


### MH-29A2B Remote Control Mic.

A compact speaker/microphone that provides a remote LCD screen with backlighting! Has duplicate keys for Call channel, VFO and memory selection, plus busy/Tx LED. Suits FT-530 only.

Cat D-2119

**\$199**



# Deluxe Handheld FM Transceivers

The superb Yaesu FT-415 and FT-815 hand-held FM transceivers are compact and rugged with dual-microprocessor control, a range of new automatic battery-saving (ABS) features and power output which is selectable in up to 4 levels at 12V. A die-cast rear case, polycarbonate front panel and battery case ensure reliability in the most demanding of environments. The display and keypad can both be back-lit, and the top panel DC supply jack can be used to power the transceiver and charge a NiCad battery pack. A 36mm speaker provides low distortion audio, while in-built VOX circuitry is included for use with the optional YH-2 headset. Advanced features include two independent VFOs, keypad frequency entry, 41 tunable memories, instant recall CALL channel and various scanning modes. The FT-415 has selectable Automatic Repeater Shift (Australian version), which selects the correct repeater offset whenever you tune to a standard repeater sub-band. Both have DTMF-based selective calling and paging facilities and come with a high-capacity 7.2V, 1000mA/H NiCad battery, belt-clip, carry case and approved AC charger.



## Specifications:

Frequency Range:  
 FT-415 144-148 MHz transmit  
 140-174 MHz receive  
 FT-815 430-450 MHz  
 Size: 55 x 146 x 33mm

Transmitter:  
 Power output:  
 FT-415 2.0W (at 7.2V)  
 FT-815 1.5W  
 Both models: 5.0W at 12V

Receiver:  
 Sensitivity: Better than 0.158uV,  
 (12dB SINAD), Ham bands only.

**FT-415**  
 Cat D-3610  
**\$599**

**FT-815**  
 Cat D-3615  
**\$699**

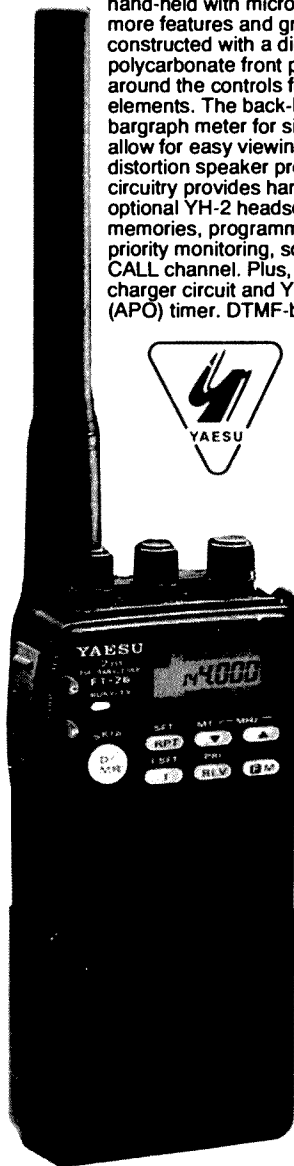
**2 Year Warranty**

# FT-26 2m Handheld

The easy-to-use Yaesu FT-26 is an ultra-compact FM hand-held with microprocessor controls giving you more features and greater convenience. It's solidly constructed with a die-cast rear case, a high-impact polycarbonate front panel, and rubber gasket seals around the controls for added protection against the elements. The back-lit 6-digit LCD screen, with bargraph meter for signal-strength and power output, allow for easy viewing of most functions. A 36mm low distortion speaker provides clear audio, while VOX circuitry provides hands-free operation with the optional YH-2 headset. Features include: 53 tunable memories, programmable band-scanning limits, priority monitoring, scan resume and an instant recall CALL channel. Plus, it offers an inbuilt battery charger circuit and Yaesu's Automatic Power-Off (APO) timer. DTMF-based selective calling and



paging facilities let you select a 3-digit ID code which allows you to be paged and also page up to 5 other stations. Complete with a high-capacity 7.2V 700mA/H NiCad battery, belt-clip, carry case and approved AC charger.



## Specifications:

General:  
 Frequency range:  
 Transmit 144-148 MHz  
 Receive 140-174 MHz  
 Channel steps: 5, 10, 12.5, 15, 20, 25kHz  
 Supply Voltage: 5.5 to 16V DC  
 Current consumption - Stand-by (with 1-sec save): 19mA  
 Receive: 190mA  
 Dimensions: 55 x 125 x 33mm

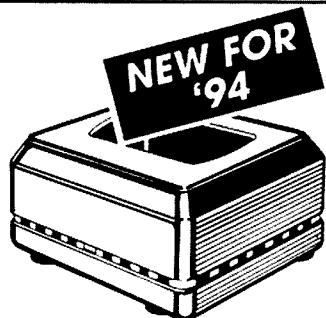
Receiver  
 Sensitivity  
 (12dB SINAD): Better than  
 0.158uV  
 Selectivity: >60dB  
 (adjacent channel)

Transmitter  
 Power Output: 2.0W at 7.2V  
 5.0W at 12V  
 Cat D-3600

**\$469**  
**2 Year Warranty**

# BONUS

Purchase any 2m or 70cm handheld during March and we'll give you a 25% discount on any matching speaker/mic or NiCad battery pack purchased at the same time. Offers not applicable to dualband handhelds. Offer expires 31st March 1994



## Mastercharger 1 Fast Desktop Charger

New for '94! At last, an intelligent, fast desktop charger that not only suits most current Yaesu handhelds but also many previous models. Made in USA, the Mastercharger 1 is a compact fast charger that operates from 12V DC, and uses switch-mode technology and a Philips battery charger monitor I.C. for flexible operation. Suitable for the FT-23/73, FT-411/411e, FT-470, FT-26, FT-415/815 and FT-530, its charging cradle can easily be replaced, allowing for the insertion of a new cradle to suit earlier transceivers (eg FT-209R/709 series) and, in the future, different brands/model handhelds. The Mastercharger 1 requires 12-15V DC at 1.3A, and is supplied with a cigarette lighter cable for vehicle use.  
Cat D-3850

**\$199**

## FT-736R VHF/UHF Base-Station Transceiver



The FT-736R is Yaesu's best VHF/UHF transceiver! Designed for the serious VHF/UHF operator, this high-performance transceiver provides 25W output (SSB, CW, FM) on the 2 metre and 70cm (430-450MHz) bands and can easily be expanded to cover the 6 metre and 23cm (1240-1300MHz) bands as required. Features include keyboard frequency entry, 115 memories, 2 independent VFOs per band, separate FM Channel knob with channel steps, 2 full duplex VFOs for Satellite operation, IF shift and Notch filters, noise blanker, all-mode VOX, SSB speech processor, GaAs Fet front-ends (430, 1200MHz), high-stability TCXO reference oscillator & an inbuilt AC power supply. Microphone optional extra.  
Cat D-2920

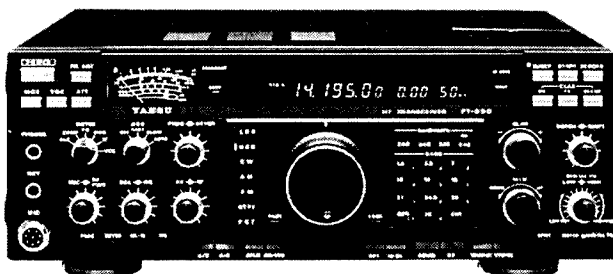


**2 Year Warranty**

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## FT-990 H.F. All-Mode Base Transceiver

The FT-990 offers many of the features of the legendary FT-1000 in a more compact and economical base-station package. Its excellent front-panel layout, together with clear labelling, a large back-lit meter and an uncluttered digital display provides very straight-forward operation. The receiver uses a wide dynamic range front-end circuit and two DDS's to provide a very low noise level and excellent sensitivity over the 100kHz to 30MHz range. Transmitter output is 100W on all HF Amateur bands (SSB, CW, FM), with high duty cycle transmissions allowed. The internal auto antenna tuner and an inbuilt AC power supply are standard features, while the customizable RF speech processor and Switched Capacitance Audio filtering facilities are unique to the FT-990. Other features include IF Shift and IF Notch filters, IF bandwidth selection, 90 memories and one-touch band-selection.  
Cat D-3260



**\$3995**

**2 Year Warranty**

B 1670



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\*MAJOR AMATEUR STOCKIST STORES SHOWN IN RED

## Awards

John Kelleher VK3DP\*

Thank you all for your response to my suggestion that I would accept any number of additions to your DXCC standings. I am pleased to note that there are still plenty of interested parties in working the world DX scene.

One factor, however, is not to my liking. I appreciate the care and cost of DX logging programs, but find that some of the new ones list countries alphabetically, not callsigns in alphabetical order, the latter being the process used by the WIA and ARRL. I am not by choice a lazy or complaining person, but I find that the entries made using the new programs take me four times as long to process and to transcribe to your DXCC master sheets.

I would be pleased if you would make your listings in the manner outlined in both the WIA and ARRL DX countries list. Remember, also, that I have painstakingly transcribed all your applications and updates to DXCC to master sheets, so I do not require a protracted list of qualifiers every time you decide to update your listings. I already have all that information here at my fingertips, so, just your additions please.

The ARRL DX Advisory Committee has recommended the creation of an RTTY DXCC Honour Roll, to require the same number of RTTY countries as the Mixed Honour Roll. On 14 December last the ARRL Awards Committee approved the new RTTY Honour Roll, to include all non-CW digital modes, including Baudot, Packet, ASCII, and AMTOR.

The DXAC also voted to maintain the "start date" for CW DXCC at 1 January 1975 (rather than moving it back to 1945 to match Mixed and Phoné DXCC).

During 1993, the following new Member States were admitted to the International Telecommunications Union, making 182 members in all.

Czech Republic (1.1.93)	Macedonia (4.5.93)
Georgia (7.1.93)	Turkmenistan (7.5.93)
Slovakia (23.2.93)	Eritrea (6.8.93)
Kazakhstan (23.2.93)	Andorra (12.11.93)

This information from an official ITU press release dated 19 January 1994.

In the search for awards, particularly from Russia and former USSR Republics, I feel that one needs a virtual check list to keep track of DXCC countries, or stations located in the above areas. Most changes reportedly became effective on 1 January 1994, and during the transition both old and new prefixes may have been used in the same area. During the early days of 1994 several new prefixes have been activated, and previously rare

prefixes have become common : US UU and UX from the Ukraine; as well as ER UK EY 4K8 4K9, etc.

Here is a list showing old and new prefixes, by country.

Country	Old	New
Armenia	RG UG	EK 4J ?
Azerbaijan	RD UD	4K5 4K9
Belarus	RC UC	EU EV EW
Georgia	RF UF	4L
Kazakhstan	RL UL	UN UO UP UQ
Moldova	RO UO	ER
Kyrgyzstan	RM UM	EX
Russia	RA UA RV MV	R UA-UI
	RW UW RZ UZ	4K0-4K4
	4K etc.	
Tadjikistan	RJ UJ	EY
Turkmenistan	RH UH	EZ
Ukraine	RB UB RT UT	UR-UZ EM EN
	RY UY	EO
Uzbekistan	RI UI	UJ UK UL UM

Please treat the above list purely as a guideline.

### The French Awards Program

The following General Rules and conditions apply to all certificates and awards issued by the REF (Reseau Des Emetteurs Francais) and should be read in conjunction with the conditions which govern the awarding of individual certificates.

A All REF certificates and awards will be issued to transmitting and/or SWL stations.

B In agreement with IARU Region 1 rules, each claim must be accompanied by a QSOs' list and by a statement from the applicant's National DX Award Manager that all QSL cards are correct, and really in possession of the applicant. In the event of any dispute, the decision of the REF is final.

### DDFM (Diploma des Departements Francais de la Metropole)

May be claimed for having contacted/heard and received QSL cards from French amateur stations. Contacts must be on HF, Mobile operation, and on CW or Phone. 40 different departements are required to qualify for the award. Endorsements are available in increments of 10 departements. A special sticker \*EXCELLENCE\* will be supplied for working all 96 departements.

### DPF (Diploma des Provinces de France)

May be claimed for having contacted/heard and having received QSL cards from French amateur stations. Modes CW or Phone. All 22 Provinces are required.

The following list contains all the qualifiers for both the above awards.

Nr	Departement	Province
01	Ain	Rhone-Alpes
02	Aisne	Picarde
03	Allier	Auvergne
04	Alpes Haute Provence	Provence-Cote D'Azur
05	Alpes (Haute)	Provence-Cote D'Azur
06	Alpes-Maritimes	Provence-Cote D'Azur
07	Ardeche	Rhone-Alpes
08	Ardennes	Champagne
09	Ariege	Midi-Pyrenees
10	Aube	Champagne
11	Aude	Languedoc-Rousillon
12	Aveyron	Midi-Pyrenees
13	Bouches-Du-Rhone	Provence-Cote D'Azur
14	Calvados	Basse Normandie
15	Cantal	Auvergne
16	Charente	Poitou-Charente
17	Charente-Maritime	Poitou-Charente
18	Cher	Centre
19	Correze	Limousin
2A	CorseSud	Corse
2B	Corse (Haute)	Corse
21	Cote D'or	Bourgogne
22	Cotes Du Nord	Bretagne
23	Creuse	Limousin
24	Dordogne	Aquitaine
25	Doubs	Franche-Comte
26	Drome	Rhone-Alpes
27	Eure	Haute Normandie
28	Eure-Et-Loir	Centre
29	Finistere	Bretagne
30	Gard	Languedoc-Rousillon
31	Haute-Garonne	Midi-Pyrenees
32	Gers	Midi-Pyrenees
33	Gironde	Aquitaine
34	Herault	Languedoc-Rousillon
35	Ille-Et-Vilaine	Bretagne
36	Indre	Centre
37	Indre-Et-Loire	Centre
38	Isere	Rhone-Alpes
39	Jura	Franche-Comte
40	Landes	Aquitaine
41	Loir-Et-Cher	Centre
42	Loire	Rhone-Alpes
43	Haute-Loire	Auvergne
44	Loire-Atlantique	Pays De Loire
45	Loiret	Centre
46	Lot	Midi-Pyrenees
47	Lot-Et-Garonne	Aquitaine
48	Lozere	Languedoc-Rousillon
49	Maine-Et-Loire	Pays De Loire
50	Manche	Basse-Normandie
51	Marne	Champagne
52	Marne (Haute)	Champagne
53	Mayenne	Pays De Loire
54	Meurthe-Et-Moselle	Lorraine
55	Meuse	Lorraine
56	Morbihan	Bretagne



57 Moselle	Lorraine
58 Nièvre	Bourgogne
59 Nord	Nord
60 Oise	Picardie
61 Orne	Basse-Normandie
62 Pas-De-Calais	Nord
63 Puy-De-Dome	Auvergne
64 Pyrenees-Atlantique	Aquitaine
65 Pyrenees (Hautes)	Midi-Pyrenees
66 Pyrenees-Orientales	Languedoc-Rousillon
67 Bas-Rhin	Alsace
68 Haut-Rhin	Alsace
69 Rhone	Rhone-Alpes
70 Saone (Haute)	Franche-Comte
71 Saone-Et-Loire	Bourgogne
72 Sarthe	Pays De Loire
73 Savoie	Rhone-Alpes
74 Haute-Savoie	Rhone-Alpes
75 Ville De Paris	Ile-De-France
76 Seine-Maritime	Haute-Normandie
77 Seine-Et-Marne	Ile-De-France
78 Yvelines	Ile-De-France
79 Deux-Sevres	Poitou-Charentes
80 Somme	Picardie
81 Tarn	Midi-Pyrenees
82 Tarn-Et-Garonne	Midi-Pyrenees
83 Var	Provence-Cote D'Azur
84 Vaucluse	Provence-Cote D'Azur
85 Vendee	Pays De Loire
86 Vienne	Poitou-Charentes
87 Haute-Vienne	Limousin
88 Vosges	Lorraine
89 Yonne	Bourgogne
90 Territoire De Belfort	Franche-Comte
91 Essonne	Ile-De-France
92 Hauts-De-Seine	Ile-De-France
93 Seine-Saint-Denis	Ile-De-France
94 Val-De-Marne	Ile-De-France
95 Val-D'Oise	Ile-De-France

General rule of thumb is to note the first two figures of the postcode on the QSL card, which denotes the departement.

The fees for both awards is US\$ 6.00, and the Awards Manager is:  
 FE6EDW COUPAS Christian  
 PO Box 83  
 F-63307 THIERS Cedex  
 France

The French Awards Programme will continue later.

*\*Federal Awards Manager  
 PO Box 300 Caulfield South VIC 3162*

ar

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 of your equipment  
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# Contests

P. Nesbit VK3APN\*

## Contest Calendar Mar-May 94

Mar 5/6	ARRL DX SSB Contest	(1/94)
Mar 12/13	BERU CW Contest	(2/94)
Mar 18/20	160 m ZL Activity Nights	(1/94 p33)
Mar 19/20	WIA John Moyle Field Day	(2/94)
Mar 19/20	BARTG RTTY Contest	(2/94)
Mar 26/27	CQ WPX SSB Contest	(2/94)
Apr 1	Poisson d'Avril Contest	
Apr 2/3	SP DX SSB Contest	
Apr 8/10	JA DX CW Contest (High Bands)	
Apr 9/10	"King of Spain" CW & SSB Contests	
Apr 9/10	Israel DX Contest	
Apr 23/24	Helvetia DX Contest	
May 7/8	ARI Contest CW/SSB/RTTY	
May 7/8	CQ-M Contest	
May 28/29	CQ WPX CW Contest	(Mar 93)

## Pete's Ponderings...

A common lament is that signal reports in contests are a farce these days, with almost everyone sending "five-nine" in phone contests and "5NN" in the CW ones. I must confess to agreeing with that viewpoint, as there is nothing sillier than exchanging such reports when signals are down in the mud, all but uncopiable. However, like everyone else, I have long since joined the crowd and in CW contests now send "5NN" more or less exclusively. As contesters, why have we succumbed to this?

In the past almost everyone tried to send accurate reports. If a station was weak, he was told just that. I remember many QSOs exchanging awful numbers like 449495 and 359349 through static crashes and QRM. Sometimes it took 3 or more overs to get the numbers through and, when combined with the difficulty of copying callsigns under such conditions, boy could it be tough! Then around 10-15 years ago the "5NN syndrome" started taking hold, and today it is entrenched to the extent that much contest logging software can't cope with anything else! Sure, some contesters still send accurate reports (bless their souls), but to be honest it is virtually impossible to do that these days (except occasionally) and remain competitive.

Aside from the fact that "5NN" is obviously quicker to send on CW than say "589" (and on phone, "five-nine" is easier because you don't break rhythm and it's often hard to judge strength anyway), it seems there is an element of psychology as well. I say this because several times during DX CW contests, as an experiment, I have changed to "real" reports whilst running a dogpile, and in

each case the dogpile promptly evaporated! Upon reverting to "5NN", the number of calling stations gradually increased until a new dogpile formed. Many readers undoubtedly have had similar experiences. Obviously, stations will stay around only if they feel you will get to them quickly. I also suspect that some believe you can't be hearing things too well if you give anything below the magic "5NN", even 589, and they won't hang around to find out! At least not for VK, which is by no means a rare country (although judging from comments received during some DX contests, one could well wonder...)

Is it better with these standard reports? Yes... probably. Apart from the higher QSO rate, this defacto standardisation of reports has certainly removed a source of stress when trying to copy weak signals, allowing one to concentrate more on callsign accuracy. It certainly eases the preparation and checking of logs. On the other hand, there are occasions during contests when it would be nice to know how your signal was really being received. Like, for instance, during last year's Remembrance Day contest when I loaded up a horribly mismatched bit of wire on 80 m, and promptly worked VK4, 6 and ZL. Was this a fluke, or was the "antenna" (for want of a better word) defying physics and actually radiating? Coincidentally, I found out that the ZL had fired up on 80 in a similar way, and was in the same quandary as me!

Looking back, my early contests seemed to be more fun, despite the odd struggle with difficult numbers and generally lower QSO rates. One had to work harder to make a good score, but in retrospect it seems there was a greater sense of achievement at the end. Perhaps modern contesting with its standardised reports simply reflects modern life in general, where every inefficiency is eliminated and it's all go go go. Although people often lament that things were better in the old days, the clock can never be turned back, even for contesting. However it doesn't hurt to occasionally ask ourselves why we *really* enter contests: is it solely to win, or for enjoyment?

## 160...

For an opportunity to work some ZLs on 160, without the hassle of entering a contest, don't forget the 160 m activity nights this month on the evenings of the 18th and 19th. No logs are required, and details are on page 33 of Jan AR.

## Thanks To...

Phil VK1PJ for handling the John Moyle Field Day Contest, John VK3ZC for the report on the 1993 BERU, Sid VK2DID for forwarding information on a forthcoming DX contest, and CQ, QST, and *Radio Communications*. Until next month, good contesting!

Peter VK3APN

## Contest Details

The following contest details should be read in conjunction with the "General Rules & Definitions" published in April 1993 *Amateur Radio*.

## SP DX Contest (SSB)

1500z Sat to 1500z Sun, April 2-3

This contest is held on the first full weekend of April, and usually has a good level of SP activity. Categories include single operator (single or all band), multioperator, and SWL. Bands are 160-10 m. Send RS plus serial number; SPs will send RS plus a 2 letter province code. Score 3 points per QSO with each Polish station, and obtain the final score by multiplying by the number of provinces worked (max 49). In this contest, multipliers are counted only once, even if worked on more than one band.

SWLs must receive the callsign and number sent by Polish stations, plus the callsign worked. Each SP may be logged only once per band.

Send your log, summary sheet, and multiplier check list to arrive by 30 April to: Polski Zwiasek Krotkofalowcow, SPDX Contest Committee, Box 320, 00-950 Warsaw, Poland. Disk logs are welcome (ARRL/ASCII file format).

Polish provinces are: SP1: KO SL SZ; SP2: BY GD EL TO WL; SP3: GO KL KN LE PI PO ZG; SP4: BK LO OL SU; SP5: CI OS PL SE WA; SP6: JG LG OP WB WR; SP7: KI LD PT RA SI SK TG; SP8: BP CH KS LU PR RZ ZA; SP9: BB CZ KA KR NS TA.

## Japan DX CW Contest (High Band)

2300z Fri to 2300z Sun, Apr 8/10

The object of this contest is to contact as many Japanese stations as possible on 14, 21 and 28 MHz CW. Classes include single operator (single and multiband), single operator QRP (5 W max O/P), and multioperator (1 Tx). Max operating period for single operator stations is 30 hours (show rest breaks clearly in log); multioperator stations full 48 hours. Multiop stations must remain on a band for 10 mins minimum.

Send RST plus CQ zone number; JAs will send RST plus prefecture number (01 - 50). Score 1 point per JA QSO on 14

& 21 MHz, and 2 points on 28 MHz. Points are doubled for QSOs with QRP stations (QRP stations must send /QRP). The multiplier equals JA prefectures + Ogasawara Isl (JD1) + Minami-Torishima Isl (JD1) + Okino-Torishima Isl. Send log postmarked by 9 May to: Five-Nine Magazine, Box 59, Kamata, Tokyo 144, Japan.

**"King of Spain" DX CW & SSB Contests**

1800z Sat to 1800z Sun, Apr 9/10  
 The CW and SSB sections of this contest are separate and run concurrently. Use 80-10 m (no WARC bands). Classes are single and multi-operator, multiband only. Send RS(T) plus serial number; Spanish stations will send RS(T) plus province letters. Score 1 point per QSO with each Spanish station per band. The multiplier is the total number of Spanish provinces worked per band (multipliers are counted separately on each band). Send logs to be received by 27 May to: URE Contest Manager, PB220, 28080 Madrid, Spain.

Provinces are: EA1: AV BU C LE LO LU O OR P PO S SA SG SO VA ZA; EA2: BI HU NA SS TE VI Z; EA3: B GE (or GI) L T; EA4: BA CC CR CU GU M TO; EA5: A AB CS MU V; EA6: PM; EA7: AL CA CO GR H J MA SE; EA8: GC TF; EA9: CE ML.

**Israel "Holyland" DX CW/SSB Contest**

1800z Sat — 1800z Sun, Apr 9/10  
 This is a fairly new contest designed to promote contacts between Israeli amateurs and the rest of the world on CW and/or SSB. Classes are single operator all bands, multioperator, SWL. Send RS(T) plus serial number; Israeli stations will add their area abbreviation. Score 2 points per 160-40 m QSO with Israeli stations, and 1 point per QSO on other bands. The multiplier equals the total Israeli areas from each band (counted separately on each band). Final score equals total points times total multiplier. Send logs postmarked by 30 May to: The Contest Manager, Israeli Amateur Radio Club, Box 17600, Tel Aviv 61176, Israel. Awards include a trophy to the outright winner, wall plaques, and certificates to the top scorers in each country (minimum of 50 QSO points).

**Helvetia DX CW/SSB Contest**

1300z Sat to 1300z Sun, Apr 23/24  
 General rules apply. Work only Swiss stations. You may work a station only once per band, regardless of mode. Score 3 points per QSO; multiplier is the total number of Swiss cantons worked (max 26

per band). Send log postmarked by 31 May to: USKA Traffic Manager, Michel Berger HB9BOI, Case Postale 4, CH-1543 Grandcour, Switzerland.

**Results of 1993 SP-DX Contest**

(band/QSOs/pts/mult/score; \* = certificate winner)

VK8AV*	A	104	312	34	10608
VK4XA	A	53	153	26	3978
VK8HA	A	33	99	25	2475
VK2DID	A	28	84	16	1344
VK4TT*	14	46	132	27	3564

**COMMONWEALTH CONTEST 1993 — RESULTS**

A study of the main contests over the last year or so shows that CW entries in the 1992 VK/ZL totalled 23, while in the latest RD there were 56 of which 13 recorded less than 20 contacts. The 1993 (56th) Commonwealth Contest — BERU — saw us holding steady at 30 entries, six of which were for the single band slots of 7 and 14 MHz. Several prominent regulars were conspicuous by their

absence and there were only two entries from VK5 and one from VK6. Some of those RD entrants, even if they made no more than 20 contacts each, would help along the VK representation as well as receive an introduction to the unique BERU scoring system, where bonus points are the key to success.

John Tutton VK3ZC, QTHR, will be pleased to forward any logs to the RSGB for new entrants.

Dennis Andrews G3MXJ, operating as 9H1EL took out the top spot, 825 points ahead of VE3EJ (who posted an all time record of 8415 in 1992). The Australian record score went up by 540 points to 6795, with another fine performance by Barry Simpson VK2BJ. Conditions were only fair for the first few hours, but a terrific opening to the UK on 80 soon made up for that!

This year, some Caribbean prefixes seemed to be missing, but the following were worked (or called): 5B4 5Z4 6Y5 9H1 9J2 P29 V85 VE1-7 VK2-9 VO1 VU2 Z2 ZB2 ZD8 ZL1-4, plus HQ stations GB5CC P29CAS and ZL6A.

Top Ten	80	40	20	15	10	TOTAL
1. 9H1EL	915	1735	2225	2170	830	7875
2. VE3EJ	575	1790	1795	1840	1050	7050
3. ZD8LII	215	1170	2220	2025	1315	6945
4. VK2BJ	755	1380	2130	1855	675	6795
5. ZD8VJ	25	845	2025	1785	1300	5980
6. VK2APK	805	1375	2250	955	175	5560
7. G4BWP	730	1555	1620	1185	455	5545
8. VE2ZP	490	1265	1820	1180	760	5515
9. VE7CC	935	1270	1315	1035	850	5405
10. G4BUO	795	1110	1495	90	480	5370

**Australian Scores**

	80	40	20	15	10	TOTAL
4. VK2BJ	755	1380	2130	1855	675	6795
6. VK2APK	805	1375	2250	955	175	5560
11. VK4XA	595	950	1705	1170	405	4825
13. VK2AYD	625	1155	1455	1020	425	4680
16. VK8AV	345	700	1750	1245	290	4330
20. VK5GZ	545	760	1210	1020	375	3910
26. VK7TS	575	850	1050	680	50	3205
28. VK5BN	465	715	755	960	175	3070
31. VK3ZC	710	965	815	435	75	3000
32. VK2BQQ	355	825	1035	630	75	2920
36. VK4OD	500	485	935	580	175	2675
38. VK2EL	75	680	1005	640	225	2625
39. VK2DID	450	730	785	630		2595
43. VK3DQ	490	695	655	455	50	2345
44. VK4XW	505	670	780	345	25	2325
46. VK3XB	405	460	760	455		2080
50. VK4LV		335	680	725	200	1960
51. VK3BXA	225	640	665	315	75	1920
80. VK7RY	540	330	285	125		1280
87. VK3KS		405	355	125		885
93. VK3XF	230	180	360			770
94. VK6AZY		490	275			765
98. VK3AMD		385		225		610
103. VK2SU		275	125			400

## Single Band Entries

7 MHz	1. VK2ETM	1170
	3. VK3APN	1060
14 MHz	2. VK8HA	1545
	3. VK4TT	1420
	4. VK5AGX	1120
	5. VK3IY	240

## Other Pacific Area Scores

12. ZL1MH	4810
15. ZL2BR	4460
73. ZL1HV	1450

## Single Band

7 MHz	2. ZL4GU	1135
14 MHz	1. ZL2VS	2040

## RSGB COMMENTS

Overall, scores were comparable with last year's, but there is a noticeable shift towards 7 & 3.5 MHz. For the next 4/5 years, extra attention will have to be paid to LF, while keeping an eye on 21 and 28 MHz during the contest for those all-too-brief openings. Forget the half sized G5RV, instead put up a 33 ft vertical with a few radials on Sunday morning, and G/VK QSOs are virtually guaranteed in the bottom 10 kHz of 40 m.

Sadly, the 1993 event was overshadowed by the untimely death of Al Slater G3FXB, a few months earlier. Al had made the contest his own, and had chalked up 18 wins including an outright win in 1990 when guesting at ZC4ESB. Much of his success was due to extensive knowledge of propagation gained over the years, giving the ability to exploit brief band openings which yield those vital extra bonus points. BERU was undoubtedly the RSGB contest closest to his heart and the best memorial amateurs throughout the Commonwealth can give to his memory is to continue to support this unique event.

73, John VK3ZC

\*PO Box 300 Caulfield South VIC 3162

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**Sign up a new  
WIA member  
today — we  
need the  
numbers to  
protect our  
frequencies and  
privileges.**

## Divisional News

### Forward Bias — News from the VK1 Division

Christopher Davis VK1DO

By the time this magazine hits your letterbox, our AGM will have come and gone. I am confident that your Division will be in the hands of a skilled committee who will ensure that the activities and spirit of our Division continue in an enthusiastic and energetic manner.

Please note the John Moyle field day contest to be held on Saturday 19 March and Sunday 20 March. The organisers of our local Canberra day activities have such a regard for the numerous radio amateurs in our local community, and indeed the solemnity of a field day, that they have moved the Canberra day holiday to the Monday after the field day weekend facilitating the rest and recuperation of our local radio warriors.

If you able to spare an hour or so during that long weekend, come on the air and hand out a few numbers to encourage those who have gone to a lot of trouble to set up field stations and enter into the spirit of things. If you are not in the contest, don't prolong the agony explaining your non participation — just give out a number and it will be quicker and more gracious than a protracted explanation trying to refuse what isn't an excessive obligation.

Please remember that this month's general meeting includes a talk by Gavin VK1EB, on what you can expect to find on amateur radio bulletin boards. Part of this presentation will include some demystification of the operating procedure relating to packet access of information within these facilities. Whether you are a packet guru or packet tyro, you are likely to benefit from this "state of the art" topic. The date for this meeting is Monday 28 March commencing at 8.00 pm in the studio room of the Griffin Centre.

If you keep a diary, you might care to note in advance the various dates for general meetings throughout 1994. All general meetings take place on the fourth Monday of each month. The dates are: 25 April, despite being ANZAC day the meeting will be held on 25 April; 23 May; 27 June; 25 July; 22 August; 26 September; 24 October; and the last meeting for the year which ordinarily takes the form of a Christmas party/BBQ at the lake will be on Monday 28 November. There is no December meeting.

If you have been unable to attend or staff the office, you will be pleased to hear that the office is now being operated on

Saturday afternoons between 2.00 pm and 4.00 pm. We hope that this altered timetable will enable more consolidated attendance without the costs or shortage of parking which plagued Saturday mornings. If you could offer to staff the office, which fundamentally involves unlocking and holding the fort, even if it were only an odd occasion, you would be assisting in maintaining this member service. With two hundred members, you would hope that each member could offer to do the job at least once allowing for those whose work or infirmity takes them out of the running. If you could help, please telephone Jan Burrell VK1BR, on 2917123.

That's about all I have to add to my last submission on behalf of the ACT Division. I hope you will support our new committee with ready offers of assistance in the countless tasks which crop up from time to time. Please make an effort to contribute news and views for both the weekly broadcasts and the monthly Forward Bias column. In terms of many hands making light work, your contributions, however small, not only assist those people editing these news services to sound informed but reinforce the notion that the facility is appreciated and worth the continued effort.

See you all at the March meeting.

73 VK1DO

### VK2 Notes

John Robinson VK2XY

### Dural back on-air

The good news this month is, in case you hadn't heard, VK2WI Dural is back on-air. Broadcasts are now conducted from Dural again every Sunday. The reformation of the Broadcast Team of announcers and broadcast engineers (panel operators) is under way and a new Station Engineering Team is being formed to maintain the equipment there and further develop the station facilities.

### FM828 transceivers

As revealed in last month's column, the Division received some 500 FM828 VHF transceivers from Telecom. At Council's 21 January meeting held at the Westlakes Club Rooms in Teralba, varying quantities of FM828s were donated to several WICEN groups and a couple of clubs, honouring an agreement made with Telecom that "prior bids" for the surplus transceivers be honoured first.

These went to Westlakes ARC, the Great Lakes Club, Hunter Region WICEN, and Newcastle-Maitland WICEN. A total of 63 transceivers were handed over in the donation from the Division. Some scallywags have lately mentioned around the bands and in a letter circulated to affiliated clubs (where did they get the list, which is a WIA Council internal document?) that they were handed over in exchange for a swag of blank proxies. Proxy forms are only printed for specific general meetings of the Division, and none were printed at the time. Hans Christian Andersen was better at telling fairy tales.

Now, the Division will sell the remaining FM828s (apart from some going to other emergency service organisations) on an "as is" basis. The donation from Telecom included a quantity of Kenwood touch-tone microphones with the transceivers. However, there are fewer microphones than radios. Because of this, Council decided that microphones would not be sold on their own and, following discussion and consultation among Councillors and with members, Council settled on a price of \$35 for an FM828 without microphone, and \$45 with a microphone.

Council also decided to accept bulk orders from affiliated clubs wishing to buy the transceivers on behalf of their members, and that orders from affiliated clubs be dealt with first, to give country members a fair go. The Division will pay freight to the nearest railway station for bulk orders from clubs. Individual sales are either on a "buyer collects" basis or by mail with a post and packing fee of \$7 per radio included.

### Exams at Parramatta

This year, apart from 20 February, examinations conducted by the Education Committee at Amateur Radio House in Parramatta will be held on 9 April (the day before the Divisional AGM), 15 May, 26 June, 7 August, 18 September, 30 October and 11 December.

### 5/8 Wave — VK5 Notes

Rowland Bruce VK5OU

By custom, the January general meeting of the WIA is a "Buy and Sell" night. It was the hottest night of the summer and Peter Maddern was late so, until he arrived, I was coerced into giving John Butler a hand in the selling of some remarkably good gear.

I can assure you that it is no easy job holding up some of the heavy equipment whilst the bids are taking place. There was a large number of items and quite a number were left un-offered about eleven

o'clock when it was decided to end the proceedings as members were not only running out of time but out of money as well. So the next B&S will have a flying start of this stuff, including some very good hi-fi speakers, as well as the gear brought down by members on the night.

The NEXT BUY & SELL is this month, on 22 March, 7.45 pm at the BGB HQ. The Equipment Supplies Committee brings its goodies to the BGB only on Buy and Sell nights now.

Whilst on dates, here are two reminders:

1. WICEN involvement in Walk-against-want.

2. The Barossa ARC Picnic is being held on 27 March.

The Clubs' Convention is also close at hand. At the time of writing eight affiliated Clubs have said they will attend. Is yours one of them?

I published a list of examination contacts last month. Here is a more complete picture of the dates for the rest of 1994. They are all on a Saturday except for that of July 17, a Sunday.

Adelaide Hills ARS. 19 March, 20 August, 17 December.

Alan Haines, 22 Moriane Avenue, Panorama, 5041 tel 276 7091

Venue: Blackwood High School, Seymour Street, Blackwood.

WIA. 16 April, 15 October.

Don Wilton, PO Box 40, Littlehampton, 5250. tel 388 6966.

Venue: Burley Griffin Building, 34 West Thebarton Road, Thebarton.

Elizabeth ARC. 21 May, 17 September.

Doug Carruthers, EARC, PO Box 8, Elizabeth 5112. tel 349 5465.

Venue: Paralowie R-12 School, Halba Crescent, Paralowie.

Taylor Radio Group. 18 June, 19 November.

Christine Taylor, 16 Fairmont Street, Black Forest, 5035 tel 293 5615.

Venue: Black Forest Primary School, 679 South Road, Black Forest.

North East RC. Rick Grivell, 45 Lincoln Court, Pooraka, 5095. tel 262 5152.

Venue: Modbury West Community Hall, Cnr McIntyre Road and Wright Road, Modbury West.

A big welcome to the following new members. May your involvement in amateur radio be long and happy. L J Kelly, D F Mackintosh VK5KDI, Dr R M Douglas, J P Malusa, R Mackie VK4SWR, John Ward VK5KBI, Richard King VK5NLK.

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## WIA News

### Broadcasting Frequency Plan

The Australian Broadcasting Authority (ABA) was expected to release its "Frequency Allotment Plan for Broadcasting Service Bands" in late February-early March, following publication of the "Second Exposure Draft" in December 1993.

The Frequency Allotment Plan, says the ABA, "...determines the number of channels to be available in particular areas of Australia to provide broadcasting services using a part of the broadcasting services bands."

The Allotment Plan covers the medium frequency (MF) bands for AM radio, very high frequency (VHF) for FM radio and the VHF-UHF (ultra high frequency) television bands.

Technical and statutory issues were covered in detail in the 144-page draft published last December, along with social and

economic considerations. Over 200 submissions were received by the ABA following an invitation for public comment issued by them last May when they published the first Draft Frequency Allotment Plan.

If you're interested in the Second Exposure Draft — December 1993, or the final Plan, you can contact the ABA's planning information line on Freecall 008-810241, or write to:

Colin Knowles  
General Manager  
Planning & Corporate Services  
Division  
Australian Broadcasting  
Authority  
PO Box 34  
BELCONNEN ACT 2616

Copies of submissions received are available on microfiche (from the ABA) at a cost of \$30, but they are also available in libraries in each state and territory.

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# EMC Report

Hans Ruckert VK2AOU\*

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## CQ-DL 1-1994 Page 4 & 9

About 70,000 radio amateurs in Germany will have to pay for EMC protection (EMVG from 9-11-1992, BGBl Page 1864) in addition to the payment for their transmitter licence and about DM300 for radio & TV reception licences. The cost of testing electronic devices (Hi-Fi, TV, Computers, etc) to see whether they are not too susceptible to licensed transmitter operation is added to the other costs associated with amateur radio activity. This additional EMC Tax is to be met by all radio transmitter operators, in order to avoid an additional burden to the Government.

This announcement caused very vocal opposition from radio amateurs and their organisation. There is a time limit if one wishes to lodge a protest. There are discussions on the definitions, and whether radio amateur transceivers are falling into the EMC protected group of electronic devices, in contrast to TV sets for example. Radio amateurs would benefit from the testing of computers to stop the production, importation and sale of those computers which cause interference to radio reception by radio amateurs.

Who should pay for this EMC testing by the authorities? The manufacturer and/or the dealer of susceptible electronic equipment, or the tax payer, or the operator, who is to be protected from inadequate EMC? The outcome of the legal and technical argument will be watched with great concern.

## RF Radiation and Mankind

The media recently started a campaign, alarming the public by claiming that the health of people is threatened if they live near high voltage lines, power stations and radio transmitters, perhaps transmitters operated by radio amateurs. In order to sort out facts from beliefs, scientists are investigating the matter. It should be very helpful that we have statistical proof going back about 100 years to Marconi's time! We know, for example, that G Roentgen (Wuerzburg University, Germany) and several scientists who worked with X rays during the early days, suffered badly from this kind of radiation. During about 70 years of radio transmitter operation by the more developed countries, and earlier too, many thousands of people worked for many years at high power radio

transmitters (1 kW to Megawatts), and they often used open wire feeder lines.

The same goes for Radar installations on the ground, at sea and in the air. One wonders whether investigators have compared the health and cause of death of these thousands of people, with the health and cause of death of a similar population, living 10 km or more away from high voltage power lines and radio transmitters?

This investigation should settle most arguments. Why was the alarm not raised 70 years ago? Why are people still keen to be employed at these high power transmitter installations, if they are as deadly as claimed by self appointed experts of the media? Or are perhaps the transmitter shielding methods adequate? Perhaps the operators have enough common sense not to be close to and in front of a high power radar antenna. It is logical and to be expected that from a certain power level and frequency, as well as distance, the radiation would be detrimental to the health of operators, or microwave ovens would not work!

It is therefore good to learn that now observations will be supported by scientifically measured facts. The safety precautions so far usually observed have apparently been sufficient to avoid any radiation health problem. CQ-DL 3/1988 page 164, VDE Standard 0848 (Federation of German Engineers) recommends as permitted RF radiation, a maximum level of 10 mW/cm<sup>2</sup> (100 Watt per m<sup>2</sup>). This is a field strength of 194 V/m.  $E(V/m) = \sqrt{3768 \times S} \text{ (mW/cm}^2\text{)}$ . This publication describes several cases, and lists DIN standards.

## EMC magazine from USA (Submitted by Craig W Gilddon VK3JK)

The papers deal with the following EMC matters:-

Field Operations Bureau (50,000 US complaints). Possible solutions to the interference. The present US Standards. Purpose of tests. Test methodology. Controlled telephone tests. Radiation susceptibility. Conducted susceptibility. Telephone field tests. Fundamental overload. Transmitter harmonics. Site and TV channel selection. Measurement methods. Susceptibility results. Blanking radius. E-field and conducted voltage. Radiated field estimates. Conclusions. Recommendations. References.

Detailed study of all these papers is highly recommended.

**Radio Communication** (Submitted by Norm Burton)  
October 1993 Fig 2 shows the attenuation of several RF chokes and ferrite beads

from 0 to 30 MHz. The following subjects are discussed:- RF filters for telephones. RF Filter chokes for audio. Mind how you tune! VHF power amplifiers. RFI from 11,000 V power installation.

December 1993 Interference or break-through? High-Pass and Band-stop Filters. Braid breakers (where to install the filters) Fig 1 to 4. PIR Alarm Sensor immunity. Alarm immunity put to test. PIR Security Light. EMC International Conference IARU Region 1. EMC regulations to cover kits. RFI from heater controller. Ferrites from scrap TVs.

January 1994 Filters and ferrites in EMC. Common mode chokes. Attenuation from 1.8 to 432 MHz, braid breakers and High Pass Filters. Notch filters. Neosid ferrite ring cores. Philips ferrite ring cores. Clip-on chokes. Ferrite rods.

## A Personal Note

With my 80th birthday not far off, I asked Federal Council to accept my resignation as EMC Co-ordinator after 10 years of service. I hope that the EMC reports helped some transmitter operating amateurs to live in peace with their neighbours and to stay on the air. I would also like to thank all those who wrote to me, expressing their appreciation, and who submitted valuable contributions. Like my long-time friend Norm Burton. (Many, many thanks, Hans! Ed)

\*25 Berrille Road, Beverly Hills, 2209  
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## WIA News

### Intruder Removed from 14 MHz

Volunteer amateur band intruder watch activities do pay off.

An interfering harmonic from Radio Rusii, a shortwave broadcaster located near Moscow, was removed recently from the exclusive segment of the 14 MHz amateur band, according to the January RSGB Press Bulletin.

The action followed reports made by volunteer observers of the Radio Society of Great Britain's Intruder Watch.

The RSGB's Intruder Watch is the Society's contribution to the internationally coordinated International Amateur Radio Union (IARU) Monitoring Service.

# FTAC Notes

John Martin VK3KWA\* Federal Technical Advisory Committee Chairman

## Channel 0 and 5A Stations

In October *Amateur Radio*, information was published from the Australian Broadcasting Authority that all NSW channel 0 stations in the WIA's list had been phased out. However, in November, a letter from VK2BYY pointed out that NEN0 in Tamworth, included in the WIA list, is still operating. ABMN0 is still on air also, and there may be others.

The WIA's information is that in 1992 there were 11 channel 0 and 21 channel 5A stations, of which all but two on each channel are to be phased out by the end of 1994.

In spite of this, the ABA spokesman said that channel 0 would continue to be an "integral part" of our broadcast allocations for the foreseeable future.

It is not clear why 7 MHz of spectrum space should be tied up indefinitely for the benefit of only two stations. The same applies to channel 5A. If 19 out of 21 stations can be moved, why leave two of them in limbo on a non-standard channel? Who will be watching them when all five networks are available on UHF?

It seems that the ABA information may contain some errors and I would like to make sure our list is fully up to date. I would appreciate information from readers in channel 0/5A areas on how many of these stations have closed, and how many are still operating.

## "No Licence" Repeaters?

There are several models of multiband FM transceivers on the market which allow the sub-band audio and squelch to be connected to the main band audio and PTT lines. This makes it possible to set up a simple cross-band repeater or link. However, it is not legal in the terms of the current or proposed new amateur regulations.

An amateur station can retransmit signals from another amateur station under the terms of RIB71 paragraphs 14 and 15. These paragraphs require getting the originating station's consent for the retransmission, suppressing its callsign, and announcing the transmitting station's callsign. This is only possible if the station is attended and this, of course, defeats the purpose of a repeater.

If retransmissions do not comply with RIB71, the only way to operate a crossband repeater is for the station to be licensed as a repeater by the SMA.

## More VHF-UHF Records

The first 6 metre EME record set by an Australian station was described in last month's *Amateur Radio*. The contact between Steve VK3OT, and K6QXY comes to 12889.6 km.

Chris VK5MC, has broken the new 2 metre EME record between VK3AMZ and VE1BVL, set in 1991. Chris also worked VE1BVL on 15/10/92 and the new record distance is 18067.4 km.

A first ever Digital Modes record for the 10 GHz band was set on 18/12/93 between Russell Lemke VK3ZQB, and Trevor Niven VK5NC. Russell was at Bridgewater and Trevor was set up at Cape Northumberland. After a successful contact over this path, Trevor extended the distance to 102.1 km by moving to Cape Banks. The mode was 45 baud RTTY, using FSK with MRA301 tellurometers.

Finally, there is a new 6 metre long path record for NSW. David Macnaughton, VK2BA, worked 9Q5EE on 6/4/91 for a new record distance of 26252 km.

Congratulations to all of these record breakers.

## Microwave Frequency Auction

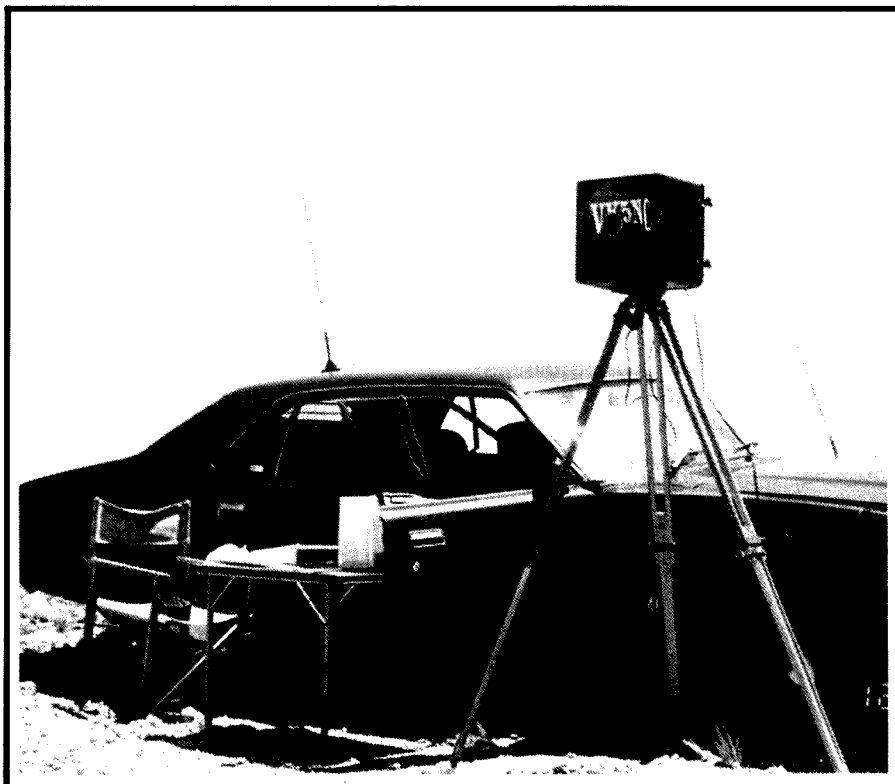
The Brisbane VHF Group has been advised that their 2304 MHz beacon could cause interference to MDS services. MDS channels 6 to 19 (2302 — 2400 MHz) will soon be allocated under the new "price based" policy of the SMA — in other words, this part of our band will soon be auctioned to MDS services.

This has been looming on the horizon for some time but very few people seem to have noticed. I hope the shock of losing 100 MHz of spectrum space will focus attention on our other shared bands. Every band from 420 MHz to 10.5 GHz is shared with other services and I do not think we can feel secure until we get exclusive segments in each of these bands.

In the meantime, 2304 MHz operators may like to work out what new crystal they will need to move from 2304 to 2400 MHz when MDS channel 6 comes into use in their area. The 13 cm band plan will need some changes as well, and a revision proposal will be published next month.

PO Box 300 Caulfield South VIC 3162

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The VK5NC setup at Cape Northumberland when the first ever Digital modes record for the 10 GHz band was established on 18 December 1993.

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## How's DX

Stephen Pall VK2PS\*

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As I write these lines, the Peter I Island DXpedition is in full swing and there are a number of dog piles on various frequencies. I noticed the first activity at around 2000 UTC on 1 February. The Japanese were calling on top of each other on 21305 kHz, but the nominated transmitting frequency of 21295 kHz, was silent. No propagation. I had a similar experience about four hours later but it was now the North Americans who were calling. Finally, around 0200 UTC on 2 February, a faint signal came through from 165° South: 3Y0PI.

As time passed the signal became stronger until it was a comfortable S5. However, the Japanese onslaught on the 15 metre band, and later on the 20 metre band, was invincible. A few VK/ZLs with 400 watts got through but stations with 100 watts had practically no chance. After four hours battling against the odds, I gave up, hoping that tomorrow, or the day after tomorrow or the day following the day after tomorrow would produce a contact with the Peter I station!

Whilst listening to the activity of this very first day of the operation, it was clear to those who heard it that there are many inexperienced DXers on the band from all areas, including even the Japanese who have some reputation of being good operators.

Many have forgotten, or never heard of, the golden rule of DXing: listen, listen and listen again before transmitting. The DX station was operating on split frequencies and the callsign was regularly announced at intervals.

Yet many operators called in blindly on the 3Y0PI transmitting frequency, making the ever present policemen jump out from their hiding frequencies chasing the inexperienced offenders away. There was even deliberate QRM on 14195 kHz at around 0745 UTC. A very strong "hash" noise accompanying a falsetto singing male voice with a signal strength of S9. Yes, there are some "brain dead loose cannons" on our frequencies who always come alive at the most critical times!

### Pratas Island — BV9P

This long planned DXpedition finally became a reality, although only for a few hours on 5 January. The news came at the last moment from the President of the Chinese Taipei Amateur Radio League (PO Box 93, Taipei 100, Taiwan). Four Taiwanese operators and OH2BH (Martii) were allowed to take part in the two hours of operation. Pratas Island (300 by 500

metres in size) has been under the control of ROC (Republic of China) ever since Taiwan became an independent administration from mainland China some forty odd years ago. The island is under strict military control and is not accessible by civilians or non-Taiwanese citizens. The island is located at 116°43' E and 20°42' N and is separated by more than 225 statute miles of open water from Taiwan. Therefore it is a potential candidate for a separate DXCC status.

The operation lasted two hours and five minutes and the operators made 630 QSOs. BV0ARL/BY9P, the official callsign of the station, was active on 20 and 15 metres and made contacts with stations in Europe, Australia and Asia. Only one American station was contacted (KH6). According to Martii VR2BH (OH2BH) the short activity was meant to be a demonstration of amateur radio for the Taiwanese officials who witnessed the activity and were very impressed, and invited the team back. According to BV5AF, the President of CTARL, the next Pratas Island operation is scheduled for March 6-14 or March 16-24. However, the actual schedule will be determined by the Taiwanese Defence Department/Army. Incidentally, Pratas Island is now accepted into the IOTA program under the reference: Dongsha Archipelago, AS-110.

### Peter I Island — 3Y0PI

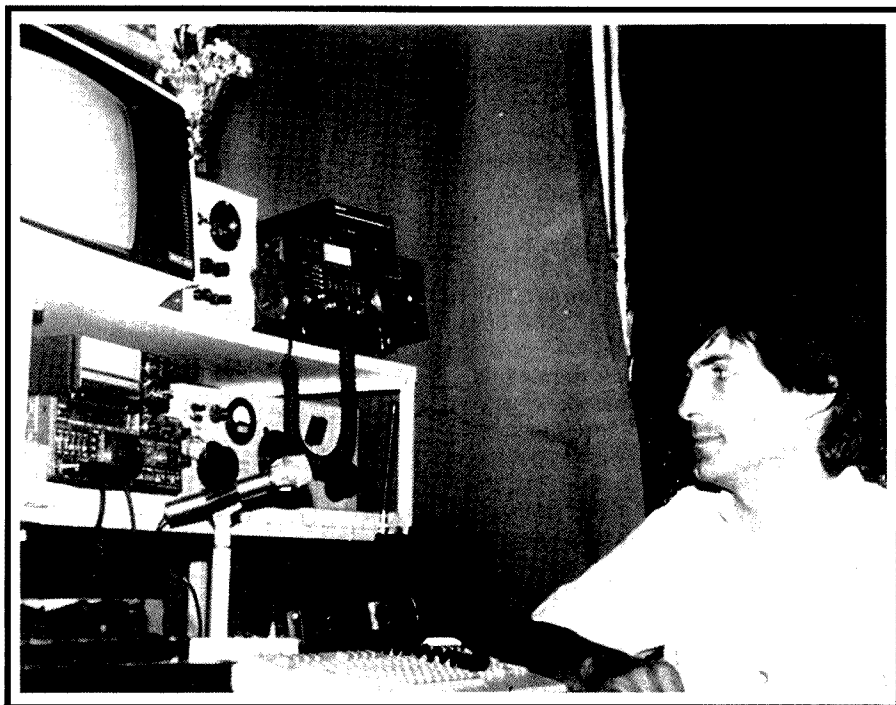
The last few weeks of January saw numerous DX Bulletins, press releases, and packet messages giving further details on this DXpedition which commenced operations on schedule on 1 February 1994.

The team consisted of 8 operators and a site manager. Operators were K0IR Ralph (expedition leader), WA4JQS Tony, W6MKB Terry, XE1L Louis, N4GCK Bob, HB9AHL Willy and ON6TT Peter. The site manager was a non-amateur, the Belgian Martin Tosseyn, who looked after the generators, tents and food. There were six Kenwood rigs, four amplifiers, five different Yagis and two vertical antennas in addition to the four generators. Computer logging was done on line.

Part of the group arrived on Falklands Island earlier on 14 January and operated for a few days as VP8BZL, concentrating on the WARC and low bands. On 23 January the full team left the Falklands on the chartered vessel "Kapitan Khlebnikov", a Russian icebreaker, and arrived at Peter I Island where they were offloaded by helicopters onto a large glacier known as "Radiosletta" at the northern end of the island.

Bob Winn W5KNE published lengthy background information about the Island in the QRZ DX Bulletin. Here are some details.

*"It is an uninhabited island located off the coast of Antarctica in the Bellinghousen Sea at 68°45' S and 90°40' W. The island was discovered in 1821 by the Russian sloops "Vostok" and "Mirny"*



Chris Z3IGX, the well known Macedonian DXer, in his shack.



under the command of Captain Thaddeus von Bellinghausen who named the island Peter I after the great Russian Tsar.

The island is roughly 13 miles long and 6 miles wide. It is a glacier capped volcanic island whose highest point is named Lars Christensentopp, 1697 metres in height (5600 feet). The first confirmed landing was made in 1929 — more than a hundred years after its discovery — by the Norwegian research vessel "Norwegia". The island became a dependency of Norway in 1933. During the years since the island was discovered numerous vessels have sighted, and circumnavigated the island to determine its size and confirm its exact location, but until recent years very few landings have been attempted. All these sightings describe the island as a very unfriendly ice and snow covered volcanic rock with a summit hidden in the clouds and cliff faces rising to hundreds of feet from the ocean. Because of these steep cliffs, transporting equipment to the top of the island is only possible by helicopters.

The first DXpedition to this island was by LA1EE (3Y1EE) and LA2GV (3Y2GV) in 1987, organised by the LA-DX Group and accompanied by a Norwegian Polar Institute expedition to the island. They were accommodated in two small igloo-shaped tents which had room enough for each operator's sleeping and operating requirements."

The present expedition is well equipped to handle all emergencies with many tonnes of equipment landed and picked up by several helicopter flights. Among the variety of equipment there was 4 km of radial wire and 200 metres of chicken wire for the ground system, 100 one metre high stakes, chairs, tables, sledge hammers, 300 kg of propane gas, 24 litres of oil for the generators, camping gear, ladders, snow shovels, etc.

Here now is the latest news on QSLing. KA6V and AA6BB, the QSL Managers, ask you to put your cards into the same envelope, but use a separate envelope for the VP8BZL activity. You are encouraged to put all your QSOs on one card and do not separate by mode. Include a self-addressed reply envelope and adequate return postage. The 3Y QSL card will be printed in Belgium and will have the same layout as the AH1A and VP8SSI cards, folding with two colour pictures. I hope you were able to have made the contact with Peter I Island, otherwise you may have to wait a long, long time for the next activity from this island. Probably only in the next century.

## New Prefixes — Russia and CIS

The former USSR republics have now officially adopted the new prefix

allocations as from the 1 January 1994. Here are the new prefixes (old ones in brackets).

Armenia EK (RG, UG)  
 Azerbaidjan 4KA — 4KZ and 4JA — 4JZ (RD, UD)  
 Byelorussia EU, EW (RC, UC)  
 Georgia 4LA — 4LZ (RF, UF)  
 Kazakhstan UN, UO, UP, UQ (RL, UL)  
 Moldova ER (RO, UO)  
 Kyrgyzstan EX (RM, UM)  
 Turkmenistan EZ (RH, UH)  
 Russia R, UA — UI, 4K0 — 4K4 (RA, UA, RV, UV, RW, UW, RZ, UZ, 4K)  
 Tadjikistan EY (RJ, UJ)  
 Ukraine UR — UZ, EM — EO (RB, UB, RT, UT, RY, UY)  
 Uzbekistan UJ — UM (RI, UI).

It is also interesting to note that the Russian Polar stations use the following prefixes north of the Arctic Circle.

Franz Josef Land: 4K2  
 European islands (30° long to 65° long): 4K3  
 Asian islands (65° E long to 170° W long): 4K4  
 Drifting Ice Floe stations: 4K0  
 Antarctica: 4K1.

## Future DX Activity

- Watch out for Pratas Island, BV9P. It was reported that another DXpedition will be organised during March 1994.
- From January through April the Israeli special station 4Z85TA will be on the air in company of 4X75TA and 4Z80TA in all modes to celebrate the 85th anniversary of the founding of the city of Tel Aviv. Special QSL and award is available from 4X6LM, Shlomo Mussali, PO Box 8225 Tel Aviv, 61081, Israel.
- Bob, N6BFM will be active from Kuwait as 9K2ZZ for another year. QSL to Ray W8CNL.
- A new Iraqi club-station YI1IRL should be on the air soon.
- Uganda. 9X5D is Paul F6EXV, who is in Rwanda for a UN mission. Check 18135 kHz at 1530 UTC.
- The proposed ZS9DX DXpedition was cancelled due to transportation problems.
- During 1994, you can expect to hear the following stations from the Australian part of Antarctica: Dale VK0DE on Davis base, and Jim VK0DJ on Casey. QSL information will follow later.
- It is rumoured that Tony WA4JQS has been planning a DXpedition to Heard Island and Kerguelen Island to take place after his Peter I Island activity.
- Aage LA9YBA has been heard on 10102 kHz at around 0100 UTC from Antarctica as 3Y9YBA. QSL to his home call.

- Holger DL5XAT and Ralf DL9XAT will be active March 5 — 17 from St Lucia using the J6 prefix to their home call. QSL to Box 1411, D-21454, Reinbek, Germany.
- There will be a group of amateurs activating the Caribbean Island of Anguilla from 5 — 10 March. Look out for the prefix VP2E. QSLs to the operator's callbook address.
- If you work AT3D, he is Dinesh VU3DEN, a member of India's Antarctic expedition. QSL to VU2DVC.

## Interesting QSOs and QSL Information

- J37ZY — Jim — 7061 — SSB — 1116 January. QSL to NS8G: Jeffrey E Martin, 5895 Ivy Hill Road, Hillsboro, OH 45133 USA.
- JD1BIE — Mir — 7061 — SSB — 1146 — Jan. QSL to JA8FCG, Hitoshi Seki, Box 162, Asahikawa, Hokkaido, Q70-91, Japan.
- V85AA — Bill — 14226 — SSB — 1142 — Jan. QSL to Bill Maddox, PO Box 1711, Bandar Seri Begawan, Brunei.
- ZK13NY — 14011 — Klaus — CW — 14011 — 0807 Jan. QSL to Klaus Schaub, Kurrstr 5, D-8522 Herzogenaurach, Germany, or the QSL Bureau.

## Smart Log<sup>©</sup>

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See review in AR, July 1993  
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Orders to: Philip Rayner (VK1PJ)  
 33 Willoughby Cres, Gilmore ACT 2905  
 Include disk size

- 5B4KH — George — 14169 — SSB — 1235 Jan. QSL via the Bureau.
- 7Z1AB — Alan — 14222 — SSB — 0553 — Jan. QSL to KN4F. James F Lane 5104 Pilgrim Road, Memphis Tenn 38116, USA.
- ZP6EM — Nito — 14188 — SSB — 1001 — Jan. QSL via the Bureau.
- ZF8AA — Ron — 7062 — SSB — 1108 Jan. QSL to N8AG, Art Geyer, 860 South, Main St, Milford — MI 48381 USA.
- FO0PT — Wal — 7005 — CW — 0813 — Jan. QSL to DJ0FX via the Bureau.
- YS1RRD — Ray — 7063 — SSB — 1147 — Jan. QSL to W3HMK, Joe Arcure, Jr, PO Box 73, Edgement, PA 19028 USA.
- FH5CB — Elio — 14252 — SSB — 0530 — Jan. QSL to FH8CB, Elio Fontaine Box 50, Dzaoudzi, F-97610, Mayotte, France.

### From Here There and Everywhere

- Steve P29DX finished his tour of duty and goes home to England mid-March.
- FT5YE — Francis — ceased operation on 30 January 1994. All QSLs to his home call F1AAS.
- It might interest you to know that out of the 59 people living on Pitcairn Island, 12 are active amateurs and there are only four family names used on Pitcairn: Christian — Brown — Young — Warren.
- If you worked VI4SAV, that was the Scout camp station of 2000 Venturer scouts from 35 countries in early January 94 in Queensland.
- The first batch of VK9MM QSL cards was posted around the middle of January, posting still continuing.
- KC4USB is an American station in Antarctica at the Byrd Surface Camp. QSL to NSFA PO Box 100, FPO San Francisco 96601 USA.
- SM1TDE/4U is located in Lebanon and is connected with the UN program. His activity will end in May 94.
- Special event stations celebrating the 17th Winter Olympics were active from Norway with these callsigns: LI0WG from Lillehammer, LI20WG from Hamar, LI30WG from Gjovik, and LI40WG from Gudbrandsdallen.
- Khalid — A61AB — was 24 years old when he was killed recently in an ultralight plane crash. He was a great helper to non-Emirate residents to operate amateur radio in his country.
- Fred K3ZO, was active for a month from Thailand as HS0ZAR. He operated under his personal call from the club station HS0AC. He was active mainly on 40 metres, both CW and SSB and was heard with a booming

signal in VK2 on 20 metres. He complained about the many Indonesian CBers who operate on the lower portion of 40 metres causing tremendous interference, besides the various man-made and other static noises.

- The July 1993 Penguin Island DXpedition QSL cards started arriving in Australia.
- The QSL manager for Tom 9K2ZC and his XYL Donna 9K2YY is now Derek KC4ELO.
- Some members of the Peter I Island DXpedition operated from the Falkland Islands under the call VP8BZL. QSL to KA6V.
- The correct QSL manager for EI7M is EI5FT.
- According to Josef OK1DTG, the November 1992 P5DTG activity was not licensed therefore it will not count as a valid contact.
- There are now five licensed nationals in Bangladesh: S21A Said, S21B Nizzam, S21C Agyab, S21AR Rashid, and S21AM Manju (PO Box 4000, Dhaka 1000, Bangladesh).
- The following DX operations have been accepted by the ARRL (operations beginning). C53GK (19 May 92) — D2SA (15 Sep 93 all bands) — J5TUBA (27 Apr 93) — JT1/KB91BZ (10 Oct 92) — T5/TU4EC (10 Dec 92)

TR8YA (8 Apr 92) — TU4EC (30 Apr 92) — TU4EF (7 July 92) — TU5AX (25 Nov 92) — TU5BA (11 Dec 92) — TU5BD (11 Dec 92) — V26A (28 Oct 92) — VP9/K8PYD (22 Nov 93) — VP9/WB8YJF (22 Nov 93) — XU5DX (1 Jan 93) — XU5SE (1 Jan 93) — Y11RJ (22 Oct 91) — 5R8DK (17 Mar 93).

- Razak A41JT the Secretary General of the Royal Omani Amateur Radio Society advised us that the new postal address for the Omani QSL Bureau is ROARS QSL Bureau, PO Box 981, Muscat 113, Sultanate of Oman.

### QSLs Received

Z32GX (4M YU5GBC) — C3URA (2Y 8M op) — VK9MM (2M VK4CCR) — HH2LO (4M KM6ON) — ZS0PI (4M DL4LK).

### Thank you

I am sorry to report that most of my regular contributors have deserted me (temporarily I hope). Special thanks are due to VK2KCP, VK2KFU, VK6NE, VK9NS, A41JT and the publications *QRZ DX*, *The DX Bulletin*, and the *DX News Sheet*.

\*PO Box 93 Dural NSW 2158  
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## Education Notes

*Brenda Edmonds VK3KT\**

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Some comments have recently been received about the standard of Morse code being used for the examinations. I hesitate to raise this topic. It may result in as much argument and acrimony as would occur if I asked members' opinions on removing Morse code as a requirement for an HF licence, but it is worth a few words.

I will not buy into any discussion as to how Morse code should be taught. There are several recommended strategies, but the many candidates who do not attend formal classes to learn their code are concerned with how and what to learn.

The important part is to learn it as sounds, not in terms of the numbers of dots and dashes. If you are learning from a chart showing .- and -.-., throw it away and use the one in RIB70 which uses di dah and dah dah di dit. And say it out loud, sing it, whistle it or sound it somehow so that the ears play a part in the learning too.

The Novice level examination was

introduced just about the time that computers and other machines started to be used for producing the code examinations. Until then, the text was generally hand sent so the style varied from sender to sender. The machines produced tapes which conformed to ITU Standard Morse code, in which all timing was tied to the length of a single dit. It came out uniform and standardised, but sounded dreadful! Even the examining RIs agreed.

After sufficient complaints were received, the then DOC moved away from ITU Standard, and established that for 5 wpm, the characters should be sent at 8 wpm, and the spaces between letters and words lengthened accordingly. For 10 wpm, the characters were sent at 13 wpm. The amateurs and candidates cheered this step, and complaints almost ceased. It is the DOC production program which is used for the WIA Exam Service examination tapes, so the style did not change when the WIA agreed to administer the examinations.

It is understandable that students coming into amateur radio from a system which used a different style for Morse code should be confused for a while, but it does not take long to adapt to a new style. Of the recent comments received, one requested that the characters for 5 wpm be sent at least 10 wpm. Another requested characters at about 18 wpm, which I understand is the standard used in some areas. Obviously this is another situation where it is not possible to please all of the people all of the time. Candidates who do best are those who listen widely — to WIA on air-practice transmissions, beacons, QSOs in progress or sent by friends. The styles may vary considerably, but it is good practice to be able to read a variety of styles. Those of you who are using computer programs to help you learn the code, see if you can set it to the standards given above, at least for a couple of weeks before you attempt the examination.

Those who have passed the Morse code examination after a few days' practice are a minority. Do not be discouraged if it takes longer than you expected. There are very many amateurs who have had to make more than one attempt, but practice and determination pay off in the end.

*\*WIA Federal Education Co-ordinator  
PO Box 445 Blackburn VIC 3130  
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## Club Corner

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### Special Event Station VI4VHF — ANARS Marks Closing of HMAS Moreton

The 83-year-old presence by the Royal Australian Navy in the city of Brisbane will come to an end on 30 March 1994. The RANR Training Depot, HMAS Moreton (Naval call sign VHF), located at New Farm will finally close at the end of March this year. Originally established in 1911 the Depot was first commissioned as HMAS PENGUIN IV in 1939, re-named HMAS BRISBANE in 1940 and became HMAS Moreton in 1942. The Depot transferred to the present site in 1960. At the height of its operations it was the home of the "1st Australian Landing Craft Squadron" which later became the "Australian Amphibious Squadron" in 1979. The base was home to the heavy landing craft HMA Ships BRUNEI, WEWAK, TARAKAN and BALIKPAPAN. The base reverted to being a RANR Training Depot in 1985.

To mark the closure and to offer all amateurs and shortwave listeners (especially those who have served at HMAS Moreton) a chance to say "goodbye", the *Australian Naval Amateur Radio Society* will operate the Special Event Station VI4VHF from 27 March through until 2 April 1994. A

commemorative QSL Card will be available. Operations will be on both CW (during odd hours UTC) and SSB (even hours UTC). Commencing 2200 UTC on 26 March 1994 the frequencies used will be (a) CW 3532 — 7020 — 14052 — 21052 — 21132 kHz; (b) SSB 3620 — 7075 — 14175 — 21175 kHz. Should 28 MHz be open check 28052 and 28132 CW or 28545 SSB. The station will also be on the Australian Navy FM net at 9 am local time on both Saturdays on the Bayside Repeater (VK4RBS 146.875 MHz) courtesy of the Bayside District ARS Inc.

The operating period also covers the anniversary of the 1941 Battle of Matapan (28/29 March) when distinguished service was given by the Australian cruiser HMAS PERTH and the destroyer HMAS STUART. To mark this anniversary VI4VHF will be joined on air by the ANARS Club Stations VK1SEA, VK2SEA and VK3SEA.

Terry R Clark VK2ALG  
Hon Sec ANARS

### RAOTC News

The annual meeting and election of office bearers will combine with a luncheon on Wednesday 16 March at 12.30 for a 1 pm start. The venue will again be the Benteleigh Club, located in Yawla St, Benteleigh. The speaker will be Andrew Rawlings from Telecom and he will talk about "Telecommunication Moves to the 21st Century".

As expected, the Club broadcast on Monday 7 February aroused a great deal of interest as it provided previously unpublished information about the HF radio equipment found in the Japanese midget submarines captured in Sydney Harbour.

Hopefully some of this information will appear in a later issue of *Amateur Radio*.

Allan Doble VK3AMD

### RAAF Signals & Radar Association (SA)

The annual ANZAC reunion will be held on Thursday 14 April 1994 at the Marion Hotel in Marion Road, Mitchell Park. This will be the 49th reunion and a number of radio amateurs are members.

The committee at present includes President, John Allan VK5UL, phone 344 7465; and Secretary, Ray Deane VK5RK, phone 271 5401.

RSVP to either of the above before 10 April 1994. Ladies are welcome to join us.

Ray Deane VK5RK  
35 Truro Avenue  
Kingswood 5062  
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## WIA News

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### WW2 Air Forces Radar Reunion

Were you a radar operator, engineer or scientist during World War 2? Well, over May 20, 21 and 22, there will be the third "Radar Reunion" of the RAF, WAAF, RAAF, RCAF, RNZAF and US Army Signal Corps in Blackpool, UK.

Venue is the Norbreck Castle Hotel. There will be a radar exhibition on show all weekend and opportunities for meeting old friends and enjoying socialising with an evening dinner dance on the Friday evening (with 30s and 40s music), a banquet with dancing on the Saturday and evening dinner with dancing to an organist on the Sunday.

Excursions to Jodrell Bank Radio Telescope or Quarry Bank

Mill (Cheshire) are on the agenda for the Saturday and half day excursions to Albert Dock, Liverpool or the Lancashire Hills (the Witch Country) on Sunday following a 10.45 am Church service.

Patron (1994) of the Radar Reunion is Professor R. Hanbury Brown AC DSc FRS. Professor Hanbury Brown spent a number of years in Australia with Sydney University and reportedly has a son living in Sydney.

Cost for two nights is 130 pounds, or for three nights 169 pounds. There is a 10 pound registration fee. Day visitors are welcome. Bookings are being taken by Bullocks Coaches in the UK, phone 061-428 5265, or fax 061-428 9074.

Thanks to Colin VK2DYM for that item.

# QSLs from the WIA Collection

Ken Matchett VK3TL\* Honorary Curator WIA QSL Collection

## INDEX (March 1988 — January 1994)

DATE OF AR	TOPIC/HEADING	QSL CARDS ILLUSTRATED
March 1988	Early call-sign prefixes	A5WS (Pre-war Australia) AC2AY (Pre-war China)
May 1988	Bert Maddick & more about prefixes	3EF & 3QT (Pre-war Australia) X2N (Pre-war Mexico) XF4J (Revilla Gigedo)
June 1988	Rev John Flynn, Alf Traeger and the Pedal Wireless	8AB — 8AC & A5AX (Pre-war Australia)
July 1988	Special Event stations eg Science Museum London, and Capt James Cook celebration	GB2SM, GB3CJC
August 1988	"Intermediates" — the precursors of prefixes	OZ4XC 9 (Pre-war New Zealand) XNU7EFF prefixes (portable US station)
September 1988	Guyana — formerly British Guiana	VP3VN, 8R1P, WB6MID/8R3
October 1988	Pre-war mobile and post war QSLs from Germany	D4BAR (Pre-war) DI9AA (Mobile marine) DA7AA (Early post-war)
November 1988	QSLs from the King of Jordan and Senator Barry Goldwater (Correction to text in March 89 issue)	JY1, 9M2TR, K7UGA, BV0BG
December 1988	Papua and self-governing Papua-New Guinea	VK4KC (Pre-war) VK9DJ
January 1989	The ARRL — its formation and HQ stations. Relay Stations	W1AW, W1MK, 5EB (Pre-war USA)
March 1989	Early Australian states" prefixes. The Flying Doctor Service	VK2JQ (Early ACT) VK5NR (Early NT) VK8XT
April 1989	The Panama Canal Zone	K5AM (Pre-war) NY2AE (Pre-war) KZ5LAND
May 1989	Macquarie Island	VK0KT, VK1BA
June 1989	"Former French Colonies" — Tunisia	FT4AF (Pre-war) 3V8ONU 3V8AB
July 1989	"Former African Colony" — Nyasaland, now Malawi	ZD6DT, 7Q7GN
August 1989	"Cards from Hawaii". Hawaii and early Hawaiian Intermediates.	HU6AKP, OH6SH, & K6AJA (All pre-war)
September 1989	"The WAZ Award" — and early Belgian call-signs.	ON4AU, B-K44, & EB4AC (All pre-war)
October 1989	"Willis Island"	VK4KR (Pre-war) VK9ZC
November 1989	"From Greenland"	OX5AT, KG1AX
December 1989	"Former British Colony in East Africa" Somalia — formerly British Somaliland	MD4PC, VQ6AB, 606BW
January 1990	"Italian Somaliland"	MS4A, I5AAW
February 1990	"Benin — A Rare DX Country"	TY2KG, TY0LC, TY9ER
April 1990	"Island in the Sun" — Jamaica	JM2PZ, (Pre-war) VP5EM, 6Y5MR
May 1990	"Nauru — Phosphate Island"	C21NI, C29ED, VK9RJ
June 1990	"Libya — North African Battleground"	L12JC, MD2AC, 5A2CV
July 1990	"The Olympic Games and Amateur Radio" Part 1	4A2IH, DJ0JE, XJ3GCO
August 1990	"The Olympic Games and Amateur Radio" Part 2	RM30, NG840, HL88AQB
September 1990	"Cocos (Keeling) Islands" Part 1	ZC2MAC
October 1990	"Cocos (Keeling) Islands" Part 2	VK1HM, VK9YC
November 1990	"Bahrein — Middle East Emirate" Part 1	VU7JU, XY16BZ (Portable station)
December 1990	"Bahrein — Middle East Emirate" Part 2	MB4BEE, A92EM, A9ZBD
January 1991	"The Boy Scouts Movement and Amateur Radio" Part 1	GB3BSI, AX2SWJ, K7BS/K7WSJ, HL0BEJ, GB3BPH
February 1991	"The Boy Scouts Movement and Amateur Radio" Part 2	PK1SCA (Pre-war Java), V56AJ, AX2BSA, VK3WIA
April 1991	"Guam — Hub of the Mariannas"	OM2MA & K6PMP (Pre-war) W9WUG/KB6
May 1991	"The Marshall Islands — A Spoiled Paradise?" Part 1	J9SIR (pre-war) KX6BU, KX6CG
June 1991	"The Marshall Islands — A Spoiled Paradise?" Part 2	K7LMU, HC8E, KX6BQ, V73AZ
July 1991	"The International Red Cross"	HL0FRC, DL0RZ, ST2FF, ST0/OR4CR
September 1991	"Korea — Land of the Morning Calm"	J8JA (Pre-war) HM0U, HL8A/2, HL88XP
November 1991	"Zimbabwe — formerly Southern Rhodesia"	Rhodesia 3SR (pre-war) ZE7JY, Z27JAM
March 1992	"Liechtenstein — Fairytale Principality"	HE1CE, HE9LAA, HB0GJ
June 1992	"Danzig — and what's on that old QSL card?" Part 1	YM4ZO (pre-war)
July 1992	"Danzig — and what's on that old QSL card?" Part 2	YM4AF (pre-war)
August 1992	"Chagos Archipelago"	VQ8AS (pre-war) VQ8CB VQ9JW
November 1992	"Rotary and Amateur Radio share common Ideals"	ZS5DDC, WR50AR, 6K89ROAR
December 1992	"Goa — Portuguese India"	CR8AA (pre-war), CR8AC
February 1993	"Navy — the Senior Service" Part 1	GB5RN, G4HMS, VK3RAN
April 1993	"Navy — the Senior Service" Part 2	VK2CC, VK2BST, VK4RAN
June 1993	"Navy — the Senior Service" Part 3	ZC4HMS, SL8CKR, DL0MF
July 1993	"The Isle of Man"	G3QF (pre-war), GD6UW, GD0LQE
September 1993	"The Royal Corps of Signals"	G4RS, VK2RAS/5, P11VKL
November 1993	"Corsica — A Struggle for Freedom"	F8NE, F0WV, TK/PA0KOP
January 1994	"Wake Island"	K6LHA (pre-war), KW6CGA, W7KHN/KH9

\*4 Sunrise Close Montrose VIC 3765 Tel 03 728 5350

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# International Amateur Radio Union Monitoring Service (IARUMS) — Intruder Watch

Gordon Loveday VK4KAL\*

The International Amateur Radio Union Monitoring System (IARUMS) is set up to record, report, and encourage the removal of non-amateur stations from amateur band allocations. Stations targeted are usually broadcast or commercial stations from other countries. Priority is not given to local "pirates". Each country appoints a Co-ordinator, who is responsible for collating reports and forwarding them to the appropriate regulatory authorities (the Spectrum Management Agency in Australia).

Each WIA Division, apart from VK3, has a Divisional Co-ordinator to collect reports from that Division and forward them to the Federal Intruder Watch Co-ordinator. But the main strength of the service is in the individual amateurs who spend time regularly listening on the bands and identifying types of signals and stations.

More Intruder Watch listeners are always required. Volunteers who contact either their Divisional Co-ordinators or me

direct will be supplied with information, log sheets and tapes to assist in identifying modes.

Below is a recently logged list of intruders into the amateur bands:-

My thanks to VKs 2GS, 4AKX, 4BTW, 4BXC, 4YFF, 6RO, 6XW. Would the unnamed observer from VK7 please supply his name to me. It WILL NOT be divulged to any other person. Your observations would be of more value if made easier for me to decode; I am not a mind reader. The official log sheets are available on request and should be used where possible.

Listening around the bands over the holiday period brought a line of thought — there are many avenues open to the monitoring service. First, and I guess foremost, are the great number of Shortwave Listeners out there, having in most cases very good receivers, and good ears. This is important.

Now, do these SWLs aspire at some future time to go the next step up and join the amateur ranks? If this is your next step, would it not be a good idea to make as sure as possible that the amateur bands are available for you to operate in? Most of the observers of 1994 are OLD TIMERS, many in their late 70's & 80's. We desperately need younger observers to fill the spaces as they appear. We can pass on valuable info now, otherwise it could be lost for ever, along with the bands, because they WILL be bought up by big money [we see it happening now].

Don't leave it too late to join. I warn there is no glory in it and no medals. You may even have to forgo some DX chasing, but at least there will be a better chance of that being around when you get your ticket. So what about it?

\*Federal Intruder Watch Co-ordinator, Freepost No 4  
Rubyvale QLD 4702 or VK4KAL@VK4UN-1  
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## WIA Intruder Watch December 1993

Freq	UTC	Date	Mode	S	Comments
7002.5	1045	051293	A1A	5	V Beacon
7005	1142	0712	NON	5	Mny obs no ID
7008.5	1055	1911	F1B	5/6	ID MNR, 250 Hz CIS
7013.5	1200	0612	F1B	3	250 Hz + R7B [S7]
7014.5	1200	0612	F1B	6	Mov'd freq + A3C
7020	1150	161293	NON	3	Freq in use aft 4wks
7035.5	1159	1412	F1B	5	1000 Hz shift
7039.5	1040	0612	A1A	7	F & S Beacons
7045	0927	0812	NON	7	4 Sec pip on freq
7047.5	1155	0612	F1B	3	1000 Hz + A1A + F1B rev
7048.5	1100	191193	mny	8	UHF3-F1B, F1A, H 24
7049	1021	0512	F1B	7	Observed 2 1/2 hrs No ID
7062.5	1045	1312	F1B	5	Also R7B 3 kHz wd
14061 + / -	0204	191193	F7B	6	DATA BURSTS
14069.5	1104	1812	A3C	4	Fax 120 rpm D speed
14095.8	0130	2611	A1A	7	ID KF?
14095.8	0200	2611	A1A	7	ID VPC mny obs
14210	1055	191193	A3E	4/5	2 F of 7105
14283}	1400	2511 +	A1A	5	ID VRQ Mni obs
14291}	2000	2812	A1A	9	Dly obs, var times
14285	0940	1512	A1A	9	ID NAP calling VPO
18025	1115	1512	A3E	4	B/c stn no ID
18100	1209	181293	A3E	6	2 way Russian L, non ham
18102	1202	2212	A1A	7	New freq VRQ 2F 9051
18125	0934	0212	A1A	7	VVV de BNA
21031.5	0222	1911	mxd	4	ID MNR UMS group[F1B/A1A]
21283.5	0905	1911	mxd	7	F1B/A1A ID UMS
21310	0500	291193	A1A	6	Mni freq to 21371 ID VVH
21405	0135	1911 +	A3E	7	R Moscow W/w servin Engl
24963	0939	0112	A3E	5	Military Asian L H 24
28400	0934	1212	A1A	3	ID "X6" Beacon
29598	0945	3112	A3E	2	B/c stn music
29655	1006	311293	A3E	9	B/c stn Mid east lang

## WIA News

### DXpedition to VP2E, Anguilla

The Lambda Amateur Radio Club will mount its third DXpedition to the Caribbean island of Anguilla, VP2E, in the British West Indies, this month.

The Lambda Amateur Radio Club (LARC) is "...an international club for gay, lesbian, bisexual and transgendered hams, shortwave listeners and computer enthusiasts, their friends and supporters."

The operation from Anguilla is planned to be on the air over March 5 to March 10. They'll be on HF, multi-band and multi-mode, plus OSCAR 13, modes B and S.

An engraved certificate is offered for every station who successfully works the DXpedition on HF or OSCAR 13.

Further details from:  
LARC International Headquarters  
PO Box 24810,  
Philadelphia USA.

Have you advised  
DoTC of your new  
address?

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## Repeater Link

Will McGhie VK6UU\*

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No FM 828 circuits this month. The circuit for the 828 speaker amplifier, power regulator and switching is complete, but there are a couple of repeater matters that may be of interest for this month. If you want the circuits I can make them available on CAD using Draft Choice via the mail, or Packet Radio in 7 Plus format. If you have requested circuits or Draft Choice from me and I have not responded, please contact me again, as the odd request may have gone astray.

Interest in the CAD drawing program has prompted me to do a future article on this shareware program. If you have wanted a way to draw up and store circuits for all sorts of reasons, then this program may be just what you are looking for. More on this in a later article.

I receive many requests for information on the 828 from amateurs who have obtained these radios and intend using them for all sorts of activity. They not only make great repeaters but normal voice and Packet use make them ideal for the Amateur. The one drawback is they require two crystals for each channel. If you are looking for a cheap source of crystals at around \$16 each that are Australian made, then I can help you out. A small company in South Australia can supply crystals for this price with a delivery time of 2 weeks. Contact me and I can let you have the address.

### Horizontal

A Packet Radio bulletin interested me for its lateral thinking even though a win in lotto is more likely. Peter VK3YZR is floating the following idea. Convince Telecom and others to change all their pager antennas to horizontal polarisation. The point being that as all FM and repeater activity on the top end of 2 metres is vertical, pagers going horizontal could reduce the interference we have to endure. The reduction could be considerable. It is generally considered that a 20 dB reduction in signal strength results from cross polarisation between antennas. Instead of the pager signal having an ERP of 4 kW it would be 40 watts. This reduction may or may not be achieved but the point is it could well make a big difference.

The pager receiver has a very poor aerial gain (I have heard around -20 dB) and may receive a horizontal signal just as well as a vertical one. If there is no difference then the service area would not change. I do not know if this is true.

Perhaps someone out there could let me know about pager receivers so I can pass the information along.

Returning to Peter's proposal, what a clever idea that would never happen! Let's hope I'm wrong but consider the following assumptions. For a start the number of pagers in Australia; let's say 1000. Now to change 1000 vertically polarised aerials over to horizontal could cost \$1000 to scrap the original antenna and replace it with the new. This is material cost only, including mounting hardware. Plus you have to add the labour costs of say 2 people for at least one day, maybe more due to travelling. If this figure is also \$1000 then we have a total per antenna to change of \$2000. This figure may be way off but it is my guess. The grand total to change all the vertical pager antennas to horizontal works out to \$2,000,000!

Now can't you just see the pager companies spending this amount of money just so a very small minority of citizens can talk to each other, about who knows what, when the phone is what the rest of the population use. Thanks Peter for a clever idea. Make up a proposal and obtain the support of your local WIA so they can put it on the table at the next Federal WIA meeting. You just never know, people do win/Lotto! (*Much cheaper and easier for all us amateurs to change to horizontal polarisation. Ed*)

### VK4XP CW Ident

In the April 93 edition of Repeater Link I presented an article by Will Scott VK4XP

on a repeater CW ident unit. Correspondence from Ray VK2TV has described some problems he has experienced after constructing the unit. Ray's letter reads in part:-

*I built the ident board making some minor changes using individual 555 timers instead of the 556, and a 2732 EPROM for the 2764. The symptom was the unit would start sending the ID and then reset early. Using a logic probe, I discovered a glitch on the D2 line when address 1F was reached. I tried a different brand of EPROM but the glitch remained. I decided to solve the problem by adding 1N914 steering diodes to the lines D0, D1 and D2 so that all three lines had to go low simultaneously before a reset would occur. However, another glitch at 2F caused another early reset later in the callsign. I solved this by adding one more diode, to the D3 line, and writing a new EPROM program to include this data line. The circuit now works well.*

Ray included a circuit of the changes he made and if you contact Ray or myself then this can be made available to you.

I contacted Will VK4XP and, after some thought, Will sent me some ideas. The problem may have been poor Vcc line filtering. The glitch could easily come from other components on the board. Another thought is to tie the reset line into the 555 from the EPROM low with a 4K7 resistor. This could eliminate stray pulses on that line. Also a 0.1  $\mu$ F capacitor to ground on this line to bypass fast ramping signals. If you have built this ident unit and have had similar problems then the above ideas may help. Let me know any problems you may have had.

\*21 Waterloo Cr Lesmurdie 6076  
VK6UU@VK6BBS  
ar

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## Stolen Equipment

*The following equipment has been reported stolen. If you have any information that may lead to the recovery of the equipment, please get in touch with the advised contact as soon as practicable.*

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**Make:** YAESU  
**Model:** FT-747  
**Serial Number:** 2C721035  
**Type:** HF Transceiver  
**Stolen from:** Dick Smith Springvale Store

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**Make:** YAESU  
**Model:** FT-912R  
**Type:** 23 cm mobile  
**Serial Number:** OK040382  
**Stolen from:** Dick Smith Springvale Store

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**Make:** YAESU  
**Model:** FT-911  
**Type:** 23 cm handheld  
**Serial Number:** 11140173  
**Stolen from:** Dick Smith Springvale Store

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## Spotlight On SWLing

Robin L Harwood VK7RH\*

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Recently, I thought that I was hearing a time warp on radio when I came across a broadcast of a Louis Armstrong concert, almost exactly 50 years to the day. However, the program I was listening to actually emanated from the studios of KGUM in Agana, Guam. It was not on a standard broadcasting frequency but on the maritime allocation of 2054 kHz and on USB. The concert I was hearing was the Coca-Cola Victory Parade and was recorded at the Dallas Naval Air Station on the 7th of December 1943.

These KGUM programs were puzzling me for a while, until I heard a warning that there was a tropical typhoon in the region, moving away from Guam and towards the Philippines. I guess that there may have been a bored navy or coastguard operator, who decided to fill in a quiet Sunday night by relaying the local AM program on to shortwave, complete with 1993 commercials and time checks.

On the 27 December I decided to check on progress of the Sydney-Hobart yacht race and tuned in on 2524 kHz. I commenced at about 1130 UTC and for the next 4 hours I sat riveted to my seat as the dramas unfolded. First off, there was a yacht in trouble and the crew eventually had to abandon ship. The crew members were able to fire off flares which were sighted by other participants.

The radio relay vessel was the "Young Endeavour" and they were co-ordinating the rescue efforts, but their signals were poor and they had to ask other yachts to relay the orders. The predictably high static levels at that time of the year also made copy difficult. The weather was foul indeed and the rescue efforts were also hampered by other yachts getting into difficulty and requiring assistance. Many were OK but were also notifying the radio relay vessel that they were pulling out. The operator on the "Young Endeavour" remarkably kept his cool in coping with these emergencies but it was apparent that some of the communication difficulties could have been overcome if they had better transmitters.

Then just as things seemed under control, a "Mayday" message popped up stating that a man had been washed overboard from the yacht "Nin". This was at 1345 UTC. All nearby vessels were ordered to assist in the search. As the evening wore on there was not much hope for the survival hopes of this missing crew member in the mountainous seas. I was somewhat taken aback to hear on the 8 AM news that he was rescued at 5

AM, after being immersed in the water for 5 hours. A remarkable achievement of survival in the worst Sydney-Hobart race on record.

The ABC domestic Shortwave service, VLW, based in Perth (WA) closed down "temporarily" on Friday, 22 January at 2200 UTC. Remaining now is the Territorial Service as the only ABC shortwave service left. The senders are based at Katherine, Tennant Creek and Alice Springs in the Northern Territory. The Alice Spring and Katherine senders also broadcast aboriginal programming from CAAMA in Alice Springs. Night time I find is the best time to hear these transmissions; Alice Springs is on 2325, Katherine is on 2310 and Tennant Creek is on 2485 kHz.

I AM somewhat surprised to find that another part of our radio heritage has disappeared without any fanfare. VIS Sydney Radio has ceased using CW as well as the ARQ/SITOR mode. VIS always used to have a strong signal here, particularly VIS26 on 8521 kHz. I grew up

by copying the traffic from VIS and am saddened to see its demise. However, I guess technology has progressed to the stage where it is no longer economically feasible to continue utilising these modes.

I note that VIP at Perth is using 8521 kHz now and is the only ARQ/SITOR station left in the Southwest Pacific. Incidentally, these maritime coast stations seem to be rapidly and quietly disappearing from shortwave. I suspect that they will be just historical footnotes within five years.

Radio Singapore International can be heard easily here in English on 9535 kHz between 1100 and 1300 UTC. They are employing several 250 kW senders. Other frequencies are 9590 and 9635 kHz with Bahasa Malay (Indonesian) and Chinese respectively. The signal on 6000 kHz is also Radio Singapore and is a relay of their domestic service.

Well, that is all for this month. My address is again 52 Connaught Crescent, West Launceston TAS 7250 or via Packet as follows : VK7RH @ VK7BBS.LTN.TAS.AUS.OC.

Until next time the very best of listening.

52 Connaught Crescent, West Launceston TAS 7250  
VK7RH @VK7BBS.LTN.TAS.AUS.OC.  
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## Technical Correspondence

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Amateur Radio Technical Editor,  
Dear Sir,

### TH3-Jnr versus the new Halfwave Verticals Roof Mounted Situation

With increased time to pursue hobbies, I am coming back to amateur radio after a long period of inactivity.

I live in an area where the blocks of land are small, neighbouring houses are very close, where there is strong resistance to towers, and where there are the usual power lines in the street.

I have refurbished my TH3-Jnr, firstly checking output from the transceiver (FT-DX-401) on all bands (10, 15 and 20 m) into an oil can 50 ohm dummy load, checking the co-axial cable for SWR (using an MFJ-209), checking the BN-86 balun for SWR, checking trap frequencies (after individual removal from the antenna as recommended by Hy-Gain in its Trouble Shooting Guide), and adjusting the driven element length for SWR and frequency (leaving the director and reflector as specified), and plotting the frequency-SWR graphs for the three bands (satisfactory).

Both DX transmit and receive from my station have been disappointing (as was

the case some years ago). The reason may be that the antenna is at 30' above ground level, and about 6' above the apex of the roof of the house (tiled roof with old non metallic sarking), and suffers from the effect of the surrounding buildings, (of about the same height, power lines, etc). I suspect the angle of radiation is high, and that power is being lost by absorption by the neighbouring buildings.

I just don't know what else I can do. Any suggestions? I am wondering about replacing the TH3-Jnr with a vertical antenna at the same location to improve transmit and receive. The base of the vertical would be at about 28-30' above ground level.

There is, with the quarter wave vertical, the problem of locating the radials on my small block.

I have noticed that there are two new verticals on the market, suitable for roof top use, which do not need radials, being:- the MFJ halfwave, on 40, 20, 15, 10, 6, and 2m, at a cost of \$448; and the Cushcraft halfwave, on 28, 24, 21, 18, 14, 10, and 7 MHz, at a cost of \$937.

The MFJ antenna is 12' high. The Cushcraft antenna is 6.9 m high. Stated angle of radiation is 16 degrees!!!

I would appreciate any comments on any possible improvements or problems that might occur by the replacement of the current TH3-Jnr with the above halfwave verticals.

Are there planned assessments and reviews for the magazine for these two halfwave antennas in the not too distant future?

I believe there are many amateurs who would be interested in technical reports on these two vertical antennas, especially as one antenna is about twice the price of the other.

I look forward to hearing from you.

**Alex Stuart VK2ALX**

Dear Alex,

### **The TH3-Jnr versus the New Half Wave Verticals Roof Mounted Situation**

The height of your TH3-Jnr antenna would appear to be the main problem. The antenna is amongst the clutter of houses and power wiring. The antenna effective height is less than a quarter wave above your house wiring on 14 MHz. More height would be desirable both to minimise detuning and to achieve lower angle radiation.

A Yagi should provide some directivity to reject noise and have around an S point of gain. It does need to be at sufficient height to work well. A vertical of the types mentioned has no gain or horizontal directivity.

Verticals, whilst capable of low angle

radiation over a good earth, may be disappointing if the earth is poor. This is distinct from considerations of feeding the antenna and refers to the earth conditions beneath the antenna out to a considerable number of wavelengths. The conditions you describe suggest a poor earth. The half wave design's feed impedance is less dependent on a ground plane and so may be easier to match for an elevated mounting point.

Noise and EMC are other considerations. Low aerials may couple into audio, TV and other equipment and also fall prey to a host of noises due to their close proximity. Vertical aerials are often particularly susceptible due to the vertical portion of the TV antenna lead running between TV antenna and TV set acting as an unwanted aerial. This can lead to pickup and TVI.

The verticals you mention are half wave designs. Both are shortened and so would suffer some loss. Shortened aerials usually suffer some loss of gain and bandwidth, usually in proportion to the degree of shortening. They both rely on earth reflection to provide good performance even though radials are not required. The manufacturers figures will have been obtained using the very good conditions existing on an antenna test range.

Your situation is likely to provide conditions somewhat below optimum and the antenna may not perform as well as you hope. The clutter of roof tops and

power wires will most likely result in some absorption of the signal and a consequent raising of the radiation angle.

Many DXers have both a vertical and a beam and employ both to their advantage. The aim is to hear and be heard.

One important part of DX success is being there when the conditions are optimum. Successful DXers spend a lot of time listening. Propagation predictions are a handy guide to good conditions. If your station is down compared to the big guns you may have to wait to get through but waiting and timing your call may lead to success. CW is also a plus in making contacts as it tends to get through better and 539 is just as good as 599 if you need the country

Antenna reviews are difficult as, without access to a suitable test range, a review is little more than assurance that sufficient hardware and instructions are supplied for construction. There are fairly subjective reviews in major overseas journals such as QST and Radio Communications, ref Radio Communications March 91, Dec 91, and July 92.

An interesting series on working DX appeared in Radio Communications in 1992 in the June, July, Aug, and Sept issues. You may find Radio Communications in your Divisional or club library, or some local amateur may subscribe.

73

Gil Sones VK3AUI Amateur Radio Technical Editor  
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# SOME THINGS HAVE NO COMPARISON

amateur  
**radio**  
action

The magazine for the serious radio operator  
**AT YOUR NEWSAGENT EVERY MONTH**



# Pounding Brass

Stephen P Smith VK2SPS\*

## Manual Telegraph Codes - English Language

Morse 1838	Morse 1844	Bain - c. 1846	International 1851
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
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

### Manual Telegraph Codes — English Language

Over the last few months we have looked at the history of Samuel F B Morse, an overview of the telegraph within the United States of America and, finally, how the telegraph came to Australia (a two part series).

As you can see from the above, I am attempting to keep this all in perspective (giving a solid grounding in early telegraph history before proceeding to modern Morse techniques and equipment).

In this issue I will cover the types of code used, from its beginning in 1832 through to the International Code of 1851. The codes in question are as follows:

- (1) Code of 1832
- (2) Code of 1838
- (3) Code of 1844 (American Morse)
- (4) Code of 1846 (Bain)
- (5) Code of 1851 (International or Continental Morse)

Morse had conceived a device on paper, while journeying home on the pocket ship "SCULLY" in 1832, for sending intelligence over great distances, by the use of electro-magnetics which he called "Telegraph" (Tele = Far Off; Graphein = To Write). The hardest thing for Morse was the invention of the code

itself. The code, called the code of 1832, consisted of figures only, coupled with a dictionary of numbered words. It consisted of spelling out a message, then showing various numbers with their word equivalents underneath.

eg. 4030 141 1.6.8.5.4.3. 322 32  
 "...Wednesday 6th August Cuvier Naturalist died"

The numbers and dots above "Cuvier" suggest that he intended to spell out unused words or names letter by letter, and this assumption is strengthened by a reference in his Caveat (ie specification of what he intended to patent) of 1837, to the dictionary having numbered words "beginning with the letters of the alphabet." Morse used this code up to December 1837. (The above paragraph was taken from an article by Tony Smith G4FAI.)

### Code of 1838

On 24 January 1838, Morse demonstrated a new code, on which he had been working over the previous year or so. It was comprised of letters instead of numbers, and speed was around 10 WPM, double that of his early figure code (refer to column Morse 1838).

Dashes are long, equal in length of the letter "L" in the 1844 code, about four dot lengths, except for Q, V, and W. G and J, and Y, S and Z remained the same. This code used a Port Rule (as discussed in an earlier issue) up to about 1840 when it was replaced by a hand key invented by Alfred Vail, Morse's partner at the time.

### Code of 1844

During this time Alfred Vail was working on a new code, along with Morse's assistance, which became the code of 1884, or commonly known as American Morse (refer column Morse 1844). Each letter of the alphabet had a separate symbol not like the code of 1838 which had the same symbol for phonetically similar letters. Each symbol was weighted, to determine its length, eg dot as 1, a space between groups of dots as 1, a dash as 2, and a long dash as 4.

The most commonly used letters had the shortest symbols, and the less frequently used longer symbols. This code was used throughout North America, Canada and Mexico.

### Code of 1846 (Bain)

The only information I have regarding the Bain Code is that it was used up to 1852 in conjunction with the American Code. Who invented it and why, since the American Code had been in service for two years, remains a mystery (refer column Bain — c. 1846)? If any reader has any knowledge on the "Bain Code", I would appreciate if they would contact me.

### Code of 1851 (International)

When Morse code was introduced to Europe, it didn't take off as fast as in the United States. The language structure was different, and the language contained diacritical marks like the German "Umlaut" and the French accents. As a result an International conference was held in Berlin in 1851, taking symbols from American Morse, and changing the spaced element letters such as C, O, R, Y, Z and long dash "L" to codes similar to the other letters. The length of a dash should be three times the dot length. Between characters, there should be a space equivalent in duration to three dots and, between words, seven dots.

This formed the code of 1851, or more commonly known as the International Morse, which has remained with us to this present day.

To conclude this column, I would appreciate any information on the Australian made "Simplex Auto Bug". See you next month.

\*PO Box 361 Mona Vale NSW 2103  
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# VHF/UHF — An Expanding World

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Eric Jamieson VK5LP\*

All times are UTC

## New Contact Arrangements

For some time I have been aware that improved facilities for submitting information to me would be helpful so I have looked at the matter and now ask my correspondents to make note of the following arrangements.

A Fax number of 085 751 043 via our local newsagent is available and fax sheets will be delivered to me within a few hours. Address for attention of Eric Jamieson VK5LP. I have also made arrangements with Gary Herden VK5ZK to download Packet messages on my behalf; in this case the messages will be forwarded to me by mail. Again address the message for my attention. My phone number of 085 751 531 is available and my desk to receive correspondence.

Please keep in mind that deadline dates for AR material are published on the first page of AR — it's usually the second Monday of the month, but not always, and that's the date my material must be in the editor's hands so I need your info a week earlier. Due to what appears to be appalling mail handling at the Melbourne end I need to post my computer disk no later than the Wednesday — five days before the appropriate Monday receipt date — but, of course, I have overlooked the fact that the Adelaide to Melbourne air distance is 650 km! I can receive letters from Europe faster than that and, typically, a letter from Brisbane, Sydney or Perth is usually on my desk in two days which I consider reasonable.

I ask that those people using the phone please consider that as a paraplegic my morning activities are somewhat restricted until all the chores, those you would accomplish in a short time span, are completed. There is usually a short time slot available around 0930 am local, then from 1030 am onwards my life assumes some normality. These times are 2300 and 0000 UTC during daylight saving and 0000 and 0100 UTC at other times. With your co-operation I am sure everything will flow smoothly.

## More EME Contacts

Mike Farrell VK2FLR reports that the October/November EME Contest was successful and aided by VE3ONT using the Algonquin radio telescope in Ontario on 144, 432 and 1296 MHz. Mike said that on the morning of 11/10 VE3ONT provided

the strongest 144 MHz signal off the moon that he had ever heard. He was worked by VK2FLR and VK3AMZ and heard by VK2YUS, VK3BRZ and VK1VP and others. During October Mike also worked KB8RQ, K5GW, W5UN, I2FAK, IK3MAC, SM5FRH and a one way with S51WV.

November EME contacts were with SM5BSZ and SM5MIX. On 5/12 a one minute CQ call produced a reply from LA8YB, and others heard were EA3ADW, OK3MS, DL8DAT, IK3MAC and GM4JJJ. A sked with N1BUG on 6/12 resulted in good signals both ways.

Mike reports that Lyell VK2BE is working towards 70 cm EME using 4x13 wavelength M<sup>2</sup> Yagis with an estimated gain of 24.1 dBd.

Ron VK3AFW also mentions the EME Contests and says that on 10/10 at 1703 VE3ONT was heard by VK3AMZ and at 1711 by himself. VK3CY heard both VE3ONT and W5UN on 144, and on 432 VE3ONT. VK3KWA heard the Canadian station on both 432 and 1296 MHz. Seems like he was a popular station!

## Two Metres and Above

As expected for this part of Cycle 22, there was a significant increase in Es activity on 144 MHz plus a set of propagation conditions which allowed contacts to New Zealand on four bands.

Mike VK2FLR says he is involved in aircraft enhancement contacts to Canberra, southern NSW and occasionally Melbourne. Consistent participants are VK2ZAB, VK2DVZ, VK2ZRE, VK1BG, VK1DO and VK1AU and less regularly VK2IFR in Cooma, VK2YZU in Peak Hill, VK2YUS in Sydney and VK1TRT in Canberra. On 10/12 Mike worked VK5RQ, VK5EME and VK5ZD Ron Es.

From 26/12 to 29/12 Mike operated portable from Tumut in southern NSW, with contacts into Sydney, Canberra and Melbourne on 144 MHz using 25 watts and a six element Yagi. Shifting to north-western NSW from 31/12 to 3/1 he had contacts from a number of sites and found a good one in the car-park at the Anglo-Australian telescope at Siding Spring. This site produced S5 to S9 signals into Sydney, Canberra and to VK2DVZ in Taree, plus hearing VK3XRS on aircraft reflection at about 740 km.

He also visited Fred VK2YZU at Peak Hill who runs 70 watts to a ten element beam and has consistent contacts to Sydney, Canberra and into Victoria.

Another station in the area is Mark VK2EMA at Tottenham, about 120 km due west of Dubbo and can be heard well in Sydney. Returning to Sydney in time for the bushfires, Mike was fortunate to work ZL4AAA and ZL3ADT on two metres Es on 11/1.

On 1296 MHz, Lyell VK2BE, Ross VK2ZRU, Ross VK2DVZ and Ian VK1BG have regular contacts between Taree, Sydney and Canberra with Gordon VK2ZAB joining in as his ten watts permits.

Ron VK3AFW reports on the widespread 144 MHz Es opening to New Zealand on 20/12 when ZL1IU was worked by VK3DLM, VK3DUT, VK3ELV, VK1VP, VK2MZ, VK2JSR and others. On 5/1/94 Arie VK3AMZ worked ZL4LV and heard ZL4TBN. Ron said the opening to ZL remained for some time, commenced east of Melbourne and worked its way through to the north.

## East-coast Tropo Workings

It would be easy for those of us who live in southern climes to believe that we are the privileged ones when it comes to extended tropo work on the band 144 MHz and above due to the well known path between Albany, Adelaide and Melbourne.

However, openings do occur in such places as the western coast of WA and along the eastern seaboard and such was the case recently when a large stable high pressure system permitted contacts between many areas of VK4 and VK2 to New Zealand.

Doug VK4OE reports that an extensive high pressure ridge was maintained in the Tasman Sea due to the approach of Cyclone Rewa. During the afternoon of 2/1/94 144 MHz opened and many VK2 stations and those in VK4 as far north as Bundaberg and Hervey Bay worked ZL4AAA, ZL1IU and ZL1SL/p all of whom were situated towards the northern extremity of the North Island in RF65 grid. Bob ZL4AAA reported hearing FM broadcast stations from Mackay.

Doug said many well-sited VK4s were giving extremely strong reports on both 144 and 432 MHz but he had to be content with weak signals due to attenuating hills to the east and south-east of him. Bob ZL4AAA took several hours off working 144 MHz to erect his 432 MHz antenna allowing Doug to finally work him at 4x1 while well-sited stations were giving reports of 60 dB over 9! It seems likely 1296 would have been possible but no such equipment existed at the ZL end.

It appears the duct did not penetrate further south towards Auckland, not even to Hamilton. A change of weather on the night of 3/1 destroyed the duct.

## Contact of the Month

I think this should go to Doug VK4OE for working ZL4AAA on 3/1 at 0740. The contact was on 432 MHz and signal reports 4x1 each way. This is the classic example of doing it the hard way. Better-sited stations were giving ZL4AAA S9+ 60 dB reports but Doug had to fire through his high-hill attenuator. I know the feeling as I was in the same situation at my former location of Forreston with S1 reports to Albany while those on the Adelaide Plains were giving S9+ reports. Well done!

## Two Metres via Sporadic E

According to Doug VK4OE 144 MHz opened on 9/1/94 around 0100 for a two hour period allowing many contacts from Brisbane to VK3, VK7 and VK5DK. From 0110 to 0130 the ionisation was so intense that VK3s reported "short skip" on 144 and 432 MHz. There was a scramble to try 432 and Doug VK3UM reported hearing a short burst of signal on 432.100 MHz which was later confirmed as being the time Roy VK4ZQ was calling.

On 144 MHz VK4OE worked in order VKs 3AMZ, 7ZMF, 3DUQ, 3DUT, 3KWA, 3JDG, 3XRS, 3UM, 7RR/p, 3ZQB, 3CY, 3LK, 3BEH, 3XEX, 5DK, 3KOS and 3DQW/p. It appears the opening did not extend further west to the Adelaide stations and certainly not to Meningie.

Regarding the Field Day Contest on 15 & 16/1, Doug said conditions generally were poor with no Es. However, from near Dorriggo he worked Sydney and Brisbane on 50, 144, 432 and 1296 MHz. Best distances were 144 to VK1DO/p Mount Ginini 680 km, 432 to VK2ZXC Port Kembla 490 km and a very pleasing contact on 1296 to VK2BE 430 km.

## Six Metres

During December and January there have been many wide-spread Es openings, so many in fact that it seems pointless tabulating everything here, everyone who has wanted to work six metres has worked all over Australia, New Zealand, Papua New Guinea and New Caledonia. However, the following are some of the good pickings which were available.

There have been many openings to Japan, good openings in fact but with fewer operators; it would seem that many JA operators have put the dust covers on their six metre rigs as have some in Australia. The openings started somewhat spasmodically during November and then as an avalanche in December. I was surprised to record openings on December 2, 3, 4, 5, 7, 8, 9, 10, 13, 21, 30, January 4, 7, 17, 18, 22, 24, 27. Openings

were most often noted from 0200 to 0500 with afternoon-type TEP and from 0800 to 1100 for evening-type TEP. A number of openings commenced early from 0030. The most consistent beacon appears to be JA2IGY on 50.009.

Through December and January there was a surprising amount of activity between 38 and 50 MHz with many TV carriers on 46.250, 48.240, 48.250, 48.260, 49.750 etc. On 8/12 an FM station on 47.200 at 0900 peaking about 315° aroused my interest especially after earlier reports of European TV carriers.

On 1/1 Andrew VK4CRT in Mackay said he had heard 14 two metre repeaters. On 8/1 JAs were working ZLs around 0300, while on 9/12 Joe VK4JH said that from 2300 he had worked VK1, 2, 3, 4, 5, 6, ZL and FK. On the same day VK2 worked FK8 on two metres and VK3s in Melbourne worked VK6AS in Esperance also on two. Wally VK4DO made almost a daily appearance into VK5 during December and January.

ZLs have appeared almost as often as the JAs with all four districts being worked, a very large opening occurring on 18/12 from 0600 to 0800. Other good ZL days were 1/1 and 2/1. PNG has been represented by P29CW, P29VPC and the P29BPL/b. Noumea has provided FK8DH, FK1UH. On 14/1 Steve VK3OT was heard working FO5DR on CW at 2345. 559 reports were exchanged but the FO5 was much weaker here. 3D2ER is still around as Steve worked him on 16/1. Jim VK9NS from Norfolk Island has been working mainly the eastern states although he did appear briefly here at 0023 on 18/1 while working VK4AFL, but he was not strong. The VK4RIK beacon at Cairns on 52.445 has re-appeared on the band.

With the above activity it's no wonder it is unwise to say nothing is left to work on six metres. The band certainly has its quiet moments but it only takes an unusual station to appear for dozens of signals to appear in a chase to work the station; so there are many listeners and few callers!

## News from Europe

Geoff GJ4ICD reports at length on the proposed DXpedition to Jordan by himself and six other operators from 27 May to 30 June to activate the prefix JY on six metres. The licence has been granted and bookings confirmed for the Marriott Hotel in Amman. Main equipment will be an FT650 with an FT690 as backup and a six element beam on a 24 foot boom.

Ted G4UPS reports that one outcome of the Triennial Conference of the IARU Region 1 held in Belgium during September 1993 was the agreement on 50 MHz repeaters. It was decided that

there would be eight repeater channels in the band 51.210 to 51.350, input spacing will be 20 kHz and the outputs will be 600 kHz higher.

Ted also reports that the November 1993 50 MHz DX Bulletin states that the H44HIR beacon which was operational on 50.005 MHz is off the air and, according to a report from Pete P29CW, off the island too. So those of us who have confirmed H44 should be thankful for having done so as it may be some time before the area is activated again.

On the propagation front all seems rather quiet in Europe. Apart from Ted's daily skeds with G3CCH and SM7AED, which are often successful, most activity involves listening for beacons. However, contacts were made with 9A3, IK5, EH, SP, OZ, F8, LA, S53, YU, OE, OM, DL, 9H, OH, fourteen countries in all. Only two months to go for the Es!

## An Unusual Happening

Last month *Amateur Radio* featured an article from Gordon VK2ZAB regarding an unusual propagation occurrence on 2/1/94 while he was operating on 144.100 MHz. This is a precis of the article together with my comments. On that day he had made two metre SSB contacts to ZL via what seemed to be Es, also to Brisbane and Lismore. Earlier Rod VK4KZR had reported two metre tropo contacts from southern VK4 to Cairns and Henry VK2ZHE at Port Macquarie had noted the presence of a coastal duct extending down the south coast of VK2.

At 1120 Gordon had his beam south west and heard snatches of conversations mentioning VK4 and ZL. Instead of best signals occurring on the direct path to both areas they occurred at 75° and were emanating from VK4HF 70 km north of Brisbane in contact with ZL1IU. Gordon contacted VK4HF and S4 reports were exchanged. VK2ZHE could not contact VK4HF. Bruce VK4BOO and Ross VK2ZRU could not contact VK2ZAB. Gordon finally lost VK4HF at 1243. The following night ZLs were again in contact with VK4s on the same 75° beam heading.

Gordon reports such occurrences had been noted before and always at the 75° beam heading when coastal ducts had been observed in VK2 and VK4 and VK4s were in contact with ZLs. VK4HF has an elevation of 305 m and VK2ZAB about 230 m.

Ross VK2ZRU suggested an ionospheric "hot spot" in the Pacific giving rise to "backscatter" but Gordon believes such hot spots would need to be in the same area each time and this was unlikely. He says, *In my view all the facts suggest the presence of a large static*

reflector located in the Pacific at a bearing of 75° east of north from my location and on a line from southern VK4 to ZL. Such an object does exist in the form of Lord Howe Island about 740 km from me and would not normally be illuminated by me but only when a duct existed. It would also be illuminated by signals from VK4 in contact with ZL. Lord Howe is mountainous with large sheer rock faces, an ideal reflector and much bigger than an aeroplane!

Gordon asked me to comment on the above and on thinking about it I believe such a situation could exist. The fact that this was not the first occurrence lends weight to the suggestion. For years I used a similar set-up, but on a much smaller scale when, from my former location at Forreston, I tried to work Steve VK5AIM and Bob VK5ZRO both west of me in the Elizabeth area but separated by a massive hill. Direct signals on 144 and 432 would be about S1 but if both ends directed signals to Mount Lofty about 60 km distant, signals rose to S4 over a very reliable path.

Because we three were geographically close we did not need ducts to produce the path as did Gordon but the techniques are the same. Gordon runs 400 watts PEP to four 13 element Yagis and has a good location at Berowra Heights. With the ERP available to him and with someone operating a well set-up station on Lord Howe Island, regular contacts should be possible over the 740 km water path. In the absence of such an operator then it seems a DXpedition could be considered. Who would like a trip to Lord Howe with 50, 144 and 432 MHz on board? If I was physically able I would go there myself!

### VHF/UHF Field Day

Chris VK1DO provided the following report on the VHF/UHF field day in January from VK1. *Three pairs of operators ventured into the field for the field day weekend. VK1CO/DO to Mt Ginini; VK1DA/KRA to Weston; VK1TRT and VK2IFR to the Snowy Mountains. All four teams were QRV 6 to 23 cm. Considerable difficulty, due to the closure of forests around Canberra, was found in reaching the intended sites. However, all stations were active from reasonable locations by late Saturday afternoon with contacts on 6 metres into VK1, VK2, VK3, and ZL. Contacts on 2 metres were confined to as far north as Doug VK4OE portable at Dorrigo, and south to Melbourne. 70 cm saw much the same as 2 metres and a lot of fun was had on 23 cm with two field stations working Phillip VK3ELV and one working Rob VK3DEM/P. 23 cm contacts were partly completed with the Geelong boys operating VK3ATL/P and Ross*

*VK2DVZ. The Snowy Mountains station operated 23 cm with a home brew quagi which would stretch the length of your fingertips to your elbow. No distance records. However, some difficult contacts to whet your appetite for future years.*

*The exercise of equipping and manning three full stations was a considerable challenge and the satisfaction gained might have been much greater if activity and conditions were more encouraging. However, we have proven what an amateur population of just 450 licensees can do with the sharing of equipment and the assistance of other local amateurs. What can your local club or Division do for the John Moyle or indeed next year's VHF/UHF field day contest.*

*Ironically, just one weekend after the contest, Bill VK2IFR worked VK7XR on 2 metres having to resort to CW. Conditions two weekends after the field day saw strong signals through to Ross VK2DVZ on 2, 70 and 23 cm. Next year's field day contest will definitely enjoy impressive conditions based on the penance we have paid for the past two years. Hope to work you then. Thanks are expressed to the numerous home stations who kept regular skeds well into the late evening and*

*returned at dawn to keep the activity percolating. See you in next year's field day*

### Closure

By the time you read this we will be approaching the equinox and the possibility for long distance contacts on six metres. Don't be fooled into thinking six metres is finished — you may not work Africa or South America but note that FO5DR was worked during January, ZLs recently worked to the USA, Hawaii has been there and of course the JAs and Pacific island nations. We are not blessed with the opportunities presented to operators in Europe but there is a lot to be said for the adage "six metres never closes, it's only the operators who stop!"

Closing with two thoughts for the month:

1. Rumour travels faster but it doesn't stay put as long as truth, and
2. Getting married is easy. Staying married is more difficult. Staying happily married for a lifetime should rank among the fine arts.

**73 from The Voice by the Lake.**

*\*PO Box 169, Meningie, SA, 5264*

**ar**

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## Silent Keys

*Due to space demands obituaries should be no longer than 200 words.*

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The WIA regrets to announce the recent passing of:-

C (Charles)	LANGHAM	VK2WCL
A C (Allan)	STYLES	VK3TV
F (Frank)	O'SULLIVAN	VK4UK
K C	PARKER	VK5AB

### Eric W Cleburne VK2BII

Eric passed away unexpectedly of a heart attack on 25 October 1993. He was born in Sydney and came on the air as VK2AII in 1934. Early in his working life he was Sound Recording Engineer for the Macquarie Broadcasting Network. He joined the RAAF Wireless Reserve and at the outbreak of war was called up, thereafter seeing service in Australia and New Guinea and rising to the rank of Warrant Officer in 4 Squadron.

The war over, Eric joined the Australian Record Company and supervised the production of the "Coronet" series, and personally recorded the "Capitol" series. In 1959, now in Victoria, he became Technical Director of the World Record Club. He took the callsign of VK3AII but business commitments curtailed his activity.

On retiring, Eric and his wife Nell moved to a small cattle farm at Cuttagee near Bermagui, an excellent location for radio. The Far South Coast Amateur Radio Club formed, Eric being active with Ken Kelly VK2MJ in establishing a 2 metre repeater. In 1978 he became co-ordinator of the 40 metre Sunday CW Net and, with the willing help of the net control stations, Eric continued the net until his death. The net has subsequently remained intact. In September 1992, Eric and Nell had travelled to Melbourne for a barbecue celebration of the one thousandth net at the home of Don VK3BKU.

Eric and Nell were renowned for their hospitality to visiting amateurs. Each year the local club had held its annual barbecue meeting at Cuttagee. The meeting will be held at Eric's and Nell's home as usual this year, sadly without the presence of the ever cheerful Eric.

To Nell, Darryl, Sheila, Kirsten and Scott, Eric's friends in amateur radio extend their sympathy,

**Ivor Stafford VK3XB**

**Tim Humphery VK3BCN**

**Don Ockley VK3BKU**

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## Over to You — Members' Opinions

All letters from members will be considered for publication, but must be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.

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### Manchester History

May I request your magazine's assistance in some research my friend, Eric G2ALN, and I are jointly working on.

May I first introduce my project. Earlier this year an article appeared in *Radio Communications* (RSGB journal) describing the early years of NFD (UK). This article led me to contacting John ZL1AH (G3AH) with whom I have been corresponding primarily with his recollections of the above era in the Manchester (UK) area.

Eric G2ALN and I have discussed the era 1936 — 1951, and his encouragement has led me to attempt this project. Together with Eric's help we are trying to write a record of the development of amateur radio primarily in the north side of Manchester, Manchester — Bury area. I am also trying to obtain a record of the NFD development from radio clubs and groups in this area.

We would like to contact amateurs/SWLs who were involved with amateur radio and wouldn't mind providing us with their recollections.

From our information there must be a number of amateurs in Australia who originate from Greater Manchester. We would dearly like to hear from them. In the first instance if you could drop Eric G2ALN a brief note I will gladly send more details.

Keith Kahn G3RTU (Not QTHR)  
(Amateur Packet Radio: G3RTU @  
GB7BEV or G2ALN @ GB7BEV)  
E W Taylor G2ALN  
76 Sidney Road  
Blackley, Manchester M9-3AT  
Great Britain

### Non Members Again

Mervyn Millar's remarks on non members (*Amateur Radio* February page 52) are worthy of comment.

Firstly *Amateur Radio* must take some blame for highlighting his outrageous comments in capital letters. (*His capitals, Roth, not ours. Ed*)

His bid to link licence fees with WIA membership is, in my opinion, irresponsible, impractical and completely unworkable.

Linking non WIA members with the ratbags who, unfortunately, spend their time on 2 m FM jamming others, is probably without foundation.

Identifying WIA members in the call book is, perhaps, the most sensible comment Millar makes.

Some of the blame rests with the WIA itself which has been too tolerant for far too long to these "others". Perhaps the WIA should try to put its own house in order by embarking on a program to attract these non members back into the fold. (*Tried many times in many ways. Suggestions would be welcomed. Ed*)

The argument provoked by Millar reminds me so much of the trade union movement which I have been a part of for almost as long as I have, with pride,

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## TAD Helps 'Again

Bill Yates VK4YWY\* tells of yet another effort by the voluntary Technical Aid to the Disabled

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On Sunday, 9th May an unusual event took place in Petrie Qld. At Backstop, a respite home for the severely disabled, Tony VK2FMT is a frequent visitor to the home and, being in a motorised stretcher wheelchair, amateur radio is a pursuit in which Tony can take part, despite his disability.

Tony, who lives on a property at Werris Creek NSW, visits Backstop on a regular basis, bringing with him his handheld Yaesu 2 metre radio. He used a vertical antenna that was fixed atop a mixture of tent poles. Strong winds played havoc with the mast and antenna, and often Bill Yates VK4YWY would be called in to repair the damage. It was decided to make a more permanent structure to accommodate Tony's antenna. Following a design that was approved by council and the Backstop board, a 700 mm cubic block of concrete was poured last November incorporating a 40 mm

signed this call . . . 57 years!

Most amateur radio enthusiasts should be able to put their heads high and say "I am a WIA member" Why not?

Activist and actor, Paul Robeson, put it simply on his last visit to Sydney when he told a gathering of workers on the Sydney docks "I am a union man". He was howled down but stuck to his guns!

The anti WIA people remind me so much of the union bashers, but Australians are coming to respect the unions. Let us hope in our field the "bashers" can be induced to join the WIA.

Roth Jones VK3BG  
23 Cherry Tree Grove  
Croydon Vic 3136  
ar

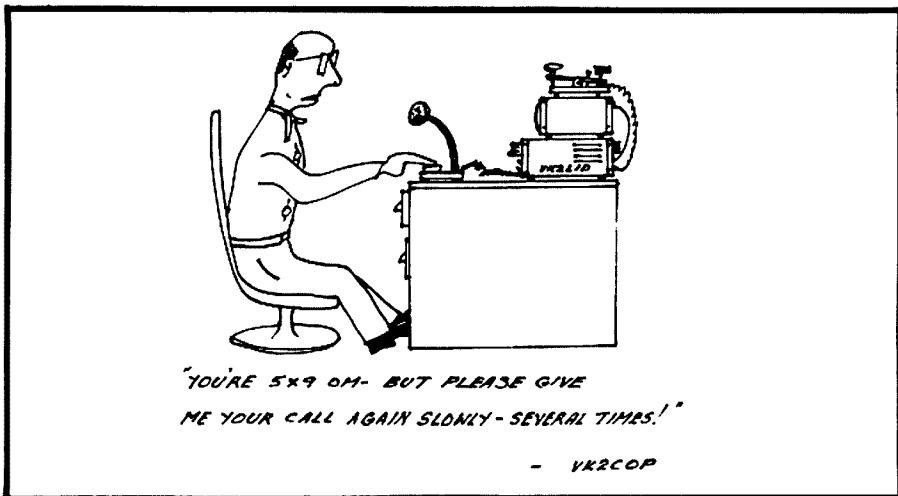
diameter water pipe with a screwed end and socket.

A 7 metre length of water pipe was capped with the antenna on the Sunday following the Barfest and with the aid of four volunteers, three of them student amateurs, the mast and antenna was erected as a free standing structure. Atop the mast, fluttering for all to see, is a flag made by a volunteer from Backstop, bearing Tony's call sign and "Ham Radio, Tony".

*Footnote: Backstop house is a residential home housing four disabled persons. There is a Co-ordinator and six part time staff, who are assisted by a variety of volunteers looking after the residents. Bill Yates is Technical Co-ordinator for Technical Aid to the Disabled (TAD) a voluntary organisation dedicated to making devices for the disabled, particularly where there is no commercial equipment available.*

\*29 Brittainy St, Petrie QLD 4502

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# HF PREDICTIONS

Evan Jarman VK3ANI\*

## The Tables Explained

The tables provide estimates of signal strength for each hour of the UTC day for the five bands from 14 to 28 MHz. The UTC hour is the first column; the second column lists the predicted MUF (maximum useable frequency); the third column the signal strength in dB relative to 1  $\mu$ V (dBU) at the MUF; the fourth column lists the "frequency of optimum travail" (FOT), or the optimum working frequency as it is more generally known.

The signal strengths are all shown in dB relative to a reference of 1  $\mu$ V in 50 Ohms at the receiver antenna input. The table below relates these figures to the amateur S-point "standard" where S9 is 50  $\mu$ V at the receiver's input and the S-meter scale is 6 dB per S-point.

$\mu$ V in 50 ohms	S-points	dB( $\mu$ V)
50.00	S9	34
25.00	S8	28
12.50	S7	22
6.25	S6	16
3.12	S5	10
1.56	S4	4

0.78 S3 2  
0.39 S2 -8  
0.20 S1 -14

The tables are generated by the GRAPH-DX program from FT Promotions, assuming 100 W transmitter power output, modest beam antennas (eg three element Yagi or cubical quad) and a short-term forecast of the sunspot number. Actual solar and geomagnetic activity will affect results observed.

The three regions cover stations within the following areas:

**VK EAST** The major part of NSW and Queensland.

**VK SOUTH** Southern-NSW, VK3, VK5 and VK7.

**VK WEST** The south-west of Western Australia.

Likewise, the overseas terminals cover substantial regions (eg "Europe" covers most of Western Europe and the UK).

The sunspot number used in these calculations is 33.8. The predicted sunspot number for April is 32.4.

VK EAST — MEDITERRANEAN										
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5		
1	11.0	1	8.4	4	-4	-15	-33	...		
2	10.4	-7	7.9	0	-5	-16	-33	...		
3	13.6	-2	10.3	0	0	-5	-15	-29		
4	19.8	5	15.2	-4	4	5	0	-6		
5	25.3	7	19.8	-8	5	8	7	4		
6	27.7	8	22.5	-9	5	9	10	7		
7	27.2	8	22.1	-8	6	10	10	7		
8	25.9	9	20.8	-4	8	10	10	6		
9	24.2	10	20.4	2	11	12	9	4		
10	22.2	11	17.7	9	14	13	8	1		
11	20.1	14	15.9	15	16	12	5	-4		
12	18.2	16	14.4	20	16	10	0	-12		
13	17.1	20	13.6	25	18	9	-3	-17		
14	16.2	24	12.8	29	18	8	-7	-24		
15	15.5	25	12.3	29	17	5	-11	-30		
16	14.8	27	11.6	29	15	2	-16	-36		
17	14.2	28	11.0	28	13	-1	-20	...		
18	13.1	29	10.2	25	8	-7	-29	...		
19	11.8	30	9.1	20	1	-17	...	...		
20	11.6	30	8.9	19	0	-19	...	...		
21	14.3	27	11.3	28	13	0	-19	...		
22	12.4	24	9.6	19	3	-11	-33	...		
23	12.0	17	9.2	13	0	-13	-34	...		
24	13.3	12	10.3	12	4	-5	-21	...		

VK EAST — SOUTH PACIFIC										
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5		
1	28.5	25	24.1	36	37	35	30	25		
2	29.1	25	24.3	37	37	35	31	26		
3	29.2	25	24.1	38	38	36	32	26		
4	29.0	25	23.7	40	39	36	32	26		
5	28.3	26	23.0	42	40	37	32	26		
6	26.9	28	21.6	46	42	38	32	24		
7	25.0	30	19.9	49	43	37	30	21		
8	22.9	31	18.2	48	41	35	26	16		
9	20.6	33	16.3	47	39	32	21	9		
10	18.6	35	14.7	46	36	27	15	1		
11	17.5	36	13.8	44	34	24	10	-3		
12	16.5	37	13.0	43	32	21	6	-8		
13	15.8	38	12.3	42	29	18	2	-13		
14	14.9	38	11.7	40	27	15	-1	-18		
15	14.3	39	11.1	39	25	12	-5	-23		
16	13.2	40	10.2	36	21	6	-12	-32		
17	11.9	41	9.1	32	14	-1	-22	...		
18	11.7	42	8.9	31	13	-3	-24	...		
19	14.4	36	10.9	36	24	11	-4	-21		
20	19.2	30	14.8	39	33	25	15	3		
21	23.2	28	18.2	38	36	31	24	15		
22	25.1	26	20.0	37	36	33	27	19		
23	26.0	26	21.1	36	36	33	28	21		
24	27.4	25	22.7	36	36	34	29	23		

VK EAST — AFRICA										
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5		
1	11.7	9	8.6	7	-3	-16	-36	...		
2	11.7	5	9.0	6	-1	-12	-28	...		
3	11.1	-1	8.5	3	-3	-13	-30	...		
4	13.9	2	10.5	2	2	-4	-15	-29		
5	18.8	6	14.5	1	6	4	-1	-10		
6	20.8	6	15.3	0	6	5	0	-7		
7	21.0	6	15.5	0	7	6	1	-6		
8	20.7	7	15.3	2	7	6	1	-6		
9	19.3	8	15.2	5	8	6	-1	-10		
10	17.6	9	13.9	8	8	4	-5	-17		
11	15.7	10	12.4	10	7	0	-12	-26		
12	14.0	12	11.1	12	4	-5	-20	-38		
13	13.0	15	10.2	13	2	-10	-28	...		
14	12.1	20	9.6	15	0	-15	-37	...		
15	11.5	25	9.1	16	-2	-20	...	...		
16	11.1	27	8.7	15	-5	-25	...	...		
17	10.6	29	8.2	14	-8	-29	...	...		
18	10.1	31	7.8	11	-13	-35	...	...		
19	9.7	31	7.3	9	-16	...	...	...		
20	10.2	30	7.1	12	-12	-34	...	...		
21	9.9	30	6.8	9	-15	-39	...	...		
22	9.5	23	6.6	5	-18	...	...	...		
23	9.2	17	6.6	3	-19	...	...	...		
24	9.9	10	7.2	4	-12	-30	...	...		

VK EAST — EUROPE										
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5		
1	10.1	-4	7.3	1	-7	-20	...	...		
2	9.4	-12	6.9	0	-8	-20	-39	...		
3	9.7	-14	7.2	0	-6	-17	-34	...		
4	11.5	-9	8.1	-1	-2	-10	-23	-39		
5	14.7	-2	11.0	-3	0	-3	-11	-23		
6	17.8	2	13.4	-6	2	1	-3	-11		
7	20.1	5	15.2	-5	4	5	1	-5		
8	21.4	7	16.2	-2	7	7	4	-2		
9	22.5	10	17.0	4	11	11	7	1		
10	22.3	13	17.5	12	16	15	10	2		
11	20.3	15	16.1	18	18	14	6	-3		
12	18.4	18	14.6	22	18	14	...	...		
13	17.4	20	13.8	25	19	10	-1	-15		
14	16.5	22	13.1	27	18	8	-5	-21		
15	15.7	25	12.4	29	17	6	-10	-28		
16	14.9	26	11.7	29	15	2	-15	-34		
17	14.3	27	11.1	28	13	-1	-20	...		
18	13.1	28	10.2	24	8	-8	-30	...		
19	11.6	29	9.0	19	-1	-20	...	...		
20	11.3	30	8.3	17	-4	-24	...	...		
21	11.1	27	7.8	14	-7	-28	...	...		
22	10.4	21	7.7	10	-8	-28	...	...		
23	10.6	11	7.5	6	-8	-25	...	...		
24	10.5	3	7.5	3	-7	-21	...	...		

VK EAST — USA/CARIBBEAN										
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5		
1	24.2	9	20.4	0	9	11	8	3		
2	21.7	10	17.2	6	12	10	5	-2		
3	19.0	12	15.0	11	12	8	0	-9		
4	16.7	14	13.2	16	12	5	-6	-20		
5	15.6	18	12.3	20	12	3	-11	-28		
6	15.0	23	11.8	24	13	1	-15	-34		
7	14.4	25	11.4	25	12	-1	-20	...		
8	13.9	26	10.9	25	10	-3	-23	...		
9	13.5	28	10.5	25	9	-6	-27	...		
10	12.4	29	9.6	22	3	-13	-37	...		
11	10.8	30	8.3	15	-7	-28	...	...		
12	10.6	30	8.1	14	-8	-30	...	...		
13	13.2	28	10.4	24	8	-8	-30	...		
14	12.8	26	9.9	21	5	-10	-32	...		
15	11.1	19	8.5	12	-5	-22	...	...		
16	13.3	14	10.3	13	4	-7	-24	...		
17	11.8	6	9.1	6	-2	-14	-32	...		
18	14.1	-1	8.7	2	-3	-14	-30	...		
19	14.1	0	10.7	0	1	-4	-15	-28		
20	18.9	4	14.6	-3	4	3	-1	-8		
21	22.7	6	17.9	-6	4	6	4	0		
22	24.4	7	19.5	-8	4	7	6	2		
23	25.3	7	20.6	-7	5	8	7	4		
24	26.3	8	21.1	-5	7	10	9	5		

VK EAST — ASIA										
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5		
1	27.4	13	22.5	17	22	21	17	11		
2	27.4	13	22.2	15	21	20	16	11		
3	28.2	13	21.6	15	21	21	18	12		
4	29.0	13	24.2	16	22	22	19	14		
5	30.2	14	24.9	18	24	24	21	16		
6	29.8	14	24.2	21	26	25	22	17		
7	28.4	15	22.9	25	27	26	21	15		
8	26.6	17	22.4	32	30	27	20	13		
9	24.8	19	19.8	38	33	27	19	9		
10	22.6	20	18.0	39	31	24	14	2		
11	20.7	21	16.5	38	29	20	7	-6		
12	19.7	22	15.6	37	27	17	3	-11		
13	18.8	23	14.9	37	25	14	0	-17		
14	17.9	23	14.3	35	22	11	-5	-23		
15	16.9	24	13.3	33	19	6	-11	-31		
16	16.0	24	12.5	31	16	1				

VK SOUTH — ASIA								
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	21.0	11	17.1	11	14	11	4	-5
2	21.6	11	17.9	10	14	11	5	-3
3	22.1	11	18.7	10	14	12	6	-1
4	22.2	11	18.6	10	14	12	7	-1
5	22.2	12	18.4	12	15	13	7	-1
6	22.8	13	18.1	14	17	14	8	-1
7	21.8	14	17.6	18	18	15	7	-1
8	20.7	16	16.8	23	20	15	5	-5
9	19.3	20	15.3	33	24	14	1	-13
10	15.7	22	13.9	32	20	8	7	-25
11	15.7	23	12.5	28	13	-1	-21	...
12	14.1	24	11.2	23	5	-13	-37	...
13	13.2	24	10.5	20	-1	-21	...	...
14	12.5	25	9.9	16	-7	-29	...	...
15	11.9	25	9.4	13	-12	-36	...	...
16	11.5	25	9.0	10	-16	...	...	...
17	11.1	25	8.7	7	-20	...	...	...
18	10.4	26	8.1	2	-29	...	...	...
19	9.6	26	7.5	-5	...	...	...	...
20	9.6	26	7.4	-6	...	...	...	...
21	12.1	23	9.1	13	-10	-33	...	...
22	15.6	14	12.0	17	8	-3	-39	...
23	18.6	13	14.6	16	13	7	-3	-16
24	20.3	12	16.2	14	14	10	2	-7

VK SOUTH — SOUTH PACIFIC								
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	19.3	15	16.0	22	18	10	-1	-15
2	19.5	15	16.6	23	18	11	0	-14
3	19.6	16	16.4	24	19	11	0	0
4	19.6	16	16.2	25	20	12	0	-14
5	19.6	17	16.0	28	21	13	0	-14
6	19.3	20	15.6	32	23	13	0	-16
7	18.4	22	14.7	35	23	12	-4	-21
8	16.8	24	13.3	33	19	6	-12	-32
9	15.0	26	11.9	30	13	5	-24	...
10	13.5	28	10.7	25	5	-13	-39	...
11	12.6	30	9.8	20	-2	-24	...	...
12	11.6	30	9.2	16	-9	-33	...	...
13	10.9	31	8.2	12	-16	...	...	...
14	10.4	31	8.2	8	-21	...	...	...
15	10.0	32	7.8	5	-26	...	...	...
16	9.6	32	7.5	2	-31	...	...	...
17	9.1	33	7.0	-2	-38	...	...	...
18	8.6	33	6.6	-7	-4	...	...	...
19	9.0	27	6.8	-3	-37	...	...	...
20	10.8	18	8.2	8	-15	-38	...	...
21	13.7	17	10.5	16	2	-12	-34	...
22	16.4	16	12.9	20	12	1	-15	-33
23	18.4	16	14.4	22	16	7	-6	-22
24	18.8	15	15.3	22	17	9	-3	-18

VK WEST — EUROPE								
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	11.7	14	8.2	10	-4	-20	...	...
2	10.6	4	7.5	3	-9	-24	...	...
3	10.6	-1	7.8	1	-7	-20	-39	...
4	13.0	-1	8.8	1	-1	-9	-22	-39
5	17.0	3	12.4	-1	3	0	-7	-17
6	20.7	5	15.2	-4	4	5	1	-5
7	23.3	6	17.1	-6	5	7	5	0
8	24.7	7	18.2	-6	5	8	7	3
9	25.8	8	19.0	-5	7	10	9	5
10	25.1	9	19.5	-1	9	11	9	5
11	23.4	10	19.6	6	12	12	8	2
12	21.5	13	17.1	14	16	13	7	-1
13	19.4	16	15.4	21	18	12	3	-8
14	17.5	19	13.9	25	18	9	3	-17
15	16.5	23	13.1	29	18	7	-8	-25
16	15.7	24	12.4	28	16	4	-13	-31
17	14.9	25	11.9	28	14	0	-18	-38
18	14.3	26	11.2	27	11	-3	-23	...
19	13.7	27	9.9	25	8	-7	-28	...
20	12.7	27	9.1	21	3	-14	-38	...
21	11.5	28	8.6	16	-4	-25	...	...
22	11.4	28	8.6	16	-5	-26	...	...
23	12.3	27	8.4	19	0	-18	...	...
24	10.9	22	8.4	10	-9	-28	...	...

VK SOUTH — EUROPE								
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	11.0	4	7.8	5	-5	-17	-37	...
2	10.1	-5	7.3	1	-7	-19	-39	...
3	10.3	-9	7.5	0	-5	-15	-32	...
4	12.4	-6	8.4	-1	-1	-7	-19	-34
5	16.0	0	11.8	-4	1	0	-7	-17
6	19.4	3	14.4	-8	2	3	0	-6
7	21.9	5	16.2	-9	3	5	3	-1
8	23.0	7	17.2	-8	4	7	6	1
9	21.9	8	17.6	-3	7	8	5	0
10	20.4	9	16.2	3	9	8	4	-3
11	18.5	11	14.7	9	11	8	0	-9
12	16.5	13	13.1	14	11	5	-6	-19
13	14.8	17	11.7	17	9	0	-15	-33
14	13.8	21	10.9	20	8	-5	-23	...
15	12.9	25	10.2	21	5	-10	-32	...
16	12.3	27	9.7	20	2	-15	-39	...
17	12.0	28	9.4	19	0	-19	...	...
18	11.6	29	9.0	18	-3	-23	...	...
19	10.9	29	8.4	14	-8	-29	...	...
20	10.3	30	7.9	11	-13	-36	...	...
21	10.8	29	8.2	13	-9	-31	...	...
22	10.4	26	8.0	10	-12	-34	...	...
23	10.2	19	7.9	8	-12	-32	...	...
24	11.5	12	8.0	9	-3	-18	-39	...

VK SOUTH — USA/CARIBBEAN								
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	24.7	9	18.5	0	10	11	9	4
2	23.3	11	18.5	7	13	13	9	3
3	20.5	13	16.2	13	15	12	5	-4
4	18.2	15	14.4	18	15	9	0	-12
5	16.9	18	13.4	22	16	8	-4	-19
6	16.3	22	12.9	26	17	7	-7	-23
7	15.6	24	12.4	28	16	5	-11	-29
8	14.9	26	11.7	28	15	2	-15	-35
9	14.4	27	11.2	28	13	0	-19	...
10	13.0	28	10.1	24	7	-9	-31	...
11	11.0	30	8.5	16	-5	-25	...	...
12	10.7	30	8.2	15	-7	-29	...	...
13	13.0	28	10.2	23	6	-10	-33	...
14	12.5	25	9.8	19	3	-13	-36	...
15	12.1	19	9.3	14	0	-15	-37	...
16	11.4	10	8.7	8	-4	-18	-39	...
17	10.8	2	8.2	3	-6	-19	-39	...
18	11.2	-3	8.4	1	-4	-15	-31	...
19	13.6	-1	10.7	0	0	-6	-17	-31
20	17.3	2	13.2	-3	3	1	-4	-14
21	20.8	5	16.2	-7	3	5	2	-4
22	23.0	6	18.3	-8	4	6	5	0
23	23.7	7	19.3	-8	4	7	6	1
24	24.4	8	20.2	-5	6	9	7	3

VK WEST — MEDITERRANEAN								
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	10.2	13	7.8	5	-13	-33	...	...
2	9.6	3	7.3	0	-16	-34	...	...
3	12.6	3	10.0	4	-2	-12	-28	...
4	18.5	7	14.2	4	7	4	-3	-13
5	23.6	8	17.9	1	9	10	6	0
6	23.9	8	20.0	-1	8	9	7	1
7	24.0	7	19.8	-2	7	9	6	1
8	24.0	7	19.6	-2	8	9	7	1
9	23.6	8	19.1	0	9	9	6	1
10	22.5	9	18.0	3	10	10	5	-1
11	20.9	10	17.7	10	13	10	4	-4
12	19.2	13	15.2	16	14	9	0	-11
13	17.3	17	13.7	21	15	6	-6	-21
14	15.5	21	12.3	24	13	1	-15	-34
15	14.6	23	11.6	24	10	-3	-22	...
16	13.8	25	11.0	23	7	-8	-29	...
17	13.2	26	10.5	22	4	-12	-35	...
18	12.7	27	10.0	21	2	-16	...	...
19	12.3	27	9.6	19	-1	-20	...	...
20	11.4	28	8.9	15	-7	-28	...	...
21	10.5	29	8.1	10	-15	-39	...	...
22	10.5	29	8.1	10	-15	-39	...	...
23	12.0	28	9.3	19	-1	-20	...	...
24	11.5	23	8.9	14	-5	-24	...	...

VK SOUTH — EUROPE (Long Path)								
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	10.2	-2	7.0	2	-7	-19	-37	...
2	10.0	1	6.9	2	-9	-23	...	...
3	9.8	6	6.9	3	-11	-27	...	...
4	9.5	10	6.7	2	-15	-33	...	...
5	8.9	14	6.5	0	-21	...	...	...
6	9.3	22	6.8	3	-21	...	...	...
7	11.0	23	8.2	12	-7	-26	...	...
8	13.6	22	10.2	20	7	-6	-24	...
9	15.9	19	11.0	23	14	4	-9	-25
10	12.5	15	9.7	13	2	-9	-27	...
11	10.7	7	8.3	6	-4	-17	-37	...
12	12.0	3	8.2	4	-1	-17	-26	...
13	11.3	-4	7.9	1	-3	-11	-26	...
14	10.7	-11	7.4	-1	-3	-11	-25	...
15	10.2	-16	7.2	-1	-3	-11	-24	...
16	9.8	-31	7.0	-9	-10	-18	-32	...
17	9.6	...	6.9	-15	-16	-24	-39	...
18	10.3	-29	7.5	-9	-15	-27	...	...
19	12.2	-13	8.4	-5	-2	-6	-14	-26
20	15.2	-5	11.2	-8	-1	-2	-8	-17
21	14.3	-6	10.0	-6	-1	-3	-11	-21
22	12.3	-8	8.6	-3	-2	-7	-17	-31
23	11.3	-8	7.8	0	-3	-10	-24	...
24	10.5	-6	7.3	1	-5	-15	-31	...

# HAMADS

## TRADE ADS

- **ALIDON FERROMAGNETIC CORES:** For all RF applications. Send business size SASE for data/price to RJ & US Imports, PO Box 431, Kiama NSW 2533 (no enquiries at office please ... 14 Boanyo Ave Kiama). Agencies at: Geoff Wood Electronics, Sydney; Webb Electronics, Albury; Assoc TV Service, Hobart; Truscotts Electronic World, Melbourne.
- **WEATHER FAX programs for IBM XT/ATs \*\*\* "RADFAX2"** \$35-00, is a high resolution short-wave weatherfax, morse and RTTY receiving program. Suitable for CGA, EGA, VGA and Hercules cards (state which). Needs SSB HF radio and RADFAX decoder. \*\*\* "SATFAX" \$45-00, is a NOAA, Meteor and GMS weather satellite picture receiving program. Needs EGA or VGA & WEATHER FAX PC card, + 137 MHz Receiver. \*\*\* "MAXISAT" \$75-00 is similar to SATFAX but needs 2 MB of expanded memory (EMS 36 or 4.0) and 1024 x 768 SVGA card. All programs are on 5.25" or 3.5" disks (state which) plus documentation, add \$3-00 postage. ONLY from M Delahunty, 42 Villiers St, New Farm QLD 4005. Ph (07) 358 2785.

## FOR SALE ACT

- **TS700SP 2 m multi-mode, AC or DC pwr \$490.** Ext VFO to suit \$90. AEA PK232 MBX multimode digital controller with licensed PC-Packratt and PK-FAX software, \$450 ONO. ICOM headset with VOX unit for HTs, \$80. All exc condn. Misc electronic parts, list available. Andrew VK1DA (06) 263 2007 BH (06) 287 1011 AH.

## FOR SALE NSW

- **SIERRA Bi-directional power monitors, 25-250 MHz, 10-500 watts \$90; 144-470 MHz, 1-50 watts \$125.** John VK2ZHM QTHR (02) 417 5338.
- **TRANSCEIVER KWM2 Collins inc PM2 p/supply \$900; DRAKE 2B receiver \$200.** Charles VK2ZR (02) 661 4238.
- **ICOM IC-730 HF transceiver, serial no 03700,** as new condition, never been mobile \$560 ONO. L Smith VK2ELS (02) 875 2958.
- **KENWOOD TM-411A/E 430-440 MHz FM transceiver, hand mic and comms, speaker, serial no 6010494, as brand new and 7 el beam antenna for same, offers please; KENWOOD TS440S, inbuilt auto ATU, mint, minimal use, serial no 9020757 with MC60 desk mic \$1650; ICOM SM5 desk mic, serial no 16730 \$70; KENWOOD TR751A 144-8 MHz all mode fitted with MU-1 for DCL operation and TU7 frequency mode, 5-25 watts output, serial no 7090520, mint \$700; ROTATOR KR400 with cable never used, \$400; YAESU FL2100Z linear amp with manual, vgc, \$900. Lawrie VK2FIF QTHR (066) 28 0418.**

- **COMPUTER Olivetti PCS86 IBM compatible 20 Mb hd 3 1/2"; VGA colour monitor, colour printer, mouse, serial parallel ports all in original cartons, software includes Framework Quicken 4, RB paint, many others, everything as new, \$600. Maurie VK2OW QTHR (02) 627 1434.**

## FOR SALE VIC

- **NEW Amateur equipment for sale, HF 5 element antenna from USA, rotator and 60 meter cable included; 2 METER FM hand held; KENWOOD headphones and squeeze keyer. Ward VK3ETY (03) 384 0802.**
- **COLLINS "S" line equip, 75S3 receiver plus 32S1 transmitter matching 115 V power supply all in e/cond, instr books \$850 lot. Can arrange cheap freight if required. Rob VK3JE (060) 37 1262.**
- **UNUSED Transformers 1x1 kVA, 1x2 kVA each with prim 440 V, sec 100/120 V in 5 taps. OK as 240 V/60 V for PSU. 1x750 VA with 600 V prim, 120/240 V sec. OK as 240 V/600 V for PSU \$90 ea, \$220 the lot; 1xex F-Wheel 24 V DC gen Nr 2, Mk 2 with 1:5 input step up gear. OK for rem water/wind PSU \$55; 1xBandit ALU-Spider for quad \$40. Pick ups only. Hartmut VK3DYD QTHR (03) 555 6714.**

- **COMMANDER 400 rotator controller and masthead units, complete with handbook, good order \$150; DRAKE 2B all band receiver, handbook excellent SWL receiver, 0.5 microvolt sensitivity, passband tuning etc. \$250. A. Crewther VK3SM QTHR (03) 386 4406.**

- **YAESU FT101B HF xcvr, vgc any test \$400.** Ken VK3NJ QTHR (03) 561 4124.

- **YAESU FT757GX HF all mode transceiver vgc original carton mic leads manual \$950 ONO. Kevin VK3ASM QTHR (03) 874 2046.**

- **PHILIPS FM321 435 MHz FM, 80 channel with owners manual \$250; YAESU FT227R 144 MHz, 10 watt mobile, scanning microphone, good condition \$275; YAESU RGM HF whips, 144, 28, 21, 27, gutter mount \$80. Kerry VK3KFC (059) 96 3580.**

- **COMMODORE C64 slimline disk drive, monitor, packet modem, cables, Digicom cartridge and disk, complete HF/VHF packet terminal, \$250 ONO. WYSE 50 RF quiet smart terminal run packet noise free on HF! Modem with separate keyboard Tony VK3TZ QTHR (03) 887 2917**

## FOR SALE QLD

- **ICOM IC475H multi-mode radio s/n 1819 modified for satellite FM data \$1900; ROTATOR Ken pro KR5400 including 40 meters 8 core hd flex \$990; 1200 BAUD bp FSK Gruh modem with box and leads \$150. All mint condition very little use. P Oliveri VK4PO QTHR (07) 843 0505.**

- **TOWER 40" tilt over dismantles to three sections is counter balanced medium duty loads can be guyed (supplied) stainless fittings \$400. David VK4DH (07) 274 2155 BH (07) 378 9868 AH.**

- **ICOM AG1200 M/H pre-amp \$160; IC-2A 2 m H/H s/n 04667 new nicads plus DC-1 \$250; IC-271H 2 m 100 W all mode s/n 03027 mutek plus transverter mod \$950; PCB heatsink system and sundry components for 50 W 1296 MHz amp (4xM57762 not included) \$160. Doug VK4OE QTHR (07) 234 1169 BH (07) 391 5526 AH.**

- **YAESU FT-7 transceiver (solid state, compact, exc mobile rig, complete with UA723 PSU \$425. HYGAIN 18AVT/WB 5 band trap vert in nice condn \$120. SHURE model 450 desk mic with data sheet \$80. WAVEMETER ex-Dept Defence GC \$45. EDDYSTONE 750 receiver GWO with circuit diag, data sheet \$120. DRAKE C-LINE valves (2) 6JB6A \$65. PSU 13.8 V 25 A homebrew with UA723 chip, finned aluminium case, \$100. MULTITESTER Sanwa N-501 (top of the range, 17  $\mu$ A FSD, 10 A AC/DC, etc \$100. FUNCTION GENERATOR Homebrew GWO \$40. YAESU SP-980 external spkr w/filters \$75. WHIP ANTENNAS 80 m w/ad-justable tip \$40, 10 m \$30. VK4SZ QTHR (070) 613 286.**

## FOR SALE SA

- **ICOM xcvr IC-730 in excellent condition \$600. Bill VK5KGG QTHR (08) 339 1427.**

## FOR SALE WA

- **OSCILLOSCOPE Tektronics model 546 with trolley \$400; YAGI 20 m Werner Wulf three element \$160; VOLTMETER HP digital model 3439A \$50. All good condition. M Bosma VK6QI QTHR (09) 525 2114.**

## FOR SALE TAS

- **IC-735 c/w microphone and handbook used by professional operator not fiddled with. \$1250. Vic VK7VK QTHR (002) 57 8471.**

- **3 ELEMENT beam for 6 m \$50; SCALAR 5/8 mobile whip for 2 m with base plus 1/4 whip for 2 m and one ss 1/4 whip for 10 m \$20 the lot. Frank VK7LO QTHR (004) 24 6672.**

## WANTED NSW

- **MULTIMODE synthesizer manual wanted please with schematic will pay cost involved. Ron VK2ERM (075) 24 2940 5-8pm.**
- **MORSE keys, bugs, and paddles also any old books on morse code, pay top dollar for the above. Steve VK2SPS (02) 99 2933 after 6.00 pm.**



**WANTED QLD**

● TUNING CONDENSER 150 pF/4000 V. Also reduction gear to suit (3 reqd). ICOM SM-5 or SM-8 desk mic in GC. ICOM FL30, FL45 filters. CAPACITORS, can or radial, to make 4000 V/50 μF. VK4SZ QTHR (070) 613 286.

**WANTED SA**

● MANUALS or handbooks for restoration project for RF bridge type Hatfield instruments, model LE300A/1 and Universal bridge type Marconi instruments, model TF868/1. All costs reimbursed. Kurt VK5KI QTHR (08) 264 1902.  
● COPY of circuit for the external VFO for FT102 transceiver, FV-102DM and frequency coverage. Will return cost of photocopy and postage. Clarry VK5KL QTHR.

**WANTED WA**

● ANY info on MTU 100 antenna tuner made by PCM Electronics Pty Ltd. Ron VK6FD QTHR (09) 362 1170.

**MISCELLANEOUS**

● URUNGA Radio Convention and Field Day. 46 years continuous this Easter, 2 and 3 April, Senior Citizens Hall, Urunga on the beautiful north coast of NSW. Fox hunts, disposals, trade displays, comfortable lounge room and adjacent unlimited parking.  
● PLEASE SEND your donation of QSL cards, old or new, to the Hon Curator of WIA QSL Collection, 4 Sunrise Hill Road, Montrose Vic 3765, Tel (03) 728 5350. Let us save something for the future. ar

**WIA News**

**New WIA Members**

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of January 1994.

- L20962 MS V BERGMAN
- L20963 MR R N GUBBINS
- L20964 MR F N JOHNSON
- L20965 MR M S KIM
- L30876 MR R WOOLLEY
- VK2ANS MR L ANDREWS
- VK2EO MR G A McGROREY-CLARK
- VK2NLK MR I A MCKINNON
- VK2PPR MR P M REEDMAN
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- VK2TBS MR A SANTOS
- VK2URI MR I SKINNER
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- VK3DF MR R J WHITEHEAD
- VK4SWR MR R G MACKIE
- VK5KBI MR J L WARD
- VK6KAF MR A V FERNIHOUGH

**Editor's Comment**

Continued from page 3

also claim to have passed its century. Hertz, Branly, Preece, Lodge and Marconi were all experimenting with "wireless transmission" in the 1890s. According to the "WIA Book, Vol 1", Marconi transmitted Morse code over one and a half miles in July 1895, but this was obviously the result of several years' development, so experimental radio is probably about the same age as Harry Angel! (As it has been all his life!)

Our organisation, the *Wireless Institute of Australia*, is still a "mere pup" at the age of 84. May we hope for and may all of us strive to achieve its continuing strength through 2010 and into its second century.

**Bill Rice VK3ABP**  
Editor  
ar

**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 per issue 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.  
\*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.

\*WIA policy recommends that Hamads include the serial number of all equipment offered for sale.  
\*Please enclose a self addressed stamped envelope if an acknowledgement is required that the Hamad 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: \$25.00 for four lines, plus \$2.25 per line (or part thereof) Minimum charge — \$25.00 pre-payable.

State: .....


**Not for publication:**       Miscellaneous       For Sale       Wanted

Name:..... Call Sign:..... Address: .....

## 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.

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## CONTRIBUTIONS TO AMATEUR RADIO

Amateur Radio is a forum for WIA members' amateur radio technical experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for possible publication. Articles on computer disk are especially welcome. The WIA cannot assume responsibility for loss or damage to any material. "How to Write for Amateur Radio" was published in the August 1992 issue of AR. A photocopy is available on receipt of a stamped, self addressed envelope.

## BACK ISSUES

Available only until stocks are exhausted. \$4.00 to members, which includes postage within Australia.

## PHOTOSTAT COPIES

When back issues are no longer available, photocopies of articles are available to members at \$2.50 each (plus \$2.00 for each additional issue in which the article appears).

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.

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Fill out the following form and send to:

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Wireless Institute of Australia  
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Caulfield South, Vic 3162

I wish to obtain further information about the WIA.

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Call Sign (if applicable):.....

Address:.....

State and Postcode:.....

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The official list of VK QSL Bureaux. All are Inwards and Outwards unless otherwise stated.

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VK3	40G Victory Boulevard, Ashburton VIC 3147
VK4	GPO Box 638 Brisbane Qld 4001
VK5	PO Box 10092 Gouger Street Adelaide SA 5000
VK6	GPO Box F319 Perth WA 6001
VK7	GPO Box 371D Hobart Tas 7001
VK8	C/o H G Andersson VK8HA Box 619 Humpty Doo NT 0836
VK9/VK0	C/o Neil Penfold VK6NE 2 Moss Court Kingsley WA 6026

# WIA Divisional Bookshops

The following items are available from your Division's Bookshop  
(see the WIA Division Directory on page 3 for the address of your Division)

	Ref	List Price		Ref	List Price
<b>ANTENNAS</b>			<b>OPERATING</b>		
Ant. Compendium Vol 2 Software 5.25" IBM Disk	BR293	\$22.00	Amateur Radio Awards Book — RSGB	BR297	\$30.00
Ant. Compendium Vol 3 1st Ed 1992	BR455	\$37.00	Amateur Techniques — G3VA — RSGB	BR393	\$30.00
Antenna Compendium Vol 2 — ARRL	BR292	\$32.00	DXCC Companion — How to Work Your First 100	BR345	\$16.00
Antenna Impedance Matching — ARRL	BR257	\$52.00	DXCC Country Listing — ARRL	BR388	\$5.00
Antenna Note Book W1FB — ARRL	BR179	\$28.00	FCC Rule Book — A Guide to the FCC Regulations	BR379	\$24.00
Antenna Pattern Worksheets Pkt of 10	BR902	\$3.00	Locator Map of Europe — RSGB	BR398	\$8.00
Cubical Quad Antennas— Hawaiian — 1993	BR041	\$37.50	Log Book — ARRL — 9" x 11" Wire Bound	BR202	\$9.00
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HF Antennas for all Locations — Mexico — 2nd Edition	BR188	\$45.00	Passport to World Band Radio	BR346	\$45.00
HF Antennas for all Locations — RSGB — 1993	BR088	\$45.00	Prefix Map of the World — RSGB (laminated)	BR397	\$25.00
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			WIA Novice Study Guide		\$1.50
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IC-R7100



IC-R100



IC-R72



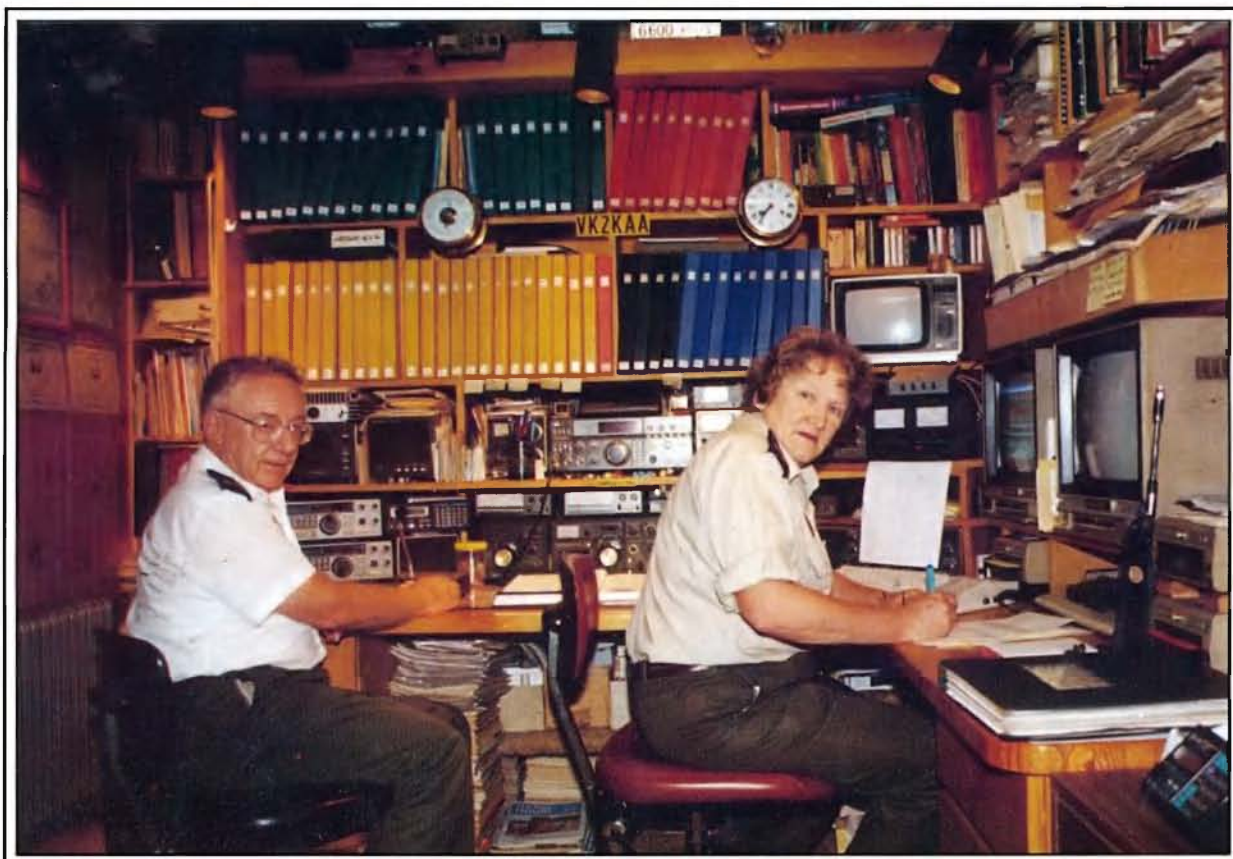
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# RADIO AMATEUR

APRIL 1994  
Volume 62 No 4



Journal of the Wireless Institute of Australia



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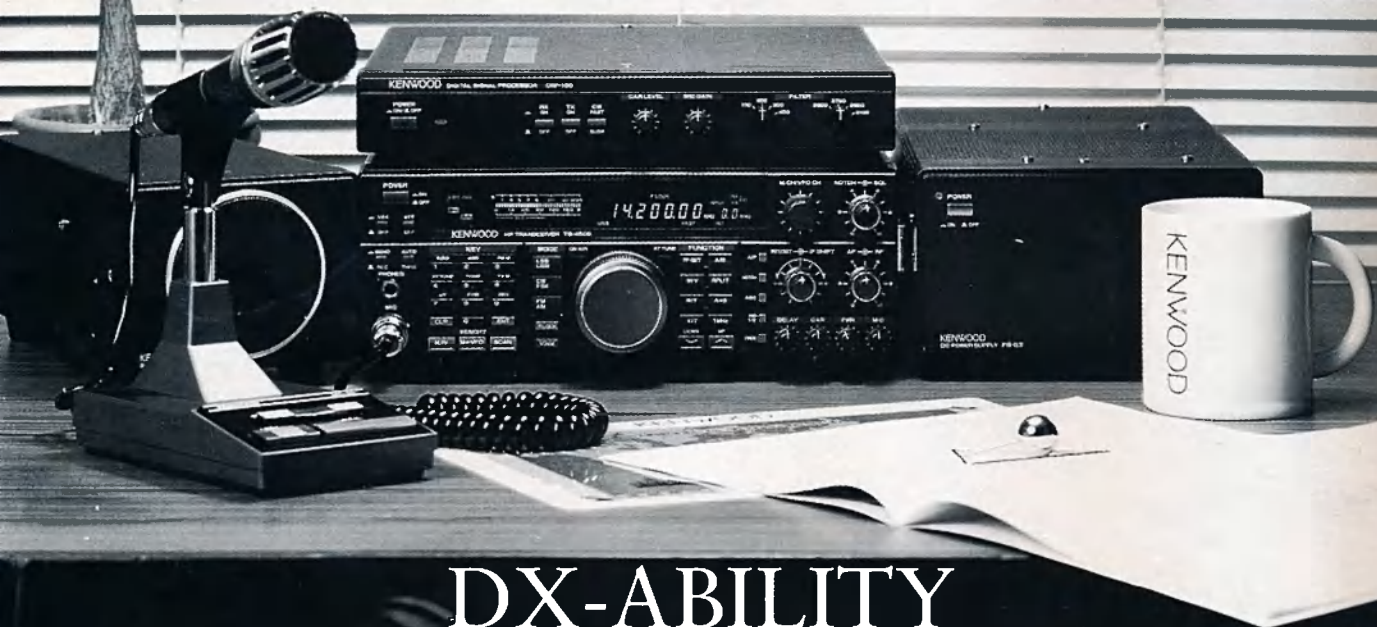
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*Amateur Radio* is published by the Wireless Institute of Australia, ACN 004 920 745 as its Official Journal, on the last Friday of each month.

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**Deadlines** Editorial Hamads

May 11/04/94 13/04/94

June 09/05/94 11/05/94

July 06/06/94 08/06/94

Delivery of AR: If this magazine is not received by the 15th of the month of issue, and you are a financial member of the WIA, please check with the Post Office before contacting the registered office of the WIA. ©

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### Cover

Barry White VK2AAB and Jo Harris VK2KAA hard at work during the NSW fires. Administrative and personnel control for WICEN was conducted here in the shack of Jo Harris for 24 hours a day during the fires. See the article about the fires on page 4 of this issue.

# Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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The world's first and oldest National Radio Society Founded 1910

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Member of the International Amateur Radio Union

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# Federal QSP

## Annual Reports

In this issue you will see some of the annual reports that will be considered at the Annual Federal Convention of the WIA which will be held at the end of this month. For myself this was my first report as Federal President, and also the last. When I stood for election to the position of Federal President at the last convention, it was with the intention of making myself available for election for a minimum of two years. Unfortunately, increasing commitments on my time, both business and private, have meant that it has become increasingly difficult for me to devote the time which the position requires if it is to be done properly. I have therefore notified the Federal Council that I will not be standing for re-election at this Annual Convention. I hope to be able to continue to serve the WIA in some other less demanding role. Whether this will be my last column depends on the deadlines for the next edition.

One pleasing event in the last month has been the resumption of meetings with the regulatory authorities, now in the form of the Spectrum Management Agency. The SMA was established last year and took over many of the functions of the old Department of Transport and Communications. Unfortunately, the birth of a new agency and the activity which it generated put most amateur matters well into the background. With things now settling back into a more normal rhythm at the SMA, meetings have been resumed and the SMA is keen to address some of the many matters which have been outstanding over an extended period, among them the new amateur licence conditions. It is hoped that we can start a semi-regular column in the near future to inform the membership of what issues are being discussed with the SMA and the outcomes which we are achieving. With any luck, the first instalment will appear in a couple of months.

Also of interest with the SMA at the moment is the Apparatus Licence Inquiry to which I referred in my last column. At its February quarterly meeting, the Federal Council considered the issues raised in the SMA discussion paper and, with input from FTAC, is preparing a paper for input to the inquiry. Preparation of the paper is being undertaken as I write this column and, despite the tight deadline, will be ready for submission to the inquiry by the deadline of mid March. This is one of those activities of the WIA at Federal level which often goes unnoticed by many, requires a significant amount of time and effort by quite a few people, but which is necessary to ensure the survival of our hobby.

Like the submission to the inquiry, much of the work undertaken by the WIA at the national and international level goes unmarked by many amateurs. It is surprising how much time and effort is expended by WIA members on a voluntary basis to ensure that the amateur side of issues is not forgotten



in the deliberations of bodies such as Standards Australia and the many committees and consultative groups which ultimately provide Australia's position at international meetings of the various components of the ITU. At this time, as the Annual Convention approaches, it is worthwhile giving thought to the many hours of work on your behalf which are finally distilled into the reports you read in this issue and which will be considered by the Federal Council at the Convention. We should all be proud of our many volunteers and the work they do on our behalf. If not for them, amateur radio would not be the fine hobby it is today.

**Kevin Olds VK1OK**  
Federal President  
ar

## Editor's Comment

### Ancient History?

In last month's Comment I made reference to the electrical and radio pioneers, Hertz, Branly, Preece, Lodge and Marconi. This produced varied responses from people in the office, some of whom had only heard of Hertz and Marconi, so it seemed worthwhile to provide a little more information about some of the early experimenters. Another response was from a reader with information

about one of Australia's earliest communication pioneers (of whom more in a later issue).

At this stage, what could be more appropriate than for a book on the earliest radio pioneers to arrive on my desk for review? At times one is forced to admit that there must be something in serendipity! Again, in a later issue there will be more to say about this fascinating book, but in the meantime it was a convenient source of information about all those who preceded Marconi.

To elaborate: Edouard Branly was a Frenchman who discovered in 1892 the principle of the coherer, an early radio wave detector using metallic particles. Lodge (1851 — 1940), who became Sir Oliver Lodge in 1902, was both an academic and experimenter,  
Continued page 55

## 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	Call Signs	Weekly News Broadcasts	1994 Fees
VK1	ACT Division GPO Box 600 Canberra ACT 2601 Phone (06) 247 7006	President Rob Apathy Secretary Len Jones Treasurer Don Hume	VK1KRA VK1NLI VK1DH	3.570 MHz LSB, 146.950 MHz FM, 438.525 MHz FM each Monday evening (except the fourth Monday) commencing at 8.00 pm.	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK2	NSW Division 109 Wigram Street Parramatta NSW (PO Box 1066 Parramatta 2124) Phone (02) 689 2417 Fax (02) 633 1525	President Terry Ryeland Secretary/ Treasurer Roger Harrison (Office hours Mon-Fri 11.00-14.00 Wed 1900-2100)	VK2UX VK2ZRH	From VK2WI 1.845, 3.595, 7.146*, 10.125, 24.950, 28.320, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 (*morning only) with relays to some of 14.160, 18.120, 21.170, 584.750 ATV sound. Many country regions relay via a local 2 metre repeater. Sunday 1000 and 1915. Highlights included in VK2AWX Newcastle Monday 1930 on 3.593 plus 10mx, 2mx, 70cm, 23cm. News headlines by phone (02) 552 5188. Some broadcast text can be found on the Packet network.	(F) \$66.75 (G) (S) \$53.40 (X) \$38.75
VK3	Victorian Division 40G Victory Boulevard Ashburton Vic 3147 Phone (03) 885 9261	President Jim Linton Secretary Barry Wilton Treasurer Rob Hailey Office hours Tue & Thur 0830-1530	VK3PC VK3XV VK3XLZ	1.840MHz AM, 3.615SSB, 7.085SSB, 53.900FM(R) Mt Dandenong, 146.700 FM(R) Mt Dandenong, 146.800 FM(R) Mildura, 146.900 FM(R) Swan Hill, 147.225 FM(R) Mt Baw Baw, 147.250 FM(R) Mt Macedon, 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday.	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK4	Queensland Division GPO Box 638 Brisbane QLD 4001 Phone (07) 284 9075	President Ross Marren Secretary Lance Bickford Treasurer David Travis	VK4AMJ VK4ZAZ VK4ATR	1.825, 3.605, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, 28.400 MHz. 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday. Repeated on 3.605 & 147.150 MHz, 1930 Monday	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK5	South Australian Division 34 West Thebarton Road Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Bob Allan Secretary Maurie Hooper Treasurer Bill Wardrop	VK5BJA VK5EA VK5AWM	1820 kHz 3.550 MHz, 7.095, 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 34 579.000 Adelaide, ATV 444.250 Mid North Barossa Valley 146.825, 438.425 (NT) 3.555m 146.5000, 0900 hrs Sunday	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK6	West Australian Division PO Box 10 West Perth WA 6872 Phone (09) 388 3888	President Cliff Bastin Secretary Ray Spargo Treasurer Bruce Hedland-Thomas	VK6LZ VK6RR 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 3.582, 147.350(F) Busselton 146.900(F) Mt William (Bunbury) 147.225(F), 147.250(F) Mt Saddleback 146.725(F) Albany 146.825(F) Mt Barker broadcast repeated on 146.700 at 1900 hrs.	(F) \$60.75 (G) (S) \$48.60 (X) \$32.75
VK7	Tasmanian Division 148 Derwent Avenue Lindisfarne TAS 7015 Phone (002) 43 8435	President Andrew Dixon Secretary Ted Beard Treasurer Peter King	VK7GL VK7EB 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, 144.150 (Hobart) Repeated Tues 3.590 at 1930 hrs	(F) \$69.00 (G) (S) \$55.65 (X) \$40.00
VK8	(Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).			Membership Grades Full (F) Pension (G) Needy (G) Student (S) Non receipt of AR (X)	Three-year membership available to (F) (G) (X) grades at fee x 3 times.

Note: All times are local. All frequencies MHz.

# WICEN Activated for the Sydney & Central Coast Bush Fires

Dr Tony Farrow VK2TJF\*

Tony was asked by WICEN to write about the WICEN involvement in the recent disastrous bushfires. Tony stresses that this is not an official report, but has been written from his own personal perspective during the emergency.

Tony, who is 48 and married with three children (and a cat), lectures in physics at Macquarie University in Sydney and also carries out research in muscle biophysics. He has been an amateur for three years and is currently involved in setting up a packet wormhole (amateur packet radio/Internet gateway) at the university.

Tony served as specialist consultant in physics and electronics for the second edition of the Macquarie Dictionary.

Here are a few personal recollections of a hectic week shared with members of Sydney North WICEN. I haven't attempted to document all WICEN's activities during this time, but only those I observed myself, so apologies to all those who did a great job but don't get a mention here. During the week following Friday 7 January over 100 WICEN operators were active on the North Shore and Gosford working on ham bands as well as on the SES frequencies and the air band.

I had been meaning to join WICEN for some time but like many of us I kept putting it off. So for some others and myself, who lent a hand during the fires, the six days from Saturday 8 January involved a fair bit of on-the-job training. For me it began on Friday the 7th when I left the Macquarie University campus with my wife Ros for dinner with friends in Turrumurra. We noticed 30 m high flames 100 m away at the edge of the campus moving fast in an easterly

direction down the Lane Cove National Park, and watched a helicopter dropping water scooped from the university lake. People were running from flats and commercial buildings, and luckily only two flats were damaged.

We must have been amongst the last to leave the area before the police closed the local streets. We drove down Lady Game Drive to Killara, and later learned that a firestorm had crossed the Ryde Road behind us some little time later and several houses in West Killara were lost. The following day I responded to a request on the Hornsby 2 m repeater for radio operators to help in what was becoming a rather serious-looking emergency.

For WICEN it began earlier on Wednesday 6 Jan when the state of the fires in the Central Coast area led to Central Coast WICEN requesting Sydney North WICEN to provide some operators on stand-by for duty in the Central Coast area. The next day two Sydney North operators were called in to man the Hornsby bushfire control.

The situation really warmed up at midday on Friday the 7th when WICEN was officially activated. The duty officer at the Sydney Northern HQ of the State Emergency Service (SES) informed Barry White VK2AAB of WICEN Sydney North that some of the SES UHF repeaters in the Central Coast area were out of action. WICEN was requested to provide a comms link between SES Sydney Northern HQ at Hornsby and the SES HQ at Erina near Gosford. Within a very short time this was provided via the Gosford VK2RAG 2 m repeater.

Central Coast WICEN was also asked to provide radio links between the SES at Erina and its mobile rescue units. This required a WICEN operator to travel on each of their vehicles; 2 m HTs were used and the links made through VK2RAG. These improved communications enabled more effective support for firefighting work, supply movement, road blocks and evacuations. Frequencies used were 2 m and 70 cm as well as the SES and air band frequencies.

Ian Rosser VK2XB, a well known local trucky, was drafted as an air-traffic-controller for a helipad, using air band frequencies. He had something like 18 helicopters using his base with many of them in a very small local air space at any one time, often with poor visibility because of the smoke. Now that really is on-the-job training! Well done Ian.

Yours truly spent some time at the SES HQ at Hornsby passing



Waiting for an SES vehicle to collect equipment and personnel. Left to right are David Ramsay VK2KLX and his boat, Jim Daly VK2XTN and Roger Henley VK2ZIG sitting on an SES portable repeater.

messages between the SES controller for Sydney North and their personnel in the Central Coast area. Other sessions were spent at the local SES HQ at Ku-ring-gai standing in for tired SES operators and using the SES bands to pass messages between the SES controllers and their rescue vehicles.

We used 2 m as a link to SES HQ at Hornsby, and to WICEN's Personnel Officer Jo Harris VK2KAA, who spent many sleepless hours organising a continuous supply of amateur operators on rotating shifts. The SES HQ at Hornsby commands a district stretching from Sydney harbour to just north of Gosford, and was involved in monitoring the serious fires in Gosford, Lane Cove Park and Ku-ring-gai Chase. These very worrying fires threatened many suburbs, and although the result was a tragedy for those who were touched by them it could have been far worse but for the hard work, dedication and training of the many firefighters who came to our aid.

Sat 8th and Sun 9th were very busy



**Ku-ring-gai SES Communications Room. Left to right, standing, are Barry White VK2AAB (Chairman District Emergency Management Organisation Communications committee, and past Sydney North WICEN Region Coordinator), Rex Willard (SES Ku-ring-gai Deputy Controller), and Allan Hedges (SES Ku-ring-gal Operations Officer. Left to right, sitting, are David Ramsay VK2KLX (Sydney North WICEN Region Coordinator) and Jo Harris VK2KAA (Sydney North WICEN Ku-ring-gal Local Coordinator).**

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days. The fires burning at Gosford and Ku-ring-gai Chase were causing concern. The freeway to Gosford was closed by fires. Fierce fires crossed Mona Vale Road, linking St Ives to the coast, damaging both power and telephone lines. Young volunteers from the Seventh Day Adventist Church were compiling a data base of evacuation accommodation in case they were needed.

On many occasions people were evacuated from streets close to the anticipated path of the fire, but the feared large-scale evacuations were fortunately not necessary. At St Ives fires moved around the Showground several times, and the lovely wild-flower gardens were damaged. By Saturday forward commands had been established at Lofberg Oval in West Pymble and on the Village green at St Ives, so the fire brigade and SES controllers could be close to the firegrounds in the Lane Cove National Park and Ku-ring-gai Chase respectively.

The SES radios at these locations were manned by WICEN personnel. Everybody was amazed at the ferocity of some of the fires. Their direction changed as they raced into the many steep gullies that typify the North Sydney terrain, driven by strong winds and by their own heat. Fires crossed the Mona Vale Road destroying overhead cables and the road was closed several times to traffic.

At midday on Saturday the SES asked WICEN to get two portable UHF repeaters and some WICEN personnel into Gosford. A vehicle convoy set out on the freeway but turned back because of fires at the Hawkesbury River bridge. The Central Coast was completely cut-off by road. It was decided to attempt to get to Gosford by water, so David Ramsay VK2KLX, Regional Coordinator WICEN North, organised a group, colourfully designated Strike Force 1, to travel by road to Brooklyn on the Northern Shores of the Hawkesbury River, where they launched David's 6.4 m runabout.

Kevin Blume VK2BJK, Graham Sommer VK2DWL, Julian Sortland VK2YJS and three SES personnel stayed at Brooklyn with the intention of setting up an HF comms base

using the amateur bands. When loaded up with David, his crewman Brian Birrell VK2KTQ, and volunteers for the Central Coast, Mike Conradi VK2ETM, Roger Henley VK2ZIG, Jim Daley VK2XTN and Dave Horsfall VK2KFU, the 175 HP outboard pushed the boat at only half its normal top speed over the 20 km run to Gosford. The wind and choppy sea required the moveable ballast skills of Jim VK2XTN, who was selected for this duty by his large aptitude for the work.

After unloading the human and inhuman cargo at Gosford, David and Jim returned to Brooklyn only to find it surrounded by fire. Meanwhile the Brooklyn comms team had fallen back from the boat ramp at Parsley Bay onto the waterside at the township with most of the townsfolk (that is after the police had closed the pub!).

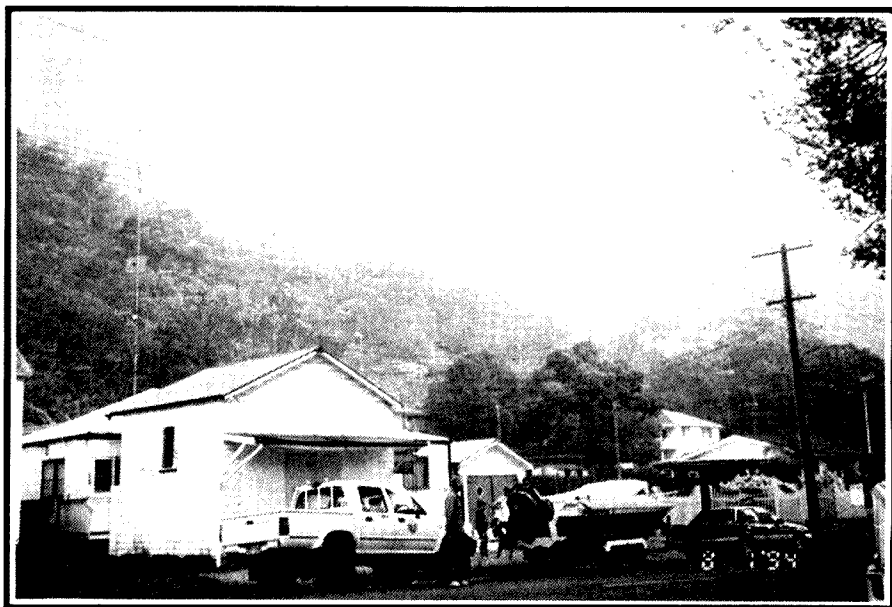
It was quite alarming for me at Hornsby HQ to hear the Brooklyn comms team describe a fire storm passing over a cliff near them, but I believe it was somewhat more alarming for them. David took his boat off shore again until the fires had passed. A fast ferry from Sydney harbour was sent to take out some of the townsfolk, whilst many fire tankers were clearing a way into town, and

eventually those who had stayed in town were escorted out in a road convoy.

Another volunteer, Garry Barker VK2TSR, was also rather interested in these proceedings and called VK2WIX, WICEN at Hornsby, from home on 2 m. He was due to collect his wife and family who were to arrive at Brooklyn on their cruiser after a two week holiday on the river. We advised that it might not be a good idea for her to call in at Brooklyn at that exact moment, but perhaps she should extend her cruise and find a smoke-free spot on the Hawkesbury to wait out the fires.

On Sunday the SES asked WICEN to provide intelligence on where the main fires were moving. They had been impressed by the information we had casually provided for them up to that time, gleaned by listening to the other services' emergency channels on our HT's. They needed up to date information so they could anticipate where their resources would be required.

From that point on one of us monitored the emergency service channels with a scanner, and plotted the progress of the fires on a situation map. Despite some difficulties with communications from time to time the emergency services showed that they



**Brooklyn on the Hawkesbury River. The only way out is cut by the fires. Just after this photo was taken, the fire came down the hill to the back of the buildings and people were evacuated to Parsley Bay (the end of the road!). The car and boat belonged to David Ramsay VK2KLX. WICEN helper Brian Birrell VK2KTQ is standing alongside Roger VK2ZIG's vehicle — Roger was at Erlina (Gosford) at the time.**

were well trained and organised, and just got on with the job at the local level. I will never forget the looks on the faces of some of the youngsters after long hours at the firegrounds; they reminded me of those old photos of WW I troops returning from the trenches. I met many wonderful people, both in the emergency services and members of the public who offered food, accommodation and their help when required. It was an example of the highest form of

human cooperation, and raises one's faith in human nature.

I heard more than one WICEN member look back on their training with some thanks. So I guess those exercises where WICEN keeps tabs on the Sydney-to-Surf Fun Run or on a bike ride are not so silly. I can see how they could hone one's operating style and accuracy in passing information, quite different from a rag-chew, as I learned the hard way.

Well, if you have been thinking of

joining WICEN but, like me, just kept putting it off then do seriously consider joining up. Thanks must go to David Ramsay VK2KLX, Jo Harris VK2KAA and Barry White VK2AAB for doing such a great job of organising the WICEN response in my area. I do apologise to those people I haven't mentioned who also did a great job, but whom I didn't get to meet.

*\*12A Clarke Place Castle Hill NSW 2154*

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## WIA News

### 1994 Wilkinson Award

Eddie Penikis VK1VP is this year's recipient of the distinguished Ron Wilkinson Achievement Award.

Given for "special achievement in any facet of amateur radio", the Award honours the memory and achievements in amateur radio of the late Ron Wilkinson VK3AKC.

Eddie has been designing, building, modifying, experimenting with and operating equipment on VHF and UHF since the late 1950s.

Eddie's successful work has established many significant distance records. He has pioneered both modes and propagation paths that are now taken for granted.

Much of the current interest in VHF and UHF owes its origins to the ground-breaking experimentation carried out by Eddie, both "in the field" and through his resolute dedication to the somewhat non-glamorous world of VHF-UHF work.

His consistent participation in field day operation made Eddie synonymous with Mount Ginini, Mount Franklin and numerous other promising sites which he exhaustively investigated. Eddie's meticulously prepared VHF-UHF portable station operations enabled numerous stations in Victoria, South Australia and often further afield, to make their first significant VHF or UHF DX contact.

Some of these first contacts cultured the interest and

fascination which subsequently led various amateurs to become attracted toward serious VHF experimentation, assisted and encouraged by Eddie's advice and leadership. Many of these amateurs, encouraged by Eddie's first contact with them, are the substantial backbone of the currently strong VHF-UHF scene.

His tenacity and thorough technical preparedness have, for example, taken 1296 MHz from relative obscurity as a band to another band which may be reliably used on a regular basis on paths up and down the East coast over distances of up to 1000 km.

The role of Eddie's well-equipped station has been of vital importance in maintaining the enthusiasm and perseverance vital to such long term projects as 1296 MHz experimentation. He maintains a reliable "frame of reference" in a field so devoid of experienced and dependable frames of reference.

For those hoping in some way to follow in his footsteps, his clockwork reliability to appear during field contests and work various field stations reliably throughout all bands, regularly into the early morning hours, and once again from dawn, demonstrates his continued awareness of the vital requirements to maintain activity in the VHF-UHF sphere.

Despite his numerous technical accomplishments and outstanding track record, little is heard of his pursuits.

"Apart from those of us who are first-hand observers and colleagues," said Chris Davis VK1DO, Ian Cowan VK1BG and Dick Elliott VK1KRE, who nominated Eddie for the Award, "there is unlikely to be an immediate appreciation of his talent and dedication.

"The depth of his understanding and experience definitely matches the very best in the field with his example to others being one of quite enviable competence."

The role Eddie has played at local, Divisional and Federal level has never wavered in his awareness of the long term and the bigger picture, developing the framework for culturing and maintaining the delicate foundation of VHF and UHF communications in terms of band planning, beacons, the role of satellites and so forth.

Eddie has never forgotten what it is like to be an experimenter. He consistently demonstrates this with his attention to technical excellence and an awareness of the need to support others who are treading the same path that he has obviously been down.

This is the second year in succession a VHF-UHF experimenter/operator has won the prestigious Wilkinson Award. Ron Wilkinson was, himself, a VHF-UHF pioneer and experimenter, also being one of Australia's earliest moonbounce (EME) enthusiasts and 1296 MHz operators.

# Tuned Feeders and Multiband Antennas

J H Gazard VK5JG\*

A radio signal is generated by a standing wave current flowing along the wire in an antenna. This current changes at a sinusoidal rate and the value  $I$  in a half wave antenna is shown by curve  $I$  in Fig 1. The voltage is shown by curve  $E$ . The impedance at any point is  $E/I$  and is shown by curve  $Z$ . Its value varies from about 70 ohms at the centre to around 3000 ohms at the ends.

The current to excite this standing wave can be fed into the antenna at any point along the wire and the usual way is by a two wire transmission line — a feeder. If the characteristic impedance of the feeder matches the impedance of the wave at the feed point the whole of the feeder current flows into the antenna and all the input power is radiated. If the impedance does not match, a proportion of the current, depending upon the degree of mismatch is reflected back into the feeder and this, together with the forward current, sets up a standing wave in the feeder and reduced power is radiated.

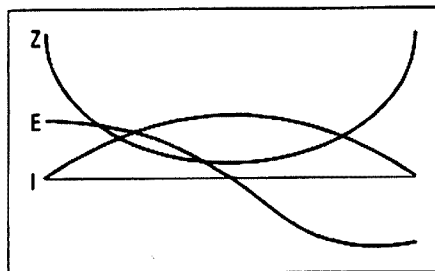


Fig. 1

The standing wave in the feeder is similar to the standing wave in the antenna in that it has high impedance points a half wave apart and midway between these points the impedance falls to a minimum. Thus, somewhere along the feeder, any particular value of impedance can be found and the standing wave in the feeder can be moved up the feeder to make a

selected value come to the antenna feed point to match the impedance of the antenna standing wave. When this is done, although reflections still occur, most of the power is eventually fed into the antenna and radiated.

In the example shown in Fig 2 a low impedance point in the feeder has been brought up to the low impedance point in the antenna to make a match. This has been brought about by using a matching device at the feeder input to adjust the impedance at the input to the value  $a...a$  shown in Fig 2. The matching device, usually known as an antenna tuning unit (ATU), transforms the impedance of the transmitter output to the required impedance at the feeder input —  $a...a$  in this case.

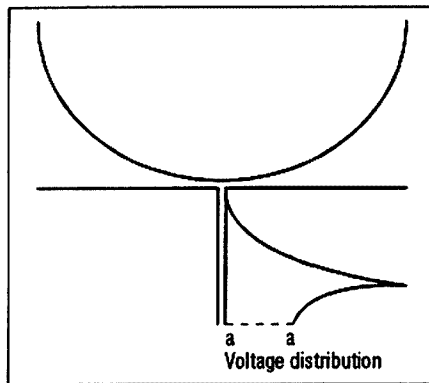


Fig. 2

When tuned feeders are used, the antenna need not be just a half wave long. It can have any length providing that the total length of the antenna plus that of each feeder wire is equal to, or greater than, a half wave at the frequency in use. For example, Fig 3 shows the impedance curves drawn for an antenna 2.6 half waves long with the standing wave impedance of the feeder matched to the standing wave impedance of the antenna at the mid point. The standing wave in the antenna will then move down the

feeder as shown and to bring this about the input impedance of the ATU must have the value  $b...b$  shown in Fig 3.

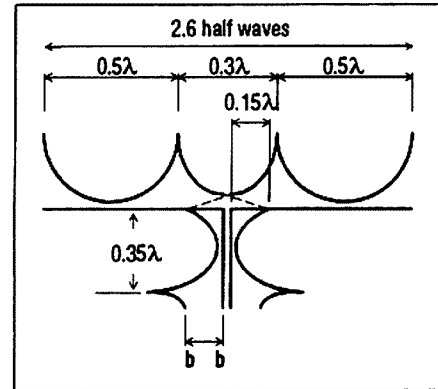


Fig. 3

One type of ATU is shown in Fig 4. This type is the simplest and is easiest to understand and tune. The capacitor tunes the coil to resonance but the match is made by the ratio of the turns on the input coil to the turns between the feeder taps.

If, for example, a 50 ohm transmitter output is to be transformed to a 1000 ohm feeder input the impedance ratio will be  $1000/50 = 20$  and the turns ratio will be the square root of 20, say 4.5, so that if this ATU input coil has 3 turns, the turns between the taps will be around 14.

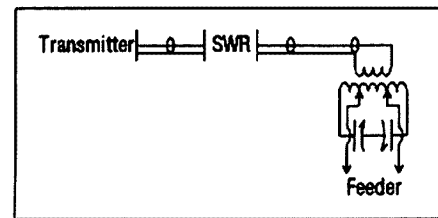
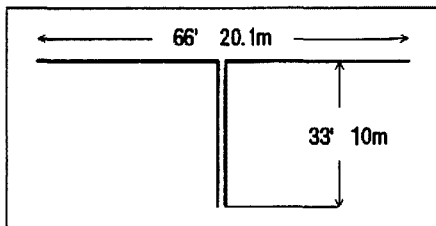


Fig. 4

The above gives a general idea of how a tuned feeder is matched to any antenna and as an example I will describe the setting up of a multiband antenna which I use. The dimensions of this antenna are shown in Fig 5. These dimensions will allow the antenna to fit into most back yards and let the number of ATU taps be reduced because one tap, at the coil ends, will match the 3.5, 7 and 14 MHz bands. For feeders I used 7/029 wire (because it was available) spaced 51 mm. The ATU used a



**Fig. 5**

1930s type broadcast receiver capacitor as the split stator unit. The coil was wound with 16 swg bare copper wire. A length of 2.4 metres was cut off and one end was gripped in the bench vice. The wire was straightened and cleaned with fine sand paper and the free end was hooked into a 2 mm hole drilled in a short length of 3/4 inch water pipe and under maximum tension the coil was close wound walking up to the vice. The coil was removed and light tension was applied between the coil ends until the air space between the turns was 1.5 mm and while the tension was maintained three strips of insulating material approximately 5 mm by 2 mm were glued along the coil with Araldite. A 3 turn input coil was laid over the coil centre but not glued at this time. The coil ends were soldered to the capacitor fixed plate terminals.

To test for the tap points on the coil two wedges were cut from 6 mm square brass rod. They were 25 mm long by 6 mm wide and tapered from a knife edge to 3 mm over the length. Short flexible leads were soldered to the wide ends of the wedges to join them to the feeder ends. One side of the wedges was coated with Araldite so that when they were inserted between the coil turns they made contact with one turn only.

To match the ATU to the feeders it was connected to the transceiver and with the transceiver on receive the taps were inserted across the coil and the dial swung until a noise maximum was heard. A switch was then made to CW transmit and the key held down while making an adjustment for best SWR.

The first setup was made on the 3.5 MHz band and the coil was trimmed so that the band tuned on maximum capacity. When the feeders were connected it was found that, on this band only, the capacity between the

feeders added to the tuner capacity and the number of coil turns could be further reduced to 19. This increased the range of the tuner at the high frequency end and the unit was later just able to tune to 28 MHz.

The input coil was then glued into place on the centre of the main coil and the setting of the taps proceeded as follows:

Band	Turns between taps	SWR
3.5, 7, 14, MHz	19	better than 1.05
10 MHz	5	better than 1.05
21 MHz	8	better than 1.05
24 MHz	3	better than 1.05
18 MHz	used tap for 10 MHz	15
28 MHz	used tap for 21 MHz	1.5

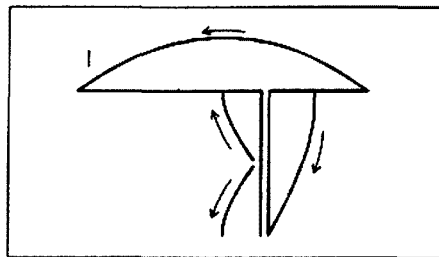
Permanent connection to the taps was made by soldering leads to the appropriate turn on the coil and taking the leads to banana sockets on the front panel for connection of the feeders. When soldering leads to the coil, adjacent turns were covered with aluminium foil so the solder could only adhere to the chosen turn.

After making this all-band HF antenna I tried the effect of feeding the antenna off centre and set up a similar antenna but with the feeder connected 11 ft from the centre. The results obtained for loading and SWR were the same as for the previous antenna except that the tapping points were different.

If the standing wave current curves for the off-centre fed antenna are drawn it will be seen that the feeder currents are unbalanced (Fig 6) and therefore the feeder will radiate.

A further test was made with the same antenna end-fed and again the antenna loaded fully with SWR close to 1:1 on all bands. The feeder

currents would be balanced on 3.5 MHz and its harmonic bands but would be unbalanced on the WARC bands.



**Fig. 6**

The unbalance of the feeder currents causes the feeder to radiate. This would affect the radiation pattern but by how much I do not know.

As a result of studying the operation of tuned feeders and making these and other tests my ideas of tuned feeders have changed and I have become aware of some facts that I have never seen in handbooks. These facts are that if the length of antenna plus the length of each feeder wire is greater than a half-wavelength at the frequency concerned almost any combination of antenna length, feeder length, and feed point will function as a workable antenna. For example, I have an antenna used for 21 MHz which has a 22 ft vertical aluminium tube set up on the top of a 30 ft pole and fed by a 24 ft tuned feeder and I have found that it will fully load on 7 MHz and all higher frequencies.

\*2 Corbin Road, Medindie Gardens SA 5081

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# Hobbyfest 93 — A Win For Amateur Radio

*Julie Kentwell VK2XBR\* tells the story of amateur radio at Hobbyfest 93*

Most people in this the so-called "Clever Country" have never heard of the hobby of amateur radio. The Gosford Field Day with its crowd of typically 2000 is merely an in-house event attracting no interest outside the hobby.

It is generally realised that people show more intelligence in connection with their chosen hobby or recreation than they exhibit in any other field of endeavour. This is quite logical; after all, what they do outside keeping the wolf from the door is normally the activity for which, overall, they are best suited. Many more people than do so now would embrace and enjoy amateur radio if it wasn't for the simple fact that they don't know it exists.

The Federated Leisure Activities Group is an organisation which, since February 1986, has sought to protect people in their non-sport recreational areas against the ravages of Government and bureaucratic excesses as well as endeavour to promote and publicise these non-sport activities; apparently with ever-increasing success. Such a success, and a major one at that, was the Hobbyfest 93 held over the October long weekend at Sydney's Eastern Creek Raceway. Here, any and all who had a hobby or recreation to display were invited to do so and yes, this included amateur radio; who else but the WIA could best represent our hobby?

When the ABC held their 60th Anniversary at Parramatta Park on Sunday, 1 November 1992 the WIA NSW Division was there with a display. A surprise was in store when, by arrangement, one operator had a CW contact with his friend. The view was that "this'll bore the pants off 'em, thank goodness it won't last long!"

How wrong can you be!

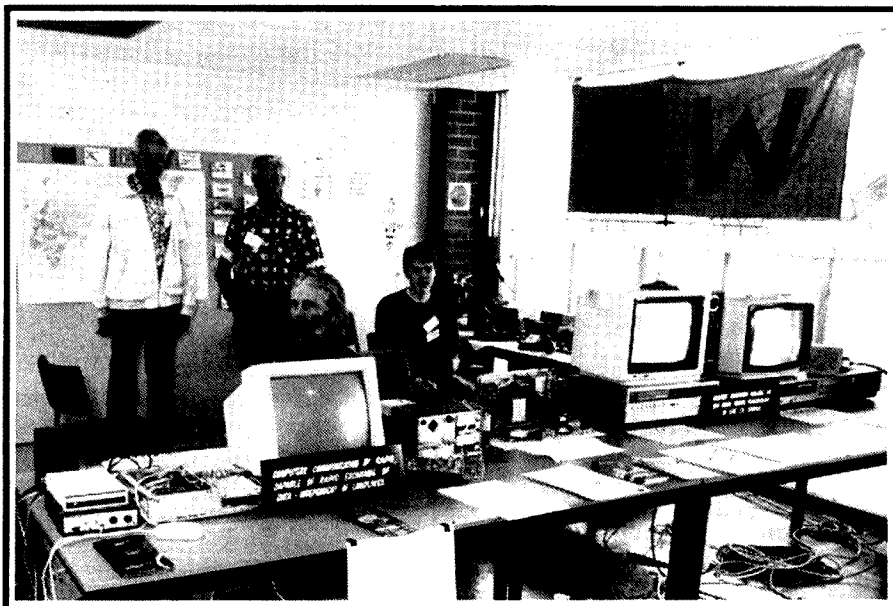
When the melodious sounds of CW floated forth from an external speaker, people came from all directions to look. Children with their noses flat against the glass, women with their families, all kinds of people, wanted to watch the "Magic of Morse". The point was taken. The big drawcards, as far as the populace at large was concerned, were amateur TV and "goode olde CW". Consequently, when the NSW Division's display at Hobbyfest 93 was planned, it included feature roles for these modes and, for the computer buffs, the ubiquitous packet radio.

Setting up the display occupied about seven hours of the Friday and about three hours of the Saturday morning. Much of the NSW Division's furniture was pilfered and carted away, as was the HF gear from the VK2AWI Parramatta station. The display took advantage of its position including a large window-wall, the HF

section of proceedings being set up to face out through the windows at passers-by and hopefully entice them inside. In this regard the amateur radio display differed from all others in that no other display used the huge windows at all. A large flag aloft proclaimed "Amateur Radio" to all and sundry while an even larger banner extolled the WIA's virtue to the world. Again, no other displays carried such banners.

Upon entering the chamber in which the display was housed, on one's right were two colour TV sets and a computer monitor amidst home-made television transmitters, power supply and a strange-looking packet BBS with covers missing and the overall impression of its "jam-and-onion filling" falling out. This masterpiece of technological expertise was actually the complete VK2XSO BBS, installed and operated by its owner/trainer Ashley because no-one else could quite decide which end was which; somewhat like modern art but a great deal more useful. The computer buffs loved it while the rest were totally confused.

On the first day of the exhibition the HF section of the WIA display must have appeared strange to most people who saw it and, indeed, it drew much attention thereby. The operator, Shan "Superbrat" VK2JSB (at the moment — his full call is just



**Aub Topp VK2AXT, John Turner VK2JWT, Julie Kentwell VK2XBR and Shannon Bathis VK2JSB at the WIA Hobbyfest 93 display.**  
*Photo by Anthony Vallario*



around the corner) is your typical mid-teenager and would not be expected, in the minds of most, to be sitting happily at a "Bells And Whistles" radio (actually a Kenwood TS680S, but it looked much more impressive than a 27 MHz AM CB radio) banging away on a Morse key in what was obviously a genuine 2-way radio conversation. Nevertheless it was true and people found it rather fascinating.

On the second and third day the Morse operators were somewhat older people such as John VK2JWT, Terry VK2UX, Barry VK2FP and Julie VK2XBR. This notwithstanding, CW again proved its worth as a crowd-magnet. A notable CW QSO was with VK2SEA Albury, operator Terry, who explained that VK2SEA is an Australian Navy Amateur Radio Society (ANARS) callsign which is only activated during Navy Week and Coral Sea remembrance.

The HF was, overall, noisy and poor. Noise level on 40 metres was S6 all day and it isn't much fun trying for a contact in that. Two metres was unusable on the first day because two watts wouldn't go past the car park due to the huge concrete/steel building, even with a 5/8 antenna on the roof. A 25 watt afterburner, brought along on Sunday morning, fixed that problem.

The amateur TV section was the most complex, the most difficult to explain and the one which best exemplified the difference in thinking between planning a display for amateur operators and planning a display for people who wouldn't know the difference between amateur radio and a hole in their sock! A display which impresses the pants off the cognoscenti is about as meaningful as an election campaign promise to a preacher, lawyer, grader-driver or plumber who wanders in for a bo-peep. Amateur TV is a difficult concept for Joe Citizen to grasp. He is, quite often, incapable of comprehending the plain fact that amateur radio operators design, build and operate stations pushing out normal colour TV transmissions where they can play videotapes, put up computer graphics, show themselves and their shacks on real, common, garden variety TV receivers



Some of the crowd who saw the amateur radio display.  
Photo by Wayne VK2XWC

as found in any home. With TV sound yet!

Joe Citizen, it seems, can only think of television as huge media empires and glowing deities on the screen of his idiot machine. This magic, all pervading medium, brings to his/her mind giant media magnates, multi-megabuck empires and, of course, the \$70 million-a-throw Hollywood mind-destroying extravaganza interspersed with brain-bleaching bulldust and vapid, empty-headed "things" parading their dubious charms.

The reality of amateur TV was demonstrated in two ways. Some distance from the building housing exhibits was a car park, reserved for exhibitors, in which the Divisional volunteers parked their limousines. In one such chariot a transmitter supplied by Brian VK2KML (and built by him) along with his 70 centimetre antenna, a video camera and a car battery, were set up. The camera showed a view of the WIA display section of the place, complete with flags and banners, as viewed from afar. The transmission was received full-strength on a normal spiral indoor antenna atop an old 14 inch colour TV set. Signs explained the picture's origin. Next to this set was another 14 inch colour TV, fed from an outdoor antenna on 579 MHz, showing the output of the Sydney ATV repeater VK2RTS; once again, signs explained

to visitors the origin of what they were viewing. John VK2JWT, the display's "front man" to visitors, had the unenviable task of explaining to visitors just what it was they were seeing.

The TV really showed its worth

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*'Agents for DRAKE R8 World Band Radio*

when a chap around 17 years of age asked just what it was all about. As luck would have it, Peter "the Brat" VK2XZP was up on the ATV repeater using his ATV-converted valve FM transmitter. Peter, being around 16 years old, seemed a logical person to chat with the interested party so the 2-metre rig's microphone was passed to the visitor who then talked with Peter on 2 metres while Peter talked back, sound and picture, on ATV. Peter's signal had come from his home at Berowra to Springwood in the Blue Mountains then to Eastern Creek. The visitor, identified only as John, was given the good drum by "the Brat" and you may hear him on the amateur bands in the not-so-distant future.

A similar situation occurred with the packet BBS. A visitor wandered over to it and spoke to its owner/trainer, Ashley "Trash" VK2XSO about Internet wormholes and similar BBS BS. No doubt, we will soon see another call sign on packet. The VK2XSO BBS was left running continuously over the three days and utilised a 3 element 2 metre beam mounted indoors, pointed through a window-wall at a convenient digipeater, thereby overcoming the problems encountered with 2 metre voice. The other gear was turned off overnight and cables removed so the huge glass doors could be closed and locked each evening.

Taking an overall view of the event and making an assessment of its worth, the opinions of all who participated are that it was certainly worth the effort. No-one was in a position to count heads but it seems as though two thousand or so people, who had never heard of Amateur Radio, now have. Opportunities like Hobbyfest 93 don't grow on trees and it is important to make hay while the sun shines in getting our message out of our shacks and into the general community. Look for the Divisional display at Hobbyfest 94. Also, keep your eye on the main chance yourself if it comes your way and gives your club or organisation the opportunity to "show 'em what we have." The display co-ordinator, Julie Kentwell VK2XBR, warmly thanks those who took part. They are:  
 Setup and dismantle: John Turner



**ATV played a key role in the Hobbyfest 93 amateur radio display.**  
*Photo by Wayne VK2XWC*

VK2JWT, Aub Topp VK2AXT, Wayne Chadwick VK2XWC, Terry Ryeland VK2UX, Barry McNeil VK2FP, Ashley Anderson VK2XSO, Tony Musson VK2CAM and Dave Reed the bus driver (he is still studying for his licence).

Equipment suppliers: John Turner VK2JWT, Aub Topp VK2AXT, Barry McNeil VK2FP, Ashley Anderson VK2XSO, Paul Jones VK2JPL, Brian Leslie VK2KML, WIA NSW Division.

Display Operators: John Turner VK2JWT, Shannon Bathis VK2JSB, Aub Topp VK2AXT, Wayne Chadwick VK2XWC, Terry Ryeland VK2UX, Barry McNeil VK2FP, Ashley Anderson VK2XSO, John Simon VK2XGJ, Tony Musson VK2CAM, Paul Jones VK2JPL, Jim Walker VK2XJW and Jenny Kentwell (soon VK2PIG).

The Sydney ATV Group repeater VK2RTS was, as mentioned, used as a drawcard and was occupied over almost all the three days by ATV operators who kept it running with videos and on-screen presentation. Thanks to Kerry Adams VK2BXT,

Peter Mudie VK2XZP, Neil Dodds VK2TNE, Barry McNeil VK2FP, Don Cross VK2EYI, Mai Charrington VK2VEU and John O'Shea VK2ATU. Well done chaps, your input was well received (disgusting pun intended) by those who visited our display.

The NSW Division appreciates the efforts of the Sydney ATV Group, not only in equipment supply and repeater input but also for the fact that, of the 15 volunteers who made the show possible, 9 of them were from the SATVG. A great effort by any judgement.

Also demanding a mention is the effort by Alan Whitmore VK2YYJ and his team in setting up and operating their own, independent WICEN display complete with working packet station just across from the NSW Division's display. Needless to say, they found it quite simple connecting to VK2XSO's Packet BBS.

Summing up, it was a good job done well by all involved.

*\*Publicity Officer WIA NSW Division*  
 ar

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 equipment serial numbers in a  
 safe place.**

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## Product Review

# Ham Log — An Australian Log Program

Evan Jarman VK3ANI

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While keeping a log may be a requirement of radio operation, for many it is just a chore. Entries are made and never looked at again: the age old concept of file and forget.

This is not the purpose of log keeping. The main function of a log, like any data base, is using the information that is recorded. This is where computers have an advantage. Reading a log book is nearly as boring as reading the phone book: great cast but no plot. The computer can analyse all the entries in a log, sort, collate and display all the entries in a log in a form that is much easier or quicker to interpret. Being in this form one can make quicker decisions. It is a natural advantage of the computer; doing mundane, boring jobs quickly and repeatedly. All part of the computer's function in life; to make life easier and more pleasant for their users.

Ham Log was written to take advantage of the computer's ability to analyse data continuously. It enables the operator to take advantage of past activity to provide information, at the touch of a button, relevant to a correct contact. This can range from an operator's name to working out if a particular station provides that all important multiplier in a contest or would be a useless duplicate entry. It can be the difference between stardom and being an also ran.

Entering contacts into Ham Log is made on a separate screen (that appears when an addition is wanted) requiring name, QTH, RST (both sent and received) and any comments. All other information is automatically provided by the program including the time QSO started and finished. When the callsign is entered, the

country is recovered from a separate data base and displayed after warning you if there has been a previous contact (done by pointing to the log entry). This is done first as it enables callsigns to be entered before working the station just to check for previous contacts. In contests this is invaluable.

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*"This program contains the features that heavy log users said that they want."*

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Some information, such as frequency, uses the default of the last used value but can be altered as required. This means that you can never forget a name again. In contest mode multipliers and that essential sequence number are provided. The included text editor (available at the push of a button) is very handy for CW operation. The fact that it creates a separate text file on disc enhances its usefulness as the text can be imported into most word processors if desired.

One feature of Ham Log is that it can keep up to six different logs. Why this would be may seem obscure at first, but it is very useful. Multiple logs allow separate logs to be kept during a contest, event, field day or during a commemorative call sign allocation. It means that the entries in the main log do not interfere during an event

such as a contest. Having worked a station ten years ago should not bring up any alarms in the heat of contest operation. Similarly, a separate log can be kept until all certificates are issued. Each of the six logs is equally accessible and can be merged when the reason for their differentiation is no longer apparent. The usual log maintenance routine such as sorting, renumbering, repairing are all available. Selection is by highlighting the menu item and pressing the enter key or choosing by number as it is with all the other options.

As with any good data base, Ham Log's country listing can be revised as new prefixes are notified. Prefix listings also use time as a parameter. This means that having worked a particular prefix, the contact remains valid even with relocation of the prefix. Also, the correct country for that prefix at that time will always appear.

Ham Log keeps statistics on log contacts such as the number of countries worked versus the mode and frequency. The same statistics are kept for confirmed contact, for quickly determining if the DXCC has been reached. Ham Log will also keep a list of stations for which a QSL has been promised and, if necessary, print the QSL label itself in any of three formats.

The programmer, Robin Gandevia VK2VN, has consulted with some of the larger QSO crunchers of the amateur world to find the options most wanted, and it shows. This program contains the features that heavy log users said that they want. It is light in the frills that make computers a law unto themselves; designed as a working aid, not as a plaything. One frill that would have been nice is the ability to change colours. In daylight the colour screen was not easy to read. A compromise was to use monochrome during the daylight and colour when light levels were lower and a more comfortable screen was wanted.

Ham Log occupies approximately 1.35 MBytes of disc space for the program with additional space for the log data. It is best run on a hard disc. The review copy came on a 3.5 inch 1.44 MBytes disc; it was version 2.41. Ham Log comes with a user's

manual if clarification is needed and has the usual F1 help screens. It requires a minimum of 384 KBytes of memory preferring 640 KBytes. The program is for IBM or compatible computers running MS-DOS 3.3 or later.

## Stop Press

### Version 2.5 is Here!

A roadtest by Ron Churcher VK7RN.

"Robin", I faxed, "Ham Log is brilliant, I love it, BUT your program doesn't do what I want. I print my QSLs on the back of a colour photo and I need a program that gives me complete control over everything that I print. None of your four automatic programs does this".

"NO WORRIES" says the genius, and up comes version 2.5 of Ham Log.

We now have a QSL "Custom Format" option. I can now select what fields I want to use from the QSO records, in what order, PLUS five text fields and send it to a DOS file. I use "Word for Windows" to set up and store my card format in the PRINT MERGE option, import the data file and print the card. One small problem exists in that the DOS data file does not include the field headers, so I have a small "Headers" file which I clipboard into each data file before printing. Get Me?

Every different word processor would need a different method so it would be impossible to incorporate every "want" into Ham Log.

### Text Editor Facility

This has now been extended allowing an unlimited "Notes/Comments" field for every QSO, saved for future use in a DOS file. Great for digital mode use.

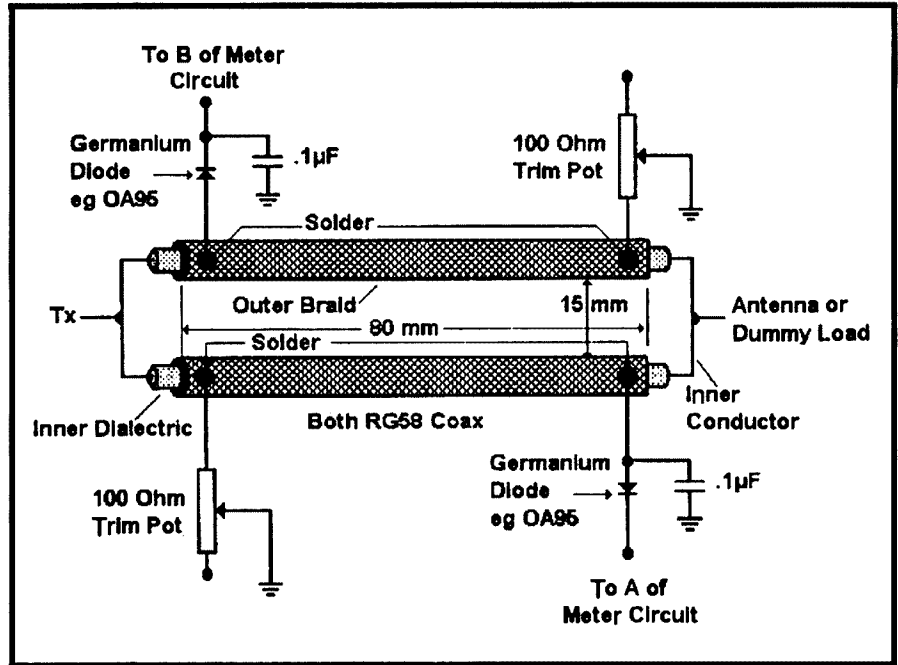
### FACTOR

FACTOR mode has now been added in place of the AM mode.

As a final comment I would recommend Ham Log to anyone, especially people like me with a pretty limited computer knowledge.

# A Simple SWR Bridge

Godfrey Williams VK5BGW. \* home brews an effective SWR Bridge.



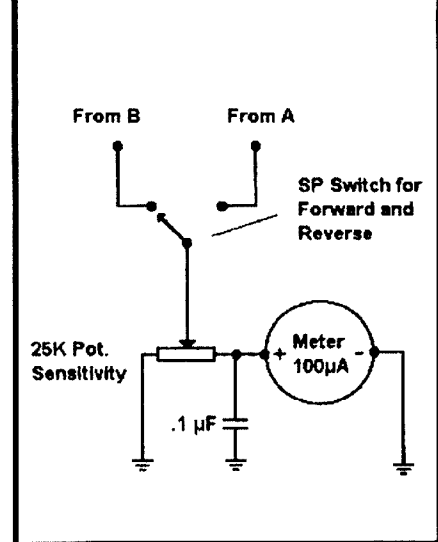
This idea was born from my own dissatisfaction with other designs I have tried, particularly those involving 50 ohm strip lines and toroidal core types.

The two parallel 80 mm lengths of RG58 coax were mounted on to, and the other 15 mm above, a piece of suitably etched PC card; the complete assembly then being mounted into a 120 mm long diecast box. The ends of the bridge are terminated in SO239 connectors, one mounted on each end of the box. Connecting wires for the meter circuit are passed through small holes drilled through the side.

With a 50 ohm load connected, adjust the appropriate trimpot for a null (should be zero at 50 ohms) then swap the transmitter and antenna connections and adjust the other trimpot in the same manner.

Sensitivity at five watts on 40 m was very good, suggesting that the bridge may also function well on 160 and 80 metres.

## Meter Circuit



The meter showed good distinction between 1 to 1, 2 to 1 and 3 to 1 SWRs when 50, 100 and 150 ohm loads were applied.

\* 31 Kennion Crescent, PARA HILLS WEST SA 5096

ar

ar

# Random Radiators

with Ron Cook VK3AFW and Ron Fisher VK3OM

Here we are back again with a variety of antenna ideas which we hope will inspire you to get outside and enjoy our late summer weather and improve your signal.

## More on Balcony Antennas

Its amazing how one (or two) ideas start another one. A letter from George Cranby VK3GI to Lloyd Butler VK5BR, and then passed on to us, pointed out that a most interesting advertisement for a compact loop antenna had appeared in the Italian magazine *Radio Rivista*.

When one of the Rons looked at the drawing, he recognised it as an old Japanese TET antenna that was collecting dust in the garage. There is no indication in the Italian advertisement as where the antenna is actually made, but the one here was manufactured in Japan and imported many years ago by the late Dick Roy VK3ADR. We suspect that possibly only one or two were imported at this time.

The antenna covers 40, 20, 15 and 10 metres with the aid of two traps. It seems that it is actually a squashed trap vertical antenna and it requires

some sort of a ground plane to operate successfully. As far as can be seen, it does not operate as a loop antenna. We have tried it out and the performance is quite reasonable. Even sitting inside the shack several interstate contacts were made on 40 metres.

If there is another one like it out there, we would be most interested to hear about it. In the meantime, we might ship it over to Lloyd Butler to get his thoughts on how it actually operates. Like one of the antennas described in the December 1993 *Random Radiators*, this one can be set either in the vertical or horizontal position. As we don't have a suitable balcony our tests were carried out in the vertical position only.

## The "Z" Match Again — A Few Problems

A letter from Murray Burford VK5ZQ describes some problems with a "Z" Match tuner he built. I will let Murray put his points first.

*"When I moved my operating position inside from the garage I could hardly bring in the monstrosity of an ATU I had been using there. My wife's*

*tolerance was being strained as it was! I remembered the Rononymous "Z" match in Amateur Radio for March 1990 and having heard of the wonders of the "Z" Match, I built it up as per the instructions and complete with the SWR meter. The device seemed to work fine. When I decided to give 160 m a try I needed to put together another ATU with an earth. Having done this I was left without the SWR meter, so used the transceiver's in-built one for the first time. So far so good!*

*On returning to the higher HF bands it occurred to me to check the SWR with the transceiver's in-built meter. The later indicated that all was not well and since solid state machines apparently do not like high SWR, I put the "Z" Match to one side and sneaked the disgusting looking ATU from the garage inside. Everything worked fine.*

*All this caused me to do some thinking and study the circuit of the "Z" Match carefully I then expressed my thoughts to other amateurs.*



Fig 1 — The line drawing of the compact loop antenna as advertised in *Radio Rivista*.

## A. J & J COMAN ANTENNAS

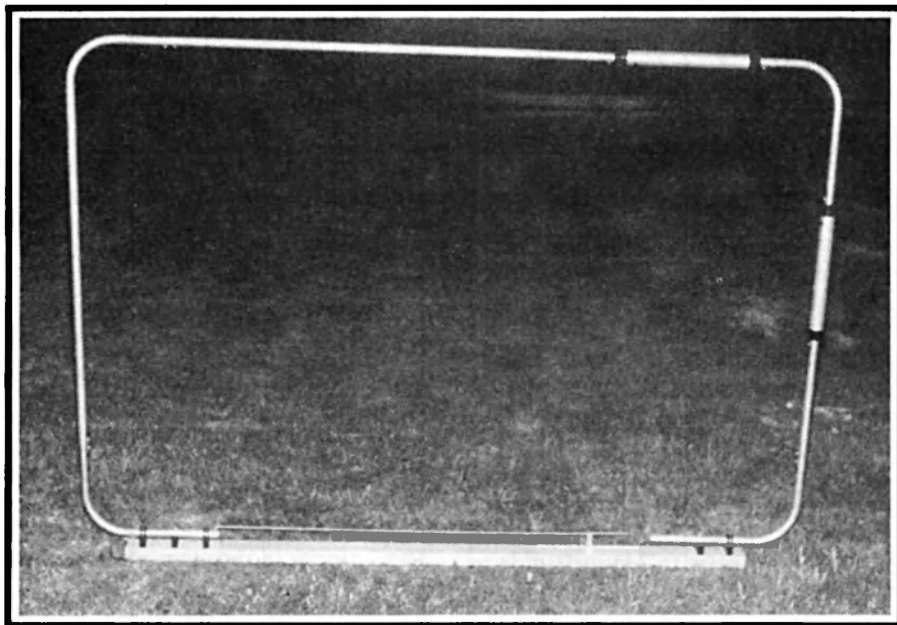
Dual band Colinear 2M&70cm	\$ 95
2M colinear 2 5/8	\$ 93
5 ele 2M	\$ 73
12 ele 2M	\$115
6 M J-pole	\$109
6 M col/in 6dbd rad 4.NEW	\$149
6 ele 6M	\$188
Duo 10-15M	\$259
3 ele 15M	\$179
3 ele 20M	\$289
M B Vert NO TRAPS 10-80 M	\$249
Tri band beam HB 35 C 5 ele	\$665
30M linear loaded 2 ele	\$360
40M linear loaded 2 ele	\$449
13-30M logperiodic 12 ele	\$865
70 cm beam 12 ele bal/F	\$102
70 cm corner ref 11 to 15dbd	\$call
23 cm corner ref 13 to 17dbd	\$call
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**A photo of the Japanese TET compact loop antenna.**

I could not see how the "Z" Match could possibly tune an aerial system. The name "Z" Match then commanded attention. Impedance matcher, maybe, but an ATU? I was doubtful. No one wants to appear like an idiot and that fact stops many people asking questions, but it's one way of learning and we all start off in the crib knowing nothing!

A couple of weeks ago I heard a Victorian amateur expressing similar views to mine about "Z" Matches and that boosted my confidence. Should "Z" Matches be included under ATUs as so many handbooks seem to do?"

Well, Murray, thanks for your thoughts. It seems you are confused between the operation of an ATU and an impedance matching system. I believe that all so-called ATUs are, in fact, impedance matching devices. Surely the idea is to match whatever impedance appears at the end of the feed line to the 50 ohm input to the transceiver. If you want to "tune" the antenna then there is only one place to do it and that's at the antenna itself.

Perhaps you might like to tell us just how your "study of the "Z" Match circuit" caused you to have doubts on the ability of it to work. By the way, Murray, did you check the performance of the two SWR meters against some calibrated dummy loads?

Sorry but we still like the "Z" Match.

### Steel Wool Baluns, Yes or No?

Thanks to Steve VK5AIM for bringing the steel wool balun to our attention. This was described in the November 1992 issue of QST.

I have to admit that the idea looked good and perhaps a few amateurs have tried it out. We must admit that we haven't. Well, in the September issue of QST, the guru of antenna matching, Walter Maxwell W2DU, pronounced judgement on it. In a word, forget it! Walter carried out several tests and compared it to a

ferrite choke balun. In all cases, the steel wool proved to be almost totally ineffective. See Table 1 for all the details.

### VK Windoms — Not So New After All

A letter from Dennis Avard VK4ADY brings to our attention an earlier version of this antenna designed by DJ2KY and featured in the 1978 edition of the RSGB book "Amateur Radio Techniques".

The idea is to use a multi-wire dipole, adding two wires 4.5 m and 2.52 m as shown in the diagram. One interesting point is the use of 60 ohm coaxial cable feeder. Probably 50 ohm could be substituted with very little change in operation. It is also suggested that 300 ohm parallel wire feeder could be used. In this case any length of feeder into a "Z" Match would be the way to go.

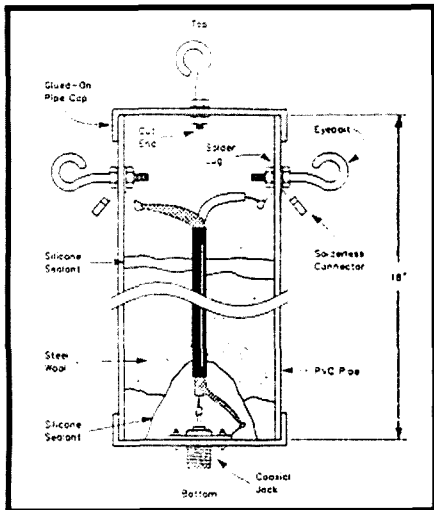
Here is a reprint of the article. Five-band VS1AA/Window

Many years ago (QST, September 1929), L Windom W8GZ, described the original single-wire-feeder Windom aerial. This utilised the fact that when an aerial is resonant, the impedance at any point along its length is a pure resistance — which in practice varies from under 50 ohms to about 5000 ohms. There is thus always some tapping point at which the radiator can be matched to a transmission line — which can take

**Table 1  
Comparing Steel Wool and Ferrite Beads in the Development of Balun Longitudinal Impedance**

Loading Material	F (MHz)	R (ohms)	X (ohms)	Z  (ohms)
Coax Alone	4	<0.1	16.5	16.5
Steel Wool		0.5	15.3	15.3
50 #73 Beads*		800	700	1063
Coax Alone	7	0.11	27.4	27.4
Steel Wool		0.95	26.0	26.0
50 #73 Beads		1450	375	1500
Coax Alone	14	<0.1	56.1	56.1
Steel Wool		1.4	54.3	54.3
50 #73 Beads		1240	-325	1282
Coax Alone	21	0.15	88.0	88
Steel Wool		2.45	90.5	90.5
50 #73 Beads		1000	-450	1097

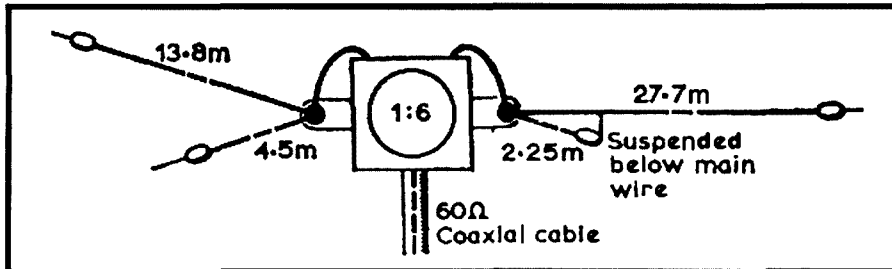
\*W2DU HF Balun  
RF Bridges: GR-1606A, Boonton 250-A RX Meter  
Signal Generator: HP 606A  
Receiver: Kenwood TS-530S transceiver



**Fig 2 — Curt Wilson's budget 1:1 choke balun using steel wool.**

the form of a single wire. In these conditions the wire no longer radiates or has pronounced standing waves on it, but acts as a conventional transmission line.

The original Windom was essentially a one-band aerial and sometimes proved pretty critical to adjust (usually by running a neon along the feeder to see if there were pronounced standing waves). Soon afterwards, G2BI showed that by cutting the feeder carefully so that the whole system provided resonance on a lower frequency band, it was possible to use a Windom quite effectively on, say, 7 and 14 MHz. Then Jim Macintosh, VS1AA (now GM3IAA), in "Some experimental work with aerials," (*The T. & R Bulletin*, November, 1936), introduced an important new idea — the "one-third" tap: "During the course of experiments with a 264 ft Windom, it occurred to the writer that there must be an arithmetical relation between these somewhat mythical tapping points, and after a little juggling with pencil and paper, the fraction one-sixth was evolved" (ie one-sixth from the centre). He added: "This one-sixth business sounds too good to be true, but it at least has the merit — if such it may be termed — of being geometrically correct." And so was born the multi-band VS1AA which is still going strong. By using the one-third tap on a 138 ft wire (and using thinner-gauge wire for the feeder) one still has a very useful four-band aerial for 3.5, 7, 14 and 28 MHz.



**Fig 3 — DJ2KY's five-band Windom. 300 ohm twin line could be used instead of the coaxial cable plus 1:6 balun transformer.**

In recent years, the VS1AA has been given a new lease of life in its twin-wire form, using a conventional 300 ohms balanced feeder instead of the slightly more critical single wire. Theoretically the impedance at the one-third tap is of the order of 500 ohms (or rather less, due to the presence of ground, etc) on 3.5, 7, 14 and 28 MHz. Unfortunately, this is not the case on 21 MHz where the point is at high impedance.

One method of coping with 21 MHz is to add two shorted quarter-wave stubs at 76 ft and 38 ft from the feed point — but stubs are never very popular.

An alternative technique is described by F Spillner DJ2KY, in *QRV Amateur Radio*, No 8, August, 1972. He used a 1:6 balun with 60 ohms coaxial cable for the feeder, but 300 ohms or open-wire line, or single wire feeder could be substituted. His basic idea is to make use of the well known multi-wire dipole technique adding two wires, 4.5 m and 2.52 m as shown in Fig 3.

And so for this month, it's goodbye from him and goodbye from me.

The two Rons.

ar

## WIA News

### Loss of 100 MHz from 13 cm Band

The 2300-2400 MHz segment of our 13 cm band (2300-2450 MHz), a shared band in which the Amateur Service is a secondary service, will shortly be auctioned off according to the SMA's new "price-based frequency allocation" policy.

This 100 MHz of the 13 cm band is allocated for use by Multipoint Distribution Services. It is expected that Pay TV licensees will use it for terrestrial distribution.

John Martin VK3KWA, Chairman of the Federal Technical Advisory Committee (FeTAC), provided WIA Federal with details in his report to the February Federal Council meeting in Melbourne.

"The result is," says John Martin, "that in the near future, as MDS services expand through the

2300-2400 MHz band, amateurs operating on 2304 MHz will have to make a move to 2400 MHz." From John's report, operators of 2304 MHz beacons in Brisbane and Adelaide have already been advised that their beacons could interfere with MDS reception. The Adelaide beacon may be required to cease operation this month or next, according to a letter from Bill Coomans, Acting Manager of the SMA's Technical Services Team, Customer Services Group, from Canberra.

John is preparing a band plan revision proposal which will be circulated shortly. He noted that there had been little protest about this proposed loss of band space (which was advised by the then DoTAC in 1988). Technical details on the primary service MDS channels are in the 1994 Call Book, page 23.

# Technical Abstracts

Gil Sones VK3AUI

## Wide Range Capacitance Bridge

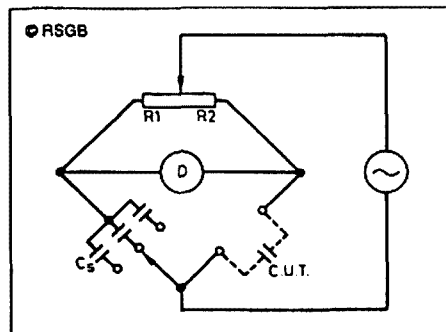
A little known bridge originally described by Clerk Maxwell offers wide range and a linear calibration. The bridge was limited originally by the need for fast mechanical switching. However, modern CMOS switches can overcome this problem.

Dick Biddulph G8DPS describes a practical application in *Radio Communication* for October 1993. The original bridge was described by Maxwell in "Electricity and Magnetism" Clarendon Press, Oxford, 1892. A more recent reference is in a publication "Electrical Measurements" by Golding and Widdis, Pitman, London, 1963.

A conventional bridge uses a high frequency bridge supply as shown in Fig 1. This circuit suffers from non linear calibration as the Capacitor Under Test is given by  $CUT = Cs \times R1/R2$ .

In the Maxwell bridge shown in Fig 2 the capacitor under test is alternately charged and discharged with the balance condition being zero galvanometer current. The simplified bridge balance equation is:-  $C = (k R1)/(n R2 R3)$  if  $(R2 + R3)$  is much greater than  $R1$ .

$k$  is a constant for each range  
 $C$  is the capacitance in Farads  
 $R1 R2 R3$  are resistances in Ohms  
 $n$  is the switching frequency in Hertz



**Fig 1** This Capacitance Bridge has the disadvantage of non-linear calibration.

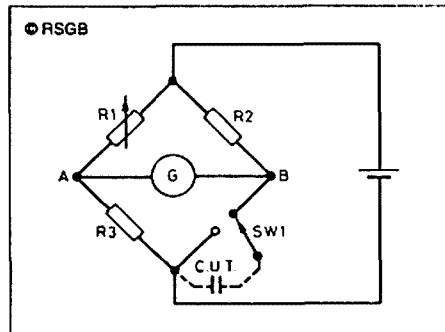
For those desiring a full equation it is given in the *Radio Communication* article.

A practical circuit is given in Fig 3 in which the switch can use CMOS switches. These do suffer from a finite on resistance of approx 120 ohms per switch. The detector and oscillator switch are given in Fig 5 and Fig 6. A variant of this is given in Fig 4 but here a very wide range has been obtained at the cost of a non linear calibration.

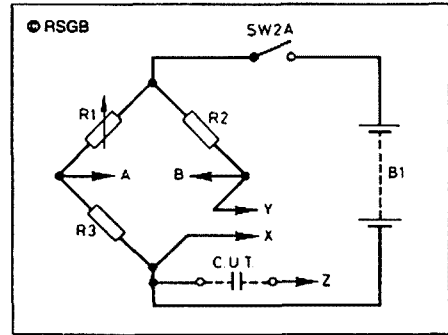
Instead of a galvanometer an OP-amp driving a dual colour LED has been used as the bridge detector. This gives a colour change as the bridge goes through the balance point and the LED colour gives an indication which side of balance the bridge is at. This is shown in Fig 5.

The switching waveform generator and the CMOS switch are shown in Fig 6. An Astable multivibrator drives the CMOS switch. Note that the bridge and switching battery supplies are common but that a separate supply is used for the detector so that two batteries are needed.

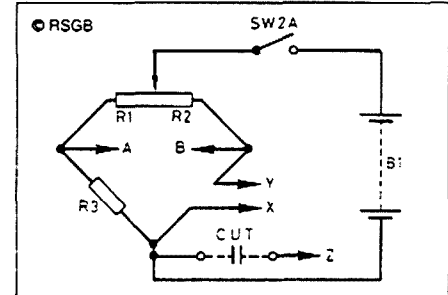
The complete bridge comprises Fig 3, Fig 5, & Fig 6. Calibration is given in Fig 7 but this is only a guide and some close tolerance capacitors or some sort of standard capacitors should be used for calibration. The parts list is given in Table 1.



**Fig 2** Clerk-Maxwell's Bridge used a galvanometer to determine the balance point.



**Fig 3** A more practical arrangement with near linear calibration.



**Fig 4** Although this circuit has a wide range calibration needs care.

### Table 1

#### Parts List

#### The Bridge

- VR1 5K Linear Plastic Track (Cermet if unobtainable)
- R2 20K 1% metal film
- R3 20K 1% metal film
- B1 9V Eveready 216

#### Oscillator and Switch

- C1 10nF 1% Polystyrene
- C2 1nF 1% Polystyrene
- C3 100pF 1% Polystyrene
- R5 220K 1% metal film 0.25W
- R6 22K 1% metal film 0.25W
- IC1 CMOS 4066B quad switch
- IC2 CMOS 4047B Mono/Astable

SW2 DPST switch

B1 see supply for bridge.

#### Detector

#Resistors all 2% 0.25W

- R7,R8 1M5
- R9,R10 10K
- R11,R12 2M7
- R13,R14 620R
- VR2 10K
- C4 100nF
- IC3 CA3140 Op-amp
- D1,D2 Red Green Bicolour LED
- SW2 DPST see Osc and Sw.
- B2 Eveready 216



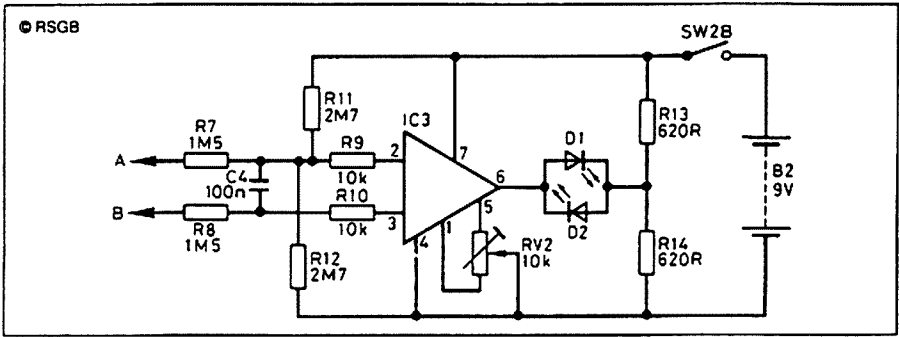


Fig 5 A general purpose op-amp is used in the detector.

the disc of laminate. Tinning the top of the disc with solder melts the glue which then cools sticking the disc in position.

Discs of laminate would seem to be a problem but Brad found that a paper punch punched out neat little discs from the laminate. This will not be too good for the punch so you should use a cheap one. You will get a lot of discs before you need a new punch.

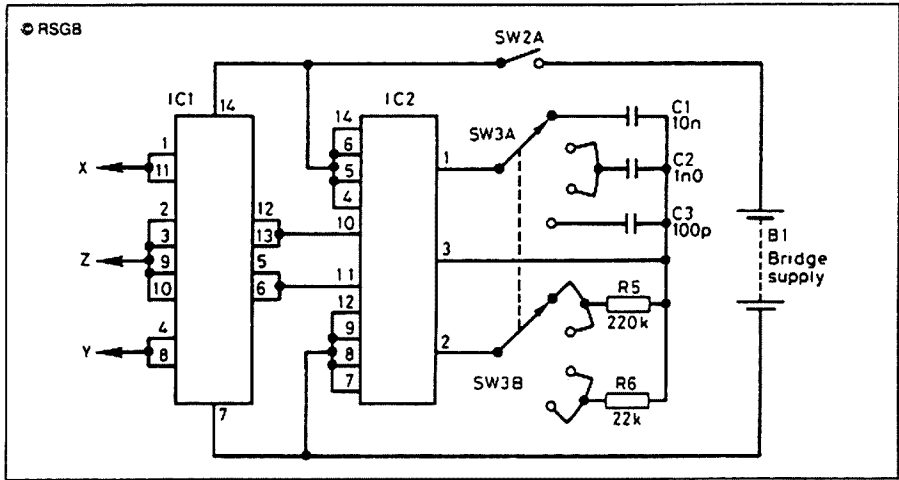


Fig 6 The CMOS astable is connected to an analogue switch as shown.

Since you are just punching the laminate you can use all sorts of scrap laminate to make the discs. The insulation of the disc and glue is adequate for low voltage circuits at less than 50 Volts. RF should be OK as the pad and glue is a small area but high power may not be a good idea.

For most small circuits and layouts the technique offers a way to make a neat layout with less reliance on aerial joints. Circuits can also be laid out on a variety of other breadboard materials. Anything that the glue will stick to is a possibility.

**Printed Circuit Breadboard**

One off circuits and experiments are not really suited to printed circuit techniques. Stripboards are not ideal for RF circuits so the use of printed circuit laminate as a ground plane bread board has developed using what has been dubbed ugly construction. The main problem being to make intermediate connection points.

A technique to easily provide insulated connection pads anywhere on a breadboard layout was described in *73 Amateur Radio Today* December 1993 by Brad Thompson N1JJ. What Brad did was to glue discs of printed circuit laminate wherever they were required on a printed circuit bread board. The copper upper side of the disc provided an insulated connection point.

The glue used was hot melt glue as used in a hot melt glue gun. A flake of the glue was cut from a glue stick. This flake of glue was placed beneath

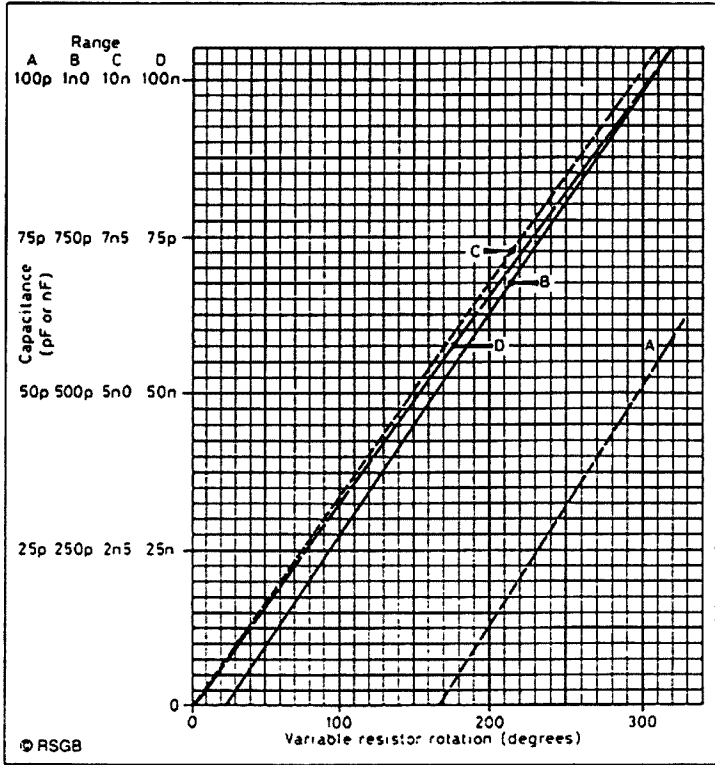
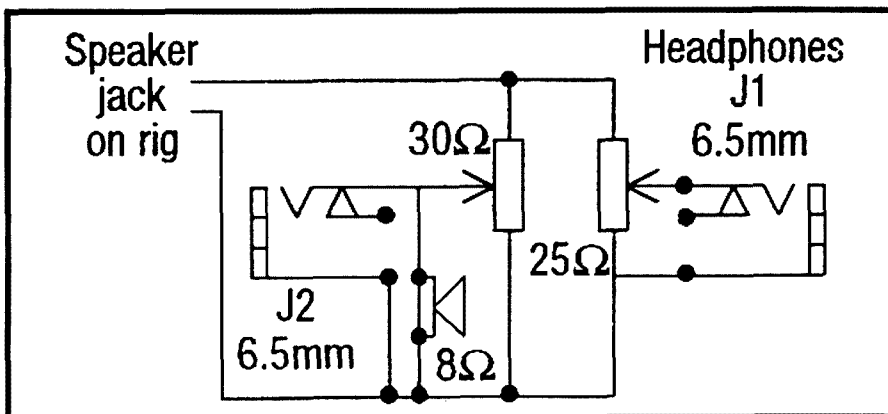


Fig 7 Calibration curve for the configuration of Fig 3.

# Speaker/Headphone Control Box

Lindsay Collins VK5GZ\* describes a neat accessory for a receiver.



J2 for cassette recorder taping and second extension speaker.

Since 1980 I have operated portable for the WIA at schools, hobby exhibitions, etc. I have always operated my own gear and also put

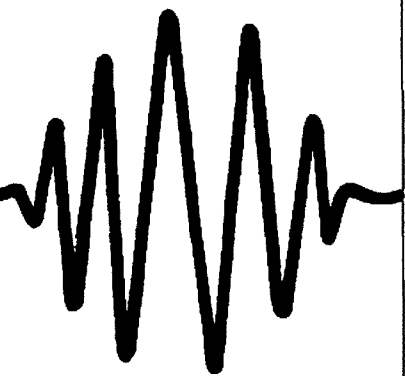
up my own antennas on a portable 28ft mast. With a twin paddle electronic keyer and my own home-built 2 memory caller, it always

attracted large crowds. In the 1985 Hobbies Exhibition I was in the WW CW contest, with amateurs telling the people what countries I was working every minute or two.

I use an extension speaker in the shack always, so when portable, the speaker volume is controlled from the rig so that the nearby operators on SSB, and other stalls, etc are not drowned out. With my hearing loss and fast CW I like to wear phones which also have a volume control. These plug into the extension speaker, also with its own volume control. At night time in the shack this volume control is turned down low so as not to affect the neighbours. Another jack is wired across the speaker to take a cassette tape recorder or a second speaker. In CW contests it allows me to remove the headphones from my ears for short spells and still be able to copy from the speaker.

\*12 Park Ave Rosslyn Park SA 5072  
ar

# amateur radio action



“ Ηουσε αδωερτισεμεντιΠ φορ Αματευρ Ραδιο Αχτιον μαγαζινε το αππεαρ ιν ΩΙΑ φουρναλ Αματευρ ΡαδιοΠ. ”

For subscription details to just about anywhere, phone Grant Manson on (03) 601 4222.

*If all this looks Greek to you, perhaps it's because you're not reading the authoritative source — Amateur Radio Action magazine... at your local news outlet every fourth Tuesday.*

number 06 001

# WIA News

## ARRL Seeking Primary Status on 900 MHz

The American Radio Relay League (ARRL) has petitioned the US Federal Communications Commission to provide two primary allocations for US amateurs in the 900 MHz band, with certain geographic limitations, according to the ARRL Letter.

US amateurs are already allocated 902-928 MHz on a shared basis. The band is used by several other services, including radiolocation, fixed and mobile services, industrial-scientific-medical (ISM) equipment and low-powered nonlicensed devices (eg "wireless" computer networking equipment).

The ARRL submitted that since the 902-928 MHz band was made available to US amateurs in most of the US in 1985, its use has grown, particularly for weak signal work and amateur TV.

Use of the 902-903 MHz

segment is "heavy", according to the ARRL, with not only weak signal operation, but point-to-point links and repeater inputs. 912-918 MHz use is also heavy, used for digital wideband TV, ATV simplex and ATV repeater operation.

The WIA's Federal Technical Advisory Committee, headed by John Martin VK3KWA, is developing a submission to be put to the Spectrum Management Agency for an allocation in the 900 MHz band for Australian amateurs.

## New WIA Members

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of February 1994.

L30877 MR M FRANCIS  
L30879 MR B F NORGATE  
L30881 MR G KAY  
VK2BEL MR R A BELL  
VK2FUL MR N KAARSBERG  
VK2IAG MR J ELPHICK  
VK2JCM MR C J MOORE

VK2TBJ MR B E KIRKNESS  
VK2TCU MR J R LAVERY  
VK2TFE MR R E BRAND  
VK2XTN MR J P DALY  
VK3ATZ MR R GLEW  
VK3BVP MR S DEERING  
VK3DAM MR A D'ALEO  
VK3DND MR H V LONSDALE  
VK3EMT MR K TYLER  
VK3EWK MR V IRVING  
VK3MFI MR K TREGENZA  
VK3TLR MR R KEOGH  
VK3TNG MR E WEST  
VK3TPD MR G PASCOE  
VK3TRQ MR J YOUNG  
VK3TWA MR A VARANO  
VK3YXR MR R G PITTARD  
VK4CSU MR N L SMITH  
VK4KOL MR C J ANDERSON  
VK4LS MR J G NEWMAN  
VK4NDE MR E J D NEALE  
VK4UW MR B W BARTLETT  
VK4XMS MR D BARTLETT  
VK4YGO MR D C GULLEY  
VK6OK MR J F O'KEEFFE  
VK6UGG MR G J GATWARD  
VK8SR MR S B RENSHAW

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KR-1000 \$1135.00

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X-300 6.5db/9.0db \$229.00  
X-400 7.9db/11.0db \$299.00  
X-510M 8.3db/11.7db \$349.00

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10/2/70CM, 15-10/2/70CM

# WIA FEDERAL 1993 ANNUAL REPORTS

Printed below are the 1993 annual reports received from various office bearers of the Federal WIA. Please note that any recommendations contained in the annual reports are subject to acceptance and adoption by the Federal Council at the 1994 Annual Federal Convention.

## FEDERAL PRESIDENT OVERVIEW

The year just completed has been one of some change at the Federal level. The year commenced on a sad note with the untimely death of the Federal President Ron Henderson VK1RH on 26 April 1993, just prior to the 1993 Federal Convention. Over many years Ron had made a significant contribution to amateur radio and the WIA, both at the Divisional, Federal, national and international levels. His loss is sorely felt by us all.

The management structure introduced in 1992 has continued throughout 1993 and has continued its examination of the Articles of Association, a lengthy process which is now nearing completion.

## FEDERAL MATTERS

### Federal Office

The change at the Federal level was also evident in the Federal Office. Bill Roper resigned early in the year as General Manager and Secretary but agreed to continue until a replacement could be appointed. After some deliberation, the Federal Council decided to split the General Manager/Secretary position into two part time positions, the Federal Secretary and the Office Manager. After advertising and interviewing prospective applicants, Bruce Thorne was appointed as Federal Secretary and Donna Reilly was appointed Office Manager. Neither Bruce nor Donna have an amateur radio background but have been able to take up the reins in the Federal Office and contributed to the financial success of 1993.

The WIA Examination Service has continued to operate smoothly and provides an efficient service to those wishing to undertake examinations for the various amateur certificates of proficiency.

### Membership Statistics

Sadly the decline in membership of the last few years has continued with a loss of 2.4% over the year to a year end figure of 6185. This loss is a concern to us all, as it is only through a strong membership that we can continue to provide an effective voice to government and internationally. It is no comfort to know that our sister societies in other countries are experiencing similar problems. Nationwide we see a continuing ageing population trend and must devote attention to the problems of both retaining existing members as well as recruiting new members.

### WIA Board of Directors and Federal Council

The Board of Directors, with representatives from each Division, has met each quarter during 1993. In addition, a special one day meeting was held in April. Use has also been made of phone and fax as a means of progressing Board deliberation between the regular meetings. Some of the quarterly meetings were also supplemented by meetings of the Federal Council which continues to set policy for the guidance of the Board and the Federal Office. Significant issues during the year have been:

- continuing work on the Articles of Association which is now nearing completion. Some may despair of the seemingly slow progress on this subject but this is an area which requires careful deliberation and debate and not one to be hastened unnecessarily.
- re-staffing of the Federal Office. This has been mentioned above.

- Amateur Radio Magazine. The Board is continuing its examination of AR magazine, including production options to ensure that AR remains viable and can continue to provide us with an effective journal for years to come.

## INTERNATIONAL MATTERS

Following the major effort involved with WARC 92, 1993 was very much a period of consolidation. Smaller, more focussed WRCs, to be held about every two years, have now replaced the less frequent, more wide ranging WARC's. For the immediate future, it appears that there will be no requirement for specific amateur representation at WRCs for several years. However, the IARU may well be involved. The WIA is continuing to be involved in ITU and IARU matters on an ongoing basis and will be well prepared when amateur representation is needed at a WRC.

The WIA has started preparation for the next IARU Region III meeting to be held in Singapore in September 1994. More will be reported on that in the near future.

## NATIONAL MATTERS

### SMA

1993 saw the creation of the new Spectrum Management Agency (SMA) under the Radcom Act 1992. This new agency has responsibility for all matters relating to the amateur radio service. Like all new government bodies, its birth was a protracted affair, during which time amateur matters were unfortunately relegated to a low priority situation. As a consequence, the new regulations for the amateur service which were foreshadowed in 1992 have yet to see the light of day and many other matters which were under consideration with DOTC have not progressed.

Recently the SMA has been able to resume its consideration of amateur matters and it is hoped that it will be possible to report progress on many of the outstanding items in the near future.

## STANDARDS

WIA involvement in standards is continuing on several fronts. This is probably one of the least known areas of WIA involvement but still very important to the amateur service. We need to be aware of new and emerging standards which are likely to affect our operation as amateur radio operators so that the necessary input can be provided to ensure that our operation is protected, while at the same time ensuring that we can continue to be good citizens and live with our neighbours, both personally and in an RF sense.

## THANKS

I wish to record my personal thanks to all who have assisted the WIA over the last 12 months.

Particular thanks must go to: Bruce Thorne, Donna Reilly and the Federal Office staff;

My fellow Board members, Rob Apathy VK1KRA, Roger Harrison VK2ZRH, Peter Maclellan VK3BWD, Rodger Bingham VK4HD, Bill Wardrop VK5AWM, Neil Penfold VK6NE and Jim Forsyth VK7FJ;

The Editor of Amateur Radio, Bill Rice VK3ABP and his gallant band of volunteers;

Our Federal Coordinators and Officers whose continuing voluntary efforts must not be forgotten:

AMSAT Awards	Graham Ratcliff	VK5AGR
Contest Manager	John Kelleher	VK3DP
Education	Peter Nesbit	VK3APN
EMC	Brenda Edmonds	VK3KT
FTAC	Hans Ruckert	VK2AOU
Historian	John Martin	VK3KWA
Honorary Legal Counsel	John Edmonds	VK3AFU

IARU Int'l Travel	George Brzostowski	VK1GB
Host Exchange	Kevin Olds	VK1OK

Intruder Watch	Ash Nallawalla	VK3CIT
Media	Gordon Loveday	VK4KAL
QSL Manager (VK0, VK9)	Roger Harrison	VK2ZTB

Standards	Neil Penfold	VK6NE
Videtares	Roger Harrison	VK2ZRH
International	Bob Godfrey	VK4BOB

Regulatory & RSG WICEN	David Wardlaw	VK3ADW
	Leigh Baker	VK3TP

Kevin Olds VK1OK  
Federal President

## ALARA

The Australian Ladies' Amateur Radio Association has had a successful year with membership holding about the same number.

Our Contest had reasonable conditions and the number of Logs received was about average.

Publicity has been improved through the production of an information leaflet detailing the background of ALARA and opportunities to become involved with amateur radio, and ALARA in particular.

ALARA was represented with a display at the Moorabbin Club, FAMPARC and Wagga Wagga conventions. As well our Editor gave a talk on ALARA to the Manly Warringah Radio Club. Lunches continue to be held in various states for a member or interested person to meet with other YLs.

The ALARAMEET held at Castlemaire VK3 in October 1993 was very successful with 80 people in attendance, including a number from New Zealand, and from most VK call areas. The next ALARAMEET will be held in VK6 in 1996 and the Western Australia YLs are planning already.

Changes to the Committee have been Margaret VK4AOE as Treasurer/Souvenir Custodian, and late in the year Bev VK6DE took over from Poppy VK6YF as VK6 State Representative.

Bron Brown VK3DYF

## AMSAT-AUSTRALIA

The number of Amateur Satellite operators has once again steadily increased during 1993 particularly in the area of the 9600 baud Packet Radio satellites and to a lesser extent the 1200 baud PACSATs. There also has been a steady trickle of newcomers to Amateur Satellites who are more interested in using Amateur Satellite for CW or voice communications and have found great satisfaction in using the Russian Low Earth Orbit Satellites like RS-10/11 and RS-12/13, AMSAT-OSCAR-21(RS-14) with its Digital Signal Processing (DSP) FM repeater and the highly elliptical orbit AMSAT-OSCAR-10 and AMSAT-OSCAR-13.

Maggie Iaquinto VK3CFI continues to be a focal point for voice and packet radio contacts with the Soviet space station MIR. This has meant that many Australian Amateurs have continued to have the opportunity to communicate with the Russian Cosmonauts onboard MIR on both voice and Packet Radio. In November/December 1992, Russian Cosmonaut, Musa Manarov, U2MIR visited

Melbourne and Maggie had the well-deserved opportunity to speak to Musa face to face having kept him company (via Amateur Radio) on many occasions while he was onboard the Russian Space Station, MIR. Also Steve VK3CAX's year 12 physics students had regular exchanges with Aleksandr, the "Orbiting Professor" onboard MIR. Similarly, Rob Chapman's year 12 physics class at St Columba's college in Essendon.

In 1993 Australian schools were once again given the opportunity to talk to the astronauts aboard the Space Shuttles which carried SAREX (Shuttle Amateur Radio Experiment). Australian schools are again invited to send a SASE to AMSAT-Australia C/o GPO Box 2141, Adelaide SA 5001 if they would like to have students contact astronauts onboard future Shuttle SAREX missions carrying amateur radio. Such contacts can be either direct on 2 m or via a phone link to my QTH.

In 1993, no representative attended any of the Phase IID Experimenters' Meeting in Marburg, Germany representing Australia. However, I still plan to attend the 1995 Phase IID Command Station Seminar as an invited participant. Phase IIIID is currently due to be launched in mid-1996.

During 1993 another 5 Amateur Radio Satellites were successfully launched. ARSENE, a French Amateur Radio Satellite was successfully launched on 12 May 1993. Unfortunately, its Mode-B transponder failed not long after launch and then not long after its Mode-S transponder also failed. This was particularly disappointing as ARSENE's orbit would have provided some very interesting radio communications capabilities with its long equatorial orbit. On 26 September 1993, PoSAT-1, KITSAT-OSCAR-25, ITAMSAT-OSCAR-26 and AMSAT-OSCAR-27 were successfully launched by the European Space Agency onboard an Ariane launcher. These 4 satellites have added to the already existing fleet of digital store and forward Amateur Radio Satellites. With the exception of IO-26, which is a stand-alone Amateur Radio Satellite, these are not really Amateur Radio Satellites but rather commercial satellites carrying Amateur Radio packages onboard. This approach with the UoSAT and Russian RS series of satellites has proved to be a very "profitable" arrangement enabling many more Amateur Radio Satellite packages to be added to the Amateur Satellite service.

During 1993, AMSAT-OSCAR-13's apogee has continued to progress towards the equator providing much more access to the Southern Hemisphere stations. During 1994, AMSAT-OSCAR-13 will provide the widest international coverage at any one time of any Amateur Satellite with the exception of AMSAT-OSCAR-10 which still provides excellent communication even though the onboard computer failed in 1986. The improvement of conditions on AMSAT-OSCAR-13 has also seen a marked increase in the number of users. In particular, due to the failure of the Mode-L (1.2 GHz uplink — 70 cm downlink) 70 cm transmitter, there has been an upsurge in users of the experimental Mode-S (70 cm uplink — 2.4 GHz downlink).

Throughout 1993 Bill Magnusson VK3JT has again continued to keep the readers of *Amateur Radio* up to date with the timely material he has provided in his AMSAT-Australia column. Bill's effort continue to generate a steady trickle of interest in the Amateur Satellite Service. In 1993 I received over 800 mail items requesting general information on Amateur Satellites and satellite tracking software. Also, the AMSAT-Australia monthly NEWSLETTER has increased its total number of subscribers (started in April of 1985) from 795 to 644 in 1993.

Finally, I would like to thank the WIA for its continued support of the Amateur Satellite Service via the activities of AMSAT-Australia and ask that the 1993 Federal Convention recommend that the WIA continue to support AMSAT-Australia financially at the present level.

Graham Ratcliff  
AMSAT-Australia National Coordinator

## AWARDS

In 1993, the "streamlining" of the Federal Awards programme continued successfully with a computerised data base for DXCC after total reconstruction of all active files. This led to the bi-annual publication of accurate DXCC listings.

These listings have been further enhanced by the introduction of the WIA DXCC Honour Roll, and the supply of Honour Roll stickers for existing certificates. Certificates for the Century Club Award have been re-designed and upgraded, along with the printing and issue of certificates for the Antarctic and Grid Square Awards. Also, DXCC application forms have been printed, and are readily available.

These achievements have led to a quick turnaround to the processing of initial applications and upgrades, and the issue of certificates. Consequently, this has encouraged greater confidence and rapport with members.

To maintain this rapport, I do have some suggestions. Please always attach your call sign, and list your application alphabetically in DXCC call sign order (this helps greatly when your list exceeds 150 entries). Please indicate all the details outlined in the WIA Awards programme. To keep my files as neat and accurate as possible, also please advise of any changes in your call sign and your address.

The good points outweigh any problem areas. To summarise, extra-ordinary mobility has been achieved through some hard work, and your co-operation, along with the usual outstanding contribution by the Federal Office staff. To further reinforce this positive situation, I am open to helpful and constructive criticisms from the Amateur fraternity.

John Kelleher VK3DP  
Federal Awards Manager

## CONTESTS

The past year has been a period of relative stability for WIA contests, and I would sincerely like to thank the following WIA contest managers for their valued contributions:

John Martin VK3KWA: Ross Hull & VHF/UHF  
Field Day  
Phil Raynor VK1PJ: John Moyle Field Day  
Northern Corridor  
Radio Group  
(VK6ANC) & VK6NE: RD Contest  
Ray Milliken VK2SRM: VK Novice

Discussions have continued with the above managers regarding possible improvements to our various contests, and some good ideas have been put forward. These mainly relate to the method of determining the winning division in the RD Contest, and also an interesting new scoring system proposed for the Ross Hull Contest by John Martin VK3KWA.

I have also been working with NZART's Contest Manager, John Litten ZL1AAS, in order to improve the liaison between our two societies. I am pleased to report that the liaison is now quite good, and John and I regularly exchange contest information of mutual interest to both societies, for publication in *Break In* and *Amateur Radio*. For me this means sending to him the rules of WIA contests in which ZLs are welcome to participate (at present this means all WIA contests), and sending the results of those in which one or more ZLs have submitted logs.

During 1993 the management of the VK/ZL/Oceania DX Contest fell to me, and in an effort to increase the number of countries active in the contest, rules were sent to considerably more amateur societies than is usual. Despite this extra publicity, most logs have remained confined to Japan, Europe, CIS, and Indonesia. Only a couple came from the Pacific and South America, and none from Africa! In fairness, many DX operators took the event very seriously, including a TF3 who faxed his log from Iceland, and an OH who went to the trouble of mounting a DXpedition to Aaland Island.

However, the days of abundant rare DX seem to be gone, which means that newer VK and ZL contesters are less likely to participate in order to

increase their country total. From comments in a number of overseas logs it appears that insufficient participation by VKs and ZLs is largely to blame for, as one entrant said, if we don't support our own contest, how can we expect overseas operators to?

Apart from increased local participation, I believe more participation from Pacific countries would also help enormously. One thing worth considering is to obtain approval to use commemorative prefixes for the contest, which seems particularly appropriate for a prefix based event. I will shortly be discussing these and other ideas with John Litten ZL1AAS, who is managing the 1994 event. A more detailed report on the contest will appear with the results in a month or so.

The world of contests is changing rapidly. Relevant factors include changing leisure patterns, reduced disposable income for many, the difficulty of getting antenna permits in city areas, the increasing use of computers in contests, and a slow but steady evolution in the sorts of things which appeal to us as worthwhile activities. As contest administrators we need to identify exactly what makes people enter our contests, and fine tune the rules where necessary to increase their appeal. Over the next 12 months I will continue to work with the contest managers to see what can be done, and restore a healthy and energetic approach to contests by VK amateurs.

Peter Nesbit VK3APN  
Federal Contest Coordinator

## EDUCATION

The main achievement of 1993 has been that work has been proceeding on the theory examination question banks.

With very considerable assistance from a small number of volunteers, both banks have been reviewed. A few badly worded and duplicated questions have been deleted and a number have been reworded for improved clarity. The next step is to add new questions to extend the number of questions in each bank. At the end of 1993, the AOCB bank was to the stage of having the balance adjusted to ensure equal attention to all sub-sections. This stage has not been reached for the NAOCP bank yet.

The intention is to build each theory bank to 1,000 questions, distributed according to the formula used for the examination papers, with the contents of each section spread as evenly as possible over the various sub-sections.

It may be necessary to postpone work on the NAOCP bank to work intensely on the Regulations bank when the new RIB 71 is finally released.

It is not intended that there be any change to the present system of producing examination papers until all banks are complete.

## Recommendations

1. that each bank be published when complete;
2. that the two theory banks be published separately as ready;
3. that the publishing be in hard copy only;
4. that the questions in the banks be considered as "type questions" only, reserving the right for, eg, figures in calculation questions to be changed when a paper is produced, or a question to be asked in reverse form.

When sections are considered nearly complete, the final draft will be circulated to Divisional Education Officers for their information and comment.

It is a continual disappointment that so little input is received from the Divisions. Despite numerous requests, I do not have names of Divisional Education Officers. At this stage of the work, particularly, it would be useful to be able to communicate with those who are more in direct contact with the education field and the candidates than I am.

Brenda M Edmonds, VK3KT,  
WIA Federal Education Co-ordinator

## ELECTRO MAGNETIC COMPATIBILITY (EMC)

The following reports were prepared and published in *Amateur Radio*.

- 1) January 1993 ("QST" & "CQ-DL") Information.
- 2) February 1993 2 parts on low-pass and high-pass filters, construction and properties.
- 3) March 1993 ("QST" & "CQ-DL") information.
- 4) July 1993 also contributions by Norm Burton ("Radio-Communication"), ("CQ-DL").
- 5) December 1993 also contributions by Norm Burton ("Radiocommunication") and by VK4QE.
- 6) January 1994 also contributions by Norm Burton ("Radiocommunication") and VK3JK "EMC-Magazine" USA.

Each report listed a wide range of EMC problems experienced worldwide and the solutions. We will have to watch out for Cable-TV problems, and the spectrum requests by other frequency spectrum users. On a personal note I informed Federal Council of my wish to retire after 10 years as EMC Coordinator. I will soon have my 80th birthday.

Hans Ruckert VK2AOU

## EXAM SERVICE

We are continuing with the good work by the WIA Exam Service prior to my time, and the people involved, including the continuing work on the theory question bank which is almost complete, to be followed by revision of the Regulations (after the new legislation).

The statistics for 1993 were:

Accredited Examiners registered at 31st December	582
No of Examination Events conducted during 1993	633
No of Candidates who sat for exams	2345
Average Exam Pass Rate	57.61%
Average candidates sitting at each event	3.70
Average exam subjects sat at each event	5.77

The costing of the exams remains the same as the aim was to supply a service to amateurs.

As a result of the SMA Exam Audit, the WIA and the SMA will be revisiting the original Agreement and no doubt Accredited Examiners and candidates will see some changes in the near future. The Audit reviewed the overall level of controls and has assessed them as satisfactory in regard to administration of the system in accordance with statutory requirements. However, the audit found that the original Agreement should be terminated and re-tendered. Various queries by the audit of deficiencies in the Agreement lend support to management revisiting the terms in the original Agreement.

There is still one investigation of exam irregularities being pursued by the SMA. However, to date no report has been forthcoming. The WIA Exam Service continues to scrutinise all exams for any anomalies.

Donna Reilly

## FEDERAL TECHNICAL ADVISORY COMMITTEE (FTAC)

### Membership

The loss of Ron Henderson VK1RH deprived FTAC of its HF Band Planning adviser, and a replacement has not yet been found. Otherwise, the membership of the technical panel is unchanged. Bill Sebbers VK4XZ has left the liaison panel and I would like to thank him for doing a very thorough and helpful job.

Neville Mills VK4KOP is now the Queensland member. Tim Mills VK2ZTM has left the liaison panel after some years and I would like to thank him for his helpful advice.

## Activities and Achievements

Much of the activity in the past year has been "routine" matters of record claims, beacon and repeater allocations, and updating the Data Base. Other activities have included technical papers on MDS and a draft submission for an LF amateur band.

Work has continued on a series of band plan revision proposals, and the drafts are now close to completion.

## Problems

It has become clear that many amateurs, especially on the VHF and UHF bands, are not aware of the band plans. The plans are published in the Call Book each year but the publicity needs to be better.

Several beacons have come back on the air, but the beacon network is still inadequate and is suffering increasing interference from FM stations. Many VHF operators value beacons very highly but do not use repeaters. An improved beacon network would give these people a more tangible reason to support the WIA.

The Amateur Service will shortly lose access to 100 MHz of spectrum space to MDS services. This probably could not have been prevented, but it is disappointing that the WIA has not taken any action. I believe that the SMA's new "price-based" allocation policy poses a serious threat to all shared amateur bands above 420 MHz.

The WIA must take a more alert and active approach to the problem of protecting these bands.

## Recommendations

1. That the WIA explore new ways of making Australian amateurs more aware of the national band plans.
2. That Divisions give further attention to improving the national VHF beacon network.
3. That the WIA develop plans and policies to protect all shared amateur bands from future threats. Specifically, that the WIA seek to obtain exclusive or permitted status for amateurs in a portion of each shared band from 420 MHz to 10.5 GHz.

John Martin VK3KWA  
Chairman, FTAC

## IARU Liaison

On the IARU front, 1993 has generally been a quiet year between the hectic times created by WARC 1992 and the preparations which have commenced for the IARU Region III meeting in Singapore in September 1994. Major areas of activity have been in the areas of the Promotion of Amateur Radio in Developing Countries (PARDC), the IARU Region III Amateur Radio Direction Finding (ARDF) Competition and the biennial visit to NZART.

The PARDC committee has been active during the year surveying the requirements in several societies within Region III. As a consequence of this, a request has recently been received from the committee through the IARU Region III secretariat for educational and other material to assist the development of amateur radio in those countries.

The inaugural IARU Region III ARDF competition was held during October 1993 in Beijing in the Peoples Republic of China. The WIA was well represented by Wally Watkins, VK4DO and Frank Sleep, VK4CAU. Wally submitted an article which appeared in the March 1994 issue of *Amateur Radio* so that we can all learn more about this new sport. Wally is also intending to attend the Region I meeting during 1994.

June 1993 was the occasion of the 1993 NZART convention and the WIA biennial visit to their convention. NZART will next visit the WIA at its 1994 Annual Convention. The WIA was represented by Kevin Olds VK1OK and Nell Penfold VK6NE at the conference held at Pukakohe on the North Island, near Auckland. The visit was an ideal opportunity to exchange views on training, examinations, Region

III matters and technical matters. NZART is organised very differently to the WIA yet it is surprising how many problems are shared by the two organisations.

Work has already commenced in preparation for the Region III meeting in September, 1994. This will be another opportunity to exchange views with our sister societies in the region as well as continue to provide through Region III and the IARU an effective amateur voice internationally.

## Recommendation

The ability of the WIA to represent the Australian amateur community internationally has been facilitated through the International Representation Levy component of the WIA subscriptions. In order that we can continue to provide an effective international voice, I recommend that the International Representation Levy component of the WIA subscriptions be maintained.

Kevin Olds VK1OK  
IARU Liaison Officer

## INTERNATIONAL AMATEUR RADIO UNION MONITORING SERVICE (IARUMS) — INTRUDER WATCH

We in VK have not been responsible for direct removal of intruders, but our reports have been useful in this field. The weather station on 10.012 MHz, "LRB80", which is no longer with us, is one which comes to mind. Quite a few have positive IDs which are being looked into at present.

The high point has been the flow of information to and from Rohan ZL1CVK, Region 3 co-ordinator, much boosted by the liaison with the SMA monitoring station in Hobart. Very valuable advice has been given to improve the observation process at base level. Some of these may seem to be not feasible at first glance, but I am prepared to try a few out on a trial basis. A database is being investigated as a possible means of shortening the turn around time, and increase evaluating time in Hobart. My thanks to Dave Thorne VK7MR.

In VK4 we have three new observers, one new observer in VK2 and VK7 but none in VK3. My thanks to those participating. The IW net only operates in VK4, conducted by Tom VK4BTW on Fridays at 0700z on 3.578 MHz. I have a standing QSO with Graham VK6RO at weekends to keep the west up to date. VK5 and VK7 are covered by mail and packet.

The low point is that there are not enough observers to cover all areas of Australia. We need co ordinators in VK2, 3 and 8, but I am at a loss to know the secret of attracting them. I'm sure they must never listen to their receivers, or maybe do not spin the dial anymore.

## Recommendations

All amateurs should make an effort to back the Monitoring Service in some way. A minimum of 2 hours a week is all that is required and would be a massive step. No one can tell me that is impossible. It is just too easy to let someone else save your pet band. Do not forget all us "oldies" will soon be leaving what is left of the bands in your hands.

## Summary

Worst offenders this year have been:  
UMS Group — all frequencies — 800 loggings;  
VUH & P7A — several frequencies — 293 loggings;  
UHF3 — 125 loggings. Beacons accounted for 320 loggings and Radio Taipei 2f on 14210 gave us 242 loggings. All these from across Australia, so don't kid yourself, they are around.

## Problems

Apart from the lack of support in some quarters, there are too many "wet blankets". The CB operations on all bands now to 29.450 MHz, mainly

from our northern neighbours, with no positive response from their Administration, makes life not so pleasant. I have invested in a fax machine, for our business mainly, but can see it being used to get the logs away quicker to those requiring them, and my notes into *Amateur Radio* when I receive directives from Region 3 as STOP PRESS. A month IS TOO LONG in this game, 2 months....forget it.

Gordon Loveday VK4KAL  
Federal Intruder Watch Coordinator

## INTERNATIONAL TRAVEL HOST EXCHANGE

The International Travel Host Exchange (ITHE) is a voluntary scheme administered by the American Radio Relay League (ARRL) wherein interested radio amateurs are able to meet or host fellow operators from other countries. Your name does not have to be on the list for you to take advantage of such hospitality, and you can do so when travelling around our own country. This is another free service from your Institute. If you wish to join the ITHE scheme, please send a SASE to the Federal Coordinator for an application form.

Several Australian ITHE participants have reported meetings with visitors but this office received no direct enquiries this year.

The total Australian membership has dropped to 21, but continued publicity at suitable intervals should improve the situation. All ITHE members are requested to write to the Coordinator when their contact details change.

Aah Nallawalla, VK3CIT  
PO Box 539,  
Werribee, VIC 3030

## FEDERAL OFFICE MANAGER

I have been in office for only 5 months of the 1993 year, and therefore can only report on this experience.

By far the most significant fact is a positive working relationship with the SMA as this is a most important role of the Federal Office. Although we have had only one actual meeting with the Department there is interaction between our officers regularly. The Federal Secretary will be reporting on progress made in this area on a regular basis.

Some features of those five months:-

1. The Apparatus Licence System Submission and the new Regulations are continuing.
2. The Memorandum of Agreement with the Department for examinations is being revisited.
3. Membership in general remains a little below budget i.e. 6334 in 1992 Vs 6185 in 1993.
4. The professional and reliable status of the magazine is being maintained by Bill Roper as Production Editor.
5. An active recruitment programme by the Federal Office continues to attract new members. Of 1190 packages sent out from the Federal Office (1.10.92 to 30.9.93) 156 amateurs joined the WIA, a 13% success rate.

Donna Reilly

## PUBLICATIONS COMMITTEE

The calendar year of 1993 has been rather full of change and rumours of change as regards the publishing of *Amateur Radio*.

The minutes of the Committee meetings each month first show evidence of this in March, when Bruce Bathols VK3UV, who had been Production Manager since September 1992, gave three months warning of his intention to resign. There were rumours that the Board was unhappy about the content and format of the magazine, and changes were to be expected.

In April, Bill Roper (then VK3ARZ, now VK3BR) resigned as General Manager, but this was completely overshadowed by the tragic death of the

Federal President, Ron Henderson VK1RH on the 26th, after a brief battle with liver cancer. Among Ron's last wishes was that the Committee and the magazine should continue with "business as usual", but he envisaged changes "around us".

Responding to some of the criticism about the appearance of *Amateur Radio*, March was the last issue to use a photograph occupying the full front cover, and April displayed the "new look", which has the great advantage of permitting either vertical or horizontal format photos to be used, or a montage of several. As Publisher, Bill Roper introduced other changes to style and layout from April on, in conjunction with Bruce, whose resignation took effect in June.

In July, Bill took over as acting Production Editor as well as accepting responsibility for keyboard input of material not already supplied on disk by contributors. As described in the 1992 report (April 93, p 49) all material now goes to the typesetters/printers on disk, greatly improving efficiency and reducing costs. The more contributions that are received on disk the more fully those benefits are felt.

Bruce Thorne, the newly appointed Federal Secretary, and therefore the new publisher of *Amateur Radio*, attended his first Publications Committee meeting in August. The Committee was perturbed to find that publication of the 1994 Call Book was behind schedule, and that the Board's plans for the future were unclear. To provide greater committee awareness of the Board's intentions Board member Peter Maclellan VK3BWD spoke at length to the Committee in September, and was able to clarify several points.

In October, Bill Roper was appointed to the position of Production Editor until the end of 1994. He was also contracted to produce the 1994 and 1995 Call Books. The 1994 Call Book was released late in October.

During October the Board established a sub-committee to consider long-term publishing options. Roger Harrison VK2ZTB, as a member of this committee, spoke to the November meeting of the Publications Committee and a good deal of information was exchanged. The sub-committee was to report early in 1994.

Finally, in late December, the year's financial performance figures became available. Advertising income budgeted to be \$45,000 was actually \$47,380. Expenses were higher than budget at \$204,000, requiring \$154,000 from members' subscriptions to make up the difference, but the cost per copy mailed to members was only \$2.24 vs \$2.42 in 1992. Expenses in 1992 were \$225,000 so \$204,000 is a great improvement.

Apart from the names mentioned in this report, there have been no changes since last year in the persons who comprise the Publications Committee or publishing staff (see April 1992, p 23).

I do wish most sincerely to thank all who have participated in the production of *Amateur Radio*, and equally sincerely hope that we may do as well as or better in 1994.

Bill Rice VK3ABP, Editor

## STANDARDS

Principal activities over 1993 have been in monitoring the activities of Standards Australia.

Probably the most significant Standards activity to report is the establishment of four radiocommunication consultative committees by Standards Australia in mid-1993. These committees have been dubbed RC/1, RC/2, RC/3 and RC/4.

General radiocommunications equipment standards will be looked at by the RC/1 committee; RC/2 will look at standards in the field of satellite and telecommunications networks, RC/3 will cover low power radiocommunications equipment, and RC/4 will cover maritime and safety of life equipment.

These committees will be making recommendations on the legislative application of the standards they prepare.

Type approval of amateur equipment has been an

issue of concern to the Australian amateur community. Fortunately the issue has now been laid to rest.

Amateur equipment is to be exempt from type approval under the new standards and compliance framework of the Radiocommunications Act 1992, according to an April 1993 letter from Roger Smith, First Assistant Secretary of the then DOTC's Radiocommunication Division.

In his letter, Roger Smith said, "This exclusion has been made because of the experimental nature of the activity pursued by radio amateurs.

"It is also consistent with the approach taken in other countries, such as Europe.

"We will request that Standards Australia make generic standards covering all radiocommunications equipment.

"These generic standards will be based on international standards (where they exist).

"Amateur radio equipment would be required to conform to the requirements of mandatory generic standards."

The WIA has been invited to participate in the relevant Standards Australia committee to ensure to represent the needs of Amateur users.

Later in the year, Standards Australia publicised the fact that powerline interference limits were being scrutinised in a revision of the Australian Standard prescribing the limits of electromagnetic interference (EMI) from overhead transmission lines.

This standard provides protection for radiocommunications services against powerline EMI.

The scope of the revision to AS 2344-1980 will change, the frequency coverage being lowered from an upper limit of 1000 MHz, down to 30 MHz. A separate standard will now cover the 30-1000 MHz range, according to Standards Australia.

Another change involves cross-referencing the methods of interference measurements.

Standards Australia's intention is to publish this revision as a joint Australian/New Zealand standard. Its release will complete the publication of all EMI standards in this area as joint standards, according to Standards Australia.

Meanwhile action on EMI standards for electrical and electronic equipment in Europe will likely have an impact in Australia.

The European Electrotechnical Commission (EEC) has set a date of 1st January 1996 for stringent new maximum emission requirements to apply to electromagnetic interference (EMI) from electrical and electronic products manufactured or sold in Europe.

Here, Standards Australia had made no decision as of June on the question of EMI requirements for such products and the federal government's Department of Industry Technology and Regional Development (DITRD) had not formulated a position at the time. No further advice on this subject was noted from Standards Australia by the end of the year.

The Australian Electrical and Electronic Manufacturers Association (AEEMA) was pressing Standards Australia to adopt a similar date so that Australia would not become a "dumping ground" for products that no longer met European requirements then.

AEEMA's Board believes that Australia should adopt the same date for EMI compliance for electrical and electronic products manufactured or sold here — that is, 1 January 1996. They are to take up the matter with DITRD and other relevant government departments.

Following a kind offer late last year, Dr Vince McKenna VK3AOY has been appointed to represent the WIA on the Standards Australia TE7 Committee on Non-ionising Radiation. This committee mostly conducts meetings in Melbourne and Dr McKenna is on the spot. He has both medical and radio knowledge so he can competently represent the Institute and amateurs' interests on that committee.

Roger Harrison VK2ZTB  
Federal Standards Coordinator

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# ALARA

Robyn Gladwin VK3ENX\*

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## Apology

In last month's column, I omitted to include the solution to the puzzle which appeared in the February edition. Here are the answers to the Word Chain: 1. wire 2. aerial 3. tuner 4. switch 5. back 6. light 7. beam 8. antenna 9. rotator 10. motor 11. car 12. garage 13. door 14. key 15. hole 16. proof 17. reading 18. glasses 19. case 20. book 21. cover 22. sheet 23. copper.

## Thelma Souper Memorial Contest 1994

This annual contest, held by the Women's Amateur Radio Organisation of New Zealand (WARO) will be held on Saturday, 9 April and Sunday, 10 April, from 0700 — 1000 UTC each evening.

1. All contacts to be on 80 m.
2. YLs contact YLs and OMs. OMs contact YLs only.
3. One contact with each station permitted in each half hour period.
4. Call CO WARO CONTEST, exchange report, serial number commencing with 001, and name.
5. To qualify as a multiplier, WARO MEMBER stations must have contact with at least 20 different stations.
6. A bonus station using the WARO callsign, ZL2YL, will be in operation for random periods and will count as a multiplier once on each night of the contest, if worked.
7. All radio regulations must be observed.

### To qualify:

- a. Enter date at beginning of each evening.
- b. Each log entry must contain: Time of contact, callsign of station worked, cipher sent, cipher received and name of operator contacted.

### Scoring:

1. Score one point for each contact, multiplied by the number of WARO members and bonus station if worked.
2. Logs to have each contact claimed as a multiplier underlined.
3. Include a separate summary sheet showing:
  - a. Your callsign, name and address.
  - b. The number of contacts.
  - c. The number of WARO members worked.
  - d. Your score.
  - e. Declaration that all radio regulations have been observed. Logs which do not comply with all the above requirements will be disqualified.

## Logs:

To reach the contest manager, Chris Armstrong, ZL1BQW, PO Box 209, Kaweraun 3083 BOP New Zealand, no later than 6 May.

If conditions are good, this contest can be great fun. As it takes up only three hours on each evening, and each station can be worked again every half hour, it is

the perfect contest for busy amateurs and those new to contesting. As many ALARA members are also WARO members, VK contacts are a welcome addition to ZL scores. Good luck!

## People in Radio

Two amateurs who really enjoy their hobby are ALARA member, Bev Clayton VK4NBC, and her OM Graeme VK4BGC. They are pictured wearing their crocodile hats beside their crocodile-decorated car. Yes, you have guessed it. BGC stands for Big Green Crocodile!

\*PO Box 438 Chelsea 3196  
ar



## QSP News

### Amateur Radio Licensing In China

Wally Watkins VK4DO advises that changes are being made to the licensing system in China to enable amateur radio operation from home.

The starting grade is SWL at a fee of 25 yuan per year. After one year, and being able to provide 20 QSL cards from amateurs, they can then progress to the next step, a BG callsign. This gives them all bands except 14 MHz with a power limit of 10 watts.

After another year and a further examination it is possible to upgrade to a BD callsign. This

allows all bands and a power level of 100 watts. A further two years and another examination leads to a BA callsign which allows all bands and 1000 watts level.

These changes are being put in place in 1994. However, there are a few BA callsigns already, mainly oldtimers who held calls before 1 October 1949.

One such oldtimer is Tom BA4AC who has a son working at the ANU in Canberra. He spent 12 months recently in Canberra visiting his son and held the call VK1CWM. He now operates from Shanghai with an excellent signal from a TS520 and a dipole.



# DICK SMITH ELECTRONICS

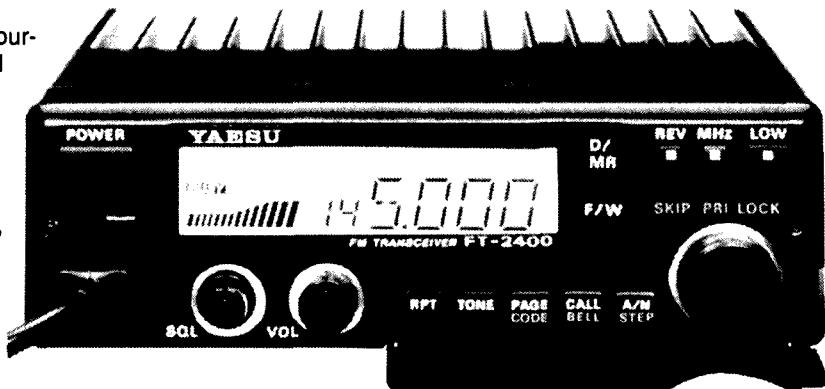


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Whether you're going bush or broadcasting around town, a quality mobile transceiver from Yaesu delivers the best performance.

### FT-2400H Rugged 2m Transceiver

The ultimate in dependability and reliability! The FT-2400H is built using commercial grade mechanical and electronic construction techniques and meets the tough USA MIL-STD-810C shock and vibration requirements, so you know you're getting the highest quality. A one-piece die-cast chassis/heatsink allows three-step output of up to 50 watts without forced air cooling. Plus, fibreglass circuit boards and chip components provide professional-grade reliability. It has a large backlit LCD screen, backlit knobs and 31 tuneable memories (which can store frequency and a four-character name of your choice). A customised microprocessor also provides Auto Repeater Shift to suit Australian conditions. Two-stage track-tuning and a dual FET mixer improve receiver intermod performance. Scanning functions include programmable scan limits, selectable scan resume modes, memory skip, and priority monitoring. Seven selectable channel-steps and CTCSS encode are standard features. Comes complete with MH-26 hand mic., mobile mounting bracket and DC power lead.



#### Specifications

##### General

Frequency range: Transmit 144-148 MHz  
Receive 140-174MHz  
Channel steps: 5, 10, 12.5, 15, 20, 25 & 50kHz  
Current Consumption: Receive: 400mA  
Transmit: 12 Amp (Hi power)  
Dimensions: 160 x 50 x 180mm (w/o knobs)

##### Receiver

Intermediate Freq: 21.4MHz & 455kHz  
Image Rejection: Better than 70dB  
Maximum AF Output: 2.0 watts into 8 ohms @ 10% THD

##### Transmitter

Cat D-3630

**\$699**

2 year warranty

### FT-5200 2m/70cm Mobile

The Yaesu FT-5200 carries the latest innovations in cross-band full-duplex and detachable front-panel design for brilliant mobile performance. It has 32 tunable memories, a built-in antenna duplexer, dual full-frequency LCD screen, 8-level automatic display/button lighting dimmer and dual external speaker jacks. A thermally-activated fan allows up to 50 watts output on the 2m band and 35 watts on the 70cm band, whilst keeping the transceiver very compact yet fully featured. Other features include:

Programmable scan limits, selectable scan resume modes, memory skip, priority monitoring, one-touch recall CALL channels, and 6 user-selectable channel steps. Comes with hand-mic, mounting bracket and DC power lead.

#### Specifications:

##### General

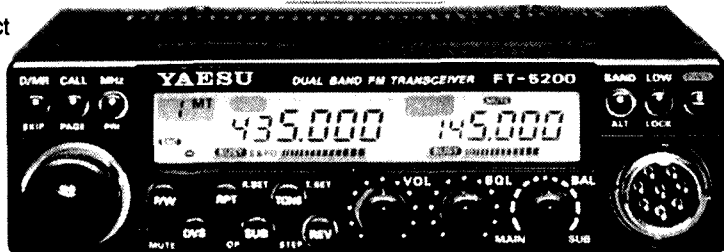
Frequency range: 144-148MHz, 430-450MHz  
Channel steps: 5, 10, 12.5, 15, 20 & 25kHz  
Dimensions: 140 x 40 x 155mm (w/o knobs)

##### Receiver

Sensitivity: Better than 0.158uV (12dB SINAD)  
Maximum AF output: 3.0W into 4 ohms @ 5% THD

##### Transmitter

RF Output Power: 2m - 50/5W (high/low) 70cm - 35/5W (high/low)



Cat D-3310

**\$1499**

2 year warranty

#### YSK-1 Remote Panel Kit

Allows remote mounting of the FT-5200 front panel.

Cat D-3311 **\$99.95**



# Yaesu FT-530 2m/70cm Hand-held

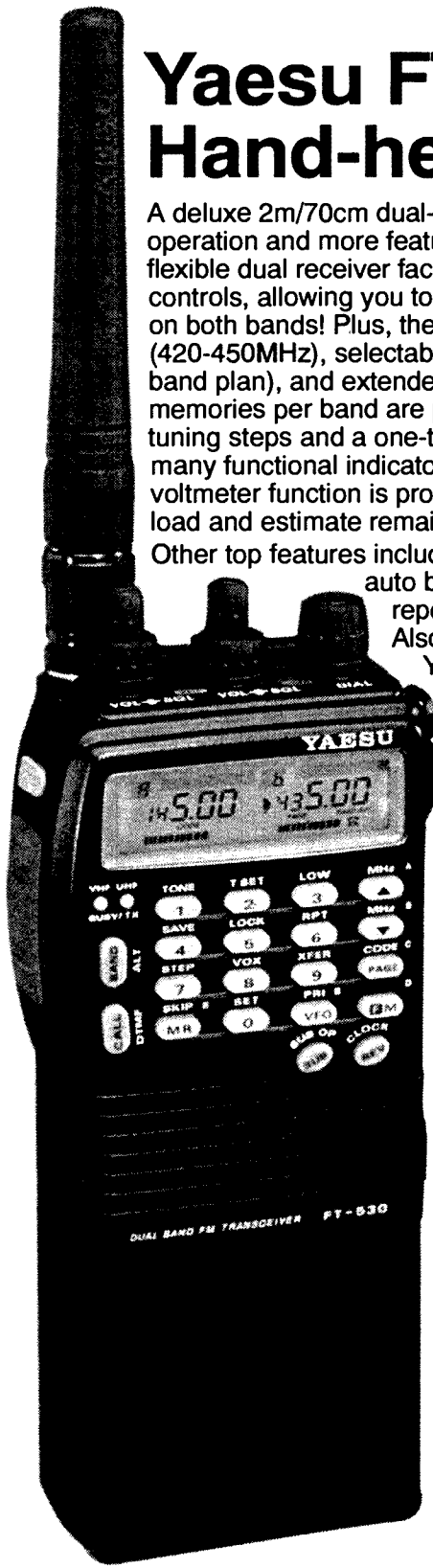


A deluxe 2m/70cm dual-band hand-held transceiver offering easier operation and more features than ever before! The FT-530 provides a flexible dual receiver facility with separate volume and squelch controls, allowing you to listen on two frequencies in the same band, or one frequency on both bands! Plus, the exclusive Australian version features full 70cm band coverage (420-450MHz), selectable Auto Repeater Shift on both 2m and 70cm (suits Australian band plan), and extended receiver coverage as standard. Two VFOs and 41 tunable memories per band are provided, together with keypad or dial frequency entry, seven tuning steps and a one-touch CALL channel. The dual 5.5-digit LCD screen includes many functional indicators plus separate signal/P.O. bargraphs for both receivers. An LCD voltmeter function is provided so you can even monitor your battery's performance under load and estimate remaining battery life.

Other top features include: Inbuilt dual CTCSS encode/decode, CTCSS scanning, an auto battery saver (ABS) for extended battery charge life, a cross-band repeater facility and inbuilt clock with alarm and snooze functions. Also provided is VOX circuitry for use with the optional

YH-2 headset, a user replaceable lithium back-up battery, and DTMF selective calling and paging. A DC supply jack allows transceiver powering and NiCad charging, with RF output in four steps up to 5W at 12V.

For enhanced battery life, an auto power-off function turns the radio off after a pre-set period of inactivity, so you won't return to a flat battery. The FT-530 comes complete with a high-capacity 1000mAH NiCad battery, belt-clip, carry case and approved AC charger.



#### Specifications

##### Frequency range:

Transmit 144-148MHz, 420-450MHz  
Receive 130-174MHz, 420-500MHz, 800-950MHz

##### Current Consumption:

Auto power off 150uA  
Standby (saver on) 16.8mA (both bands)

##### Dimensions:

55(W) x 163 (H) x 35mm(D)

##### Transmitter:

Power Output: 5, 3, 1.5, 0.5 (at 12V)  
RF Power Output 2.0W (2m), 1.5W(70cm)  
(Supplied 7.2V 1000mA/H NiCad)

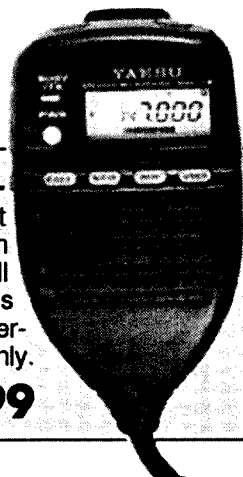
##### Receiver:

Sensitivity: 2m:<0.158uV  
70cm: <0.18uV  
(Ham bands only 12dB SINAD)  
Audio Output (12V) 300mW at 8 ohms

Cat D-3620

# \$999

## 2 Year Warranty



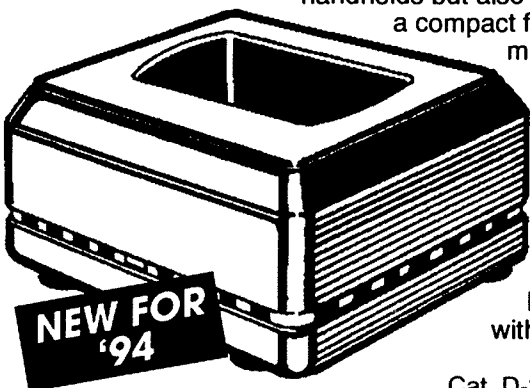
#### MH-29A2B Remote Control Mic.

A compact speaker/microphone that provides a remote LCD screen with backlighting! Has duplicate keys for Call channel, VFO and memory selection, plus busy/Tx LED. Supplied with a user-programmable key. Suits FT-530 only.

Cat D-2119 **\$199**

# Mastercharger 1 Fast Desktop Charger

New for '94! At last, an intelligent, fast desktop charger that not only suits most current Yaesu handhelds but also many previous models. Made in USA, the Mastercharger 1 is a compact fast charger that operates from 12v DC, and uses switch-mode technology and a Philips monitor I.C (with  $\Delta v$  full charge detection) to charge NiCad batteries between 6V and 12V.



Charge time varies between 1/2hr and 2 1/2 hours, depending on battery voltage and capacity. Supplied as standard to suit the FT-23/73, FT-411/411e, FT-470, FT-26, FT-415/815 and FT-530, its charging cradle can easily be replaced, allowing for the insertion of a new cradle to suit earlier transceivers (eg FT-209R/709 series) and, in the future, different brands/models handhelds. The Mastercharger 1 requires 12-15V DC at 1.3A, and is supplied with a fused cigarette lighter cable for vehicle use.

Cat D-3850 **\$199** **COMING SOON - CHARGING CRADLES TO SUIT VARIOUS KENWOOD, ICOM, AND ALINCO HANDHELD.**

# FT-990 H.F All-Mode Base Transceiver

The FT-990 offers many of the features of the legendary FT-1000 in a more compact and economical base-station package. Its excellent front-panel layout, together with clear labelling, a large back-lit meter and an uncluttered digital display allows very straight-forward operation. The receiver uses a wide dynamic range front end circuit and two DDSs to provide a very low noise level and excellent sensitivity over the 100kHz to 30MHz range. Transmitter output is 100W on all HF Amateur bands (SSB, CW, FM), with high duty cycle transmissions allowed. The internal auto antenna tuner and an inbuilt power supply are standard features, while the customizable RF speech processor and Switched Capacitance Audio filtering facilities are unique to the FT-990. Other features include IF Shift and IF Notch filters, IF bandwidth selection, 90 memories and one-touch band-selection.

Cat D-3260

**\$3995**

Includes inbuilt AC power supply. Microphone optional extra.



**2 Year Warranty**

PHONE, FAX & MAILORDER SERVICE & YAESU BROCHURE HOTLINE

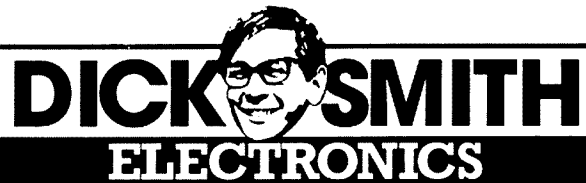
**Outside Sydney (FREE Call) 008 22 6610**  
**Sydney and Enquiries - (02) 888 2105**

Fax: (02) 805 1986 or write to

Dick Smith Electronics, Mail Orders, Reply Paid 160  
 PO Box 321 NORTH RYDE NSW 2113

All major Credit Cards accepted. O/Nite Courier Available.

Yaesu stocks and some antennas not held at all stores, please contact your local store for availability, or phone 008 22 6610



B 1670

NSW • Albany 21 8399 • Bankstown Square 707 4888 • Blacktown 671 7722 • Bondi 387 1444 • Brookvale 905 0441 • Burwood 744 7299 • Campbelltown 27 2199 • Chatswood Chase 411 1955 • Chullora 642 8922 • Gore Hill 439 5311 • Gosford 25 0235 • Hcrrnsby 477 6633 • Hurstville 580 8622 • Kotara 56 2092 • Liverpool 600 9888 • Maitland 33 7866 • Mid City Centre 221 0000 • Miranda 525 2722 • Newcastle 61 1896 • North Ryde 878 3855 • North Sydney (Greenwood Plaza) 964 9467 • Orange 618 400 • Parramatta 689 2188 • Penrith 32 3400 • Railway Square 211 3777 • Sydney City 267 9111 • Tamworth 66 1711 • Wollongong 28 3800 ACT • Belconnen (06) 253 1785 • Fyshwick 280 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 • Frankston 783 9144 • Geelong 232 711 • Highpoint 318 6300 • Melbourne City 399 Elizabeth St 326 6088 & 246 Bourke St 639 0396 • Richmond 428 1614 • Ringwood 879 5338 • Springvale 547 0522 QLD • Booval 282 6200 • Brisbane City 229 9377 • Buranda 391 6233 • Cairns 311 515 • Capalaba 245 2870 • Chermalide 359 6255 • Maroochydore 791 800 • Mermaid Beach 785 600 • Rockhampton 27 9644 • Southport 32 9033 • Toowoomba 38 4300 • Townsville 72 5722 • Underwood 341 0844 SA • Adelaide City 232 1200 • Elizabeth 255 6099 • Enfield 260 6088 • St Marys 277 8977 • Westlakes 235 1244 WA • Cannington 451 8666 • Fremantle 335 9733 • Perth City 481 3261 • Midland 250 1460 • Northbridge 328 6944 TAS • Glenorchy 732 176 • Hobart 31 0800 • Launceston 344 555 NT • Darwin 81 1977

\*MAJOR AMATEUR STOCKIST STORES SHOWN IN RED

# AMSAT Australia

Bill Magnusson VK3JT\*

## National co-ordinator

Graham Ratcliff VK5AGR  
Packet: VK5AGR@VK5WI

## AMSAT Australia net:

Control station VK5AGR

Bulletin normally commences at 1000 UTC, or 0900 UTC on Sunday evening depending on daylight saving and propagation. Check-ins commence 15 minutes prior to the bulletin.

Frequencies (again depending on propagation conditions):

Primary 7.064 MHz. (Usually during summer).

Secondary 3.685 MHz. (Usually during winter).

Frequencies +/- 5 kHz for QRM.

## AMSAT Australia newsletter and software service

The newsletter is published monthly by Graham VK5AGR. Subscription is \$25 for Australia, \$30 for New Zealand and \$35 for other countries by AIR MAIL. It is payable to AMSAT Australia addressed as follows:

AMSAT Australia  
GPO Box 2141  
Adelaide SA 5001

## Mode "X" and All That

A question that frequently crops up is to do with transponder modes. What do those letters mean? What are the amateur bands involved? What equipment requirements do they impose?

It must be a bit bewildering to the newcomer. After successfully grappling with what seems to be adequate station equipment and learning about apogees, perigees, times of acquisition, uplink and downlink frequencies you would expect a more or less clear run at the satellites. To your disappointment you find you can't access the transponder only to be told it was on a different mode at the time you were trying.

Here then is yet another set of facts to be learned, another facet to be mastered. It's a problem as old as amateur radio satellites. In designing the early satellites, one of the main decisions which had to be made was which bands to use for the telemetry signal transmissions. Conventional wisdom would have it that the HF bands would be no good as the signals would need to pass through the ionosphere with all its (then) unknown effects. The early "beacon only" satellites, the phase 1 birds, used VHF for this reason. The 2 metre band proved not to be entirely free of ionospheric effects so

this posed a real dilemma to the designers of the first transponders to be flown on amateur radio satellites. No doubt they would have liked to go up in frequency. Except for a relatively few diehard experimenters, the technology of the day did not allow that.

The possibility of 6 metres would no doubt have been canvassed. Once again this would have restricted the number of amateurs who could have made use of the satellites. Widely differing frequency allocations around the world were also a problem with 6 metres. On balance the designers opted for a 2 metre uplink and a downlink in the 10 metre band, deciding to risk the 10 metre propagation problems in order to gain the maximum exposure of this new amateur pursuit among the general amateur radio population.

Thus mode "A" was born. It was very successful. I don't remember it being called mode "A" in the early days as it did not have to be differentiated from any other mode. There were no other modes! As more satellites came along, however, the need to spread out became apparent. The times they were a-changing and more gear was becoming available. 70 cm was a viable alternative when OSCAR-7 was designed so it was provided with a transponder uplinking in the 70 cm band and downlinking in the 2 metre band. This became known as mode "B". This is still a popular mode today.

When OSCAR-8 came into being one of the transponders was designed and built in Japan. The 2 metre band is very crowded in Japan and this surely affected the decision to pioneer a new mode. The transponder had a 2 metre uplink and a downlink in the much quieter 70 cm band. This became known as mode "J" (for Japan). Mode "J" produced some problems (and still does) for the unwary. The frequencies are carefully chosen so as not to be in harmonic relationship. Despite this the proximity of the 3rd harmonic of the 2 metre uplink transmitter to the high sensitivity downlink receiver can produce many spurious signals in the downlink passband. Much work was done to overcome this and sharply tuned strip line filters became the order of the day.

When the high orbit satellites came on the scene it became possible to include a number of transponders in the design and allow for switching between them to a predetermined schedule. The pressure was to move into the UHF and microwave region. OSCAR-10 and later OSCAR-13 moved into "L" band. The "L" mode transponder required the user to uplink in the 23 cm band and its downlink was in the 70 cm band. This was to be the new experimenter's mode.

It certainly spurred a lot of people on

to play with the microwave region. The challenge was to build a transmitter stable enough for SSB use and with enough output to uplink a good signal into the satellite which could be as much as 40,000 kilometres away. This is no mean task. Even with the relative ease of building high gain antennas it is still as much a challenge today as it was when these satellites were launched.

Unfortunately, mode "L" has been fraught with problems. OSCAR-10 went out of control due to radiation damage to the computer memory and OSCAR-13's "L" mode failed some time ago. At present we do not have an amateur radio satellite with "L" mode transponding capability.

The next step up was the advent of "S" mode on OSCAR-13. This once again has a 70 cm uplink but the downlink is in the 13 cm band, around 2.4 GHz. This is the latest experimenter's band and many stations are finding the challenge to be a stimulating one. Good results can be obtained with antennas like loop Yagis and the helix. Home made converters are an option and of course the sky's the limit with many stations using dish antennas for reception.

## Summary

Beginners will probably find mode "B" on one of the high orbit satellites an attractive starting point. However, there may be a better alternative for the newcomer. The Russian RS series of satellites have never deserted mode "A". The current RS satellites have transponders labelled "A", "K" and "T" which are HF to VHF modes involving the 2 metre, 10 metre and 15 metre bands. They require only the most basic station equipment.

The failure of the 70 cm transmitter on OSCAR-13 which disabled the "L" mode on that satellite also put an end to the "J" mode. At present there are no voice transponders operating in "J" mode.

"S" mode is still to be regarded as an experimenter's mode but the numbers are increasing.

Mode switching schedules are published regularly and switching is carried out according to MA number, ie at regular times each orbit.

## Next month

I'll start taking a closer look at each of these modes one by one. The topic for May, a discussion of the requirements for a station capable of working mode "A" and related modes and some tips on working the current mode "A" satellites.

\*359 Williamstown Rd, Yarraville VIC 3013  
Packet: VK3JT@VK3BBS

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# Awards

John Kelleher VK3DP\*

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This month we continue with a selection from the French Awards Programme.

**DUF** (Diplome de l'Univers Francophone) May be claimed for having contacted/heard and having received QSL cards from countries on the list below.

**DUF1** Awarded for contacts with 5 different countries in three continents.

**DUF2** Awarded for contacts with 8 different countries in four continents.

**DUF3** Awarded for contacts with 10 different countries in five continents.

**DUF4** Awarded for contacts with 20 different countries in six continents.

**DUF MEDAL** A very nice medal which can be claimed by the proud recipients of DUF4.

## DUF COUNTRIES LIST

### EUROPE

01 France F  
02 Corsica TK  
03 Monaco 3A  
04 Andorra C3  
05 French Army in FRG DA/DL

### AFRICA

06 Algeria 7X  
07 Tunisia 3V  
08 Morocco CN  
09 Cent Afr Rep TL  
10 Congo TN  
11 Ivory Coast TU  
12 Benin TY  
13 Gabon TR  
14 Rep of Guinea 3X  
15 Mali TZ  
16 Mauritania 5T  
17 Niger 5U  
18 Senegal 6W  
19 Chad TT  
20 Birkina Fasso XT  
21 Cameroon TJ  
22 Togo 5V  
23 Djibouti J2  
24 Malagasy Rep 5R  
25 Mayotte FH  
26 Comoros D6  
27 Reunion FR  
28 Glorioso Is FR/G  
29 Tromelin Is FR/T  
30 Europa FR/E  
31 Juan de Nova FR/J

### STH AMERICA

32 Fr Guyana FY

### NTH AMERICA

33 St P & Miquelon FP  
34 Martinique FM  
35 Guadeloupe FG  
36 St Martin FG/FS

37 St Barthelemy FG/FS  
38 Clipperton Is FO

### ASIA

39 Vietnam XV  
40 Kampuchea XU  
41 Laos XW

### OCEANIA

42 New Caledonia FK  
43 Loyalty Is etc FK  
44 Chesterfield Is etc FK  
45 Wallis Is FW  
46 Futuna Is FW  
47 Vanuatu YJ  
48 Tahiti FO  
49 Leeward Is FO  
50 Tubuai FO  
51 Rapa FO  
52 Marquesas Is FO  
53 Gambier Is FO  
54 Tuamotu FO

### AUSTRALIA & ANTARCTICA

55 Adelie Land FT8Y  
56 Kerguelen Is FT8X  
57 Amsterdam & St Paul FT8Z  
58 Crozet Is FT8W

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## Club Corner

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### South East Radio Group Inc

It's hard to believe, but the South East Radio Group Inc is holding its 30th annual convention. Yes, that's right! Its 30th convention will be held over the weekend of 11 & 12 June 1994.

I believe that our group can justly and proudly claim that this convention is the longest continuously run convention in Australia.

This year the program has been altered and has even greater emphasis on Fox Hunting type events. This is in line with our responsibility to conduct the Australian Fox Hunting Championships each year. However, increasing emphasis is to be placed on the Home Brew competition. For the last few years, thanks to an anonymous supporter, the focus on Home Brew has been increased considerably. Unfortunately, to our disappointment and no doubt that of our benefactor, this has not seen the level of entries change appreciably. So come on all of you Home Brewers, "rolling your own" can't be that dead. It doesn't have to be flash, just home built. There are

The Awards Manager is:

F9IL DUBOIS Edmond  
33, Les Tamaris  
F-34340 Marseillan France.

Fees for the above award(s) are

DUF1 US\$4.00  
DUF2 „ 5.00  
DUF3 „ 6.00  
DUF4 „ 11.00  
DUF MEDAL „ 15.00

### DTA (Diplomes des Terres Australes)

May be claimed for having contacted/heard and having received QSL cards from the territories listed below.

Kerguelen Is FT8X  
Amsterdam Is FT8Z  
Crozet Is FT8W  
Adelie Land FT8Y

**DTA Proof of contact with 3 Territories.**

**DTA EXCELLENCE** Proof of contact with all four territories.

The Awards Manager is:

FE6AXP POMEL Max  
PO Box 73  
F-63370 LEMPDES France. The fee is US\$ 6.00.

So, while we have diminished propagation, dig into those boxes of QSL cards, and see if you qualify. Good luck and good hunting.

\*Federal Awards Manager  
PO Box 300 Caulfield South VIC 3162  
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three different sections ranging from Novice to Expert, so if you built it, bring it. Great prizes too!!

The South East Radio Group convention promises to be a very popular spot on the amateur calendar so make sure that you don't miss out by booking your accomodation early. A list of recommended motels and caravan parks is available by writing to the Convention Coordinator at SERG, PO Box 1103, Mt Gambier, SA 5290.

### Moorabbin & District Radio Club

The Moorabbin & District Radio Club annual Hamfest will be held on Saturday 14 May. The location will again be the Brentwood Secondary College, located in Watsons Rd, Glen Waverley, map reference 71-C-7. Entrance is from Heath St and there is plenty of free parking space.

There will be an extensive display of the latest gear in all phases of amateur operation plus plenty of space for the sale of preloved items. Admission charge will

be \$3 per head. Snacks and hot food will be available all day. That means between 10 am and 3 pm. If you want to sell preloved gear then you should contact Trevor Armstrong VK3JJR on (03) 720 7609 after business hours. A six foot trestle will cost \$15 and a three foot one will cost \$10. Don't leave it too long to make a booking as space is always eagerly snapped up. A big new feature of the Hamfest will be a Home Brew competition which continues a long tradition of the M & DRC.

Entries are open to amateurs everywhere and there will be valuable prizes available including cash which can be spent on the spot. Be in it! You might win it! All enquiries about the home brew competition should be directed to David Armstrong VK3XJP/VK3PNL on (03) 808 8286 or 018 998 665. When you pay your \$3 to enter the Hamfest there is no further charge to enter the Home Brew competition. Entries must be entered by 11 am and will be judged by 12 noon. If you are booking a table for the sale of gear you must be there by 9.30 am.

If you are trying to obtain a licence or to upgrade your present call, why not use the M & DRC exam service? Exams are held on the 3rd Saturday of each month at the Combined Club Rooms in Turner Rd, Highett. Enquiries about this club service should be directed to Jerry Viscaal VK3MQ at (03) 704 6355 after business hours.

Allan Doble VK3AMD

### **Wahroonga Amateur Historical Radio Association**

In August last year a group of amateurs in the Wahroonga area, (20 kilometres north of Sydney in NSW) formed a new association specifically for the purpose of commemorating the 75th anniversary of the first radio message from the United Kingdom to Australia. The message sent by Marconi from Carnarvon in Wales to Ernest Fisk at Wahroonga was received on 22 September 1918.

In 1993 our group, using the special callsign VK2WAH, made contact with GB2VK, The Dragon Radio Club working from the old Marconi transmitting station at Waunfawr near Carnarvon. Throughout the 24 hour period many stations were worked world wide by both special stations. A tradition has now been started and an attempt will be made to work GB2VK on 22 September each year.

The Cornish Radio Amateur Club has invited us to participate in the 1994 International Marconi Day. We will be using the callsign VK2IMD and will be offering a special QSL card for a contact with our station. If direct QSLing is required the address is WAHRA, PO Box

600, Wahroonga, NSW 2076. A stamped addressed envelope MUST be included with all Australian direct cards, otherwise cards may be sent via the QSL Bureau.

Operation will take place for the 24 hour period from 0000/2359 UTC on Saturday 23 April 1994. The main mode of operation will be SSB on all HF bands with periods of CW or digital modes of communication being actively encouraged. Local stations will hear the VK2IMD callsign on various repeaters throughout the day.

The Cornish Radio Amateur Club offers a special award certificate for working International Marconi Day stations. The required standard for the 23 April 1994 event is to work twelve of the participating stations either as a full transmitting station or alternatively they offer the shortwave listener an award for logging 12 of the IMD stations.

All award claims should be made in writing giving a full extract of your log entries to Cornish Radio Amateur Club, IMD Awards Manager, PO Box 100, Truro, Cornwall, TR1 1 RX.

For the transmitting station claimant the cost is \$US10.00, 350 sterling or 12 IRCs. You require contacts with a minimum of 12 of the participating stations working two way on any mode employed. Be warned that only one contact with each participant will count towards the award, so a contact on two bands or on two different modes will count only as one contact.

For the SWL Award the cost is \$US5.00, 300 sterling or 8 IRCs. You require to have logged 12 two way QSOs and provide us with a full extract from your listeners log. As with the transmitting station claims we will allow mixed modes and bands but be warned each callsign will be counted just once towards the minimum of 12 required.

Stations to listen for on 23 April 1994 are as follows:- (alphabetical)

CT1TGM — COIMBRA, PORTUGAL  
DA0IMD — BORKUM ISLAND  
EI2IMD — CROOKHAVEN, EIRE  
EI4IMD — GALWAY, EIRE  
GB0IMD — ISLE OF WIGHT  
GB1IMD — LEICESTER (SATELLITES)  
GB2GM — POLDHU COVE  
GB2IMD — RATHLIN ISLAND, N IRELAND  
GB2MDI — SALISBURY PLAIN  
GB2MID — SANDBANKS, POOLE, DORSET  
GB2SFL — SOUTH FORELAND LIGHTHOUSE  
GB4IMD — TRURO (THE CRAC STATION)  
GB4MD — OLD CARNARFON STN, WAUNFAWR  
GB4MDI — FLATHOLM ISLAND  
IY0GA — SARDINIA ISLAND  
I7??? — CASELECCHIO DI RENO  
IY0ORP — ROCCA DI PAPPÀ, ROME  
IY0TCI — CIVITAVECCHIA  
IY1TTM — SESTRI LEVANTE, GENOVA  
IY4FGM — VILLA GRIFONE, PONTECCHIO

K1VV/IMD — CAPE COD, MASS  
KK6H/IMD — MARSHALL, CALIFORNIA  
OE??? — RADIO AUSTRIA INT, VIENNA  
PY1?? — RIO DE JANEIRO, BRAZIL  
VE1IMD — GLACE BAY, NOVA SCOTIA  
VK2IMD — WAHROONGA, NSW  
VO1IMD — ST JOHNS, NEWFOUNDLAND  
ZS6IMD — JOHANNESBURG, SOUTH AFRICA

In 1992 134 awards were issued and it is hoped many more claims will appear in 1994. We look forward to your company on the bands on Saturday 23 April 1994 and wish each and every one of you the very best of luck.

Jo Harris VK2KAA  
President WAHRA  
Packet VK2KAA@VK20P

### **Brisbane North Radio Club**

The World Gymnastic Championships will be held at the Boondall Entertainment Centre, Brisbane from 19 to 24 April, 1994.

To publicise and commemorate this event, Brisbane North Radio Club intends to use a special callsign V14WGC, for the period from 3 to 30 April 1994 inclusive operating HF on 80, 40, 20, 15 and 10 metres (not necessarily all at the same time).

For the actual period of the games (19 — 24 April) the station will operate portable from the Games site from which 2 metres will also be active.

Operators will try to maintain a watch for a number of hours during each 24 hour period. CQ calls will be made on bands appropriate to the propagation conditions on SSB using the lower portion of the band to include Novice frequencies. CW will be available when possible on appropriate frequencies depending on the availability of CW operators. A special QSL card will be forwarded upon proof of contact (QSL card or log extract). Forward to the Awards Manager, Brisbane North Radio Club, PO Box 78, Chermerside OLD 4032.

Graham Clayton VK4BGC

### **Riverland Radio Club/Sunraysia Radio Group Hamfest**

These groups will be holding their combined Hamfest in Renmark on Saturday 21 May 1994 from 0930 to 1600 hours. It will be held in the Tucker Hall at the Renmark oval.

This is the first time such an event has been staged in the Riverland of South Australia. As this area is such a rich wine and citrus growing area, it is hoped that this event will attract a lot of interest, so allow time to sample the local product.

To add interest for non-ham family members there will be a supporting hobby and craft section. So, to those who have a hobby besides amateur radio, you will be welcome to display and demonstrate

your particular hobby. Plans are well in hand for static and flying model aircraft displays. This is also a good time to dispose of all that unwanted equipment, whether it be radios, computers, spare radio parts or radio magazines.

Following the Hamfest a dinner will be held in the Renmark Hotel. A three course dinner will cost \$16.00 per head and must be booked. Accommodation is available in Renmark and Berri, and includes hotels, motels and on-site vans. Book early to avoid disappointment.

General admission will be \$2.00 per family, trestles for hobby displays are free, and trestles for hobby, disposals and commercial sales are \$10.00 each. They must be booked with the Secretary, Riverland Radio Club, PO Box 646, Renmark SA 5341. Enquiries can also be sent to Doug, VK5GA@VK5BRL.

Adrian Wallace VK5AW  
PRO RRC Hamfest Committee

### Townsville Amateur Radio Club

A Novice level amateur radio course is being conducted by Iain Morrison on behalf of the Townsville Amateur Radio Club Inc. The course is currently under way at the club rooms located at the SES complex, Green St West End every Saturday from 2 pm to 5 pm. For further information please call 077 797 869.

It's on again! The annual pilgrimage by the steamy north's amateur radio operators to South Mission Beach will happen this Queen's Birthday long weekend with setting up on Friday evening 10 June and packing up on Monday 13 June.

If you require van accommodation book now with the Village proprietors, else join the tent city. Any which way, feel really welcome when the village cassowaries give your place and provisions the seal of approval.

Anyone interested in radio communications is welcome to attend at the Beachcomber Coconut Village, The Esplanade, South Mission Beach. A Village station will be on air monitoring the amateur radio VHF simplex call channel and, if conditions permit, the Cairns VHF repeater.

### Summerland Amateur Radio Club

#### Thirty Fifth Annual Meeting

Sunday, 20 February 1994 was the date of the 35th Annual Meeting of the Summerland Amateur Radio Club. The venue was our clubrooms at Richmond Hill where radio transmitting and test equipment is available for use by members. We have a current membership of 86. The club is involved in all forms of

Amateur Radio and Computer (radio related) activities.

Office-bearers for 1994 are:-  
 President Steve Myers VK2JSM  
 Vice-President Iain McMillan VK2XVR  
 Secretary Ric Virtue VK2EJV  
 Treasurer Karleen Foster VK2VKT  
 Publicity Graeme Virtue VK2GJ  
 Committee Peter Richens VK2FSD & Andrew Cook VK2NDC.

The Examinations Officer, Gerry Creswell VK2IGC, reported that during the year 41 candidates had attempted 53 subjects with 31 passes, resulting in 7 new callsigns being allocated. The club will continue to effect improvements to the club building and grounds as time and finances permit. The regular monthly outings will be continued and ideas are sought for further activities. Our emergency network (WICEN) is being consolidated and the usual weekly radio nets will continue on our various radio repeaters.

### EXPO a success

Despite a few exhibitors failing to show, the recent Computer & Electronics EXPO, conducted by the Summerland Amateur Radio Club in the City Hall Lismore, was considered by all to be a very successful venture.

Around 500 paying customers, over the day, mingled with 15 stall-holders. Considerable interest was displayed in the latest in computer equipment and programs. Much money and goods changed hands during the day. Two of the tables, with pre-loved gear, were empty by lunchtime and most of the other display folk took away a lot less than they brought. The refreshment kiosk did a brisk trade. All members of the public and exhibitors spoken to agreed that it had been a good day and that we should do the same again next year, or sooner. Many thanks to the exhibitors who made the day, and to all those folk who gave their support.

Graeme VK2GJ, Publicity Officer  
ar

## Contests

P Nesbit VK3APN — Federal Contest Coordinator\*

Contest Calendar Apr-Jun 94		
Apr 2/3	SP DX SSB Contest	(Mar 94)
Apr 8/10	JA DX CW Contest (High Bands)	(Mar 94)
Apr 9/10	Israel DX CW/SSB Contest	(Mar 94)
Apr 9/10	"King of Spain" CW & SSB	(Mar 94)
Apr 23/24	Helvetia DX CW/SSB Contest	(Mar 94)
May 7/8	ARI DX Contest CW/SSB/RTTY	
May 14/15	CQ-M Contest (CIS)	
May 14/15	Sangster Shield (80 m ZL)	
May 14/15	Danish SSTV Contest	
May 28/29	CQ WPX CW Contest	(Feb 94)
Jun 4/5	RSGB Field Day CW	
Jun 11/12	ANARTS (VK) RTTY	
Jun 18/19	VK Novice Contest	
Jun 18/19	All Asia CW DX Contest	
Jun 25/26	ARRL Field Day	

A couple of interesting and unusual contests came to light this month, namely the Sangster Shield which is popular in ZL, and a Danish SSTV contest. As the Danish amateur society doesn't usually send contest results to the WIA, if anyone enters their contest and subsequently receives the results, I would appreciate a copy for publication.

I had hoped this month to present an updated version of the "General Rules and Definitions". However, due to lack of space, this will have to be held over. Please note the revised date for the CQ-M Contest. Thanks to John VK3KWA for

handling the Ross Hull and VHF-UHF Field Day Contests, and CQ, QST, Radio Communications, and Break-In. Until next month, good contesting!

73,  
Peter VK3APN

### Contest Details

The following contest details should be read in conjunction with the "General Rules & Definitions" published in April 1993 *Amateur Radio*.

### ARI International DX Contest CW/SSB/RTTY

2000z Sat to 2000z Sun, May 7/8

This contest occurs each year on the first full weekend of May. Anyone can work anyone else, and categories are single operator CW, SSB, RTTY or mixed; multi-operator single transmitter mixed; and SWL mixed. Bands are 160-10 m (no WARC). The same station can be worked on the same band once each on CW, SSB, and RTTY, but the multiplier can be claimed only once for that band. Once a band or mode has been used, 10 minutes must elapse before it can be changed. Send RS(T) + serial number — Italian stations will send RS(T) + province.

Score 10 points per Italian QSO, 3 points per QSO with stations in another continent, 1 point per QSO with stations

in own continent, and zero points per QSO with stations in own country. Final score equals total points from all bands times total multipliers from all bands.

Multipliers are the sum of Italian provinces (max 102) and countries (excluding I and IS0) on each band. Province codes are: I1: AL AT BI CN GE IM NO SP SV TO VB VC; IX1: AO; I2: BG BS CO CR LE LO MI MN PV SO VA; I3: BL PD RO TV VE VR VI; IN3: BZ TN; IV3: GO PN TS UD; I4: BO FE FO MO PR PC RA RE; I5: AR FI GR LI LU MS PI FT SI; I6: AN AP AQ CH MC PS PE TE; I7: BA BR FG LE MT TA; I8: AV BN CB CE CZ CS IS KR NA PZ RC SA VV; IT9: CL CT EN ME PA RG SR TP AG; I0: FR LT PG RI ROMA/RM TR VT; IS0: CA NU SS OR.

Use a separate log for each band, and a check log (ie sorted callsign list) for 100 + QSOs on any band. Send log within 30 days to: ARI Contest Manager I2UIY, PO Box 14, 27043 BRONI (PV), Italy. Logs on disk are welcome and accepted **ONLY** if you use the MS-DOS logging program available from the contest committee for US\$5 (to cover disk/postage only).

### CW-M Contest (CW, Phone, Mixed)

2100z Sat to 2100z Sun, May 14/15

Sponsored by the Russian Radio Amateur Union and the Krenkel Central Radio Club, this contest runs on the second full weekend of May each year. Categories are single operator, single and all band; multioperator single transmitter; SWL. Bands are 80-10 m, and can be changed only once per 10 minutes. No cross mode QSOs please. Exchange RS(T) plus serial number. Score 1 point per QSO within own country, 2 points with a different country in the same continent, and 3 points with other continents. The final score equals total points times total number of countries from each band. Countries are according to the R-150 list, which is similar to the ARRL DXCC list except for former USSR countries. Serious competitors should review the R-150 list. Continents are as for WAC. Awards apply. Mail logs by July 1 to "Krenkel Central Radio Club, CQ-M Contest Committee, Box 88, Moscow, Russia".

### Sangster Shield

0800-1100z Sat & 0800z-1100z Sun, May 14/15

This unusual contest emphasises low power operation. Work ZLs on 80 m CW. QSOs can be repeated once per 1/2 hour period, ie 0800-0830, 0830-0900, etc. At least 5 minutes must elapse between repeat QSOs with the same station, or else another station must be worked in between. Send RST plus power output,

ZLs will send RST/branch/power. Non-ZLs using up to 5 W score 10 points per QSO with a ZL, if the ZL worked is using up to 5 W; or 5 points per ZL using over 5 W. Non-ZLs using more than 5 W score 5 points per QSO with a ZL using up to 5 W. QSOs between stations where both use more than 5 W are invalid for the contest. Final score equals total points times number of ZL branches worked. Send logs to reach "Contest Manager ZL3KR, 4 Exton Street, Christchurch 8005, NZ" by 9 June. Certificates will be awarded to the highest scoring non-ZLs in their respective call areas.

### Danish SSTV Contest

0000z Sat to 2400z Sun, May 14/15

Use IARU recommended frequencies for SSTV on 80-2 m. Work stations once per band. Score 2 points for the first QSO with any DXCC country, 1 point for further QSOs, and 1 bonus point for each Danish QSO. Final score is the total points. Awards apply. Send logs by June 6 to "Carl Emkjer, Soborghus Park 8, DK-2860 Soburg, Denmark".

### Results of 1993 ARI DX Contest

The following entrants led Oceania in the mixed, CW, and SSB categories respectively (Call/Class/QSOs/Mult/Score):

VK2APK	SO.MXD	434	146	288788
VK2DID	SO.CW	40	34	8160
P29JA	SO.SSB	8	7	560

### Ross Hull Contest 1993 — 1994: Results

The number of logs submitted this year was about the same as usual. Some entrants reported more activity from fewer number stations than last year. I have totalled the number of different stations appearing in the Ross Hull and Field Day logs, and the table shows those worked on each band in each state. Many of these stations may not normally be "DX hounds" - some were tracked down on FM nets — but the figures at least show the pattern of activity:

CallArea	6 m	2 m	70 cm	23 cm	3 cm	Total
VK1	7	14	8	6	—	35
VK2	15	46	10	4	—	75
VK3	24	69	37	31	3	164
VK4	44	16	7	3	—	70
VK5	25	59	21	3	—	107
VK6	9	24	—	—	—	31
VK7	4	5	3	3	—	15
Other	16	4	1	—	—	21
TOTAL	143	233	86	51	3	

("Other" comprises 1 VK8, 5 JA, 8 ZL, 1 P2 and 1 FK8 on 6 m, 4 ZL on 2 m, and 1 ZL on 70 cm).

Again most logs came from VK3, although VK1 and VK5 had higher participation rates per capita. Activity in other states is still disappointing, especially VK6, where the only contest activity on any band above 6 metres was on 2 metres FM.

### This Year's Ross Hull Contest Results

The highest overall score again goes to Roger Steedman VK3XRS, who also had top score on 6 m, 2 m and 70 cm. Chris Davis VK1DO came second, with Ross Barlin VK2DVZ a close second on 2 m. On 23 cm, all I can say is that it would have been very boring to do nothing but listen for three weeks! It is good to see some 10 GHz activity also.

This, combined with the recent rash of new records, will hopefully lead to more interest in the higher bands next time.

I would like to congratulate Roger on another herculean effort. This is his 5th consecutive win, equalling the record set by Kerry Adams VK5SU in the early 70s. Congratulations to all other entrants as well.

Call	Name	6 m	2 m	70 cm	23 cm	3 cm	TOTAL
VK3XRS	R. Steedman	718	2428	2254	1420	208	7028
VK1DO	C. Davis	428	1544	1757	290		4019
VK2DVZ	R. Barlin		2108	854	290		3252
VK2ZAB	G. McDonald	12	1940	987			2939
VK3CY	D. Clarke		1208	1323			2531
VK3AUI	G. Sones	93	660	1071	650		2474
VK3TU	A. Gnaccarini	50	592	959	660		2261
VK3ALZ	I. Berwick	101	560	791	600		2052
VK3DEM	R. Ashlin	30	820	756	200	224	2030
VK3KWA	J. Martin				1640		1640
VK7IK/3	I. Kucerans				1610		1610
VK7XR	A. Hay	29	632	644	80		1385
VK3KTR	R. Rode		532	693			1225
VK7KAP	A. Perkins	1	340	483	90		914
VK1DA	A. Davis	155	308	182	70		715
VK3WAL	K. Hewett				224		224
VK2EDA	A. Davis		200				200
VK5NC	T. Niven						

Check Log



## Time for Some Changes?

The rules have not changed much for 4 years. During this time some aims have been achieved, and others not. For example, the level of activity is still very poor outside the south-eastern states, due partly to the large number of local contacts possible in the more densely populated areas.

It takes a relentless effort to fill the log with large numbers of contacts, and many people with jobs or family commitments cannot afford to spend the amount of time it takes. However, a shorter contest might not help either, as even one week of "living in the shack" could be impossible for many. The problem is not the number of days, but the number of hours per day that have to be spent. A shorter contest could also make it likely that many amateurs — and the best propagation — might be absent during the contest.

I feel the solution is to reduce the number of contacts that have to be made, and increase the time available for making them. What I propose is to extend the contest to cover more of the DX season, up to say 8 weeks, and to drop the "best 7 days" scoring and replace it with scoring based on the *best 100 contacts* made on each band.

This would make it possible to build up a competitive log by taking advantage of DX openings as they occur, rather than having to spend all day "working everything that moves". It would also encourage more DX activity and reduce the scoring advantage of people in more densely populated areas.

One entrant has suggested that this approach could deter those with more modest stations, who cannot work as much DX as the "big guns". My feeling is that most people who enter under the present rules accept the fact that they probably will not win, and yet they still join in. My hope is that they would continue to enter, and that the proposed rule changes would make the contest more attractive to others as well.

Narrow band DX operation is a minority activity nowadays and the contest plays a fairly major role in stirring up SSB and CW activity. We must try to get more stations involved and spread the activity over a longer period. If we cannot do this, one day we may wake up after our winter hibernation and find the DX calling frequency has become an FM net. Use it or lose it!

Other possible changes are increased publicity outside the WIA, and perhaps confining 6 m activity to 52 MHz and up. Any and all comments are invited!

## List of Winners, 1950 — 1994

1950 — 1951	VK5QR	R. Galle
1951 — 1952	VK5BC	H. Lloyd
1952 — 1953	VK4KK	A. K. Bradford
1953 — 1954	VK6BO	R. J. Everingham
1954 — 1955	VK4NG	R. Greenwood
1955 — 1956	VK3GM	G. McCullough
1956 — 1959*	VK3ALZ	I. F. Berwick
1959 — 1960	VK4ZAX	D. R. Horgan
1960 — 1961	VK3ARZ	W. Roper
1961 — 1962	VK5ZDR	M. J. McMahon
1962 — 1963	VK4ZAX	D. R. Horgan
1963 — 1964	VK5ZDR	M. J. McMahon
1964 — 1965	VK3ZER	R. W. Wilkinson
1965 — 1966	VK3ZDM	J. R. Beames
1966 — 1967	VK5HP	J. H. Lehmann
1967 — 1968	VK3ZER	R. W. Wilkinson
1968 — 1969	VK5ZKR	C. M. Hutchesson
1969 — 1970	VK3ZER	R. W. Wilkinson
1970 — 1971	VK4ZFB	E. F. Blanch
1971 — 1976*	VK5SU	J. W. K. Adams
1976 — 1977	VK4DO	H. L. Hobler
1977 — 1978	VK3OT	S. R. Gregory
1978 — 1979	VK4DO	H. L. Hobler
1979 — 1980	VK3ATN	T. R. Naughton
1980 — 1984*	VK6KZ	W. J. Howse
1984 — 1987*	VK3ZBJ	G. L. C. Jenkins
1987 — 1989*	VK5NC	T. D. Niven
1989 — 1994*	VK3XRS	R. K. W. Steedman

(\* = Winner for more than one consecutive year)

## VHF-UHF Field Day 1994:

### Results

The level of activity this year was generally good, although the bands went dead silent in my area after the first 24 hours. The south-eastern states again had the lion's share of activity. The highest activity per capita was in VK1, and the lowest was in VK4, where there were no portable stations at all. Shame and scandal!

Logs were generally well presented, but most had to be re-scored — many thousands of points were added to the logs and no log finished up with fewer points than were claimed. Some entrants claimed contacts with a home station, followed shortly after by the same station signing /P or /M. The ruling is that the station is the same even if the location is changed.

Some entrants also claimed points for multiple contacts with the same station under different call signs. This is possible if there are multiple operators who give out numbers using their own call signs with a "/P". These contacts were allowed this year, but next year the rule will be that a station is only portable if its equipment — not its operator — has changed location.

It was pointed out that home stations are in a different section from portable stations, therefore there is no point in giving double points to portable stations. I admit to woolly thinking on this, and next

year the scoring for all sections will be the same.

One entrant pointed out that it is unfair to allow 24 hour stations to enter the six hour section, because they do not have to do all the work within the one day, and can pick their best six hours. The point is taken and this will be changed. However, it will be noted that the winner of the six hour section this year was not a 24 hour entrant.

There were several entries from "partnerships" of two operators. According to the rules, these are multiple operator stations, even though they may not have the same resources as a big club station. Should there be a separate section for these "partner" stations? Or should they be allowed to enter as two separate single-operator stations who just happened to be at the same location?

One entrant objected to the locator based scoring system. One reason for using this system is to stimulate interest in the WIA Grid Square Award, and another is to simplify log-keeping. I am inclined to retain locators, since that seems to be what the majority want.

For next year, I assume a mid-January date would still be the most suitable — say January 14/15. Any comments or other suggestions would be much appreciated.

### Results

All that said, at last we come to the results! For the second time, Rob Ashlin VK3DEM has poked a major hole in the troposphere and thus obtained a stupendous score in Section A. Congratulations Rob, I hope you will recuperate in time for the next one. Phil Helbig VK5AKK came second with an excellent score, and in Section B the prize went to Ron Cook VK3AFW, closely followed by Doug Friend VK4OE.

In the multi-operator section, the Geelong Amateur Radio Club won again with a very high score, followed by a near-tie between VK1DO and VK5BW. The top score for a home station went to Des Clarke VK3CY. My thanks and congratulations to all those who made the Field Day a success, and I hope you will all be back next year.

**Help stamp out stolen equipment — always include the serial number of your equipment in your Hamad.**

CALL	NAME	6 m	2 m	70 cm	23 cm	3 cm	TOTAL
<b>Section A — Portable, Single Operator, 24 Hours</b>							
VK3DEM	R. Ashlin	150	9776	7616	1280	96	18918
VK5AKK	P. Helbig	224	9360	2842	120		12546
VK4OE/2	D. Friend	90	1680	1610	880		4260
VK3XEX	M. Batt	28	1536	952			2516
VK5XE	I. Northeast		1536				1536
VK6BWI	P. Parker		1520				1520

**Section B — Portable, Single Operator, 6 Hours**

VK3AFW	R. Cook		1904	1050			2954
VK4OE/2	D. Friend	70	760	1050	300		2180
VK3XEX	M. Batt	16	576	448			1040
VK2DXV	W. Jirgens		504	126			630
VK5XE	I. Northeast		704				704

**Section C — Portable, Multi Operator**

VK3ATL	(1)	1778	13624	16296	1620		33318
VK1DO	(2)	192	7392	5488	1080		14152
VK5BW	(3)	700	9680	2604	200		13184
VK1TRT	(4)	200	5456	3234	520		9410
VK1DA	(5)	312	2496	1218	280		4306
VK7XR	(6)	40	440	448			928

**Section D — Home Station**

VK3CY	D. Clarke		2112	1372			3484
VK3AUI	G. Sones	48	980	1260	170		2458
VK3KWA	J. Martin	3	288	392	480		1163
VK5NY	R. Bowman	12	96	105	20		233
VK5BD	J. Haseldine						Check Log

(1): K. Asplin VK3DQW, L. de Vries VK3PK, A. Forster VK3AJF, C. Leone VK3BCL, C. Gnaccarini VK3BRZ, A. Gnaccarini VK3TU, M. de Vries (SWL)

(2): C. Davis VK1DO, G. Rozenberg VK1CO

(3): A. Raftery VK5BW, A. Russell VK5ZUC, J. Brayley VK5AJQ

(4): T. Roulston VK1TRT, W. McIntyre VK2IFR

(5): A. Davis VK1DA, R. Apathy VK1KRA

(6): A. Hay VK7XR, A. Perkins VK7KAP

**Some Comments from the Logs**

"The thought of setting up a multiband VHF station in time for a 6 am start is rather daunting... "An excellent contest and great fun... "Would have done better but the tent was blown down by gale force winds... "I did all the operating and the others went through five slabs of beer... "Many operators did not know the contest was on... "Apart from poor conditions, heavy winds, rain, thunder and lightning, we had a really good time..."

ar

**WIA News**

**Standard Time/Frequency Service**

Here's a reminder of Australia's own Standard Time and Frequency transmission service, station VNG.

The service has continuous transmissions on 2500 kHz, 5000 kHz, 8638 kHz and 12,984 kHz. In addition, transmissions on 16,000 kHz operate between 2200 and 1000 UT.

On the 2.5, 5 and 16 MHz transmissions, a talking clock announces the time each minute, with a spoken station identification every 15 minutes.

There are no voice announcements on the eight and 12 MHz transmissions. These have a "VNG" Morse ident every 15 minutes.

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Some user comments: "Golly I am impressed... Over the Moon" "I have a number of logs and Ham Log is on the hard disk to stay!" "It is without doubt the best Log I have ever used — you have covered everything — a breeze to use" "A super program and Australian" "Thanks for the excellent back-up service" An FK8 wrote to the magazine *Megahertz*: "My job — programmer of 14 years... I've acquired 10 log programs without ever making use of them until I purchased Ham Log. It has maximum ease of use whilst keeping a rare functional richness... perfect statistics, listings and rare tools — torture it: one use will make you appreciate its flexibility." VK6PY, VK4VHP, VK5QB, FK8GV.

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Robin Gandevia, VK2VN

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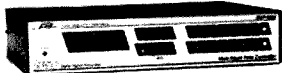
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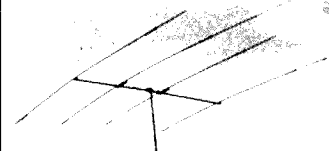
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## Divisional Notes

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### Forward Bias — News From the VK1 Division

Rob Apathy VK1KRA

The ACT Division held its Annual General Meeting in February introducing a largely new committee. This is not to suggest that the membership was in any way unhappy with the old committee but change is inevitable and as some say a change is as good as a holiday. In fact Christopher Davis has done an excellent job as President but has decided to step down and spend more time with his family. Hugh Blemings our secretary who came in at short notice has very heavy work commitments and simply cannot devote the necessary time. So the old committee retires with our gratitude for a job well done to be replaced by the new with fresh energy, ideas and their own way of tackling things.

While changes may be necessary we are not about to embark on a crash program and our members can expect ample opportunity to have their say. The formula used for broadcasting and meetings have stood the test of time and are likely to remain unchanged. A few questions remain as they have been with us for some time: the value of maintaining the Divisional office at the Griffin Centre at just under \$1000 per year must remain under constant scrutiny. This is an emotive topic as some members feel that the office is a necessary part of the service provided to our members. I am not convinced of the economical viability of the office and this topic will remain at the top of our list for some time.

In the past our committee meetings were held before the general meetings. While the arrangement suited some people the new committee expressed a desire to go back to a more traditional setting where meetings are held two weeks ahead of the general meeting. While this means giving up one extra night per month the consensus of the new committee was that they would be more comfortable with such an arrangement.

We finished the year in a financially healthy position thanks largely to the good work of Don who has agreed to stay on in the same job for another year. There are some signs, however, such as the long awaited fee for repeater sites, associated legal costs and general increase in a variety of areas such as rent, that fees may have to be reviewed later this year.

Our new Federal Councillor is Richard Jenkins a well known member of the amateur community in Canberra who has

agreed to take over from me. I have now completed my three year contract that I agreed to. I am certain that Richard will be an excellent ambassador for us on the Federal Council.

Most sincere thanks are also due to Ted and Richard for the tireless work done over the past years looking after our education program in the ACT and Jan for looking after the examination service so well. While Ted and Richard are retiring Jan has agreed to stay on for a while. There are always a lot of people behind the scenes who are not seen and maybe not even heard who are never the less vital to our operations. We are blessed in the ACT with an excellent repeater site and a top repeater thanks to the work of Bob Milliken and Paul Bell. I would like to take this opportunity to thank them for their dedication, advice and hard work.

More on the new committee in the next issue — hope to see you at the meeting in April. Please note that the meeting is on 25 April, ANZAC Day.

### VK3 Notes

Jim Linton VK3PC

#### Annual General Meeting

Members of the WIA Victorian Division should have received notification of the annual general meeting, and copies of annual reports and balance sheet.

The AGM will be held on Wednesday, 25 May at the Ashburton Library, High Street, Ashburton, starting 8 pm sharp.

The meeting of members, a requirement under Corporations Law, is to formally receive annual reports, elect the 1994-95 council, and appoint auditors.

#### ATV Repeater

The amateur television repeater VK3RTV is beaming its signal to the Greater Melbourne and Geelong area via a new antenna.

Peter Cossins VK3BFG says the repeater was off air for four weeks recently after the antenna inadvertently suffered damage due to site works.

Up until then VK3RTV, first licensed by WIA Victoria on 5 September 1978, had been in continuous service except for about a total of about two weeks until the recent outage.

Peter was eager to get the repeater back on air and with the help of friends built and installed an 8-phased horizontal array antenna.

Those assisting with the task were ground crew Phil VK3AWG, and Neil

VK3BCU, and performing the rigging tasks at the Olinda site was Geoff VK3JDJ.

WIA Victoria paid the costs of raw materials for the antenna and expressed appreciation to Peter VK3BFG and the ATV Group for their efforts in keeping VK3RTV on air.

#### Novice Class

A broad range of people are now studying for their Novice licence at the 1994 WIA Victoria theory and Morse classes.

Some 20 enrolled in the theory class run by Rob Carmichael VK3DTR, and a lesser number were in the Morse class being instructed by Bert Hanson VK3BAW.

Rob is well known to the many of his previous class students who are now on air under their own call signs, while Bert has returned to teaching after a break of many years.

There was an interesting trend with this year's classes having more doing the theory than the Morse class, usually the numbers were about equal.

It appears a number of people are preparing to qualify for the proposed no-code VHF/UHF Novice licence.

#### Mobile Antennas

The road traffic authority VicRoads is concerned about some antennas mounted on the front bumper, bull bar or other front part of a vehicle.

Its publication "Vehicle Standards Information" issue 29 refers to the Road Safety (Traffic) Regulations 1988.

The regulations require a driver to have a "full and uninterrupted" view of the road, any traffic ahead and to each side of the vehicle.

Vehicles must also meet the "Standards For Registration" which ban the fitting of anything which would prevent a driver having an adequate view of the traffic.

VicRoads is concerned about antennas of more than 30 mm in diameter which encroach into the driver's field of view.

"The aerial or mounting should not obscure or otherwise adversely affect the performance of visibility of headlamps, parking lamps, turn signal lamps or any other mandatory lamp or reflector," it says.

In addition the antenna must be fitted securely, and not have any sharp edges or protrusion which could increase the risk of injury to pedestrians or cyclists.

The publication also recommends that the antennas be non reflective and it prefers a matt black finish.

Emergency or special purpose vehicles requiring the fitting of these antennas which cannot meet the guidelines may apply for a conditional registration.

Anyone needing further information should contact VicRoads, or write to the Manager, Vehicle Safety Branch, 60 Denmark Street, Kew 3101.

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## Education Notes

*Brenda M Edmonds VK3KT\**

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### 5/8 Wave — VK5 & VK8 Notes

*Rowland Bruce VK5OU*

Hey! Come on guys, don't mess around with the title, (*Amateur Radio* February 1994.) This column isn't just "VK5 Notes". VK8 is part of the Division too and the title of 5/8 Wave was coined by Jenny Warrington VK5ANW, the first compiler of it, to denote the unique status of the Division in covering two call areas. For those of you interested in zones it has a foot in both 29 and 30 in the CQ scheme of things. It must be admitted though that there isn't much about the Territory very often, but this is a factual report; I don't make things up as I go along; I need your input to make the column representative.

The February General Meeting was a nostalgic affair. President Bob VK5BJA, had put together a tape from video clips of the Jubilee 150 year's activities, 1986. There were many well remembered events and many recognisable faces, but don't the years take their toll, even only eight of them? Where has the white hair come from? For that matter, where has the hair itself gone to? Do you remember working the Jubilee 150 stations? The Kangaroo Island lighthouse, the Overland Train, the Jubilee 150 train, the Falie and the Marion Centenary station? Do you have the Jubilee 150 certificate signed by the Premier, John Bannon?

The last weekend in February saw the holding of the first Clubs' Convention since 1991. Again some old faces, but also some new. It's good to see that these are often younger too. Many things were discussed and ideas put forward (some new, some old) and, being a residential weekend, much rag chewing took place well into the night. I could not attend the whole weekend but I intend to get a copy of the minutes when they are completed, to form the basis of several months' 5/8 Waves.

Because of the Christmas and New Year break, a longer than normal list of new members was approved at the February meeting. Welcome to B K Milne VK5BKM; T K Munn VK5NDD; J D Woolner VK8ZAO; D M Simkins VK5KWY; S B Renshaw VK8SR; D J Richards VK5NDR; J Ward VK5KBI; R King VK5NLK and J P Malusa. It is sad, too, to report the passing of W R Franzi, who held the two call signs of VK5FR and VK5VK, depending whether he was on the mainland or Kangaroo Island. He was a strong supporter of the Jubilee 150 referred to above. ar

Of late I have been contributing these notes only in alternate months to allow space for the many other regular columnists. However, I have asked for space this month in order to make a specific statement.

During February, at least two Divisional broadcasts carried information about examination matters which was incorrect. It was stated that:-

- Questions on FM may appear on Novice Examination papers;
- FM is not on the Novice syllabus; and
- A candidate choosing an incorrect answer to a question on FM would not be penalised.

Please be assured that FM is on the Novice syllabus. It was listed in the original DOC 71 in 1989, and has appeared in each reprint since. There has

never been a policy of discounting questions on FM if they appear. Candidates or instructors who have been confused by these statements are advised to obtain a copy of RIB 71, which has recently been reprinted by the SMA.

As I have said previously, work is proceeding on the revision and extension of the theory question banks. The AACP bank is proceeding well, and should be completed soon. Until the revision is completed the current system for producing papers from the existing, modified banks will continue.

Interested persons who wish to make comments are invited to write to me at the address below.

*\*Federal Education Coordinator  
PO Box 445, Blackburn, VIC 3130  
ar*

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## FTAC Notes

*John Martin VK3KWA\**

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### New 70 cm Record

The South Australian 70 cm record between VK5NC and VK6UD has been broken by a contact between Roger Bowman VK5NY and Don Graham VK6HK. The new record distance is 2149.9 km. Don commented that it had been eight years since he last worked Adelaide on 70 cm! Congratulations to Roger and Don.

### 13 cm Band Plan

Last month I mentioned the need for a new band plan to cope with our loss of spectrum space below 2400 MHz. The segment 2400 — 2450 MHz is reserved entirely for satellites at present, but we will have to plan for a number of other uses as well.

In other countries (Japan, for example), a segment up to 2405 MHz has been kept clear for satellites. Current satellites do not operate below 2401 MHz, so the segment 2400 — 2401 MHz appears to be the best spot for the new narrow band segment. The draft plan includes provision to reshuffle this part of the band in response to any major changes in satellite allocations.

The draft plan is shown below. There is nothing final about it and any comments would be appreciated. I do not know how much time we have to finalise the new

plan, but I assume that the "crunch" will not come for some months yet.

2400 — 2401 NARROW BAND MODES (EME, terrestrial DX, beacons etc as per existing plan for 2304 — 2305 MHz)

2401 — 2405 SATELLITES

2405 — 2406 FM SIMPLEX — voice

2406 — 2407 FM SIMPLEX — digital

2407 — 2410 RESERVED (Future use depends on satellite allocations. Satellite segment could be changed and NB/FM segments moved higher if necessary).

2410 — 2412 FM REPEATER/LINK OUTPUTS (20 MHz offset)

2412 — 2430 ATV CHANNEL 1 (2421 +/- 9 MHz)

2430 — 2432 FM REPEATER/LINK INPUTS (20 MHz offset)

2432 — 2450 ATV CHANNEL 2 (2441 +/- 9 MHz)

*\*Federal Technical Advisory Committee Chairman  
PO Box 300 Caulfield South VIC 3162  
ar*

**Don't buy stolen equipment — check the serial number against the WIA stolen equipment register first.**

# How's DX

Stephen Pall VK2PS\*

Whilst we are happily DXing, our masters, the International and National authorities regulating the communication service of this nation, of which the amateur service is only a minor part, are seriously discussing the problem of allocating more and more spectrum space to the ever increasing demand from non-amateur bodies for their exclusive use.

If you have a limited amount of a commodity, and spectrum space is one such commodity, and you as a government have a total monopoly in the allocation of that commodity, then the price of the product must rise, and somebody's gain must be the other fellow's loss. Our bands are always under constant threat and you the rank and file amateur better be very busy and use the bands in ever increasing numbers, otherwise one day the axe might fall on your beloved band space.

The International Telecommunication Assembly met in Geneva from 8 to 16 November 1993. This new organisation, the successor to the Plenary Assembly of the International Consultative Radio Committee (CCIR) acts as the management body for the various study groups of ITU's radiocommunications sector. Among other things, this assembly also prepares the agenda for the future, for example for the next two World Radio Conferences (WRC). One will be held in 1995 and the other two years later in 1997. The 1995 Conference will review, amongst other agenda items, "The use of the HF bands newly allocated to broadcasting", whilst the 1997 Conference will "Examine the HF bands allocated to broadcasting." By implication there will be probably a continuing pressure on amateur bands, particularly in the area of the 13 and 23 cm bands.

Closer to home, our Spectrum Management Agency, which is part of the Department of Communications yet an independent Commonwealth statutory body, has released a discussion paper entitled "Inquiry into Radio Communications Apparatus Licence System". Do yourself a favour and ask for a free copy from the agency. Please read it and send your comments immediately to your WIA Division. There will be seminars covering this subject in every state of Australia. Try to attend them if you can.

## Peter I Island — 3Y0PI

The DXpedition to this Antarctic island is now history. Landing on the island took

place on 29 January and lasted 3 hours during which the helicopter made 40 trips back and forth from the ship to the island. Some equipment was damaged in transit. After erecting the tents and antennas they went on air immediately on several bands around 2000 UTC on 1 February. The first few days produced excellent weather and about 2000 QSOs but conditions deteriorated and by 5 February snowstorms with winds up to 120 km/h made them stop operations for up to half a day.

Some of the antennas and generators were temporarily out of action. Propagation to VK/ZL was reasonable and most of the contacts to this part of the world were made during the first two days of the activity. Despite several solar storms and high A-Indices the expedition made approximately 65000 QSOs and operated until 16 February.

Extremely bad weather made the evacuation of the team from the island very difficult. By 18 February only two members of the team were on the Russian ship. The last ones were lifted off at the end of the day on Sunday 20 February. The ship "Akademik Fedorow" took them to Punta Arenas, Chile. From there they continued their journey by taking a flight back home. All in all this activity was a great success and congratulations are due to the members of the expedition on their achievement.

## Cocos Island TI9

Members of the Oklahoma DX Association and others will activate this Costa Rican Island during May. The ten days of activity will start on the second week in May. Transportation and the landing permit have been taken care of. It will be a full scale multinational effort with about 12 operators and six stations. CW and WARC bands will be the preferred operational modes.

Leading the team will be Javier AH6MM and Craig AH9B. Others in the group are V73C, AD1S, TI2JJP, XE2CQ, NH6UY, N5MIH and NOAFW. QSL to OKDXA, Box 88 Wellston, OK 74881, USA.

## International Marconi Day, 23 April

The Cornish Radio Amateur Club is again sponsoring a world wide activity on Marconi's birthday. This year there is an Australian entrant for the first time. VK2IMD, a special callsign, will be activated by the Wahroonga Amateur Historical Radio Association for 24 hours

from 0001 UTC to 2359 UTC on Saturday, 23 April. The original celebration started in 1988 with only six participating stations of which all had to have some affiliation with Marconi, usually sites used in early experiments.

This year the list has grown to 29 participating stations. The event is always celebrated on the nearest Saturday to Marconi's actual birthday which was on 25 April. There will be ten stations with the GB prefix, seven with an Italian prefix, one Canadian, two with Irish prefixes and one station each from Portugal, Germany, the Republic of South Africa, Austria and Australia. Each station will have a suffix combination incorporating the letters IM, IMD, MD or similar. There is also an attractive award if you work 12 Marconi stations (see details in *Club Corner*). QSL direct with an SASE to WAHRA, PO Box 600, Wahroonga, NSW 2076 or via the Bureau.

## Antarctica — VK0 and Others

There are several Australian stations currently operating from Antarctica. Dave VK0DE (Davis Base), Jim VK0DJ (Casey Base), and Paul VK0CS (Casey Base). Please note there are no stations on Macquarie Island or Heard Island at present.

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See review in AR, July 1993

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Other active Antarctic stations are: IA0PS (Italian, Terra Nova Bay), LU1ZA (Argentina, Orcades Base), AT3D (India, Maitvee Base), CX0CMK (Uruguay, Cheriffe Base), ZX0ECF (Brazil, Ferraz Base), DP0GVN (Germany, Neumeyer Base), OA0MP (Peru, Macchu Picchu Base), VP8HAL (British, Antarctic Halley Station), 3Y9YBA (Norwegian, Bluefield Camp, Tierro Mountains).

### New Russian Callsigns

It was reported that Russia has reserved some new callsign blocks for the following areas: R1MVA — R1MVZ Malyj Vysotskij Island; R1FJA — R1FJZ Franz Josef Land; and R1ANA — R1ANZ for Antarctica. No one knows as yet when these callsigns will be put into use. Neither do we know what will happen to the 4K3 and 4K4 prefixes used by stations operating from Russian islands.

There is some confusion about the old ex-USSR callsigns and the new allocated ones. Not all the former republics have converted the old prefixes into new ones, so QSLing is a problem. It is always advisable to ask the operator what republic is he transmitting from, and note the country on the back of your QSL card under the callsign. This will help your QSL Bureau to forward the cards to the correct overseas bureau, as each republic now has a separate QSL Bureau.

### Future DX Activity

- The sovereignty of Walvis Bay and Penguin Islands was transferred to Namibia on 1 March 1994. The "Sydney Morning Herald" quoted an AFP report on 2 March. "Thousands of Namibians roared with delight as the South African flag was lowered for the last time over the enclave of Walvis Bay at midnight on Monday, ending 84 years of rule by Pretoria. The ceremony marked the reintegration of Namibia's only deep water port and 12 islands with the rest of the country." The new callsign of ZS9A will be V51C. Baldur and friends (DJ6SI, DJ6JC and V51BI) were the last DXpedition to operate from Penguin Islands (from 23 to 28 February) as ZS0X.
- It was reported by OE6EEG that monk Apollo, SV2ASPA from Mount Athos has decided to start operating again, despite the fact that he is still not happy with a previous decision by the ARRL regarding the former activity from Mt Athos of Baldur DJ6SI. Apollo is active on the 80, 15 and 20 metre bands but has very limited time for amateur activity as he is in charge of works in building a new monastery.
- Pierre FT5XJ is active on Kerguelen Island until July 1994.

- Laci HA0HW will operate from Phnom Penh as XU0HW for two weeks beginning 5 May. Laci is the QSL Manager for Sanyi XU7VK, a Hungarian national attached to the Hungarian Embassy in Cambodia. Both stations intend to be active on all bands in CW, SSB and digital modes. It is also planned that they will activate Rong Island in the Gulf of Thailand with the callsign of XU0HA. QSL for all these XU activities to P0 Box 24, Puspokladany, H-4151 Hungary.
- Holger DL7VTM and friends will be active from Zambia mid-March to 6 April. Callsigns 9I2TM and 9I2LA will be used. QSL to DL7VRO.
- Mats SM7PKK and Nils SM6CAS will be active from Banaba Island T33, up to 5 April. The SSB call is T33CS and the CW call is T33CS. SSB cards to be sent to Philip Marsh, Orcheston Rd, Bournemouth, BH8 8SR, Dorset, UK. CW cards to be sent to Mats Persson, Zenithgatan 24 #5, S-21214, Malmo, Sweden.
- Try to work 5Z4JD before he leaves Kenya in May or June.
- Brian VP8FM is now the Base Commander at the British Antarctic Survey Base and will operate as VP8HAL or under his own call VP8CFM. He will be at the base for the next 14 months. QSL to GM4KLO.
- Look out for 9N1AA who is active from Nepal. QSL to Satish K Kharel, PO Box 4292, Kathmandu, Nepal.

### Interesting QSOs and QSL Information

- 4K1F — Yuri — King George Island — 14204 — SSB — 0759 — Jan. QSL to KF2KT, Nikolai Komissarov, 1862 Woodbine St, Ridgewood, NY 11385. Note this is a new address.
- CE2CC — Joe — 7063 — SSB — 1033 — Feb. QSL to Jose Chadwick Larrain, Box 197, Vina Del Mar, Chile.
- PJ2HB — Hank — 7063 — SSB — 1113 — Feb. QSL to WA2NHA Howard Messing, 90 Nellis Drive, Wayne, NJ 07470, USA.
- YL1WW — Larry — 10105 — CW — 1055 — Feb. QSL to A B Litte, Lakstigalas 6 37, LV-2150 Sigulda Latvia. (No radio amateur identification on envelopes).
- OY9JD — John — 14226 — SSB — 1148 — Feb. QSL to Jon Ingolvur Dam, Marknagilsnegur 26, FR-100 Torshavn — Faroes.
- VS6WV — Mike — 7062 — SSB — 1110 — Feb. QSL to K0TLM, Thomas L Bishop, 4936 N Kansas Ave, Kansas City, MO 64119 USA.
- SV8JE — Chris — 14222 — SSB — 0650 Feb. QSL to Christos Plessas, G

Doriza 3, GR — 28100, Argostolion, Greece.

- V73GF — Reuben — 14226 — SSB — 1149 — Feb. QSL to P0 Box 446, Majuro, MH 96960 Marshall Islands.
  - IY0A — Luc — 14202 — SSB — 0712 — Feb. QSL to IK0USA, Paulo De Michetti, Casella Postale 9047, I 00167, Roma, Italy.
  - HK0NZL — Louis — 7085 — SSB — 1132 — Feb. QSL to Louis Alberto Escobar Potes, Box 013, San Andres, Colombia.
  - T24JJ — Nob — 14196 — SSB — 0629 Feb. QSL to JR2KDN. Yuichi "YU" Yoshida, Kato Bldg, 4F 529 Rokugaikae, Kita-Ku, Nagoya 462, Japan.
- If you find this subsection useful, then please send me detailed band reports, as above, of your interesting DX QSOs including details of direct QSLs received (time it took to receive the reply and QSL Manager's callsign or address or op).

### From Here There and Everywhere

- Gunter DK2WH who took part in the August 1993 Penguin Island DXpedition advises that all the QSL direct cards were mailed out in January from the Czech Republic due to the extremely high postal rates in Germany.
- Dave VK6DX reports good openings to the USA in the evening and to Europe in the mornings his time. He specialises in 40 metre CW contacts with homebrew equipment.
- The proposed KP5/AB4JI DXpedition to Desecheo Island has been cancelled due to unauthorised presence of armed Haitians on the Islands.
- The St Peter & Paul Rocks DXpedition had severe generator problems and operated most of the time with reduced power. They closed down mid February after only a few days of operations.
- The Albroilhos Archipelago (IOTA SA-019) was activated in the last days of February under the callsigns PY0A and PY0B. For DXCC this will count only as Brazil. QSL to Roberto Stuckert, PT1GTI, PO Box 09647, 70001-970, Brasilia, DF, Brazil.
- According to some unconfirmed rumours the mainland Chinese amateurs are in trouble. It is said that the authorities charged them with "listening to unauthorised frequencies". There is no further substantiation of this news. Do any of our readers have more information?
- The Pitcairn Amateur Radio Club (VR6PAC) elected the following officers: Brian Young VR6BX

President, Tom Christian VR6TC Secretary, Meraida Warren VR6MW Treasurer. Incidentally, out of the 12 licensed operators 11 are locals, and out of the 11 locals 5 are YL operators and all of them QSL direct except 3 who use outside QSL Managers.

- Jon 3DA0CA is QSLing direct for contacts on 20 and 15 metres. His address is PO Box 329, Mbabane, Kingdom of Swaziland, Africa.
- Satish 9N1AA has written a letter to Hubert ZLIWG. Gray VK4OH sent me a copy of that letter. Here are some interesting facts of a radio amateur's life in Nepal. "I am using a Yaesu FT757GX in combination with a 4 band vertical antenna 45 feet above the ground. I was a SWL since 1980 but I am still very new to this hobby. My total on air experience is not more than 10 hours. Previously the only active operator from Nepal was Father Marshall Moran (now a silent key) who received a licence by royal ordinance from his Majesty King Mahendra. Amateur radio was established in Nepal in 1990 after changes in the government. To pass the necessary Telecommunication laws, to design a radio amateur course and to arrange the amateur examinations has taken more than two years. With me, two other hams have passed the examination test and got their licence. Suresh Upreti 9N1HA and Ram Gurung 9N1RB. Suresh has his own station but Ram often operates from my shack. My major interest is in digital modes. I have had QSOs with more than 200 stations in 12 countries in the RTTY mode."
- Moldova ER (formerly U05), has been divided into 5 call areas, ER1 to ER5. The prefixes from ER6 to ER9 are reserved for special purposes. The ER0 prefix will be used by foreign amateurs operating in Moldova.
- The Armenian Radio Sport Federation advised the various DX outlets that the station operating on 40 and 80 metres with the callsign EK7M is a pirate,
- The licensing system has changed in Andorra C31. Andorra now has its own Constitution, is a member of the United Nations (184th member) and is also a member of ITU. Andorra is not part of the European CEPT Agreement. The C30 guest licence call has not been issued for more than 3 years. The present licensing system is using C31 (resident with all privileges on all bands), C32 (Restricted) and C33 Limited Licence. According to URA (Unio De Radioaficionats Andorrans) the following are illegal operations: C31/OZ3JK/m, C31LX, C31NP, C30EJA, and C31AZ.

- It appears that the new Russian prefix of RK identifies club stations.



**Bill VR2BZ with his "DX" antenna, a total of 21 inches or 54 cm in length.**

- Have you had a problem with your neighbours or with the authorities or with both of them when you put up your beam in your backyard? Did you think that life was miserable and difficult? If so, please pause for a few minutes and consider the difficulties of Bill VR2BZ. Bill is originally from South Australia but has lived and worked since 1981 in Hong Kong. Five years ago he was infected with an incurable disease called "amateur radio" which has taken over his life. He now spends a lot of time with a soldering iron in hand and fingers dancing over the keys of a computer on packet and tracking satellites. Bill has written a long letter to Gray VK4OH thanking him for a recent QSO. Here are a few interesting details from his letter. "You may be interested to know that in Hong Kong we all have major problems with antennas. As we all live in flats, we are governed by deeds of mutual covenant. One of the restrictions is that we cannot put anything outside the flat or erect anything on the roof. This is to prevent everyone putting up their own TV antenna and running a coax up the outside of the building to the roof. There are always, of course exceptions, and in the older block of flats, there is a spaghetti of coax running up the sides of the buildings and over the roof. On the roof there is a forest of grey metallic skeletons, pointed in all directions, showing their age with the rust from the very corrosive atmosphere here, and these are the TV antennas for every flat in the building. Needless to say, each new building has a communal antenna

for TV with coax feeding every flat from the inside. There are 240 flats in my building, and ten blocks surrounding us, all within 100 yards. Quite congested. One or two hams have been lucky and live in flats where either their deed doesn't specify "no antennas" or more likely when the ham asked the management if they could erect an antenna, they were refused and, after a suitable interval, they went ahead anyhow. I fit into the latter category. The antenna (or is it a coil?) I use is the Isotron which is 21 inches overall length, and it is on a short boom, 3 feet long, jutting out from the side of the building. I don't even have a balcony on which to erect it. The block of flats I live in is 30 storeys high and there are neighbouring blocks a stone's throw away. My flat is on the 25th floor, is 800 sq feet in area and the rent is AUD3,000 per month!!! So I am surprised to get any RF out and I am delighted to receive your QSL card."

So ends the letter from Bill. Would you want to be a DXer in Hong Kong? And we, here in VK with our towers, beams, dipoles and V-beams complain if we cannot work Peter I Island?

## QSLs Received

V73GF (2W OP) — VR6CB (3M OP).

## Thank You

Many thanks to the dwindling number of contributors to this column. Your help is greatly appreciated. Special thanks to VK2KAA, VK2KCP, VK2KFU, VK4CY, VK4OH, VK4XW, VK6DX, VR6CB, DK2WH, OE6EEG, and the publications QRZ DX, The DX Bulletin, DX News Sheet and the W6GO/K6HHD list.

**73 and Good DX**

\*PO Box 93 Dural NSW 2158

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## Silent Keys

Due to space demands obituaries should be no longer than 200 words.

The WIA regrets to announce the recent passing of:-

N B	HANDO	EX VK3YW
R A (Tony)	MELLORS	VK2VTM
M J (Maurice)	STREET	VK3BRJ
J F (Jock)	SPEER	VK3CJS
K J (Kevin)	DUFF	VK3CV
N M C	CAMERON	VK3NC
H (Harry)	DUGGAN	VK3XI
K V	FORD	VK4BKM
H	TEARLE	VK4HP
C L (Lloyd)	JURY	VK5TP

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# Pounding Brass

Stephen P Smith VK2SPS\*

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By the time you have read this article, the 140th Anniversary of the official opening of the first telegraph link between Williamstown and Melbourne, will be over. This historic event was conducted by members of the Sydney Morsecodians Fraternity. I hope to report, and perhaps submit some photographs, on this famous event in a later issue.

Moving along, I would like to say a very special thank you to all the members of WICEN and the Bush Fire Brigades, whether amateurs or not, on a fabulous effort during the recent dreadful NSW bushfires.

On a more pleasant note, David Couch VK6WT has donated some 200 Morse keys from his collection to the "Wireless Hill Telecommunications Museum" located in the town of Melville near Perth, WA. If you ever have the opportunity to go to Perth, a visit to the museum would certainly be worthwhile as some of the attractions include, Radio and Shipping, Amateur Radio, Royal Flying Doctor Services, Telegraph and Telephone plus lots more.

The museum was opened by the town of Melville in 1979 as a contribution to the 150th anniversary of settlement of Western Australia. The site of the museum is the "Applecross Wireless Station" and is open Saturday and Sunday from 2 pm till 5 pm. Enquires can be made through 09 3647067 or 3641558.

David has also donated his extensive collection of RAF and RAAF Morse keys to the "Aviation Museum of Western Australia". The museum is located at Bullcreek Drive, Bullcreek near Perth, and is open from 11 — 4 pm daily. For enquiries phone 09 3324444.

On the subject of museums, I hope to write a special issue on Telegraph Museums in Australia and abroad. If you have come across a museum you think may be of interest, please drop me a line.

I recently received a letter from Bruce Morris GW4XXF, of Gwynedd, Wales, in relation to the marine distress and calling frequency "500 kHz" which has been in service for about 90 years. Bruce is an Ex Marconi Marine Merchant Navy R/O, who has been recording and collecting the final close-down broadcasts of Coast Stations on the marine wireless and telegraph frequencies. As you know this is an almost sacred frequency which has been guarded since the early days of wireless, around the clock and around the world by countless ships and coast stations. Sadly the end is near for this

service due to changes in marine communications technology.

I believe Bruce to be one of the very few people, or perhaps the only one in the world, who is collecting these priceless memories. Many stations have gone "Silent Key" without making any special recordings or broadcast. Indeed, had it not been for Bruce's pestering, many more would have followed suit. On our own shores the number of stations now "Silent Key" are as follows:

From 31 January 1992, Coast Stations located at Hobart, Rockhampton, Thursday Island, Broome, Carnarvon, and Esperance have been QRT.

From 31 January 1993, Coast Stations at Adelaide closed, and Brisbane continued operating only as a commercial station during daylight hours.

Bruce Morris is doing a fantastic job in preserving part of our Wireless Telegraph history for future generations. If anyone requires further information Bruce can be contacted as follows: Mr Bruce Morris GW4XXF, 62 Gerllhn, Tywynedd, LL369DE, Great Britain. Telephone 44 654 710741 — Fax 44 654 712441.

## QRP Scene

Remember 17 June is designated annually by the IARU as world QRP day. Typically, power levels ranging from 5 watts output down to milliwatts, are the go. It's very exciting working DX using only 5 watts. So all you "Amp Freaks" out there give it a go, you will really be surprised and may even get hooked.

I've recently purchased from the "CW Operators QRP Club" their "Club Communicator, CW Tx for 3.5 MHz". All I will say at this stage is "fantastic". The manual is a whopping 53 pages, and is extremely detailed. I hope to submit a report on it in a later column.

## News from Spain

A new QRP Club has recently been formed, the "QU\_R\_PE EA\_QRP CLUB" (a bit of a mouthful!). Founders of the club include Miguel EA3EGV, Vicers EA3ADV and Xavier EA3GCY. Further information is available from Miguel at Pau Abad 15 30 1A, 08207 Sabadell, Barcelona, Spain.

A very handsome certificate is issued upon joining. As of this moment I have received no information about the cost of membership.

To conclude this issue, a sneak preview of future articles: Next month a close look at CW Nets, what's around. History of the straight key. Hand key restoration. Setting up your workshop, and finally QRP Hill Topping. \*PO Box 361 Mona Vale NSW 2103

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## Technical Correspondence

*All technical correspondence from members will be considered for publication, but must be less than 300 words.*

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### Hand-Held Problems Follow-up

I would like to correct my technical correspondence which appeared on page 58 of the February 1994 issue of *Amateur Radio* magazine. The Motorola transistor MRF237 does have the emitter connected to the case (not the collector, as stated), but the pin connections for the collector and emitter are transposed when compared with a 2SC1947. So the MRF237 is not a direct replacement on a printed circuit board.

Rod Torrington VK3TJ

4 Thistle Street

Pascoe Vale Sth VIC 3044

*With reference to the above item, we also received the letter below. Ed.*

### More About Output Transistors

Further to Rod Torrington's (VK3TJ) letter in the February issue of *Amateur Radio*, I would like to point out that the MRF237 transistor's emitter is connected to the case, but the emitter and collector

leads are transposed relative to the 2SC1947 mentioned.

I have just fitted an MRF237 to a Yaesu 690R which had a tired 2SC1947 which would only deliver 1.5 W on FM. On SSB and AM the distortion made the audio unreadable but FM was OK. The MRF237 cured the problem.

Evidently the tired transistor would work on constant carrier but not when AM and SSB modulated.

John Ruston VK5ARK

Box 98

Renmark SA 5341

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**Sign up a new member today. We need the numbers to protect our frequencies and privileges.**

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# Over to You — Members' Opinions

All letters from members will be considered for publication, but must be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.

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## Takeover Rumour

I have heard a rumour that *Amateur Radio* magazine is about to be taken over and published by a private family company, owned by an amateur.

I, and all the other writers and correspondents, have, over the years, contributed to "our" magazine freely and with no thought of reward, and I would strongly object to having my time and effort used to line the pockets of someone who has his own interests in mind.

I would also object to my membership fees being diverted to a private individual or company, even if only to cover his expenses to produce the magazine. As a majority of people see the only benefit of WIA membership is receipt of *Amateur Radio* magazine, I am concerned that they will feel as I do, resign from the WIA and buy another magazine for news. Then the lack of direct communication between amateurs and their WIA will inevitably lead to the total failure of the WIA.

I recognise the pressures on the editorial volunteers to produce a quality electronics magazine. We have seen a number of good electronics magazines fail over the last twenty years or so, illustrating how hard it is to survive on a commercial basis.

Does the rumour have any substance?

Colin MacKinnon VK2DYM  
52 Mills road  
Glenhaven NSW 2156

(As mentioned in the Publications Committee Annual Report published elsewhere in this issue, the Federal Council set up a sub-committee some time ago, comprising Roger Harrison VK2ZRH, Neil Penfold VK6NE and Bill Wardrop VK5AWM to investigate the future direction to be taken by *Amateur Radio* magazine. A preliminary report has just been issued and makes no recommendation regarding private publication. Ed).

## Remembrance Day Contest Scoring

I read with interest your article in the latest edition of *Amateur Radio* — RD CONTEST REVISITED.

I fully agree with the comment that "Perhaps we should consider re-introducing the old scoring system which allocated QSO points according to difficulty". I can see no reason as to why

this could not be used in the present contest calculation formula.

I have been involved in the RD Contest for many years but have always felt that it lost a lot of its appeal when the "one point per contact" system was introduced and tended to make stations concentrate on local VHF contacts in preference to working other States on the HF bands. It lost the "thrill" of battling through a high QRN to exchange numbers with that weak station that yielded you more points than the stronger closer stations. I have found that, during the past few years, Eastern

State stations are not so keen to work VK6 stations as it is easier to make contact with the closer stations and they are worth the same points. I don't blame them — this is all part of contest working — get as many points as you can by working the strongest stations first.

I do feel that re-introducing the "old" points system would generate a lot more interest in the RD Contest and bring a lot more stations up on the HF Bands. I wonder how many other amateurs will agree with me. Maybe we should have a quick referendum and see what the results are.

Best wishes and thanks for an interesting magazine.

L A Ball VK6AN  
117 Butcher St  
Bruce Rock WA 6418  
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## Repeater Link

Will McGhie VK6UU\*

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### FM 828-4

This is number 4 in the series of circuits for the FM 828 transceiver, and also the most difficult to produce. The power supply and switching logic is where the radio comes together and there are numerous interconnections. A considerable area for error, so if you do find any please let me know.

the E band model. Manuals for all the 828 series are available from Philips and they are not expensive, at between \$20 to \$30.

The E band model can be converted to 6 metres without too much effort. More on this soon.

Both the B and A band tune on to 2 metres without any modifications.

The T and U band probably tune on to 70 cm without modification but I have not placed one of these on to 70 cm. The W1 and W2 do not tune on to 70 cm without modification. I have modified a W1 band to 70 cm and it was not easy. The radio almost receives at full sensitivity on 70 cm but not quite. The front end receive tuned circuits and local oscillator need extra inductance. Unfortunately you cannot just add extra capacitance, because these tuned circuits are helical coils with no access to the hot end of the coils. There is no capacitor loading as the coils are many turns of fine wire that just end. The only capacitance is in the coil to the can surrounding the coil. The coil is tuned by a plastic dielectric tuning slug that changes the capacitance to ground by changing the amount of dielectric. Adding half a turn to these small delicate helical coils is not easy. It can be done but takes time and patience. Perhaps there is an easier way. If you know please let me know.

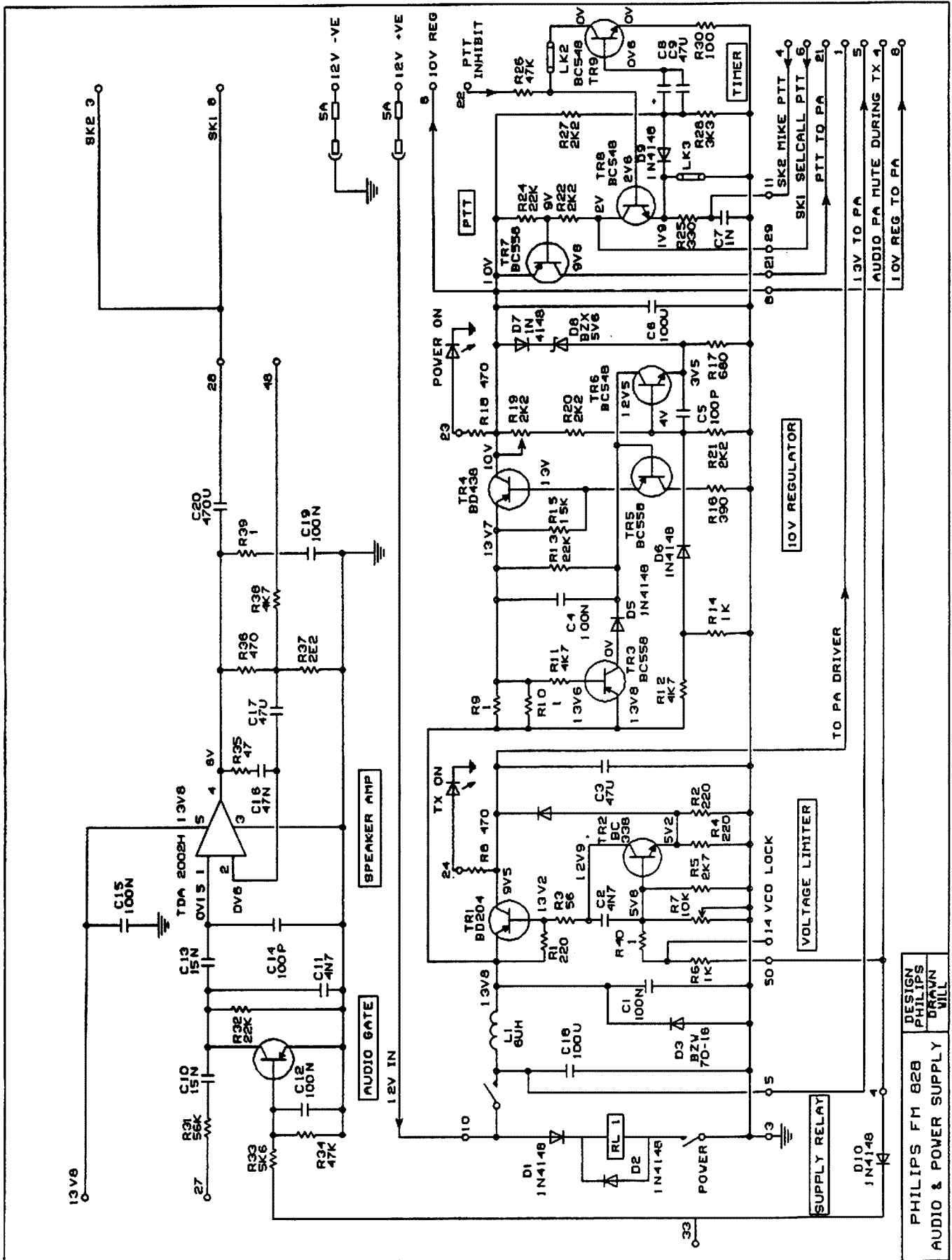
### Interest

Judging by the phone calls and packet contacts there is considerable interest in the surplus FM 828. With 500 radios being donated by Telecom to the VK2 Division, many Amateurs will end up with one or more of these radios. Let's hope most of them end up operating on our bands. Here is some information on these radios as there are several versions.

G BAND	32 — 40 MHZ
E BAND	68 — 88 MHZ
B BAND	132 — 157 MHZ
A BAND	146 — 175 MHZ
T BAND	403 — 420 MHZ
U BAND	450 — 470 MHZ
W1 BAND	470 — 500 MHZ
W2 BAND	500 — 520 MHZ

Yes there is a G Band version. This I was not aware of until David VK3KCX rang me to let me know of the existence of the rare 32 to 40 MHz G band model. I have on order the manual and will be interested to see how much it differs from

\*21 Waterloo Cr Lesmurdie 6076 VK6UU@VK6BBS  
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PHILIPS FM 828  
AUDIO & POWER SUPPLY  
DESIGN PHILIPS  
DRAWN WILL

## February Federal Council Meeting

The Federal Council/Board met in Melbourne over the weekend of 19-20 February. As is now the usual practice, there was an informal meeting of the seven Divisions' Federal Councillors and attending alternates for an hour on the Saturday morning to plan the order of business and discuss particular items of interest.

Apart from the happy business of deciding on the winner of this year's Wilkinson Award, there were a number of major business items on a very full, 26 item, agenda. The formal sessions opened just after 1000 hrs on the Saturday and closed after 1630 on Sunday the 20th. On the Sunday morning, Councillors and Alternates met in session as a "Committee of the whole" to hear from the new Federal Secretary, Bruce Thorne, and Office Manager, Donna Reilly, as February marked the end of their probationary employment period, and to discuss a variety of issues relating to the operations of the Federal Office.

The Board heard reports from all Councillors, as well as Federal Secretary, Bruce Thorne, and Federal Office manager, Donna Reilly, who submitted written reports, as is now the policy. In addition, Federal International Regulatory coordinator, David Wardlaw VK3ADW gave a verbal report on his attendance at the seminar on "Access to the Spectrum and the New Radiocommunications Act" last November. Issues canvassed at this seminar were clear precursors to recent actions of the SMA. Papers from the seminar were copied to all Federal Councillors.

Reports were also given by the new Federal QSL Collection Curator, Ken Matchett VK3TL and Federal Historian, John Edmonds VK3AFU. The Council has adopted responsibility for what used to be the Victorian Division's QSL

Collection. Ken showed Council the type of displays he has made up, the manner of preservation and storage, and some of the truly historic cards in the collection.

Federal Historian, John Edmonds, is embarking on an oral history project, to record interviews with amateurs in an effort to preserve anecdotes and details of amateur radio history. Initially, John is focusing on the RAAF Wireless Reserve and Women in Amateur Radio.

The first report of the subcommittee considering publishing options and policy for *Amateur Radio* magazine was tabled and discussed. The lengthy report covered current practices and procedures as described by the Publications Committee, and compared these with industry practices. Eight preliminary recommendations were made in the report, which were adopted by Council. The subcommittee is to proceed with these to develop an "editorial platform" and recommendations on publishing options. Another report is due before the Federal AGM in May.

The revised draft of the Federal Articles of Association, a task under way for the past 18 months, was tabled with copies to all Councillors. This revision takes into account last year's comments and revisions from the Divisions. Further comment is to be made by Councillors before the May Federal AGM so that the complete revised Articles may be tabled and discussed then.

The 1994 International Amateur Radio Union Region III Conference, to be held in Singapore in September, was discussed at length. A draft budget was considered, revised and approved. A delegation of four people was approved, with a budget of \$12,000 (coming from International Representation reserves). Air fares and accommodation make up the major portion of costs.

The delegation to the 1991 Region III Conference in Bandung had a strength of four people, headed by the late Ron Henderson VK1RH, then Federal President. The Bandung delegation's experience showed this optimised participation of the delegation in most sessions and areas of discussion. The WIA will develop a series of papers for presentation to the Conference.

One important item the WIA delegation will put to September's Conference will be a proposal to hold the year 2000 Region III Conference in Australia. This will be the year of the Olympics in Sydney. The Conference is usually scheduled for about the same time of year as the Olympics, thus giving particular strength to Australia being that year's Conference host.

The Federal Technical Advisory Committee Chairman's report from John Martin VK3KWA, covered, among routine items, the impending loss of 100 MHz of the 13 cm band between 2300 and 2400 MHz, some necessary band plan revisions, and recommendations for submission to the SMA for a low frequency amateur band in the 190 kHz region. The latter was to be raised with the SMA by Federal during the next meeting with the SMA, which should have taken place by the time this is published.

The SMA's Inquiry into the Apparatus Licence System was discussed at length at the February meeting. Points to be made in a submission to the SMA from WIA Federal were developed and a submission will have been sent by the time this is published (see separate "WIA News" item).

The Council noted that Dr Vince McKenna VK3AOY had been appointed by the Federal Standards Coordinator to represent the WIA on the Standards Australia TE7 Committee on Non-ionising Radiation.

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# QSLs from the WIA Collection

Ken Matchett VK3TL\* Honorary Curator WIA QSL Collection

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## WIA QSL Collection Becomes Federal

At the Federal Council meeting held in Melbourne on 20 February 1994, a motion was passed which transferred the WIA QSL Collection from WIA Victorian Division control to the Federal Body, which now becomes responsible for the financing and the administration of the collection.

The collection was started in 1987 by myself and became financially supported by the Victorian Division for the four years from 1987 to 1992.

By becoming a Federal Council responsibility the Collection becomes, in effect, the property of all Divisions of the WIA. It is only right that this should be so since a considerable number of QSL cards have been donated both by private WIA members and State QSL bureaux from throughout Australia.

The Collection consists of the following representative collections:

VK Pre-war collection

VK Post war

DX

Thematic

Pictorial

Commemorative

Special Issue QSLs

Selected Pre and Post war SWL cards.

In all approximately 450,000 QSLs are in the collection, one of the largest collections in the world.

About 800 cards have been mounted on special display boards. These have been constructed so that several boards may be displayed in an upright position on trestle tables. In addition, several volumes of rare DX QSLs have been made up. There are also some displays of historical QSLs.

Club secretaries and Hamvention organisers are invited to contact me at 4 Sunrise Hill Road, Montrose, VIC 3765, or telephone (03) 728 5350 so that arrangements can be made for either intra- or interstate transportation of certain displays to both Clubs and Convention Centres.

The Federal Council seeks persons who would be willing to assist me in maintaining the Collection. At the present time we need three helpers to take care of:

1. The Historical Collection. This includes the pre-war collection of approximately 10,000 QSLs. It is hoped that the person would have an interest in the

history of amateur radio with particular reference to Australia.

2. Thematic Collection. This collection contains QSLs depicting such themes as Sport, Scouts, Aircraft, Space Exploration, YLs and XYLs, Signals, and so on.

3. Pictorial Collection. This is a fairly large collection of about 80,000 cards which are among the most attractive of the collection.

No letter writing is involved in these tasks, the main job being to keep a record of the collection and possibly arrange some of the cards for exhibition. The collecting, sorting and acknowledgment of QSLs will continue to be the responsibility of the Honorary Curator.

Apart from its value as an attractive item at radio exhibitions and Hamfests, it has a most important role in preserving some of the history of our great hobby which otherwise would be irretrievably lost.

Please give this appeal your earnest consideration.

\* 4 Sunrise Hill Road Montrose VIC 3765  
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## Spotlight on SWLing

Robin L Harwood VK7RH\*

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The future of shortwave has been debated thoroughly by program planners and technical administrators with an eye to improving technology and changes in the political and financial climate. Many of the larger stations, particularly those European based operations, have been increasingly using satellite feeds, on a TV subcarrier on an existing transponder, that can be easily picked up and re-broadcast over domestic public or semi-commercial outlets. This is indeed working and many international broadcasters are reducing or axing European services via shortwave.

Now some technical and program managers are having to rethink this strategy, because they are now realising that they have no editorial control once the audio feeds leave the studio. The amount of program content is up to the owners/controllers of the rebroadcasting outlets. Although the technology does certainly exist for private listeners to intercept the satellite audio feeds, the potential audience using this method is in the hundreds compared to the millions who have access to shortwave. The economics of shortwave versus satellite is still heavily weighted to the former and will continue to do so for some time. Although it is cheaper for the broadcaster to utilise satellites than terrestrial senders, the opposite is true for the listener. Here the cost of a simple shortwave receiver is about a tenth of that of a satellite dish and complex receiving equipment and decoder.

With the majority of the world's population being in the developing world and not having the position of acquiring the more complex technology, it is apparent that the use of shortwave will be continuing at least for the next 20 to 30

years. Especially as the number of nations that have banned the private possession and use of home satellite receiving systems are increasing. Malaysia, Singapore, China, North Korea, Iran and Algeria are just some of the nations who have imposed bans, while in Indonesia, Thailand, Philippines, Taiwan and especially the Indian sub-continent, where there aren't any restrictions in place, the number of dishes pointed skyward has mushroomed.

Recently I was able to briefly meet with David Mairdonald, the Australian manager for the World Radio Missionary Fellowship which has operated Radio HCJB for over 60 years. He confirms that the three powerful Gospel radio networks, who have been increasingly co-operating since 1986, see that their future is going to be on shortwave, although newer technologies are rapidly being developed. About 40 languages a year are being added annually to the combined output of HCJB, Transworld Radio and the Far Eastern Broadcasting Corporation (FEBC). New facilities are continually being added to cope with this expansion. Also additional sites for senders are under review, especially in Africa, particularly since the Liberian civil war destroyed the site of another Gospel broadcaster in Monrovia. Another potential site could be in NW Western Australia to reach South, SE Asia and the Indian Ocean regions.

I recently received confirmation that Monitor Radio International has indeed sold their Scotts Corner, Maine site to a group called "Prophecy Countdown", an independent Adventist organisation. It is not affiliated with Adventist World Radio, which operates a network of stations in Guam, Costa Rica, Italy, Slovakia and

hires air time from Russian senders. "Prophecy Countdown" commenced on 17 January and is aired when WCSN in Maine is not broadcasting Monitor Radio International or the weekend religious output. I personally have not observed it yet, although I do notice that the third transmitter at Cypress Creek is scheduled to commence in September. That is presumably when WCSN will be running full time under the new owners. Rumours are also circulating that there may be further cutbacks to MRI programming in order to cut costs.

I noted in another Australian bi-monthly publication that the English Service of the "Voice of Russia" is currently being heard in Australia. Well, it's news to me as no such service exists, although there is a broadcasting organisation of that name, currently with programming exclusively in Russian. The only English programming out of Moscow is, of course, from Radio Moscow International which reportedly is operating on behalf of the "Commonwealth of Independent States". The "Voice of Russia" is the Russian external service and is separate from Radio Moscow International. At least that is what it is supposed to be in theory.

Incidentally, there is another good source for what is happening on shortwave. It is Glenn Hauser's "World of Radio" which has been around for a while. Yet it is much easier to hear now at 0900 UTC on Saturdays via KWHR in Hawaii. The frequency is 9930 kHz.

Well, that is all for this month. Until next time, the very best of 73 and good listening!

\*52 Connaught Crescent, West Launceston TAS 7250  
VK7RH@VK7BBS.LTN.TAS.AU.SOC

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## WIA News

### RSGB Sends Sympathies

Ian Suart GM4AUP, 1994 President of the Radio Society of Great Britain (RSGB), sent a message of sympathy on behalf of the RSGB Council via the WIA Federal President, Kevin Oids VK1OK, to any WIA members who may have suffered losses in the recent fires here.

"There is no doubt that the consequences of these fires will have been devastating to the many people who saw their homes damaged or destroyed with little they could do about it," the letter said.

## VHF/UHF — An Expanding World

Eric Jamieson VK5LP\*

All times are UTC

### Beacons

Ian VK3ALZ reports on various beacons as follows: VK7RNW on 50.05675 was heard at 0930 on 2/2 at 529 thus confirming it is operational. Others confirmed by Ian are VK3RGG on 144.530, VK3RTG 144.430, VK7RNW 144.4746, VK5VF 144.451, VK5RSE 144.550, VK3RMB 432.5339, VK3RTG 432.430, VK3RAI 432.450.

Ian says VK7RNW at Lonah is audible every day with signals peaking to S9 at times. VK5VF is frequently audible and peaking to S3 around 2345. He asks where are the VK5s as frequent calling seems to raise no one, and adds *I would like to make the point that it is not much use having beacons if people don't use them. On the many occasions when VK5VF has been audible there are always several Melbourne stations calling Adelaide. but the response has been negligible.*

A problem at the VK5 end is that despite there being beacons in Melbourne and Ballarat it is rare for them to be heard! Here at Meningie where I am 130 km closer than stations in Adelaide, I occasionally hear VK3RGG weakly and have yet to hear VK3RTG and that is with the use of a mast-head amplifier! VK7RNW is quite consistent, not very strong but regular. Perhaps this is because the path to VK7RNW is mainly over the sea whereas the other two beacons are over land.

It might be worth checking the radiation patterns of the VK3 beacons in case VK5 is in a null. I recall that years ago when VK3RTG first radiated I heard the beacon twice only in about ten years so there seems a problem hearing Melbourne beacons even during enhanced conditions. Perhaps VK5VF is sited better — it is enormously powerful here.

Ian says there are many Melbourne stations active on 1296 MHz and during the Ross Hull Contest he averaged six contacts per day including VK3XRS over a 230 km mountainous path. VK7DC is S9+ in Melbourne when conditions are reasonable. No contacts were made on 2304 MHz. Ian is able to place a temporary beacon on 2304.080 MHz for anyone requiring such a service.

### Two metres and above

Although VK5 missed out on its customary four days of enhanced conditions across the Great Australian

Bight to Albany around the end of January, there has been some activity.

Trevor VK5NC at Mount Gambier said that 13/1 provided good signals on 144 and 432 MHz around 1045 when he worked VK7XR and VK7KAP on both bands and VK7DC on 144. Also contacts to VK3XRS, VK3CY, VK3KWA, VK3EUC, VK3II, VK5NY and VK5AKK on 144. On 31/1 the band opened to Esperance when at 1036 Trevor worked VK6AS on 144 with signals so strong that they were able to reduce the power to one watt and maintain contact. At 1047 VK6APZ was worked on 144 and 432. On 5/2 he worked a number of VK3s and VK5RN on 144.

From the January 1994 issue of Japan's *CQ ham radio* magazine (courtesy Graham VK6RO) comes a list of JA beacons: 50.01022 JA2IGY, 50.012 JD1ADP, 50.017 JA6YBR, 50.02701 JA7ZMA, 50.04397 JR6YAG, 50.059 JH0ZPI, 50.480 JH8ZND, 50.48980 JG1ZGW. Other Pacific area beacons include 50.00811 DX1HB, 50.019 P29BPL, 50.043 ZL3MHF, 50.062 KH6HME, 50.064 KH6HI, 50.07469 VS6SIX, 50.076 KL7GLK, 50.084 3D2FJ, 51.022 ZL1UHF, 51.029 ZL2MHB, 52.510 ZL2MHF.

### Switzerland

Dan HB9CRQ is seeking 144 MHz EME contacts with Australia and has already worked VK5MC, VK3AMZ, VK3AUU, VK2FLR and VK2DVZ. He has worked 94 DXCC out of 578 grids in more than 1800 EME QSOs with 603 different stations. His grid square is JN47cf.

Dan's equipment is: Antenna — 8x19 xxx by M<sup>2</sup> yagis, 7/8" low loss phasing harness, 0.3 dB nf GaAs-FET pre-amp by K13W. Receiver: Icom IC 781 + SSB-Electronics converter with filters IF 250 Hz and audio 100 Hz. Transmitter: FT-726R to Mirage B1016 to 8877 (by HB9SV) with an output of 2.5 kW.

Dan has worked many single yagi stations with the smallest being W2RS running 150 watts to a single 19 element. He says any station using one yagi or more and about 200 watts of CW is a potential partner for a 144 MHz EME QSO. He hopes the publishing of this information may encourage further EME activity from Australia.

Dan has PC software which calculates EME windows so he is able to suggest possible sked times. He is usually QRV on EME activity weekends and operating random around 144.015 MHz. His phone number is 41-64-715544 or Fax

41-64-702104. Postal address: Dan Gautschi, PO Box 12, CH-5737 Mensiken, Switzerland.... Who wants an EME contact?

## EME News

**Doug VK3UM** writes very enthusiastically about his 432 MHz EME contacts on 28/1 and 29/1 when he said *It's been years since I can remember signals as good. There was some slow QSB but no libration and good alignment down to about 10 degrees. I was consistently hearing my echoes above the noise with 60 watts at the feed and at 120 Hz bandwidth.*

28/1: 1900 OK1CA 559 339, 1941 G0BPU 449 449, 1945 DL9KR 589 579. 29/1: 1930 I5CTE 0 0, 1958 IK1HWD 459 449, 2000 EA3DXU 0 339, 2025 UT5EC 549 459, 2037 I5MPK 559 559 plus SSB 54 45, 2100 IW5AVM 0 359 and 0 449.

## Sporadic-E on 432 MHz?

Last month I wrote about the large two metre Es opening between 0110 and 0130 on 9/1/94 when VK35 and 7 were working Brisbane stations. A suggestion that skip had shortened on 432 MHz brought a scramble to that band with VK3UM well amongst it.

I have received a letter from Doug VK3UM which clarifies the situation in regard to the happenings on that day. If you are a serious VHFer then I think the following description could benefit you.

About 0100 Doug received a phone call from Arie VK3AMZ who advised that the two metre band was open to Brisbane. Doug checked the band and although signals were S9 plus there were deep fades and short period "drop outs" which indicated the band was not "solid" and "steady" which we know it can be at times. However, he advised the Brisbane gang that he would transmit on 70 cms.

He used his EME station with all its facilities for measuring noise from any ionised reflection medium, including aurora. As Doug can read down to 0.5° both azimuth and elevation absolute and knowing the exact system gain and noise temperature, he went hunting for noise.

It did not take him long to find it. Initially the noise peaked at 31° Az and 3° El at levels between +4 <—> 7 dB above ground temperature. Translated to cold sky it meant (+5.3) 9.5 <—> 12.3 dB above 15°K which was quite a racket by his system standards.

He tracked the noise for about 45 minutes during which time it moved as far north as 21° and east 38°. In elevation it peaked at one stage to 8° which is some distance south. At best the "cloud" was about 10° wide at the 3 dB points and for a period he was able to discern two

"clouds" some 3° wide. The level varied as indicated both in short and long term rates. At one point it "cut" and he found it again some 15° away.

Doug regrets not graphically plotting the occurrence on his computer system to give a hard copy/disk record, but in the heat of the moment I suppose one can be forgiven for overlooking some things!

Doug transmitted and immediately received a response. The signal was very weak and masked by the "sky noise." He found that if he was on the edge of the "cloud" then he had a better s/n ratio. Regardless of this he was unable to extract a call sign despite hearing his own call sign many times during the 15-20 minutes of operating. Doug asked the other operator to try CW but no, asked him to call on six or two metres but no. The local boys and VK3AMZ helped where they could but to no avail.

Who it was Doug has no idea. He has since proven that it was no one in VK1 or Brisbane (VK4) or VK3. The station responded each time Doug put it over but so far no letter, phone call or any communication. Strange.

Doug says *This form of Es cloud (that day) does produce noise and this I have verified. Not as much as I have heard on 70 cms from aurora but it is quite significant and on my system you can't miss it. Just what the absorption/reflection co-efficient is who knows (yet). How much scatter, how the reflection angle is affected we are still to discover.*

*You (VK5LP) will recall that it was in the late 1950s and early 1960s when we first*

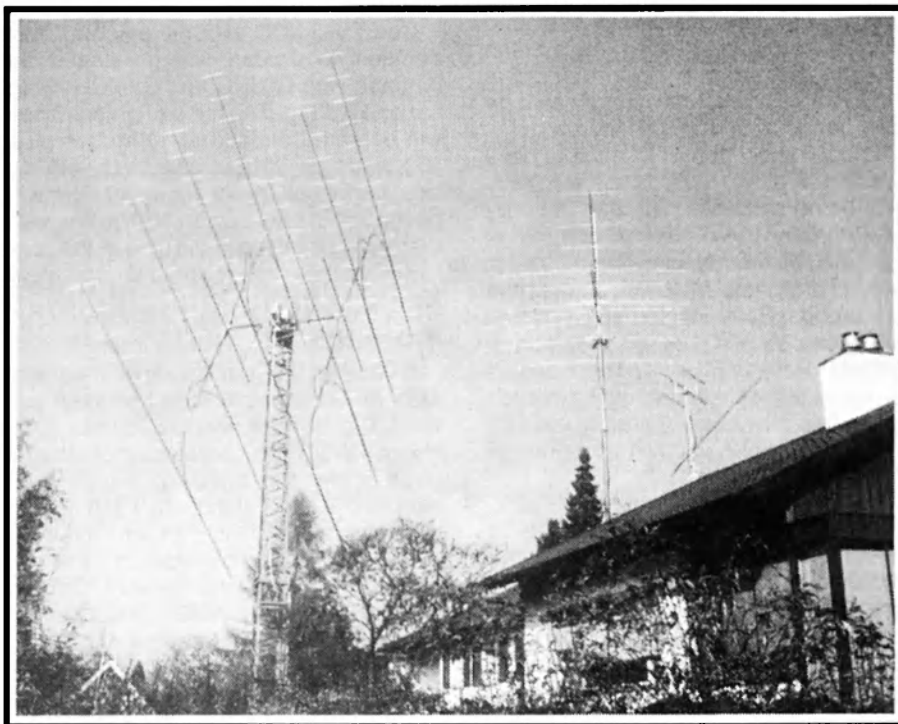
*found that with solid six metre signals it did not mean the same on two metres where the path was generally shorter, ie the path existed to a different place than that which you expected at the time. I suspect that 70 cm is similar. Who knows? The trouble is that such conditions happen all too infrequently and there are not enough 70 cm stations in the right spot.*

*Over the past few years whilst attending International EME Conferences I have had long discussions with the Europeans, State-Siders and Canadians etc but not one knows of a single 70 cm Es OSO! Not one! 70 cm aurora has been done many times, rather commonplace but with a fair degree of difficulty. It is these guys whom I expected would do it but no. True, most live, by Australian standards, a lot further north relatively than we do and Es on two metres is not as common as in VK.*

*Es on 70 cm poses a great opportunity for some serious amateur radio research. It may be possible, even easy, but I suspect not. It may not be anything like two metres — if it was then someone somewhere would have done it years ago.*

*I suspect that a scatter medium may be more likely as the reflection/absorption coefficient may be too high for 70 cm. I feel that it will need considerable grunt, good ears (though getting into or matching the received noise level won't require something ultra flash) and a lot of bird perch! Time may tell? Very interesting Doug...5LP.*

Doug also noted the attempts by various amateurs to work VE3ONT last year. He said the signals were 58/57 and



**The EME array of HB9CRQ.**

Chris VK5MC told him of similar signals on 23 cm. Doug heard VE3ONT on two metres at a little stronger than Dave W5UN's normal signal. Could be worked easily with 200 watts and a single yagi. On 70 cm VE3ONT was audible -1° below the horizon and their QSO was over in less than one minute! He said they were brilliant operators and a pleasure to listen to the way they handled the dogpile.

Doug suggests that if operators want to be serious about EME then they must do a lot of work on their receiving systems otherwise signals are always going to be marginal and many calls will be missed.

Finally, after doing his sums, Doug concurs with Gordon VK2ZAB's conclusion re Lord Howe Island acting as a passive reflector for the two metre signals into New Zealand. These were the subject of a report in last month's *Amateur Radio* when I also agreed with the finding.

### Six metre snippets

John VK4PU says there have been the usual Es contacts to VK1, 2, 3, 5, 6 and 7 plus ZL, FK8 and a few JAs. The VK7RNW beacon is very strong. He will be erecting a new tower soon for VHF and UHF antennas.

Clarrle VK5KL worked P29CW on CW at 0806 on 8/12/93 but has had no JA openings during the summer.

Lance VK4ZAZ writes *As predicted, there were many lively six metre openings with Es extending to two metres. The tropo to NZ in January on 144 and 432 MHz was reminiscent of a similar set of conditions in October 1988 when it was possible to access NZ 432 repeaters using ten watts. It seems this time conditions extended further north into VK4 — maybe it did then but there was no one around. There is certainly a lot more activity at present on those bands than a few years ago.*

Although most of the DX-hunters have ceased operating, there is still evidence of F2 being available. Through January and February there were a number of days when the frequencies below 50 MHz were full of signals, including TV carriers from Europe. So much so that on 17/2 at 1100 Steve VK3OT worked a station in Central Russia on 50 MHz. There seems little doubt more stations could have been worked had they been operating but with most of Europe closed down opportunities have receded.

The November 1993 issue of *FIVE NINE* from Japan (courtesy John VK4PU) carries an extensive list of six metre beacons operating on all six continents. From the February 1994 issue of the same magazine is a list of the top 20 six metre DXCC Standings. Of these JA4MBM heads the list with 156 countries, followed by JA1BK 150, JE1BMJ 140, JA1VOK 135 and on down to the 20th station JA1ELY

with 114. In the top 20 there are eight from JA1 and seven from JA2.

### News from Europe

Ted Collins G4UPS in his January report advises that Mike ZD8M (G3UOF) confirms the ZD8VHF beacon on 50.0325 is still operational. From Ascension Island Mike has worked KP4EOR, YV4AD, CT3FQ and several PT/PY stations.

Mike believes the regular paths to these areas are the result of ducting. Ted says that when he was ZD8TC he had mentioned many times in his log that such contacts were due to ducting. It may be interesting to also note that Ascension Island is about 8° south of the equator while Venezuela is about the same distance above the equator.

*(I remember reading somewhere of the occurrences of atmospheric ducting in the South Atlantic Ocean around 50 MHz and even more so in the Indian Ocean where their results were first noticed on the radar screens of warships during World War II. However, ducting does occur more often on frequencies of 144 MHz and higher. ....VK5LP).*

Looking at Ted's January report I am amazed at the way six metre stations in Europe have disappeared. Contacts/heard included: 9A3, DL3, IK2, IN3, OE6, OY9, OZ2, OZ3, S51, S53, S55, S56, S59, SM3, SM6, SM7, YU1 being 17 prefixes in 9 countries. Of course there were various contacts throughout Great Britain and his regular skeds with G3CCH and SM7AED. Ted must be building a veritable dossier on his contacts with SM7AED.

Geoff GJ4ICD reports that the DX-pedition to Jordan will go ahead as planned with G0JHC and GJ4ICD flying out on 28/5 to set up the equipment. They will operate from 160 to 10 metres plus 100 watts on 50 and 144 MHz with no skeds. The call to look for on 50 MHz will be the JY7SIX beacon on 50.075. We wish them well and despite the time of the year I am sure there will be some VK operators looking for them.

### From the US

If you can lay your hands on a copy of QST for March 1994 then I suggest you read *The World Above 50 MHz* by Emil Pocock W3EP who presents more than a page under the heading "How's Your Horizon." It looks at the effect that nearby and more distant hills can have on what would generally be considered prime hill-top VHF sites. Roger VK5NY, Gordon VK2ZAB and Wally VK4DO might ponder the consequences of the three included equations as they sip tea at their mountain retreats!

Todd Emslie from Ryde, Sydney, reports his observations of TV/FM DX

during December and January. His information is indicative of what can be heard or seen if you are prepared to seek it out and the results can be used to promote contacts on 50 and 144 MHz.

Multi-hop Es was observed on several days with the following highlights noted: 8/12: Western Australian 6ABC FM 93.3 MHz Bunbury, 97.7 Perth, 98.9 York. Northern Territory: FM 96.9 8SUN, 100.5 8KIN. 10/12: Chinese video Ch C1 49.75 Ch2 57.75, audio on 56.25, WA FM 6ABC 94.5 Albany.

4/1: KVZK Ch A2 American Samoa 55.2474 and audio 59.7474, FM 96 95.4 English Service, Noutarang 97.4 Hindi Service, FM from Lautoka, Fiji. 16/1: KVZK A2 and unidentified Ch A3 video 61.2492 from the Pacific (? Hawaii). 17/1: KSBS 92.1 Pago Pago, American Samoa, KVZK A2, 95.4/97.4 Fiji FM, 6ABC 93.3 Bunbury.

Todd said all FM DX was monitored with an ONKYO T-9090 II digital FM tuner connected to two 8 element yagis vertical/horizontal. KVZK Ch 2 A2 American Samoa was noted on several days using an Icom R7000 receiver and its video carrier was measured at 55.2474 with 0 KHz beat SSB. He has found that signals are easier to detect if you tune below the main carrier to hear the side-band heterodyne which for KVZK is approximately -700 Hz which corresponds to 55.2467 MHz. KVZK vision carrier is a good early warning indicator for multihop openings to the Pacific area.

Todd is interested in exchanging TV/FM/6m/2m DX logging details with amateurs and others and can be contacted at 13 Warren Street, Ryde, Sydney, 2112. Thanks for your information Todd .... VK5LP

### Closure

By the time you read these columns we will be in the middle of the autumn equinox. Don't put away your six metre equipment — there is still some F2 propagation out there.

Thank you to the many operators observed during the Es summer period who immediately moved from 50.110 after establishing a contact. Such consideration will eventually be noticed by the few who remain on the international call frequency.

Closing with two thoughts for the month:

1. One of the tests of leadership is the ability to recognize a problem before it becomes an emergency, and
2. The degree of one's emotion varies inversely with one's knowledge of the facts — the less you know the hotter you get!

73 from The Voice by the Lake.  
\*PO Box 169 Meningie, South Australia 5264

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## SMA Inquiry

A submission developed by WIA Federal has been put to the Spectrum Management Agency following a call for submissions in the SMA's discussion paper on their "Inquiry into the Apparatus Licence System."

The SMA held a series of information seminars on the subject around Australia over February and early March. What they had to say was the subject of a lengthy report in last month's *WIA News*.

In the submission, concerns were raised that the licence categories to be used by the SMA should be in agreement with those specified by the International Telecommunications Union (ITU).

The ITU Radio Regulations defines the Amateur Service as "*A radiocommunication service for the purpose of self-training, intercommunication and technical investigations carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.*"

Additionally, the ITU defines the Amateur-Satellite Service as "*A radiocommunication service using space stations on Earth satellites for the same purposes as those of the amateur service.*"

The submission attached importance to these definitions being adhered to throughout any discussions or proposed changes being carried out within Australia, "...whatever other aspects of licensing of amateur radio operators may be under consideration."

The submission argued that, because bands allocated to the Amateur Service are defined by international agreement and are used worldwide, they cannot be considered as a "marketable resource" within Australia.

Non-amateur users of the HF bands, the submission pointed out, would encounter considerable interference from overseas amateurs legitimately using the HF bands. In addition, it was argued, all of the UHF amateur bands are already allocated on a shared basis, and as far as amateurs are concerned, are not suitable for commercial exploitation. The same applies to many of the amateur microwave bands, it was argued.

In shared bands which come under commercial pressure, the SMA has been silent on the fate of the dispossessed users where such sharing is diminished, the submission pointed out.

The WIA submission put it to the SMA that a policy would be welcomed that saw: no service deprived of access to bands which are allocated to it under ITU agreements; no shared bands offered in entirety for price-based allocation; when shared bands are earmarked for price-based allocation, portion or portions are withheld so that all services may have some access; where services are deprived of spectrum space by price-based allocations, they are compensated by receiving primary or exclusive status in the portion of the band left for them.

The submission pointed out that approaches have already been made to the SMA to consider licence terms of more than one year (eg 5 years), a licence for short-term visitors and payment by credit card or EFT and payment through agencies acting for the SMA.

On the subject of considering the Amateur Service for Class Licensing, the submission pointed out that an amateur licence is an operator's licence, not an apparatus licence and that, owing to the experimental nature of the Amateur Service, amateur equipment is not subject to standards or type approval.

It was argued that it would be

difficult to apply Class Licensing to the Amateur Service while still observing the ITU criteria and maintaining an adequate level of regulatory activity.

WIA Federal's submission also covered the social value of the Amateur Service. This includes aspects of self-training and research which contribute to the good of society in general, proficiency in providing communications in local or national emergencies, and contributing to international understanding, knowledge, goodwill and welfare through the ability to communicate worldwide.

The SMA was urged to consider the objective basis of such social benefits when considering frequency allocations and licence fees.

The matter of interference to the internationally allocated 6 m and 2 m amateur bands from non-standard VHF TV channels was raised in the submission. Full access to the 50-54 MHz band allocated by the ITU regulations has long been denied Australian amateurs. It was pointed out that the Australian Broadcasting Authority is permitting emissions from TV stations to fall outside the bands allocated to them. Such matters should be considered in the Apparatus Licence System review, the submission urged.

Finally, the WIA submission expressed concern that, regardless of any final decisions, there was a need for the SMA to maintain its position as the overall regulatory body to ensure that all users operate within the terms of their licences and to investigate reports of misuse or interference.

In addition, where the equipment was licensed, rather than the user, the equipment should conform to specified technical standards and be unable to be modified to operate outside the bands for which it is designated to be used.

# HF PREDICTIONS

Evan Jarman VK3ANI\*

## The Tables Explained

The tables provide estimates of signal strength for each hour of the UTC day for five of the bands between 7 and 28 MHz. The UTC hour is the first column; the second column lists the predicted MUF (maximum useable frequency); the third column the signal strength in dB relative to 1  $\mu$ V (dBU) at the MUF; the fourth column lists the "frequency of optimum travail" (FOT), or the optimum working frequency as it is more generally known.

The signal strengths are all shown in dB relative to a reference of 1  $\mu$ V in 50 Ohms at the receiver antenna input. The table below relates these figures to the amateur S-point "standard" where S9 is 50  $\mu$ V at the receiver's input and the S-meter scale is 6 dB per S-point.

$\mu$ V in 50 ohms	S-points	dB( $\mu$ V)
50.00	S9	34
25.00	S8	28
12.50	S7	22
6.25	S6	16
3.12	S5	10
1.56	S4	4

0.78	S3	2
0.39	S2	-8
0.20	S1	-14

The tables are generated by the GRAPH-DX program from FT Promotions, assuming 100 W transmitter power output, modest beam antennas (eg three element Yagi or cubical quad) and a short-term forecast of the sunspot number. Actual solar and geomagnetic activity will affect results observed.

The three regions cover stations within the following areas:

**VK EAST** The major part of NSW and Queensland.

**VK SOUTH** Southern-NSW, VK3, VK5 and VK7.

**VK WEST** The south-west of Western Australia.

Likewise, the overseas terminals cover substantial regions (eg "Europe" covers most of Western Europe and the UK).

The sunspot number used in these calculations is 34.1. The predicted value for May is 32.2.

## VK SOUTH — SOUTH PACIFIC

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	19.4	15	16.1	23	18	11	-1	-15
2	19.8	16	16.8	24	19	12	0	-13
3	19.8	16	16.6	25	20	12	0	-13
4	19.7	17	16.4	27	21	13	0	-13
5	19.5	18	15.9	29	22	13	0	-15
6	18.7	21	15.0	33	23	12	-3	-19
7	16.9	24	13.4	33	19	6	-11	-31
8	15.0	26	11.9	29	13	-3	-24	...
9	13.4	28	10.6	24	4	-14	...	...
10	12.2	29	9.6	19	-4	-26	...	...
11	11.3	30	8.9	14	-12	-38	...	...
12	10.6	31	8.4	10	-19	...	...	...
13	10.1	32	8.0	6	-24	...	...	...
14	9.8	32	7.7	3	-29	...	...	...
15	9.6	32	7.5	2	-32	...	...	...
16	9.1	34	7.0	-1	-36	...	...	...
17	8.8	34	6.8	-4	...	...	...	...
18	8.5	34	6.5	-9	...	...	...	...
19	8.7	31	6.6	-6	...	...	...	...
20	10.3	23	7.8	5	-20	...	...	...
21	13.2	19	10.1	16	0	-16	...	...
22	15.9	17	12.4	21	11	-1	-18	-38
23	17.8	16	14.2	22	15	6	-8	-24
24	18.7	16	15.2	23	17	9	-4	-19

## VK WEST — SOUTH PACIFIC

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	22.9	12	18.6	17	18	15	8	0
2	23.7	12	19.7	17	19	16	10	2
3	24.2	12	18.2	18	20	17	11	3
4	24.3	13	20.3	20	21	18	11	3
5	24.2	14	20.0	23	23	19	12	3
6	23.8	15	19.3	28	26	21	13	3
7	22.2	18	17.7	33	28	21	11	5
8	20.0	21	15.8	36	27	18	5	-8
9	17.8	24	14.1	34	23	12	-2	-19
10	15.8	26	12.5	31	18	5	-13	-33
11	14.2	28	11.2	28	12	-2	-23	...
12	13.5	29	10.6	26	9	-7	-30	...
13	12.8	30	10.1	24	5	-12	-36	...
14	12.2	30	9.6	22	2	-16	...	...
15	11.8	31	9.3	20	0	-20	...	...
16	11.6	31	9.1	19	-2	-22	...	...
17	10.8	33	8.3	17	-5	-27	...	...
18	10.6	33	8.1	15	-8	-31	...	...
19	10.3	32	7.9	13	-11	-35	...	...
20	10.6	24	8.0	11	-9	-30	...	...
21	12.7	20	10.0	16	2	-12	-34	...
22	16.2	16	12.4	19	12	3	-1	-27
23	19.8	14	15.3	19	17	11	1	-11
24	21.9	13	17.4	18	18	14	6	-3

### VK EAST — AFRICA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	11.2	12	8.2	8	-6	-21	...	...
2	10.7	7	8.2	6	-5	-19	-39	...
3	10.2	0	7.8	3	-7	-20	...	...
4	13.0	3	9.9	4	1	-7	-21	-37
5	18.0	7	13.9	4	7	4	-3	-13
6	20.9	7	15.4	3	8	7	1	-7
7	21.0	7	15.7	3	9	7	2	-6
8	19.6	8	15.6	6	9	6	0	-10
9	17.8	9	14.0	8	8	4	-5	-16
10	15.8	9	12.5	10	7	0	-11	-26
11	14.0	11	11.1	11	4	-5	-20	-38
12	12.7	13	10.0	11	1	-11	-29	...
13	11.9	17	9.4	12	-1	-16	-38	...
14	11.3	22	8.9	13	-4	-21	...	...
15	10.9	26	8.6	13	-6	-26	...	...
16	10.7	28	8.3	13	-8	-29	...	...
17	10.4	30	7.7	12	-10	-32	...	...
18	10.0	31	7.3	10	-14	-37	...	...
19	9.5	31	7.0	8	-18	...	...	...
20	9.8	31	6.8	10	-15	-39	...	...
21	9.8	30	6.7	8	-17	...	...	...
22	9.4	27	6.6	5	-20	...	...	...
23	9.1	20	6.5	2	-21	...	...	...
24	9.6	14	6.9	4	-16	-36	...	...

### VK SOUTH — AFRICA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	11.2	19	8.1	13	-2	-18	...	...
2	10.9	14	8.3	9	-4	-20	...	...
3	13.8	14	10.9	13	5	-4	-20	-38
4	18.9	13	14.5	14	13	9	0	-10
5	21.2	10	15.7	10	13	10	3	-5
6	21.8	9	15.9	8	12	10	4	-4
7	21.4	9	15.5	7	11	9	3	-5
8	20.6	9	14.7	8	11	8	1	-7
9	19.3	10	13.7	10	11	7	-1	-12
10	17.6	11	12.3	12	10	4	-6	-19
11	15.8	12	11.0	13	8	0	-13	-29
12	14.1	14	9.8	14	5	-6	-23	...
13	12.7	17	8.8	14	0	-14	-35	...
14	11.7	21	8.1	13	-4	-21	...	...
15	11.1	25	7.6	12	-8	-28	...	...
16	10.6	27	7.2	11	-12	-34	...	...
17	10.1	29	7.0	9	-16	-39	...	...
18	9.6	30	6.9	7	-19	...	...	...
19	9.5	30	6.8	5	-22	...	...	...
20	9.4	30	6.7	4	-24	...	...	...
21	10.0	30	7.2	9	-17	...	...	...
22	9.9	30	7.0	9	-16	...	...	...
23	9.6	27	6.9	8	-18	...	...	...
24	10.2	22	7.4	8	-13	-34	...	...

### VK WEST — AFRICA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	10.2	23	7.7	9	-12	-33	...	...
2	10.3	18	7.9	9	-8	-27	...	...
3	13.2	15	10.4	14	4	-7	-25	...
4	18.3	13	14.2	16	14	8	-2	-14
5	21.6	11	16.9	12	14	11	4	-4
6	22.5	10	18.3	10	13	11	5	-2
7	22.5	9	18.6	9	13	11	5	-3
8	22.1	9	18.1	8	12	10	4	-3
9	21.2	9	17.2	9	12	9	3	-6
10	19.8	10	15.6	12	12	8	0	-10
11	17.9	12	15.2	15	12	5	-5	-18
12	16.0	15	12.6	17	10	1	-13	-29
13	14.1	18	11.2	18	6	-5	-24	...
14	12.7	22	10.1	18	2	-13	-36	...
15	12.0	26	9.5	17	-1	-19	...	...
16	11.4	28	9.0	16	-5	-25	...	...
17	11.0	29	8.7	15	-7	-29	...	...
18	10.7	30	8.4	14	-9	-32	...	...
19	10.5	31	8.2	13	-11	-34	...	...
20	10.1	31	7.8	10	-15	-39	...	...
21	9.6	32	7.3	7	-20	...	...	...
22	9.9	31	7.5	9	-16	...	...	...
23	10.7	31	8.3	14	-8	-30	...	...
24	10.0	30	7.7	10	-14	-38	...	...

### VK EAST — ASIA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	26.3	13	21.7	17	21	20	15	9
2	27.3	13	20.9	16	21	20	17	11
3	28.1	13	21.6	16	21	21	18	12
4	28.5	13	23.5	16	22	22	18	13
5	28.5	14	23.4	18	23	22	19	14
6	27.8	14	22.6	21	24	23	19	13
7	26.3	15	21.2	25	26	23	18	10
8	24.2	17	20.3	31	28	23	15	6
9	22.1	20	17.6	38	30	23	12	0
10	19.9	21	15.9	37	27	17	4	-10
11	18.2	22	14.5	35	23	11	-4	-21
12	17.3	23	13.8	34	20	8	-9	-28
13	16.6	24	13.1	32	17	4	-14	-35
14	15.8	24	12.7	30	14	0	-20	...
15	15.1	24	11.9	28	11	-5	-27	...
16	14.6	25	11.4	26	8	-8	-32	...
17	13.3	26	10.4	21	5	-19	...	...
18	11.4	27	8.9	11	-15	...	...	...
19	10.8	27	8.3	11	-22	...	...	...
20	11.5	27	8.8	12	-14	-39	...	...
21	15.8	21	12.5	27	13	0	-19	...
22	23.2	16	18.2	27	25	20	12	2
23	24.7	14	19.8	22	23	20	14	6
24	25.3	13	20.6	19	21	19	14	7

### VK SOUTH — ASIA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	20.8	11	17.0	12	14	11	3	-6
2	21.6	11	17.9	11	14	11	5	-3
3	22.1	11	18.7	10	14	12	6	-1
4	22.2	11	18.6	11	15	12	7	-1
5	22.1	12	18.3	12	15	1		

VK EAST — EUROPE									
UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9	
1	11.0	-3	8.0	...	2	-4	-14	-31	
2	10.5	-9	7.7	...	0	-4	-14	-30	
3	11.0	-11	8.2	...	-1	-3	-11	-24	
4	12.8	-7	8.9	...	-3	-1	-6	-16	
5	15.4	-2	11.6	...	-6	0	-1	-8	
6	17.7	1	13.4	...	-7	1	4	-3	
7	19.4	4	14.6	...	-7	3	6	0	
8	20.7	7	15.3	...	-7	6	6	3	
9	21.0	9	15.8	...	-2	9	9	5	
10	20.1	11	16.3	...	8	12	10	4	
11	17.9	12	14.3	...	13	12	8	-1	
12	16.3	15	12.0	-2	19	12	5	-7	
13	15.5	17	12.3	-2	21	11	0	-16	
14	14.8	20	11.7	14	21	10	-3	-21	
15	14.1	23	11.2	23	22	8	-8	-26	
16	13.6	25	10.7	34	23	8	-8	-26	
17	13.2	27	10.3	39	23	7	-8	-30	
18	12.2	28	9.5	42	20	2	-16	...	
19	10.8	30	8.3	40	14	-9	-30	...	
20	10.4	30	8.0	40	12	-12	-34	...	
21	12.3	30	9.0	43	22	4	-13	-36	
22	11.5	23	8.8	22	16	0	-17	...	
23	11.8	13	8.3	-6	10	-1	-15	-35	
24	11.4	4	8.2	-28	5	-3	-15	-33	

VK SOUTH — EUROPE									
UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9	
1	11.8	7	8.4	-26	7	-1	-12	-30	
2	11.2	-2	8.1	-26	7	2	-3	-13	-29
3	11.8	-5	8.6	...	0	-2	-9	-23	
4	13.6	-3	9.4	...	-2	0	-4	-13	
5	16.8	0	12.4	...	-6	1	1	-4	
6	19.5	3	14.4	...	-9	2	3	0	
7	21.2	5	15.7	...	-10	2	5	3	
8	22.1	6	16.4	...	-8	4	6	5	
9	20.7	7	16.6	...	-3	6	6	3	
10	18.7	7	14.8	...	2	7	6	0	
11	16.8	9	13.2	...	7	6	3	-5	
12	14.8	10	11.7	-34	10	6	-1	-14	
13	13.3	13	10.5	-11	13	4	-7	-24	
14	12.6	17	10.0	6	14	2	-11	-32	
15	12.0	21	9.5	20	15	0	-17	...	
16	11.6	25	9.2	32	16	-3	-21	...	
17	11.4	27	8.9	37	16	-4	-24	...	
18	11.2	29	8.7	40	16	-6	-26	...	
19	10.7	29	8.3	40	13	-10	-32	...	
20	10.1	30	7.7	39	9	-16	...	...	
21	10.4	30	7.9	40	11	-13	-36	...	
22	11.7	30	9.1	42	19	0	-19	...	
23	11.6	23	8.8	23	15	-1	-18	...	
24	12.4	15	8.7	-1	13	2	-11	-30	

VK WEST — EUROPE									
UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9	
1	12.8	16	8.8	3	13	1	-13	-33	
2	11.8	6	8.4	-23	6	-3	-15	-34	
3	12.3	1	8.9	...	3	-2	-11	-27	
4	14.5	1	9.8	...	0	1	-4	-14	
5	17.9	3	13.1	...	-3	3	2	-4	
6	20.8	5	15.3	...	-6	4	5	2	
7	22.7	6	16.6	...	-7	4	6	4	
8	23.6	7	17.4	...	-7	5	7	6	
9	24.4	8	18.0	...	-5	6	9	7	
10	23.5	8	18.3	...	-1	8	9	7	
11	21.4	9	18.1	...	5	10	9	4	
12	19.3	11	15.4	...	11	12	8	1	
13	17.2	13	13.7	-22	16	12	5	-5	
14	15.7	17	12.4	1	19	11	1	-13	
15	14.8	20	11.8	18	22	10	-1	-18	
16	14.2	24	11.2	33	23	9	-4	-24	
17	13.6	25	10.8	38	23	7	-8	-29	
18	13.2	26	10.4	42	22	5	-11	-33	
19	12.9	27	10.0	43	22	3	-13	-37	
20	12.1	27	9.3	42	18	-1	-20	...	
21	10.8	28	8.4	40	12	-11	-33	...	
22	10.7	28	8.2	40	12	-12	-35	...	
23	12.7	28	9.3	43	21	3	-14	-37	
24	11.6	24	8.9	30	15	-3	-22	...	

VK EAST — EUROPE (Long Path)									
UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9	
1	12.7	10	8.5	-19	10	3	-7	-22	
2	12.2	12	8.3	-11	10	1	-9	-26	
3	11.8	14	8.1	0	12	0	-12	-30	
4	11.3	18	7.9	10	12	-1	-15	-36	
5	10.8	24	7.7	25	13	-4	-21	...	
6	11.4	24	8.2	26	15	0	-17	-39	
7	13.2	23	9.6	25	21	8	-5	-23	
8	15.2	21	11.6	15	23	15	6	-7	
9	12.5	16	9.6	-2	15	6	-4	-20	
10	11.9	8	9.1	-23	9	3	-6	-21	
11	12.5	3	9.9	...	5	1	-7	-20	
12	11.9	-3	9.4	...	1	-1	-8	-21	
13	11.5	-8	9.0	...	-1	-2	-8	-20	
14	11.2	-13	8.7	...	-2	-2	-8	-19	
15	10.9	-16	8.5	...	-3	-2	-8	-19	
16	10.5	-19	8.0	...	-3	-3	-8	-19	
17	9.9	-28	7.5	...	-5	-5	-12	-24	
18	10.2	-20	7.7	...	-3	-3	-9	-20	
19	12.2	-11	9.6	...	-4	-2	-6	-15	
20	15.6	-1	11.9	...	-4	1	-1	-7	
21	16.8	3	11.4	...	-1	4	2	-4	
22	15.1	4	10.2	...	3	4	0	-9	
23	14.1	6	9.5	...	6	4	-2	-13	
24	13.2	7	8.9	-32	8	3	-4	-18	

VK SOUTH — EUROPE (Long Path)									
UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9	
1	11.6	5	8.0	-26	6	-2	-13	-29	
2	11.2	9	7.8	-11	7	-4	-17	-37	
3	10.8	13	7.6	0	8	-6	-21	...	
4	10.4	17	7.4	11	8	-9	-26	...	
5	10.1	22	7.3	24	8	-12	-32	...	
6	10.7	23	7.8	25	11	-8	-27	...	
7	12.2	22	9.1	25	17	1	-14	-35	
8	14.5	21	10.7	20	21	10	0	-17	
9	14.1	18	9.8	8	17	7	-3	-19	
10	12.6	12	8.8	-9	11	1	-9	-26	
11	11.4	5	8.1	-24	6	-2	-12	-29	
12	11.2	0	7.7	-37	3	-3	-13	-30	
13	10.7	-7	7.5	...	0	-4	-13	-28	
14	10.4	-12	7.2	...	-1	-4	-12	-26	
15	10.1	-17	7.1	...	-1	-4	-11	-24	
16	9.7	-32	6.9	...	-9	-11	-19	-33	
17	9.4	...	6.8	...	-16	-17	-26	...	
18	9.9	-36	7.2	...	-12	-13	-20	-34	
19	11.6	-14	7.9	...	-4	-2	-7	-17	
20	14.4	-6	10.6	...	-7	-1	-3	-10	
21	15.5	-2	10.8	...	-6	0	-1	-7	
22	14.0	-3	9.7	...	-3	0	-3	-12	
23	13.0	-2	9.0	...	0	0	-6	-17	
24	12.1	1	8.4	...	3	-1	-9	-23	

VK WEST — EUROPE (Long Path)									
UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9	
1	11.2	-5	7.8	...	0	-5	-14	-29	
2	10.7	-2	7.5	-31	1	-7	-18	-35	
3	10.3	1	7.3	-21	1	-9	-22	...	
4	10.0	4	7.2	-12	2	-11	-26	...	
5	9.8	8	7.1	-3	2	-13	-30	...	
6	10.3	11	7.6	1	4	-10	-26	...	
7	11.8	13	8.8	3	9	-3	-17	-37	
8	13.8	15	10.3	3	14	5	-6	-22	
9	15.8	15	11.8	0	17	10	1	-11	
10	15.5	13	10.7	-8	14	8	0	-12	
11	12.2	6	9.4	-24	6	0	-9	-24	
12	11.9	0	8.5	...	2	-2	-10	-24	
13	11.7	-5	7.9	...	0	-4	-12	-26	
14	11.1	-11	7.4	...	-3	-5	-12	-25	
15	10.6	-17	7.3	...	-4	-5	-12	-24	
16	10.3	-22	7.0	...	-6	-6	-13	-24	
17	10.0	-35	6.9	...	-13	-13	-19	-32	
18	9.6	...	6.7	...	-18	-18	-25	-39	
19	9.3	...	6.6	...	-19	-20	-28	...	
20	9.8	-39	7.0	...	-14	-14	-21	-35	
21	11.4	-17	7.6	...	-6	-5	-9	-19	
22	13.4	-9	9.4	...	-7	-3	-6	-14	
23	12.5	-10	8.7	...	-5	-4	-8	-18	
24	11.7	-8	8.1	...	-2	-4	-11	-24	

VK EAST — MEDITERRANEAN									
UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5	
1	13.3	8	10.2	9	4	-3	-17	-34	
2	11.9	-1	9.1	3	0	-8	-22	-39	
3	12.1	-5	9.1	0	0	-7	-19	-34	
4	14.7	-1	11.6	-3	2	-1	-8	-19	
5	19.1	3	14.6	-8	3	4	0	-6	
6	22.6	6	17.6	-11	3	6	5	1	
7	24.4	7	19.5	-11	3	7	7	3	
8	22.9	7	18.4	-7	5	7	6	1	
9	20.8	7	17.6	-2	6	7	4	-2	
10	18.8	8	14.9	2	8	6	0	-8	
11	16.7	9	13.3	7	8	4	-4	-15	
12	15.2	10	12.0	10	8	0	-10	-24	
13	14.4	14	11.4	14	8	0	-15	-31	
14	13.7	18	10.9	17	8	-3	-20	-39	
15	13								

# HAMADS

## TRADE ADS

● **AMIDON FERROMAGNETIC CORES:** For all RF applications. Send business size SASE for data/price to RJ & US Imports, PO Box 431, Kiama NSW 2533 (no enquiries at office please ... 14 Boanyo Ave Kiama). Agencies at: Geoff Wood Electronics, Sydney; Webb Electronics, Albury; Assoc TV Service, Hobart; Truscotts Electronic World, Melbourne.

● **WEATHER FAX programs for IBM XT/ATs** \*\*\* "RADFAX2" \$35-00, is a high resolution shortwave weatherfax, morse and RTTY receiving program. Suitable for CGA, EGA, VGA and Hercules cards (state which). Needs SSB HF radio and RADFAX decoder. \*\*\* "SATFAX" \$45-00, is a NOAA, Meteor and GMS weather satellite picture receiving program. Needs EGA or VGA & WEATHER FAX PC card, + 137 MHz Receiver. \*\*\* "MAXISAT" \$75-00 is similar to SATFAX but needs 2 MB of expanded memory (EMS 3.6 or 4.0) and 1024 x 768 SVGA card. All programs are on 5.25" or 3.5" disks (state which) plus documentation, add \$3-00 postage. ONLY from M Delahunty, 42 Villiers St, New Farm QLD 4005. Ph (07) 358 2785.

● **THE WORLD OF HAM** radio compact disc, over 7000 files of amateur software, thousands of short wave frequencies, over 1000 radio modification files \$79.95 plus post \$6.00 for IBM compatibles. W. Kessler, 3 Howard Ave, Ormond Vic 3204, (03) 578 4825.

## FOR SALE NSW

● **MFJ 1224 computer interface C64 software** and handbook \$150. Ray VK2FW QTHR (063) 65 3410.

● **B & W dummy load wattmeter** oil cooled ranges 0-10, 100-300- 1000W, 52 Ω good condtn \$200. Gordon VK2AVT QTHR (02) 580 4325.

● **ESTATE OF VK2EEX KENWOOD TS530S** \$500; AT230 \$120; MC50 \$30; KENPRO squeeze key \$100. Ian VK2MW (02) 44 4985.

● **TOWER** free standing made in USA triangular made of aluminium in two sections each 12ft long never used, top plate suitable for rotor or vertical antenna \$120. Ken VK2CWI (044) 76 1805.

## FOR SALE VIC

● **KENWOOD TS-811A** and **KENWOOD TS-711A** 70 cm and 2 m all mode xcvsr 25 watts output and built in 240 V p/supply both in excellent condition, no faults \$1,100 each. Andy VK3DTO (053) 82 1439 BH (053) 82 1759 AH.

● **YAESU FT101ZD** (no WARC bands) s/n 9F060399 mic & external SWR meter inc. good cond. \$525. Roy VK3RU QTHR (03) 889 5762.

● **IBM XT turbo 20 meg hard disc colour monitor key board** \$250. Jim VK3YJ QTHR (03) 315 9387.

● **ESTATE OF VK3NC ICOM IC735 transceiver** \$1,000; **MATCHING power supply PS55** \$250; **YAESU FF501** \$250; **BENCHER paddle keyer** \$40; **DICK Smith solder station** \$50 Alistair (03) 429 5508.

● **ICOM IC-28A 2 m FM xcvr 25/5 W 21 memory channels** highly visible LCD readout c/w all leads mike inst manual carton as new hardly used \$450. Alf VK3EJ QTHR (03) 877 2983.

● **YAESU FT-ONE g/cov receiver, plus brand new extender boards 140 watt transmitter** all filters installed 12 V 240 V plus microphone FM board ec \$1,500. Patrick VK3GEE (051) 99 2811.

● **DECEASED ESTATE OF Dick Fitzsimmons Ex-VK3RZ. KENWOOD TS-440SAT HF xcvr** vgc \$1,700; **KENWOOD MC-80 desk mic** \$70; **ICOM PS-15 power supply** \$100; **YAESU FT-290R 2 metre all mode xcvr** \$350. Mike VK3RZ (016) 39 7565.

● **ICOM 751A and workshop manual, low air time, \$1200. AICRAFT SKYPHONE AWA** \$120. Ron (03) 707 3405.

## FOR SALE QLD

● **VALVES** for restorers, collectors, some unused in cartons. Octals, novals, metals, military. All tested. Sockets, ceramics, shields, all types. Send 9" x 4" sase for latest list, reas prices. Ted VK4YG PO Box 245, Ravenshoe Qld 4872, (070) 97 6387.

● **MOSLEY 4 band trapped HF vertical antenna** with data sheets \$75; **SHURE model 450 desk microphone** with date sheet \$75; **WAVE meter** ex Dept of Defence gc \$40; **EDDYSTONE 750 receiver, gwo** with circuit diagram, data sheet \$120; **DRAKE C-line valves (2) 6JB6A** \$60; **MULTITESTER Sanwa N-501** (top of the range) 17 μA FSD. 10 A ac/dc etc. \$95; **FUNCTION generator** home brewed gwo \$35; **YAESU SP-980 external speaker w/filters** \$70; **WHIP Antennas 80 m w/adjustable tip** \$35, 10 m \$25. John VK4SZ (070) 61 3286.

● **YAESU FIF-232C computer aided transceiver (CAT) interface.** c/w din lead & RS232 cable vgc \$50; **HIGH Power valves, 7 x 813s, 6 x ceramic 813 sockets, top caps.** Filament xfmsr to suit 813 — 2 with 10 V AC CT & 1 with 2 x 10 V AC CT & a 6.3 V AC CT \$50 the lot. Gary VK4AR QTHR (07) 353 1695.

● **TELEREADER CWR685 cw/ baudot ASCII** with keyboard, manual good cond \$250 or near offer; **DSE computer program data recorder CATX 7206** \$40. Gordon VK4KAL QTHR (079) 85 4168.

● **YAESU FRG-9600 VHF/UHF receiver** w/operating manual vg cond \$300; **RS2100 RTTY scope HAL g/cond w/manuals** \$100; **ANTENNA multi-band vertical (W. Wulf) 10-80 m 2 years old g/cond** \$150. Dick VK4KEZ QTHR (07) 264 1655.

● **REFLECTOMETER, SWR 50 MHz — 3.8 GHz, 50 Ω, machined heavy brass.** Silvered N-type connectors. Schottky diode-chip components. Single diode system. No swapping of connectors. \$150 Keith Searle VK4ZKS MSI 1877 Malanda QLD 4885 (070) 966 149.

## FOR SALE TAS

● **ONE 3 m length of 20 mm square alum tubing** and four 2 m lengths of alum tubing 12 mm outside diam. \$15 the lot. Prefer local buyer. Frank VK7LO QTHR (004) 24 6672.

## WANTED ACT

● **CIRCUITS** copy of handbook, other information for a Datong automatic RF speech processor. Richard VK1RJ (06) 258 1228.

## WANTED NSW

● **RAAF Radar units part of ASV equipment** — transmitter AT300, receiver AR301 — cases only of interest if undamaged. A Gray, VK2LJ, PO Box 353, Whale Beach NSW 2107.

● **HEWLETT PACKARD technical manuals** for models 8410A, 8413A, 8414, 1430C, 1411A, 3440A, 3430A, 5261A, 8698A, 5264A, 5253B, 5254, electronic test equipment. Peter VK2CPK QTHR (02) 605 4790.

● **FR101 Receiver** any condition; **FV101B ext VFO valves IT4 IS4 SP10PB landliner.** Ray VK2FW QTHR (063) 65 3410.

## WANTED VIC

● **YAESU FV101 extension VFO** in good condition; **YAESU YD844 desk mike.** Andrew VK3WAB QTHR (03) 544 2758.

● **WANTED Dead or Alive b/w video camera type National model WV- 1004E.** Peter VK3BK (03) 879 1896.

● **KENWOOD TM-731A** perfect or vgc, with all mounts, box, instructions etc. Harry VK3BCG QTHR (03) 836 6266 ext 237 BH.

## WANTED QLD

● **ICOM IC-PS 30 or IC-PS 15 power supply;** **ICOM IC-SP20 or IC-SP3 external speaker;** **ICOM SM-8 desk microphone;** **CONDENSER tuning wide spaced plates (150 pF); REDUCTION drive BC347 velvet drive or similar.** John VK4SZ (070) 61 3286.

● **WORKSHOP manual or circuit for Airmec signal generator type 407** made by Rancal or loan of one to copy. Will pay any costs involved. A Hinkler VK4AC, 41 Spenser St, Iluka NSW 2466, (066) 46 6587.

- 11 YEAR OLD Boy studying for novice licence wishes to buy reasonably priced communications receiver. Jonathon (076) 61 7640.
- WISH TO Borrow PC File 5 manual, return guaranteed. Gordon VK4KAL (079) 65 4168 or post:- Freepost No 4 Rubyvale Old 4702 to Gordon Loveday.

**WANTED SA**

- METER and high tension probe to 5 kV or probe only. Murray VK5BVJ QTHR (087) 38 0000.

**WANTED WA**

- 70 cm BASE station all mode. R Baker VK6QB OTHR (097) 52 2651.

**MISCELLANEOUS**

- PLEASE SEND some of your QSL cards to the WIA collection. Expecially special issue call signs, pictorial cards and rare DX. Contact Ken VK3TL, 4 Sunrise Hill Road, Montrose Vic 3765, Tel (03) 728 5350.
- HOMEBREW COMPETITION open to all, cash prizes, Moorabbin District Radio Club Hamfest. Saturday, 14 May at Brentwood Secondary College, Glen Waverley, Map Ref 71-C-7. Competition details from David Armstrong VK3XJP/VK3PNL (03) 880 8286 (AH) or (018) 99 8665. Book space for preloved gear with Trevor Armstrong VK3JJR (03) 720 7609 AH. Extensive trade exhibits, free parking, entry \$3.00. Food available 10 am to 3 pm.

ar

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**AR 20 YEAR INDEX  
PO Box 300  
Caulfield South VIC 3162**

**Editor's Comment**

Continued from page 3

who developed the coherer from Branly's findings, was greatly influenced by Hertz, and was one of the first to realise that electrical discharges were oscillatory.

Preece, who became Chief Engineer of the British GPO and eventually Sir William, was greatly involved with Marconi's demonstrations.

So there we have the briefest of the thumbnail sketches of a few of those who laid the foundations, first of amateur radio, but eventually of the massive communications system which now covers the globe with electronic Babel (or should that be "babble"?). I promise you there is much more to come!

I wonder which present day names will be remembered in the 2090s?

**Bill Rice VK3ABP  
Editor  
ar**

**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 per issue 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.

\*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.

\*WIA policy recommends that Hamads include the serial number of all equipment offered for sale.

\*Please enclose a self addressed stamped envelope if an acknowledgement is required that the Hamad 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: \$25.00 for four lines, plus \$2.25 per line (or part thereof) Minimum charge — \$25.00 pre-payable.

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**Not for publication:**

Miscellaneous

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Wanted

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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.

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## CONTRIBUTIONS TO AMATEUR RADIO

Amateur Radio is a forum for WIA members' amateur radio technical experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for possible publication. Articles on computer disk are especially welcome. The WIA cannot assume responsibility for loss or damage to any material. "How to Write for Amateur Radio" was published in the August 1992 issue of AR. A photocopy is available on receipt of a stamped, self addressed envelope.

## BACK ISSUES

Available only until stocks are exhausted. \$4.00 to members, which includes postage within Australia.

## PHOTOSTAT COPIES

When back issues are no longer available, photocopies of articles are available to members at \$2.50 each (plus \$2.00 for each additional issue in which the article appears).

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.

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## 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:.....

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Address:.....

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# WIA Morse Practice Transmissions

VK2BWI Nightly at 2000 local on 3550 kHz

VK2RCW Continuous on 3699 kHz and 144.950 MHz 5 wpm, 8 wpm, 12 wpm

VK3COD Nightly (weekdays) at 1030 UTC on 28.340 MHz and 147.425 MHz

VK3RCW Continuous on 144.975 MHz 5 wpm, 10 wpm

VK4WIT Monday at 0930 UTC on 3535 kHz

VK4WSS Tuesday at 0930 UTC on 3535 kHz

VK4WCH Wednesday at 1000 UTC on 3535 kHz

VK4AV Thursday at 0930 UTC on 3535 kHz

VK4WIS Sunday at 0930 UTC on 3535 kHz

VK5AWI Nightly at 2030 local on 3550 kHz

VK6WIA Nightly at 1930 local on 146.700 MHz and nightly (except Saturday)  
at 1200 UTC on 3.555 MHz.

# WIA Divisional Bookshops

The following items are available from your Division's Bookshop  
(see the WIA Division Directory on page 3 for the address of your Division)

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Ani Compendium Vol 3 1st Ed. 1992	BR455	\$37.00			
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RSGB Call Book 1993/4	BR465	\$38.00			
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**IC-R7100**



**IC-R100**



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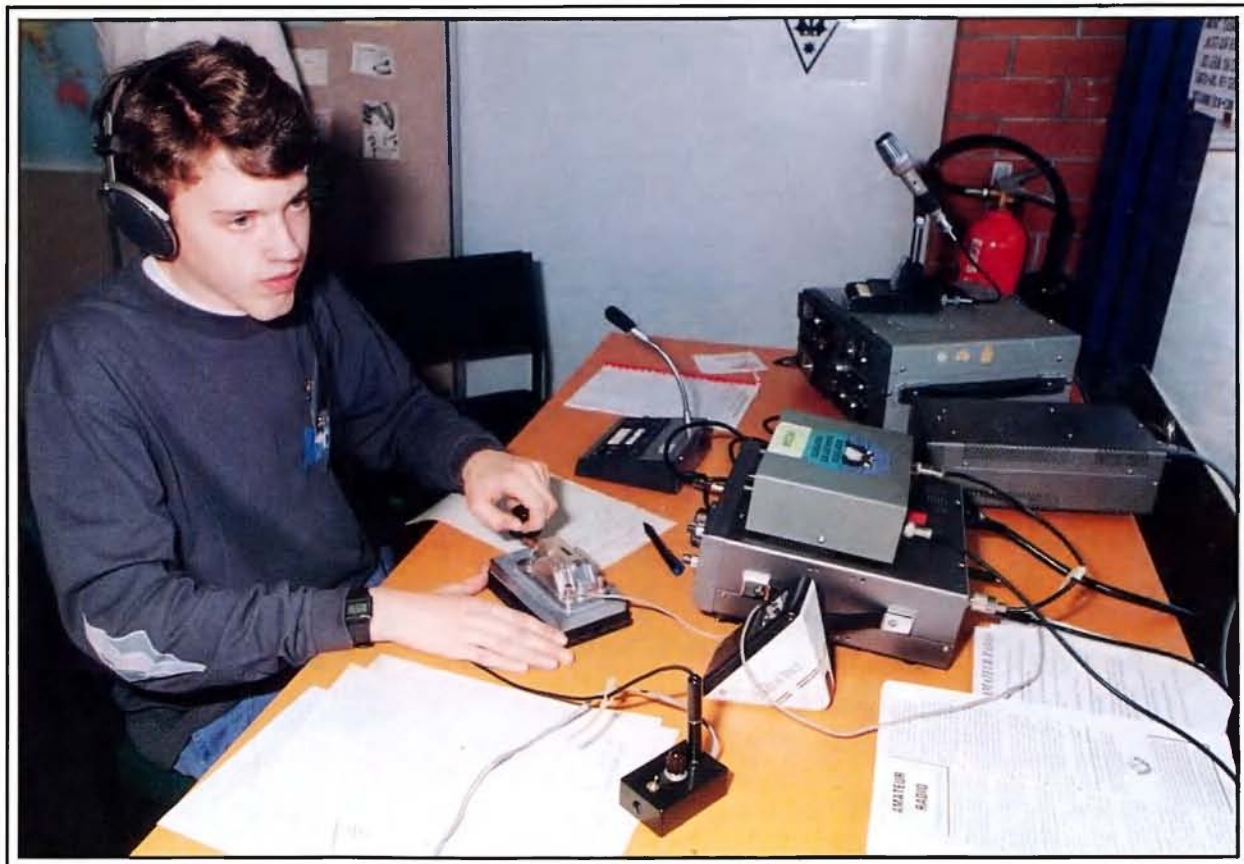


# RADIO **AMATEUR**

MAY 1994  
Volume 62 No 5



Journal of the Wireless Institute of Australia



## **IN THIS ISSUE:**

**Amateur Radio on a Budget**  
**A Russian Military Aircraft Radio**  
**The Joy of Kit Building**

**and lots more**

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**Business Hours:** 9.30 am to 3 pm weekdays

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Shannon Bathis VK2JSB operates the NSW Division's HF station at Eastern Creek Raceway, Sydney, during Hobbyfest 93 (see page 10 of the April 1994 issue of *Amateur Radio*).

# Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

## Wireless Institute of Australia

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Representing the Australian Amateur Radio Service

Member of the International Amateur Radio Union

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Awards:	John Kelleher	VK3DP
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Education:	Brenda Edmonds	VK3KT
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# Federal QSP

As foreshadowed in my comments in the April issue of *Amateur Radio*, this will be the last column that I will be writing in my capacity as Federal President. By the time you read this, the WIA Annual Federal Convention will be over and there will be a new Federal President.

One hope I have is that I will be able to have more on-air time in the future. It is some time since I have had the opportunity to spend large amounts of time on-air. Activities around the house and yard have dictated a relocation of several of the antennas and equipment. In some cases the dismantling has been done but the re-assembly in a new location in the yard is awaiting time and effort to get parts of the station back on the air.

I'm sure we have all been in the same situation at some time or another. Maybe with the lesser responsibility I can find more time to get those missing bits of the station up and going again. Some 12 months ago my wife obtained her Novice Licence and, watching the thrill she has obtained from her first overseas contact, her first contest, etc, has emphasised for me the aspects of radio I have been missing.

Reduced time on the air seems to be the normal thing for many who work within the WIA and the amateur community in a voluntary capacity. The time that they give is what allows us all to continue to enjoy our hobby in whatever way we wish. There are those who would say that this is just a hobby, so why are the Divisions and the WIA at the Federal level spending so much time on issues that seem to be unrelated to amateur radio?

The operations of the WIA, both at the Divisional and Federal level, are governed by the Australian Securities Commission and the relevant aspects of Company Law. This law, as it affects bodies like the WIA, has changed in recent times and those who are administering the WIA at all levels have been required to ensure that they are conforming with all relevant ASC requirements. This type of activity takes time. At the Federal level I believe that the end is in sight and we will soon be able to put such matters behind us and get back to considering issues which are more directly related to the hobby.

In the end it is only a hobby, a point which sometimes escapes some people. We pride ourselves on being able to operate our band plans on the basis of them being a gentleman's agreement. This is the type of thinking which needs to also become embedded in our activities in the administrative side of our hobby. Sure, there is a business side to it, and business has its place, but we should all try to think more of our gentleman's agreement way of operating, both in our actions on-air, as well as our actions in the administrative side of our hobby. Let's try and get on with our fellow amateur and not turn our hobby into something rivaling the happenings in the political arena.

Let's be proud of our status as amateur radio operators and proud of our relationship with our fellow operators and the community at large. Remember, we need to be good citizens, both within our hobby and in the wider community, if our hobby is to survive well into the next century.

That's it from me. I wish you all well and also the best to the new Federal President and the new Federal Council.

Kevin Olds VK1OK, Federal President

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# Editor's Comment

## Fact Finding

It is a human weakness to prefer a simply stated case, easily repeated and seeming plausible, even though it may not be in accord with the facts. Often this is because the facts are difficult to find, or even when found seem prohibitively complex. Simple slogan-type statements are easier to comprehend.

I am motivated to start out this way by several situations which apply to

Amateur Radio magazine and to the WIA at present. We have in this issue some "Update" comments and "Technical Correspondence" on the subject of antenna feedlines and standing waves, following an article we published last month.

We also have some technical correspondence (not in this issue) on the relative effectiveness of signals complying with our VK power limits of 400 W PEP for SSB and 120 W for CW (based on 150 W DC input).

Both topics have caused several of us to think seriously about the accuracy of our understanding of transmission lines and power rating systems. To some extent we are still trying to find the "facts"!

Another prolific area for this bias towards the simple solution (which may be no solution at all) is in the field

of politics; both our own Institute council management, and the larger arena of State or Federal Government. Here there is fertile ground for the embroidered fact, the half-truth, the mis-representation, and the outright lie! As the satirical saying goes "Don't confuse me with the facts, my mind is made-up"!

How may we be sure we have all the facts before we reach an opinion? I'm sorry, but the question is almost impossible to answer. The more facts are discovered in any real-world situation, the more are found hidden beneath them! Life wasn't meant to be easy!

To change the subject completely, in March I asked again after two years whether Harry Angel VK4HA, at 102,

Continued page 55

## 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	Call Signs	Weekly News Broadcasts	1994 Fees
VK1	ACT Division GPO Box 600 Canberra ACT 2601 Phone (06) 247 7006	President Rob Apathy Secretary Len Jones Treasurer Don Hume	VK1KRA VK1NLJ VK1DH	3.570 MHz LSB, 146.950 MHz FM, 438.525 MHz FM each Monday evening (except the fourth Monday) commencing at 8.00 pm.	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK2	NSW Division 109 Wigram Street Parramatta NSW (PO Box 1066 Parramatta 2124) Phone (02) 689 2417 Fax (02) 633 1525	President Terry Ryeland Secretary/ Treasurer Roger Harrison (Office hours Mon-Fri 11.00-14.00 Wed 1900-2100)	VK2UX VK2ZRH	From VK2WI 1.845, 3.595, 7.146*, 10.125, 24.950, 28.320, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 (*morning only) with relays to some of 14.160, 18.120, 21.170, 584.750 ATV sound. Many country regions relay via a local 2 metre repeater. Sunday 1000 and 1915. Highlights included in VK2AWX Newcastle Monday 1930 on 3.593 plus 10mx, 2mx, 70cm, 23cm. News headlines by phone (02) 552 5188. Some broadcast text can be found on the Packet network.	(F) \$66.75 (G) (S) \$53.40 (X) \$38.75
VK3	Victorian Division 40G Victory Boulevard Ashburton Vic 3147 Phone (03) 885 9261	President Jim Linton Secretary Barry Wilton Treasurer Rob Hailey Office hours Tue & Thur 0830-1530	VK3PC VK3XV VK3XLZ	1.840MHz AM, 3.615 SSB, 7.085 SSB, 53.900 FM(R) Mt Dandenong, 146.700 FM(R) Mt Dandenong, 146.800 FM(R) Mildura, 146.900 FM(R) Swan Hill, 147.225 FM(R) Mt Baw Baw, 147.250 FM(R) Mt Macedon, 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday.	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK4	Queensland Division GPO Box 638 Brisbane QLD 4001 Phone (07) 284 9075	President Ross Marren Secretary Lance Bickford Treasurer David Travis	VK4AMJ VK4ZAZ VK4ATR	1.825, 3.605, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, 28.400 MHz. 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday. Repeated on 3.605 & 147.150 MHz, 1930 Monday	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK5	South Australian Division 34 West Thebarton Road Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Bob Allan Secretary Maurie Hooper Treasurer Bill Wardrop	VK5BJA VK5EA VK5AWM	1820 kHz 3.550 MHz, 7.095, 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 34 579.000 Adelaide, ATV 444.250 Mid North Barossa Valley 146.825, 438.425 (NT) 3.555m 146.5000, 0900 hrs Sunday	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK6	West Australian Division PO Box 10 West Perth WA 6872 Phone (09) 388 3888	President Cliff Bastin Secretary Ray Spargo Treasurer Bruce Hedland-Thomas	VK6LZ VK6RR 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 3.582, 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 146.700 at 1900 hrs.	(F) \$60.75 (G) (S) \$48.60 (X) \$32.75
VK7	Tasmanian Division 148 Derwent Avenue Lindisfarne TAS 7015 Phone (002) 43 8435	President Andrew Dixon Secretary Ted Beard Treasurer Peter King	VK7GL VK7EB VK7ZPK	146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.750 (VK7RNA), 3.570, 7.090, 14.130, 52.100, 144.150 (Hobart) Repeated Tues 3.590 at 1930 hrs	(F) \$69.00 (G) (S) \$55.65 (X) \$40.00
VK8	(Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).			Membership Grades Full (F) Pension (G) Needy (G) Student (S) Non receipt of AR (X)	Three-year membership available to (F) (G) (X) grades at fee x 3 times.

Note: All times are local. All frequencies MHz.

# A Russian Military Aircraft Radio

Colin MacKinnon VK2DYM \* gives an interesting insight to old military aircraft radios.

Older readers and collectors of military history will know of the English TR-5043 VHF aircraft transceiver, which was adapted by the US military as the SCR-522, and was used extensively by the allies in the latter stages of WW2 and up to the 1950s, in Spitfires, Mustangs and other aircraft of that vintage. After the war many amateurs modified the sets for two metres and it provided a cheap entry to that band. See Photo No 1, a top view of a 522 with the lid removed.

The TR-5043/SCR-522 was a 4 channel crystal controlled, amplitude modulated transmitter and receiver, covering the 100-156 MHz range and

operated remotely via a 4 button switch. The power output was less than 10 watts (from 320 watts input!). The transmitter and receiver were separate units which fitted side-by-side into a metal case, whilst the channel change and tuning actuator mechanism fitted into the case on top of them. The channel change mechanism was electromechanical with a uni-selector relay which selected the required crystal and moved four metal slides to retune the receiver input and transmitter output circuits. The transmitter has four tuned circuits whilst the receiver has two. Before each mission the correct crystals were fitted and the set was

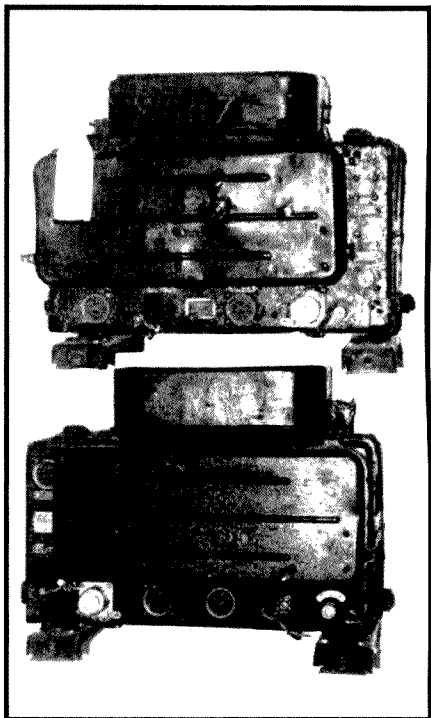


Photo 2: Front view of Russian radio. Transmitter "A" at top, Receiver "B" below.

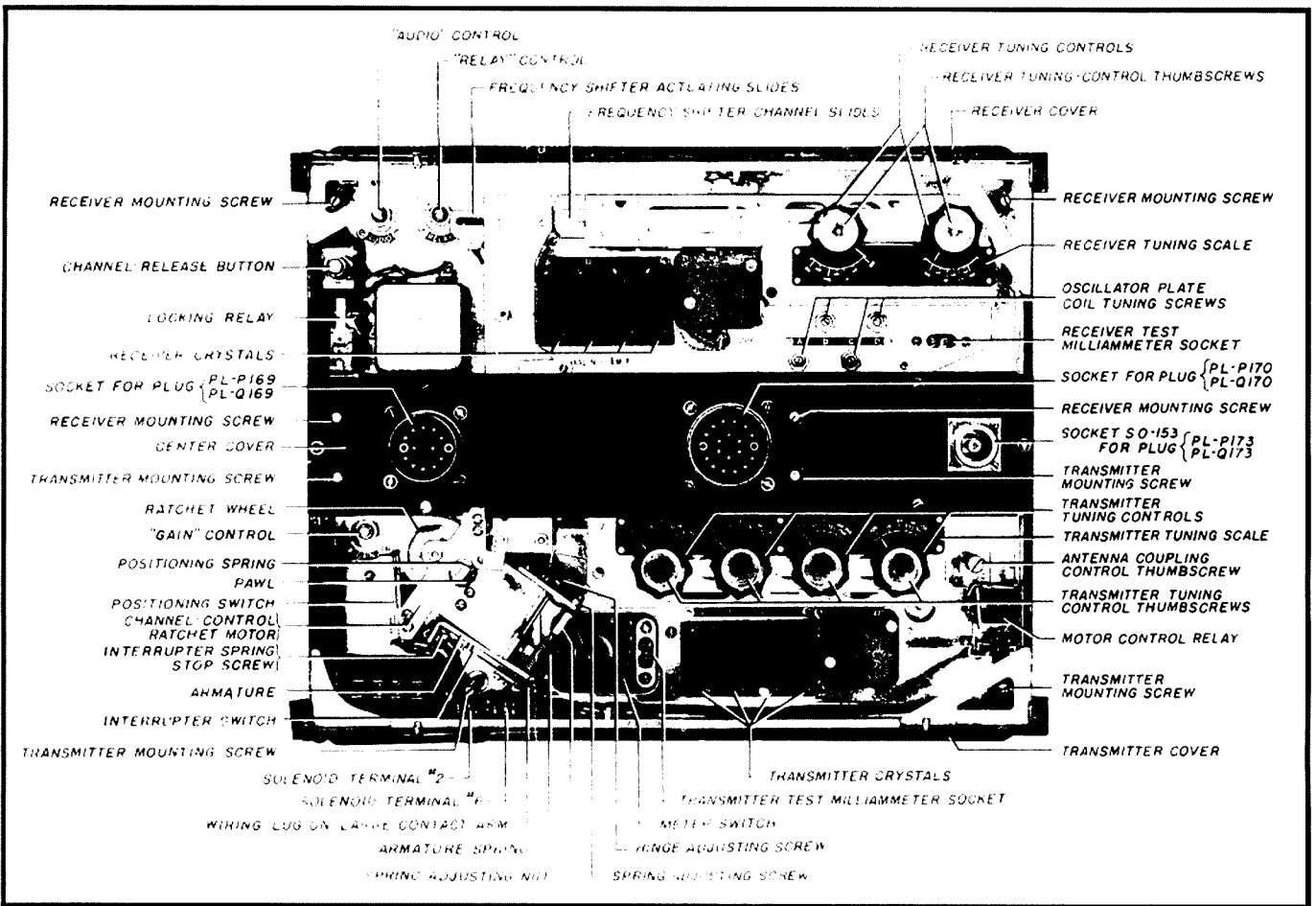
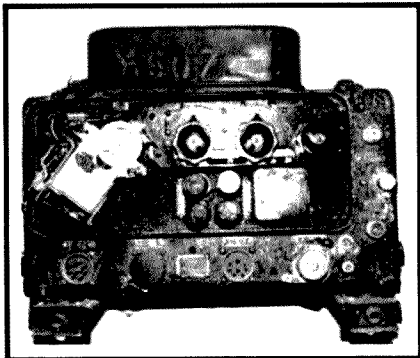


Photo 1: Top View of SCR-522 with lid removed.

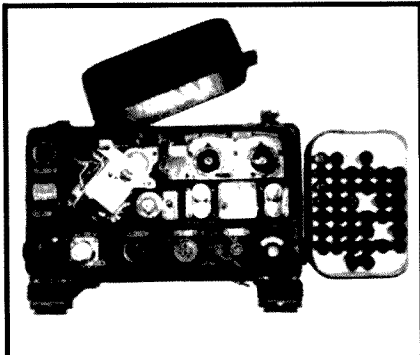


**Photo 3: Front view of Transmitter with cover removed.**

pre-tuned for each channel. The separate power supply was a very heavy (19 kg genemotor in a metal case with filters etc. Most sets had a 28 volt input, although 14 volt versions were made.

Recently a Russian version of the SCR-522 was obtained from a Polish made MiG-15 fighter aircraft and it is interesting to compare the two. Electrically the set is very similar to the 522 but with Russian valves and electrical components. However, the channel change mechanism and

many other components are obviously American made! The explanation for this is that during the war, the US supplied the Russians with large quantities of equipment

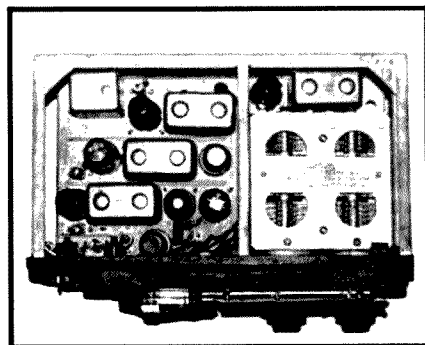


**Photo 4: Front view of Receiver showing box of crystals at right.**

and materials and that must have included the components of the SCR-522, which they have built into a modified version of the US set.

The Russian radio consists of three separate boxes, a transmitter unit "A" and a receiver unit "B" as shown in Photo No 2, plus a vibrator type

power supply unit "C". Whereas the SCR-522 was only fitted with four sets of crystals as needed, the Russian set



**Photo 5: Top view inside Receiver. The tuning units at the right are of US manufacture.**

has a metal box with a hinged lid attached to the top of each unit, containing a full complement of crystals. The crystals are fitted inside cylindrical holders marked "A" for the transmitter and "B" for receiver with the channel number marked. The electrical connectors are different to the US type and all nameplates are in Polish. The mounting brackets

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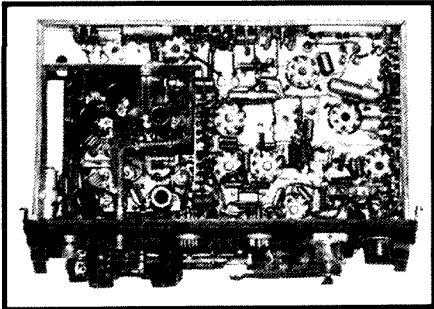
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underneath the Russian set are also not to US and British standard. The construction is quite good, but the cases are of lighter construction than the 522 and exhibit a few dents from mishandling.

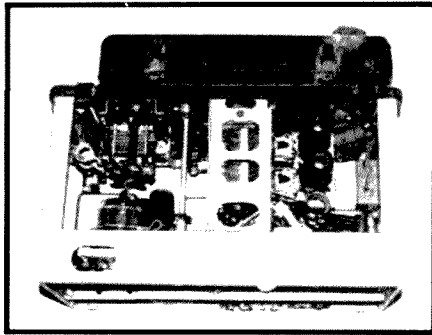


**Photo 6: Underneath view of Receiver.** The neat wiring is similar to US methods. Components have English markings.

Photo No 3 shows the Transmitter with the front cover removed so that the channel change and tuning mechanism can be compared with the 522. This transmitter only has three tuning adjustments whereas the 522 has four. Just below the three tuning dials you can see the four cylindrical crystals. The receiver in Photo No 4 has its own channel changer/tuning slide, again a 522 component, and it has the same volume and relay controls as the American radio. The box of crystals for it is shown on the right. The internal photos, No 5 and 6 (receiver) and 7 and 8 (transmitter), show the neat construction of both, with valves ("lampy" in Polish), component designations and values all in English. There are obvious differences in part location and component dimensions but the similarities are such that radio technicians who worked on the 522 set would feel right at home with this gear.

The Russian set appears to have a similar output power to the 522, but the power supply is a marked contrast to the heavy US set, in that it is a vibrator type unit, weighing only around 10 kg. I haven't included a photo because it is just a small black box.

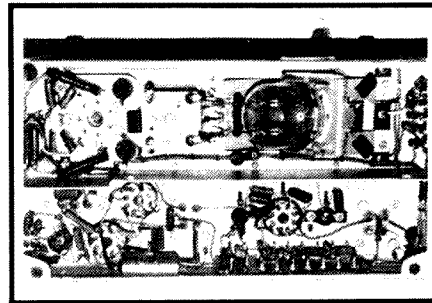
The MiG-15 and its later, faster development, the MiG-17, carried this VHF radio as well as a low frequency Direction Finding radio which is based on the Bendix MN-26 radio



**Photo 7: Top view inside Transmitter,** with the 832 equivalent final output valve visible at lower left.

made in the US commencing in the late 1930s and running well into the 40s. There are a few differences in construction technique and the Polish wording indicates its origin but it is otherwise almost an exact copy of the MN-26. Whereas the VHF radio does not comply with current air communications standards and has been replaced, the MN-26 radio performs better than modern solid state models so has been retained in the aircraft.

Another interesting comparison is the engine of the MiG-15 which is a copy of the Rolls Royce Nene jet engine. The English Government sold 25 Nenes to the Russians in 1946 and the design was promptly copied (illegally) and improved. When working on the MiG engine the English Rolls Royce manuals proved very adequate for the purpose!



**Photo 8: Bottom view inside the Transmitter** showing the 832 type harmonic amplifier at top right. The socket for the final output valve is on the top left.

The MiG-15 first flew in 1947 and several thousand were made in various variants with many still in service. The Polish made aircraft were mostly two seat trainer MiG-15 UTI models, called the LIM-3 in Poland. It has a wing span and length of 10 metres, and a top speed of 1000 km/hr, with armament of a single 23 mm cannon. The MiG-15 gave the United Nations forces in Korea a rude shock as it was superior to the allied aircraft including the F-86 Sabre jet, but fortunately the Chinese pilots were poorly trained and inexperienced.

Today I can sell you an airworthy MiG-15 for only \$500,000, so please form a queue!

\* 52 Mills Road, Glenhaven NSW 2156  
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## WIA News

### Appreciation for WICEN

The acting Chief Commissioner from Victoria Police, Robert Falconer, has written to WICEN (Victoria) Inc, expressing appreciation for their work during the floods last year in Northern Victoria.

The acting Chief Commissioner said, "I write to express both the Police Force's and my personal gratitude for the excellent work done by WICEN members..."

He went on to say, "...WICEN members provided valuable

assistance in the data transfer of registration information.

"The effort by WICEN volunteers, and the fact that they are volunteers who provide their own time and resources, is to be highly commended as in such circumstances it would have been extremely difficult to complete the registration of evacuees by any other method.

"...be assured that WICEN will continue to have a vital role in emergency response communications within Victoria."

WICEN (Victoria) can take a well-deserved pat on the back.



# Amateur Radio on a Budget

## — Part 1

*“Doc” Wescombe-Down VK5HP/VK4CMY\* explains how low cost amateur radio can be enjoyed.*

“\$\$\$\$\$\$!” reads the welcome ticket to any new amateur in 1994 (or, as in the author’s case, an operator returning to the hobby after a protracted absence). If you have the budget allocation or credit availability to purchase new equipment, then you need read no further. But amateur radio is a hobby to some of us, neither an obsession nor a way of life. It is to these mere mortals that this article is directed.

Each amateur (or is it “amateur’s household”?) will determine the \$ limit in establishing and updating the home station. In my own case, having many years of no work, or only part time work during mature age studies, as well as some of life’s cruel twists, this meant relying heavily on club station equipment. Thank you both to South Coast Amateur Radio Club, Adelaide, of which I was co-founder in 1974, and the Whyalla Amateur Radio Club in country South Australia.

It was during these years (1978-90) of adversity that I learned both humility and “making-do” - or was it recycling? Colleagues such as Drew VK3XU, Paul VK5TT, Andy VK5AAQ, Steve ex VK4LG, Bob VK4KNH, Andrew VK2AAK, Freda VK2SU, Robby VK4YV, Peter VK5BWI and the many others who responded to “wanted to buy” advertisements, have all contributed to my successful “comeback” to amateur radio.

In 1974-75 I built my first station from the ARRL books “Understanding Amateur Radio” and “How to become a Radio Amateur”. Nowadays, deteriorating eyesight and lack of mains power/workshop facilities has restricted homebrewing to HF aerials, ATUs, RF switching, masts and the like. Andy VK5AAQ has been my eyes and hands for other projects.

By advertising for older used radio parts and equipment on a club basis, a number of people in similar situations have been helped into and within the hobby. For example one operator donated an FT200 and power supply; another amateur sold us an RCA AR88 RX (early 1940s) for \$100, a Yaesu FT101B txcvr 1972 for \$100, a Yaesu FT100 txcvr 1966 for \$20, a Hallicrafters 2x813 linear for \$80 and “threw in” a Kenwood TS520 with VFO 1974 for free. From a deceased estate came a Drake L4B, TR4C, T4X and R4C for \$1100. Other responses resulted in a mint Heathkit SB201 for \$400; FLDX 2000 for \$80; BC779 “Super Pro” RX, BC348 RX (both 1940s), 3BZ TX, RF and AF signal generators, 400 valves, homebrew 100 w TX with Geloso VFO, six vintage mantel radios 1925-1951, various power supplies, Bird 43 wattmeter, slugs and dummy load, transformers, ARRL handbooks and radio magazines back to 1930 all for \$400; another was the donation of a QRP Heathkit HW-8.

Obviously a variety of people benefit from these acquisitions — restorer/collectors of vintage equipment helped pay for the “job lots” and SWLs/new amateurs can get on air very economically. Other amateurs have assisted with photocopies of schematics and manuals as well as donations or cheap sales of various components.

From my own perspective, valve equipment is preferred and US-made in particular (Heathkit, Swan, Ten-Tec, Hallicrafters) although British-made receivers (Eddystone EA12 and Racal RA17) are also favourites. As my service training was valve-centred and I know little about solid state and computers, I am comfortable with this approach.

For years though, I used a Ten Tec “Argonaut” 509 QRP rig and Heathkit HW7 QRP transceiver to notch up more than 10,000 QSOs on CW. It is only in the last 12 months that a transition to some phone operation has been made.

Enough about the situation here. How about you? Where do you start looking and for what do you look?

Other amateurs are the best start point. Let the word spread that you only have \$100, \$300 or \$600, etc to spend and be patient. The cheaper gear is out there, cluttering up people’s shacks, sheds and wireless offices. Make yourself known to local council tip operators, broadcast and TV station engineers, run advertisements in “Trading Post”, AR,





etc. But saturate the enquiries — don't just run one advertisement. Buying and selling is all timing. Haggling is a matter of personal judgment and all kind of surprises may result.

For example, one respondent to an advertisement said he had a Heathkit SB200 linear for \$X. Haggling, based on the perceived age of the unit versus the availability of "Ameritron" units new for \$1400 saw an agreed price (sight unseen) of \$X-200. When the unit arrived, it was not an SB200 but an SB201, in mint condition and perhaps 5 years old!

Job lot or shack clearouts can result in other bargains. One operator had a complete utility (and cab) load of valve-era equipment and parts which he wanted disposed of in one sale. He had contacted a state WIA Division and various electronics magazines in previous attempts to sell it all but had received no responses. A few judicious telephone calls to various "collector" amateurs

in a couple of states and the \$400 necessary was in hand and paid. In appreciation, the seller gave a complete Bird 43 Wattmeter outfit as an agent's "bonus".

Hamfests are another great source of goodies. "Caveat Emptor", or "Buyer Beware", always applies but purchasing leverage can be applied if the unit is being purchased untested. By way of examples, a well-made solid state 35 amp power supply (no metering and an unfashionable metal case) sat all day at an amateur flea market probably because it had "48V" scribbled in felt-tip on a switch. The vendor did not want to carry it home (25 kg) and accepted a \$30 offer. Guess what? Yep — 13.8 volts @ 35 amps not 48 volts!! A huge 1750-0-1750 transformer went for \$20 because it was on the floor too heavy to lift on to the trestle table) and everyone was overlooking it.

Everyone has their own economic values, but I guess my years of

economic adversity (plus an unsympathetic YL!) have resulted in the formula that as a hobby, my amateur station will never cost more than a fortnight's net salary. That is also why I hand write my articles and three books (thus far) because I will not be able to afford a computer. Quality of life is more important to us than any piece of amateur gear so our 26 acre "High Country" land, new house and various livestock "pets" take primary focus. No rigs running all the time. No 2 m chatback. No packet. 80-40-20-15 m QRP and QRO CW (with a little bit of phone for old friends VK5AAQ and VK5TT) will keep me happy and within budget. Whatever you spend on your hobby, remember two things:

1. Old watts are as good as new watts; and
2. You won't be able to take it with you no matter how much you paid for it.

\*C/o PQ Dalveen QLD 4374  
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## WIA News

### New WIA Members

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of March 1994

L20968 MR J C COULSTON  
L30882 MR M PRICE  
L30883 MR W KESSLER  
L30884 MR G DUMARESQ  
L40333 MR J M NOUD  
L60334 MR K J RAY  
VK2BDK MR S J SOARS  
VK2DGV MR H J SCHUMACHER  
VK2FEX MR J M BOGDANSKI  
VK2FNP MR N A PRATT

VK2GA MR F DELIA  
VK2GEO MR P TEVAH  
VK2GO MR R SWALLOW  
VK2GZO MR R EDWARDS  
VK2JOE MR J FREEDMAN  
VK2KDG MR D G H BUTLER  
VK2KVD MR J R ORGAN  
VK2KVK MR B S ROZEMA  
VK2MLC MR C E LOVE  
VK2MNZ MR H G HUGHES  
VK2SX MR K W JACKSON  
VK2TDS MR D R SMITH  
VK2TEM MR J A COTTEILL  
VK2WRM MR R P MULLINS  
VK3ABO MR H P PETRODASKALAKIS  
VK3DJO MR J WEEMAES  
VK3KCM MR I MCLEAN

VK3MGU MR H C MATTHIES  
VK3MHJ MR R LEKIC  
VK3MKE MR W E MAYELL  
VK3NSS MR S SIMPSON  
VK3PLT MR A JOHNSON  
VK3TNW MR R FORMAN  
VK3US MR R CLARKSON  
VK3XLD MR D LEARMONTH  
VK4CTG MR N COLYER  
VK4DAE MR D A EDEY  
VK4EET MR E W R DE YOUNG  
VK4EMM MR J E LOFTUS  
VK6JAM MR M L GERVAISE  
VK6NSL MR C D SELL  
VK7NN MR D A HOPPER  
VK7YME MR G M CUTHBERT

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# The Joy of Kit Building

Alex Edmonds VK3BQN\* has also encountered some of the sorrows.

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Sometime between the time they first tear the controls off the television as children, and the time they throw the soldering iron through the window screaming "die you bastard", most people with a strong interest in electronics will attempt to build something known as a "kit". The idea of the kit is very simple.

You buy a box or bag that has all the components you need, clear and detailed instructions, and you can experience the joy of building something for yourself and making it work.

This is the theory.

In practice, there are a few minor problems that may be experienced.

What you must remember is that if there were no problems, any idiot could do it. In order to provide you with satisfaction for achieving something there must be a real CHALLENGE to be met. For this reason, the kit manufacturers and designers include certain little "errors" for you to overcome, and therefore increase your pleasure in your final success.

## Components

First, there are the wrong components. Sometime between the original release and the time you bought the kit, one (or more) of the original components will have gone off the market. In order to make up for this, the kit manufacturer will have supplied an "equivalent" component. This does not include items such as diodes or transistors, where the "equivalent" is the same size and shape as the original, and where a nice note will explain to you why there is a difference. This refers to resistors, capacitors, switches etc, where you will be given no warning that any substitution has been made.

It is easy to determine which is the "equivalent" component.

It is the one which will not, under

any circumstances, fit on to the circuit board.

I have built five kits. Every one included at least one component that physically could not fit on to the board as supplied. The one involving the 12 position switch where the mounting holes were all 5 mm too widely spaced caused the most violent reactions. Since the board was supposed to be fixed to the case by the switch mounting, it did, however, cause some amusement.

If it is simply a matter of the leads being too short to reach both of the mounting holes at once, you end up simply adding wire to the leads, or possibly even drilling new mounting holes. If the problem is that the component is several sizes too large to actually fit in the space left by the components surrounding it, it may simply end up hanging on long wires.

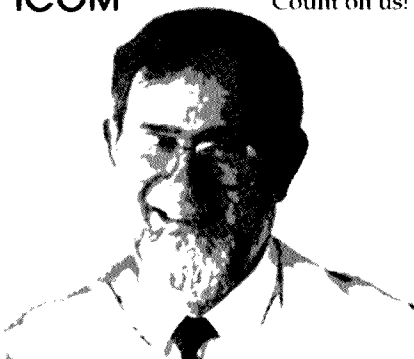
In extreme cases, the "equivalent" may be hurled violently across the room, after having been smashed flat with a hammer, leaving you to dig through your stock of components for something that will actually fit on the board. The other point of interest from "equivalent" components is the strong tendency to supply components of different values from those that are specified in the instructions and circuit diagrams.

This may not matter much in the case of slight changes in some resistors or decoupling capacitors, but I am wondering about what effect the substitution of 27 pF capacitors for all the specified 22 pF capacitors in the tuned circuits of my 1296 MHz kit will have.

Components that are simply "missing" are less common, although the plastic box that one of my kits is built into is held together with insulating tape, due to the fact that, while the kit included the box, it didn't include the screws to hold the box together. It did, however, include

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a number of other screws and washers that had nothing to do with the case, and that were included for some reason that I have never been able to discover.

## Instructions

Secondly, you must deal with the instructions.

These may be far more imaginative than merely supplying the wrong components.

These may include requirements that are physically impossible.

For example, they may require you to wind more windings on to a toroid than can actually be done, due to the fact that when 2/3 of the specified number of turns of the specified wire are wound on, there is no longer any space to push the wire through.

This makes you actually THINK about what you are doing, instead of mindlessly following the instructions, and leads to hours of fun trying to work out what to do.

You must also be prepared for:

- 1) placement diagrams that show electrolytic capacitors fitted backwards,
- 2) instruction sheets that refer to components that don't exist; and
- 3) instruction sheets that refer to two different components by the same designation.

Serious, determined study of the circuit will, eventually, enable you to determine (probably) what the instructions mean, and where all the bits go.

In each case, instead of expecting you to act like a mindless robot blindly following instructions, they want you to study the circuit, to learn how it works, to expand your mind. Isn't that nice of them?

## Construction

The next thing to remember is to be very careful in mounting and soldering components.

Proper techniques increase the chances of your success. They also reduce the risk of damaging any components. This is important since it is virtually certain that nobody anywhere in your state will be able to supply replacements for any "unusual" IC used in the kit in anything under two months (if that). (For the purpose of this study,

"unusual" ICs are defined as anything other than a 74 series logic circuit or a 741 Op-Amp.)

This teaches you the real importance of proper construction technique. After all, if you know you'll have to wait several weeks as a minimum before you can get a replacement, it will teach you to be careful with what you have. (This works under the same principle as the American defence department, whose suppliers selflessly and unstintingly cost individual washers at \$50 or more each, thereby ensuring that people will take great care not to lose them.)

Of course, it is not just the kit manufacturers who are so marvellously encouraging. The component manufacturers and sales outlets also want you to expand your horizons.

As an example, anybody who has ever tried to mount a flanged BNC connector into a box will have discovered that the holes in the flange are tapped, in order to allow mounting using bolts or screws. Nobody in Australia sells the screws that would fit these mounting holes (*They are actually an American 3-56 thread, similar to, but a little finer than, a 7 BA. These also do not grow on trees! Ed*). The same goes for a vast number of switches with tapped mounting holes.

Think what this means. Now, if you want to use these components, instead of thoughtlessly using a simple screw, you are privileged to learn how to re-drill the holes, thereby adding a new skill to your dealings with small mechanical components.

Magazines, of course, are also a great help.

Just think, if they didn't tell you all about the wonderful new components available, you wouldn't spend all those weeks trying to track down somebody who sells them, all the time learning how to deal with people, and coming to terms with how small the Australian market really is in world terms, and how little interest the manufacturers have in selling components here.

## Marketing

Foremost amongst those trying to teach you the true facts of life about the world we live in may, however, be

the marketing branches of the manufacturers.

I well remember the Japanese company stand at an electronics exhibition some years ago, advertising a marvellous new computer memory chip that would soon be released for commercial use.

I remember how impressed I was by their advances in technology.

I remember how delighted I felt to hear the person manning the stand explain that there were no plans to sell any of the chips in Australia, but that the entire production run was to be used in that company's products manufactured in Japan.

I remember asking why on earth they were advertising the chip in that case.

I suppose it was to inspire admiration.

To make Australians aware of Japanese technology.

To teach us to live with the knowledge that you can't have everything you want in life.

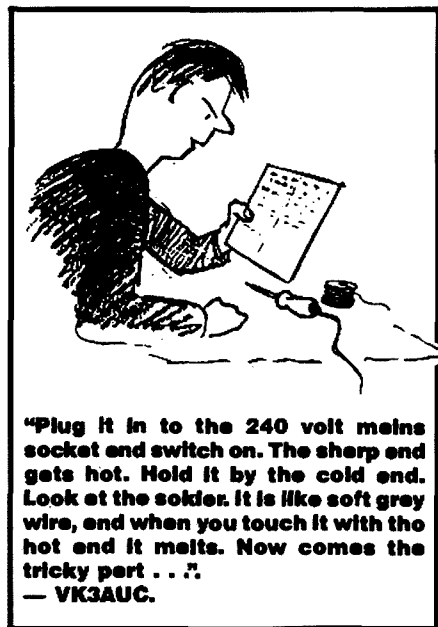
To encourage us to learn to overcome frustration and rise above it.

To show that there is no sense of achievement in anything that requires no effort.

After all, imagine how boring it would be to be able to simply walk into a shop and buy the component you want. Where's the fun in that?

*\*PO Box 445 Blackburn VIC 3130*

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# Equipment Review

## ICOM IC-2GXAT

Reviewed by Paul McMahon VK3DIP\*

### What is it?

The IC-2GXAT is a simple 2 metre handheld, offering 7 watts out (when used with the appropriate battery pack, and down to 3 watts with the standard pack provided) in a small package. The review set had a serial number of 01091.

### First Impressions

The first thing to be noticed with the review IC-2GXAT came when opening the box. There is no foam, it is all cardboard. Environmentally friendly this may be, but for something as heavy for its size as this handheld, it makes the packaging

basically non reusable. This was aptly illustrated in the case of the review set. It had obviously been to at least one other review before it got to me and, although the radio was in good condition, unfortunately the packaging was not. Enough on cardboard, on to the radio.

The IC-2GXAT is not the world's smallest handheld, yet it is still smaller than, say, the venerable IC-2A. It comes with a 240 V AC charger, "rubber ducky" antenna, BP-160 7.2 V 700 mAh nicad pack, a belt clip, a carry strap, and an instruction book. The top of the set has the standard BNC connector for the antenna, as well as the normal



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X-7000 8.3db/11.7db/13.7db \$399.00

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10/2/70CM, 15-10/2/70CM

ICOM speaker/mic connector, the latter being normally covered by some rubber stoppers to keep the outside outside. Also on the top, and fitted with a rubber guard, is the power cum charging socket that ICOM seem to have standardised on. Don't expect to buy one of the matching plugs down at the corner store, but it did seem to make a good contact. The top is completed by one small button (Set) and two relatively large knobs, one of which is a concentric squelch/volume on/off type and the other a click/detent type frequency control.

The side of the set has four buttons — the expected PTT, plus a second function key for use with the keypad, a monitor button to temporarily un-mute the set, or listen on the input of repeaters, and a panel light button for the LCD display.

The front of the set has a reasonable sized LCD display which features frequency, memory number, and an S meter cum power out indicator. Also on the front is a numeric touch pad, with three other buttons for such things as duplex, scan, and VFO or memory selection, completing the list of controls. All buttons are slightly recessed into the case, probably to help prevent accidental activation. Likewise all have solid feeling rubber covers. This radio was made to be used in less than ideal conditions.

The IC-2GXAT, as the name suggests, seems to have evolved from the IC-2GAT. It has the same output power, receive power save, splash resistance, scanning, monitor function, call channel, etc, of its forbear. The main differences are better styling (more curves, less square edges, bigger knobs), improved receive sensitivity (0.18  $\mu\text{V}$  for 12 dB SINAD, vs 0.25  $\mu\text{V}$ ), more memories (40 vs 20), and smaller size (57 x 125 x 35 mm vs 65 x 151 x 35 mm).

The set feels comfortable in the hand and looks pleasing to the eye. The control arrangement is functional. While some actions require two hands, they don't require three, or small fingers. In fact you could probably do most of the basic functions whilst wearing gloves.

## Technical Bits

Firstly, these are very hard to come by. The manual is of very little help with only some very sketchy specs hidden at the back, from which you can glean that the receiver is a dual conversion with the first IF at 21.7 MHz and the second IF at 455 kHz. In fact, the manual is no more than an instruction book, and one aimed at the technically, and radio, illiterate at that. The results here have thus been obtained by experimentation rather than recourse to any technical considerations of circuit or anything. I realise that some amateurs, maybe even many, couldn't care less about how their equipment works, or what's inside it, but I hope there are some out there, like myself, for whom this is one of the first things looked for on opening the manual on a new set. I do realise that a service manual is probably available (and companies supplying rigs for review please note it would be real nice if you were to include a copy with the review set) this usually has to be ordered with a suitable delay, and price. More on this later.

In the review set the frequency display would have you believe that the set is capable of receiving from 50 MHz to 204 MHz in 5 kHz steps. This is, of course, at odds with the manual and brochure which suggest that the frequency coverage is restricted to 144 MHz to 148 MHz for Australia. I should perhaps note at this point that the manual also was not quite right for the fast tune function (ie turning the frequency knob whilst holding down the function key) with a 10 MHz rate being available in addition to the 1 MHz and 100 kHz rate mentioned in the manual. The frequency could also be set using the front panel keyboard. However, in this case, only the last four digits could be entered. In fact, while the set does have a fairly wide band receiver it is not as wide as the display indicates. The review set would not receive below 136 MHz, and strange things happen at about 195 MHz (the dial frequency changes but the actual receive frequency doesn't appear to vary).

The sensitivity appears pretty good across this range with no dropping off towards the edges. The limits are

probably decided more by the processor than any RF circuitry and at some stage someone will probably come up with some combinations of buttons to push while turning the power on to extend this further. As said, the sensitivity was within a dB or so at all measured spots across this range. If anything it actually seemed to improve as the frequency went higher, though this could have been a function of my test equipment. Anyway, the local Channel 7 TV picture and sound carrier could be received at full scale on the S meter, at the appropriate frequencies of course, with just the rubber ducky on, and in my semi underground shack. The audio quality of the TV sound, of course, left lots to be desired, but the local CFA was perfectly clear copy. The behaviour of the S meter appeared consistent across the band, with about 6 dB taking a signal from S1 to S5 and a further 6 dB providing full scale.

On transmit the set would not make a noise outside 144 MHz to 148 MHz, but it did at least give you some indication of this when you pressed the PTT, with the word OFF on the display. Audio quality was acceptable with the internal microphone, and quite good when using the speaker mic from an IC-2A. Output power was as expected at around 3 watts on high and 1 watt on low, and pretty constant across the band. Unfortunately, due to the ICOM standard power connector, or at least my lack of a suitable plug, I could not verify that the output power on high was indeed the 7 watts claimed, but I have no reason to doubt this.

On the subject of power supplies, as stated the supplied pack is the BP-160 which is a 7.2 V 700 mAh unit. With the supplied charger the recommended charging time is 15 hours. For this ICOM claim you will get around 4.5 hours use assuming a one minute TX, one minute RX, and an eight minute power saved RX duty cycle. ICOM claim that the battery pack is good for at least 300 with up to 500 charges if the recommendations given are followed. It is worth while having a thought about how this would suit your usage of a handheld, and perhaps purchase an additional battery pack.

Alternatives include:

- The BP-132A which is a 12 V 600 mAh unit which will give you the full 7 watts out but which, at the duty cycle above, is only good for 2.5 hours.
- The BP-157A which is a 7.2 V 900 mAh unit which is similar to the supplied unit but with a claimed 5.83 hours.
- The BP-130A which holds 6 standard AA cells which could also be nicads. The timings here of course depend on the batteries fitted.

Which of these will be best for you is dependent on how you use your handheld. I would, however, suggest you give serious consideration to the AA cell pack. About the only disadvantages to the nicad packs are the relatively poor shelf life, and high initial cost. These are normally not so important, however there can be situations where they are the deciding factors.

For example, I normally carry a handheld with me to work, yet only use it for about 10 minutes each day, if that. Under these circumstances a nicad pack is pretty useless. Basically you either charge it up each night, or when you reach for it, it is invariably flat. I carry an AA cell pack and a spare set of batteries for it and under these circumstances have only to change batteries once every two or three months, and am virtually guaranteed use of the handheld when I need it. Not to mention the fact that a quick charge is only as far away as the nearest 7-11, and you will get, as in the case of the IC-2GXAT, the full rated power out.

## Operation

The instruction manual is 35 pages long with a small fold up "cheat sheet" to carry around with the set. Both explain in often painful step-by-step detail exactly how to do anything the radio is capable of. This goes down to the level of telling you how to transmit by pressing the press to talk switch, and how to return to receive by releasing the press to talk switch. In summary no one will have any excuses for not being able to figure out how to do something.

There do, however, seem to be a couple of minor slip-ups in the

manual, such as in a couple of cases mentioning the set as an IC-2GAT, and saying some things like *press this button and three beeps may sound?* Anyway, a good test of how simple a set is to use is to just try to figure it out without reading the manual. In this case I could figure out how to switch it on, adjust volume and squelch, set the required frequency by turning the big knob, and I was on the air. If what you want is a simple to use set then this is it.

As has been mentioned before, on air audio quality, both transmit and receive, was quite acceptable, and the rig felt comfortable in the hand. Operation of the memories and scan functions did require recourse to the instructions. However, once one could see how it was done this also is very straight forward. The IC-2GXAT seems to have followed the trend towards a smaller number of function buttons, going more for the same button performing different functions depending on how long you hold it for. For example, pressing the low/high power button briefly toggles the power level between high and low. If, however, you hold this button down for some seconds the handheld goes into set mode.

Scanning was simple to set up. You put some frequencies into the two special program scan edge memories, press scan and off you go. By the way, the memories hold all required information about the frequency such as duplex, shift, tone frequency, etc and are useable across the entire displayed frequency range. There are 40 memories available and if, for some reason, this is too much for you, you can reduce the number via a set function. You can also use a set function to have the display read channel number instead of frequency for the ultimate in appliance operation.

Other useful features are the input frequency monitor, the power saved receive mode, and the timed dial light. The set also offers a couple of tone access and pager functions when used with a matching unit at the other end and, of course, with the appropriate optional extra modules. While these sound like a good idea I wish someone would put some effort into standardising these sort of

features so that they could be used independently of the brand of the set you happened to own.

These features also fit in with a couple aimed at repeater usage, which are of limited usefulness in Australia. For example, the ability built in to scan for any sub audible tone would be very useful except, of course, most Australian repeaters do not use sub audible tones.

## Conclusion

The IC-2GXAT is a solid handheld which is built to be a useable work horse unit. It performed well on all tests made, and the extended receive coverage is a real bonus. The emphasis in the manual is keep it simple. However, it does contain everything you need to know to operate the set. There are several useful additional features but none that I would say were unusual enough to really sway a purchase one way or the other.

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# Technical Abstracts

Gil Sones VK3AU1

## Ceramic Resonator VFO

Building a stable variable frequency oscillator for a project is often difficult. Crystal oscillators are fairly simple and if one of the cheap mass produced crystals can be used they are cheap to make. They cannot be moved very far in frequency which may be a disadvantage for rock bound QRP operation.

There is an alternative to the crystal with a similar range of frequencies to those available in the cheap mass production crystals. They are not quite as stable or as accurate but acceptable stability is achievable and it is possible to pull the frequency over a greater range than the comparable crystals.

*The design offers a 20 kHz tuning range around 3.58 MHz on 80 metres with quite acceptable stability.*

Ian Braithwaite G4COL describes a VFO using a ceramic resonator in *Radio Communications* for February 1994. The design offers a 20 kHz tuning range around 3.58 MHz on 80 metres with quite acceptable stability. The ceramic resonator used is available in Australia at a modest price.

The supplier of the resonators is *RS Components Pty Ltd* who have outlets in all mainland states. VK1 is handled from VK2, VK7 from VK3, VK8 from VK5, and they will take phone credit card orders. Remember, however, that they are a trade house and you need to know what you want preferably with a stock code. They do carry a fascinating range of parts but find someone with a catalogue. A similar parts supplier is *Farnell* who is in Sydney.

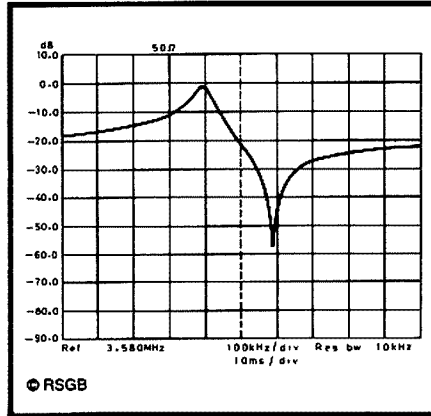


Figure 1 Frequency response of 3.58 MHz ceramic resonator.

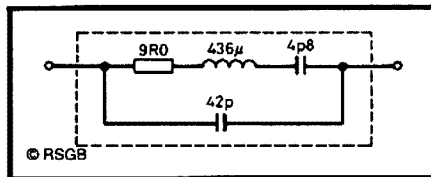


Figure 2 Equivalent circuit of 3.58 MHz ceramic resonator close to resonance.

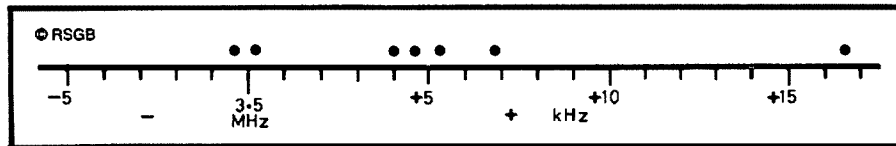


Figure 3 Scatter in frequency of seven 3.58 MHz Resonators.

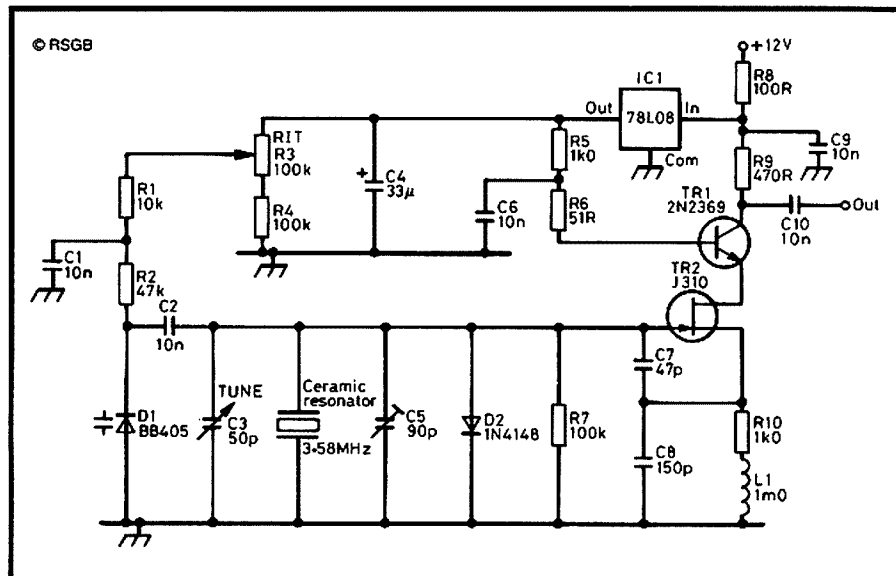


Figure 4 Circuit diagram of ceramic resonator VFO.

The characteristic of a 3.58 MHz resonator is shown in Fig 1. This is similar to that for a crystal. The equivalent circuit of this resonator is shown in Fig 2. Whilst the Q is lower than a quartz crystal it is somewhat higher than an LC circuit.

The series resonance can be pulled higher by a series capacitor or the parallel resonance can be pulled lower with parallel capacitance. The oscillator circuit must be suited to the resonance you elect to use.

Temperature stability was found to be around 3 kHz for a temperature rise from 23°C to 50°C. So, rapid excursions of temperature should be avoided. However, adequate stability exists at a room temperature in the 20°C range.

The frequency scatter of several resonators tested by G4COL is given in Fig 3.

The circuit of the ceramic resonator VFO is given in Fig 4. The circuit uses a JFET oscillator with a transistor buffer and a 3 terminal voltage regulator. The circuit uses the voltage regulator to both stabilise the varicap voltage and the transistor base supply which regulates the drain of the JFET. The 78L08 may be difficult to obtain locally and an LM317 with



a couple of resistors could be substituted or, alternatively, there are circuits to use a 78L05 to regulate a higher voltage. The LM317 and the 78L05 circuits are in most data books.

Drift figures are given in Table 1

Elapsed time	Frequency (MHz)	Drift (Hz) from datum
0	3.550321	0
1 min	3.550306	- 15
9 min	3.550302	- 19
28 min	3.550314	- 7
3 hr 27 min	3.550350	+29
3 hr 58 min	3.550338	+17

**Table 1** Drift figures for Ceramic Resonator Oscillator.

Frequency MHz	RS Stock Code
0.5	658-514
1	656-158
2	656-164
3.58	656-170
4	656-186
4.19	656-192
4.91	656-209
6	656-215
7.37	656-221
8	656-237
10	656-243
11	656-259
12	656-265

**Table 2** Ceramic Resonator Stock Codes at RS Components

and the stock numbers of resonators are given in Table 2.

### Triband Dipole

A simple triband dipole was described in the Swiss magazine *Old Man* for February 1994 by Robert Kägi HB9KL. The dipole consists of parallel 80 and 40 metre dipoles with 15 metre operation using the 40 metre dipole as three half waves.

Of interest is the shortening of the 80 metre dipole by folding back the ends. Some adjustment of the length would be required in VK as our band is different. The 80 metre section being resonated at 3.7 MHz would

require some extra length to lower the frequency for local use.

The spacers used were plastic and some care would be needed to select a plastic which is not too badly affected by ultra violet light. An alternative would be to use dowel or canes, possibly with plastic insulator tips. The pipes used in garden watering systems may provide suitable materials.

The antenna was built with 400 mm spacers. The centre was supported 10 metres off the ground and it was hung as an inverted Vee with an included angle of 115 degrees. This means the ends were approximately 2 metres off the ground.

The total length of the 80 metre section was 42.48 metres for a frequency of 3.7 MHz. The length of the 40 metre section was 20.18 metres for a frequency of 7.05 MHz.

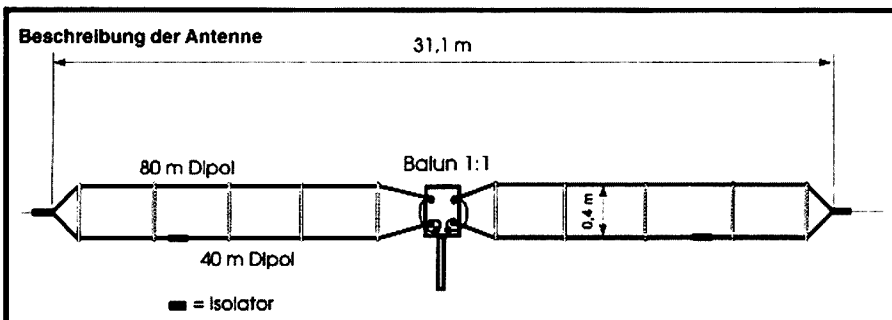
To adjust lower in the band lengthen the 80 metre section by around 2 metres and prune to get a suitable resonance point in our band. This will only be around a metre overall as the ends are folded.

A bandwidth of 142 kHz was obtained on 80 metres and a bandwidth of 255 kHz on 40 metres. The bandwidths on both bands were for an SWR of 2:1. At resonance an SWR of 1.05 was obtained at 3.7 MHz and an SWR of 1.1 was obtained at 7.05 MHz. A 1:1 balun was used at the feed point and one of the Current Balun designs using ferrite beads would be suitable.

Figures were not given for 15 metres but the bandwidth should be reasonable. Some compromise may be needed between the 40 metre centre frequency and the 15 metre centre frequency but this should be fairly easy.

The antenna is shown in Fig 5.

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**Figure 5** Triband Dipole.

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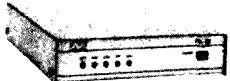
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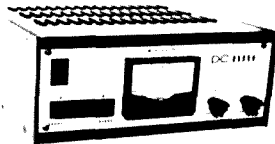
TE-23	2 element 3 band 14/21/28	\$414
TE-23M	2 ele 3 band mini 14/21/28	\$440
TE-33	3 element 3 band 14/21/28	\$575
TE-43	4 element 3 band 14/21/28	\$750
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TE-44	4 element 14/21/28 1 ele 7 Mhz	\$870
TE-26	1 ele 14/21/28 1 ele 10/18/25	\$380
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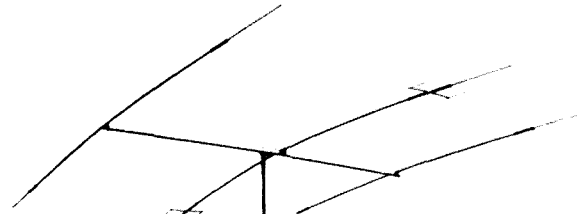
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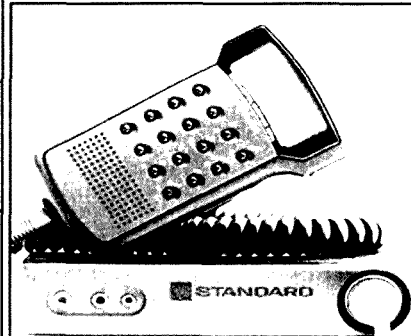
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Ph (03)700 5428

# Inductance Measuring Made Simple

Translation from "Radio Rivista" March 1993 by George Cranby VK3GI

This little device provides inductance measurements from 0.5  $\mu\text{H}$  to 1.0 mH. It works with voltages ranging from 9 to 15 volts. To find the frequency of oscillation it requires either a digital frequency meter or a wide band receiver (400 kHz — 20 MHz). The value of inductance is then calculated using the formula  $L = 25340/F^2C$ ; where L is in  $\mu\text{H}$ , F is in MHz and C is in pF.

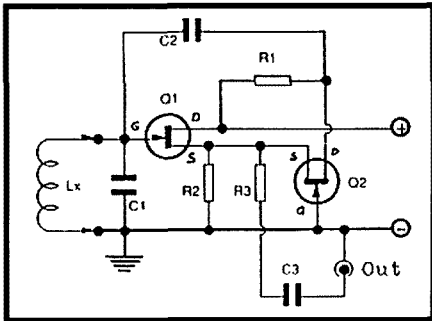


Fig 1 Circuit diagram.

The circuit uses a Butler oscillator comprising two FETs, Q1 and Q2. It operates by connecting C2 between the gate of Q1 and the drain of Q2. Q2 also acts as a buffer by connecting its gate to earth.

This, together with the fact that signal is picked up at low impedance from the source circuit, makes it possible for the oscillator to be connected directly to low impedance loads without the need for additional amplifier or buffer stages. Also, there

will be no significant drop in output or frequency stability.

The Butler oscillator is noted for its frequency stability, comparable to that of a crystal oscillator. It can work over a wide range of supply voltage without affecting its output. With the given component values, it covers from less than 400 kHz to about 150 MHz. This depends on the inductance value put in parallel with C1, the fixed tuning capacitor. The signal is not perfectly sinusoidal but it is not being used as a VFO.

It is important that C1 is an NPO type, and the connection between the test coil and the input to C1 be kept as short as possible. The circuit board should be placed in a metal box and the earth plane of the PCB connected to the box.

The coil under test is connected to the tester and the frequency read on a counter or receiver. Then the inductance can be determined from the table or from the formula provided.

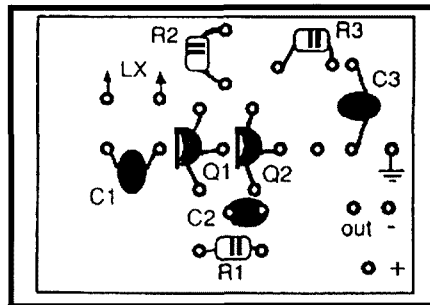


Fig 3 Board parts layout.

## Parts list

- R1 10k 1/4 watt 5%
- R2 560 1/4 watt 5%
- R3 1k 1/4 watt 5%
- C1 150 pF NPO ceramic
- C2 33 pF ceramic
- C3 4700 pF ceramic
- Q1, Q2 2N3819 or equivalent.
- Metal box
- BNC panel connector

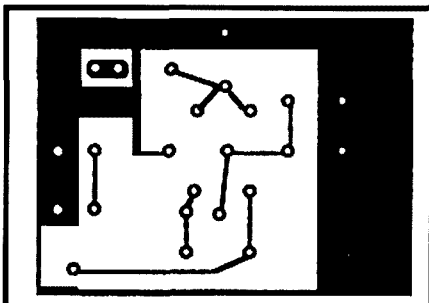


Fig 2 Circuit board.

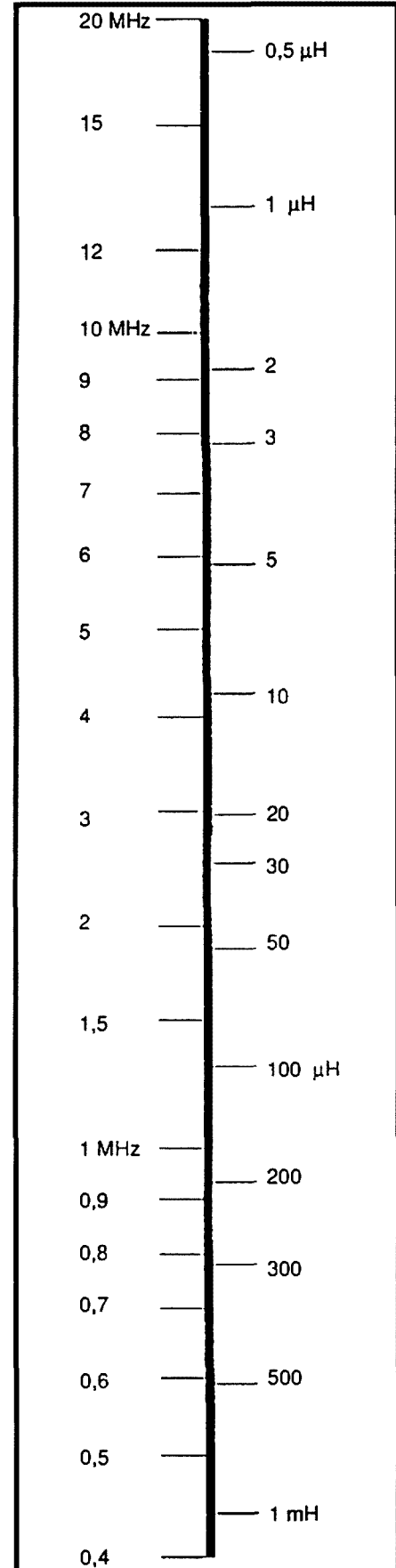


Table 1

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# Japanese Encounter

*Brian Ward VK2WBJ\* passes on some interesting information about an amateur radio event.*

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This is an extract from the "Pitcairn Miscellany". I thought it may be of some interest to *Amateur Radio* readers, who may have heard Nob and Hiro on air. As Nob claims 31,000 QSOs while on Pitcairn Island, surely there must be some VK's in there! Nob's callsign was VR6JJ and Hiro's VR6BB (QSL via JF2KOZ).

The "Pitcairn Miscellany" is a local news sheet produced by the school teacher with the help of his pupils and raises a small amount of money for the school.

The following article is written by Nob Ichino who, together with Hiro, are the first indigenous Japanese to land on Pitcairn. They arrived on the *Melbourne Star* in January 1993 to spend four months on the Island. Both are ham radio enthusiasts. While here, they earned the respect of the Islanders because they adapted so well to a culture very foreign to them. I leave Nob's transcript unedited because his English is delightful and adds dimension to his personality.

I wonder when I have known Pitcairn Island? Surely when I had contact with Betty VR6YL in '86. As soon as I finished contact, I looked for it on the map. "Wow, further 7000 miles away from Japan! Any transportation to go.....?"

Sever years later, early morning January 11th '93, we've arrived at the

island at last. Looking from ship it gave me a very ghostly impression because some parts was covered by clouds. That was never forgetable.

When ships are stopping I am so excited as well as Islanders. (I had never thought I saw some ships here.) To see people was lot of fun. When I saw a few Japanese passengers, I was really surprised. They were

surprised more than I. They've never thought Japanese get on board from Pitcairn. I spent a great time with them.

Ham radio from Pitcairn has always been fun. Hiro and I've made 31,000 contacts and we've made some records. We will show them some photos of Pitcairn Island with our QSL cards.

I don't know when I come here next. However I really wish to come back 10 years later to see difference how kids grown and so forth.

Arigatou everyone! Sayonara Pitcairn.

Thank you, Nob and Hiro, too.

\*23 Bass St Caringbah NSW 2229

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## A Compact Shack

*Fred Boorman VK4ZU\* solves the problem of space and tidiness with his "shack"*

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I have just read the Federal President's QSP, about the interior appearance of many "shacks", in the September issue of *Amateur Radio* magazine. I was never the tidiest person in the house but I always considered my shack reasonable until a serious illness changed my life style and we had to move from our house to a smaller unit.

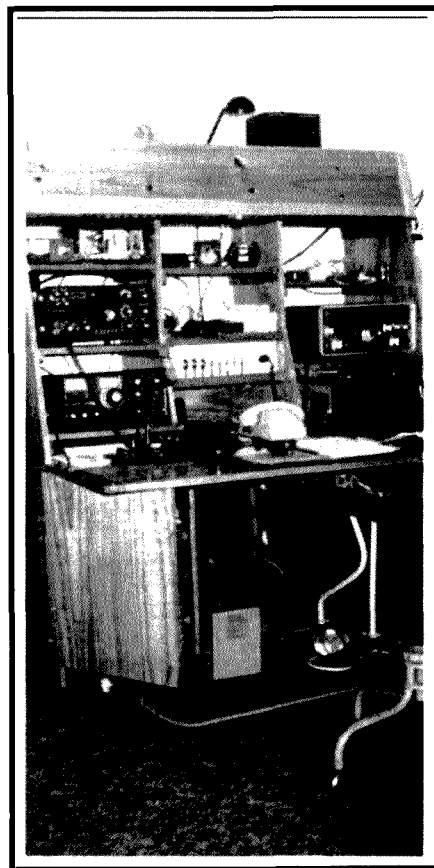
The unit consisted of two large rooms and no provision for a radio. Many hours of thought and months of work later and the problem was solved. I now operate from my "new shack". The "shack" is not yet finished but has developed into an ongoing job.

The lower shelves, two either side, are on a roller for ease of access. The cupboards below the operating table are for power supplies and books.

The whole unit closes up and then occupies a space 4 1/2 feet long and the same height. It stands 2 feet out from the wall and is on castors for ease of movement. This may help solve a problem for some other ham.

\*PO Box 654 Caboolture QLD 4510

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**Help stamp out  
stolen equipment  
— always include  
the serial number  
of your equipment  
in your Hamad.**

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# ALARA

Robyn Gladwin VK3ENX\*

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## Award Pennant

Bron Brown VK3DYF, ALARA Secretary, recently received, on behalf of our Association, a Pennant from the Air Forces Amateur Radio Net. The Pennant is quite easy to "earn". It only takes two contacts on one of their Nets to qualify for this award. The Nets are held on Tuesdays at 1000 UTC on 3.567 MHz and 1030 UTC on 3.610 MHz and then again on Fridays at 0600 UTC on 3.605 MHz and at 0630 UTC on 7.085 MHz. So, enjoy two contacts and send an extract of your log, with \$5, to the Awards Manager, L J Brines VK2LEN, 26 Pozieres Avenue, Umina NSW 2257. This lovely blue pennant would be an attractive addition to any radio shack wall.

## Visit of YLRL President

Dr Christine Haycock WB2YBA has recently visited Australia. She is an ALARA member, sponsored since 1979 by Mavis Stafford VK3KS, beside whose rig she is pictured. Dr Haycock is the founder of the Young Ladies Radio League, the US equivalent of ALARA, and is, at present, its President for the second time. She has led an interesting life. She has received many awards for her skill as a surgeon and is now Professor Emeritus of Surgery at the UMDNJ New Jersey Medical School in Newark. In her leisure hours, as well as her interest in amateur radio, she breeds miniature Schnauzer dogs for shows and is a keen photographer and photographic competition judge. Dr Haycock is also a member of the WIA.

## ALARA Net

Our Net continues to have a good attendance each week and all are welcome to listen if not able to participate on air. The Net is held on Mondays at 1030 UTC on 3.580 MHz and much news is shared. Last week we learned that Alma Wills ZL1WA, a DX member, had been in hospital for an operation. Alma came to Castlemaine last year and we wish her a speedy recovery. Another news item on the Net was the success of Helen Cunningham VK7HJ, who has received her full call amateur radio licence at age 15. She has been encouraged by her father, Kirby VK7KC, and we hope she will be interested in joining ALARA.

Owing to family commitments, this will be the last time I write this column as Publicity Officer. However, I will still be



involved with the Association. I would like to end with another of the clever cartoons produced by our Newsletter Editor, Dorothy Bishop VK2DDB. This time she has also included an appropriate comment on the Net.

It's my turn on the rig now dear  
In fact you're overdue.  
Now don't go playing "What a surprise"  
'Cause we both know you knew!

I've finished all the kitchen work  
And done the ironing too.  
As for the housework, it's all done  
There's none for you to do!  
Your coffee's by the TV set  
The kids are all in bed.  
So while I'm on my ALARA net  
You go rest your weary head!

\* PO Box 438 Chelsea VIC 3196

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# AMSAT Australia

Bill Magnusson VK3JT\*

## National co-ordinator

Graham Ratcliff VK5AGR

Packet: VK5AGR@VK5WI

## AMSAT Australia net:

Control station VK5AGR

Bulletin normally commences at 1000 UTC, or 0900 UTC on Sunday evening depending on daylight saving and propagation. Check-ins commence 15 minutes prior to the bulletin.

Frequencies (again depending on propagation conditions):

Primary 7.064 MHz. (Usually during summer).

Secondary 3.685 MHz. (Usually during winter).

Frequencies +/- 5 kHz for QRM.

## AMSAT Australia newsletter and software service

The newsletter is published monthly by Graham VK5AGR. Subscription is \$25 for Australia, \$30 for New Zealand and \$35 for other countries by AIR MAIL. It is payable to AMSAT Australia addressed as follows:

AMSAT Australia  
GPO Box 2141  
Adelaide SA 5001

## Congratulations

Arch Woolnough VK3BW and I had often spoken over the air. I had not met him until he knocked on my door one day in 1966, his arms full of traps for a triband beam. I had been lamenting (on air the night before) my lack of a few traps to refurbish an old TH-4 which I had acquired from a friend whose tower had collapsed in a storm. Arch, in characteristic fashion, had searched his junk box, found some traps and delivered them. I was delighted to receive them and to meet him face to face. We have been friends ever since.

Arch was first licensed in 1929. He wanted the callsign 3AW but a commercial broadcaster already had it so he settled for 3BW. Those were the days when amateurs vied successfully with commercial stations for an audience. Gaining quite a reputation in broadcasting, Arch was awarded the Gadsen trophy in 1934 for quality and content of broadcasting.

"What has all this got to do with satellites?". Being an old timer has never stopped Arch from embracing new technology. He became interested in satellite operation with the launch of OSCAR-10. An exponent of CW, he did much of his operating in this mode. Later

he transferred his attention to OSCAR-13. This brings me to the subject of this short note. Recently Arch completed his 1000th QSO via OSCARS 10/13. He will shortly be celebrating his 85th birthday and is looking forward to his second 1000 QSOs possibly with the aid of phase 3d. Typically modest, Arch does not claim this to be a noteworthy event and tends to shrug it off. I believe it's worth a mention. Congratulations Arch.

Many thanks to Barrie VK3YXK for the news. Maybe you know of other old timers who have successfully made the effort to work the birds. I can think of a couple. People like AMSAT-VK stalwart Chas Robinson VK7KP, and Col Fletcher VK2ASF. Col's first rig was a spark transmitter. He was fluent in the Japanese language and one of his real joys (well into his 80s), was to work JAs via OSCAR-10. Let me know of any similar exploits you think may be worthy of mention in this column.

## TELECOM Time Setting Service for PC Users

This service came on line early last year in Melbourne. Due to the programming efforts of a local amateur a few of us have been using it ever since. It works well and takes ALL the guess work out of setting your PC clock accurately. Recently several programs have been appearing on the BBS network. They all appear to do the job but they are not all without bugs. One well behaved one is called TELETIME. It comes as a zipped file and expands into a read.me file, a .dat file and a .exe file. Get hold of this program and give it a go. The service is available in all capital cities.

## AO-13 and "S" Mode

AO-13 has been performing brilliantly. Operators on "S" mode have enjoyed excellent conditions during the summer attitude schedule. Features included several hours of "B/S" time with more than an hour and a quarter of exclusive "S" mode time. Squint angles were often down into single figures and frequently down to 1 or 2 degrees. Even down here in south eastern OZ the elevation angles have been quite high, sometimes up to 45 degrees. This has been due to some masterful scheduling by the control stations who have managed to pick their way through the recent series of eclipses with flying colours. Thanks chaps.

## Working the MODE "A"/"K"/"T" Satellites

Last month I gave a brief account of the various transponder modes on the current amateur radio satellites. Let us look now at the HF/VHF modes in more detail.

### Overview

Mode "A" involves a 2 metre uplink signal which the satellites retransmit in the 10 metre band. Mode "K" is an all HF mode. You uplink in the 15 metre band and the satellite retransmits in the 10 metre band. Mode "T" requires an uplink in the 15 metre band and downlinks in the 2 metre band. Some satellites schedule modes "K" and "T" on together. In this mode an uplink on 15 metres will be retransmitted in both the 10 metre and the 2 metre bands. These combinations of modes make it possible for the beginner to have a go without the need for lots of expensive gear. They present enough of a challenge to separate real triers from casual triers and if you are serious it can whet your appetite for more. With persistence it is possible to get very good results from mode "A", "K" or "T".

Many operators in Europe concentrate on these HF/VHF modes and specialise in "over the horizon DX" on the Russian RS birds as they traverse the north polar region. This is a specialised area and requires some experience with sporadic HF and VHF propagation. It is not a common activity in the southern hemisphere as there are no heavily populated areas surrounding the south pole. It appears to be in the trans-polar region that most of this activity takes place. I'd be interested in hearing from anyone who has had experience of this in VK. There may be instances of South American or South African QSOs by this method. Distances claimed by northern hemisphere stations would indicate that these paths are possible.

### Equipment

The most appealing aspect of these modes is the equipment list. It is fairly modest. You will need an HF SSB/CW transceiver and a 2 metre SSB/CW transceiver. The antennas also can be quite simple. A moderate gain vertical for 2 metre uplink and a 29 MHz or 21 MHz dipole for downlink or "K/T" uplink. You don't need rotatable antennas or auto-track.

### What you can do

All these modes are "talk through" transponder modes. That means you can use them like a voice (or Morse) duplex repeater in the sky with a rather large coverage area. Stations thousands of kilometres apart can make contact in this way. It is "duplex" in the sense that you

can hear yourself coming back through the satellite as you speak. This is the ultimate way of monitoring your own station performance. There is NO excuse for a crook signal on the satellites!

### Frequencies

I'm not going to mention specific frequencies here as the full list was published in the January 1994 column and will be updated in July. I will refer only to amateur frequency bands. The early mode "A" transponders did not generally invert the passband. Most of the current satellites invert the pass band. This is done to partially compensate for Doppler shift. On mode "A/K/T" this is hardly necessary. The signals will not move more than a few kHz even during an overhead pass. A result of inversion is that if you uplink on USB the downlink will appear as a LSB signal on a "mirror image frequency" in the downlink passband.

### Tracking

All the amateur radio satellites carrying modes "A/K/T" are in low earth, near polar orbits. This simplifies tracking requirements. One can be confident of hearing at least two passes in the mornings and two passes in the evenings. Once you know how far apart these passes are, say 90 minutes, you can estimate within a few minutes when the

next one is due. You cannot get it exactly right this way but it will do for a start. If you move deeper into amateur radio satellites you will need at least a programmable calculator or, better still, a computer to do the quite difficult job of predicting the times of future passes.

### Operating

As well as a "talk through" transponder, some satellites carry a "Robot". The robot is a recording device which you can access on CW. If you call the robot on the correct frequency it will respond with a QSO number, thank you for the QSO, then sign off. In the process the QSO is recorded on the satellite for retrieval by the command station. QSLs are given out for contacts with the robot.

All amateur radio satellites carry beacon transmitters. You should listen for the beacon when you expect the bird to come over your horizon. When you hear it you can begin calling and compare the strength of your signals with the strength of the beacon. You should adjust your uplink power so that your return signal does not exceed the beacon by more than a few dB. This gives others a fair go as the available transmit power is shared between all signals in the passband. Be sure not to get a reputation as an "alligator" (a big mouth).

If you hear someone calling CO you can quickly estimate your required uplink frequency and make a test call. If you're close, you can "talk yourself" onto frequency by listening to your own signal. Some operators find that an automatic Morse keyer is useful for identifying the retransmission of their own signal.

### Doppler shift

Once contact is made you will find that the signals appear to need retuning after a while. This is because the Doppler shift on both uplink and downlink signals is varying as the satellite moves closer to or further away from the stations in contact. It appears to be best practice for both station operators to leave their receive (downlink) frequency fixed and tune their transmitters (talk yourself back) onto frequency at the start of each "over". This method seems to give more acceptable results than tuning your receivers to compensate. It means that, once established, the QSO does not tend to wander all over the passband and perhaps interfere with other contacts. Good luck with modes "A/K/T".

### Next Month

A discussion of the mode "B" and "J" transponders.

\*359 Williamstown Rd, Yarraville, VIC 3013  
Packet: VK3JT@VK3BBS

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# SOME THINGS HAVE NO COMPARISON

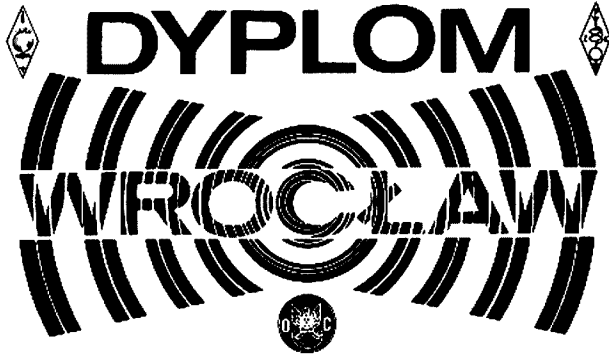
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# AWARDS

John Kelleher VK3DP — Federal Awards Manager\*

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KLUB SP6PKQ - IKAR



ZA SPEŁNIENIE WARUNKÓW  
OKREŚLONYCH REGULAMINEM  
OTRZYMUJE



I have it on good authority that there are many, many members of the Amateur DX fraternity who have box upon box of QSL cards sitting idly, which could be put to use earning Awards. With the present lull in the Solar Cycle now would be a great time to dig out those cards which qualify, and set about compiling your claims.

## CTARL Awards Program

The Chinese Taipei Amateur Radio League sponsors the following Awards.

**The Worked Chinese Prefixes Award** is offered for working Chinese stations with the following prefixes: BA BA1T BY BV BZ and 3H-3U. Contacts on any mode and band are acceptable for the Award. Classes: Basic (20 prefixes) Class B (30 prefixes) and Class A (40 prefixes).

The **10,000 Award** is available for contacts with stations in towns with different postal code 3 numbers (zip codes) in Taiwan that add up to at least 10,000. A postal code may be worked only once.

The **Worked All Taiwan Districts Award** is offered for making contacts with a station in each of Taiwan's ten call areas,

0-9. There are no band or mode restrictions.

To apply for each award, submit either photocopies of the QSL cards, or a signed certificate (signed by an official of a local Radio Club, or two other amateurs) that the necessary QSL cards are in your possession, a log extract and a fee of US\$5.00 or 10 IRC. Mail your applications to:- CTARL Awards Manager, PO Box 93 Taipei, Republic of China.

## WROCLAW Award

From Poland comes the **WROCLAW AWARD**, which is issued by the Polish Amateur Radio Club Station SP6PKQ "IKAR" located in Wrocław. Qualifications date from 6 May 1945. DX stations require 10 points, which may be scored in the following manner. Each QSO 2 points. Each QSO with SP6PKQ 5 points. Each QSO with SP0 SR SN SQ0 or 3Z prefixes 7 points. Each QSO made during the "Days of Wrocław" celebrations (6 to 10 May) double points.

Contacts with stations may be repeated on all bands using different modes of emission. The above requirements apply

equally to Short Wave Listeners. Applications may be confirmed by an official of your Radio Club, or by two licensed amateurs, and forwarded to:- KLUB KROTKOFALOWCOW SP6PKQ - "IKAR" PO Box 2190 50-985 WROCLAW 47 POLAND.

## The DLD Awards Program from Germany

The DLD Award is an official award issued by the DARC, and is available to all licensed amateurs and SWLs. The names of new award holders will be published in the DARC magazine CQ-DL.

### DLD Award classes and modes

1. DLD is issued separately for each amateur band.
2. DLD is in different classes on each band as follows: DLD100 DLD200 DLD300 DLD400 DLD500 (with lapel badge) DLD600 DLD700 DLD800 DLD900 DLD1000 (with engraved badge of honour).
3. For SWLs the awards are known as DLD-SWL 100 up to DLD-SWL 1000.
4. All DLD awards may be issued for mixed modes, or may be endorsed for single mode operation, providing that this is supported by the necessary QSL cards.

### Conditions of issue

1. All modes permitted by the applicants licence may be used.
2. The initial award is for 100 different DOKs on a single band. For each further 100 DOKs on the same band, the applicant may apply for the next class of DLD.
3. Stations only have one DOK, which is registered with the DARC QSL bureau. The DOK, or amateur administration area may be taken from the QSL card, or by request to the German operator during the QSO. Special event DOK's are used from time to time.

### Applications for DLD

All valid DOK's are listed in the official DOK list which may be obtained from the sponsor and used as the application form. It is recommended that you use a separate list for each band. The DOK list costs DM5 or 5 IRCs plus a self-addressed label. Applications must be verified by the applicant's local club, or an official Awards Manager. Ask for a fee schedule from the sponsor when you request your DOK list. Apply to: DARC, DLD-Diplome, Postfach 11 55 D-3507 Baunatal 1 Germany. Note that the above post code will have been changed to five figures since the combination of the two Germanys. The new DOK list does contain the listings applicable to the area of the old East Germany.

\*PO Box 300 Caulfield South 3162

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# Contests

Peter Nesbit VK3APN — Federal Contest Coordinator\*

## Contest Calendar May-July 1994

May 7/8	ARI DX Contest CW/SSB/RTTY	(Apr 94)
May 14/15	CQ-M Contest (CIS)	(Apr 94)
May 14/15	Sangster Shield (80 m ZL)	(Apr 94)
May 14/15	Danish SSTV Contest	(Apr 94)
May 28/29	CQ WPX CW Contest	(Feb 94)
Jun 4	Merv Stinson Memorial 80 m	
Jun 4/5	RSGB Field Day CW	
Jun 11/12	ANARTS RTTY Contest (VK)	
Jun 11/12	QRP Weekend 1994	
Jun 18/19	VK Novice Contest	
Jun 18/19	All Asia CW DX Contest	
Jun 25/26	ARRL Field Day	
Jul 1	Canada Day CW/Phone	
Jul 2	NZART Memorial Contest (80 m)	
Jul 2/3	Venezuela SSB DX	
Jul 9/10	IARU HF Championship	
Jul 16	Jack Files Memorial (80 m Phone)	
Jul 16	Colombian Independence Day Contest	
Jul 23	Jack Files Memorial (80 m CW)	
Jul 23/24	Venezuela CW DX	

Who amongst us hasn't yearned for the ideal contest station: pushbutton rigs, linears, and beams on every band; a quiet mountaintop QTH with views down to 0 degrees in every direction; massive ground conductivity; an understanding family where the XYL says "Another contest? How wonderful! What can I do to help you dear?" and kids who offer to help with antenna refurbishment or perhaps sweep the shack floor; no TVI...

For most of us, the reality is somewhat different. Luckily, over the next couple of months there are some contests which should appeal to the average ham who doesn't have the ideal contest station and/or time to spare. These include several 80 m sprints, which appear to be growing in popularity each year, and a new QRP contest organised by the CW Operator's Club. The sprints are short duration affairs which, despite requiring a minimal amount of time (you can enter and your family not even know about it), are extremely competitive. And, of course, simple rigs, even home brew ones, will suffice in a QRP contest.

So, how about firing up on 80 for one of the sprints, or dusting off that old home brew QRP rig. You may actually have a very good time! Thanks this month to VK2BQS, VK2SRM, VK4LW, VK5AKZ, JARL, CQ, QST, *Radio Communications*, and *Break-In*. Until next month, good contesting!

Peter VK3APN

## Contest Details

The following contest details should be read in conjunction with the "General Rules & Definitions" published in April 1993 *Amateur Radio*.

### Merv Stinson Memorial Sprint (80 m Phone & CW)

1030-1130z, Sat 4 June

The Redcliffe Radio Club of Queensland invites all amateurs and SWLs to enter the 2nd Merv Stinson Memorial Contest. This contest remembers the effort and assistance Merv gave to many people to help them obtain their certificates of proficiency, and he was an active participant in many club activities. Last year's contest was supported by over 30 entrants from VK, ZL, P2 and VE.

The object is to contact (or log QSOs if an SWL) as many stations as possible on 80 m using phone or CW. Contacts with any country are valid. Exchange RS(T) & serial number (leading zeros are optional, ie 591 can be used instead of 59001). The score is the number of stations worked (no multipliers). Logs must show date/time (UTC), callsign, RS(T) & serial numbers sent and received, mode. Include a cover sheet showing name, address, callsign, total valid QSOs, and a declaration that the rules and spirit of the contest were observed. Send logs to: Contest Manager, Redcliffe Radio Club, PO Box 20, Woody Point, QLD 4019, to be received by COB Monday, 4 July. Certificates to the highest scores in each section overall; in each VK call area; ZL; P2; and the rest of world.

### RSGB Field Day

1500z Sat to 1500z Sun, 4/5 June

This CW contest usually stimulates considerable portable activity in the UK and Europe. Overseas stations are invited to participate and submit a log, but otherwise are ineligible to compete. Certificates will be awarded to the overseas stations in each continent making the most contacts. Send log to: RSGB HF Contest Committee, PO Box 73, Lichfield, Staffs, WS13 6UJ, England.

### ANARTS WW DX RTTY

0000z Sat to 2400z Sun, 11/12 June

This contest is organised by the Australian National Amateur Radio Teleprinter Society, and runs on the second full weekend of June each year. The object is to contact as many stations

locally and overseas as possible on 80-10 m (no WARC bands), using any digital mode (no satellite). Categories are single operator, multioperator (one Tx), and SWL. Max operating time is 30 hrs (single op). Rest periods can be taken at any time during the contest. Mark rest periods in log. Messages comprise RST, TIME, CQ ZONE. For each valid QSO, points are claimed according to zone. Space precludes publishing a complete points table, however the following extracts show the points claimable by entrants in zones 28, 29, and 30. The numbers show the number of points for QSOs with zones 1 to 40, working left to right, top to bottom:

#### Your Zone = 28:

31	40	40	44	45	49	53	51	55	54
49	48	46	32	30	26	22	20	20	25
20	11	14	10	15	05	07	02	10	17
31	24	34	25	36	30	22	26	19	34

#### Your Zone = 29:

39	50	43	52	54	47	49	54	52	44
42	37	37	42	39	36	32	30	30	34
28	21	24	20	23	16	15	10	02	09
15	32	42	33	39	31	24	24	20	44

#### Your Zone = 30:

35	50	35	44	46	38	40	44	45	37
41	33	34	49	47	42	38	45	32	43
37	29	30	24	30	22	18	17	09	02
24	07	51	42	47	40	33	32	29	48

Countries per ARRL DXCC list, except that each call area in mainland VK, VE, JA and W counts as a separate country, which naturally excludes mainland VK, VE, JA and W as separately claimable. Call areas outside these mainland areas (eg VK0, JD1, KL7, KC4) count as separate countries. One's own country (as defined herein) can be worked for QSO points, but not for a multiplier.

Points are determined for each band and then added. Countries are similarly tallied. Continents are those worked on all bands (max 6). Total score is: points x countries x continents. Non-VKs should add "VK Bonus" to their points tally, which is 500 pts for each VK worked on 80 m, 400 pts on 40 m, 100 pts on 20 m, 200 pts on 15 m, and 300 pts on 10 m. Send log to: Contest Manager, ANARTS, PO Box 93, Toongabbie, NSW 2146 by 1 September. If required, a full page scoring table is available from ANARTS upon receipt of a SASE.

### QRP CW Weekend 1994

0000z Sat to 0800z Sun, 11/12 June

This contest is sponsored by the CW Operators' Club, and recognises World QRP Day (Jun 14). It is open to entrants from VK, ZL and P2. Use 80-10 m, preferably calling on recognised QRP frequencies (1815, 3530, 7030, 14060, 21060, 28060), then QSYing to a working

frequency. To spread interest and reduce possible band congestion, it is suggested that stations distribute their calling as follows: On Hour = All Bands; Hour + 15 mins = 40 m; Hour + 30 mins = 20 m; Hour + 45 mins = 15/10 m. Exchange RST + serial number. Repeat QSOs with the same station are allowed with a minimum of 3 hours between subsequent QSOs. QRP stations should score 5 points for each non-DX station worked, and 20 points for each DX station worked. QRO stations should score 1 point for each non-DX station worked, and 10 points for each DX station worked. "DX" means any station outside VK, ZL and P2. QRP means up to 5 W carrier power to the antenna. QRP stations must sign /QRP. Send logs to: Ron Everingham VK4EV, 30 Hunter Street, Everton Park, QLD 4053 by 14 July 1994.

### 35th All Asian DX Contest

CW: 0000z Sat to 2400z Sun, 18/19 June  
Phone: 0000z Sat to 2400z Sun, 3/4 Sept

The object is to contact as many stations in Asia as possible, on 160-10 m (no WARC bands). Classes are single operator, single and multiband; and multioperator multiband. Call "CQ AA" or "CQ Asia". Exchange RS(T) plus two figures denoting your age (YLS send "00"). For each QSO score 3 points on 160 m, 2 points on 80 m, and 1 point on other bands. The multiplier is the number of different Asian prefixes worked per band, according to CQ WPX rules (refer Feb 94). Example: JS9ABC/7 counts for prefix JS7. Note that JD1 stations on Ogasawara (Bonin & Volcano) Isl belong to Asia, and JD1 stations on Minamitori Shima (Marcus) Isl belong to Oceania. Final score is total QSO pts x total multiplier.

Use standard log and summary sheet format, clearly showing new multipliers when first worked. Send logs postmarked by 30 July (CW) and 30 Sept (SSB) to: JARL, AA DX Contest, Box 377, Tokyo Central, Japan. Indicate phone or CW on envelope. Awards include certificates to the top 1-5 stations in each country on each band (depending on activity), and medals to the continental leaders. For full results please enclose an IRC and SAE with log.

Asian countries are: A4 A5 A6 A7 A9 AP BV BY EP HL HS HZ JA JD1 (Ogasawara) JT JY OD S2 TA UA9/0 UD UF UG UH UI UJ UL UM VS6 VU (Andaman & Nicobar) VU (Laccadive) XU XW XX9 XZ YA YI YK ZC4 1S (Spratly) 3W/XV 4S 4X/4Z 5B 7O 8Q 9K 9M2 9N 9V; Abu Ail/Jabal at Tair.

### ARRL Field Day

1800z Sat to 2100z Sun, 25/26 June  
This mixed mode contest is open to

W/VE. As with the RSGB Field Day (see above), overseas stations are invited to participate and submit a log, but otherwise are ineligible to compete. Exchange RS(T) + QTH, W/VE will send operating class + ARRL/CRRL section. Send log postmarked by 26 July to: ARRL Field Day Contest, 225 Main St., Newington, CT 06111, USA.

### VK Results of 1993 CQ 160 m DX CW Contest

(QSOs/Mult/Countries/Score):  
VK3IO 75 15 9 16512

### 1994 WIA VK Novice Contest

0800z Sat to 0800z Sun, 18/19 June

The object of this contest is to encourage amateur operation in Australia, New Zealand and Papua New Guinea, and particularly to promote contacts with novice and radio club stations. Only stations in VK, ZL and P2 call areas are eligible to participate.

All operations must be confined to the novice frequency allocations in the 10, 15 and 80 m bands, viz 3.525-3.625 MHz, 21.125-21.200 MHz and 28.100- 28.600 MHz. No cross-band operation is permitted. Stations in the same call area may contact each other for contest credit.

Sections include (a) Phone-novice/full call; (b) CW-novice/full call; (c) SWL. Except for club stations, no multi-operator operation is allowed.

Phone stations call "CQ Novice Contest", CW stations call "CQ N". Exchange a serial number comprising RS (or RST) followed by three figures commencing at 001 for the first contact and increasing by one for each subsequent contact.

Any station may be contacted twice per band, provided at least 12 hours has passed since the previous contact with that station. SWLs may log up to 10 sequential contacts made by a station, and then must log no less than another five stations before logging that station again. The five stations so logged need a minimum of one contact only logged.

Score 5 points for contacts with novice

or combined call stations, 10 points for contacts with club stations, and 2 points for contacts with full call stations. SWLs score 5 points for novice to novice contacts, 2 points for novice to full call or full call to full call contacts, and 10 points for contacts made by a radio club.

Logs must show: Date/time UTC, Band, Mode, Station contacted, Report and serial number sent, Report and serial number received, Points. Each log sheet must be headed "VK Novice Contest 1994". The total claimed score for each page must be shown on the bottom of the page.

Attach a summary sheet showing all standard information (refer to "General Rules & Definitions" published in April 1993 *Amateur Radio*). In the case of a club station, the summary sheet must be signed by a responsible officer of the committee, or a licensed operator delegated by the committee to do so.

Entrants may submit only one contest log per mode. Logs for entries where an entrant uses more than one callsign whilst operating in this contest will not be accepted. Send entries to: Novice Contest Manager, WARC, Box 1, Teralba, NSW 2284, to arrive by 25 July 1994.

The Keith Howard VK2AKX Trophy will be awarded to the novice entrant with the highest aggregate (phone and CW) score, and the Clive Burns Memorial Trophy to the novice entrant with the highest CW score (these are perpetual trophies on permanent display at the Federal Office). In each case, the annual winner will receive a suitably inscribed wall plaque as permanent recognition. Certificates will also be awarded to the top scoring novice stations in each call area, the top scoring station in each section, and to any other entrant where meritorious operation has been carried out. Awards are at the discretion of the contest manager. A Certificate of Participation will be awarded to all operators who submit a log in this year's contest.

Ray Milliken VK2SRM  
Novice Contest Manager

### RESULTS OF 1993 VK/ZL/OCEANIA DX CONTEST CONTINENTAL LEADERS:

CONTINENT	SINGLE OPERATOR		MULTIOPERATOR		SWL
	PHONE	CW	PHONE	CW	PHONE
Oceania	VK3EW	VK2APK	ZL2AWC	-	-
Africa	-	-	-	-	-
Asia	RK9C	RW9WA	JA9YAV	-	JA1-7777
Europe	G3NAS	RB4XQ	UR8J	UR8J	OM3-27707
North America	-	K3ZO	N6AA	-	-
South America	-	LU2DKN	-	-	-

**INDIVIDUAL RESULTS:**

(Shown in order: Callsign, Band, Band Scores, Final Score.  
 \* = Certificate winner. Band Score = Band Points x Band Multiplier; Final Score = total Band Points x total Multiplier.)

CALL	BND	160	80	40	20	15	10	SCORE
<b>PHONE, SINGLE OPERATOR</b>								
<b>Oceania:</b>								
DU7AFT*	15					10754		10754
V85BJ*	A	1254			42420			61372
VK1KLB	80		1470					1470
VK1LEC*	80		3300					3300
VK2APK*	A	320	7590	26840	102424	63448	75	984390
VK2ARJ	A	400	5980	4420	53573	7832	3	315596
VK2IVK	A		12960	330	480	97836		279112
VK2PS	A	100	1440		4366			24072
VK2VM*	20				64702			64702
VK3EW*	A	40	11050	154105	93275	64988		1445860
VK3SM*	20				1480			1480
VK4DGS	A		1860	30	2295	1612		34602
VK4ICU*	15					273000		273000
VK4LT	A		240	5	40920	14994	429	141804
VK4NEF	A		1530			25344		45570
VK4OD*	20				1760			1760
VK5AFO	A		4550	840	9153	9100	243	122430
VK5GN*	A		360	910	168912	95758	1188	684956
VK5OE*	20				1806			1806
VK5PMC	A		2160			103472		144088
VK6WOG*	A		1600	6380	16377	101150		370111
VK8AV*	A		1260	5	4898	59388	2550	186984
YB2BKJ	A			700	1332	28		5390
YB6INU	A			205	5057	1326	6	16120
YC3SPS*	15					27800		27800
YC6KD	15					17108		17108
ZL1AAS*	A	160	28080	4030	44919	51408		589410
ZL3TX*	A	720	57200	80	9156	2080		253130
ZL4NF*	20				89856			89856
<b>Asia:</b>								
JA1AAV	20				20			20
JA1AB	A				40	270		520
JA1BUI	20				77			77
JA1IT	A			5	16	400		735
JA2DLM	A			5	119	600		1440
JA2GHP	15					252		252
JA2IZA	15					126		126
JA3CE	15					24		24
JA3ETD*	15					720		720
JA3JOT	A			60		418	72	1368
JA3SSB	A				15	40		105
JA3YKC	15					50		50
JA4AQR	A				1	288		333
JA5APU	15					132		132
JA5IP	20				50			50
JA6BWH	A		10	5				30
JA6ODU	A				9	576		765
JA7BEW*	A		40	120	990	2960	24	11868
JA7HB	15					88		88
JA9XAT	15					50		50
JA0BQB	A				15	270		420
JA0CJK	15					260		260
JE2NWN*	20				144			144
JE4VSC	A				1035	1496	27	5810
JE7DOT	A				60	96		312
JE8JXU	15					8		8
JE0EHE	15					224		224
JF2LEX	10					120		120

JF3EIU	10							759	759
JG1EGG*	10							972	972
JG1GCO	15							12	12
JG1JQJ	15							504	504
JG1RDV	A						4	340	24
JG1RRU	20						1		1
JG1TVK	20						91		91
JG1UKW	15							20	20
JG400U	15							84	84
JH1ACP	15							224	224
JH1TYU	15							340	340
JH1UUT	A						66	450	3
JH2HFD	A					80	990		1650
JH2WHS	15							528	528
JH3LCU/1	A					40	5	154	96
JH4OYA	A							18	72
JH8DBJ	15							440	440
JH8DHV	15							168	168
JL6IPK	15							320	320
JN1FRL	15							40	40
JN1OVF	40						45		45
JQ1VNM*	40						3120		3120
JR1MRG	A					10		15	272
JR2TRC	15							96	96
JR3CVJ	15							420	420
JR3KAH	15							280	280
JR7LVK	A							594	3
RK9C*	A					720	3990	3930	1120
RW9WA	A						100	1088	12
7K2CWQ	15							18	18
<b>Europe:</b>									
DK3KD*	20							451	451
DL4YBP	A							48	64
DL6CIA	A						10	135	24
EA3BOX*	20							90	90
EA3GHO	A							4	16
ES5RY*	20							363	363
F5NBX*	A					20	5	684	2
G3NAS*	A					160	10	192	216
HB9DX	20							90	90
HB9IK*	A						20	456	110
I4CSP	A							28	8
IK4SWX*	A							440	80
LA8GV*	A							30	2
LY2ZZ*	20							2128	2128
LZ2VP*	20							320	320
OH6IU*	A							1316	64
OH6LNI	A							140	36
OH7NW*	20							30	30
OK1AD*	A							518	42
OM3CRH*	15							12	12
OM3EA	20							360	360
OM3KAG*	20							690	690
OZ8T*	20							16	16
PA0EHF*	A							72	4
RB5QW*	20							154	154
SM5BBS*	20							66	66
SP1HJK	20							36	36
SP2FOV*	A							116	112
SP5CJQ	A							78	32
SP8EEX*	20							40	40
UA1ZDX	20							270	270
UA6LAK	A							120	40
UB3IDX*	A						280	396	30
UV3HD*	20							456	456
YU7SF*	15							2	2

<b>North America:</b>								JH2ABL	A	10	120	105	210	27	2068
K3ZO*	A		200	2		252	JH3ECB	A				270	528		1575
N6AA	A	10		9		52	JH3WKE*	15					204		204
<b>South America:</b>								JH4OYA	A			1	48		65
LU2DKN*	20			60		60	JK1AJX/1*	A		100	348	858	72		4554
<b>PHONE, MULTIOPERATOR</b>								JK1GXU	A			42	16		110
ZL2AWC*		440	960	32		3960	JK2VOC	15				64		64	
JA9YAV*					8	8	JR7OMD/2*	40			210			210	
RB4IYU				112	2	144	RV9WB	A			5	91	72	420	
UR8J*						13818	RW9WA*	A	90	385	525	396	27	6435	
US7I	120	1320	1330	896		10023	UD6DKW*	A			12	24		72	
UT7W	10		2090	560		5280	UN5G	A	160	385	150	192		3886	
<b>PHONE CHECK LOGS</b>								UN7BY	A		60	96	48	660	
DF5WN, SP7VCK, VK3APN								<b>Europe:</b>							
<b>CW, SINGLE OPERATOR</b>								DJ5GG*	20			128		128	
<b>Oceania:</b>								DK3KD*	A		300	243	12	1411	
VK2APK*	A	560	64800	168200	36600	18252	1248946	DL3RD	A			180	90	532	
VK2PS	A	700	1350	660	1764	450	32604	DL5AUJ	20			12		12	
VK2QF	A		540	1120	3233	24924	12	84840	DL6YK	A		45	77	8	360
VK2SPS	A		300		2925	2	6165	DL8UED	20			42		42	
VK3APN*	40		60750				60750	DL9AWI	A	40	75	42	2	648	
VK3KS	20				4		4	EA2CR	A		5	1		12	
VK3XB*	20				1280		1280	EA5CKP*	A		20	70	2	220	
VK4CMY	20				25000		25000	EA5CLO	A			54	2	77	
VK4ICU	15					37962	37962	EA5SM*	15				18	18	
VK4OD	20		40		2064	4136	14418	ES4MM*	20			462		462	
VK4TT*	A				62592		62592	ES5RY*	A	40	80	275		1105	
VK4XA*	15					110080	110080	F5NBX*	A		10	96	2	240	
VK4XW	A		10	1900			2200	G3DYY	A	10		36	18	220	
VK5AGX*	20				20184		20184	G3GLL*	A	10	440	117	12	1680	
VK6AJ	A			80	12065	10292	108	55277	G5MY	A		75	30	248	
VK6BGV	A			2640	23424	14416	27	115804	HA5LZ*	A		100	30	279	
VK6HG	A		480	2185	14382	4902		76500	HB9IK*	A		210	136	132	1480
VK6ZH*	A			2640	36120	67130		259532	IOZUT*	A		225	55	8	720
VK8AV*	A	240	15300	20650	125020	37024	612	832397	IK5TSS	A			2	2	8
YB2BKJ*	20				2479			2479	LA8WG*	20			55		55
YB6TI*	15					112466	112466	LY1CX*	A		40	270	108	1170	
ZL1AIZ*	A	300	52800	81640	12160	12972	360	721897	LY2BO	A		60	290	72	1139
ZL1BN	A	20	11070	44145	6674	12090	624	336174	OH7NW*	A			12	8	40
ZL1HV*	15					13552		13552	OH0/OH3TY*	A	10	160	135	32	1314
ZL1VD	A	20	660	20160	10260	112	12	101412	OK1AD*	A		45	448	156	1679
ZL2AGY*	A		10	369840	2790	3456	108	597312	OK2BDI	A		5	136		198
ZL3GQ*	A	180	19000	185225	10998	16100	243	785601	OM3EA*	20			126		126
ZL4QY*	80		3640					3640	OZ1LO*	A		5	96	40	351
<b>Asia:</b>								OZ5DX	A	10	100			175	
JA1AAT	15					112	112	RB4EK	A				56	40	198
JA1AUD	A		350	210	20	484	12	4480	RB4IXQ*	A		80	540	400	2784
JA1BNW	A			140	126	396		1958	RB5EX	A		100	35	144	840
JA1POS*	20				1			1	S51MF*	A		180	84	40	1005
JA2GTW	A			490	63	272	3	2668	S59ZZ*	15				56	56
JA3ARM	A	5	126	460	48			1848	SM0CSX*	20			6		6
JA3JOT	A			5	176			243	SP2FOV*	20			230		230
JA4AOR	15					32		32	SP3AOT	A			12	8	40
JA5IP	40			150				150	SP5CJQ*	A		20	144	30	504
JA6BWH	A		90	30	6	42		620	SP6OJE	20			91		91
JA9CWJ	A		40	45	70	224	27	1886	SP7VCA*	15				2	2
JA9XAT	A				4	3		14	SP8TK*	20			230		230
JA0BQB	A				35	60		190	TF3DX*	20			4		4
JE2NWN	A				50	216		476	UA6LAK*	A			190	156	720
JF0SGW	A				54	140	60	748	UB5ZKG	A			20	8	54
JG1RDV	A				15	340		507	UC2ACZ*	A			390	8	510
JG1RRU	40			40				40	UO5OA*	A			126	36	300
JG3CQJ	A		40	100	80	288		2001	UV3HD*	20			190		190
JH1NXU	15					50		50	YL1WW*	A		40	189	100	976
									YO6LV*	20			20		20
									YU7SF*	A		100	16		232

**DICK SMITH**  
ELECTRONICS



# Tune Into A Top Quality Yaesu Transceiver!



**2 year warranty**

## FT-11R Micro Deluxe 2m Handheld

New for '94! One of the world's smallest 2m FM handhelds with a full-size keypad, the FT-11R has been reduced in size, but not in features. Designed to fit comfortably in your hand, it's just 57 x 102 x 25.5mm (W.H.D) including the FNB-31 NiCad pack, and weighs only 280 grams.

The result of the latest in miniaturisation, microprocessor control and FET technology, the FT-11R provides a large back-lit LCD screen with full frequency readout, 150 memories (75 in alpha-numeric mode), full function keypad with easy SET mode, and up/down thumb control Volume and Squelch settings. A new high efficiency FET RF amplifier provides 1.5W output standard from the compact 4.8V battery pack, and up to 5W output from 9.6V (using an optional battery pack or PA-10 mobile adaptor). A range of battery life extenders, including Auto Battery Saver, Tx Save, and Auto Power Off (with ultra-low 20uA consumption) are included. Australian version Auto Repeater Shift, DMTF based selective calling and paging, extended 110-180MHz receiver coverage (including the AM aircraft band), and a variety of scanning modes are also provided.

Other new features include naming of memory channels, DTMF Auto-dial memories, and DTMF Message Paging with up to 6 alpha-numeric characters. A large range of accessory lines are also available for easier customisation of your transceiver.

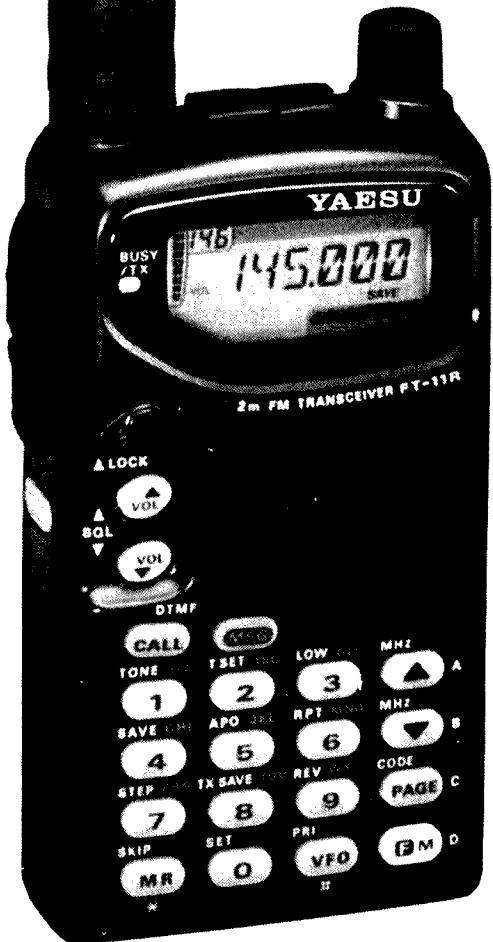
The FT-11R comes with an FNB-31 600mA/H NiCad, belt-clip, approved AC charger, CA-9 charge adaptor and antenna.

Cat D-3640

**\$699**

Shown approximately full size.

**NEW FOR '94**  
**Coming soon!**





# Yaesu FT-840 HF Transceiver

Blending the high performance digital frequency synthesis techniques of the FT-890 with the operating convenience of the FT-747GX which it replaces, the all new FT-840 H.F mobile transceiver sets the new standard for high performance affordable transceivers.

Covering all H.F amateur bands from 160m-10m with 100w P.E.P output, and with continuous receiver coverage from 100kHz to 30MHz, the FT-840 provides SSB/CW/AM operation (FM optional), 100 memory channels, a large back-lit LCD screen, two independent VFOs per band, an effective noise blanker, and an uncluttered front panel, all in a compact case size of just 238 x 93 x 243 (WHD). Unlike some competing models, small size doesn't mean small facilities. The FT-840 provides easily

accessible features such as variable mic gain and RF Power controls, SSB Speech Processor for greater audio punch, and IF Shift plus CW Reverse to fight interference. Dual Direct Digital Synthesisers ensure clean transmitter output and fast Tx/Rx switching, while the low noise receiver front-end uses an active double-balanced mixer and selectable attenuator for improved strong signal handling. The FT-840 weighs just 4.5kg, and uses a thermally switched cooling fan, surface mount components and a metal case for cool, reliable operation.

An extensive range of accessory lines are available, including the FC-10 external automatic antenna tuner, so you can customise the FT-840 to suit your operating requirements.

Cat D-3275



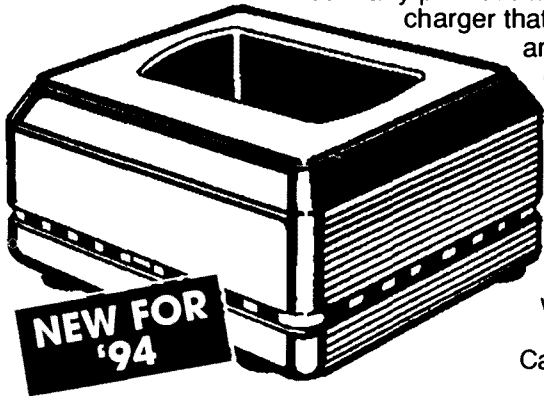
**NEW FOR '94**  
**Coming Soon!**

*2 Year Warranty*

**\$1895**

# Mastercharger 1 Fast Desktop Charger

At last, an intelligent, fast desktop charger that not only suits most current Yaesu handhelds but also many previous models. Made in USA, the Mastercharger 1 is a compact fast charger that operates from 12v DC, and uses switch - mode technology and a Philips monitor I.C (with  $\Delta v$  full charge detection) to charge NiCad batteries between 6V and 13.2V. Charge time varies between 1/2hr and 2 1/2 hours, depending on battery voltage and capacity. Supplied as standard to suit the FT-23/73, FT-411/411e, FT-470, FT-26, FT-415/815 and FT-530, its charging cradle can easily be replaced, allowing for the insertion of a new cradle to suit earlier Yaesu transceivers (eg FT-209R) or different brands/models handhelds. The Mastercharger 1 requires 12-15V DC at 1.3A, and is supplied with a fused cigarette lighter cable for vehicle use.



Cat D-3850 **\$199**

**NOW AVAILABLE:  
CHARGING CRADLES TO SUIT  
VARIOUS KENWOOD, ICOM,  
AND ALINCO HANDHELDS.**

# FT-990 H.F All-Mode Base Transceiver

The FT-990 offers many of the features of the legendary FT-1000 in a more compact and economical base-station package. Its excellent front-panel layout, together with clear labelling, a large back-lit meter and an uncluttered digital display allows very straight - forward operation. The receiver uses a wide dynamic range front end circuit and two DDSs to provide a very low noise level and excellent sensitivity over the 100kHz to 30MHz range. Transmitter output is 100W on all HF Amateur bands (SSB, CW, FM), with high duty cycle transmissions allowed. The internal auto antenna tuner and an inbuilt power supply are standard features, while the customizable RF speech processor and Switched Capacitance Audio filtering facilities are unique to the FT-990. Other features include IF Shift and IF Notch filters, IF bandwidth selection, 90 memories and one-touch band-selection. Cat D-3260



**\$3995**

**LAST OPPORTUNITY AT THIS PRICE!  
Price Must Rise 30st June '94.  
BUY NOW AND SAVE!**

**2 Year Warranty**

**BONUS MD-1 Desk Mic**

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B 1704

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**\*MAJOR AMATEUR STOCKIST STORES SHOWN IN RED**

North America:							SWL RESULTS							
K3ZO	A	240	600	77		2774	(All phone; no SWL CW entries received)							
NGAA*	A	40	330	119	224	60	3614		90	546	1083			
<b>CW, MULTIOPERATOR</b>							OM3-0001	10	60	516	1168			
UR&J*		200	495	1062	754	27	10857	OM3-27707*	10	5	1305	60	2508	
UT7W			175	532	270	3	3074	ONL-383		10	1	36	115	
<b>CW CHECK LOGS</b>							ONL-4003*				450		450	
DL7VOX, LA7WJ, OH2YL, UN6T							SP-0142-JG				9	312		435
							SP-0189-GD					25		25
							SP-3003-LG*			45	507			864
							SP4-208				102			102

## SUMMARY:

Thanks to all who entered the VK/ZL/Oceania DX Contest, and of course especially those who submitted logs. Despite a clash with RSGB's 21/28 MHz Contest during the phone weekend, and a JA contest and poor conditions on the CW weekend, many fine scores were made.

Some multiband entrants will be pleased to find their scores considerably higher than expected. This occurred where they used the literal (but incorrect) procedure from the 1993 rules to calculate multiband scores, which led to artificially low scores. All multiband logs have been re-scored where necessary, using the same calculation procedure as in previous years.

DX entrants may have noticed that the flat 2 points per QSO, used in previous years, was replaced by one where points

are graded according to band. The graded system has applied to Oceania for many years, and it seemed logical to extend it to non-Oceania entrants to provide a similar incentive to operate on bands other than 20 and 15 m. A number of entrants took advantage of this new system, and put in some good scores on 40 and 80 metres. All DX logs have been re-scored to the new points system where necessary.

1993 also saw the introduction of a multioperator category, which attracted 8 entries. Although not an overwhelming number, it is still early days. This category has been needed for some time, and it is hoped that more multioperator entries will be received in future.

Some entrants counted countries instead of prefixes, robbing themselves of thousands of points. In these cases I counted the number of prefixes and re-scored their logs accordingly. As

expected this made a dramatic difference, for example one entrant went from 2800 points to well over 100,000! However, with several hundred logs to check, I really don't have the time or inclination to do this as a matter of course, so a 10% penalty has been applied to the offending logs. Next time please count your multipliers properly, because in future a less lenient view may well be taken!

Peter Nesbit VK3APN

## Some Comments From Logs

Condx bad for Spain... EA3GHQ. FB contest and operators... EA5CLO. Next year again... ES5RY. Not so much activity this year... G3GLL. Poor condx made going hard... G5MY. Nice to meet old friends. Less stations in CW part, but still excellent... HB9IK. I am his young sister. I write the log because he is blind since

## WIA News

### \$40,000 For Bulletin Board Libel

According to a report in the *Sydney Morning Herald* for 1 April, a West Australian man was awarded \$40,000 damages after being libelled on a computer bulletin board.

Sydney Morning Herald reporter, Duncan Graham, said that "...it is believed to be the first time a successful defamation action has been taken in Australia over material published on an electronic mail system."

Apparently, an anthropologist working in the Kimberley region of Western Australia sent a message to a worldwide science related network of bulletin boards denigrating a Dr David Rindos, who was then at the University of

Western Australia's Department of Anthropology.

The libellous material alleged sexual misconduct as well as professional misbehaviour which reflected on Dr Rindos' academic competence, the judge hearing the case commented in his judgement.

According to the Sydney Morning Herald report, the judge said "...the nature of the remarks is such that they are likely to be repeated and that any rumours of a like kind that had circulated previously were likely to gain strength from their publication."

The case has implications not just for telephone-accessed computer bulletin board networks, but for the amateur packet radio network, too. Items, articles or

bulletins sent as "electronic mail" are "published" by the computer network system, just as surely as printed journals.

In some states, the defamation laws permit the originator (or author) to be sued for damages as well as the publisher of libellous material. Bulletin board system operators (sysops) are regarded as a "knowing publisher" as they have control of the system. If the sysop and the owner of a system are different people, or a person and a company for example, both may be held liable.

The issues and implications are complex, and the legal arguments tortuous, but BBS sysops, and the amateur community, will have to come to grips with the situation sooner or later.



July. He contacted only one ham, but is very glad now and says "see you again"... sister of JA1POS. Little stations also work in this contest! JA3YKC. I want more VK/ZLs active! JA6BWH. Interesting contest, but few VK/ZL stations... JA9CWJ. No good on 10 m... JE7DOT. Made my first ZL contacts in this contest... LA8GV. Condx bad, strong Aurora here... LA8WG. Sorry for few QSOs but bad propagation here... LU2DKN. Tnx for best contest in the world... OH6IU. I missed the first 2 hours due to broken balun. I'll be back again next year from OH0... OH0/OH3TY. The LF bands are really tough here. My HF beam is fixed on USA... OZ5DX. Extremely poor condx Saturday, nothing heard Sunday... OZ8T. Was nice to get 59+40 dB from VK... RK9C. My first VK/ZL contest... SP2FOV. My 3rd VK/ZL. Despite the most effort, the slimmest results! Conditions here simply not present until the last half hour when I just managed 2 QSOs! TF3DX. Not so much time due to baby sitting... SP6QJE. I was running a logging program under Windows. After working 92 stations I realised the PC was running fast. After changing to DOS I had no further problems... VB5BJ. 40 m was poor, and QRN level was high. Gone are the days with long band openings. Condx even worse in the CW part, Sunday afternoon the noise was so high that nothing could be heard so I switched off and had a rest... VK2APK. Over 30 years participating in this contest, and it still gives me a kick! VK2ARJ. Some big DX pileups kept operating skills honed... VK2QF. Just a token entry, I was minding grandchildren... VK3SM. Although on car battery power and limited operating time, I enjoyed my "comeback" to HF contesting... VK4CMY. Had a great time, my first real go at a CW contest... VK4ICU. The pile-ups are a challenge... VK4OD. When I was on the band the DX wasn't, and when they were, my beam was in the wrong direction... VK4TT. Enjoyed the contest again. This being my second attempt I thought I would be better prepared, but no, band condx were severe on the low frequencies which made things harder... VK5AFO. Apart from antenna problems, was kept busy and enjoyed the contest. Good to hear so many DX stations... VK5AGX. Condx could have been better, but considering my battery powered setup am happy with the result... VK6BGV. A fun contest, but the XYL dragged me off to a wine festival... VK6HG. Poorer condx than last year, but enjoyed contacting many friends. First time I used a computer program for the contest, and it turned out to be a bit of a hassle! I had to perform some drastic surgery to make this submission... VK8AV. Only 15 m was open... YB2BKJ. Activity

down on last year. Where were the VKs and ZLs, especially on 160 and 80? ZL1AIZ. Where were the VKs and ZLs on the low bands? Did a bit of QRN scare them away? Fell asleep and missed the dawn opening on 80... ZL1BN. Sorry for token entry this year, everything seemed to stop me getting on air... ZL1HV. Frustrated with 160 as only VK2BJ was available for points, despite two FK8s calling CQ JA and CQ DX!!! ZL1VD. Pity about condx. 40 m closed around 1500, and on Sunday it was noisy to say the least... ZL2AGY. CT using All Asia with a country list that put all countries in zone 25 did a great job... ZL3GQ. 10 m totally dead this year... ZL3TX. Computer broke down, so had to revert to the old methods. My wrist is still sore! ZL4NF. Could hear the JAs but they couldn't hear me. Heavy QRN Sunday... ZL4QY.

## Ross Hull Contest and VHF UHF Field Day Results Corrections

A correction to the Ross Hull Contest results published last month: the score of 224 points for VK3WAL should have appeared in the 3 cm (10 GHz) band column.

There is also a correction to the VHF UHF Field Day results published last month. Eric Fittock VK4NEF came third in Section B with a score of 1344 points. My apologies to Eric for leaving him out of the list.

John Martin VK3KWA

\*PO Box 300, Caulfield South, VIC 3162  
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## Club Corner

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### South Coast Amateur Radio Club News

South Australian Technical Symposium

The 2nd Annual SA Technical Symposium will be run later this year. The format will be similar to last year's event, where a series of lectures will be presented on a range of topics of technical interest to amateur radio and electronics hobbyists. The date and venue for this year's Symposium have not been finalised as yet, however already we are collecting a quality line up of lecturers.

Topics already planned include:

- Getting into Amateur FAX and SSTV
- FM ATV Operation and Equipment
- Electrical & Electronic Measurements
- Electrical Safety in the Shack
- An Introduction to the world of Microprocessors
- The TPK Packet Broadcast Protocol Explained
- HF Wire Antennas
- VHF Earth-Moon-Earth Communications.

There are many other topics in the pipeline also. In next months AR magazine, watch out for information on how you can obtain YOUR ticket to attend this event!

### Packet Education Program

The club is also conducting an active packet user education and recruiting drive. This is being led with the production of Packet Modems for the IBM PC based on the TCM3105 modem IC (compatible with BayCom and similar software packages). These modems are available for \$50 each plus \$5 postage to anywhere

in Australia. Send your cheques to the address below.

The other very handy packet tool available is a packet operator's handbook called "The Hitch-Hiker's Guide to Packet Radio in SA (2nd Ed)". This booklet is 155 pages jam packed with information on everything from setting up a TNC, operating the commands on a Packet BBS, using a NETROM or Rose network, setting up a TCP/IP node, using the RTTYGate gateway BBS stations right through to an introduction to Satellite Packet Radio. While this has a bias towards the VK5 packet network conditions, much of the publication is generic and would apply just about anywhere. "The Hitch Hiker's Guide to Packet Radio" has become indispensable in many Amateur Shacks around the country already. If you would like to obtain a copy, you can send a cheque for \$20 (includes postage and packing) to:

South Coast Amateur Radio Club Inc.  
PO Box 333

Morphett Vale SA 5162

Delivery for both the modems should be within 6 weeks. Clubs wishing to make bulk purchases of 10 or more should write to the secretary for details of available discounts.

If you are in Adelaide, why not drop in to the South Coast ARC? The club meets every Wednesday evening at 8 pm at the Karawatha Community Hall, 12 Baden Tce, O'Sullivan's Beach. Club liaison frequencies are 146.675 MHz repeater or 147.675 MHz simplex on 2 m and 439.675 MHz simplex on 70 cm.

Grant VK5ZWI  
Club Secretary

## Port Macquarie Field Day 11/12 June 1994

This year the Oxley Region Amateur Radio Club Inc Field Day will take place at a new venue located in the middle of Port Macquarie on the harbour front.

The Field Day will commence at 3 pm on Saturday, 11 June with "Fox Hunt" trials (non-competitive) so that visitors can get a feel for the town. This will be followed by an evening social and dinner. The competitive Fox Hunting will commence on Sunday morning, 12 June.

The trade shows, amateur radio demonstrations such as satellite, packet, computers and other amateur radio interests, together with the "Flea Market" where you can bring your "don't wants" and sell, as well as buy things you "don't want", will commence at 9.00 am on Sunday, 12 June.

The venue this year is the newly built Scout Hall located in central Port Macquarie on Buller Street. This building is right on the harbour water front between Westport Bowling Club and the Country Comfort Motel.

Those in the family that are not interested in amateur radio can always drop a fishing line in the Hastings river or maybe fly a kite (subject to the weather).

The event also coincides with the Timberton Vintage Machinery Rally at Wauchope which should interest the oldtimers.

The local 2 m voice repeater is on 146.7 MHz, and the packet digipeater is on 144.875 MHz.

Event brochures and maps of the area can be obtained in advance by writing to:  
The Hon Secretary ORARC,  
PO Box 712,  
Port Macquarie NSW 2444.

We are not the largest Field Day in NSW, nor the smallest, but we are the friendliest.

**David A Pilley VK2AYD**  
Hon Secretary  
ar

**Sign up a new  
WIA member  
today — use  
the form on the  
reverse side of  
the AR Address  
Flysheet.**

## Divisional Notes

### VK2 Notes

*John Robinson VK2XY*

By the time you read this, the outcome of the Council elections for 1994-95 will be known to you. One can only hope, before the event, that reason and common sense prevails and the future of the Division for at least the next year is positive.

Members will have, I hope, read and digested the Annual Report and associated literature. All has not been well with the administration of the Division in the past, despite the "window dressing" lulling members into a state of disinterest, or perhaps apathy.

It is evident that for a Division of this size, professional management practices are necessary. The Supreme Court summons delivered just before last year's AGM caused two very good people, with sorely needed skills and experience, not to take up their positions.

The Annual Report gave some details of objectives for the Division. A change to the fee structure, for one, further work on policies and procedures for another, overhaul of the Articles of Association, and tentative budgets for 1994 and 1995 — something never previously given or contemplated by past Councils, at least in the past 25 years.

Management expertise available within the Division needs to be strengthened. This can be achieved perhaps by drawing on a pool of retired professionals for advice — even providing a little help with carrying out some tasks, maybe. Some consideration was given to this last year, but with all the "sabotage" and nonsense generated by some members opposing change in the Institute, it could not be followed up. This year might be another story.

### Censure

On 10 March, then Councillors Roger Henley VK2ZIG and Cesar Miranda VK2TCM sent a letter to all other Divisional Presidents and Secretaries, and WIA Federal President and Secretary. It was on Divisional letterhead and contained information about the result of the February EGM. The last paragraph urged other Divisions to instruct their Federal Councillors not to take any decisions "involving Roger Harrison's family companies". NSW Divisional letterhead was used without the knowledge or approval of Council or the Secretary and breaches the Corporations Law. The content has possible defamatory imputations, and other ramifications.

A reply from Federal President Kevin Olds and Federal Secretary Bruce Thorne confirmed that neither Roger Harrison nor his "family companies" were involved in any dealings with WIA Federal, nor being considered in any way. The suggestion implied in Henley and Miranda's letter was that there may be some impropriety on Roger's part as he was both a Divisional Councillor and a Federal Councillor. A strong rebuff to the inferences in Henley and Miranda's letter was received from VK4, who also questioned the letter's propriety. A letter from VK3 questioned its propriety, sought advice as to its official status and would ignore it if not official correspondence. It seems the other Divisions have treated their letter with the ignore it deserved.

As a result of their actions, and following advice from Divisional solicitor David Lewarne, at its 5 April meeting, Council passed this motion: "That this Council record its censure, in the strongest terms of the actions of Councillors Cesar Miranda and Roger Henley in composing and posting the letter (of 10 March 1994), in contravention of their duty as Directors of the Division, in contravention of their duty to the Council and the Division, in contravention of the interests of the Division, and in bringing the good name and reputation of the Division, the Secretary Roger Harrison, his family business and by association his wife Val Bergman-Harrison, into question and that this censure be conveyed to all recipients of their letter....be broadcast on the Division's Sunday broadcasts on 10 April 1994 and to all members via the VK2 Notes in May Amateur Radio magazine." Precipitous action based on wild rumour doesn't pay.

### VK3 Notes

*Barry Wilton VK3XV*

### Special Projects — Financial Assistance

In 1989 WIA Victoria commenced a program designed to ensure future financial stability, through professional management of our resources.

This has been achieved and Council is now committed to the upgrading of membership services.

It is difficult to attain this goal without significantly increasing labour costs, and suitably qualified volunteers are simply not available.

A greater level of participation by the membership will be necessary if we are

to benefit from the gains made during the past few years, and to facilitate and encourage this a "SPECIAL PROJECTS FUND" has been established.

This fund will be financed by utilising portion of our accumulated profits reserve.

WIA Victoria may assist with part, or in some instances full, financial support for specific projects or developmental work which is of direct benefit to WIA Victoria members and/or to the hobby of amateur radio in this state.

Applications for financial assistance from affiliated clubs, groups, and individual members will be considered on their merit by Council and will be required to meet specified criteria.

Further information and details of the criteria can be obtained by contacting the WIA Victoria Secretary — Manager.

### **New Federal Councillor**

Alan Noble VK3BBM, has been appointed as Federal Councillor for the Victorian Division.

Alan's appointment follows the retirement of Peter Maclellan VK3BWD, who has given the Division exceptional service for a number of years, and for which we are grateful.

The Division Council will continue to draw on Peter's experience and expertise, as he is expected to remain on the team for some time as an Alternate Councillor.

Bill Trigg VK3JTW, will also play a major role in the policy area, as an Alternate Councillor assisting Alan.

Alan has a broad depth of knowledge and has previously served as a Federal Councillor as well as being an ex President of the Division.

### **5/8 Wave — VK5 & VK8 Notes**

*Rowland Bruce VK5OU*

You no sooner pass on the latest information, and see it published, than the situation changes and you end up looking silly. Sorry, folks, but nevertheless I am happy to say that the Equipment Supplies Committee will be attending all general meetings after all. Thanks to the Elizabeth ARC for picking up this very valuable service to members.

On the subject of ERC, please check the address when ordering by mail. The Marden PO Box is now closed.

I said last month that the Clubs' Convention had been a success. Next year the Council is planning to repeat the exercise on the first or second weekend in March. At this year's meeting Kingsley VK5AKN offered his services as the Morse Practice Coordinator. Council has confirmed him in this position and I guess we offer him both our congratulations and thanks. It is great to see non-metro members able to offer their services to the Division.

On country matters, it is timely to remind amateurs that the Riverland Convention at Renmark is being held on 21 May.

Welcome to another new member, J Scheiffers VK5NJO.

The May general meeting will be a Buy and Sell, again. The five Tuesday months seem to be prevalent this year! The June meeting will feature Mark Spooner VK5AVQ presenting "Communications in Antarctica". Should be very interesting. On his recent visit to the frozen south Mark became the first amateur to .... well, why not come to the meeting and hear first hand?

Further to articles recently on the various examination officers and venues, it is worth noting that Adelaide Hills, Elizabeth, and North-East Clubs can accommodate candidates in wheelchairs.

Publications has run out of the 1994 Call Book, but don't panic — Ian has more on order.

### **VK7 Notes**

#### **"QRM" News From the Tasmanian Division**

*Robin L Harwood VK7RH*

The Annual General Meeting of the Tasmanian Division was held on 26 March 1994 at the Southern Branch Clubrooms on the Hobart Domain. There were

## **WIA News**

### **Standard Sought On Insulating Oil Hazard**

Oil-filled transformers and capacitors manufactured from the 1930s through the 1960s used oils containing polychlorinated biphenyls, or PCBs (not to be confused with printed circuit boards!).

PCBs were used for their good insulating properties and as a flame retardant, and were widely used around the world, including Australia, particularly in the power transmission industry.

Power factor correction capacitors, for example, widely used in fluorescent lighting installations in that era, used PCB-laced oils.

From the late 1960s and particularly the early 1970s, concerns over serious health risks associated with PCB oils brought

about a rapid decline in their use.

While active use of PCBs has been almost nil for some years, according to Standards Australia, the incidence of PCBs is still significant, owing to both unintentional contamination and residue from previous use of PCB oils. There are also many remaining devices filled with PCBs and yet to be drained, particularly in power supply and transmission applications.

Standards Australia has a committee, EL/8, which has developed standards on insulating oils, and is working on a new Australian standard for the measurement of PCB contamination in insulating oils.

There is currently no Australian standard which details appropriate methods for testing levels of PCB contamination in insulating oils,

and "acceptable" levels of PCBs permitted in given situations have not yet been set.

A joint Australian/New Zealand standard is to be developed aiming, among other things, to detect levels of PCB contamination down to one or two parts per million. A draft for public comment is timetabled to be ready late this year.

As many amateurs acquire, or may have acquired, equipment manufactured between the 1930s and early 1970s, components of which may use insulating oils containing PCBs (particularly oil-filled capacitors and transformers) the health hazards of PCBs and their safe disposal are issues of concern to the amateur community as well as the electrical engineering and manufacturing industry.

approximately 30 in attendance. Andrew VK7GL, the Divisional President, chaired the meeting. After the various reports were read, the following individuals were appointed to fill the following positions:

Patron	Col VK7LZ
QSL Bureau	Charles VK7PP
Federal Councillor	Jim VK7FJ
Broadcast Officer	John VK7JK
"QRM" Editor	Robin VK7RH
Hon Solicitor	Phil VK7ZAX
Awards Manager	Phil VK7PU
VK7 WICEN Co-ordinator	Tony VK7AX
IARUMS Co-ordinator	Robin VK7RH

There were two retirements from Divisional ranks, namely Andrew VK7KAP, as FTAC Representative, and Bob VK7NBF as Awards Manager. On behalf of the Tasmanian Division I would like to express our appreciation to both for their invaluable contribution to amateur radio in VK7. Andrew has stepped down to work and family commitments. Bob, who has done sterling work administering the Divisional Awards, particularly the famous "Tassie Devil Award", has decided to step aside due to ill health and we do sincerely hope that you will be back into full swing very quickly, Bob.

There was no need for an election for Divisional Council as the required number of nominations had been received. After the conclusion of the AGM the Divisional Council had a short session, and the office-holders were elected as follows:

President	Andrew VK7GL
Vice-Presidents	Barry VK7BE Phil VK7PU
Secretary	Ted VK7EB
Treasurer	Phil VK7PU
Assistant Secretary	Robin VK7RH
Assistant Treasurer	Tony VK7AX
Councillor	Bill VK7JWR
Councillor	John VK7JK

We would like to express our thanks to the retiring members of Council, Frank VK7ZMF, Clarrie VK7HC and especially Peter VK7ZPK for their invaluable contribution to the Tasmanian Division. Peter has been our Divisional Treasurer for many years and now finds it too difficult due to interstate work commitments to fulfil this role. I know that it will be a hard act to follow, but we will try our best.

The "Spirit of Tasmania" Award has at last been finalised after a few hiccups and should be soon dispatched to recipients. Thank you for being so patient but it was out of our control.

Congratulations to Tom VK7AL who celebrated the 60th anniversary of receiving his ham licence on 6 April. He has not been in the best of health of late, but still retains his interest in the hobby.

There are two concerns that worry your Divisional council at present. Firstly, is the

prospect of annual fees being levied on several Divisional Repeaters by the Site owners, eg CAA and/or National Transmission Authority. These, although reduced from commercial services, are still beyond the reach of the Division. This is being studied in detail to see what can be done. Secondly, the appearance of unlicensed operators on the Northwest coast using dual band handhelds to conduct questionable traffic. They have been noted using the VK7RMD UHF Repeater and have been challenged on-air. Not only have they antagonised the amateurs by their behaviour, but have also upset the HF and UHF CBRS users in the area. Reports have been sent to the appropriate authorities.

Don't forget that if you are interstate and wish to catch up with news from VK7, a 20 metre relay of VK7WI can be heard on 14.130 MHz at 0930 hours EAST. This is in addition to the Tuesday night

rebroadcast on 3.590 MHz at 1930 EAST, prior to the "Tassie Devil" Net. As well, the Northern Branch station has news from the Northern half of VK7, on the first, third and fourth Wednesdays of the month, also on 3.590 MHz from 1930 and 2000 EAST.

Meetings for the month of May are as follows:

Southern Branch — Wednesday 4th May 1994 at Domain Centre

Northwestern Branch — Tuesday 10th May at Penguin High School

Northern Branch — Wednesday 11th May at Launceston Institute of TAFE Alanvale campus, Block "C".

All commence at 7:30 pm.

In conclusion, if you have any news for inclusion please contact me at 52 Connaught Crescent, West Launceston, TAS 7250 or via VK7RH @ VK7BBS by the last Monday of the month.

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## How's DX

Stephen Pail VK2PS\*

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The big debate is on about the projected timing of the next solar minimum, the date at which the current Cycle 22 ends and Cycle 23 begins. The Australian IPS Radio and Space Services quotes four well known scientists who, as scientists usually do, agree to disagree on the timing of the ending of the present cycle.

Patrick McIntosh, a scientist at the Space Environment Laboratory in Boulder, USA, thinks that the date of the coming sunspot minimum will be in the last quarter of 1995, resulting in a 9 year length to the cycle. Peter Taylor, from the American Association of Variable Star Observers, thinks that the minimum should occur sometime during the first portion of 1996. According to this scenario, Cycle 22 will be the third shortest on record, about 9.5 years in length. Andre Koecklenbergh, from the Sunspot Index Data Centre in Belgium, quotes four possible dates, based on four different methods of approach to the problem. His predictions are for a minimum in August 1994, or April 1995 or December 1995 or finally in March 1996.

Richard Thompson, a scientist at IPS Radio and Space Services, says that some features of Cycle 22 suggest that the cycle is running faster than 10 years. The decline of Cycle 22 has been rapid and is between three and eight months ahead of the corresponding declines of Cycles 18, 19 and 21. This supports the idea of an early solar minimum in the first half of 1996. However, there is an outside

chance that it might occur even earlier, perhaps late 1995, giving Cycle 22 yet another distinction as one of the shortest on record.

## Cheyne Island — VK6CHI — IOTA OC-193

Mal VK6LC, the well known West Australian DXpeditioner, was on his seventh DXpedition between 16 and 23 of March 1994 for the Islands on the Air (IOTA) program. His target was Cheyne island (34° 35' 30" East and 118° 46' 30" South) off Cape Riche, approximately 100 km east-north-east of the City of Albany (in VK6) and about 2.5 km off the mainland between Bremer Bay and Albany. The island is 3 km long and 1 km wide.

It is a rock island uninhabited except for fairy penguins, seals, and various migratory birds. The island is a class "C" reserve and access is strictly restricted by the Department of Land and Conservation. The island lies close to the continental shelf and was used in the late 1920s and up to the early 1950s to spot whales as its highest point is about 30 metres above sea level. Cheyne Beach is a salmon netting area and the beach on the mainland is closed to the public during the salmon fishing season.

The official permit to land restricted the DXpedition's movements to a small beach section approximately 200 metres by 25 metres in area in the north west corner of the island. Mal and his co-partner in the

venture, Ron VK6LG, had a very busy time during the seven days on the rocky island. They had an operating tent of 4 x 4 metres and a sleeping tent of smaller dimension. The expedition operated in two shifts. Ron VK6LG was on the day shift which also included his early morning compulsory fishing for breakfast. Mal VK6LC was looking after the night shift. The station consisted of a TS-50 and a TS-130S transceiver with an FL2100Z linear amplifier, a three element monobander Yagi on 20 metres, a similar monobander on 15 metres, a multiband Butternut HF6 vertical antenna and two phased verticals on 40 metres. The antennas were tested prior to departure on Ron's farm and a proven configuration was worked out which resulted in both stations being on air simultaneously without QRM or intermodulation. Power was supplied by two 5 kVA petrol generators with voltage regulators.

The DXexpeditioners arrived on the island on 16 March and became active on 17 March. During the first three days they had poor openings to Europe and to the USA although conditions were better later. The main activity was on 40 metres and, despite the noisy band conditions, there were "dogpiles" some lasting six hours. Over 3000 QSOs were made, about 700 on 15 metres, 1300 on 20 metres and a little over 1000 on 40 metres.

The expedition worked all seven continents, over 100 countries and over 100 islands. There will be a special QSL card printed and the QSL Manager is Mai VK6LC. His address is M K Johnson, 9 Abinger Rd, Lynwood, WA 6317, Australia. Direct QSLing is the preferred option with an SASE for the VK contacts and an SAE and return postage for an overseas reply. Malcolm's DXpeditions are not sponsored and, to reply via the QSL bureau in VK6, cost 5 cents a card, an expensive proposition which will depend on availability of reserve funds.

### Pratas and other Taiwanese Islands

As indicated in March *Amateur Radio* there was a second brief operation from Pratas Island. The island has been recognised in the IOTA program as AS-110, however, the DXCC still has not decided whether it will recognise it as a new country or not? Some more information is needed according to DXAC sources and the indecision, it seems, has not pleased a number of amateur groups, especially the Taiwanese.

The operation was in low key from 21 March to 25 March using the callsign BV0ARL/BV9P. Four bands were active, mostly in the SSB mode with a sprinkling of CW activity. Two groups of mostly

Taiwanese operators were on their first DXpedition with very limited experience. Signals in Australia were very weak and only a handful of VKs were able to contact them as the Japanese amateurs, being much closer to the action, dominated the bandspace.

BV94ARL was active on 26/27 March during the CTARL annual general meeting from Taichung City, Taiwan. BOOK (note the new prefix) was operational from KIN-MEN Island from 2 to 5 April and finally BOOM was activated in April from Mazuo Island. QSL for all the above operations should be sent to CTARL, Box 93, Taipei 100, Taiwan, ROC.

### Solitary Island VK4CRR/2 — IOTA OC-194

Our "island hopper" DXers were active also on the east coast of Australia. Bill VK4CRR, the well known DXer, was active as VK4CRR/2 from Solitary Island which is off the mainland near the town of Woolgoolga in NSW, in the Pacific Ocean. Bill started around 1200 UTC on 30 March and, after about 4500 QSOs, he packed his gear and left for home around 2100 UTC on Easter Sunday (local time), 3 April. QSL to VK4CRR, with an SAE and return postage, at 26 Iron St, Gympie, QLD, 4570 Australia.

### Spratly Islands — 9MOA — IOTA AS-051

There was a short activity by a group of Malayan, Japanese and one UK amateur from Swallow Reef from 2 to 5 April. The signal was weak here in VK and poor propagation was not much of a help. They were active on all bands and modes including FM, RTTY, AMTOR, FACTOR and packet. QSL to JA9AG.

### Future DX Activity

- The proposed DXpedition by the Oklahoma DX Association and others to Cocos Island, TI9, has been cancelled. Allegedly some Costa Rican DXers have threatened to force their radio society to discredit any TI9 trip that uses a QSL manager located in any country other than Costa Rica.
- Trindade Island (SA-010). PY1UP will be active as PY0TUP from April to August on all bands, CW and SSB.
- If you need Nigeria on CW try to work DL9GMM/5N0 on the 10-80 metre bands. He is working barefoot into wire antennas. QSL to his home call. He will leave Nigeria at the end of the year.
- Fred Lukas K1EFI will be active from Bermuda as K1EFI/VP9 from May 12-20. QSL to his home call.
- Paul F6EXV is still active in Rwanda until the end of May, using the callsign 9X5DX. QSL to F2VX.

- The opening of the Channel Tunnel between France and the United Kingdom will be celebrated by two special event stations GBOCT and TM5TSM and will be active on 6 and 7 May.
- YI0CW is active on 18075 kHz around 1400 UTC. QSL to SP5AUC.
- YR0DCF celebrates the 625th anniversary of the founding of the City of Braila in Romania. QSL to Y04DCF.
- Richard AH6IO will operate from Johnston Island as AH6IO/KH3 from 4 to 9 May on all bands. QSL direct only to his home call.

### Interesting QSOs and QSL Information

- JH1KSB/JD1 — Fuku — 14042 — CW — 0920 — March. QSL via the Bureau.
- S51VO — Vlado — 14040 — CW — 0649 — March. QSL via the Bureau.
- 5R8DG — Geo — 14029 — CW — 1142 — Feb. QSL to F6FNU, Antoine Baldeck, BP14, F-91291 — Arpajon Cedex France.
- V44KAI — Joel — 7004 — CW — 1113 — Feb. QSL to Trevor J Liburd, Ponds Pasture, St Kitts, Caribbean.
- 5X1F — Sam — 14243 — SSB — 0651 March. QSL to WB1DQC, Peter R D

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33 Willoughby Cres, Gilmore ACT 2905  
Include disk size

Munroe, 41 Cheryl Ln, Holliston, MA-01746, USA.

- VP5JM — Jodie — 7083 — SSB — 1121 — March. QSL to W3HMK, Joe Arcure, Jr, PO Box 73, Edgemont, PA 19028, USA.
- FS5PL — Lionel — 14260 — SSB — 0629 — Apr. QSL to FG5BG, Georges Santalikan, 44 Rue Amedee, Fengarol, Brest, F-97130, Capesterre Belle Eau, Guadeloupe, France.
- KP2AD — Lubos — 3797 — SSB — 1017 — Apr. QSL to Lubos P Sudek, PO Box 2611, Charlotte Amalie, VI 00801, Virgin Islands, USA.
- XX9TZ — 21025 — CW — 2338 — Apr. QSL to KU9C, Steven M Wheatley, PO Box 5953, Parsippany, NJ 07054, USA.
- T97T — Nedim — 14186 — SSB — 0612 — Mar. QSL to SM5AQD, Hakan Erikson, Svanv 6, S-61162 Nykoping, Sweden.

### From Here There and Everywhere

- Tom, BA4AC has given some new information regarding the mainland China prefixes. There are eight kinds of prefixes. BY (Club stations), BZ (individual callsigns to be used from Club stations), BA, BD, and BG (individual callsigns to use at own station, first, second and third class licence respectively). BG is also allocated to listeners who have 4th class licences. BT is used for special stations and BW will be used for visitors. B is used on 144 MHz for Club and individual stations.
- Do you remember the first balloon crossing across Australia by Dick Smith in June 1993? Dick's story, well illustrated, has appeared in the Australian Geographic's April-June 1994 issue. The Wireless Institute of Australia and Australian radio amateurs were given special mention in the article, which is recommended for reading. Try your local library for a copy.
- Alan VK4AAR kindly supplied some information about the new structure of the Croatian prefixes and suffixes. The old Yugoslav prefixes have been changed as follows: YU2 became 9A2, YT2 is now 9A3 and 4N2 changed to 9A4. Club stations now have the 9A1 prefix, whilst the 9A6 and 9A7 prefix is used only on VHF bands. Croatia has kept all the old suffixes, therefore 4N2AA became 9A4AA. The situation is different in Slovenia. The old YT3, YU3 and YZ3 prefixes were replaced with the S5 prefix and completely new suffixes were allocated. The 1994 "International Callbook" carries the full range of the new Slovenian callsigns.

- If you want to be a successful DXer you have to start at an early age. Jason AB5LX had an exciting time in the middle of March working all the stations, among them many VKs and ZLs on the "222" net. The interesting part is not that Jason has an extra class licence, but that he is only 11 years old and handled the calls like an experienced "old salt".
- As with many of us, I also received a great number of SWL cards from the former Soviet Union in years gone by, and I always gave the sender of the cards the courtesy of replying with one of my cards. In March this year I received a letter postmarked 15 November 1993 from Alexey UA4-148-807 thanking me for the first DX card from Australia. Alexey is a high school student who wants to improve his English by having penfriends in many parts of the world (he wrote a quite satisfactory letter with the help of a dictionary). He asked me *"..could you find me a penfriend of my age (I am 16 years old) in your town. I would rather (prefer) a girl!"*. Well here is the challenge to readers of this column who have a family with teenagers. Wonderful opportunity to spread the goodwill and the international friendship around the world. I sincerely hope that at least one family will take up the challenge. You can reach Alexey by writing to Alexey Vlaskin, Box 2063, Penza, 440061, Russia.
- Are you still waiting for your card from Romeo for his Afghanistan DXpedition in Dec 1991? After many unsuccessful attempts I received my card from W8BLA (Verne E Fowler, 11315 Stroup Road, Roswell, Georgia, 30075-225 USA), who says that he is the QSL manager for the following DX stations: IS0RR, YA0RR (both expeditions), ZF1CQ, ZF2QP and ZF1A. He has no logs yet for the XY0RR expedition, but he is still trying to get it.
- Heard a VK2 operator conduct a lengthy "chit chat" QSO in the middle of the very busy DX band with a Sicilian station. The Italian was politely replying to all the questions about the weather, details of his station, his family and the local time but indicated that he was in a hurry to go to work. He also said that he would appreciate a QSL card from the VK2. This is the verbatim reply from the VK2 amateur *"Sorry OM I do not QSL, but anyhow I am interested in what kind of work you do". Any comment?*
- We know many stories about the expensive postage rates in Germany. Harald DJ3AS was kind enough to

send me the latest booklet about the German postage rates. The local letter in Germany costs DM1.00 which is approx 85 cents Australian. For mail outside Germany there are two delivery areas with two tariffs. One delivery area is called "Europe" (which includes all the CIS states of the former Soviet Union, all the French overseas departments, plus the Portuguese, Spanish and Danish dependencies). The other delivery area is "the rest of the World". Australia, NZ, USA, etc fall into this category. A standard overseas airmail letter up to 20 gm costs DM3.00 which is approx AUS\$2.54, therefore one US "greenstamp" is not enough for an airmail reply. The German Post Office will pay only a flat rate of DM2.00 for an IRC which value is at variance with the definition by the International Postal Union of an airmail reply postage. The answer is plain mathematics. If you want a direct airmail reply from Germany you have to send either two "greenstamps" or two IRCs. This is also the reason that DX QSL cards originating from Germany very often are posted from the neighbouring Czech Republic, where the postage is still cheaper.

- Richard VK1RJ advised me on behalf of Derrick VK1NR as follows: Derrick is being bothered by the activities of an alleged "slim" operating with the callsign SU1DX and giving Derrick's name and call as his QSL manager. As a result of this annoying action Derrick is receiving a fair amount of mail asking for QSL cards. Derrick's health is no longer 100% and he is concerned that he cannot respond to all these letters. The VK1 Division of the WIA tries to send a "negative" reply to the QSL requests. Please note VK1NR is not the QSL manager for anybody.
- Talking about QSL cards. Neil VK6NE Federal QSL Manager for the VK9 and VK0 call areas, advises that the following do not collect Bureau cards: VK9NS, VK9NL, VK9ND, VK9NI and VK9NP.
- Do you remember "Yvonne" the "slim" masquerading as VR8B? It appears that there is now a very good CW operator from the direction of east who calls herself "Chloe" and appears on the edge of the 14 MHz CW band as ZK2DX. Chloe sends many 88s to her QSO partners and asks that QSLs to be sent to the ZL QSL bureau. "Chloe" ignored calls from VK.
- It was reported that Eva PY2PE, who was a well known DXer especially in French circles, is now a silent key.
- George TU2QW closed his station on

2 April and is going back to France. QSL to F6EXQ.

- The following countries restrict forwarding QSLs only to members of that country's national amateur radio organisation: Egypt, France, Germany, Japan, Monaco, Morocco and Portugal.
- The new prefix of Penguin Islands, following their transfer to Namibia, is reported to be V59.
- Russia has discontinued issuing the RV7 prefix to foreign visitors. Only three calls were issued: RV7AA, RV7AB and RV7AD.
- The station T33CW, which was active in February and asking that QSL cards to be sent to OH3JA, was a pirate. Don't QSL.

- As reported by Fred K3ZO, Shane BV2FA, who is well known to VK/ZL DXers, is the editor of the Amateur Radio Magazine in Taiwan. He says that there are 1381 licensed amateurs in Taiwan. Remember 4-5 years back when there were only a few? There is only one class of licence, therefore all of them have HF privileges. The annual licence test will take place this year in April or May.

- The St Peter and St Paul Rocks DXpedition was terminated after a few days of operation because of generator trouble.

- The Bangladeshi S21Z series of callsigns which were reserved for foreign operators have already been used up so the authorities have begun to use the S21Y series to be issued to foreigners.

- Carlos TI2CF and Jose TI2JJP were active as TI9CF and TI9JJP for about one week ending on 20 March. TI2CF is a reliable QSLer, however many amateurs did not receive their card from TI9JJP's previous activity from Cocos Island. QSL routes: TI9CF via TI2CF and TI9JJP via TI2AOC.

- The rumour that the mainland Chinese radio amateurs are in "trouble" is nothing else but a rumour based on an incorrect interpretation of a news item by the Voice of America (VOA). It seems that a group of SWLs (you need a licence in China to be an SWL) and possibly a number of "illegal" CBers caused havoc on some radio channels and, as a consequence, there was some police action in Henan Province (BY6).

- It was reported that Achmed 7O1AA was active on various nets. His address was given as Achmed Nater, PO Box 4858, Aden, Yemen.

- Romeo was also reported as working on the 40 and 80 metre bands as 3V8RR causing big pile-ups in Europe.



**Aimee FK8FA and Michel FK8GO at the Gosford Field Day.**

- The Gosford Field Day is a meeting place not only for local and interstate amateurs, flea market bargain hunters, clubs, and the commercial communication outlets connected with amateur radio, but also a meeting place for those whose main activity is DXing on the HF-bands. It was therefore a real surprise and pleasure to meet two well known DXers from French Caledonia, Aimee FK8FA also known as FY4FC, F5NIY and VK4CTA and Michel FK8GO also known as FY4FM, F5NHL and VK4CTA. Aimee and Michel were en route for a holiday in Queensland and they decided to drop in at Wyong NSW to have a "good look" at the Gosford Field Day. Later they reported that their stay on the Gold Coast was a "rainy" one. Better luck next time.

### **QSLs Received**

4K4POL/A (2M via UA0KCL) — 9K2ZZ (2W via W8CNL) — E2OAT (2W via HS1HSJ) — 9Y4VU (2W via W3EVW) — UJ8JMM (3W via DL8WW) — YA0RR (3W via W8BLA) — SU2MT (3M op).

### **Thankyou**

Many thanks to those who kept me informed but especially to VK1FF, VK1RJ, VK3DSL, VK2KCP, VK2KFU, VK4AAR, VK6LC, FK8FA, FK8GO and W8BLA. A special word of thanks also to the following publications: QRZ DZ, The DX Bulletin, DX News Sheet and the W6GO/K6HHD list.

*\*PO Box 93, Dural, NSW 2158  
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## **International Amateur Radio Union Monitoring Service (IARUMS) — Intruder Watch**

*Gordon Loveday VK4KAL\**

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Did you know that as far back as the 1950s, the original concept of the Intruder Watch was put forward by the RSGB? So it may be time to revitalise the IW. This has happened to some degree in the USA with their AIRS (International Reporting System).

I hope you are aware that we must not take our privileges and rights for granted, a fact too often learned the hard way. They must always be vigilantly protected and guarded, lest they be usurped by others.

We are all aware of the WARC meetings, but did you know that "loop

holes" appear in the frequency allocations. Any government may assign any frequency to any radio service, so long as such stations operating "out of band" DO NOT CAUSE HARMFUL INTERFERENCE, to stations of other countries operating within the agreed regulations. This means that before any action can be taken against these "intruders" two conditions must be met: (a) Harmful interference must exist; and (b) Someone must complain.

It MUST be the users of the spectrum that complain, not simply a monitoring

service. The monitoring service coordinates these complaints with those of other regions. If there are no complaints from such users, the intruder may be considered to be operating quite legally. Now do you see why we must have a solid observer corps?

Our observations from all states in Australia are forwarded to the SMA for verification. They then take the necessary steps, as they see fit, to remove the offender. Also, the summary of observations goes to the Region 3 coordinator for inclusion in the worldwide monitoring system, which has its own method of dealing with offending administrations. A few may question the need for our vigilance but it would be far worse if we "rolled over and played dead".

How do we revitalise the Intruder Watch? The most sensible way seems to be a marked increase in observers. It should be the duty of all radio amateurs to maintain a close check on all forms of harmful interference on our bands, not just intruders. We welcome shortwave listeners (SWLs). We also would like to see more activity on the 10 metre band which, for some time now, has been invaded by CB operators from Thailand, from 28.060 to 29.450 MHz. These intruder signals come into my QTH at S 9+ on an 18 hour basis.

When did you last use 10 metres? It is not dead all the time. Have a listen and call CQ, do not go to sleep. I've had some rare surprises on a "dead" band. Maybe you deserve to lose it, but don't whine if you do!

The primary frequency list for May — 7048/9, 14094, 21314 kHz. I do not require input before the end of May.

Secondary frequencies you may like to look at include 7085, 18125, 14030, 14065, 14093, 14100, 14141.5, 14170.5, 14205, 14211, 14212, 14240, 14279.5, 14125. For those with SITOR (Mode F1BCN) 7000, 14078, 18101.5, 18167.7, 21131.7, 21432.

Check each day, at least once and more if possible, as the pattern of operation may change. The secondary frequencies are preferred ones, check each alternate day. If observed, include in the log sheet, otherwise keep for further observation, as with all other frequencies.

*\*Federal Intruder Watch Co-Ordinator, Freepost No 4  
Rubyvale QLD 4702 or VK4KAL@VK4UN-1*

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**Remember to leave  
a three second  
break between  
overs when using  
a repeater.**

## Packet World

Grant Willis VK5ZWI\*

### Introduction

Welcome to *Packet World*. Due to work commitments Warren VK1XWT has asked me to lend a hand in producing a packet radio column for *Amateur Radio* magazine. I hope that people find some of the things I intend to include over coming months useful and informative.

The world of packet radio is one of the fastest growing aspects of our hobby. More and more amateurs are dusting off their computers or terminals, obtaining packet modems and taking a look at what all those weird and wonderful beeps and gurgles are down around 144 and 147 MHz. The aim of this column is to provide a source of up to date news on the packet scene in Australia as well as occasional reference material useful to the packet operator. I also plan to produce a series of feature articles on various aspects of packet radio to complement the column over the coming year covering everything from setting up a station, to how AX.25 works, using a BBS station and setting up a TCP/IP network node and high speed links.

The world of packet radio is a very diverse and exciting one. I hope I can share with you some of the things that are happening and perhaps enthuse more people to take a look and become active in this mode. Packet, I believe, is one of the Amateur Operator's most powerful information tools available to us. Its correct use could prove a tremendous benefit to the hobby as a whole.

### Getting Started on Packet — Where to get Help

One good place to start finding out about packet radio is your local radio club. More often than not someone will be able to help you get started. In South Australia, to help this process along, a packet help guide called "The Hitch Hikers Guide to Packet Radio in South Australia (2nd Ed)" has been produced. This booklet is a

comprehensive guide to operating a packet radio station covering things like:

- Setting up a Packet Station
- Using a BBS station
- Sending and Receiving Packet Mail and Bulletins
- Retrieving Computer Programs and Information files
- Using various Packet Radio networking tools (eg Rose, NET/ROM, TCP/IP)
- An Introduction to Satellite Based Packet Radio.

Full descriptions of the commands commonly encountered are given as well as using various mail servers and databases.

While this booklet has a bias towards South Australian packet network conditions and services, most of the information is generic and could apply to anywhere in Australia. It is the ideal guide book or reference manual for packet operators. Copies are already beginning to circulate nationally through some of the major packet organisations in each state. If you would like to obtain a copy you can write to:

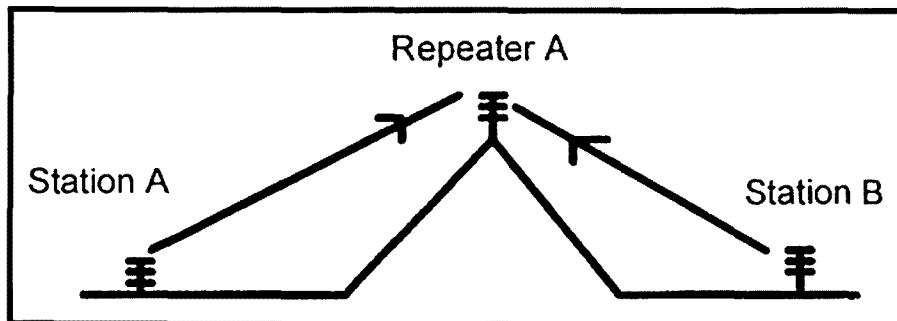
Hitch Hikers Guide to Packet Radio  
C/O South Coast ARC Inc  
PO Box 333

Morphett Vale, South Australia 5162

The cost is \$15 plus \$5 postage and packing. Cheques or Money Orders can be made payable to the South Coast Amateur Radio Club. There are bulk order discounts available for clubs. For more details on these contact the South Coast ARC at the above address.

### Packet Repeaters — a Different Approach

One of the major problems many packet repeaters face around the country is "hidden transmitter syndrome". This is the single most prominent cause for congestion on the simplex packet networks that currently exist around the





world. Worse still, many repeaters are often sited on high hills or mountains where they can hear over a wide area many stations that can't hear each other. The problem then arises that active stations can't detect when the channel is being used by someone else.

In the diagram this is demonstrated where station A and B are on opposite sides of a hill and can't hear each other but Repeater A can hear both of them. Station A and B can transmit at the same time because they won't know that the channel is in use. At the repeater what happens is that the STRONGEST signal wins and will be the signal the repeater acts on.

To overcome the problem, one solution is to have the repeater retransmit everything it hears simultaneously on another channel, exactly the same as a voice repeater. This can be further improved by having a pair of modems, one connected to the repeater receiver and one to the transmitter to decode the bits and regenerate these before sending them. This is done on a bit-by-bit basis, unlike a digipeater which performs this frame by frame. Connecting to someone through the repeater would look no different to connecting to them direct. You would not use a "Digipeater" type connection, nor even a NET/ROM or Rose connection to connect to someone who was on the same repeater as you were.

These repeaters also are able to have a TNC interfaced to them allowing them to be connected to other networks and links. You could talk to the repeater TNC for network facilities. The major advantage is that this type of repeater (known as a regenerative data repeater) removes all hidden transmitters. All stations access the repeater in "Simplex" mode with a transmit offset (the same as a voice repeater). The only station that has to transmit and receive at the same time is the repeater. This really is an effective way of delivering a wide area repeater system with none of the drawbacks of putting simplex packet repeaters on top of mountains or requiring users to be capable of full duplex. It is an even better idea for higher speed user services.

In Australia there are currently no packet repeaters operating this way, although the current 70 cm packet band plan does have support for such repeaters. More needs to be done, however, to ensure there is room to implement these regenerative repeaters in the 70 cm band. To that end I am preparing in conjunction with 5TAC and the WIA a proposal for extension of the packet band plans. More about this next month.

## The Packet Doctor

This small corner of the column is intended to be something of an information and help desk for newcomers to packet radio. I invite readers to send in particular packet related questions they might have. I intend to look over the questions received each month and answer some of these in the column. The address to send your queries to is:

The Packet Doctor  
C/O WIA SA Div  
GPO Box 1234  
Adelaide, SA 5001

## Conclusion

Well that's all for this month. I hope to have more news on packet radio from around the continent next issue. If your local packet group is experimenting with something or perhaps you might like to send in some news on what is happening on packet in your area then why not send it to me. I can be reached on packet radio via VK5ZWI @ VK5TTY.#ADL.#SA.AUS.OC

*C/o WIA SA Div, GPO Box 1234 Adelaide 5001*  
**ar**

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## Pounding Brass

*Stephen P Smith VK2SPS\**

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During the last couple of weeks my on-air operating has come to a screeching halt due to a number of projects I have been involved with. I am currently restoring a recently acquired Army MK5 Field Telephone/Morse set and a Japanese Navy key. Both are presently in bits down in the workshop but are coming along nicely.

Before I continue with this series I would like to take this opportunity and thank every one who contributed to it. The response to my appeals for help was terrific.

I will now deal with Morse code practice nets, catering for the beginner to advanced level. I have attempted to include all the Morse practice nets on frequency to date but, alas, with new clubs starting up and some clubs changing formats slightly, I apologise if you are not included.

I have received a number of interesting letters from readers requesting information on radio nets so I will explain basically what a net is and how it is run. It doesn't matter if it's SSB or CW, they usually follow the same guide lines (this may seem like sucking eggs to quite a few so please bear with me).

The definition of net as described in the Standard English Dictionary is *Broadcasting system of several stations linked together*. In layman's terms, it is a

number of amateur operators ranging in number from three (3) to over twenty (20), with the sole purpose of communicating with one another, whether it be local stations or DX. (Just imagine if everyone tried to communicate at the same time. "QRM Heaven".)

What's required is some sort of control. This is where the "Net Control Station" comes in, or NCS for short. His/her role is to control proceedings making sure nobody calls out of turn. Each net operates on a certain frequency at a particular time depending on the day or evening as the case may be.

"Check In" is a term used to join the net. When you have checked into the net the NCS will log your call and he may ask for your name which will be added to his list of operators. When the NCS is satisfied he has enough operators, he will commence proceedings. Depending on the net, the NCS will stop the proceedings every 10 minutes or so whilst asking for any more "Check Ins". He will normally do this until no more check ins are accepted.

It is a good idea, if you intend to join a net, to check in early. Sometimes the NCS reads out the operators call signs from his list, letting late comers to the net know who is on frequency. Depending on how many stations are on the net you may have to wait several minutes for your turn to transmit.

When your turn arrives the NCS will ask you to make a call. For example, you require to work a 5A station. You call this station and he acknowledges, then you both pass RS(T) and name, keeping it short so as the others on the net can have their go. When you have exchanged information you pass it back to the NCS who will then call in the next station on the list and so on until everyone has made their call.

If it is a local net the overs could be of longer duration. To leave the net all you have to do is get the attention of the NCS and tell him you are going "QRT". It's as easy as that.

We know the Q code is used in CW to cut down transmission time and to help with the passage of information during a contact. Well, there is a special Q-code used in net operations which I will mention in another series as the nets described here are Morse Practice Nets and don't contain the need for this special type of Q code. You should also be aware that not all nets operate the same way. For example, one particular net on 80 metres starts on SSB and switches to CW where a passage of about 5 minutes duration is sent, then switches back to SSB where the message is read back to all concerned and any corrections made.

This concludes net operations, I hope I have answered most of your questions. Remember, listen in on the net first and find out how it is run, how check ins, etc, take place. Then when you feel confident, give it a go. You will find the majority of nets will give you a helping hand when they know you are new to net operations.

Down to business, the first practice net we will look at is in VK6. The WIA WA Division presently run two practice nets. The first is on VK6RAP, which is the VHF net on 146.700 in the 2 metre band. VK6RAP is the channel 2 repeater in Perth. Its coverage is around 160-200 km under good conditions, and the session commences at 1930 hrs local time and runs for about 45 minutes.

The second session, which is VK6WIA, is run on a frequency of 3.555 MHz in the 80 metre band, also in the evening with a starting time of 1200 UTC. The sessions go to air every night of the week except Saturdays. The team consists of approximately 16 operators who donate their free time in the running of these nets which is on a rostered basis with two operators on each evening, one on HF and the other on VHF.

The session consists of pre-recorded tapes. The tapes consist of Morse text, each text having plain language and numbers or alpha numeric groups. These texts run for around 5-6 minutes with each text getting faster and so on. Generally the speed format is roughly Text 1 around 5 WPM, 2 around 7-8 WPM, 3 around 10-11 WPM, and so on up to around 16-18 WPM.

They also run about 5-6 texts on the VHF session and about 8 texts on the HF session. After each text has been sent the operator reads back on SSB what has been sent. They have over 150 pre-recorded tapes and each tape has two sides with each side containing a different set of texts.

They have an extensive library of recordings which are shuffled about between operators and the library is continually being added to.

At the end of each session, after the last text has been read out, the operator calls other operators, who have been listening, to call in on either the key or SSB and make comments on the session. The call back is a good way to gauge the number of novices using the session, and to answer any questions they might have.

These sessions also attract numerous full call operators who help and support novices on their way to full call status. Also it keeps their "ears in" if they can't get to a key often. Punctuation is added to text of 12 WPM and over to cater for more competent enthusiasts.

As far as the history of the broadcast

goes, I am led to believe it was started by Jack Sweeney and the session later continued by the late Cyril Rutledge VK6CR who, for many years, operated the session by himself.

Later the coordinator was Mal Johnson VK6LC who put the session into its present format with a roster of volunteers

who have successfully continued to present the program each night. Phil Bussanich VK6SO took over from Mal in 1990 as coordinator.

Next month we will look at South Australian and Victorian nets.

\*PO Box 361 Mona Vale NSW 2103  
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## Over to You — Members' Opinions

*All letters from members will be considered for publication, but must be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.*

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### Sixty Second Club

A few words on why a few VKs found it necessary to form a group known as the "60 Second Club", and its success.

Just on 20 years ago, on their retirement, Ed W6SHW (recent Silent Key) and Jack VK2APT began daily contacts on 14.237 MHz. Ed, with his outstanding signal, was copied all over VK and the Pacific Islands and our daily contacts became the target for many breakers. Some wanted just a report from Ed, while others wished to comment on the subject in hand.

A small group of regulars joined us each day and, as they included some of the biggest signals out of VK, this made our round table a target for breakers from the USA. Unfortunately, due to skip, frequently Ed could not copy the USA stations and he would be left in complete silence, like a shag on a rock!

At times the breakers would transmit continuously for 10 minutes or more. Not being the most patient bloke in the world, Ed would break in, say he was going to bed, and sign out. Not wishing to lose my old mate I suggested a few rules for our round table:

1. All stations must use VOX;
2. No transmission to be longer than 60 seconds; and
3. No breaker to be invited to join unless he could copy, and be copied by, all stations.

All regulars agreed to these conditions and a very interesting and smooth operation eventuated. "Your turn", "my turn", etc does not apply and, as we are all on VOX, if you have something to say you just break in. If anyone tends to "run off at the mouth", he is told to "put a sock in it"! Regular identification is strictly observed and it all makes for an enjoyable round table. Unfortunately, the Silent Key syndrome keeps depleting our numbers.

Jack Trevena VK2APT  
108 Ocean Parade  
Dalmeny NSW 2546

### Clerk Maxwell

I read with concern your editorial comment in *Amateur Radio* for April 1994 concerning the pioneers of wireless communication.

Perhaps in your future comments on this subject a reference to James Clerk Maxwell (1831-1879) would not go astray.

This 19th Century genius wrote in 1862 that "...by a comparison of the electro-magnetic experiments of M M Kohrausch and Weber with the velocity of light as found by M Fizeau, that the elasticity of the magnetic medium in air is the same as that of the luminiferous medium, if these two co-existent, co-extensive and equally elastic media are not rather one medium".

Clerk Maxwell went on to say that the agreement between the figures of Kohrausch and Weber and Fizeau was so good that "we can scarcely avoid the inference that light consists in the transverse undulations of the same medium which is the cause of electric and magnetic phenomena".

Maxwell read a memoir to the Royal Society in 1864 entitled "A Dynamical Theory of the Electro-Magnetic Field" and had twenty equations to prove it.

This surely was an incredible triumph for mathematics and the real start of the electronic age. I have found that very few younger people have ever heard of James Clerk Maxwell.

Ray Jones VK7RQ  
314 Clarence Street  
Howrah TAS 7018

*(My list of pioneer names was not meant to be exhaustive, Ray, Clerk Maxwell deserves a book all to himself! Ed)*

### A Plea for Unity

The Amateur Radio Service (we sometimes forget that it is a service!) has suffered at irregular intervals from dramatic and bitter infighting. The most spectacular brouhahas, certainly the most fascinating and sad to read about, were

during the growing up period of the late 1920s and the early 1930s when many amateurs, mostly apparently well meaning, became involved in disputes which achieved little except damage to our service and to old friendships. We are fortunate that our Institute was lucky enough to survive.

One of our Divisions seems to be undergoing a similar travail. Perhaps it is none of the business of members of other Divisions but, as a member of another Division and as an amateur who knows something of previous problems, I have

to make the obvious point that we do our Institute a sad disservice when we allow differences of philosophy or opinion to get out of hand.

I know no more of the present dispute than any other amateur who listens to the amateur bands. I am NOT, repeat NOT several times, writing as Federal Historian. I have deliberately refrained from writing this letter until after yesterday's annual general meeting in the Division concerned. But I make my faint cry of "enough" before we as a service make ourselves into a communications

laughing stock.

I hope that reason has prevailed and that this letter loses its immediate point. I am sure that there are amateurs doing their best to resolve the problems, but we have a sad history of several episodes of conflict which cost us the respect that our voluntary service earned us. Could we all perhaps learn a little from the present, hopefully past, kerfuffle.

**John Edmonds VK3ATG/AFU**  
**RMD 9320 Willowite Road**  
**Moriac VIC 3240.**  
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## QSLs from the WIA Collection

Ken Matchett VK3TL\* Honorary Curator WIA QSL Collection

### Fire Fighting and Amateur Radio

#### G4LFB

The originator of this card was indeed fortunate in gaining the initials of the London Fire Brigade, LFB, as part of his own call-sign. Crude hand operated pumps were used to fight the disastrous Great Fire of London in 1666 but they were still supported by bucket brigades. It was not until about 1780 that the first body of fire fighters was formed in England. These men were drawn from the Thames watermen, the fire service having been organised not by government but from the first formed fire insurance office.

Of course, fire fighting dates back long before this, history recording that China had a fire organisation as early as 4000 BC, that of Egypt dating from about 2000 BC. By about 40 BC the Romans are said to have had a highly efficient fire brigade under the *praefectus vigiliam* (prefect of the watch). However, it was the 19th Century that saw the development of steam-powered engines, the first probably

used in London in 1829. Transportation of the fire engine to the fire itself remained a problem which was partly solved at least by the development of the steam-propelled vehicle that did not have to be dragged to the fire. The QSL shows a fairly old extension ladder attached to the vehicle. Such ladders first appeared in the 1870s and were used as a rescue device. It was many years later that ladders became part of the fire-fighting operation.

#### YU1AFQ

Like so many QSL cards of a thematic nature, those of fire-fighters often display their interest or profession. The QSL displayed, YU1AFQ, celebrates the centenary of the voluntary Fire Brigade "Matica" in Lemur, a suburb of Belgrade. It is an attractive card showing a fireman in action. Space does not permit any detailed treatment but the collection also contains thematic cards showing fire-fighting activities and equipment, some historical, including JH4HNJ (Shimane, Japan), JA1OVF (Ibaraki, Japan showing its first horse-drawn steam pump dated 1899), K2FD (New Jersey, complete with

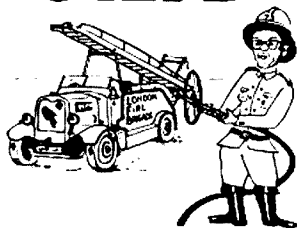
appropriate callsign suffix), W2CBS New York (a QSL from "Smoky Joe"), K6KZF (Santa Monica California firefighters showing an historic steam pump), G4WKD (Cheshire Fire Brigade showing horse-drawn fire vehicle), HB9CUK (Fire Brigade Zurich Airport), K1MRV (Chelsea, Mass. Fire Department), G0JWA (Derbyshire Fire Service Amateur Radio Society), ZS6AHE (Fire Station, Benoni, South Africa), WB8RPU (Delaware, Ohio Fire Department), K6THH (Oak View California showing a 1917 water tanker), JF1JLW (Toride Fireman Ham Club of Japan), HB9CXA (Bassersdorf, Switzerland) and several very fine QSLs from Japan showing fire stations, vehicles and equipment from several fire stations.

#### VKD, VK3EJ and 3EH

In Australia, it is recorded that grass fires were fought by military personnel very soon after the arrival of Phillip's first fleet. As the new colony grew and more substantial buildings were erected, the extinguishing of fires became a major concern of insurance companies. These provided buckets at certain stations

### AMATEUR RADIO STATION

# G4LFB



TO RADIO *VK1CB*  
 CONFIRMING OUR *144* MHz QSO  
 ON *8/11/86* AT *0815* GMT  
 UR CWIAMISSBIFM RST *5/4*  
 TCVR *TS940 14.722 ANT 2EQ. AD.*  
*400 WATTS 60 60 ft*  
 TNXPSE QSL DIRECT OR VIA RSGB  
*hood to char. VK1 again*  
*char. H4M cu B4GM 73 H4LFB*

OTH: 184 Thistle Grove, Welwyn Garden City, Herts. AL7 4AJ, England

73 Harold White




# YU1AFQ

100

1870 - 1970

DOBROVOLJNO  
 VATROGASNO DRUŠTVO  
 "MATICA" ZEMUN

180 Metres 1666 Kilo Cycles.  1887 Metres. 1590 Kilo Cycles.

**VKD** **VK3EJ**

Q.R.A. Eastern Hill. Portable.

Power Input 100 Watts. Power Input 100 Watts.

**METROPOLITAN FIRE BRIGADE, MELBOURNE.**

*Test. 1 PM DAILY. MON. SAT.*

Remarks *Your rpt would be appreciated.*  
*VK3EN. OP. in charge.*

primarily by insurance companies. Originally horse-drawn, the first motor vehicle came on to the roads from the Eastern Hill HQ in 1901. It was a steam motor car constructed by the Brigade's own workshop. However, the last horse belonging to the service was not sold until 1918. It is recognised that speed is an essential ingredient of any emergency service. It is therefore interesting to note that the Brigade was forced to apply for an exemption (which was reluctantly given) to the road rule then limiting the speed of vehicles to 12 miles an hour. Details of the history of the Metropolitan Fire Brigade (Melbourne) can be found in the book entitled *Life Under the Bells* by Sally Wilde (Longman-Cheshire 1991). Like transportation, efficient means of communication is regarded as an essential ingredient of any emergency

together with ladders and axes. Australia's oldest fire station, the No 1 Volunteer Fire company in the Haymarket, Sydney dates from 1857, but a system of volunteer fire fighters was in operation long before that date.

The 1884 Fire Brigades Bill that established the Metropolitan Fire Brigade was a great step in the development of an efficient service, finance being obtained from Government and municipal funds as well as from insurance companies. It is said that the NSW Board of Fire Commissioners is the largest centrally-controlled fire service in the world. Further details may be obtained from Colin Adrian's book entitled *Fighting Fire — a Century of Service 1884-1984*.

Melbourne's first recorded fire occurred in April 1838, a wattle and daub guard room off Collins Street. The fire was started by aboriginal prisoners as a novel way of escape which seems to have been successful. The next year the Melbourne Fire and Marine Insurance Co entered into the fire fighting business and provided leather buckets and axes to volunteers. It was up to another insurance company, the Cornwall Fire Insurance Co, to invest in an actual fire engine. Just before the gold rushes the Melbourne Fire Prevention Society was formed consisting of seven persons (the population of Melbourne was then less than 5040).

Following the English tradition all men working the water pumps were supplied with beer. At an enquiry held in 1885 the Brigade captain was asked about drinking on duty. He swore that he never supplied his men with alcoholic liquor but the publicans did! As in NSW a later development was the formation of suburban fire units, these being supported by contributions of insurance

**Metropolitan Fire Brigade Head Quarters, Eastern Hill, Melbourne, Victoria.**

*25/11/27*

Your Report received here at *25/11/27* Melb.M.T.

Audibility *3/5* Character *3/5* Modulation *3/5*

Transmitters *2/5* Watt Tubes *3/5* in Hartley Circuit.

Heising Modulation. In *20* Volt. C. *50* M.A.

Also Portable Station on 3EJ *J.W.* Tubes in Hartley Circuit.

R.A.C. from *3/5* Tubes. *1000* Volt. C. *50* M.A.

Receiver *3/5*

Antenna *87* ft. long *35* ft. high. Counterpoise *90* ft. long *12* ft. high.

Remarks *2/3 to 5 yr rpt which is appreciated.* *W Stock* O.I.C.

companies, municipal and government funds.

Melbourne's building boom of the 1880s gave rise to taller buildings which made the use of steam fire engines obligatory and saw the demise of the old manual pumps.

Apart from actually fighting fires there are many other aspects of this important service, not the least of which is fire prevention. Automatic sprinkler systems date back as early as 1885 as insurance companies offered discounts to firms installing them. Watch towers also became a common feature and several street fire alarms were installed. The need for telephone links also was another reason for the establishment of a full-time component of the service.

In May 1891 the Melbourne Fire Brigade replaced the brigades formed

service. In 1924 experiments with radio commenced in Melbourne. The best known pioneer in this field is Henry Pierce who, before joining the Brigade, had been employed at radio station 3AR. He was an active radio amateur, his call-sign being VK3EN. The first Brigade transmissions were on a wave length of 180 metres (frequency was hardly ever mentioned in the golden days of radio), transmitter power being 25 watts. (Later, permitted power was increased to 100 watts.)

The WIA collection is fortunate indeed in having the earliest QSL of the first radio station established at the Princes Hill HQ. The call is 3EH and the card is dated 22 November 1927. A Hartley circuit was used together with Heising modulation. An antenna 87 feet in length was used together with a counterpoise 90 feet long. The card shown, VKD/VK3EJ, was a later QSL from the BHQ, and is signed by

Henry Pierce, the radio operator in charge. The collection also contains several of Mr Pierce's own QSLs with the call-sign VK3EN. Like the Brigade HQ card it shows fire hose, axe and helmet.

During the Second World War a network of two-way communication was established between fire vehicles and base stations but it wasn't until 1971 that a control centre was established to coordinate calls to and from all stations and mobile units, and not until 1989 that a modern computer system could be installed.

Much of the history of fire fighting in Australia has dealt with metropolitan brigades. However, early "Bush Brigade Volunteers" in turn formed "Bush Fire Brigades" at about the turn of the century. These were the forerunners of the present Country Fire Authority (CFA) organisation almost all of whose members are volunteers. Peter VK3CFA is one such member fortunate enough to have been allocated that appropriate call-sign. Eric VK3ZHQ shows a tender used for rural fire fighting on his QSL card.

The same kind of organisational development can be found in other Australian States. History tells us that as early as 1827 in Tasmania seven prisoners were organised to form a fire unit but it wasn't until 1910 that the first permanent fire fighters were appointed. Tasmania can also boast of establishing Australia's first all-female fire unit. Queensland's first Brigade dates back to 1865 and was called the "City Volunteer Fire Brigade". In South Australia insurance companies' fire engines were operating as early as 1839, and in WA the Fire Brigade Board, which centralised administration, was founded in 1898. The NT saw the Darwin Fire Brigade established in 1941.

Nowadays all States and Territories are known for their efficient services provided to the public. Such a service coordinated by modern radio communication has, in times of emergency, been assisted by the radio amateurs' own voluntary emergency organisation, WICEN (Wireless Institute of Australia Civil Emergency Network). Like the volunteers of the Fire Fighting services, members of WICEN can be justifiably proud of their commitment to service to the public.

### Note From the Author

The collection is still in need of QSL cards. Those most in demand are rare DX cards, pre-war, pictorial and thematic cards and special issue (commemorative) QSLs. Please contact the author who is the Hon. Curator of the Collection.

### Thanks

The WIA would like to thank the following for their kind contribution of QSL

cards to the Collection (supplementary list):-

VK9NS, VK3AGW, VK6HD, VK3AHK, VK3DMS, VK4NJQ, VK4KYM, VK2ALG, VK4NRZ & VK4BRZ, VK2POA, G3HCC, VK3BG, VK5TL, VK3TE, W2MEL, VK2ALG, VK2UB and VK2QF.

Also the friends and relatives of the following "Silent Keys" (supplementary list):-

VK2YL, VK3WQ, VK2AHM (courtesy of VK3DMS), VK4KHZ and VK3YU.

*\*4 Sunrise Hill Road, Montrose VIC 3765  
Tel 03 728 5350*

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## Spotlight On SWLing

*Robin L. Harwood VK7RH\**

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Another bit of shortwave radio history came to an end on Sunday 27 March when the BBC World Service closed down its Pacific Service on 7150 kHz. This late afternoon regular was there when I commenced listening to shortwave in 1956 but had been on this frequency for many years prior to that. Fortunately London can still be heard on 9410, 12095 or 6195 kHz. I note that the "Beeb" is running Arabic on 7150 at 0600 now. It does seem strange that they have dropped this frequency for I am hearing the Skelton senders from 0500 till 0750 on 7230 kHz. Yet the programming isn't coming from Bush House, but from Tokyo, Japan. It is rather ironic that I hear Tokyo better via the UK site than direct from Japan at this time.

Incidentally, it has now been confirmed that there are big changes planned for 1995 for all BBC external services, especially with the 24 hour BBC World Service, which will be split up into six or seven regional services. For example, Asia, Africa, North and South America, the Middle East, Europe as well as Oceania will have programming closer to their local time zones. This will also allow the BBC to make better use of their senders to carry non-English programming to the same regional areas. There are also some programming alterations already under way ahead of these planned changes. For example the 30 minute "Newsdesk" at 0700 UTC has been axed, replaced by a 15 minute news bulletin. Also the number of presenters of "Newsdesk" has been cut back from two to one.

The BBC External Services have had approximately \$12 million slashed from this year's allocation by the Foreign and Commonwealth Office, which is responsible for their budgeting. As well, the BBC World TV Network Asian release also had a setback when Rupert

Murdoch's "Star" satellite TV network axed the BBC's use of a transponder, placing a Mandarin movie channel in its place. The "Star" satellite network based in Hong Kong has gained a foothold into Asia and recently several Asian governments have become nervous about BBC TV news broadcasts. Hence the real reason why "Star" decided to ditch the BBC from their output. They didn't want it to affect their other programming.

I believe, however, that they are hoping eventually to get a transponder on another satellite in the future to service the same region. Yet, the "Beeb" has bounced back by announcing the commencement of an Arabic TV service for 9 hours a day, hoping to extend this to 24 hours by the end of this year.

Several international broadcasters have been suffering severe jamming of late and have made some slight frequency adjustments as a result. The main culprit appears to be North Korea who seem to be jamming shortwave programming in that language, even if it is directed away from the Korean peninsula. The only exemption appears to be China Radio International and Radio Pyongyang itself. Even Radio Moscow's Korean broadcasts have been known to be occasionally jammed.

South Korea has been known to jam clandestine broadcasts emanating from the northern half of the Korean peninsula since the Korean War and there are very few shortwave sets on the market in South Korea while they are virtually non-existent in the north. Despite this, the North Koreans are still quite nervous about their citizens having access to international radio, particularly at this present time. Hence Korean broadcasts are jammed on shortwave no matter if they be for domestic consumption or for the sizeable worldwide Korean expatriate community.

You can hear the North Korean clandestine on 3480, 4120 or on 4457 kHz. It is there under the South Korean jamming and comes in from about 1000 UTC onwards. The North Korean jamming efforts can be heard on Radio Korea (Seoul) on 7180 or 9570 kHz in the evening hours. Even relay broadcasts via Radio Canada International in Sackville (NB) from Seoul directed to North America on 11715 and 9685 KHz suffer.

Radio Pyongyang in English can be heard from 1100 UTC on 9977 kHz. This gives the North Korean perspective, while Radio Korea can be heard in English from 1200 UTC on 7180 kHz or on 9685 at 1130 via RCI.

Well, that is all for this month. Until next time, the very best of listening and 73.

*\*54 Connaught Crescent, West Launceston TAS 7250  
VK7RH@VK7BBS.LTN.TAS.AUS.OC*

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## Technical Correspondence

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### Tuned Feeders and Multiband Antennas

Being a "tuned feeders" man from way back, I was very interested in the article "Tuned Feeders and Multiband Antennas" by Mr J H Gazard VK5JG, in the April issue of *Amateur Radio* magazine.

It is encouraging to see people developing their own theories. Full marks to Mr Gazard for original thinking, and the exercise of creative imagination. I found the exposition of his theory very plausible, until reaching the part where tuned feeders are seen to match the antenna at the feed point. An inner voice cried "Uh Oh! — No way!"

If this contention were indeed correct, the transmission line would have an SWR of 1:1. A wealth of accumulated evidence exists to show that this is not so. Further, there is no way an ATU at the sending end of a transmission line can affect the current distribution following it (except for amplitude); it cannot "move an impedance up the feeders" as described. All such a device can do is correct any reactance, and present the transmitter with the desired resistive load.

Looking further back, Mr Gazard claims that only the current due to toward power enters the antenna, the remainder being reflected at the feed point. This is in direct conflict with Kirchhoff's first Law, which states, in effect, that the current entering any point must be equal to the current leaving it. Adjacent ammeters, in the feeder and antenna, will be found to produce identical readings.

It is not explicitly stated, but the author gives the impression he subscribes to the commonly held misconception that "forward power is radiated; reflected power is wasted". Perhaps this is a good opportunity for comment. There is ample evidence from published SWR and loss data (eg ARRL Handbook) that this is not so. The reason for this apparent contradiction of the Law of Conservation of Energy is that reflected power is not dissipated as heat, but is re-reflected as forward power.

Figure 6 in the article calls for comment. It is stated that the feeder currents are unbalanced, due to the offset of the feed point. Again, the unfortunate Kirchhoff has been denied. Since the gap in the antenna is a small fraction of a wavelength, the immediately adjacent antenna currents will be virtually identical. So must the feeder currents be. (It is of interest to note that correct placement of

the feed point can, in fact, produce a perfect match. See Bill Roper's article "You Too Can Have an SWR of 1:1" published in the October 1990 issue of *Amateur Radio*.)

We should be grateful to Mr Gazard. From the point of view of the magazine, ANY article which arouses interest, provokes discussion and ultimately leads to enlightenment, is a GOOD article.

Graham Thornton VK3IY  
12 Alan Grove  
Woori Yallock VIC 3139

### Another Viewpoint

May I call attention to April 1994 *Amateur Radio*, page 16, Random Radiators by VK3AFW and VK3OM. The statement presented, apparently as a fact, is "...If you want to 'tune' the antenna then there is only one place to do it and that's at the antenna itself." Commenting on this, I submit the following.

On the same page reference is made to "...the guru of antenna matching, Walter Maxwell W2DU." Maxwell's book, *Reflections*, ARRL, 1990, Page 7-5 states "...system resonance compensates for the effect of the off-resonant condition of the antenna as we move around a given frequency band."

Page 13-4 states "The antenna tuner really does tune the antenna to resonance, in spite of opinions to the contrary of those who are unaware of the principles of conjugate matching. The tuner obtains the match, by which all reactances throughout

the entire antenna system are cancelled, including that of the off-resonant antenna, thereby tuning it to resonance."

Page 17-2 states "When a conjugate match is accomplished at any of the junctions in a system, all reactances in the system are cancelled, including any reactance in the load, This reaction cancellation establishes resonance in the entire system."

And page 19-5 of Maxwell's book, *Reflections*, states "To paraphrase from this NBS (National Bureau of Standards) definition, conjugate match ... according to the theorem, when a conjugate match is accomplished at any of the junctions in the system, any reactance appearing at any junction is cancelled by an equal and opposite reactance, which also includes any reactance appearing in the load, such as a nonresonant antenna. This reactance cancellation results in a net system reactance of zero, establishing resonance in the entire system. In this resonance condition the generator delivers its maximum available power to the load. This is why an antenna operated away from its natural resonant frequency is tuned to resonance by a matching network connected at the input to the transmission line." So says "...the guru of antenna matching, Walter Maxwell W2DU..."

Oh yes, I like the Z-match ATU. Mine is the one-coil version, QRP and covers 160 m through 10 m with no switching. It works just fine!

73 and Aloha.

Dean Manley KH6B  
2058 Ainaola Drive  
Hilo, Hawaii 96720  
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## Repeater Link

Will McGhie VK6UU\*

### FM 828-5

This is number 5 in the series of circuits for the FM 828 transceiver. At long last the first drawing of the transmitter. This circuit shows the reference oscillators (transmit frequency) and the phase modulator. There are 3 reference oscillator circuits to allow for 3 transmit channels. This signal is around 18 MHz but is not multiplied up to 2 metres. Rather, it is compared to a divided by 8 signal from the VCO which oscillates at the 2 metre output frequency. It is this signal that is amplified in the power amplifier.

The next circuit will show the Phase comparator where an error signal is produced to lock the VCO onto 8 times

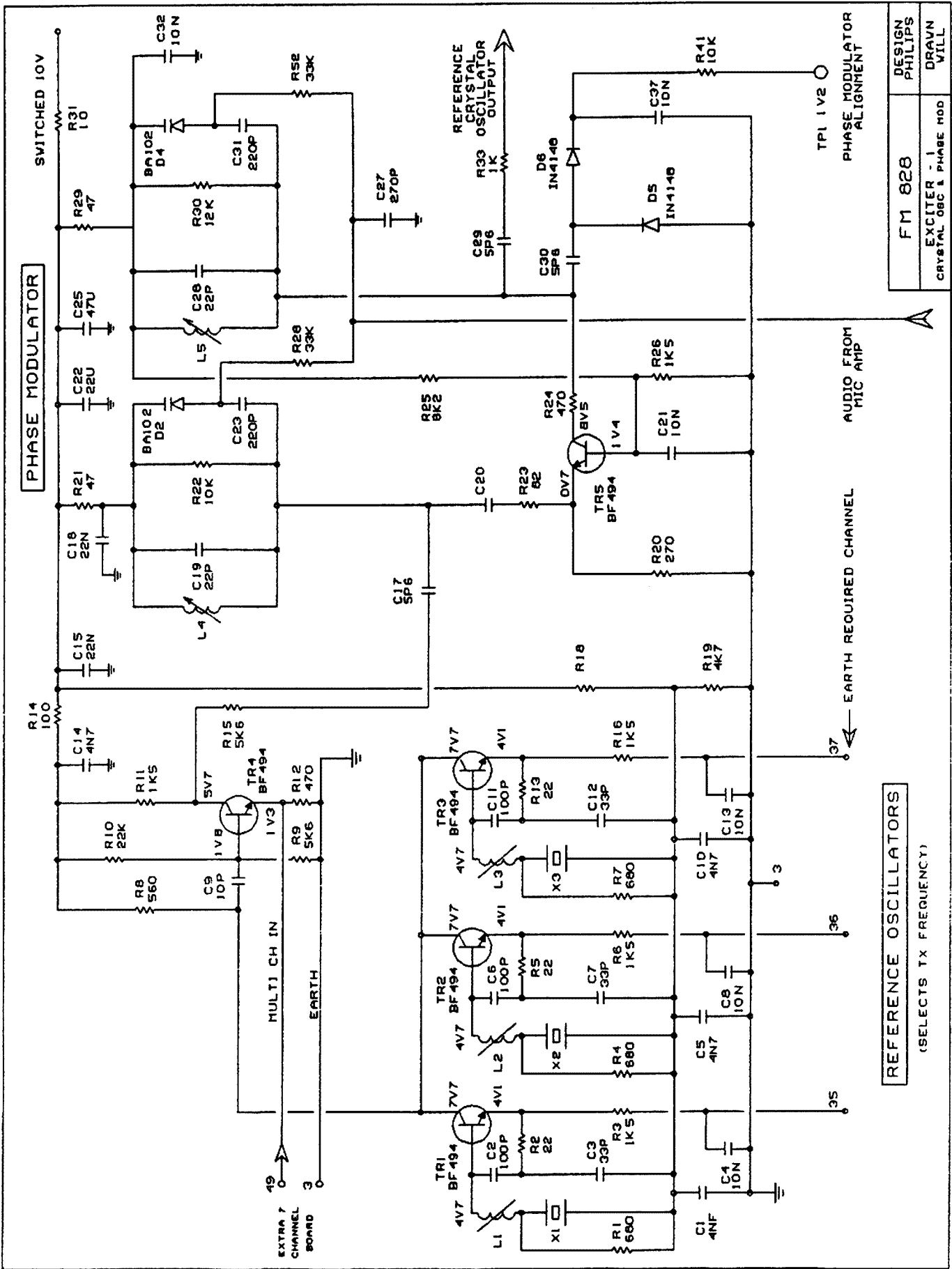
the crystal reference oscillator. This may seem a complicated way of doing it but, as there are no frequency multipliers in the transmitter chain, there can be no harmonic related signals from the 18 MHz crystal. The end result is a very clean transmitter signal with no spurious responses.

Note the test point 1 (TP1) which is for adjusting the phase modulator tuned circuits L4 and L5. Simply tune L4 and L5 for maximum voltage at TP1.

All these circuits were produced on the CAD program Draft Choice and are available via Packet radio in 7-Plus format.

\*21 Waterloo Cr Lesmurdjie 6076  
VK6UU@VK6BBS

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DESIGN	PHILIPS
EXCITER - 1	DRAWN
CRYSTAL OSC & PHASE MOD	WILL

FM 828
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REFERENCE OSCILLATORS (SELECTS TX FREQUENCY)
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PHASE MODULATOR ALIGNMENT
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# VHF/UHF An Expanding World

Eric Jamieson VK5LP\*

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All times are UTC

## Six metres

Judging from the lack of correspondence six metre operators have not been making many contacts. There are still contacts to be made with the JAs who appear quite often, especially the beacons! On 16/3 JAs were hearing the VK7 beacon and worked P29CW and VK4BRG. VK3s have been working some VK2s. **John VK4KK** said on 27/3 that, between 0130 and 0400, JA1 through to JA0 were very strong in Brisbane. John also said from 2-6/4 JA9AG will operate as 9M0AG and from 8-14/4 JA1UT will operate as E28DX. These notes will be too late to help but it will be interesting to be informed if anyone found them on the band.

**John VK4PU** writes confirming that JAs have been around. 2/3: JA7 beacon and several JAs working VK4s; 3/3: JAs to VK4, JA beacons 2 and 7, much TV crud on band from north. New JA0 beacon very strong. Best JA opening of recent times was on 27/2 with beacons 0, 2, 6 and 7 and stations on from practically all JA call areas.

On 31/3 between 0200 and 0900 there was much activity below 50 MHz from the Asian region, with many Korean telephone signals and TV. JA2 and 4 were weak but JA6 was strong indicating the best conditions were west of Japan. This was born out by the appearance of HL4KM, HL1MKF from Korea, XX9TDW from Macao but no signals from Hong Kong. Maybe their beacon is not working?

**Emil W3EP** from QST and "The World Above 50 MHz" reports that on 12-13/1 New Zealanders worked stations in Texas and possibly other areas. At 0000 on 12/1 W3IWU had a good Es opening and then double-hop Es to XE1J. N7JJS/5 also worked XE1J and was then surprised by a contact with ZL2TPY at 0046. It was curious that W3IWU was able to hear both ends of that contact but was unable to work the ZL himself. The opening lasted for about 45 minutes.

The next day about the same time Al WB5LUA and his son Brian N5QGH found ZLs on the band and worked ZL2TPY and ZL2KT between 0120 and 0135 as did a number of other Texans.

**Emil W3EP** goes on to say that these contacts are difficult to explain and this is his reasoning. *The contacts occurred at the time and season when F-layer propagation between the South Pacific and the southern tier of states would be*

*expected. The problem was that the solar flux was less than 100, well below what is normally necessary for the MUF to exceed 50 MHz. Es was reported at the same time, at least on 12/1, so multi-hop E skip cannot be ruled out. At more than 12,000 km an astounding five or six Es hops would have been required to reach Texas. A combination of the two propagation modes is another possible solution, especially in explaining how W3IWU was able to hear what was going on.*

So, once again, there is proof that you can never say six metres has died. If you are around at the right time then there are rewards for vigilant operators.

## From Europe

**Ted G4UPS** writes that Peter Taylor G8BCG, who will be remembered as H44PT from the Solomon Islands, advises that anyone requiring a card for an H44PT contact should write to: Peter Taylor, 10910 Kester Drive, Cupertino, CA 95014, USA. Peter has all his H44 logs with him.

**Ted** also says that the delay in receiving QSLs from 9K2WR in Kuwait was due to his log being on a computer disk which was seized under security regulations. The disk has been released so write to Mrs Amy Nutt, 5005 Willow Rock Way, Sacramento, CA. 95841-4912, USA.

1994 — despite the voices of gloom, conditions on the 6 m band have not been so bad — so writes **Ted G4UPS**. In January 1994 alone he had more than 70 QSOs with 13 countries. He said it took him years, from the permit days of 1983 to 1986, to work 13 countries!

On page 49 of the January 1994 issue of *Six News* from the UK Six Metre Group is a 50 MHz DXCC Standings List from the ARRL which was made available by Emil W3EP.

At the time of printing, Certificate 166 was the last to be issued and was awarded to Steve VK3OT. Steve was also mentioned as being the first to attain DXCC from the Oceania area. Other snippets of interest are:

K5FF has certificate number 1.  
JA4MBM at number 4 is the first Japanese recipient.

G3RFS and PA0ERA both hold Certificate 57!

The first certificate to Europe was G4AHN with number 29.

G6HCV was the first UK class "B" to reach DXCC status with number 137.

59 DXCCs have been awarded to Japan.

53 DXCCs have been awarded to Europe including 19 with a G prefix.

38 DXCCs have been awarded to the USA.

VE1YX is the only award to Canada! There are two awards to KH6.

Two awards only have gone to South America, PY5CC and ZP6CW.

No station is listed from Asia.

Certificates number 101, 103, 123, 143 and 163 have not been issued.

Three certificates have gone to Malta.

The DXCC Desk is currently turning around applications in 4-6 weeks.

FR/DJ3OS/G and YV0/W6JKV are currently the only 6 m QSLs that the ARRL is consistently rejecting.

## Aircraft Enhancement

**Fred Baker VK2YZU** confirms my six metre contact with him and says that he has now become interested in contacts using aircraft enhancement. His window for working into the eastern side of Melbourne is 2140 to 2150 +/- 5 minutes.

On 4/12 at 2150 he worked VK3XRS (144.200) with signals to 5x5 and nine times since and usually with two overs each time. On 14/1 2149 VK3TU 5x5, 2151 VK3BRZ 5x5; 15/1 2136 VK3DEM 5x3. Also on 9/4 Fred worked VK3XRS at 0335 on 6 metres and at 0339 on two metres, 5x2 (the latter contact, he reasoned, was probably due to ducting).

So another satisfied customer! My signal paths from Meningie are too far south for assistance from interstate flight paths. We have many daily small-aircraft movements from the Meningie Airport but they are of no value, particularly when flying at a height of 1000 feet or less!

**Chas VK3BRZ** writes that there has been a small reduction in participation but regulars are VKs 1BG, 1DO, 2ZAB, 3TU, 3AFW, 3BRZ, 3DUJ and 3XRS. Newcomer Brian VK3JG has worked Canberra on two metres.

On 5/3 VK3BRZ worked VK2ZAB on 432.1 at 5x1, 5x2. Distance is about 770 km. The VK3BRZ station on 70 cm consists of an IC-471H with 50 watts to 4x15-element DL6WU Yagis at 16 m with a GaAsFET pre-amp. Gordon VK2ZAB runs 300 watts to 4x22 element Yagis also with a GaAsFET pre-amp.

Chas said it was his first contact to Sydney on 70 cm and the contact was easier than on two metres. Signals to Canberra are also good but the path duration is shorter than on two metres.

Chas is also puzzled at the lack of reference to aircraft enhancement in overseas publications with only a passing reference in the *ARRL Handbook*. Can anyone inform him of foreign articles on the subject?



## Two metres and above

Chas VK3BRZ reports on the good opening between VK3 and VK5 on 13/3. Early in the evening VK5KAF on Kangaroo Island was worked by Melbourne stations on two metres. Earlier in the day VK5s had been working VK6s. VK5s ACY, DK and NY appeared on both 144 and 432 and worked VK3s ALZ, KWA, TU, TDV, FPG, AFW, ZQB and BRZ. Many signals were 5x9 both ways. VK3BRZ worked VK5NY on 6 metres at 5x4. There were no VK7s despite their beacon VK7RNT being copied at good strength by VK5NY. On 1296 Roger VK5NY worked VK3ALZ, VK3KWA and VK3TU.

Ron VK3AFW continues to work Andrew VK7XR, on two metres each week-day morning. At Ron's end the 380 km path is obstructed by a low ridge about one km distant. CW is the preferred mode with signals 519 and 529 on average. Tropo enhancement allows phone contacts and for four days at the beginning of March SSB QSO's were up to S7 with occasional deep fades in a 15 minute contact.

After several years of using 144.100 they are now using 144.080 and welcome breakers, especially from interstate. The QSOs commence around 2220 and end with a chat to Des VK3CY.

The VK7RNW beacon continues to provide reliable propagation indications and can be heard to 579 in Melbourne. VK5VF is the only other interstate beacon to be heard in Melbourne this year.

Ron said that overall two metres had not been favourable this year, the only recent contact of note being to Mick VK5ZDR on 9/2 with 5x5 signals both ways. However, he continues to work via aircraft enhancement and includes VK1BG and VK1DO as regulars in his log. He no longer hears Lyle VK2BE on 432 and 1296 as Lyle's path south has been ruined by a large block of flats erected next door to him!

My old friend AI VK5EK has launched himself into EME operation on two metres. Using 8 NBS Yagis and overall modest equipment he has had success working European stations. It is believed he may have antenna shielding problems looking the other way for US stations. Good luck!

Mark VK5EME advises of the concern being felt in Adelaide over the possible loss of the 2.3 GHz band to MDS. Two beacons and an ATV repeater operate on that band and, whilst there appears to be no immediate threat from MDS in Adelaide, the fact that other States are being affected is of concern, especially when long distance contacts are being sought. It seems three options are offered: turn off the beacons, accept interference, don't cause interference to MDS.

If amateurs are required to shift to 2.400 — 2.450 GHz then there will be a headache caused by the need for changes to the operating parameters of the many 2.3 GHz transverters, amplifiers, pre-amplifiers, etc which have been designed and sold for the VK5 Equipment Supply Committee. You just don't make an effective change of 50 to 100 MHz higher in frequency by simply plugging in another crystal!

At this stage I don't know enough about what the future holds for the band to comment any further but ahead the use of 2.3 GHz looks bleak.

Further to my notes of March I note from the New Zealand magazine *Break-In* that the tropo opening of 2/1 was probably one of the best ever between New Zealand and Australia. The duct lasted for 27 hours and in that time Bob ZL4AAA, situated on the northern end of the North Island, had worked more than 60 VK2s and VK4s on 144 MHz SSB and FM.

Signals were very strong and stable and it was possible to work across the Tasman using very low power. Bob was working FM stations using 20 watts and a 4 element Yagi at distances in excess of 1900 km and was elated to work VK2AWA who ran 300 mW to a groundplane. Bob's best DX was 2350 km. ZL1IU worked many VK2s and VK4s but also added VK5NC and VK5DK (which I reported in the February issue) for a distance of 3000 km.

### Best contact for the month

This should go to VK2AWA who used 300 mW to a groundplane antenna to work ZL4AAA on 144 MHz during the big tropo opening on 2/1/94. It is reported late but I did not have prior knowledge of the contact.

### Unusual contact

Further to Gordon VK2ZAB and his contact to New Zealand using Lord Howe Island as a reflector, a letter has arrived from Alan Williams VK7AM outlining an unusual 144.320 MHz contact he had operating as VK4AI from Brisbane.

Alan was one of the first VK4s to use SSB on two metres and over several days was interested to hear a weak signal south east of him. He and Roy VK4ZRM monitored the signal but, due to its weakness, were unable to complete a contact. Finally on 16 November 1966 from 1145 to 1253 UTC, VK4AI maintained an SSB contact with LA4ZH/MM who was operating from the oil tanker *Falkenberg*. The ship was 210 nautical miles NW of Lord Howe Island which was about halfway to Brisbane and opposite Coff's Harbour. Certainly an unusual contact with no apparent language barriers in view of the length of contact.

Aage LA4ZH/MM was using a Gonset 900A to a stacked pair of halo antennas 3/4 wavelength apart. He was the First Officer/Radio Operator and gave Alan 5x9 and received 5x5. Alan used a homebrew transverter to a QQVO-3/20A feeding a pair of 8 over 8 slot-fed Yagis at 17 m. A schedule was set for the next night but no contact resulted due to weak signals. No doubt the tanker travelled quite a distance in 24 hours. After a long wait a QSL card arrived via the Bureau. Of the contact Alan said, "It was still very much the good old AM days, no band plan, no FM or repeaters and everyone a gentleman."

Over the years I have heard of a number of MM contacts on VHF, one in fact using super-regenerative equipment on six metres! One wonders how the ship-board radio equipment fared. I suppose I could cap it all by saying I have a QSL for an alleged two metre contact I had with a station in Germany. Its a bit far from Meningie for me to work a DL on two metres and I have never been to Europe so you can draw your own conclusions!

Incidentally, Alan VK7AM was first licensed as G3IRS in 1949 at the age of fourteen. Then VS6DL in 1953, G3MHD in 1957. He worked eleven countries on two metres and received the *Short Wave Magazine* VHF Century Club Award for working 100 stations over 100 miles on AM by 1959. He commenced using SSB in 1963 with 25 watts from a QQVO-3/20A and a Nuvistor converter. Later he used a QQVO-6/40A at 160 watts output (poor thing, I hope you did not cough into the microphone!.5LP) to an 8 over 8 skeleton slot antenna. He favours this type of antenna due to its relatively high gain and wide bandwidth.

### Beacons

The 1994 edition of the RSGB *Amateur Radio Call Book* (courtesy Doug VK4OE) has six pages listing beacons commencing with the 1000 watt ERP GAM1 at Chelmsford UK on 3.821 MHz, then twelve more HF beacons before commencing a long list of 28 MHz beacons world wide. Then comes half a page of 50 MHz beacons, nine on 70 MHz, a full page each on 144, 432 and 1296, half a page on 2.3 GHz, five on 3.456 GHz, four on 5.76 GHz, twenty nine on 10 GHz and six on 24 GHz. All of the beacons on 144 and higher bands appear to be located in the UK or Europe.

As is the case in most call books, by the time they are in print quite a percentage of beacon listings are out of date and this list is no exception as there are many omissions from 50 MHz. The only Australian beacon listed is VK6RPH in Perth on 50.066 although we do have six listed on 28 MHz! Notwithstanding such

omissions, for anyone living in Europe and working 144 and above, the list would be very useful. On 144 there are three running 1000 watts ERP, one each at 1500 and 1800 watts and quite a collection between 100 and 700 watts. In Holland there is one running 400 watts on 2.3 GHz and one in the UK on 10.368 GHz runs 50 watts. On 24 GHz there are two running 8 watts. Interesting.

### Six Metre Standings List

The next list is due in the August issue and additions and alterations are required by 20 June please. Unless I am presented with very good reasons for continuing the Standings List, then the next list will be the last. Considerable thought and anguish have been part of the process in arriving at this decision, for the following reasons:

1. During the past two years about half the entries have not been upgraded. Why?
2. The list is inaccurate because of known high scores by a number of stations who have chosen not to be listed.
3. Although limited to just a few people, over the past five years the list appears to have been the source of petty squabbling with queries as to the authenticity of some contacts.
4. When the Standings List was introduced in 1980 I had envisaged and found it to be an interesting addition to my notes. For some years it was, then reason 3 crept in and I found myself being forced to closely scrutinise the entries and ask for photocopies etc.
5. One member has attained DXCC so it is likely that interest in attaining 100 countries will now wane, especially with F2 contacts disappearing as Cycle 22 ends.

### Errata

Ron VK3AFW drew my attention to the reference to the ZL Es opening on page 48 of the March issue as being 1992 and not 1993, he had included it as a comparison and I read it incorrectly. Sorry Ron.

### Closure

Closing with two thoughts for the month:

1. I'm scared! I don't know whether the world is full of smart men bluffing or imbeciles who mean it, and
2. Ever notice that the more modern and streamlined planes become, the more they resemble those paper arrows we made in primary school?

**73 from The Voice by the Lake**

\*PO Box 169 Meningie SA 5264  
FAX: 085 751 043

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Six metre operator JA1VOK and his eight year old son.

## What's New?

Bob Tait VK3UI

### New Range of Mobile Antennas

Adrian Fell VK2ZDF, a regular contributor to *Amateur Radio* magazine, advises that **Global Aerials** has released a range of 11 mobile antennas at a budget price.

The range covers all amateur bands from 3.5 to 30 MHz. Specials are also available on request.

These new, high performance mobile whips are designed to be mounted high on the vehicle, eg at roof or boot level. The slim, two piece construction is unobtrusive as the upper whip is not easily seen. The lower band units (3.5 to 14 MHz) are 2 metres in length and the higher frequency units are 1.7 metres long

with the exception of the 27 to 29.8 MHz whip which is also 2 metres long.

The low band whips use a matching capacitor in the feed line to obtain a low SWR.

For further information contact Adrian Fell at Global Aerials on (02) 899 8560 or write to PO Box 244, Baulkham Hills, NSW 2153.

### MFJ Antenna Tuner/Artificial Ground

MFJ has done it again with the release of their new MFJ-934 Antenna tuner/artificial ground. You get the best features of the MFJ-931 & MFJ-941E combined into one box. This compact unit measures 270

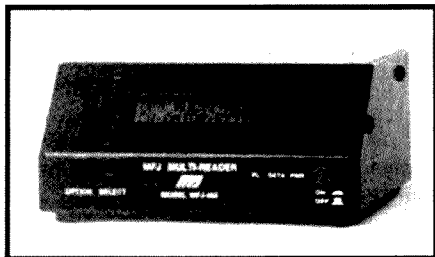


x 73 x 178 mm, small enough to fit into your luggage when you go portable. The MFJ-934 turns a random wire into an effective antenna that works; the ground matching control lets you switch in an inductance to bring an attached wire to a low impedance point to form an artificial ground.

Press a button and read the ground current or VSWR on a cross needle meter. The tuner covers 1.8 to 30 MHz and will tune random wire, balanced lines or coax; it is rated at 300 watts.

For further information contact DAYCOM on (03) 543 6444.

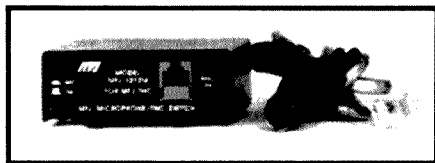
### MFJ-462 Multi Reader



Have you ever wondered what all those mysterious whistles, chirps and buzzing sounds are on the HF bands. Much of this is RTTY, ASCII, CW or AMTOR signals passing all sorts of interesting traffic. This unit decodes these signals and uses an LCD display to scroll the information across the screen. You don't need a computer or an interface program. Just plug the unit into your earphone jack and tune into these interesting modes. Turn your receiver into an eavesdropper and get the latest news of the world.

For further information contact DAYCOM on (03) 543 6444.

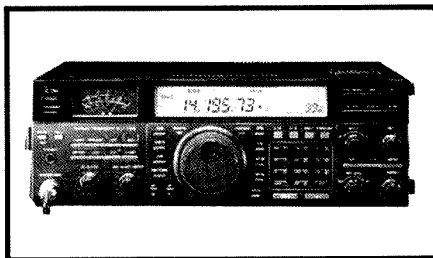
### MFJ's new TNC/MIC Switch MFJ-1272B/M



Switch between your TNC or microphone by simply pressing a button. No more unplugging cables to change modes; just plug in the pre-wired cable into your rig. Works with Kenwood, ICOM, Yaesu, Alinco and many others. For radios with 8 pin connectors order the "M" version. Plug in cables allow interface to any radio.

For further information contact DAYCOM on (03) 543 6444.

### ICOM IC-736 HF/50 MHz All Mode Transceiver

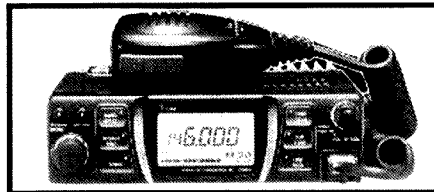


This new HF transceiver from ICOM covers all 9 HF ham bands, plus 50 MHz, and includes general coverage receive from 500 kHz to 29.995 MHz. The inbuilt antenna tuning unit has preset memories for each 100 kHz step.

Other features include an inbuilt switched mode power supply, power MOS-FETs providing full 100 W output on all bands including 50 MHz, double band stacking register, pass band tuning and a notch filter.

Supplies of this exciting new HF transceiver are in stock. For further information contact ICOM (Australia) Pty Ltd on (03) 529 7582, or Fax (03) 529 8485.

### ICOM IC-281H 144 MHz FM Transceiver



Some of the features in this exciting new 2 m mobile include the availability of an extra receive band, 430 — 440 MHz, which enables full duplex, cross band operation between the 2 m and 70 cm bands; a total of 60 regular memory channels plus 10 scratch pad memories; and a data jack which connects a TNC directly to the modulation circuit therefore enabling data speeds up to 9600 bps to be used.

The one-piece die-cast aluminium frame includes a large heat sink which provides increased stability for high duty cycle operation such as packet.

Supplies of this exciting new HF transceiver are in stock. For further information contact ICOM (Australia) Pty Ltd on (03) 529 7582, or Fax (03) 529 8485. ar

## Update

### Tuned feeders and Multiband Antennas

There are some errors in this article which was published on pages 8 and 9 of the April 1994 issue of *Amateur Radio*.

The topic is probably one of the most discussed, yet at the same time most misunderstood, areas of amateur radio theory, so it is not unusual to find even experienced authors occasionally running into problems in this field.

Regrettably, the errors concerned slipped through our normally stringent checking procedures. The editors have learnt from this experience.

The article states, beginning near the bottom of column one, "...the standing wave in the feeder can be moved up the feeder" and, further on, "...a low impedance point in the feeder has been brought up to the low impedance point in the antenna .... by using a matching device at the feeder input .... known as an antenna tuning unit (ATU)."

The facts are:

1. Once the antenna characteristics have been fixed, they alone determine the position of standing waves on the feeder;
2. The ATU has no effect on the feeder standing wave position; and

3. The ATU transforms the impedance at the feeder input to a value, at its own input, giving a better match to the transmitter output. Thus, by optimising the power transfer, it will change the amplitude of the standing waves on the feeder and antenna, BUT NOT THEIR POSITION!

Later in the article (the last paragraph) it is claimed "...if the length of antenna plus the length of each feeder wire is greater than a half-wavelength .... any combination .... will function as a workable antenna". This is partly true, but only because a larger antenna will be more efficient. In fact, antennas much less than a half-wavelength can be quite "workable".

This proviso about antenna plus feeder length is first mentioned near the end of column two, which then refers to "standing wave impedance" (a term of dubious meaning). The rest of the paragraph is ambiguous, and Fig 3 is also slightly in error.

For further comment on this matter, see Technical Correspondence elsewhere in this issue.

Bill Rice VK3ABP  
Editor  
ar

## Silent Keys

*Due to space demands obituaries should be no longer than 200 words.*

The WIA regrets to announce the recent passing of:-

H M	SMALL	VK2CAJ
L (Lindsay)	WEST	VK2EI
C N (Colin)	PARKINSON	VK2PC
F T (Frank)	HINE	VK2QL
R (Dick)	TILLEY	VK3AET
S (Stewart)	MCLEAN	VK3AIA
W (Bill)	BROWNHILL	VK3AWB
S D C	TOVEY	VK3BFN
A (Alan)	CAMPBELL-DRURY	VK3CD
H G	WILSON	VK4AGO
E F	FELL	VK4EF
B D	CLARK	VK4KU
C (Charlie)	O'BRIEN	VK4NC
J A	WRIGHT	VK7WJ

### Frank Hine VK2QL

Frank Hine VK2QL of Homebush in Sydney died on 26 March 1994 aged 86. He had been in poor health for about 18 months and was confined to a nursing home at the time of his death. His wife Marjorie died last year. He is survived by his daughter Susan and son Brian plus several grand children and great grand children.

Frank trained as a fitter and turner with the NSW railways but, following the depression of the early thirties, he found himself temporarily unemployed. He joined the RAAF in 1936 and rose to the rank of Flight Lieutenant before leaving in 1956. During WW2 he saw active service in New Guinea as well as in Darwin and Townsville. After the RAAF he was employed by Toohey's in Sydney in their Property Division with responsibility for management of licensed premises. He finally retired in 1973.

Frank will be remembered as an avid Morse code enthusiast. From receipt of his amateur radio licence in 1935 until ill health intervened in 1992 he was continuously active on the bands apart from the war years. His main interest was the chasing of rare DX and participation in HF band contests and similar activities. Over the years he collected many awards and trophies. To aid him in the use of the HF bands he studied in detail radio propagation and the vagaries of the ionosphere. Frank never needed high power to work the world — he used his knowledge of the bands to great effect and became one of the world's great DXers. He achieved worldwide acclaim for his prowess on the bands.

Many will remember Frank for the training in Morse code and operating procedures he gave during his time with RAAF signals. Many VKs owe their

present skills in CW operating to Frank's war-time training courses.

Frank was a staunch supporter of the WIA and for a time operated the VK2 QSL Bureau. He contributed regularly to the NSW Division Broadcasts with monthly reports on HF band propagation and conditions.

To his family and many friends we offer our sincere condolences.

Peter Naish VK2BPN

### Lindsay West VK2EI

Lindsay passed away peacefully in his sleep on 6 March 1994 at Banora Point in his 99th year.

He passed his amateur exam in 1936 and built all his AM gear. His Sunday morning record sessions on the broadcast band were very popular in Parkes where he lived.

He conducted a Radio Sales and Service shop in Parkes in the pre-war years and during the war was employed by AWA in Sydney testing radio equipment for the services. After the war he returned to Parkes to a small hobby farm for a few years and enjoyed amateur radio in his spare time.

Lindsay spent the remaining few years of his life in retirement at Banora Point with his wife Teresa who died a few years ago. The disability of deafness prevented

him from operating over the last few years.

To his son Wesley and daughter Sylvia and their families, Lindsay's friends extend their sympathy.

Herb Unger VK2UJ

### Alan Campbell-Drury VK3CD

Alan was born in Melbourne in 1918 and passed away peacefully on 11 March 1994 after a short illness. After leaving school he began his career as an apprentice photographer. At the outbreak of World War II Alan was trained by the Navy and served as a ship's telegraphist during the entire war. Alan joined the ANARE (Australian National Antarctic Research Expeditions) in 1947 and went on several expeditions to Antarctica as the radio operator and photographer (then VK3ACD).

In 1967 Alan left ANARE to become a lecturer in photography at Swinburne College, from where he retired in 1983 as a senior lecturer. In his retirement he enjoyed travelling to outback Australia and very much loved pursuing his hobbies of amateur radio and photography.

Alan will be remembered as a very competent CW operator and will be greatly missed by his family and friends. He was always a very friendly and generous man.

Rick Campbell-Drury (*I am currently undertaking studies to achieve the AOCPP and will be proud to take my father's callsign, VK3CD.*)

ar

**Master Henry Witherspoon is dragged kicking and screaming from the family piano, to be forced to undergo what he detests most: a lesson in CW ...**



## Band plans and Operating Habits

On each VHF band, a segment is set aside by gentlemen's agreement for narrow band modes and weak signal operation. Other segments are set aside for FM and repeaters, packet radio, etc. This band plan arrangement helps avoid mutual interference problems between otherwise incompatible modes and operations.

On the two metre band, the narrow band segment is from 144.000 to 144.600 MHz. Within this 600 kHz segment, the first 100 kHz — from 144.000 to 144.100 MHz — is for CW only operation. The segment between 144.100 and 144.600 MHz, is for CW, SSB and other narrow band modes. Within this segment is a sub-segment *exclusively* for beacons, between 144.400 and 144.600 MHz. There is, in addition, a "national SSB calling frequency" of 144.100 MHz. All this is part of a long-standing gentlemen's agreement that is adhered to nation wide.

Unfortunately, a growing number of wideband FM signals are appearing below 144.600 MHz, transgressing the band plan arrangement. FM stations have recently been heard using the national SSB calling frequency (144.100 MHz) and on other

frequencies below 144.600 MHz.

Two metre operators who use the segment below 144.600 MHz, particularly those in pursuit of weak signal and long distance work, find FM stations who operate on top of 2 m beacon frequencies particularly annoying. Just because the VK5 2 m beacon cannot be heard by an FM station in Sydney is not a good reason for that station to operate in the beacon segment, using the VK5 beacon frequency or a frequency adjacent to it.

Beacons serve a number of purposes: among other things, to provide an effective indicator of propagation "openings", and to provide a constant reference signal for operators in the beacon's "local" area. At considerable distances, a beacon's weak "scatter" signal provides a means of checking or measuring station system performance.

It's just as important to have beacon frequencies free of interference when a band's NOT open as when it is open.

Many volunteers have spent a lot of time and money (often, WIA members' money) constructing, installing and maintaining the twenty four 2 m beacons currently operating in Australia.

FM stations operating in the beacon segment completely negate the efforts of these people.

Last year, for example, there were occasions when FM operators in Sydney, for example, were actually having contacts on top of the Adelaide beacon frequency, when the beacon was clearly audible at the time! These stations declined to move, when asked.

There would be certain complaint if SSB or CW operators moved into the channelised FM/repeater segments and operated with impunity. Many such operators run considerable power to large antenna arrays and thus have high radiated power.

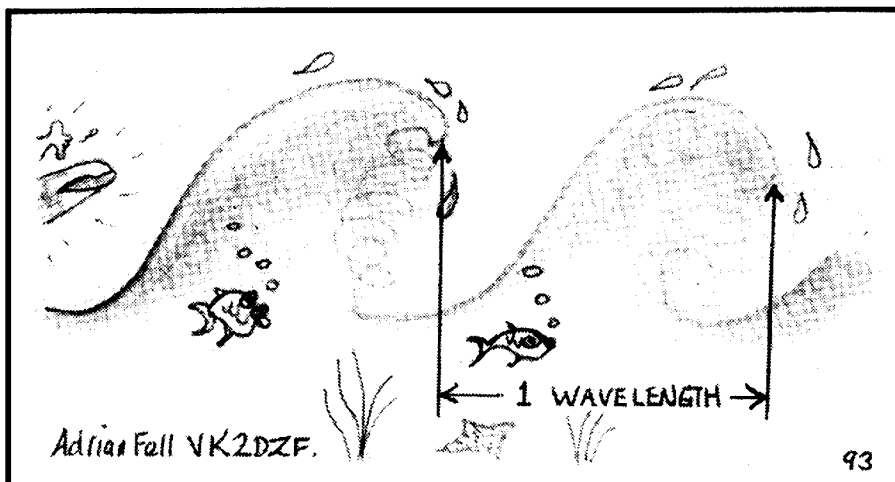
Courtesy and respect for the band plan, which preserves the rights of operators who pursue differing modes and operating practices, needs to be observed for the sake of peaceful coexistence.

The national 2 m band plan expressly reserves the region below 144.600 MHz for narrow band modes. The segment 144.600 to 145.700 is for general use, ALL modes. FM is not compatible with narrow band modes and weak signal operation.

The current Call Book provides full details on the 2 m band plan on page 21. All the band plans, from HF through to the SHF bands, are covered on pages 19 through 25.

Thanks to the NSW VHF-to-SHF DX Group for raising the issue.

**Don't buy stolen equipment — check the serial number against the WIA stolen equipment register first.**



# HF PREDICTIONS

Evan Jarman VK3ANI

## The Tables Explained

The tables provide estimates of signal strength for each hour of the UTC day for five of the bands between 7 and 28 MHz. The UTC hour is the first column; the second column lists the predicted MUF (maximum useable frequency); the third column the signal strength in dB relative to 1  $\mu$ V (dBU) at the MUF; the fourth column lists the "frequency of optimum travail" (FOT), or the optimum working frequency as it is more generally known.

The signal strengths are all shown in dB relative to a reference of 1  $\mu$ V in 50 Ohms at the receiver antenna input. The table below relates these figures to the amateur S-point "standard" where S9 is 50  $\mu$ V at the receiver's input and the S-meter scale is 6 dB per S-point.

$\mu$ V in 50 ohms	S-points	dB( $\mu$ V)
50.00	S9	34
25.00	S8	28
12.50	S7	22
6.25	S6	16
3.12	S5	10
1.56	S4	4

0.78	S3	2
0.39	S2	-8
0.20	S1	-14

The tables are generated by the GRAPH-DX program from FT Promotions, assuming 100 W transmitter power output, modest beam antennas (eg three element Yagi or cubical quad) and a short-term forecast of the sunspot number. Actual solar and geomagnetic activity will affect results observed.

The three regions cover stations within the following areas:

**VK EAST** The major part of NSW and Queensland.

**VK SOUTH** Southern-NSW, VK3, VK5 and VK7.

**VK WEST** The south-west of Western Australia.

Likewise, the overseas terminals cover substantial regions (eg "Europe" covers most of Western Europe and the UK).

The sunspot number used in these calculations is 32.5. The predicted value for June is 30.7.

## VK SOUTH — SOUTH PACIFIC

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	17.5	15	13.2	22	14	4	-10	-27
2	18.0	16	13.5	23	15	6	-8	-25
3	18.1	16	13.5	24	16	7	-7	-24
4	18.0	17	13.5	25	17	7	-8	-25
5	17.4	19	13.1	27	17	5	-11	-29
6	15.5	23	11.7	28	12	-3	-24	...
7	13.5	26	10.2	23	3	-16	...	...
8	11.8	28	8.9	16	-9	-33	...	...
9	10.6	30	7.9	8	-21	...	...	...
10	9.7	31	7.3	1	-32	...	...	...
11	9.1	32	6.7	-5	...	...	...	...
12	8.8	32	6.5	-8	...	...	...	...
13	8.5	32	6.3	-10	...	...	...	...
14	6.4	33	6.2	-12	...	...	...	...
15	8.4	33	6.2	-13	...	...	...	...
16	7.7	34	5.9	-20	...	...	...	...
17	7.5	34	5.8	-23	...	...	...	...
18	7.6	34	5.8	-23	...	...	...	...
19	7.7	32	5.9	-22	...	...	...	...
20	9.0	25	7.0	-6	...	...	...	...
21	11.4	20	8.8	9	-12	-35	...	...
22	13.9	17	10.7	16	2	-13	-35	...
23	15.7	16	12.0	19	9	-3	-21	...
24	16.7	16	12.7	21	12	1	-15	-33

## VK WEST — AFRICA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	8.9	25	-17	...	...	...	...	...
2	8.5	19	6.6	-1	-28	...	...	...
3	11.2	15	8.4	9	-6	-23	...	...
4	16.1	13	12.5	15	9	1	-13	-29
5	19.1	11	14.6	13	12	7	-2	-14
6	20.1	10	15.3	11	12	8	0	-10
7	20.5	9	15.3	10	12	8	0	-10
8	19.9	9	14.9	10	11	7	-1	-12
9	18.5	9	13.9	10	10	4	-5	-17
10	16.6	10	12.5	12	8	1	-11	-26
11	14.5	12	10.8	12	4	-6	-22	...
12	12.6	14	9.4	11	-1	-16	-37	...
13	11.1	18	8.2	9	-9	-28	...	...
14	10.2	23	7.6	7	-16	-38	...	...
15	9.9	27	7.3	6	-19	...	...	...
16	9.6	29	7.1	5	-22	...	...	...
17	9.4	30	7.1	4	-24	...	...	...
18	9.4	31	7.0	4	-25	...	...	...
19	9.4	31	7.0	4	-25	...	...	...
20	9.1	31	6.9	2	-28	...	...	...
21	8.6	32	6.6	-2	-34	...	...	...
22	8.7	32	6.7	-1	-33	...	...	...
23	9.6	31	7.3	6	-22	...	...	...
24	9.0	32	6.9	1	-29	...	...	...

## VK WEST — ASIA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	21.6	13	16.6	18	18	14	6	-4
2	22.2	13	17.0	16	18	14	7	-2
3	22.9	12	17.4	15	18	15	9	0
4	23.6	13	18.3	15	18	16	10	2
5	23.9	13	18.1	16	19	17	11	3
6	24.0	13	18.3	18	20	18	12	4
7	23.9	14	18.2	20	21	18	12	4
8	22.9	15	17.4	23	22	18	11	1
9	21.0	17	16.1	27	23	16	6	-6
10	18.7	19	14.2	31	21	11	-3	-19
11	16.5	20	12.6	28	14	1	-17	-38
12	14.5	22	11.0	23	5	-12	-36	...
13	13.2	23	10.0	18	-3	-24	...	...
14	12.6	24	9.5	15	-9	-32	...	...
15	12.1	24	9.1	12	-14	-39	...	...
16	11.7	24	8.9	10	-18	...	...	...
17	11.4	24	8.6	8	-21	...	...	...
18	11.4	25	8.7	7	-21	...	...	...
19	10.6	25	8.1	1	-31	...	...	...
20	9.2	26	7.1	-13	...	...	...	...
21	8.9	26	6.9	-18	...	...	...	...
22	11.5	20	8.7	7	-19	...	...	...
23	16.0	15	12.4	19	9	-2	-20	-39
24	19.8	14	15.3	20	17	11	0	-12

## VK EAST — AFRICA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	9.6	13	7.6	2	-17	-38	...	...
2	8.8	6	6.8	0	-18	-39	...	...
3	8.5	-2	6.6	-2	-19	-38	...	...
4	11.1	2	8.6	3	-5	-18	-37	...
5	15.8	6	12.2	6	5	-1	-12	-26
6	18.9	7	14.7	6	8	4	-4	-14
7	18.3	7	13.7	6	7	3	-5	-16
8	16.5	8	12.3	7	6	0	-10	-24
9	14.4	8	10.8	8	3	-5	-20	-37
10	12.5	8	9.3	7	-1	-13	-32	...
11	11.0	9	8.2	6	-7	-23	...	...
12	10.2	13	7.5	5	-12	-31	...	...
13	9.8	18	7.2	5	-16	-37	...	...
14	9.6	25	7.0	5	-20	...	...	...
15	9.4	28	6.9	4	-22	...	...	...
16	9.3	30	6.9	4	-23	...	...	...
17	9.3	30	6.9	4	-24	...	...	...
18	9.0	30	6.8	2	-27	...	...	...
19	8.5	31	6.5	-1	-32	...	...	...
20	8.6	31	6.6	0	-31	...	...	...
21	8.8	30	6.7	0	-31	...	...	...
22	8.5	30	6.6	-2	-34	...	...	...
23	8.2	24	6.4	-5	-36	...	...	...
24	8.4	16	6.6	-4	-30	...	...	...

## VK SOUTH — AFRICA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	9.5	21	7.2	5	-18	...	...	...
2	9.2	16	7.1	2	-19	...	...	...
3	11.8	14	8.8	10	-2	-17	-38	...
4	18.5	14	12.8	16	11	3	-9	-24
5	18.8	10	15.2	12	11	6	-3	-15
6	19.7	9	15.9	10	11	7	-1	-12
7	19.0	9	15.3	10	10	5	-3	-14
8	17.7	9	14.1	11	9	3	-7	-20
9	16.0	10	12.6	11	6	-1	-14	-30
10	14.0	10	11.0	10	2	-8	-25	...
11	12.2	11	9.5	8	-4	-18	-39	...
12	10.8	13	8.4	5	-11	-29	...	...
13	9.9	17	7.7	3	-18	-39	...	...
14	9.5	23	7.3	2	-24	...	...	...
15	9.3	26	7.1	1	-27	...	...	...
16	9.1	28	6.9	0	-29	...	...	...
17	8.9	29	8.8	-1	-32	...	...	...
18	8.8	30	6.8	-2	-34	...	...	...
19	8.6	30	6.7	-3	-36	...	...	...
20	8.4	30	6.5	-6	...	...	...	...
21	8.7	30	6.8	-3	-35	...	...	...
22	9.0	30	7.0	1	-29	...	...	...
23	8.7	30	6.8	-2	-34	...	...	...
24	8.9	25	7.0	0	-29	...	...	...

## VK EAST — EUROPE

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	11.6	-2	8.3	2	-1	-10	-25	...
2	11.4	-7	8.2	0	-2	-10	-23	...
3	12.2	-8	8.9	-2	-1	-7	-18	-32
4	13.8	-5	9.7	-4	0	-3	-11	-23
5	15.9	-2	11.6	-6	1	0	-6	-14
6	17.5	1	12.8	-7	1	2	-2	-9
7	18.3	3	13.4	-6	3	3	0	-7
8	18.8	5	13.8	-3	5	5	1	-6
9	18.2	6	13.9	1	6	4	-2	-11
10	16.1	7	12.2	5	6	1	-8	-21
11	14.1	7	10.7	7	3	-4	-18	-34
12	12.9	9	9.7	9	1	-10	-27	...
13	12.3	12	9.3	10	-1	-14	-33	...
14	11.7	16	8.9	11	-3	-18	...	...
15	11.4	19	8.6	11	-5	-23	...	...
16	11.1	25	8.4	13	-8	-28	...	...
17	11.1	27	8.4	13	-8	-29	...	...
18	10.4	29	7.9	10	-15	-39	...	...
19	9.0	30	7.0	0	-30	...	...	...
20	8.7	30	6.8	-2	-34	...	...	...
21	11.2	28	8.7	15	-7	-29	...	...
22	11.5	24	8.7	15	-2	-19	...	...
23	12.7	14	9.0	13	4	-8	-25	...
24	12.1	5	8.6	6	0	-10	-26	...

## VK EAST — ASIA

UTC	MUF	dBU	FOT	14.2	16.1	21.2	24.9	28.5
1	23.1	12	17.6	16	18	15	9	0
2	23.7	12	18.5	15	18	16	10	2
3	24.2	12	18.4	15	18	16	11	3
4	24.5	12	18.7	16	19	17	12	4
5	24.6	13	18.8	17	20	18	13	5
6	23.9	14	18.2	20	21	18	12	3
7								

VK EAST — EUROPE (Long Path)									
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9	
1	13.9	15	9.5	-9	15	8	-1	-14	
2	13.1	17	8.9	0	15	6	-4	-20	
3	12.5	19	8.5	10	16	5	-7	-25	
4	11.9	25	8.2	29	19	3	-11	-32	
5	11.7	23	8.1	24	17	2	-12	-33	
6	12.5	25	8.7	29	20	6	-7	-27	
7	14.2	23	9.9	26	23	12	0	-15	
8	12.6	19	9.6	10	16	5	-7	-25	
9	10.3	11	7.9	-4	8	-5	-19		
10	9.9	2	7.6	-20	4	-5	-18		
11	10.3	-3	7.6	-34	2	-5	-17		
12	10.0	-9	7.3	0	5	-15	-32		
13	9.9	-14	7.4	0	5	-14	-29		
14	9.8	-17	7.2	-1	-4	-12	-26		
15	9.7	-19	7.2	-1	-4	-11	-25		
16	9.5	-28	7.1	-6	-8	-16	-31		
17	8.9	-37	6.8	-11	-15	-25			
18	9.0	-37	6.9	-11	-15	-25			
19	10.5	-14	7.7	0	-2	-3	-10		
20	13.5	-3	10.4	0	-1	0	-4		
21	16.5	4	12.4	0	1	4	5		
22	16.7	9	11.4	0	7	9	5		
23	15.7	12	10.7	-32	12	9	4		
24	14.7	13	10.0	-19	13	9	1		

VK SOUTH — EUROPE (Long Path)									
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9	
1	13.1	12	9.1	-15	11	4	-5	-19	
2	12.4	15	8.6	0	13	3	-9	-26	
3	11.8	19	8.3	12	14	1	-13	-33	
4	11.4	24	8.0	27	16	-1	-17		
5	11.4	23	8.0	25	15	-1	-17		
6	12.1	25	8.6	29	18	3	-12		
7	13.5	23	9.7	26	21	9	-3		
8	12.4	18	9.7	12	14	0	-14		
9	11.0	12	8.5	0	7	-7	-22		
10	10.1	6	7.8	-11	3	-10	-25		
11	9.7	0	7.5	-22	1	-10	-25		
12	9.4	-6	7.2	-31	0	-9	-22		
13	9.3	-12	7.3	-39	0	-8	-19		
14	9.2	-16	7.0	0	-7	-17	-17		
15	9.1	-31	7.0	0	-8	-14	-24		
16	8.8	0	6.9	0	-16	-21	-33		
17	8.5	0	6.6	0	-24	-30			
18	8.7	0	6.8	0	-24	-28			
19	9.9	-30	7.6	0	-9	-11	-19		
20	12.3	-10	9.8	0	-3	-2	-7		
21	14.9	-2	11.9	0	-4	0	-3		
22	15.7	1	11.0	0	-2	3	0		
23	14.7	4	10.3	0	3	4	0		
24	13.8	8	9.6	-35	8	5	-2		

VK WEST — EUROPE (Long Path)									
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9	
1	12.7	2	8.9	3	0	-8	-21		
2	12.0	5	8.4	-24	5	-1	-11		
3	11.4	8	8.1	-11	7	-3	-15		
4	11.1	11	7.9	-2	7	-4	-18		
5	11.1	13	7.9	2	8	-4	-18		
6	11.8	15	8.5	5	11	-1	-14		
7	13.1	16	9.5	5	14	4	-7		
8	14.8	16	10.7	2	16	9	0		
9	14.1	13	11.6	-2	13	4	-6		
10	12.3	8	9.6	-15	6	-3	-14		
11	10.8	1	8.4	-25	1	-8	-20		
12	10.0	-6	7.7	-34	-1	-9	-21		
13	9.6	-12	7.3	0	-2	-9	-20		
14	9.3	-17	7.1	0	-3	-8	-18		
15	9.2	-30	7.2	0	-8	-13	-23		
16	9.1	0	6.9	0	-15	-19	-29		
17	9.0	0	6.9	0	-20	-24	-33		
18	8.8	0	6.8	0	-26	-29	-39		
19	8.4	0	6.5	0	-30	-34			
20	8.6	0	6.7	0	-24	-29			
21	9.8	-26	7.4	0	-7	-10	-18		
22	12.2	-10	9.7	0	-4	-4	-10		
23	14.3	-3	10.1	0	-4	-1	-5		
24	13.3	-1	9.4	0	0	0	-6		

VK EAST — MEDITERRANEAN									
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5	
1	13.0	6	9.9	7	2	-6	-20	-38	
2	13.1	1	9.9	2	1	-5	-18	-33	
3	16.2	3	12.0	-1	3	1	-6	-16	
4	20.6	6	15.5	-4	5	6	3	-3	
5	23.5	7	18.0	-7	5	7	6	1	
6	23.7	6	17.9	-7	4	7	5	0	
7	22.5	6	17.1	-6	5	6	4	-1	
8	20.6	6	15.6	-2	6	6	1	-5	
9	18.2	6	13.7	2	6	4	-3	-13	
10	16.0	7	12.1	5	5	0	-10	-23	
11	14.0	8	10.6	8	3	-5	-19	-36	
12	12.8	10	9.7	9	0	-11	-28		
13	12.3	15	9.2	12	0	-15	-35		
14	11.8	19	8.9	13	-2	-19			
15	11.5	25	8.8	15	-4	-23			
16	11.3	27	8.5	15	-6	-26			
17	11.3	28	8.6	15	-6	-26			
18	10.7	29	8.1	12	-11	-34			
19	9.5	30	7.3	5	-23				
20	9.3	30	7.2	3	-25				
21	11.6	28	8.7	17	-4	-24			
22	11.6	27	8.9	17	-1	-19			
23	11.3	19	8.7	12	-3	-19			
24	14.4	15	11.0	15	9	0	-14		

VK SOUTH — MEDITERRANEAN									
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5	
1	13.0	13	9.9	12	3	-7	-24		
2	12.9	5	9.7	6	1	-7	-22		
3	16.1	5	12.7	3	5	1	-7		
4	20.8	7	15.8	-1	7	7	3	-3	
5	22.3	6	16.7	-4	5	7	4	-1	
6	22.2	6	16.6	-5	5	8	3	-2	
7	21.5	5	16.1	-5	5	5	2	-3	
8	20.0	5	15.0	-2	5	5	0	-7	
9	18.0	5	13.5	0	5	3	-4	-14	
10	15.7	5	11.8	4	4	-1	-11	-25	
11	13.6	5	10.2	5	1	-7	-22	-39	
12	11.9	8	8.9	6	-3	-16	-36		
13	11.0	12	8.2	6	-8	-25			
14	10.6	17	7.9	7	-12	-31			
15	10.4	24	7.6	8	-15	-38			
16	10.2	26	7.5	7	-17				
17	10.2	28	7.5	8	-18				
18	10.1	29	7.6	8	-18				
19	9.9	29	7.5	6	-21				
20	9.3	29	7.1	2	-28				
21	9.4	29	7.2	2	-27				
22	10.6	29	8.2	12	-12	-35			
23	10.1	26	7.8	8	-16				
24	14.0	20	10.5	19	7	-5	-24		

VK WEST — MEDITERRANEAN									
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5	
1	12.0	19	9.1	13	-2	-18			
2	12.0	9	9.0	8	-3	-16			
3	14.8	7	11.7	6	4	-3	-15		
4	19.0	8	14.4	4	8	5	-1		
5	21.0	7	16.3	1	7	6	1	-6	
6	21.2	6	16.0	-1	6	6	1	-6	
7	21.2	6	16.0	-1	6	6	1	-6	
8	20.8	6	15.7	-1	6	5	0	-7	
9	19.6	6	14.9	1	6	4	-1	-10	
10	17.9	6	13.5	4	6	2	-6	-17	
11	15.7	7	11.8	7	4	-2	-14	-29	
12	13.7	9	10.4	8	1	-10	-27		
13	12.1	12	9.1	8	-5	-20			
14	11.1	16	8.4	7	-11	-31			
15	10.7	22	8.1	8	-15	-38			
16	10.4	25	7.8	6	-19				
17	10.2	26	7.7	5	-21				
18	10.1	28	7.6	5	-23				
19	10.1	28	7.6	5	-23				
20	9.6	28	7.3	2	-28				
21	8.8	29	6.7	-6					
22	8.6	29	6.7	-7					
23	10.5	27	7.9	8	-18				
24	10.3	27	7.9	8	-16				

VK EAST — USA/CARIBBEAN									
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5	
1	23.9	8	18.1	0	9	10	7	1	
2	23.4	11	18.3	7	13	10	9	3	
3	21.4	14	17.2	15	17	14	8	0	
4	19.5	17	15.6	22	19	14	5	-5	
5	18.3	21	14.5	29	22	14	2	-10	
6	17.4	24	13.8	32	22	13	0	-15	
7	16.6	25	13.5	32	21	10	-4	-20	
8	15.7	26	12.2	31	18	6	-10	-29	
9	14.4	26	10.9	26	11	-4	-24		
10	13.1	27	9.9	22	4	-12	-36		
11	12.5	27	9.4	20	1	-17			
12	11.9	28	8.9	18	-2	-22			
13	11.5	27	8.6	16	-5	-25			
14	11.3	21	8.5	12	-7	-26			
15	11.0	16	8.4	9	-7	-24			
16	10.5	8	8.0	4	-10	-26			
17	9.2	-3	7.1	-1	-15	-33			
18	8.9	-11	6.9	-2	-14	-30			
19	11.4	-5	8.9	0	-5	-15			
20	15.9	1							

# HAMADS

## TRADE ADS

- **AMIDON FERROMAGNETIC CORES:** For all RF applications. Send business size SASE for data/price to RJ & US Imports, PO Box 431, Kiama NSW 2533 (no enquiries at office please ... 14 Boanyo Ave Kiama). Agencies at: Geoff Wood Electronics, Sydney; Webb Electronics, Albany; Assoc TV Service, Hobart; Truscotts Electronic World, Melbourne.
- **WEATHER FAX programs for IBM XT/ATs** \*\*\* "RADFAX2" \$35-00, is a high resolution shortwave weatherfax, Morse and RTTY receiving program. Suitable for CGA, EGA, VGA and Hercules cards (state which). Needs SSB HF radio and RADFAX decoder. \*\*\* "SATFAX" \$45-00, is a NOAA, Meteor and GMS weather satellite picture receiving program. Needs EGA or VGA & WEATHER FAX PC card, + 137 MHz Receiver. \*\*\* "MAX-ISAT" \$75-00 is similar to SATFAX but needs 2 MB of expanded memory (EMS 3.6 or 4.0) and 1024 x 768 SVGA card. All programs are on 5.25" or 3.5" disks (state which) plus documentation, add \$3-00 postage. ONLY from M Delahunty, 42 Villiers St, New Farm QLD 4005. Ph (07) 358 2785.
- **REFLECTOMETER, SWR 50 MHz — 3.8 GHz, 50 ohms, machined heavy brass.** Silvered N-type connectors. Schottky diode-chip components. Single diode system. No swapping of connectors. \$150 Keith Searle VK4ZKS MSI 1877 Malanda QLD 4885 (070) 96 6149.

## FOR SALE ACT

- **CREATE RC5A-2 antenna rotator heavy duty worm drive in good condition suitable for large beam complete with 60 m of control cable \$470.** Len VK1LR (06) 287.0221 BH or (06) 281 6570 AH.

## FOR SALE NSW

- **ICOM 24AT VHF-UHF HT BP84 7.2 V cig lighter cable with noise-fil, leather case, mob bkt, inst manual, Aristo nicad batt charger, Diamond RHHT UHF-VHF ant, as new \$850.** Rolly VK2GFO (044) 64 3361.
- **PHILIPS 747 UHF transceivers** some already on 70 cm band others easily converted c/w mic and speaker \$50; A Couple are multi channel, manual available \$10. David VK2BDT QTHR (048) 21 5036.
- **VALVE PA amplifier** uses 4 807s British built wall mounted with separate tuner \$50; IC2G handheld 2 m hi-band VHF \$250; INFO-TECH M75 + M150 RTTY terminal \$80; HEATHKIT valve GDO with coils \$10. Doug VK2DHK QTHR (063) 31 7775 (018)200 871.
- **VENTURA Publisher V4.2 latest software** from Corel CD ROM format for Windows, ideal for newsletter or course notes. New unopened box \$250. Doug VK2KIQ QTHR (02) 587 4989 AH or (02) 411 9538 BH.

- **TS43X \$1350; FRA-7700 Pre-amp \$70; MULTI MK2 ATU \$70; AIRCRAFT scanner Rama \$150; MOBILE whips 40/20/15/28 \$75; YAESU YG221 digital display as new \$145; MOBILE mount TS440 \$35; FM kit 440/430 \$250.** J Jeffery VK2AJY (043) 93 2626.
- **DECEASED ESTATE OF VK2BII.** YAESU FT401 c/w mic & speaker \$200; YAESU FT401 c/w mic \$175; KW2000 c/w p/s & mic \$200; SIGNAL injector (ITK) \$20; WOODPECKER blander \$30; ACTIVE audio filter (ERC) \$80; UNIVERSAL VTVM \$30; SWR meter (new) \$25. All items ONO plus freight. R Price VK2AWQ (064) 94 1347.
- **COMPLETE Novice station FT7 xcvr 8I09076 h/mic mounting brkt FC700 ATU 3FO30350 both manuals orig cartons 13.8 V, 6 A PS all very good condn G5RV ant throw this over two trees you're on air.** Alf VK2API QTHR (044) 71 3493. Licensed Amateurs Only.
- **NALLY tower with rotator 5 El Yagi perfect elevated location for radio at Erina on 1/2 acre, fine home 4 beds big workshop \$375,000.** M Barry VK2IH QTHR (043) 67 7499.
- **YAESU FT-4700 dual band 2 m/70 cm mobile, front panel remote mounting kit (long 6 m cable version), brand new, never unpacked, save \$400 under current model new price, \$1200; SCANNER PRO 2022 210 channel desktop/mobile, mains + 12 V, in original packing, as new, cost \$550, sell \$360; STAN-DARD nicad battery pack CNB161 700 mAh, good condition, \$60. Can transport interstate if required.** Brad VK2KQH, day/early evening (02) 906 5855, otherwise 018 64 0377.
- **FR101 RECEIVER, digital, 160 m through 2 m, all filters and extras \$350 ONO** Ray VK2COX (02) 661 9316 AH.
- **SATELLITE Dish 2.2 m & Ku LNB \$175; INFO-TECH CW & RTTY encoder/decoder \$350.** Bob VK2CAN (02) 416 3727.
- **COLLINS Company KWM2 transceiver \$900.** Charles VK2ZR (02) 661 4143.
- **YAESU FT101E mint \$450; YAESU FRG7700 rcvr memory \$350; MFJ TUNER/PRE new \$190; TOKYO HC500 ATU \$150; MINT Kenwood TM701A VHF/UHF mobile \$650; YAESU FT212RH 2 m mobile new \$499; TELEREADER CWR880 \$250 mint.** Harley VK2AHD (069) 21 1004.
- **TELREX Antenna monarch six elements unique patented balun, brand new, imported direct any reasonable offer accepted from WIA members.** Leo VK2NHT QTHR (02) 484 1389.
- **DECEASED ESTATE VK2QL.** KENWOOD TS930S HF transceiver with AT930 auto ATU \$1500; UNIDEN 2020 HF transceiver \$350; HYGAIN RF550A combined wattmeter and aerial switch \$75. Peter VK2BPN (02) 871 2971.
- **EXPLORER 70 cm 40 channel transceiver with repeater option excellent condition serial no. 6300338 \$150.** Peter VK2BEU QTHR (02) 872 3381.

## FOR SALE VIC

- **MONITOR ex Microbee computer, 30 cm screen, green, phosphor CRT, input phono pin jacks, 75 ohm or higher impedance reasonable condition.** Best offer. Paul VK3NFJ QTHR (03) 803 2982.
- **ICOM IC751 HF c/w workshop manual \$1600; IC730 HF c/w BPT filter \$600; IC255A 2 m 25 watt \$300, all equipment with orig packaging and instruction manuals.** David VK3DPM QTHR (03) 598 1015.
- **YAESU FT101B HF transceiver VGC 240 V and 12 V, any test \$400.** Ken VK3NJ QTHR (03) 561 4124.
- **FT101B Transceiver modified to cover all WARC bands, remote VFO, remote speaker, external preamp covering 14-30 MHz, handbook and copy of service manual, three spare sets of valves \$600 ONO** Allen VK3SM (03) 386 4406.
- **ALINCO Hand held, TX 144-148 MHz RX 136-176 MHz, 20 memory, band scan, memory scan, spare battery, charger, leather case, car bracket, 2 years old \$360.** Kerry VK3KFC (059) 96 3580.
- **AMERITRON AL811X linear amp unused complete with tubes \$950.** Stan VK3VJQ (051) 55 3475.
- **VERTICAL Antenna 5 band Nagara V-5JR GC \$60.** David VK3DNG QTHR (03) 859 4698.
- **COLLINS 75S3 receiver and 32S1 transmitter both in EC, \$650 lot.** Rob VK3JE (060) 37 1262.
- **HONDA portable electric generator model EM300 output 240 V 50/60 Hz 200/250 VA or 12 VDC 100 W 4 stroke uses lead free petrol very quiet. User and service manual included as new \$450.** Ray VK3JI QTHR.
- **FV-707DM remote VFO suits FT-707 \$250; STEP down transformer 240-110 20 A \$150.** Ron VK3AEO (03) 707 3405.

## FOR SALE OLD

- **YAESU FT75B txcvr s/n 50724Y FP-75B AC power supply, FV50C ext VFO instruction manual, "golden oldie" operating but needs alignment \$100. Lot plus freight.** DICK Smith 4-way coax switch \$50 plus freight. Ron VK4BF QTHR (077) 71 5802.
- **ESTATE OF EVAN FELL.** Tender transformers, capacitors variable HI-V, inductors variable fixed, receivers, telephones, test gear, transmitting valves, magazines books. No military radios. Send 85c stamps. Contact Peter Hadgraft, 17 Paxton St, Holland Park Qld 4121, AH (07) 397 3751.
- **ICOM IC251A all mode transceiver good condition, no handbook mic included \$500.** Glenn VK4TZL (071) 28 3827. Lic amateurs only.
- **5 ELE Triband yagi \$250; DAIWA DR7500 rotator and DC7001A control \$200.** All items plus freight and include papers. Alan VK4AAR (018) 45 7691.



**FOR SALE SA**

● **MAGAZINES**, Amateur Radio Action (24) Vol 1-9, Electronic Aust (97) 1970-93, Amateur Radio (171) 1979-93. Rex VK5ARV (08) 381 5676.

**WANTED ACT**

● **TEN-TEC** Paragon or OMNI V. Consider Corsair. Must be excellent condition. Richard VK1RJ (06) 258 1228 AH.

**WANTED NSW**

- **FT-101B** or **FT-101E** in good working condition with manual and spare valves an advantage all offers considered. Robert VK2GZ QTHR (069) 62 3576.
- **DIP** meter, function generator; **MINILAB** RF signal generator. Ian VK2CIB (02) 772 8213 BH.
- **MONTH** and **Year** issue of AR that included modification to 530S to correct intermittent fault of digital read out and signal variation. Article by VK station. Garnet VK2CGF QTHR (065) 51 0767.
- **WOULD** anyone have a couple of two metre cavities even one from two people would be good. A fair price please. A Walsh VK2TBW Phone (048) 61 2092 or fax (048) 61 1536 anytime.

**WANTED VIC**

● **FRIENDLY** farmer/family with reasonable sized property who would be kind enough to give an opportunity to family of five to camp at farthest corner of their property through school holidays. Thomas VK3HH (03) 547 0910.

- **FT225** multi mode 2 m transceiver in good condition. Also **FTV901** transceiver. John VK3ATQ (03) 542 2854.
- **ICOM** AG-35 70 cm Pre-Amp also a **KR-5400** or **KR-500** rotator for satellite work. Paul VK3EPD (059) 83 1771.
- **FM828E** or similar for conversion to 6 m, also **PRC-25** military **TXRX**. Damien VK3CDI (054) 27 3121.

**WANTED QLD**

- **NUVISTOR** type 8056. Trevor VK4ATS QTHR (07) 265 4974.
- **CIRCUIT** diagram or photocopy of workshop manual for Crammond HF marine transceiver model **CSB150**, costs repaid. Geoff VK4ZGF QTHR (071) 22 1368 AH.

**WANTED SA**

- **FOR** copying or copy of handbook for **AWA** distortion and noise meter model **3A56068**. Yuri VK5ZYS QTHR (08) 47 0537.

**MISCELLANEOUS**

- **PLEASE SEND** your donation of **QSL** cards, old or new, to the Hon Curator of **WIA QSL** Collection, 4 Sunrise Hill Road, Montrose Vic 3765, Tel (03) 728 5350. Let us save something for the future.
- **HOME BREW** COMPETITION open to all, cash prizes, Moorabbin District Radio Club Hamfest. Saturday, 14 May at Brentwood Secondary College, Glen Waverley, Map Ref

71-C-7. Competition details from David Armstrong VK3XJP/VK3PNL (03) 880 8286 (AH) or (018) 99 8665. Book space for preloved gear with Trevor Armstrong VK3JJR (03) 720 7609 AH. Extensive trade exhibits, free parking, entry \$3.00. Food available 10 am to 3 pm.

**Editor's Comment**

Continued from page 3

could be the world's oldest amateur. Thanks to information sent in by a helpful reader we now know that the world's oldest amateur was probably a W1 from Vermont, who died recently aged 106. So Harry is in there with a chance.

And finally, at the last Publications Committee meeting we all agreed that *Amateur Radio* would look even better with more photographs. So keep those cameras clicking, folks; it's your photos that fill the pages and the more the merrier.

**Bill Rice VK3ABP**  
Editor  
ar

**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 per issue 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.  
 \*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.

\*WIA policy recommends that Hamads include the serial number of all equipment offered for sale.  
 \*Please enclose a self addressed stamped envelope if an acknowledgement is required that the Hamad 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: \$25.00 for four lines, plus \$2.25 per line (or part thereof) Minimum charge — \$25.00 pre-payable.

State: .....


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Name:..... Call Sign:..... Address: .....

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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.

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## CONTRIBUTIONS TO AMATEUR RADIO

Amateur Radio is a forum for WIA members' amateur radio technical experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for possible publication. Articles on computer disk are especially welcome. The WIA cannot assume responsibility for loss or damage to any material. "How to Write for Amateur Radio" was published in the August 1992 issue of AR. A photocopy is available on receipt of a stamped, self addressed envelope.

## BACK ISSUES

Available only until stocks are exhausted. \$4.00 to members, which includes postage within Australia.

## PHOTOSTAT COPIES

When back issues are no longer available, photocopies of articles are available to members at \$2.50 each (plus \$2.00 for each additional issue in which the article appears).

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.

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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:.....

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- VK2 PO Box 73 Teralba NSW 2284
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- VK6 GPO Box F319 Perth WA 6001
- VK7 GPO Box 371D Hobart Tas 7001
- VK8 C/o H G Andersson VK8HA  
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- VK9/VK0 C/o Neil Penfold VK6NE  
2 Moss Court Kingsley WA 6026

# WIA Divisional Bookshops

The following items are available from your Division's Bookshop  
(see the WIA Division Directory on page 3 for the address of your Division)

	Ref	List Price		Ref	List Price
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Ant. Compendium Vol 2 Software 5.25" IBM Disk	BR293	\$22.00			
Ant. Compendium Vol 3 1st Ed. 1992	BR455	\$37.00			
Antenna Compendium Vol 2 — ARRL	BR292	\$32.00			
Antenna Impedance Matching — ARRL	BR257	\$52.00			
Antenna Note Book W1FB — ARRL	BR179	\$26.00			
Antenna Pattern Worksheets Pkt of 10	BR902	\$3.00			
Cubical Quad Antennas— Hawland — 1993	BR041	\$37.50			
Easy Up Antennas	MFJ38	\$39.25			
G-QRP Antenna Handbook — RSGB — 1992 1st Edition	BR452	\$22.50			
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HF Antennas for all Locations — Moron — 2nd Edition	BR188	\$45.00			
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Novice Antenna Notebook — DeMaw W1FB — ARRL	BR162	\$20.00			
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Reflections Transmission Lines and Antennas — 5.25" IBM	BR348A	\$22.00			
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All orders must be accompanied by a remittance.  
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## UPDATE: SPECTRUM MANAGEMENT 1993/94

Several points were made by SMA's representative Mr Peter Stackpole, Guest Speaker at WIA's Annual Convention Dinner on 30th April 1994.

The first subject is the development of new licensing approaches, both for greater efficiency in the system and in order to offer radiocommunications users more flexible and suitable licensing.

The second subject is the potentially far-reaching work to develop a standards regime which will support strong growth in use of the radiofrequency spectrum but contain interference.

The third subject is the internal restructuring of the SMA combined with multiple levels of consultation with clients designed to make the SMA a highly consultative and responsible regulator.

The SMA is now nearing the end of a public inquiry into the system of Apparatus Licensing. The WIA is among the 340 organisations and individuals which have made submissions. The SMA is in the last stages of preparing a report to the Minister which is due at the end of May. Some conclusions of that report are:-

- there was support for simplifying licence categories and support for the SMA proposed framework for service charges and licence fees.
- SMA proposes to issue 5 year licences to any user on request.
- Short term licences for visitors from overseas will continue to be issued with a fee on a pro-rata basis.

It is expected that the SMA will publish, around July or August, a draft determination of new fee levels.

The review of apparatus licensing will not result in fundamental change in the way the spectrum is managed in Australia. Its results will be nonetheless very significant in improving the efficiency, equity and rationality of licensing and pricing.

There are two issues that are of importance to amateur radio operators. The first is the simplification of present licensing conditions and

- the addition of a Novice Limited class on 2 metres
- a revision of Limited licensees' frequency allocations to include frequency about 29 Mhz and
- a review of the Novice class frequency allocation and power.

*These changes are not expected to be implemented until sometime near the end of this year.*

*The second issue concerns new interference provisions relating to the operation of amateur stations. These provisions are being proposed to encourage amateur radio operators to take more responsibility in the resolution of interference caused by their transmissions, and will involve the development of guidelines to be used to enable interference problems to be resolved between the amateur and the party affected by the interference. These guidelines will be developed cooperatively and in consultation with the amateur community and will be framed to ensure that the rights of both parties are preserved.*

*Class licences have already been determined for some categories such as low interference potential devices, e.g. transmitters for control of toys or garage doors; standard mobile telephone handsets communicating with base stations are another case.*

*SMA's present intention is to proceed to class licensing for citizen band radio services and handphones operating at 27 MHz. It is unlikely that amateur radio licences will be converted to class licences in this first round. Most probably amateur licences will be identified as separate categories under the apparatus licence scheme.*

*SMA have put forward to Government proposals for an EMC framework in Australia. This will not be retrospective. From 1 January 1996 the Australian framework is expected to involve:-*

- introduction of mandatory emission standards for all electrical and electronic equipment which emits radio frequency energy;*
- the application of standards to all equipment manufactured in or imported into Australia for local use.*
- development of immunity standards, either mandatory or voluntary, for equipment -likely to be affected- by EMI;*
- determination of standards by the SMA following development through a public process conducted by Standards Australia.*
- compliance through either self-certification or testing, plus labelling by suppliers;*
- administration of the EMC framework through the SMA.*

*SMA has made a major effort to engage in thoroughgoing consultation and interaction with its clients.*

*The Radiocommunications Consultative Council is central to consultation on spectrum issues. All major users (including the WIA) and consumer organisations are represented on it.*

*Where significant change to the system is proposed the SMA has adopted the practice of publishing discussion papers and taking comment. The SMA has issued two major ones so far on the review of the apparatus licence system and on an EMC regime. You can expect another later this year on the detail of spectrum licensing.*

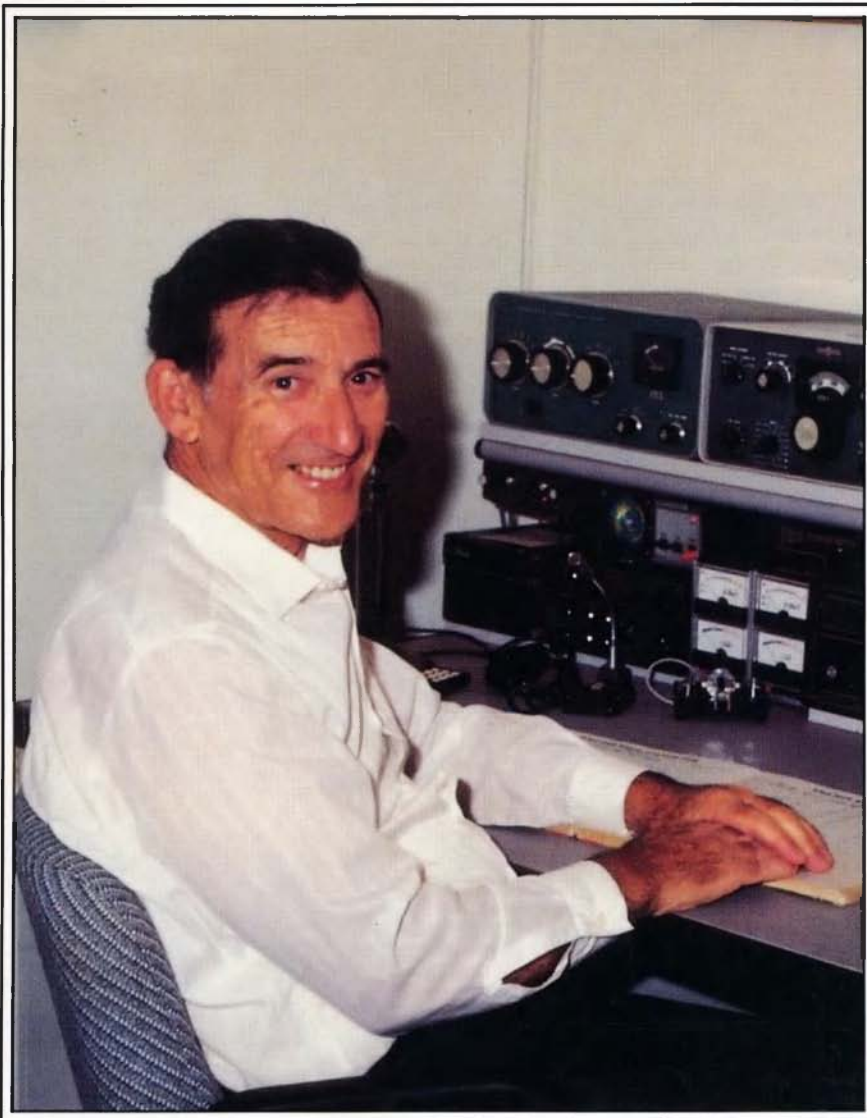
**A FULL REPORT WILL BE CONTAINED IN FUTURE ISSUES OF AMATEUR RADIO**

# RADIO AMATEUR

JUNE 1994  
Volume 62 No 6



Journal of the Wireless Institute of Australia



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- FT-840 Review
- Getting a Vertical Antenna to Go — Part 3
- WIA 58th Federal Convention
- Radio in Japanese Midget Subs

and lots more

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Amateur Radio is published by the Wireless Institute of Australia, ACN 004 920 745 as its Official Journal, on the last Friday of each month.

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Deadlines Editorial Hamads

July 06/06/94 08/06/94

August 11/07/94 13/07/94

September 08/08/94 10/08/94

Delivery of AR: If this magazine is not received by the 15th of the month of issue, and you are a financial member of the WIA, please check with the Post Office before contacting the registered office of the WIA. ©

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### Cover

Well known DXer, Neil Penfold VK6NE, new Federal President of the WIA.

## Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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## Federal QSP

When someone utters the words "amateur radio", what do they conjure up in your mind?

Building things and making them work?

An outlet for your competitive spirit in contests?

Endless opportunities to make new friends around the world?

Digital communication and computers?

Or just chatting with local friends on two metres?

Amateur radio's many facets are the hobby's greatest attraction. However, let's not dwell too heavily with your past to provide the material for submissions we'll undoubtedly have to make to the authorities now and in the future. Look about you and see how the world has changed.

How many of the 300-odd DX countries can you call on the telephone from your home?

"Where's this QSP heading?" you may be asking.

To the future!

New regulations appear to be just around the corner. The SMA enquiry into the Apparatus Licensing System is rolling along. Moves are afoot to follow NZART's lead in participating in the CEPT system of licensing in Europe. Alignment of the 7 MHz band is an agenda item at the next IARU Region III conference. EMC and standards are appearing more and more frequently in various publications. Even the local paper carries the occasional EMC snippet.

These are the signposts to the future you cannot afford to ignore.

And there is yet another. This one carries the question, "When will you help those few willing workers in the arena of WIA activities?"

As with many organisations today, the WIA's membership is declining for all the reasons we've heard and discussed over and over again. (Reasons or excuses?)

Whichever, the signpost message is clear. It's time to reverse the trend.

Do YOU want to help?

Write to *Over to You* and air your ideas on **HOW WE WILL SURVIVE IN THE FUTURE.**

Neil Penfold VK6NE, Federal President  
ar

## Editor's Comment

### Our Tangled Structure

Elsewhere in this issue you will see (and perhaps read!) an account in my words of the recent Federal Convention of the WIA. From conversations I have had with several amateurs over the last few weeks it seems that many are unsure of exactly how the WIA is structured. Particularly,

they seem confused by our combined State and Federal administrative system. Even though it has all been said before in various ways, I thought it might be useful to try to outline it again.

Firstly, don't assume, because Australia has eight State and Territory governments plus a Federal Government based in Canberra, that the seven WIA Divisions and the Federal Body have a similar relationship! They do not! Apart from not being governments, there is one basic difference. In the political scene, the laws of the Federal (Commonwealth) Government prevail over those of the States, if and when differences exist between them. But the WIA Federal Body is owned by the State Divisions and has no

individual members of its own. Its members are the seven Divisions.

Thus the Federal Body (NOT "Division") is a creature of the Divisions, controlled by the Divisions operating collectively, and having no separate powers of its own beyond those which the Divisions agree to give to it. Such agreement between Divisions is proposed, debated and formalised at the Federal Convention each year, as well as at quarterly Federal Council meetings. The Federal Council consists of a delegate from each Division (not surprisingly called the "Federal Councillor") plus alternate councillors and observers if desired; but each Division has only one vote.

The purpose of the Federal Body is to do for the WIA as a whole those

things which are best done on a national basis. From time to time there are changes made in the scope of the Federal activities, agreed upon at a Convention, but generally it falls somewhere about midway between the two extremes of Divisions only and no Federal Body, or Federal only with no Divisions.

Now to something completely different! Keen-eyed readers will have noticed there were two different shades of paper in the May issue, and again this month. This is due to an upgrade in quality of the paper by the supplier at no extra cost to us. Sometimes you really can get something for nothing!

Bill Rice VK3ABP  
Editor  
ar

## 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	Call Sign	Weekly News Broadcasts	1994 Fees
VK1	ACT Division GPO Box 600 Canberra ACT 2601 Phone (06) 247 7006	President Rob Apathy Secretary Len Jones Treasurer Don Hume	VK1KRA VK1NLJ VK1DH	3.570 MHz LSB, 146.950 MHz FM, 438.525 MHz FM each Monday evening (except the fourth Monday) commencing at 8.00 pm. Repeated on Wednesday evening at 8.00 pm on 146.950 MHz FM.	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK2	NSW Division 109 Wigram Street Parramatta NSW (PO Box 1066 Parramatta 2124) Phone (02) 689 2417 Fax (02) 633 1525	President Terry Ryeland Secretary/ Treasurer Roger Harrison (Office hours Mon-Fri 11.00-14.00 Wed 1900-2100)	VK2UX VK2ZRH	From VK2WI 1.845, 3.595, 7.146*, 10.125, 24.950, 28.320, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 (*morning only) with relays to some of 14.160, 18.120, 21.170, 584.750 ATV sound. Many country regions relay via a local 2 metre repeater. Sunday 1000 and 1915. Highlights included in VK2AWX Newcastle Monday 1930 on 3.593 plus 10mx, 2mx, 70cm, 23cm. News headlines by phone (02) 552 5188. Some broadcast text can be found on the Packet network.	(F) \$66.75 (G) (S) \$53.40 (X) \$38.75
VK3	Victorian Division 40G Victory Boulevard Ashburton Vic 3147 Phone (03) 885 9261	President Jim Linton Secretary Barry Wilton Treasurer Rob Hailey Office hours Tue & Thur 0830-1530	VK3PC VK3XV VK3XLZ	1.840MHz AM, 3.615 SSB, 7.085 SSB, 53.900 FM(R) Mt Dandenong, 146.700 FM(R) Mt Dandenong, 146.800 FM(R) Mildura, 146.900 FM(R) Swan Hill, 147.225 FM(R) Mt Baw Baw, 147.250 FM(R) Mt Macedon, 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday.	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK4	Queensland Division GPO Box 638 Brisbane QLD 4001 Phone (07) 284 9075	President Ross Marren Secretary Lance Bickford Treasurer David Travis	VK4AMJ VK4ZAZ VK4ATR	1.825, 3.605, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, 28.400 MHz. 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday. Repeated on 3.605 & 147.150 MHz, 1930 Monday	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK5	South Australian Division 34 West Thebarton Road Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Bob Allan Secretary Maurie Hooper Treasurer Bill Wardrop	VK5BJA VK5EA VK5AWM	1820 kHz 3.550 MHz, 7.095, 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 34 579.000 Adelaide, ATV 444.250 Mid North Barossa Valley 146.825, 438.425 (NT) 3.555m 146.5000, 0900 hrs Sunday	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK6	West Australian Division PO Box 10 West Perth WA 6872 Phone (09) 388 3888	President Cliff Bastin Secretary Ray Spargo Treasurer Bruce Hedland-Thomas	VK6LZ VK6RR VK6OO	146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 1.825 3.560, 7.075, 14.115, 14.175, 21.185, 28.345, 50.150, 438.525 MHz. Country relays 3.582, 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 146.700 at 1900 hrs.	(F) \$60.75 (G) (S) \$48.60 (X) \$32.75
VK7	Tasmanian Division 148 Derwent Avenue Lindisfarne TAS 7015 Phone (002) 43 8435	President Andrew Dixon Secretary Ted Beard Treasurer Peter King	VK7GL VK7EB 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, 144.150 (Hobart) Repeated Tues 3.590 at 1930 hrs	(F) \$69.00 (G) (S) \$55.65 (X) \$40.00
VK8	(Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).			Membership Grades Full (F) Pension (G) Needy (G) Student (S) Non receipt of AR (X)	Three-year membership available to (F) (G) (X) grades at fee x 3 times.

Note: All times are local. All frequencies MHz.

## Equipment Review

# Yaesu FT-840 All Mode HF Transceiver

Reviewed by Ron Fisher VK3OM\*



The Yaesu FT-840 HF transceiver with MH-1b8 microphone.

The latest low priced entry to the HF amateur radio market is the Yaesu FT-840. At this time I am not sure if it is intended to replace the now ageing FT-747GX or whether Yaesu will be running two low priced transceivers side by side.

Whatever, we will be comparing these two transceivers as they do share a lot in common. The FT-747 appeared on the market in early 1988 and certainly set new standards of simplicity in amateur HF transceivers. Perhaps in some ways the simplicity was over done and maybe it didn't enjoy the popularity it should have. Certainly its low price was (and still is) a very good point in its favour as was the fact that three filters, AM, CW and SSB were included in the price.

However, the tuning ergonomics were perhaps just a bit too odd to make the transceiver a runaway favourite.

The "click stop" main tuning was a real pain which made band scan tuning a slow and laborious job. Having said that, I used one on an expedition to the Gulf of Carpentaria and the Northern Territory two years ago and found its performance as a mobile rig to be first class. Use was mainly confined to several fixed frequencies and the excellent memory system took care of this.

So, what have Yaesu produced to bring the FT-747 up to date? The answer is the FT-840, an up-to-date transceiver with excellent tuning characteristics and 100 multi purpose memories.

## Enter the FT-840

The FT-840 is a compact, but not miniature sized, transceiver. It, in fact, matches the size of many of its competitors and is exactly the same size as the old FT-747. The plastic cabinet of the 747 has been replaced with a normal metal type. With this, the weight is also up by 1.2 kg to 4.5 kg, which is still light in comparison with many mobile/portable transceivers.

The full general coverage receiver covers from 100 kHz to 30 MHz, while the transmitter operates on all amateur bands from 160 to 10 metres. Operation is possible on SSB, CW, AM and FM with FM available as an option and wideband AM reception also available as an option. A narrow CW filter is also available if required.

The transmitter has a nominal 100 watt output and a speech processor is included to give the audio a worthwhile boost. The frequency synthesiser now uses two direct digital units driven from a single master oscillator. Hopefully this should overcome the calibration problems of the FT-747 which needed accurate setting of both the master oscillator and the carrier oscillators to ensure spot on frequency read out.

The click stop tuning of the 747 has gone and has been replaced with a very smooth running, weighted control and memory selection is now via two small up/down buttons at the top right hand side of the front panel. RIT now has a separate control at the bottom right of the front panel which replaces the very confusing RIT of the 747.

The speaker on the FT-840 is mounted under the top cover in place of the front panel mounted speaker of the 747. Finally, the DC connector on the rear panel has been changed to a standard six pin plastic type which makes it compatible with most past, and all current model, HF mobile transceivers.

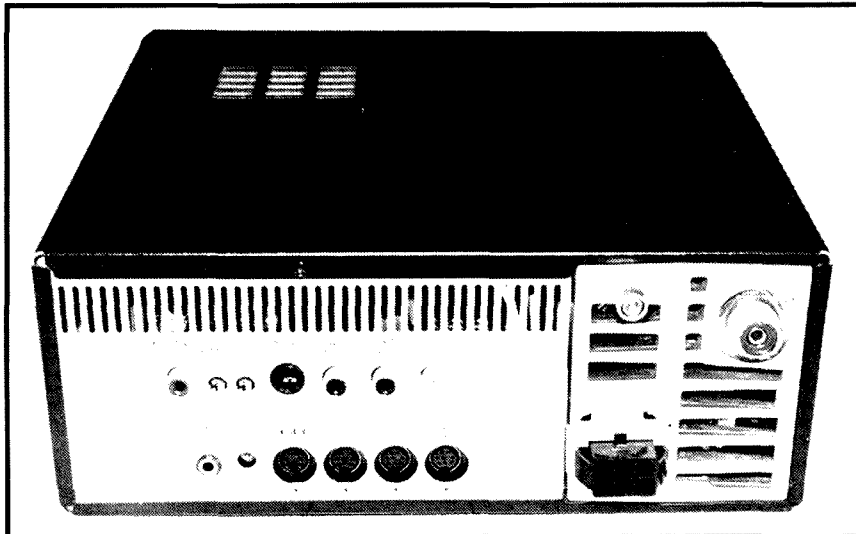
## On the Air

Putting the 840 on the air was very easy. All of my power supplies are already fitted with six pin DC connectors for my existing equipment so no rewiring was needed. As usual, the microphone supplied with the rig

is the MH-1b8 and I will have more to say about this later.

First thing noted on initial switch-on was the very clear LCD readout which now displays frequency to 10 Hz. The main tuning control is nicely weighted and very smooth to use, a distinct difference from the FT-747. Modes are selected with four buttons to the left of the tuning control. Each of these has at least two positions selected in sequence. The SSB button selects either USB or LSB while the CW button selects either wide or narrow selectivity providing, of course, the optional narrow CW filter is installed.

The same applies to the AM button but the other way around. The button selects either normal or narrow selectivity but, unless the normal AM filter is installed, you only get narrow (2.2 kHz) bandwidth. The FM button selects the FM mode provided that the optional FM board is installed. If it is you can then select positive or negative off-set for repeater operation with sub-audible tone or simplex operation. The fifth and bottom button



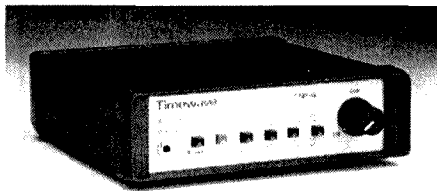
Rear panel of the FT-840.

is for locking the tuning control. It does not lock mode selection or the RIT. Yaesu have paid special attention to the tuning system of the FT-840. Let's run through the facilities that are offered. The standard tuning rate is in 10 Hz steps but four different tuning knob rates can be selected. A small

slide switch, accessible through a hole in the bottom plate, allows selection of either a 5 or 10 kHz per knob revolution rate. Then, with the "fast" button selected, the tuning rate goes up to 100 Hz steps which gives either 50 kHz or 100 kHz per knob revolution depending on the position

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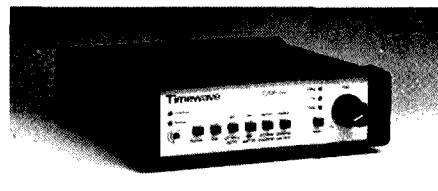
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of the above slide switch. I must admit that I preferred the 5 kHz rate, but the choice is there for you to choose.

When it comes to band selection, there are again several very flexible methods. Either amateur band or general coverage switching is available via the "Band" up/down buttons. With "Ham" selected, the transceiver steps from one amateur band to the next with the previously used frequency coming up on each band. With "Gen" selected, the transceiver steps up and down in 100 kHz segments but, if "Fast" is selected at the same time, this increases to 1 MHz segments. I noted that with "Fast" selected in the "Ham" mode nothing extra happens, the rig still selects amateur bands in normal sequence.

Overall, the tuning and band change system used in the FT-840 is amongst the best that I have ever used in a basic, low cost transceiver.

The FT-840 has a total of one hundred memory channels. The first ninety can store frequency, mode, wide/narrow IF selection for CW and AM modes, clarifier on/off and split frequency status. The ten "P" memories store upper and lower frequency limits for programmed band scanning. In addition, they also store all of the information that can be stored into memories one to ninety.

Both the metering and the meter itself have been greatly improved. The meter is at least 50% larger than the one in the FT-747 and is very clearly calibrated and brightly illuminated. On transmit, both power output and ALC can be monitored in sequence via the meter switch at the top left of the front panel. Unfortunately, there is no SWR reading which would be very handy for mobile and portable use.

Tuning around, I was impressed with the very smooth tuning and the quick and easy band changing system. The RIT (there is no XIT) has a wide or narrow range of  $\pm 1.25$  or 2.5 kHz which are selectable with one of the power-up functions. I found the  $\pm 1.25$  kHz to be about right. With RIT selected an indicator shows on the main display and the main frequency readout shifts, but there is no separate RIT frequency readout.

As seems to be the fashion, several

functions can be preset with the power-up function. These include CW mode BFO offset, scan resume mode, either 5 second delay or squelch operation, and normal or reverse sideband for CW reception. Unfortunately, this latter function can only be accessed by switching the transceiver power off first. Other power-up functions are covered clearly in the instruction manual.

Received audio quality was rated as fairly good. The small internal speaker lacked high frequency response compared with a good quality external speaker. AM reception through the side-band filter was very poor. If you want a bit of broadcast entertainment when the bands are dead then the optional 6 kHz bandwidth filter would be essential. The CW enthusiast would equally need the 500 Hz filter.

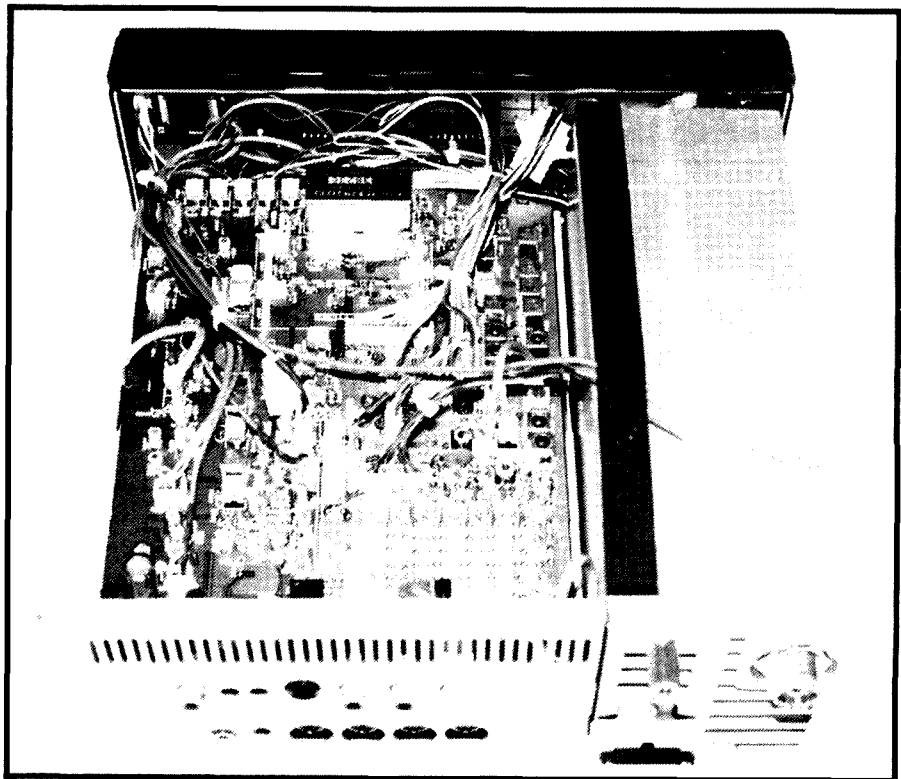
Transmitted audio quality was reported as very good with the processor adding a definite bite to the signal. The compression level is adjustable via a recessed control on the rear panel and you will need to set this up with a critical listener for best overall results. I found that the compression was not excessive with the control set about half way.

No VOX is included in the FT-840 but I guess most operators will not miss this. It's most unusual to hear amateurs using VOX these days. Reports indicated that the signal was very clean so long as the ALC reading on the meter was not exceeded.

The CW operator should be very happy with the FT-840 on transmit. CW uses a semi break-in system with the return to receive delay being adjustable via a rear panel recessed control. The 840 does not have a full break in (QSK) system, however, you can get close to it with minimum delay selected. The CW transmitted signal was reported as being very clean. The power output can be adjusted down to QRP level at about 4 watts. Several pages of the manual are devoted to computer control of the transceiver. I was unable to check this facility but there is plenty of information if you wish to try this facility.

### **The Yaesu MH-1b8 microphone**

Microphones supplied with amateur transceivers these days are not all the same so I feel that a few words are in order to describe this one. It is supplied with all Yaesu HF



**The FT-840 with the top cover removed.**

transceivers and has, in fact, been around for a few years. The manual shows a response curve which shows the effect of the "tone" switch on the back. Tests showed that most contacts preferred the switch in the No 1 position that is the maximum bass response.

This microphone is larger and slightly heavier than other hand microphones. The PTT switch tends to be a bit "clunky" in its action. The button actuates a slide switch where others use a micro switch for smoother action. After banging an MH-1b8 around the Northern Territory a couple of years ago, I found that the metal grill became loose and actually fell out. Also, being metal, it became scratched very easily with the paint flaking off. Also, for some strange reason, the MH-1b8 is not usable on Yaesu VHF transceivers. The microphone will work but the UP/DWN wiring is not compatible and so nothing happens. Very odd.

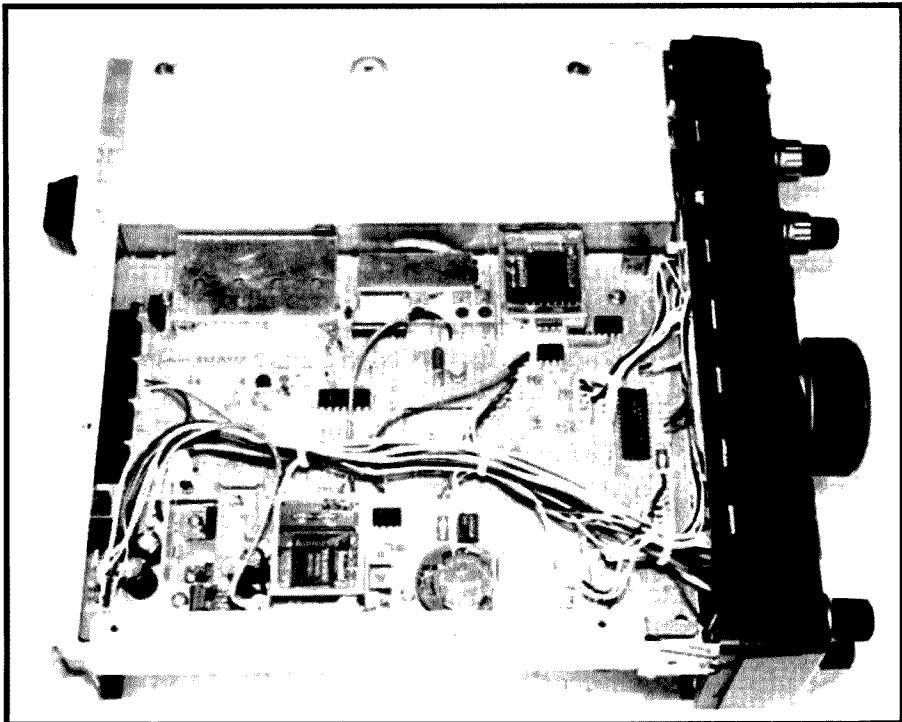
**On Test**

I carried out the usual series of tests on the FT-840 starting with transmitter power output and current drain for both transmit and receive. Power output is variable on all modes via the "RF PWR" control. A Yaesu FP-707 power supply was used for all tests.

Power output in CW mode

Band	Power Out
160	110 watts
80	110 watts
40	106 watts
30	105 watts
20	100 watts
18	100 watts
15	100 watts
13	99 watts
10	95 watts

Power on all modes can be reduced to four watts on all bands. In the AM mode power output is about 25 watts maximum and can be reduced to about 2.5 watts. To achieve 100% modulation this output is spot on. No tests were carried out in the AM mode apart from the above power output checks. PEP output in the SSB mode was essentially the same as the CW power in the above tests. The power calibration on the meter was very close to the actual measured output.



**The FT-840 with the bottom cover removed.**

Current drain on receive was 1.3 amps with low audio output peaking to 1.5 amps at maximum audio output. Current drain on transmit with maximum CW output on 20 metres was 19 amps and, with minimum power out (4 watts), it was 5 amps. On SSB the peak current drain would be about the same as above but the average drain would probably be about 2/3rds of the peak current.

Yaesu specify the transmitter IMD as -25 dB for 100 watts PEP output at 14.2 MHz. This appears to be a very realistic figure and our tests agreed with this. It's interesting to note that Yaesu include transmit IMD in their specification where other manufacturers do not. Thanks Yaesu for your honesty.

**Receiver Tests**

Firstly the "S" meter calibration was measured.

"S" Reading Voltage Input.

1	1.4 $\mu$ V
2	1.8 $\mu$ V
3	2.5 $\mu$ V
4	3.4 $\mu$ V
5	4.8 $\mu$ V
6	7.0 $\mu$ V
7	10.0 $\mu$ V
8	15.0 $\mu$ V
9	25.0 $\mu$ V

+ 20 dB	88.0 $\mu$ V
+ 40 dB	1000 $\mu$ V
+ 60 dB	.03 v

There is no preamp switching on the FT-840 but the attenuator provides 12 dB attenuation. Measurement indicated this to be spot-on with the specification. The signal input to produce "S" 9 on each band was checked.

1.8 MHz	16 $\mu$ V	18.1 MHz	19 $\mu$ V
3.6 MHz	17 $\mu$ V	21.2 MHz	25 $\mu$ V
7.1 MHz	17 $\mu$ V	24.5 MHz	17 $\mu$ V
10.1 MHz	23 $\mu$ V	28.5 MHz	17 $\mu$ V
14.2 MHz	25 $\mu$ V		

Yaesu specify receiver sensitivity for SSB and CW in the range of 1.8 to 30 MHz as 0.25  $\mu$ V for 10 dB S/N. My measurements indicated a slight improvement on this with 12 dB S/N. Sensitivity was not checked below 1.8 MHz but it appeared to be quite adequate. No measurements were made in the FM mode as the optional FM unit was not provided in our review transceiver.

The only IF filter included in the FT-840 was the standard SSB filter with a -6dB band width of 2.2 kHz and a -60dB width of 5 kHz. It appears that the filter is similar to the one used in the older FT-747 as the specification is the same. Again our tests confirmed Yaesu's figures.

Receiver audio power output was measured at both 4 and 8 ohms load impedance. Maximum power at 8 ohms was 1.2 watts and 1.8 watts at 4 ohms. The specification shows 1.5 watts at 4 ohms for 10% distortion. My measurements came up with 6% for the same figure, a slightly better result. For mobile operation this is a bit on the low side and, in fact, slightly less than the FT-747 which I found to be badly lacking audio output in my camper van a couple of years ago. If you use an external speaker, make sure it is 4 ohms impedance to produce the maximum acoustic output.

Another thing noted was that the action of the IF shift was rather unbalanced. No doubt there is an internal adjustment to put this right and the problem should be fixed under warranty. The outcome of this was that interference rejection was better on one sideband compared to the other.

### Instruction Manual

There is no doubt that Yaesu manuals are the best produced in the industry. The quality of printing and presentation is top class. However, that's not to say that the contents could not be better. Up until a few years ago Yaesu manuals had some technical content. Unfortunately, this has all but disappeared. From an operating instruction point of view though, I give it 10 out of 10.

A full circuit diagram is provided, but there are no photos showing adjustment points. Clear diagrams show how to install the optional CW and AM filters which plug in and do not require soldering or removal of circuit boards. Another new innovation described in the manual is the replacement of the lithium battery. In the early years this was definitely a "return to the service department job". No longer so. But tell me, when did you last hear of a lithium battery that needed replacing? They seem to last a very long time.

### Conclusions

No doubt about it, Yaesu have put a lot of thought into the design of the FT-840. Maybe they are even reading a few equipment reviews and are

taking note of what is said. Would I change anything on the 840 if I had the chance? Well, no, I don't think so, but I feel that Yaesu should have included an AM filter as standard even if the price had to be increased to cover it. The only other transceiver that I can remember where good AM reception was an option was the old Kenwood TS-430. From there on all general coverage transceivers have had reasonable AM reception although some have been better than others.

Another problem with Yaesu HF transceivers in general is that you

cannot buy a matching Yaesu power supply. I have seen photos of the FP-800 which matches both the 840 and 890 transceivers. It looks most attractive and seems to be available everywhere but here in Australia. I am sure this is costing Yaesu sales here. If the others can do it, why not Yaesu?

Retail price of the FT-840 is \$1895 and overall this represents excellent value. Our review FT-840 was supplied to us by Dick Smith Electronics to whom all enquiries should be directed.

\*24 Sugarloaf Road, Beaconsfield Upper, VIC 3808

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## QSP News

### New Federal Office Postal Address

After fifteen years, PO Box 300 Caulfield South is no longer the postal address for mail for the Federal Office and *Amateur Radio* magazine. A new post office has opened only a few doors along from the Federal Office and, as from 3 May 1994, the new postal address for the Federal Office is: **PO Box 2175  
Caulfield Junction VIC 3161**

### Stop Press

Last year in June, adventurer Dick Smith and balloonist John Wallington successfully crossed the Australian continent from west to east in a Roziere combined helium-hot air balloon.

This year, following their example, Steven Griffin, a Brisbane balloonist, will try to do the same, but with a difference. Steven will attempt the balloon crossing alone from west to east. He will use the balloon and gondola of his predecessors loaned to him by Dick Smith. The flight will take off from Carnarvon, WA in the early days of June 1994 depending on favourable wind conditions.

The gondola will have most of the equipment used last year, but due to budgetary restrictions, Steven's attempt will not be a very elaborate one. The shortwave

radio is still in the gondola, but Steven's qualifications enabled him to obtain only a combined radio amateur licence with privileges only on the 80, 15 and 10 metre amateur bands.

There will not be an organised amateur radio net to follow his flight due to poor propagation and the limitations of band use imposed by the licence. The callsign to be used will be VK4JAW/aeronautical mobile. Steven will use amateur radio only in emergency or when his commercial communication equipment proves inadequate.

All radio amateurs are kindly asked to keep a listening watch during the month of June on 3605 kHz, 21155 kHz and 28620 kHz, and give assistance if required. We all wish Steven good luck.

Stephen Pall VK2PS

### Slow Morse Beacon

The North East Radio Club in Adelaide has produced a Morse Code Training Beacon for two metres on 144.975 MHz signing VK5RCW. It has a continuous output of 10 watts. It takes 80 minutes to cycle from 5 WPM to 12 WPM in 10 minute steps, with 8 pm local CST one of the starting points at 5 WPM. This allows you to organise your time for the speed you need. Signal reports would be appreciated to PO Box 36, Modbury North SA 5092.



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# WIA 58th Annual Federal Convention

Bill Rice VK3ABP reports on the recent AGM of the WIA

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The 58th Federal Convention of the WIA was held at the Windsor Motor Inn, Wellington St, Windsor, Victoria over the weekend of 30 April to 1 May 1994.

## List of People Attending

Kevin Olds VK1OK  
Richard Jenkins VK1RJ  
Gavan Berger VK1EB  
Roger Harrison VK2ZRH  
Terry Ryeland VK2UX  
John Robinson VK2XY  
Alan Noble VK3BBM  
Bill Trigg VK3JTW  
Peter Maclellan VK3BWD  
Barry Wilton VK3XV  
Ross Marren VK4AMJ  
Rodger Bingham VK4HD  
Bill Wardrop VK5AWM  
Ian Watson VK5KIA  
Neil Penfold VK6NE  
Bruce Hedland-Thomas VK6OO  
Jim Forsyth VK7FJ  
Bruce Thorne  
Donna Reilly  
Brenda Edmonds VK3KT  
David Wardlaw VK3ADW  
David Andrews ZL2SX  
Alan Wallace ZL1AMW  
Bill Rice VK3ABP

Retiring Federal President  
ACT Federal Councillor  
ACT Alternate FC  
NSW Federal Councillor  
NSW Alternate FC  
NSW Observer  
Vic Federal Councillor  
Vic Alternate FC  
Vic Alternate FC  
Vic Observer  
Old Federal Councillor  
Old Alternate FC  
SA Federal Councillor  
SA Alternate FC  
WA Federal Councillor  
WA Alternate FC  
Tas Federal Councillor  
Federal Secretary  
Federal Office Manager  
Minute Secretary  
Director, IARU Region 3  
NZ observer  
NZ observer  
Editor *Amateur Radio*

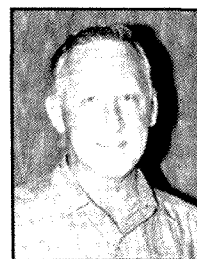
Kevin Olds VK1OK. He began by welcoming the delegates from New Zealand, David Andrews ZL2SX and Alan Wallace ZL1AMW. VK4 then moved that standing orders be suspended to discuss the 8th item on the agenda, described as "the VK3 motion" (from the previous quarterly meeting). This was that the role of the Federal Office should be discussed, particularly the purposes for which the Federal body has been constituted. After some discussion it was agreed that the item be set aside to permit drafting a more formal motion.

Discussion then followed on the topic of members transferring membership from one Division to another, without changing their State of residence. It was claimed this had

been "encouraged by the Federal Office", but the claim was denied. VK3ADW said he had "heard it all before" during his 40 years of WIA activity! This motion also was set aside to permit re-drafting.

## Too Many Meetings?

Another motion by VK3 was to reduce the number of Federal Council meetings (at present four per annum, the Convention being one of the four). This would save expense, particularly if the Federal Office was provided with adequate guidelines between meetings but on the other hand VK5 pointed out that the present meeting business always seems to occupy all the available time! Again, the motion was set aside.



VK3 Federal Councillor  
— Alan Noble  
VK3BBM.



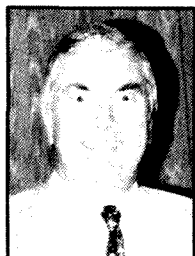
VK4 Federal Councillor  
— Ross Marren  
VK4AMJ.

The last VK3 motion proposed that all Divisional Councils should have input to all Federal discussions, with six weeks notice of proposals to permit local discussion. It was expected this could increase telephone bills and office work. This motion was carried.

Discussion then moved to the accounts, auditors and co-ordinator's reports, many of which have been published in *Amateur Radio* (April issue pp 22-25). Some of the reports were considered non-controversial and accepted with little or no comment, but those which attracted debate were the financial reports. This led on to a long discussion about Federal Office security. Some recommendations were unacceptable to some Councillors and were set aside for further discussion on Sunday.

## Hazards

An interesting point which emerged from debate on the Standards report was in regard to non-ionising



VK1 Federal Councillor  
— Richard Jenkins  
VK1BJ.

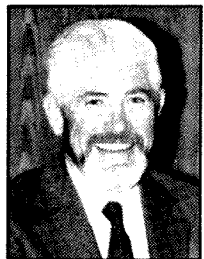


VK2 Federal Councillor  
— Roger Harrison  
VK2ZRH.

Others were also present from time to time. Federal co-ordinators and other guests attended the Saturday night dinner, as well as IARU vice president Michael Owen VK3KI, now returned to VK after six years in the UK.

The Convention was opened at 0910 by the retiring Federal President,

radiation and specifically RF fields from transmitting antennas, particularly cellular mobile phones. There is a possibility that these and other transmitters might be prohibited in the city of Auckland (according to ZL2SX) which of course would have serious repercussions on amateur radio. VK3ADW advised against "panic" however, as high level discussion of such radiation hazards (if any) has been continuing in Australia and NZ for some years, and no doubt even more in the USA and elsewhere overseas.



**VK5 Federal Councillor**  
— BNI Wardrop  
VK5AWM.



**New Federal President**  
— Neil Penfold  
VK6NE.

The next report to provoke discussion was that on the WIA Exam Service. The method by which Divisions pay for exam materials was criticised, and the service appeared to be running at a loss for the last few months. In defence, it was claimed that seasonal factors make profit and loss figures misleading over less than a full year.

### Convention Location

Federal Conventions have been held in Melbourne exclusively since 1975, but prior to that had been held in other cities too (Sydney in 1974, Brisbane 1971, Adelaide 1970, Canberra 1969, Hobart 1967, to name some years only). This was thought to be worthy of consideration again, and it was resolved that the Federal Office conduct a full cost comparison of the possibilities for future years. (Sydney in the year 2000 would seem appropriate. VK3ABP) During the discussion the point was firmly made by the President that all Federal meetings are open, and any individual WIA member may attend them.

### Budget

As always, money matters seem to stimulate discussion, and the Budget for 1994 brought out a number of



**VK7 Federal Councillor**  
— Jim Forsyth  
VK7FJ.



**Vice President IARU**  
— Michael Owen  
VK3KI.

conflicting viewpoints. The surplus is planned to be \$29,000 with accumulated reserves of \$170,000 at 31 December 1994. This was thought to be too high by VK4HD, who preferred reserves of no more than about \$40,000. The topic was raised again of how WIA functions should be divided between Divisions and Federal. It was claimed that in 1974 or thereabouts Federal was run by a manager and an office boy (*but there were many volunteers. Ed.*) Now it has an annual salary bill of \$155,000, also has the Exam Service to run, plus many other responsibilities in a climate of costs rising and membership falling. VK3BWD thought the surplus should be applied to reducing the Federal component of subscriptions. Eventually the Federal Secretary was requested to revise the Budget figures.

### RCC

David Wardlaw gave an outline of the recently established Radiocommunications Consultative Council, a special group set up by the Spectrum Management Agency to advise on radio-communications generally and, in particular, the introduction of spectrum licensing. David is the WIA representative on the RCC. He said



**Manager, SMA Customer Services Group**  
— Peter Stackpole  
VK1RX.



**Retiring Federal President**  
— Kevin Olds  
VK1OK.

it was unlikely that spectrum licensing would apply to frequencies below 30 MHz, or to bands which have only one user service.

### Office Bearers

The election of the President and seven Federal Councillors produced some changes to the Council. Kevin Olds vacated the chair in favour of the erstwhile Vice-President, Neil Penfold VK6NE, who thus became the first-ever WIA Federal President from Western Australia. Bruce Hedland-Thomas VK6OO as Alternate FC took over for VK6, and Ross Marren VK4AMJ replaced Rodger Bingham VK4HD as the VK4 Federal Councillor. Later in the Convention Roger Harrison VK2ZRH was elected to the position of Vice-President. The new Council began its operations by reviewing the minutes of the previous Council meeting in February, and discussing current correspondence, but adjourned at 6 pm for the Convention Dinner.



**Federal Secretary**  
— Bruce Thorne.



**Federal Office Manager**  
— Donna Reilly.

### SMA Spokesman

The speaker at the Dinner was Peter Stackpole VK1RX, who is a manager with the Spectrum Management Agency. He spoke at length and answered many questions about apparatus licensing, new regulations (not likely till the end of 1994), interference, class licensing, EMC standards and spectrum licensing. Among the points he made were that the present period is one of many rapid changes to administration, and that amateur radio in particular, from a spectrum licensing viewpoint, was in "a very hard basket"! An account of his address, in abbreviated form, was included as an insert in *May Amateur Radio*.



The new Federal President Neil Penfold VK6NE in the chair at the Convention, flanked by Federal Office management, Bruce Thorne and Donna Reilly.

## Back to Work

Convention business recommenced on Sunday with a continuation of discussion on the role of the Federal Office. Seven headings were enumerated as describing the scope of the Federal body. These were:

1. National and international representation.
2. Publishing Amateur Radio and the Callbook; editorial policy to be defined.
3. Centralised membership records.
4. Co-ordination of advisory committees.
5. Provision of examination materials.
6. Federal Office administration and management.
7. Membership Recruitment.



Amateur Radio magazine Editor  
— Bill Rice  
VK3ABR



Minute Secretary/  
Education  
Co-ordinator  
— Brenda Edmonds  
VK3KT.

There should also be no extension of trading activities (unless authorised by Council).

It was quickly realised that full debate and agreement was not to be achieved in the time available, and the office must continue to function in the meantime, so a clause "to authorise all current procedures until otherwise directed" was added. Also, on the request of VK2ZRH, the word "centralised" was deleted from clause 3.

The next item was the WIA representation at the IARU Region 3 Convention to be held in Singapore from 4 to 9 September 1994.

Nominations were called, but there was some disagreement as to whether the delegation should be two, three, or four people. After considerable discussion it was agreed that four would be necessary and that these should be Kevin Olds VK1OK (IARU representative), Neil Penfold VK6NE (President), Gavan Berger VK1EB (SMA liaison) and John Aarsse VK4QA. Reserves (should a need arise) would be selected from VK2ZRH, VK2UX and VK3KT. Wally Watkins VK4DO will be passing through Singapore at the same time en-route to an ARDF contest and may also be able to assist.

## Correspondence

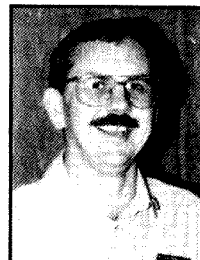
Approximately 30 items of correspondence were discussed during the rest of the morning. Most were of limited general interest, but one of the more important points was that Federal Office correspondence to members on Divisional matters should not be direct, but via the member's Division. In the afternoon there was extensive debate on the security of the Federal Office. John Robinson VK2XY described (from his own personal professional knowledge) a number of modern security systems to ensure not only the safety of valuable or sensitive records, but also to control out-of-hours access. Measures are already in place to provide some of these benefits, but more are to be installed.

## Other Items

Discussion moved on to the WIA/SMA "memorandum of understanding" under which the Exam system operates. Some details were seen to need amendment in the light of operational experience.



NZART Observer  
— David Andrew  
ZL2SX.



NZART Observer  
— Alan Wallace  
ZL1ANW.

The Federal Memorandum of Association has been the subject of continuing draft changes for some time, and will need more amendments before final legal approval is sought.

A sub-committee preliminary report on publication options for *Amateur Radio* has been published, but further investigation has been delayed. There was some discussion about proposed special publications.

After one or two final and minor items were mentioned, Neil VK6NE declared the 58th Federal Convention to be closed at just after 4 pm.

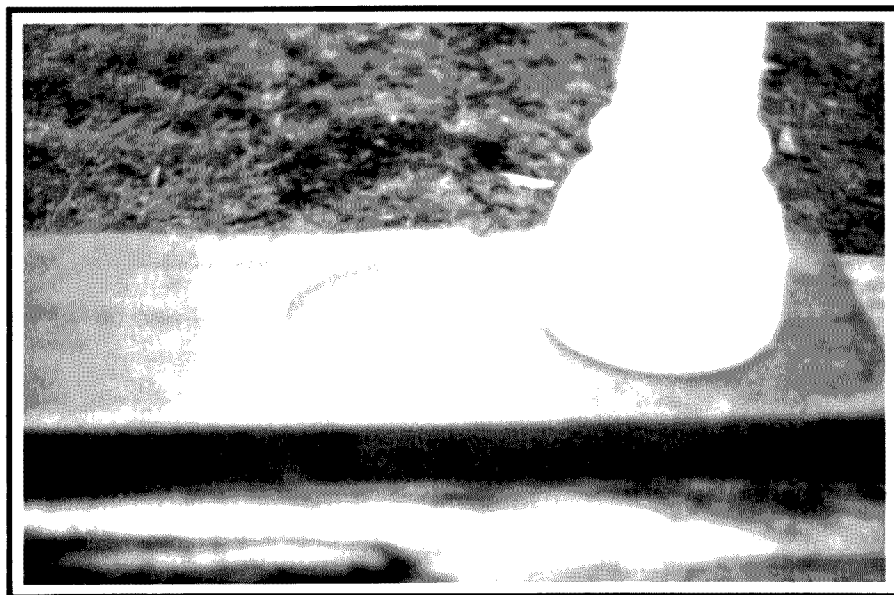
(All photographs taken by Vicki Griffin VK3BNK.)

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# Getting a Multiband HF Vertical To Go! (Part III)

*"Doc" Wescombe-Down VK4CMY/VK5HP\* with more useful information about vertical antennas.*

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**Photo 1 An ironbark board routed to accept the large ceramic insulator.**

A 5/8 wave vertical antenna is probably the best all round DX transmitting antenna apart from a Yagi-Uda or quad array. This type of vertical is often overlooked for the lower HF bands simply because of the height, but perhaps the subject is worth reconsidering.

For 7.1 MHz operation, such a radiator would be 25.1 metres (83.5 feet) high. For 3.65 MHz, this same radiator will be 116 degrees of electrical length and will happily operate at that lower frequency with an SWR of less than 2:1. Let us reflect on the 5/8 wave antenna for the upper HF bands, 14, 21 and 28 MHz.

This 5/8 wave antenna can give your signal about a 3 dB power gain over a ground plane (1/4 wave vertical). For 14 MHz we require 12.65 metres (41.5 feet); for 21 MHz 8.47 metres (27.75 feet); and for 28 MHz 6.5 metres (21.25 feet). These radiator lengths may be more appealing to some operators and their "landladies"!

Yet there exists another option which is perhaps underrated, if not overlooked. The HALF WAVE vertical radiator. I run two such installations. One for 40 metres and the other for 20 metres. Being on alternative power, I run from 5 to 30 watts of RF from a car battery source, but as anyone who has worked me will assure you, these aerials REALLY get out!

I believe the two main reasons are LOCATION — my QTH is atop a 915 metre hill with no obstructions within 65 metres of the feed point; and RADIAL NETWORK — 120 halfwave radials for 80, 40 and 20 metres. Yes it means a lot of wire and a lot of space but can raise the RF power by up to 8 dB and that means a "lot of signal".

Interestingly, most theoretical references state that radials are inoperative for halfwave vertical radiators. But, with respect, I do question this theory. To me, return current paths are required to

complete the circuit and that is a function of the radials. I do believe that the amount/lengths of wire used here contribute to the ground reflection within half a wavelength of the antenna feedpoint since the longest radials extend some 40 metres in each direction 120 times, 20 metres in each direction 120 times and 10 metres in each direction 120 times!

This is the setup simply because both the wire and the real estate were available and everything I had read about vertical antennas indicated that this would be an optimum installation. All of the radials are tent-pegged on top of the ground.

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*120 halfwave radials  
... can raise the  
RF power by up to 8 dB*

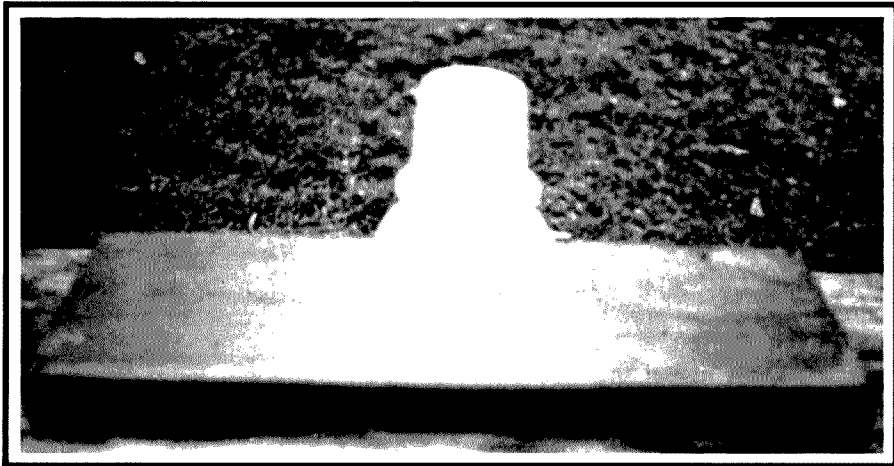
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However, both halfwave verticals worked really well with only eight halfwave radials for each band and that makes the whole thing more feasible for many. Remember, radials can be run around the base of your boundary fences, in gutters, along rooflines, etc, etc.

Here is my proposition. Build a halfwave vertical for the band of your choice (see any dipole chart for measurements) but add eight halfwave radials to it and FIND places on your block to route them. I have even wrapped them around the perimeter of a stumped house in suburbia and secured them to the hardwood stumps with fencing staples.

Any motor winding shop should be able to help you with a few kg of wire "mistakes" to use for the purpose and, at about \$5.00 per kg, the whole thing is a cheap exercise.

Antenna radiator elements can be made from guttering downpipes, alloy irrigation pipe, aluminium tubing, or even food cans soldered together end-to-end. "Lister" irrigation in our area sell new 10 metre lengths of 1.5 inch (yes, it is still sold with Imperial diameters!) alloy irrigation pipe for \$40.00 minus couplings, but I've paid as little as \$4.00 a length at clearing sales. Don't forget to use conductive



**Photo 2** The vertical antenna base mount ready to take the antenna.

paste (eg Shell EMF Welder Grease) on contacting surfaces if you telescope tubing.

Some polypropylene guys and a base insulator and you are in business — halfwave business! The photos show the base insulator assembly using an ironbark board routed to accept a large ceramic insulator which is secured with either silicone sealant or epoxy glue. If any interested reader has trouble

obtaining such an insulator, I have a limited number available at \$7.00 each plus \$5.00 postage. First in first served.

Most amateur references provide details on alternative methods of feeding such aerials but I will be pleased to share information with those who write enclosing an SASE envelope.

*\*via Post Office  
Dalveen QLD 4374*

✻

## WIA News

### Ham Fair in Tokyo

The Japanese Amateur Radio League's 18th Ham Fair will be held over three days, from 19 to 21 August, this year. Site for the occasion will be the New Hall of the Tokyo International Trade centre in Harumi, Tokyo.

The fair, reputed to be the largest show of its kind according to *The JARL News*, will have a wide range of exhibits, lectures, "novelty booths" and other attractions with the main theme being "Double enjoyment in various modes."

Just as the celebrated Australian "Wyong Field Day" has its "disposals sale", the JARL Ham Fair boasts a "recycle corner", which proved very popular last year, says the JARL report.

A new attraction will be the ARDF (amateur radio direction finding) corner, no doubt in response to this booming "sport"

(a combination of pedestrian foxhunt and marathon foot race — ask Australia's foremost exponent, Wally Watkins VK4DO!).

Naturally, there'll be a commemorative radio station, 8J1HAM. So, if you can't get to Tokyo in person, you might get there "in spirit" by working 8J1HAM around 19-20-21 August.

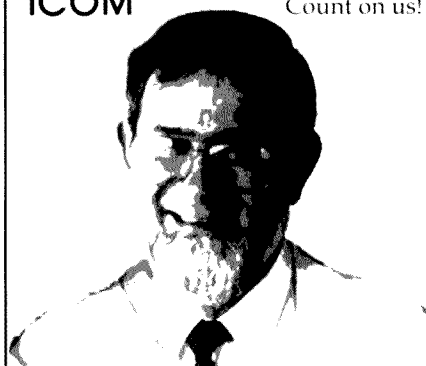
### Happy Fourth to Fuji 2 Bird

As of 8 February this year, the Japanese Amateur Radio League's Fuji 2 satellite was four years old. Launched as JAs-1b in 1990, it has operated since then without mishaps, says *The JARL News* for Feb-Mar.

This month, parallel operation of both analogue and digital modes may become possible as the satellite will enter a "full daylight" period orbit, depending on its position.

ICOM

Count on us!



# "VK3LZ calling!"

The latest snippets from Icom.

### IC-736 SHORTAGE

We have been overwhelmed by the early response to the IC-736. Consequently we have numerous back-orders which we shall endeavour to fulfil in June.

Our apologies for the delay.

### IC-2340H - DUAL BAND MOBILE

Stock has now arrived. This unit is the same style as the IC-281H.

### MT GAMBIER CONVENTION

Look forward to seeing many familiar faces at Mt Gambier. If all goes to plan, we'll have the IC-820H Base Satellite Unit available for its first public showing.

"... 73"

Call me at Icom on  
ph: (03) 529 7582  
(008) 338 915

ACN006 092 575

# Did They or Did They Not?

Col Harvey VK1AU has dug out the truth about the radio equipment on the midget submarines that attacked Sydney.

When the re-built composite Japanese midget submarine was put on display at the Australian War Memorial, there was no evidence that communication equipment had ever been installed. There was no wire aerial or conventional aerial mast, no equipment rack, no cabling, no Morse key and no intercommunication gear such as headphones or microphones. There still is none.

After Pearl Harbour, the Americans had recovered a similar submarine intact. Photographs of this midget aground and before salvage, showed no sign of an aerial or mast. The British had also recovered a midget intact after the raid on Diego Suarez Bay in 1942. Enquiries about the wireless fit in these midgets remain unanswered.

But there were statements by Old Timers that Japanese wireless equipment had been seen at Garden Island after the remains of two midgets had been recovered from Sydney Harbour.

An enquiry at the Australian War Memorial revealed that *"...the radio sets and ancillary equipment were removed from the submarines at the time of salvage for analysis by the RAN and military intelligence organisations. Their eventual fate and whereabouts is a mystery that has not been satisfactorily resolved to this day."*

Japan's midget submarine program started in 1933. In 1938 construction started at Kure on 48 midgets of the type that subsequently raided Pearl, Diego Suarez and Sydney Harbours. These so-called "midget" submarines were 81 ft long, had a 6 ft beam, a 6 ft draft and displaced 46 tons. They were built of welded 5/16 inch steel plate and were intended to take two 5 ft 6 in long, 17 inch diameter torpedoes with 700 lb warheads to within 1000 yards of a worthwhile target in a harbour. They were piggy-backed aboard large I Class mother submarines to within about 10 miles of the target harbour, and after a raid were expected to rendezvous with their mother submarine then about 40 miles away. The submarine's crew of two was then to be recovered and the midget scuttled by two 60 lb charges fired through a timer.

The Japanese expected such success from their fleet of midgets that they withdrew five of their large strategic submarine fleet for modification as mother-submarines. Fortunately for the Allies, their hopes were never realised, (other than at Diego Suarez where the Royal Navy battleship RAMILLIES was badly damaged and a tanker, BRITISH LOYALTY, sunk).

Although the mechanisms of these midget submarines were quite

complex, there were always problems with stability and ballasting, particularly after the launch of a torpedo. Fore and aft trim was supposed to be maintained by moving a large weight along a longitudinal track. But there were also 534 lead "pigs" weighing a ton, which could be (and were) moved by hand to correct heel or for and aft trim.

The battery stack for the 600 HP motor was in two large compartments, one with 72 volt batteries (each with 70 plates) the other with 136 batteries. The stacks could be switched to provide either 52, 104 or 208 volts to the reversible motor. Batteries were brought up to charge by an umbilical from the mother submarine.

On a full charge, the submarine could attain 23 knots on the surface, and 18 knots submerged for about 3/4 hour. At about 2 knots their range was about 100 nautical miles.

It was inconceivable that these tactical weapons would not have a means of communication, particularly for rendezvous. But intensive searches of the War Memorial Research Records, Australian Archives, Garden Island and Australian Maritime Museums, even the Washington Navy Yard, and the Royal Navy Historical Branch of Ministry of Defence in London, had failed to produce a comprehensive report or photographs of the communications equipment.

Proof of its existence was that at the time of Pearl Harbour, transmissions from Ensign Yokoyama's midget (to the effect that *"he had succeeded"*) had been picked up aboard the Japanese light cruiser "Katori" which was at

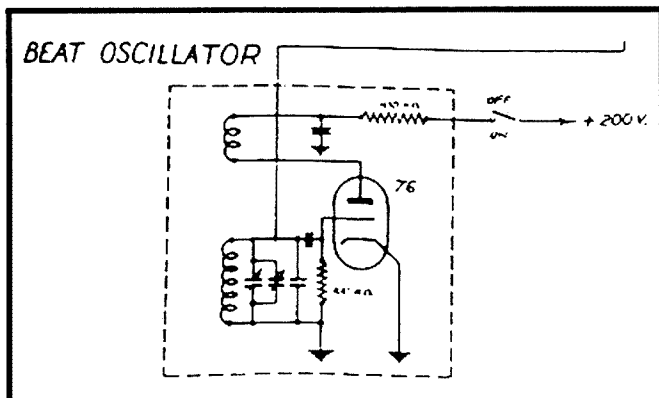


Fig. 1

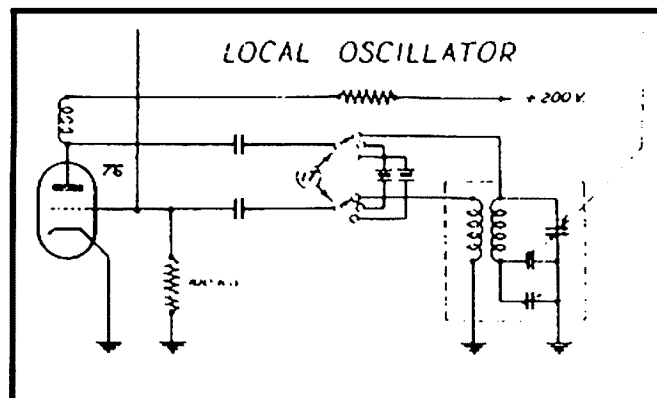


Fig. 2

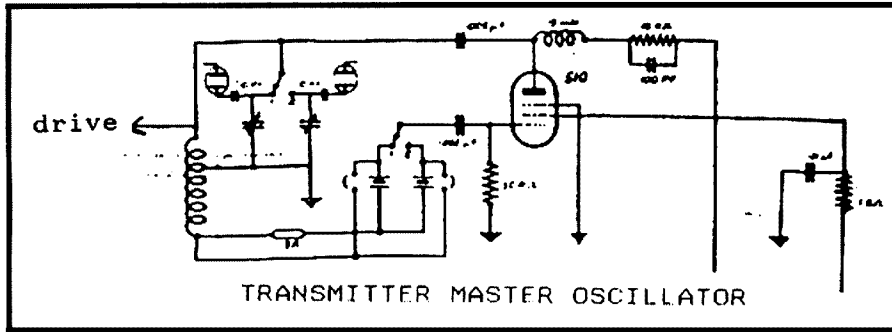


Fig. 3

Kwajalein in the Marshall Islands 2300 miles to the south west. There was thus the possibility, given the very short antenna, that the equipment in use might have been low band VHF, and that this intercept was an early example of either Es or TEP propagation.

Captain Sasaski, who was in command of the Sydney Harbour operation, was heard to report to his HQ that up to the time set for rendezvous with his returning midjets, he had received no communication from them.

Two brief reports in the NSW Archives by the Port of Sydney W/T Officer (Commissioned Telegraphist A Brooks) confirmed that two sets of HF equipment had been salvaged and the best of these sent to Navy Office Melbourne. There was now no doubt about the presence of HF wireless on the midjets that entered Sydney Harbour in July 1942.

An exhaustive search in the ACT and NSW for a report on this salvaged equipment produced only the title of a likely file held in the Victorian Archives. Allan Doble VK3AMD kindly volunteered to inspect this file in Melbourne.

To date, no photographs of the equipment, or the equipment itself, has been found anywhere in the world. So, to our amazement and pleasure, Allan found a schematic of the W/T equipment, and an engineering drawing made at Garden Island in 1942 showing the retractable aerial in the conning tower and the position of W/T equipment on the bulkhead of the control room. The photocopy of the schematic is unclear in places, but enough has been gleaned to show that the submarine wireless equipment, although conventional, was of good innovative design.

An article in the March 1994 issue of the "Oldtimers" newsletter OTN was probably the first published anywhere in the world to describe the communication equipment fitted to Japanese "midget" submarines in 1942. An updated version of that description follows.

The equipment to be described was manufactured by Japan's OKI Electric Company and subsequently examined by Navy Office Melbourne. This description is based on a local schematic reconstructed from the water damaged Japanese schematic for equipment bearing serial number 33. No photographs or written report appear to exist, and the weight of the equipment is unknown. The transmitter and receiver were in the same aluminium case measuring 15.5 inches by 10.5 inches by 11 inches.

### Receiver

The receiver was a 7 valve superheterodyne using a 6D6 tuned RF stage, a 6L7G mixer, 6D6 IF, 6B7 2nd detector and 1st audio,

transformer coupled to a 42 audio output stage. The beat oscillator was a 76 valve configured as a conventional feedback oscillator (see Fig 1).

The local oscillator (also a 76 valve) was unusual in that it used either of two crystal frequencies, as well as having provision to pre-set the receiver to a VFO frequency between 7900 and 10100 kcs (kHz) (see Fig 2). The local oscillator tuning condenser was ganged to the RF and mixer stages tuning condensers. The internal pre-set tuning dial was calibrated 0-100 and a graph was provided to translate dial readings to frequency.

On one equipment recovered from Sydney Harbour the receiver local oscillator crystal was branded 8755 kc, and was measured as 4696.1 kc which, when doubled, suggests a receiver IF of about 635 kc.

AVC was available and gain was controlled by varying the cathode bias on the RF and IF stages. The plate load on the 42 audio output valve was an iron core choke with two headphone outlets coupled to the plate via a condenser, suggesting that headphones (called "listening apparatus") were of high impedance.

The receiver RF and IF stage plates were fed from a 200 volt DC rail via tuned RF chokes or traps. The power supply was a 250 volt vibrator supply, dropped to 200 volts for the receiver. All valve suppressor grids were tied to ground. All screens were

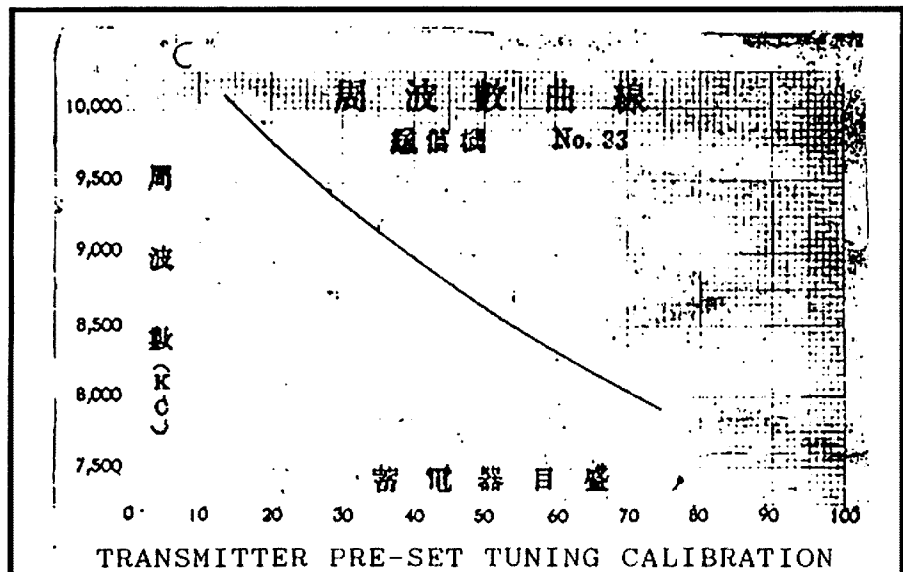


Fig. 4

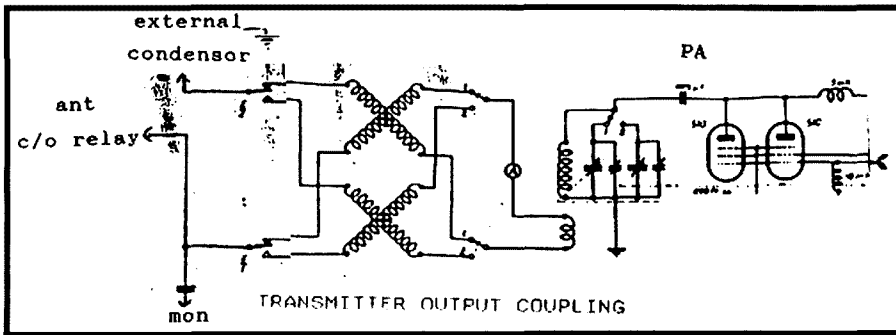


Fig. 5

fed from the 200 volt rail via a dropping resistor. Transmitter sidetone was fed to the 1st audio valve plate. The antenna was directly connected to the receiver through the transmit/receive relay, rather than through the antenna coupling networks provided for the transmitter.

**The Transmitter**

The transmitter was a 2 stage MOPA two frequency device using pentode valves equivalent to the RK20. Two 510 (12 volt filament) valves in parallel were used as the PA with 1000 volts on the plates provided by a motor generator, and 250 volts on the screen from the vibrator power supply normally used to operate the receiver.

Most functions were activated by one or other of 5 relays. Provision was made for an external "High Voltage Gauge" and the 1000 volt HT rail was fused at 1 amp. DC CW input would have been about 200 watts, representing about 100 watts output.

The oscillator valve was also a type 510, with its plate fed from the 1000 volt rail via a dropping resistor (see Fig 3). On one equipment recovered from Sydney Harbour, the transmit crystal selector switch was jammed on the setting for 8755 kc.

On the second set of recovered equipment the transmit frequencies were 7955 or 8950 kc. This suggests that each submarine communicated with its parent submarine on an individual, rather than a common frequency. The oscillator could be made to operate as a self-excited Hartley oscillator by setting an internal jumper across either, or both, crystals. Transmission could then be on either of two pre-set and pre-tuned frequencies in the range 7900 to 10100 kc. A calibration chart was provided for use by the technician

tuning the equipment to a non-crystal frequency (see Fig 4).

No metering was provided, but a neon tube across each of the two oscillator output tank tuning condensers was used to show the presence of drive to the PA.

The transmitter was capable of telephone or telegraph operation. The tone oscillator for MCW operation was a transformer-coupled feedback oscillator using another type 76 valve. In telegraph mode both oscillator and PA plates and screens were keyed by relays. R/C click filters were used across the relay contacts, as in amateur practice. Transmitter adjustments were made on full power.

There was one PA tank coil but two preset PA plate tuning condensers, and two output coupling devices. The tuning condensers were ganged to the oscillator crystal-selector switch, so selection of the crystal also selected the appropriate output tuning condenser and output tuning goniometer. The gonios were inductively coupled to the parallel tuned PA tank coil. The earthy side of the tuning gonio was fed to ground via an external fixed capacitor (see Fig 5).

Transformer coupled grid

modulation from a carbon handpiece (microphone) was provided for the PA (see Fig 6). There was no microphone gain control and no microphone pre-amplifier. A sample of RF was fed via a neon tube and filter back to the receiver 1st audio valve plate, for sidetone. The only meter shown on the schematic is an aerial current meter, but this is not mentioned as having been installed.

**Antenna**

The aerial was a metal rod 2 ft 3 inches long and 2.5 inches in diameter situated at the foremost end of the conning tower. It was raised and lowered by a handwheel situated overhead forward in the control room. When in a lowered position the apex of the aerial, which was slightly convex in shape, was flush with the top of the conning tower.

The feeder to the aerial consisted of a 1.5 inches diameter rubber-insulated cable which coiled at the base of the conning tower when the aerial was lowered. The feeder cable passed through a pressure gland into the control room and was clipped diagonally across and down the front bulkhead to the transmitter receiver unit on the bulkhead near the floor.

Before reaching the transmitter unit, the rubber insulation was abruptly tapered to form a flexible cable for connecting to the aerial terminal of the transmitter and receiver unit. Another terminal on the unit allowed the external "balancing condenser" to be inserted between chassis and the earthy end of the goniometer type output tuning coils.

The schematic can be found in Victorian Archives Document MP1049/5- File 2026/21/36. ar

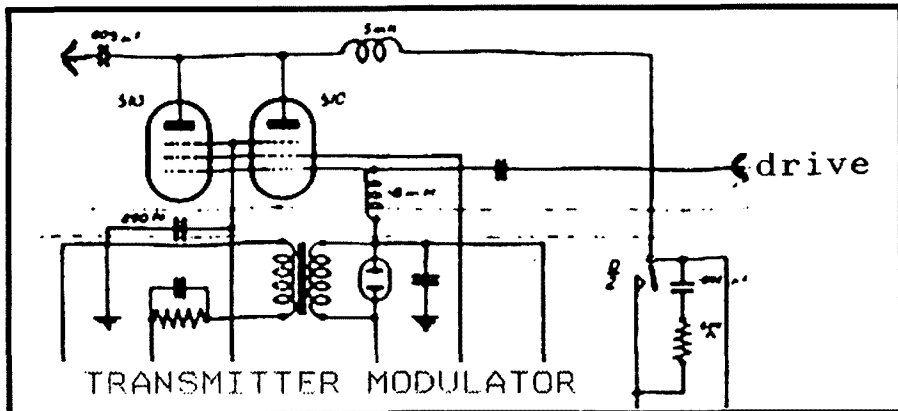
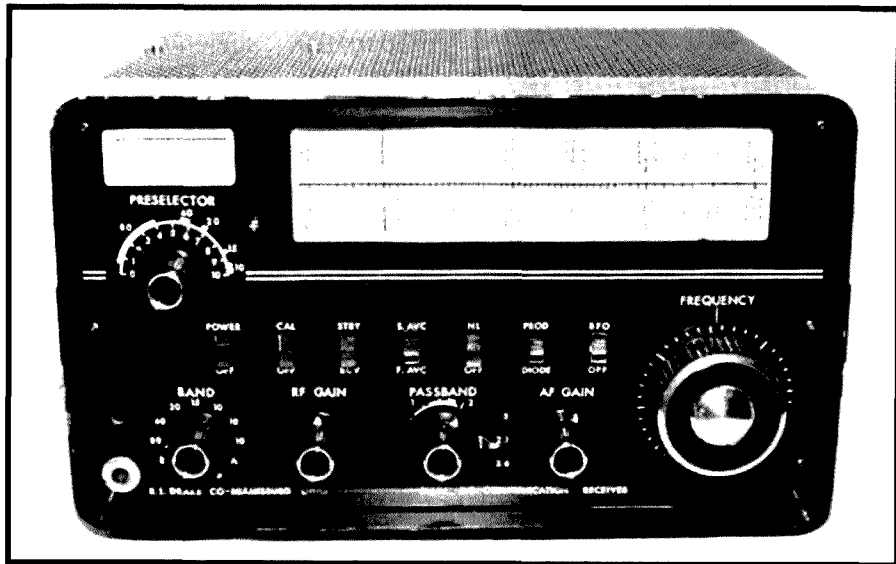


Fig. 6



# Amateur Radio on a Budget — Part 2

"Doc" Wescombe-Down VK5HP/VK4CMY\*



Drake 2-B HF, triple conversion, all valve receiver.

Part 1 shared some ethos, anecdotal experiences and personal disclosures so Part 2 should provide some more "meat" on the subject.

There are many areas to be considered, including:

- Safety
- Service backup and spare parts
- Home building or not
- Space availability
- TVI/BCI potential
- Initial cost
- Personal preferences
- AC or DC operation
- HF, VHF, UHF or any combination
- Type of antenna(s) to be erected.

Of these, safety and TVI/BCI potential probably loom as the most important. Ensure used gear has safe power cords and plugs, switching, electrolytic capacitors and transformers. Time spent in detailed examination and thorough cleaning of pre-owned rigs is vital. Ensure adequate RF screening exists and check with a field strength meter plus your own TV and stereo units. Upon "firing up", check with your neighbours too!

When choosing older equipment it is an implied "rule of the game" that spares may no longer be available. Allow for that when making the choice and negotiating the price. After purchase, a follow-up advertisement for a "basket case" of similar type will often bring you a cheap and ready source of spare parts. Remember, it's all in the timing and how you spread word of your needs. This particularly applies to

buying older homebrew equipment but it is always cheap!

If your desk top does not favour an AR88 receiver, then don't look for one. If you don't want 110 volt equipment then avoid it. The cheap TH3 at the hamfest is not a bargain if it may incite World War III with YL and/or council. If your location does not favour it, forget the el cheapo ex-electricity authority 50 metre tower with revolving platform. If you don't like switches, stay away from separate TX/RX combinations or rigs like the Swan 700. Find VOX equipped gear. If you want to go mobile one day, forget AR7, Super Pro and FL2100 units. Spend maximum time looking at, reading up on, and asking about, all the different units; and there are dozens and dozens of them.

Budget buying is about timing, but it is also about options. The FT101 doesn't pop up but a TS520 does. Be flexible about your basic principle rather than having tunnel focus. Get on the air first and start enjoying your hobby, then look for more specific equipment if you want. I have bought and sold 30 or more HF rigs to get my modest station to where it is today — partly functional, partly nostalgia.

Do you need an inbuilt power supply or could you make do with a separate unit tucked out of sight, safe and ventilated? Do you require a separate VFO or can you really come a bit down the track? Do you require an amateur band receiver or a general coverage version? Can you build some of your own "add-ons" (eg crystal filter for CW, external speaker unit, pre-amp, ATU, antenna, antenna

## ATN ANTENNAS

56 Campbell St, Birchip Vic 3483

Phone: (054) 92 2224

Fax: (054) 92 2666.

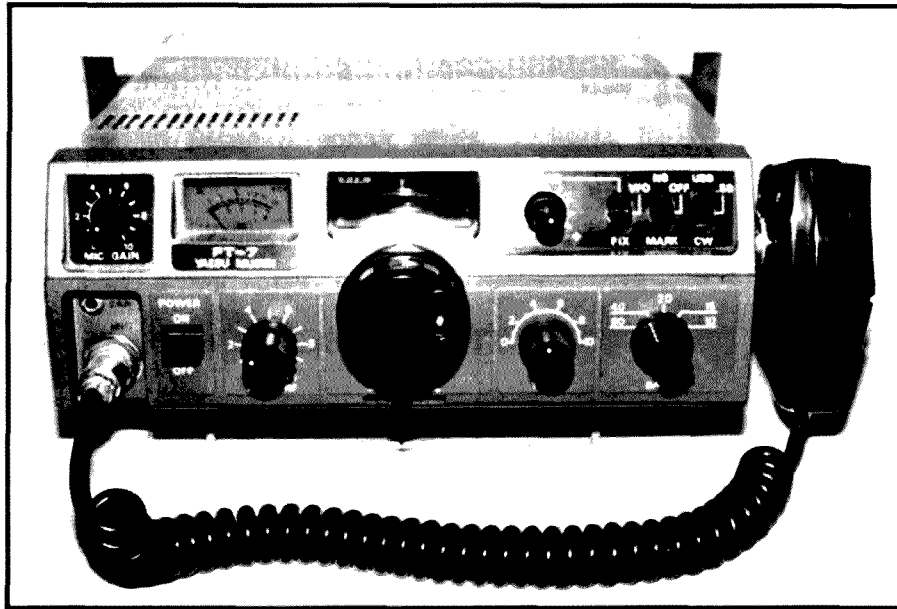
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VHF/UHF or any options from these and forward plan to upgrade your station in four or five years time when DX conditions improve.

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How we confuse these in our lives! If you can objectively undertake your own needs analysis and commence option generation from there, the confusion level should be lower (eg "Yes, I realise that DX working is not at a premium at the moment, so I can work on skill development, local contesting, local award hunting and



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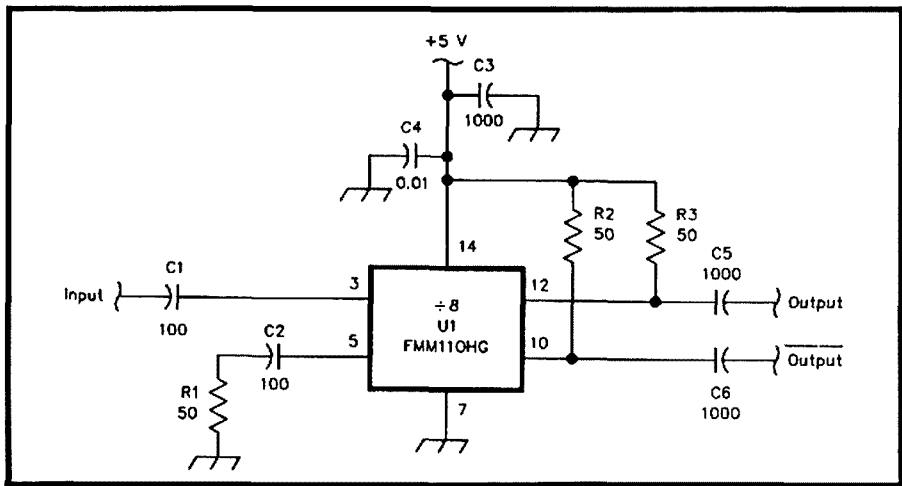
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# Technical Abstracts

Gil Sones VK3AU1



**Fig 1 Schematic Diagram of the Preselector Circuit**  
**C1, C2 100 pF Single layer SMD chip Caps.**  
**C3, C5, C6 1000 pF Single layer SMD chip Caps.**  
**C4 0.01 uF SMD Cap.**  
**R1, R2, R3 50 ohm Chip Resistors**  
**U1 Fujitsu FMM110HG preselector IC.**

## 12 GHz Preselector

Fujitsu make a 12 GHz divide by 8 preselector. It is a GaAs monolithic surface mount packaged IC. In QEX for September 1993 a working PCB using this IC was described by A Vilaseca HB9SLV and S Rivière F1JSR. The PCB used ordinary fibreglass laminate and worked with less than 1 mW input.

The Fujitsu IC type FMM110HG has the following characteristics:-

Input Frequency	0.6 to 12 GHz
Input Level	0 to +10 dBm
Output Level	+4 dBm typical
Maximum Output Level	+13 dBm
Power Supply	+5V at 120 mA

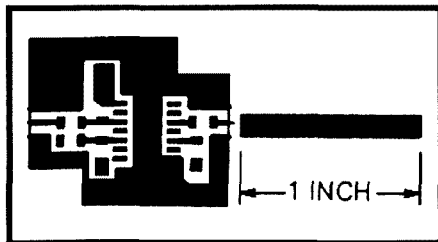
The circuit is shown in Fig 1. The PCB pattern is shown in Fig 2. The component placement diagram is shown in Fig 3.

Parts are SMD types and the capacitors C1 — C3, C5 & C6 should be single layer SMD types. C4 is less critical. The IC should be soldered to the board by its bottom to ground it and improve heatsinking.

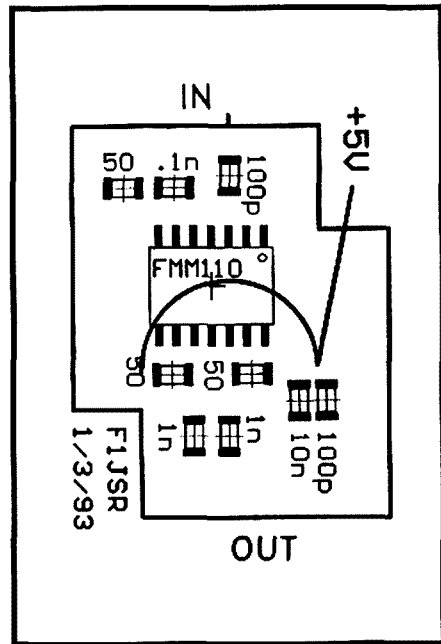
Lead lengths are very critical and microwave techniques must be used.

The pcb is soldered into the box and the connectors attached with zero lead lengths. A feedthrough is used on the supply lead.

In Fig 4 are two suggested uses for the preselector. You can use it as a counter front end or you can use it as part of a microwave frequency synthesizer. One of the prototypes enabled the stabilisation of a Gunn oscillator allowing the use of narrow band FM. This would give a much lower signal threshold for the system. Another was used with a dielectric resonator oscillator.



**Fig 2 Etching Pattern**  
**Components are surface mounted on the circuit side of the board with the other side left unetched. Use Epoxy Fibreglass board.**



**Fig 3 Component Placement Diagram for the Preselector.**

A point to note is that the preselector may oscillate in the absence of an input signal. The oscillation is in the 650 MHz range and ceases when an input signal is applied. Adjustment of the supply voltage in the range 4.5 to 5.5 volts may be useful to optimise operation.

Cost has been left to last. In the USA or Europe the cost was quoted as \$US300 for the whole device. While this may cool your ardour it is a fairly reasonable price for these sorts of units.

## Digital SSB

An IC has been released by Harris in the USA which is virtually a Weaver method SSB receiver. The Harris HSP50016GC-52 Digital Down Converter (DDC) is a complete Weaver, or third method, receiver implemented digitally in one CMOS chip. A demonstration application circuit is in QEX for March 1994. The author is P T Anderson KC1HR.

External to the chip you need to digitise the incoming RF signal with a fairly fancy A to D Converter. This requires a 16 bit or better A/D working at 52 megasamples per second. At the output you need a 16 bit D/A to provide the audio output. You also need a clock oscillator and a computer to talk to the IC.

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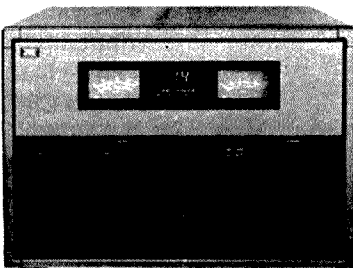


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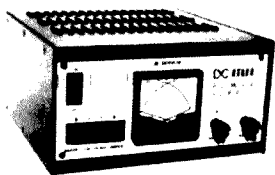
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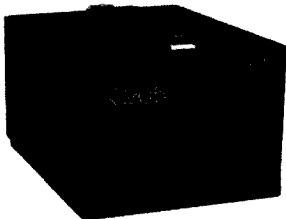
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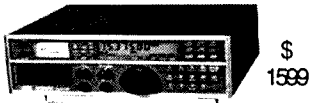
- \*Best Portable Receiver 1989/90. by World Radio Handbook!
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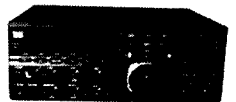
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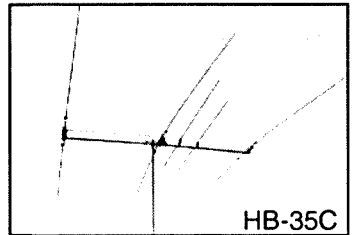
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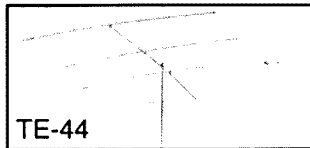
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HB-35C 5-element trapless beam



HB-35C

### FOUR BAND BEAMS FOR 7-14-21-28 MHz BANDS

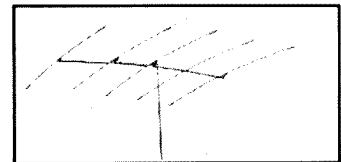


TE-44

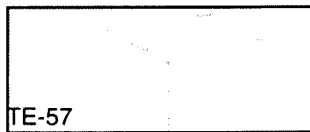
TE-14 rotatable dipole  
TE-34 3-ele beam on 14-21-28MHz, 1-ele on 7MHz  
TE-44 4-ele beam on 14-21-28MHz, 1-ele on 7MHz

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TE-46 3-ele beam on 14-21-28MHz, 1-ele on 10-18-25MHz  
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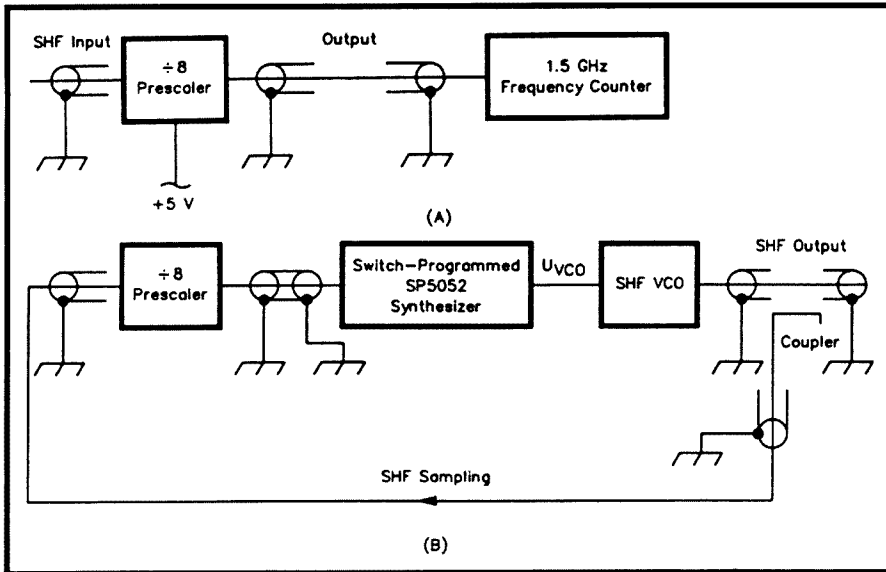


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**Fig 4 Block Diagrams of the Prescaler Applications. At A, use with a 1.5 GHz frequency counter. B shows an SHF Synthesizer using the Prescaler.**

The DDC performance specification is as follows:-  
 Clock Frequency 0 to 52 MHz  
 Input Signal Frequency Zero to Half the Clock Frequency.  
 Spurious Free Dynamic Range 102 dB.

Passband (-3 dB) to Stop Band (-102 dB) Shape Factor 1.5.  
 Passband Width variable over a wide range.  
 Output passband centre frequency fixed at 1.79 times the passband width in real output mode.

Output passband centre frequency fixed at zero in quadrature output mode.

A block diagram of the DDC is given in Fig 5. The decimating filters have an output sample rate which is a fraction of the input sample rate.

With relatively little development a complete HF digital SSB receiver is now a possibility. This chip nearly reaches 30 MHz and with other developments the realisation of a complete digital HF SSB receiver must be close. The costs at the moment are fairly high with the DDC in the \$US160 range and the other chips being fairly high spec and costly but the price of ICs has a way of tumbling.

### Fox Hunting With a Handheld

A handheld can be used as a direction finder in a fox hunt but it does lack control of the received signal strength. In QST for January 1994 Glen Rickerd KC6TNF describes a cheap attenuator to control the signal reaching the handheld radio.

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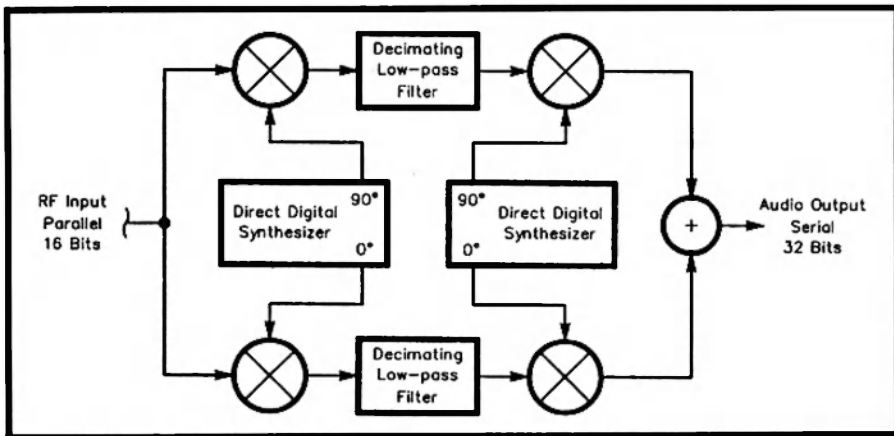
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 10/2/70CM, 15-10/2/70CM



**Fig 5 Block diagram of the Harris HSP50016 Digital Down Converter. This is a complete Weaver method receiver in one digital chip.**

To foxhunt with a handheld the basic technique is to clutch the handheld close to your chest or tummy and then turn around. The signal will be absorbed in one direction by your body giving a null to the rear. This works if the signal is not too strong but as you get closer the null will be hard to pick. The sensitivity pattern is illustrated in Fig 6.

An attenuator is needed, but only a limited amount of attenuation is possible with standard attenuators as the signal leaks in through the case of the handheld. Glen KC6TNF describes an attenuator which gets over this problem and uses cheap and readily obtainable materials.

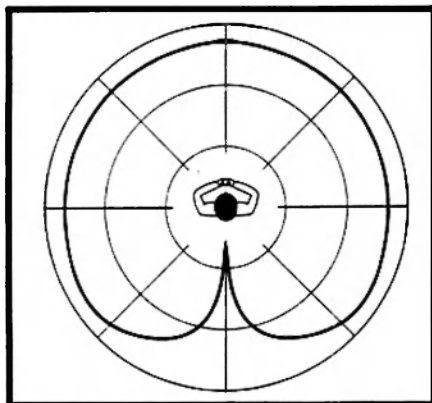
The handheld is lowered into a mailing tube covered in aluminium foil and the further into the tube the greater the attenuation. The tube acts as a waveguide beyond cutoff and quite high attenuation is possible. This is the same principle used in



**Using the attenuator tube. The H-T is suspended by the wrist strap inside the tube. For very strong signals such as those encountered close to a hidden transmitter, remove the rubber duck antenna and suspend the H-T deeper within the tube, adjusting the depth for optimum signal strength. Photo from QST by Don Pass.**

some signal generators and is used in shielding circuits.

A mailing tube is chosen which will allow the handheld to be lowered into it. The exterior of the tube is then covered with aluminium cooking foil.



**Fig 6 Handheld receive sensitivity pattern when using body fade for direction finding.**

Any joints should be overlapped generously. The bottom of the tube may be covered if desired but you probably won't have to if sufficient attenuation can be obtained.

The handheld is lowered into the tube by the wrist strap or you could attach a longer non-metallic cord. The handheld is lowered into the tube until sufficient attenuation is obtained, giving a weak and scratchy signal. Then, clutching the tube holding the handheld to your chest rotate slowly to find the null. Adjust the attenuation to get the best null. A shoelace can be pressed into service to lengthen the handheld wrist strap if needed.

Some practice is needed to develop the technique but the costs are minimal.

ar

## QSP News

### New Federal Office Postal Address

After fifteen years, PO Box 300 Caulfield South is no longer the postal address for mail for the Federal Office and *Amateur Radio* magazine. A new post office has opened only a few doors along from the Federal Office and, as from 3 May 1994, the new postal address for the Federal Office is: **PO Box 2175 Caulfield Junction VIC 3161**

**Have you advised the WIA Federal Office of your new Callsign? Use the form on the reverse side of the Amateur Radio Address Flysheet.**

# Random Radiators

with Ron Cook VK3AFW and Ron Fisher VK3OM

## The Automatcher

The fully automatic amateur antenna matcher, yours for only \$99.00. Provides a maximum VSWR of 1.5:1 on any HF amateur band, any mode, self powered, fully automatic, special circuitry. In the past couple of years two manufacturers have been running adverts with wording similar to the opening sentences in US amateur magazines. Are the claims true? Strictly speaking, yes.

The ARRL has carried out tests on one brand and we believe that the second brand uses the same system. How is it done? It seems too good to be true. One Ron says that his grandmother always said that if it seems too good to be true then its very likely too good to be true. Well, the units can do what is claimed. We've put our heads together and figured out how it can be done. And, here's the good news, you can build one for less than \$50! Does this mean the end of the Z-Match? No, there is a trade-off.

Figure 1 shows a coax connector connected to a balanced L network of resistors, R1, R2 and R3. As can be seen they can be regarded as being in series. If the total resistance of these resistors is 50 ohms, then a 50 ohm coaxial cable connected to the connector would see a good match and, providing the resistors had low series inductance and low shunt capacitance, the VSWR on the line would be close to 1.0:1. Often such arrangements are called dummy loads. There, you thought it was familiar, didn't you. Dummy loads do not make good antennas as they convert virtually all the incident power to heat. Very little signal is radiated.

Now if we connect some wire at points A and A, the ends of R1, some of the power flowing down the coax will be radiated by virtue of the current flowing in these wires. We could connect a full size dipole. Compared to the usual arrangement we now have R1 shunted across the feed

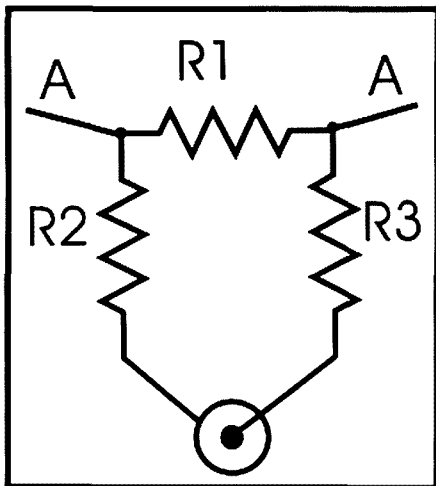


Fig 1 — The automatch circuit.

point and R2 and R3 in series with the feed line. It is easy to understand that if the dipole were very short, then the dummy load would still be a good dummy load and only a little signal would be radiated. We can probably guess that increasing the length of the dipole would increase the signal radiated by the system. Interestingly

enough the VSWR won't change much.

Some of you may recognise the system. In many RF measurement situations it is necessary to stabilise the load so a resistive attenuator pad is placed in circuit. For example, if antenna gain tests are being done it is common to put a 10 or 20 dB pad at the input of the measuring receiver to provide a high quality 50 ohm load for the antenna. This reduces the receiver sensitivity but that is not an important issue. Introducing an attenuator between the antenna and transmission line improves the match at the expense of transmitter power. A 3 dB pad will reduce a very high VSWR to 3:1.

It works like this. Suppose we have a transmitter connected to a feed line which is connected in turn to a very badly matched antenna. The VSWR, we will assume, is effectively infinite. Suppose that a 3 dB attenuator pad is connected between the antenna and the feed line. Consider what happens when the transmitter is keyed. The output flows up the feed line to the attenuator. Half the power from the transmitter is absorbed in the 3 dB pad. Virtually all the remaining power is reflected by the very badly matched antenna. Half this reflected power is absorbed by the 3 dB pad as the reflected power heads

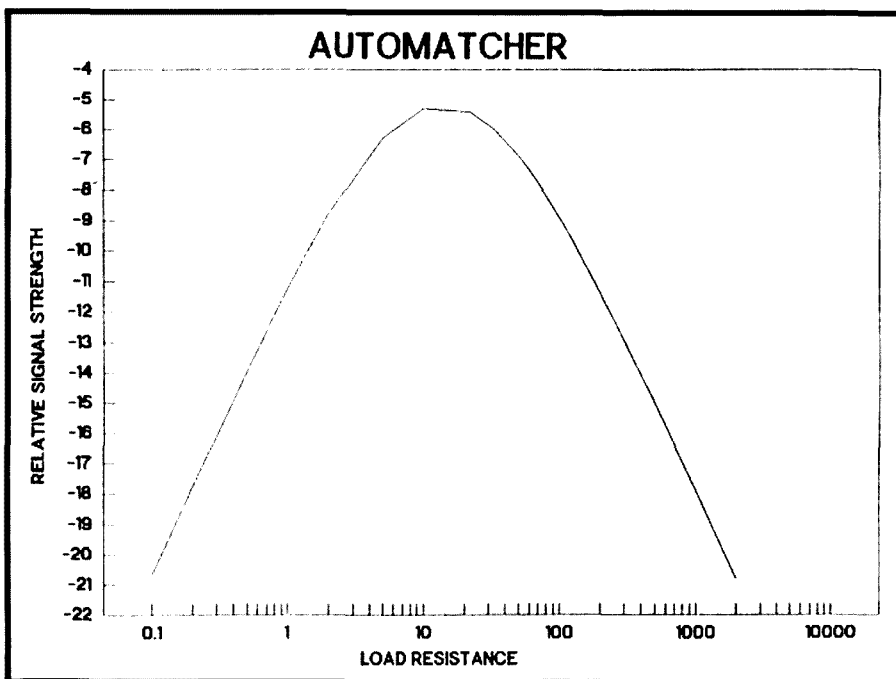


Fig 2 — Load vs relative signal.



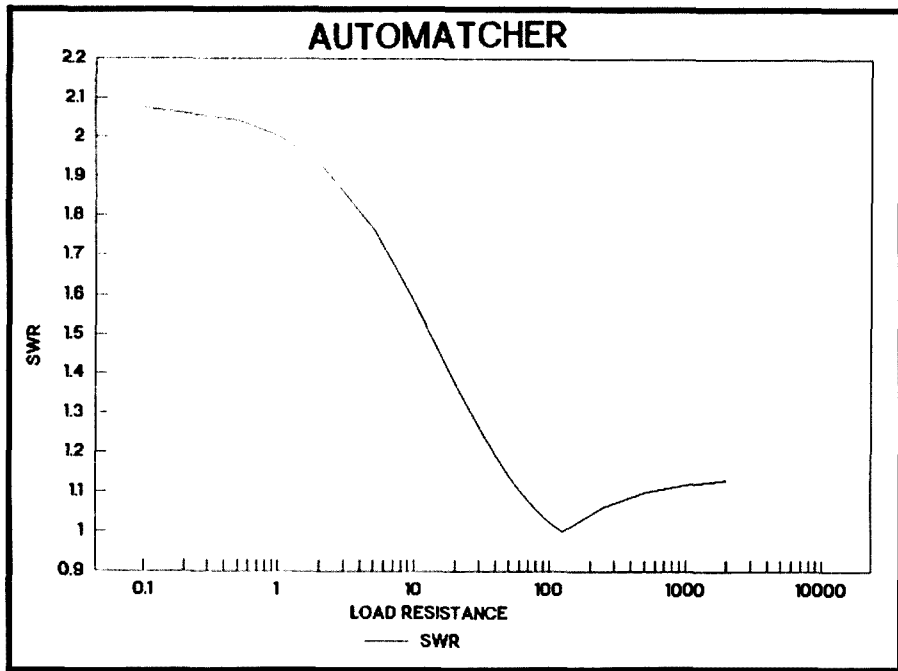


Fig 3 — SWR vs load (antenna) resistance.

back toward the transmitter. So the power travelling back along the coax is half of half of the transmitter power, or one quarter of the transmitter power. This is, if you care to do the calculations, equivalent to a VSWR of 3:1. It can be seen that if a 3 dB pad reduces the almost infinite SWR to 3:1 then lesser VSWR's will be made to look even better. A 6 dB pad will give even better improvement in the VSWR. Of course the power fed into the antenna is reduced by 3 or 6 dB as the case may be in our two examples, and if a mismatch exists then only a fraction of that will be radiated.

The matcher in Fig 1 is, in fact, an attenuator with the antenna connected across the output. Typical values for R2 and R3 are 12 to 15 ohms, with R1 having a value of 15 to 22 ohms. As the antenna is across R1, higher values of R1 will allow more power to be taken by the antenna. Lower values of R2 and R3 will reduce attenuation but also reduce SWR reduction. It is fairly easy to calculate the attenuation of the automatcher and its SWR for a purely resistive antenna and these results can be used to estimate the effects with a practical reactive antenna. Although the calculations can be done for reactive antennas, it is necessary to do many sets of

calculations for various frequencies.

Fig 2 shows that for R1 = 33 ohms and R2 = R3 = 12 ohms, an attenuation of about 5 dB minimum occurs and the VSWR is less than 1.2:1 for a wide range of antenna resistances and likely to be less than

2:1 for any practical HF antenna system. No tuning, no power supply.

Of course the down side is that the radiated signal will be at least 5 dB down on using the system with a conventional ATU (or tuner or matcher or Z-match, they all do the same thing regardless of name). In practice a signal loss of 10 to 25 dB might be more typical. So, if you want a great match for the transmitter, instant "tune-up", and you don't mind being S4 when others are S9, then this is the system for you.

The power rating of the resistors needs to be substantial as the majority of the transmitter power is used to heat them up. A 25 watt 12 ohm resistor can be made from 25, 1 watt 12 ohm resistors. Make up five strings of five resistors in series. Cut the leads fairly short so that the strings are not too long. Connect the five strings in parallel. The result is a 25 watt 12 ohm resistor. If all three resistors are made up with a 25 watt rating then any 100 watt transceiver can be used for SSB, CW or AM and FM if the two latter modes are set for not more than 75 watts.

73 from the two Rons  
ar

## WIA News

### Changes for Outback Radio

The 2.5 million residents of Australia's outback country are to get improved communications with the recent introduction of new services.

Many outback residents rely on high frequency radios for communications and have either no access or very limited access to the telephone service.

There are more than 80,000 HF radios used for this purpose across Australia.

Telstra — the corporate name of the communications company otherwise known to you and me as Telecom Australia — has introduced two services: one is satellite-based and called Satcom-m; the other uses HF and is called Radphone Direct Dial.

The new HF Radphone service allows users to dial directly to just about any telephone number in Australia.

The practise of outback HF users having to call a base station to place a phone call will die out.

Later this year, the facility to send faxes and digital data will be added.

The satellite-based Satcom-m service employs terminals the size of a briefcase, including the antenna.

The HF terminals for the Radphone HF service cost about the same as top-line, multiband HF amateur rigs, while the satellite terminals cost about five times as much.

Once you've got over that little hurdle, then there's the phone bills.....

# ALARA

Margaret Loft VK3DML

Well, it has been quite a few years since I last wrote these notes for *Amateur Radio*, so it is good to be back for this month's news. ALARA members all send a very big vote of thanks to Robyn VK3ENX for her sterling effort as the ALARA publicity officer over the last few years. With regret our committee has accepted Robyn's resignation and we all wish her and Colin well in their new home.

The VK5 ALARA girls did not run their "drop in" centre at the Barossa Picnic on 27 March, but they had their display and were represented by Meg VK5AOV, Christine VK5CTY and Sue Mahoney. Also helping was Erica Schnabel.

Dorothy VK2DDB had an ALARA table with a bird's eye view from the first floor at the Gosford field day and met Mary VK4BEM, Pixie VK2KPC, Marjorie VK2AMJ, Aimee FK8FA and Pauline VK2GTB.

Welcome to new members Wilma VK3MWJ, Margaret VK2MAS and Deb Matthews. A copy of the ALARA History is held in the WIA library.

One aspect of belonging to ALARA is the sponsorship of DX YLs into ALARA, and they reciprocate by sponsoring you into their YL group. For the last 10 years Marilyn ZL2BOA and I have built up a wonderful friendship both on air and by correspondence. Through our love of craft we also spend many hours discussing our latest projects, etc. Some years ago Lois WB3EFQ joined our discussion and

added to our enjoyment. Marilyn and Lois sponsored each other into their YL groups. I was already a member of YLRL.

Lois and Tom WB3BZN planned a visit to New Zealand in February this year and suggested maybe George and I could be in Napier when they visited Marilyn. George was not able to go but I could. So, on 22 Feb I flew out of Melbourne to Napier and arrived at 0645 UTC, our usual sched time and, although we had met two years ago and talked many hours on air since then, we still sat up until 2 am catching up (to me it was only midnight!).

On Wednesday Marilyn took me to her spinning group where I ended up as guest speaker talking about merino fleece. On Thursday Lois and Tom arrived by train. They did not know I was there as 14 MHz was the pits just before they left and we did not get to tell them I was coming. The talk flew thick and fast and we had our joint birthday party around 11 pm that night. The three of us had so much to talk about comparing all our interests and the cost and the availability, or lack of, in each country.

Marilyn and Lois are still nursing (my previous occupation), we are all hams and all craft people, and the similarities went on and on.

On Friday we did a "Cook's" tour of Napier and then had fish and chips for tea out of paper, a special request from Lois. On Saturday Marilyn arranged a trip out to the Gannet colony at Cape Kidnapper,

a trip of 10 km along the beach by tractor and trailer. We left at 10 am (it depends on low tide) and arrived at midday after being bogged in the sand a few times when we had to get off and push. We got soaked a couple of times. Luckily it was a hot day at 28°C (that's hot for Napier). Most people walked up to the top to see the view and more gannets. It is the only colony on a mainland. Usually they are on islands. At age 26 weeks the gannet chicks fly to Australia and then return the following year to stay.

Our trailer had a very flat tyre so we had a bumpy trip back to beat the rising tide. Halfway back a second trailer had a wheel seize so it was a very eventful and most interesting day.

On Sunday Graham ZL2BCK took us into the Kaweka Ranges and we saw some Red Tussock grass in one of the few remaining uncleared areas. We also walked through a native forest area.

On Monday we said goodbye to Lois and Tom. We have lovely memories of four very happy days with them. On Friday morning I had to say goodbye to Marilyn and Graham after 10 days jam packed with so much we had fitted into the time.

Arriving at Papakura I was met by Aola ZL1ALE and Dave ZL1AMN who took me to their home for my last night in New Zealand. After tea I had the pleasure of catching up with some old and new friends Alma ZL1WA, Jackie ZL1TZW, Win ZL1BBN, Biny ZL2AZY and Merv ZL2AVY, Ann ZL1TRH and Ian ZL1BFB, Teresa ZL1VFR and Andy ZL1UTX, Petre ZL1UQT, Pat ZL1LD and Ivor ZL1AGO, Eileen ZL1BRX and Fred ZL1SP, Elva ZL1BIZ and Ian ZL1BKZ, Celia ZL1ALK and Geoff ZL1AYV. Certainly a lovely big group and a wonderful way to end a holiday, all brought about by amateur radio and the fellowship it encourages.

Next month another member of the committee will be the guest writer for this column.

ar



Left to right Margaret VK3DML, Marilyn ZL2BOA and Lois WB3EFQ.

**Don't buy stolen  
equipment —  
check the serial  
number against  
the WIA stolen  
equipment  
register first.**

**DICK SMITH**  
ELECTRONICS



# FT-11R Micro Deluxe 2m Handheld



**2 year warranty**

New for '94! One of the world's smallest 2m FM handhelds with a full-size keypad, the Yaesu FT-11R has been reduced in size, but not in features. Designed to fit comfortably in your hand, it's just 57 x 102 x 25.5mm (W.H.D) including the FNB-31 NiCad pack, and weighs only 280 grams.

The result of the latest in miniaturisation, microprocessor control and FET technology, the FT-11R provides a large back-lit LCD screen with full frequency readout, 150 memories (75 in alpha-numeric mode), full function keypad with easy SET mode, and up/down thumb control Volume and Squelch settings. A new high efficiency FET RF amplifier provides 1.5W output standard from the compact 4.8V battery pack, and up to 5W output from 9.6V (using an optional battery pack or PA-10 mobile adaptor). A range of battery life extenders, including Auto Battery Saver, Tx Save, and Auto Power Off (with ultra-low 20uA consumption) are included. Australian version Auto Repeater Shift, DTMF based selective calling and paging, extended 110-180MHz receiver coverage (including the AM aircraft band), and a variety of scanning modes are also provided.

Other new features include naming of memory channels, DTMF Auto-dial memories, and DTMF Message Paging with up to 6 alpha-numeric characters. A large range of accessory lines are also available for easier customisation of your transceiver.

The FT-11R comes with an FNB-31 600mA/H NiCad, belt-clip, approved AC charger, CA-9 charge adaptor and antenna.

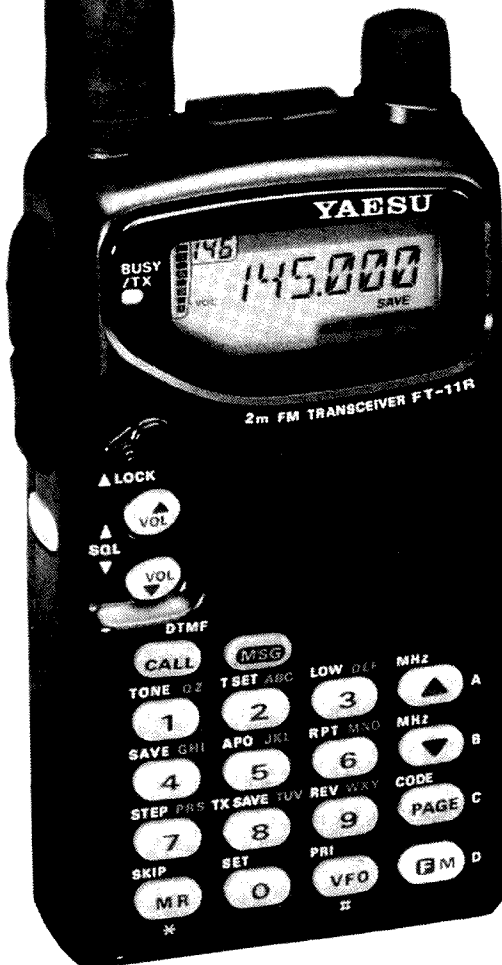
Cat D-3640

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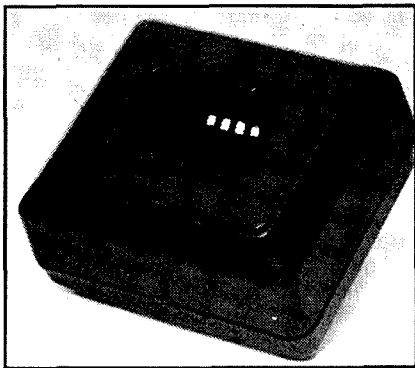
Save \$20

**70cm Module To Suit FT-726R**

Great value for parts (especially RF output module).

Cat D-2952 **\$59.95**

\* All specials are available until June 30 1994 only, or while stocks last. Some products and prices may not be available through Dick Smith Electronics Authorised Stockists.



## MasterCharger 1 Fast Desktop Charger

New for '94! At last, an intelligent, fast desktop charger that not only suits most current Yaesu handhelds but also many previous models. Made in USA, the MasterCharger 1 operates from 13.5V DC and uses switch-mode technology plus a Philips battery charge monitor I.C. (with -ΔV full charge detection) to charge NiCad batteries between 6V and 13.2V. Suitable for the FT-237/3, FT-411/411e, FT-470, FT-26, FT-415/815 and FT-530, its

charging cradle can easily be replaced, allowing for the insertion of a new cradle to suit earlier Yaesu transceivers (eg FT-209R) or different brands/model handhelds. The MasterCharger 1 requires 12-15V DC at 1.3A, and is supplied with a fused cigarette lighter cable for vehicle use.

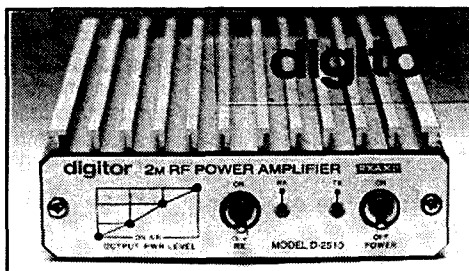
Cat D-3850

Now available - charging cradles to suit various Kenwood, Icom, and Alinco handhelds.

**SAVE \$30**

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## 2m RF Power Amplifier



Boost your 2m hand-held's performance with this compact amplifier. Works with 0.3 to 5W input and provides up to 30W RF output, plus has an inbuilt GaAsFet receive pre-amp providing 12dB gain. A large heatsink and metal casing allow for extended transmissions at full output, and a mobile mounting bracket is supplied for vehicle use. Requires 13.8V DC at 5A max. Size 100 x 36 x 175mm (W x H x D).

Cat D-2510

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**NEW FOR '94**

## FT-990 H.F All-Mode Base Transceiver

The FT-990 offers many of the features of the legendary FT-1000 in a more compact and economical base-station package. Its excellent front-panel layout, together with clear labelling, a large back-lit meter and an uncluttered digital display allows very straight - forward operation. The receiver uses a wide dynamic range front end circuit and two DDSs to provide a very low noise level and excellent sensitivity over the 100kHz to 30MHz range. Transmitter output is 100W on all HF Amateur bands (SSB, CW, FM), with high duty cycle transmissions allowed. The internal auto antenna tuner and an inbuilt power supply are standard features, while the customizable RF speech processor and Switched Capacitance Audio filtering facilities are unique to the FT-990. Other features include IF Shift and IF Notch filters, IF bandwidth selection, 90 memories and one-touch band-selection.

Cat D-3260

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# AMSAT Australia

Bill Magnusson VK3JT\*

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## National co-ordinator

Graham Ratcliff VK5AGR

Packet: VK5AGR@VK5WI

## AMSAT Australia net:

Control station VK5AGR

Bulletin normally commences at 1000 UTC, or 0900 UTC on Sunday evening depending on daylight saving and propagation. Check-ins commence 15 minutes prior to the bulletin.

Frequencies (again depending on propagation conditions):

Primary 7.064 MHz. (Usually during summer).

Secondary 3.685 MHz. (Usually during winter).

Frequencies +/- 5 kHz for QRM.

## AMSAT Australia newsletter and software service

The newsletter is published monthly by Graham VK5AGR. Subscription is \$25 for Australia, \$30 for New Zealand and \$35 for other countries by AIR MAIL. It is payable to AMSAT Australia addressed as follows:

AMSAT Australia  
GPO Box 2141  
Adelaide SA 5001

## "S" Band News

Apart from microwave ovens, local subscriber TV channels and OSCAR-13 we now have a couple more signals to listen for on 2.4 GHz. Recently the DOVE (DO-17) satellite controllers turned on the 2.4 GHz beacon. It is transmitting 1200 baud telemetry and it is quite loud. I have copied it perfectly from about 5 degrees elevation on a simple ground plane antenna. The ground plane is 60 mm diameter and the antenna 29 mm long. They are soldered directly to an "N" connector which is screwed onto the pre-amp. Surprisingly this device at "broomstick" height is quite adequate for DO-17 and also for UO-11.

DOVE's beacon is on 2401.2205 MHz and UO-11's beacon is on 2401.500 MHz. Both are subject to large frequency excursions due to Doppler variation. The amount of variation is typical of LEOs on these frequencies. Both beacons usually come in about 50 kHz high and go out about 50 kHz lower than the nominal frequency. This is a bit hard to cope with by manual tuning. Next month I'll give a brief account of my efforts to auto-tune these birds. Using the 2 1/4 turn left hand helix designed for my dish feed, both these beacons pin my "S" meter for about 90 degrees of each reasonably high pass.

Good stuff, these microwaves.

Last month I dealt with the HF/VHF modes in the continuing saga of the transponder modes. Here goes with the VHF/UHF modes.

## Modes B and J

The "reciprocal" modes. Handy because two transceivers, one for 2 metres and the other for 70 cm, can be configured to handle both modes. Of course, if you have one of the new fangled multi-mode multi-band devices it will do this and other jobs admirably. Similarly, the one steerable antenna system will do for both modes. Most operators opt for circularly polarised Yagis on both 70 cm and 2 metres. 3JT, being made of sterner stuff, likes to poke about with oddball antennas like the helix and Lindenblads and such.

So, what's on modes B and J? The first things that come to mind are the transponders on OSCARs 10 and 13. Unfortunately, both the mode J transponders on these satellites are now out of action. OSCAR 10's on board computer was "cooked" by radiation and failure of the 70 cm transmitter on OSCAR 13 took out the mode J and mode L transponders. Mode B, however, is alive and well on both these birds.

Mode J is popular with the designers of the digital amateur radio satellites. WO-18, LO-19, FO-20, UO-22, KO-23, KO-25 and IO-26 all have mode J capability. The three most popular of

these, UO-22, KO-23 and KO-25, are buzzing 24 hours a day with 9600 baud, mode J digital activity. The quieter and less cluttered environment of 70 cm is much more user friendly than 2 metres. The 2 metre band is practically unusable in many parts of the world due to man made noise and illegal radio activities.

This last unfortunate fact points the way to the future of amateur radio satellites. Popular pressure has dictated that a mode B transponder be included in the design of the new phase 3d satellite. In my opinion this will prove in time to be the least used of the transponders in the future as more operators realise the benefits of moving higher in frequency. A large slice of the world's amateur population is already cut off from mode B for the above reasons.

We already see plans afoot for the transmitters and receivers on phase 3d and a fundamental change to mode designation. We will see the introduction of modes V, U, C, X and Ka. This will lead to a rationalisation of some of the anomalies inherent in the older mode designations. It will be a welcome change (when we oldies get used to it) and it will allow newcomers to make more sense of the mode structure. The RF systems on phase 3d will not be built in the form of transponders but will be separate transmitters and receivers which can be coupled by a matrix switching arrangement into any combination or set of combinations. I'll look more closely at the frequency plans and switching arrangements planned for phase 3d next month.

\*359 Williamstown Rd, Yarraville, VIC 3013  
Packet: VK3JT@VK3BBS  
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## Awards

John Kelleher VK3DP — Federal Awards Manager\*

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From the DXAC comes the following information. The question of new country status for Pratas Island is back on the DXAC agenda after consultation with Dr Bolon Lim BV5AF of the Chinese Taipei Amateur Radio League. A vote on the question of DXCC country status for Pratas Island has not yet been scheduled.

By unanimous vote the ARRL DXAC passed a recommendation to delete Walvis Bay (ZS9) and Penguin Islands (ZS0, ZS1) from the active DXCC listings. They decided that these entities no longer meet the DXCC criteria following their turnover to Namibia by South Africa. This recommendation has been sent to the Awards Committee for action, along with a suggested effective date of 1 March 1994.

This action by the ARRL would now reduce the DXCC countries total to 326 countries. However, future consideration must be given to Pratas Island, and possibly the question of the Turkish enclave in Northern Cyprus.

The question of new Russian prefixes continues to perplex the amateur community. In my own small way, and when information is received at this office, I will keep members informed.

New callsign blocks have been adopted by the following:-  
R1MVA-R1MVZ Malyj Vysotskij Island  
R1FJA-R1FJZ Franz Josef Land  
R1ANA-R1ANZ Antarctica

These callsigns are intended to replace the 4J and 4K series previously used.

The following information was supplied by Serge Bandukevich, of the DX Club of the Republic of Belarus (formerly known as Byelorussia). The prefixes currently in use in Belarus are EU, EV and EW. The EV prefix is reserved for Memorial stations. Club station calls have suffixes beginning with W, X and Z. The number in the prefix has the following meanings:-

- 1 Minsk City (ex UC2A)
- 2 Minsk Region (ex UC2C)
- 3 Brest Region (ex UC2L)
- 4 Grodno Region (ex UC2I)
- 5 Not Used
- 6 Vitebsk Region (ex UC2W)
- 7 Mogilev Region (ex UC2S)
- 8 Gomel Region (ex UC2O)
- 9 Not Used
- 0 Visiting Amateurs

Stations in the Karelia area are now using callsigns from the following series:-  
 RA1NAA-RA1NZZ  
 RA1NA-RA1NZ  
 RN1NA-RN1NZ  
 RK1NA-RK1NZ  
 RK1NWA-RK1NZZ for Club stations  
 UN1 and possible EM1N for previously established stations.

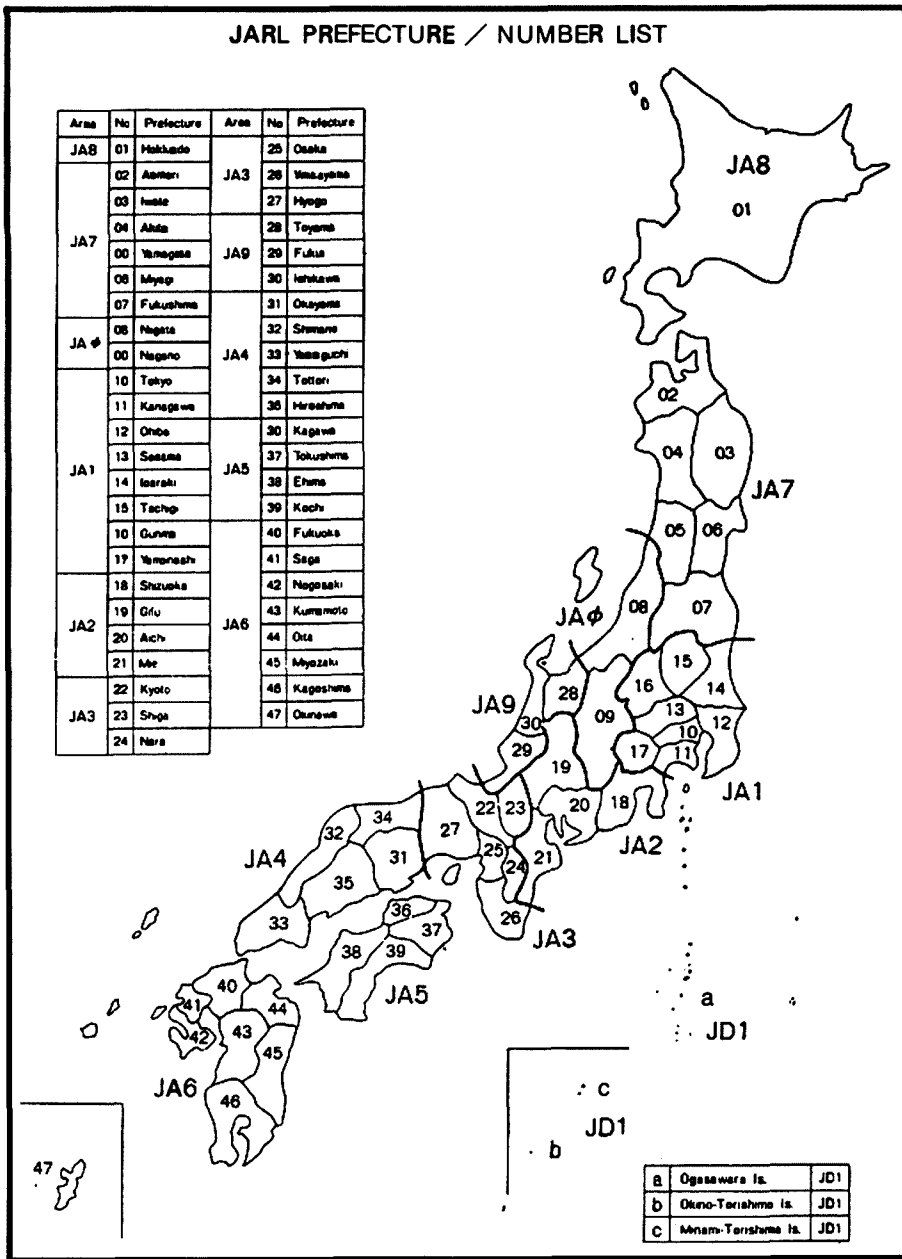
It must be noted (more confusion) that the EM prefix has been assigned to the Ukraine, and that the series UN2 to UN0 is now allotted to Kazakhstan.

Following my suggestion that you rummage through your collection of QSL cards while conditions are relatively low, to possibly earn some awards, I have had requests to publish the Japanese (JARL) Awards program (it seems that operators have more JA cards than any other!).

## The JARL Awards Program

### General Rules

1. JARL Awards will be issued to Amateur Stations and SWLs.
2. Each claim must be accompanied by a QSL card list furnished with the callsigns of stations worked/heard, dates, bands and modes of the contacts meeting the requirements of the award concerned.
3. Each list must be accompanied by a statement from the applicant's national society or from any two amateurs, certifying that the QSL cards are in the possession of the applicant, and that all QSO information is correctly listed.
4. A fee of 8 IRCs or US\$4.00 will be charged per award. If the operator finds it necessary to submit QSL cards in lieu of a certified list, then sufficient return postage must be included.
5. Applicants can request three of the following four endorsements.
  - (1) Bands. (Only contacts made within the same band)  
 All Amateur bands. 3.8 MHz is included with 3.5 MHz.



- (2) Modes. (Only contacts made in the same mode)  
 CW, AM, SSB, FM, SSTV, RTTY, ATV, FAX.
- (3) Contacts made only through Amateur Satellites.
- (4) QRP. Only contacts made through transmitters with final input of 1 (one) Watt or less.

Only contacts made with land stations (including mobile stations on a river or lake) will be acceptable. Those with maritime or aeronautical stations, however, will be acceptable for 50 MHz (100), 144 MHz (100), 435 MHz (100), 1200 MHz (10), 2400 MHz (10), 5600 MHz (10) and VU1000 awards.

Only contacts with amateur stations authorised by the administration will be acceptable. All contacts must be made

within the same call area, or if no call area exists, within the same country. All correspondence must be sent to:-  
 Japan Amateur Radio League  
 Award Desk  
 1-14-2 Sugamo, Toshima,  
 Tokyo 170  
 JAPAN

### JARL Awards and requirements

1. All Japan Districts (AJD) may be claimed for having contacted/heard and received a QSL card from an Amateur station located in each of the ten (1) call areas (1-0) of Japan.
2. Worked All Japan Prefectures Award (WAJA) may be claimed for having contacted/heard and received a QSL card from any amateur station located in each of the 47 prefectures

of Japan. Your list should be arranged in numerical order of prefectures.

3. **Japan Century Cities (JCC)** may be claimed for having contacted/heard and received a QSL card from an amateur station located in each of at least 100 different cities of Japan. JCC-200 through JCC-600 will be issued as separate awards. Your list should be arranged in order of JCC reference number.
4. **Japan Century "Guns" (JCG)**. The rules are the same as for JCC, with cities replaced by "guns", which can be smaller divisions of the aforementioned prefectures.
5. **VU-1000** may be claimed for having contacted/heard and received confirmation from each of at least 1000 different amateur stations on 50 MHz, 144 MHz and/or 435 MHz. Your list should be arranged in alphabetical order of prefix, followed by the suffix. Only contacts made on and after 29 July 1977 will be acceptable.
6. **Worked All Cities Award (WACA)** may be claimed for having contacted/heard and received a QSL card from an amateur station located in each of ALL the cities of Japan that are in existence on the day that the final contact for the award is claimed. Your list should be arranged in order of JCC reference number.
7. **Worked All "Guns" Award**. Same as the rules for WACA, with cities replaced by "guns".
8. **Asian DX Award (ADXA)** may be claimed for having contacted/heard and received confirmation from an amateur station located in at least 30 Asian countries including Japan.
9. **Heard All Continents (HAC)** may be claimed for having heard and received a QSL card from an amateur station located in each of the six (6) continents.
10. **Amateur Satellite "Fuji"**. Applicants should make contact with ten (10) different amateurs through the Amateur Satellite "Fuji" on CW and SSB only, and receive confirmation from those stations.

#### Asian Country List of prefixes for ADXA

A4 A5 A6 A7 A9 AP BV BY EP HL HS Hz JA JDI (Ogasawara) JT JY OD S2 TA UA9/0 UD UF UG UH UI UJ UL UM VS6 VU VU4 VU7 XU XW XX9 XY/XZ YA YI YK ZC4 1S 3W/XV 4S 4X/4Z 5B 7O 8Q 9K 9M2 9N 9V. UD through UM can be replaced with new prefixes.

\*PO Box 2175, Caulfield Junction, VIC 3161  
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## Club Corner

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### Summerland Amateur Radio Club

The two major events in the Summerland Amateur Radio Club's calendar, for the remainder of this year, are the Annual Club Hamfest and the Grand Computer EXPO.

31 July is the date of the Hamfest, at the clubrooms in Richmond Hill, with bring and buy stalls, disposals, demonstrations (radio), refreshments, etc.

Keep 26 November clear for the Grand Computer EXPO, in the Lismore City Hall. Many commercial exhibits and displays of the latest in computers and electronics. Bring and buy tables, disposals, radio demonstrations and refreshments.

Also the Radio Club is planning to assist with the International Travel-Fest, in the Lismore City Hall, on 6 and 7 August. It is hoped to set up communication links with the various countries that will be involved in the Travel-Fest.

For information on these, or on any Radio Club activities, please contact Steve VK2JSM, on 626 693, Ric VK2EJV, on 895 137, or Graeme VK2GJ, on 851 336. Also check out a local BBS, VK2EA-2 or VK2YDN-1, via VK2RPL-2. The Club's postal address is PO Box 524, Lismore, NSW 2480.

VK2GJ Graeme, Publicity Officer

### Radio Amateurs Old Timers Club

Office bearers and committee for the year to 30 June 30 1995 are as follows:-  
President: John Fullagar VK3AVY  
Vice President & Broadcast Co-ordinator: Allan Doble VK3AMD  
Secretary/Treasurer: Arthur Evans VK3VQ  
Committee: Bill Gronow VK3WG, Ron Fisher VK3OM, Ken Seddon VK3ACS, John Tutton VK3ZC  
Magazine publisher: Stewart Day VK3ESD.

Members and interested friends are reminded that we have two 80 metre transmissions on our regular first Monday of the month. We believe these will become increasingly important as sunspot conditions continue to deteriorate.

The frequency will be 3.615 kHz plus or minus QRM. The first one is at 10 am simultaneously with the 2 metre signal. The second one is at 8.30 pm. Call backs follow each transmission. We had a gratifying number of call backs on 80 metres after our May sessions reaching VK2, 3, 5, & 7. The team who make our six transmissions possible each month

would be encouraged if they could receive a more numerous response from VK4 and VK6. We have a lot of members in each of these areas and we know we put a good signal out to them. If this means you, please call back and let us know that we are not wasting the time of our broadcast team.

Allan Doble VK3AMD

### Moorabbin & District Radio Club

As this issue of *Amateur Radio* goes to press the club is looking forward to a large attendance at our Hamfest at the Brentwood Secondary College in Glen Waverley on Saturday 14 May. (These publishing deadlines can be a bit unfortunate can't they?)

The Club's strong hope is that the open Home Brew competition will attract a big entry, especially as Ron Cook VK3AFW and Drew Diamond VK3XU have kindly agreed to be the judges without fear or favour.

Club members are reminded that the annual meeting and election of committee and office bearers will be held on Friday 15 July. The committee asks members NOT to assume that everything will be all right, but to give serious thought to those who should be entrusted to carry on the long tradition of the club.

Allan Doble VK3AMD

### Ballarat Amateur Radio Group Inc

Ballarat Amateur Radio Group Hamvention

It has been confirmed that the annual BARG Hamvention will be held on the weekend of 29 and 30 October. Further details will be forthcoming as planning continues, including a possible venue change. However, we suggest you mark these dates on your calendar to ensure that you keep the weekend free to attend this "premier" amateur radio event.

Tony VK3DMK and his enthusiastic team are determined to surpass their previous organising achievements and are promising that this year's event will be a "winner". We'll keep you posted.

Norm D'Angri VK3BLA

### Hervey Bay Amateur Radio Club Inc

The "White Whale Award — 1994"

The annual Festival of Whales, in "Whale City" Hervey Bay, is fast approaching us and the HBARC once



again is keen to show the world its city, its radio club, and all aspects of amateur radio, not only to other amateurs but to all fellow human beings.

Each year, gentle ocean giants, the Hump Back Whales, stop for approximately three months to rest and raise their young in the quiet waters of Hervey Bay. Whilst doing this they like to observe the tourists who make themselves very available on every possible floating vessel. The whales seem to have a BALL!

The callsign will be **V14WWA** (White Whale Award). The award itself, a magnificent 10 x 8 inch glossy photograph of a rare, gentle giant of the deep playing with others, was a great achievement for the patient photographer. This rare white whale has been seen on various occasions at rest in our sheltered bay but, over the past three to four years, only few photographs have been successful. WE HAVE ONE OF THE BEST, and it can be on your shack wall!

**WHEN?**

The Special Event Call will be available to all amateurs and listeners world wide for a contact between 1 August and 31 October 1994. The usual five green stamps (or \$5) will apply to help with the printing and mailing costs. Please note the extended time of three months instead of one month to allow for poor propagation that may make contacts difficult.

The frequencies to be used will be as close as possible to 3.794, 7.100, 14.235, 21.250 and 28.495 MHz and Australian Novice frequencies will be used as much as possible, bands permitting.

Send applications for the award and/or QSL cards to QSL Manager, HBARC Inc, PO Box 829, Hervey Bay, QLD 4655. Please note that all enquiries are answered 100%.

**Jim White VK4BX**

**Granite Belt Amateur Wireless Group — SE Queensland**

Group member activity is centred on improving low band DX setups, with Kev (Warwick) and Paul (Tenterfield) revamping their 160 and 80 metre aerials, Doc (Dalveen) installing an 80 metre 1/4 wavelength groundplane and 40 metre 4 element vertical phase array, Karl (Pozières), Peter and Tom (Amiens) and Alan (Stanthorpe) all hunting for 160, 80 and 40 m valve rigs. Perhaps BARCFEST will help provide some more of the older equipment this year. Naturally little valve HF equipment appears now in Hamads so, if you want a good home for that old shackwarmer, please let us know!

Recent group activities included a

portable QRP CW outing and winery tour; a valve-type test/measuring equipment night which featured old CROs, Ratcliff and Marconi RF signal generators and a huge Cintel AF generator (courtesy Paul and his trailer!); and a demonstration of open wire feeder line and Beverage aerial construction by Doc. The use of open wire line for feeding quads (72 ohm) wire arrays (72, 300, 450 and 600 ohms) and vertical aerials (72 and 300 ohm) was particularly interesting, as was Doc's

collection of hundreds of TOOTHBRUSH HANDLES for spreaders!!

The group is particularly interested in obtaining HEATHKIT equipment from yesteryear (SB104A, SB401, HW101, HW16, SB200, SB201, SB220, etc) and GALAXY transceivers 300, 500 and 550 series. Condition not important. Any details and information to PO Box 24, Dalveen Qld 4374 please.

**Doc VK4CMY**  
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**Contests**

*P Nesbit VK3APN — Federal Contest Coordinator\**

**Contest Calendar June-July 94**

Jun 4	Merv Stinson Memorial 80 m	(May 94)
Jun 4/5	RSGB Field Day CW	(May 94)
Jun 5	Portugal Day	
Jun 11/12	ANARTS RTTY Contest (VK)	(May 94)
Jun 11/12	QRP Weekend 1994	(May 94)
Jun 11/12	South American WW DX CW	
Jun 18/19	VK Novice Contest	(May 94)
Jun 18/19	All Asia CW DX Contest	(May 94)
Jun 25/26	ARRL Field Day	(May 94)
Jul 1	Canada Day CW/Phone	
Jul 2	Australasian Sprint 80 m CW	
Jul 2	NZART Memorial Contest (80 m)	
Jul 2/3	Venezuela SSB DX	
Jul 9	Australasian Sprint 80 m Phone	
Jul 9/10	IARU HF Championship	
Jul 16	18th West Australian 80 m SSB	
Jul 16	Jack Files Memorial Phone	
Jul 16	Colombian Independence Day Contest	
Jul 23	18th West Australian 80 m CW	
Jul 23	Jack Files Memorial CW	
Jul 23/24	Venezuela CW DX	
Jul 30	Waitakere Phone Sprint 80 m	
Aug 6/7	YO DX Contest	
Aug 7	Jack Files Memorial (CW)	
Aug 13/14	Worked All Europe CW	
Aug 13/14	SARTG RTTY Contest	
Aug 13/14	SEANET SSB DX Contest	
Aug 20/21	Keyman's Club of Japan (CW)	

One of the most controversial, yet least publicised, aspects of modern contesting would have to be the issue of cheating. At its lowest levels cheating comprises taking credit for a contact where you're not quite certain about the callsign, or else perhaps you had to guess the number. Maybe you suspect that the station you have been calling for the last few minutes, as part of a dogpile, really gave that number to someone else and simply got part or even all of your callsign wrong. (After all, if he couldn't copy you properly (or at all), how can you be blamed?) Other times it means making a mistake when attempting to identify the country belonging to an unusual prefix,

which "just happens" to boost your multiplier total...

At the other extreme is the contester who pads his log with bogus contacts, either during the event or after it. If the contest requires serial numbers to be exchanged, he might skip the odd number here and there, usually early in the morning when others are less likely to be listening, to enable extra callsigns and multipliers to be added later. Combined with judicious jamming of other contesters who are likely to be a threat, this contester can become virtually invincible.

Fortunately, the great majority of contesters are decent, honest people who log their contacts fairly and accurately, and who would never take advantage of other contesters by falsifying contacts. Their attitude is that if they are beaten this year, they just have to try harder next time around. Most importantly, the certificates on their wall really mean something. *They are people of honour, without whom contests could, and would, not exist.*

What about log checking, I hear you say? Well, for the smaller contests, particularly those on a local or semi-local level, it is easy to cross-check contacts. If a doubtful callsign appears, and the owner of that callsign has not submitted a log, confirmation is as close as a telephone call away. At the other end of the spectrum are the large worldwide events, such as the CQWW, WPX and ARRL contests, where logs are cross-checked by computer. Disk logs are entered directly, typed ones are scanned, and handwritten ones keyed in. For these contests, as many as 30 or 40 people may be involved for much of the year. Checking is thorough, and the cheater has a high probability of being detected and disqualified.

However, in-between contests present a problem. In such events several hundred logs containing between half a

dozen and a thousand or more contacts are often checked by only one person, generally on a part-time basis. The seasoned cheater knows that it is physically impossible for our intrepid volunteer to perform much more than spot-checking and that, with some finesse, enough bogus contacts can be added to almost guarantee winning without excessive risk of being discovered.

It is bad enough that these types obtain certificates and trophies which they have not earned, and which say more about their lack of contest ability than anything else (because they have to cheat in order to get them). In practice little status is obtained from having them, because their activities are usually visible enough that few honourable amateurs would wish to visit and view the collection of certificates and trophies anyway. Worse, however, is the fact that, by obtaining these prizes unfairly, they deprive other entrants of ability and honour as their rightful recognition. With little chance of winning, at least honestly, the risk is that sooner or later these other top notch operators could drift out of contesting altogether.

Ironically, it is the entrants themselves who hold the key to keeping things honest. If YOU enter a contest and hear some mischief, spend a few minutes listening and noting your observations. In particular, write down the time, serial numbers, callsigns, and whatever else seems relevant, and advise the relevant contest manager promptly. If you can record the errant behaviour on tape, so much the better.

Remember, also, that in most contests entrants are required to sign a declaration that they have observed the "spirit of the contest", meaning that rudeness to other entrants, jamming, and other unsporting behaviour is sufficient grounds for disqualification in its own right. In such instances, a tape recording and/or the corroboration of other observers will assist the manager immeasurably, and generally enable him to act.

There are many superb contest operators in Australia and, as Federal Contest Coordinator, I intend to do everything possible to ensure they obtain the recognition to which they are entitled, and that the few "bad eggs" are weeded out. As fellow testers, your help is needed, and will assist greatly!

Note that whereas last month's Calendar showed the Jack Files Memorial Contest as an 80 m event, it is now 160, 80, and 40 m. Thanks to VK4LW, VK5OV, VK6APK, VK6NK, ZL1AAS, ZL1BVK, CQ, QST, and *Radio Communications*. Until next month, good contesting!

Peter VK3APN

## Contest Details

See also "General Rules & Definitions" published in April 1993 *Amateur Radio*.

### 13th South American World Wide CW

Jun 11/12, 1500z Sat to 1500z Sunday

This CW contest is sponsored by the Brazilian magazine *Antenna Electronica Popular*, and occurs on each second full weekend in June. The objective is to work as many amateurs worldwide as possible, with the emphasis on South American QSOs. Bands are 80-10, and categories are: single operator, single and all band; multioperator, single and all band; and QRP all band (max 10 W I/P). Exchange RST & serial number. Claim 0 points for QSOs with own country (multiplier credit only), 2 points for QSOs within own continent, 4 points for QSOs with other continents, and 8 points for QSOs with South America. Continents are as defined for WAC. Multipliers are total DXCC countries (including South American countries) plus total South American prefixes. The score on each band equals the QSO points for that band x the multiplier for that band. Overall score equals the total band scores. Use separate logs for each band, and mail by 31 July to: "WWSA Contest, PO Box 282, ZIP 20001-970 Rio de Janeiro, RJ — Brazil".

### Canada Day CW/Phone

July 1, 0000z-2359z Friday.

Rules are the same as last year. For details, see this column in June 1993 issue of *Amateur Radio*.

### 9th Australasian 80 m Sprint (CW/Phone)

July 2 (CW), July 9 (Phone); 1100-1159z Saturday.

The reasoning behind this contest is that most contests are loaded with fairly complex rules, and participation, except by serious testers, is tending to diminish. This contest, which has been organised by the Adelaide Hills Amateur Radio Society, and co-sponsored by the VK5/8 Division of the WIA, is designed to be quick and simple, yet challenging and fun.

The object is to make (and SWLs to hear and log) as many contacts as possible in a 1 hour period on 80 m, working VK, ZL and P2 on 80 m. Clubs are also eligible. Frequencies are 3500-3700 kHz (CW) and 3535-3700 kHz (phone). Call "CQ Sprint", "CQ Contest" or "CQ TEST". Exchange serial numbers starting anywhere between 001 and 999, reverting to 001 if 999 is reached. Note that RS(T) is not required for this contest.

Logs should include time (UTC), callsign worked (both callsigns for SWLs), and numbers sent and received. Attach a summary sheet showing name, address, callsign, contest date, and declaration. Club/multioperator entrants must list the names and callsigns of all operators. Send to: "AHARS, PO Box 401, Blackwood, SA 5051" to be received by Friday 12 August. Endorse the envelope CW, Phone, or SWL. Logs can also be forwarded via packet to VK5AFO @ VK5WI.#ADL.#SA.AUS.OC. Certificates will be awarded to the highest scoring station (and SWL) in each VK, ZL, and P2 call area in both the CW and Phone sections. Trophies will be awarded to the outright winners of both. A certificate will also be awarded to the highest scoring Novice entrant in the CW Sprint, providing that the recipient is not entitled to another CW Sprint award. Other awards may be made at the Contest Manager's discretion. (Thanks to David Box VK5OV for this information).

### NZART 80 m Memorial Contest (CW)

July 2, 0800z-1400z Saturday.

VKs are invited to join ZLs in this yearly contest to commemorate amateurs lost in World War II. It is open to single operator stations on 80 m, fixed and mobile. The contest has six operating periods, each of one hour, from 0800z-1400z.

A station may be contacted TWICE during each operating period, once on phone and once on CW, providing that such contacts are not consecutive. Exchange RS(T) plus serial number commencing at any number between 001 and 300 for the first contact. On phone, score 15 points for the first QSO with a scoring area, 14 points for the second QSO with that area, descending to 1 point for the 15th and subsequent QSOs with that area. The same scoring system is used for CW, except that QSO points remain at 5 for the 11th and subsequent QSO with that scoring area. Scoring areas are VK and ZL prefixes/areas, and DXCC countries. The rules for SWL entrants are similar except that the callsigns of the stations heard and being worked must be given, and only the cipher of the station heard is required.

Send logs and summary sheets ASAP to: "Memorial Contest, PO Box 20 332, Auckland 7, New Zealand". Nominate the category entered (Open; Phone; CW; Beginners CW; QRP; Homemade SSB), and include a points summary showing the number of QSOs and points for each VK/ZL call area worked. Certificates will be awarded to the top 3 scoring VKs. (Thanks to John Litten ZL1AAS for this information).

### 33rd Venezuela DX Contest

July 2/3 (SSB), July 23/24 (CW); 0000z Saturday to 2400z Sunday.

This contest celebrates Venezuela's independence. It is world-wide, ie work both YV and other stations. Bands 80-10 m. Categories are: single operator, single and all band; multioperator, single and multitranmitter.

Exchange RS(T) and serial number. Score 1 point for QSOs with own country, 3 points for QSOs with other countries in the same continent, and 5 points for QSOs with other continents. Multiplier equals YV call areas plus number of countries worked (including own country) on each band. Final score is total QSO points from all bands x sum of multipliers from each band.

Include 2 IRCs or the equivalent to cover the cost of processing and mailing any awards. Send logs by September 30 (SSB) and October 31 (CW) to: "Radio Club Venezolano, Concurso Independencia, PO Box 2285, Caracas 1010- A, Venezuela".

### 9th IARU HF Championship

July 9/10, 1200z Saturday to 1200z Sunday.

This contest runs on the second full weekend of July each year. Bands 160-10 m. Categories are single operator, CW only, phone only, mixed; multioperator single transmitter mixed mode only. Multioperator stations must remain on a band for at least 10 minutes at a time (exception: IARU member society HQ stations may operate simultaneously on more than one band with one transmitter on each band/mode, providing only one HQ callsign per band is used).

Exchange RS(T) and ITU zone (Note: ITU zones are NOT the same as the CQ zones used in most other contests. In our region they are P2 = 51, VK4/8 = 55, VK6 = 58, and VK1/2/3/5/7 = 59). HQ stations will send RS(T) and official society abbreviation.

Claim 1 point for QSOs within own zone or with an HQ station, 3 points for QSOs with different zone in own continent, 5 points for QSOs with different continents. Multiplier is total ITU zones plus IARU HQ stations worked on each band (note: HQ stations do not also count for zone multipliers). Final score is total QSO points from all bands x sum of multipliers from each band.

Include a dupe sheet for 500+ QSOs. Send logs postmarked by 9 August to: "IARU HQ, Box 310905, Newington, CT 06131-0905, USA". Official forms and an ITU zone/prefix/continent map can be obtained from the same address on receipt of a large SASE with 2 IRCs or equivalent. Certificates to the top scorers

in each category, in each state, ITU zone, and DXCC country. Also, stations with 250+ QSOs or 50+ multipliers will receive achievement awards.

### 18th West Australian 80 m

July 16 (SSB), July 23 (CW); 1030-1330z Sunday.

The object of this contest is to promote contacts between VK6 and the rest of Australia and overseas, and for SWLs to hear and log as many VK6 stations as possible. All contacts must be made in the 80 m band. Call "CQ WA", "CQ WAA", or "CQ Contest", keeping CQs brief (3 x 3 max), as excessively long CQs risk disqualification! Prearranged contacts are not allowed.

VK6 and VK4 stations will send RS(T) plus Shire Code. All others should send RS(T) plus serial number commencing at 001. Stations may be worked twice on the night, ie once during 1030-1300z, and again during 1300-1330z.

VK6 stations should claim 5 pts for each QSO with VK6, 2 pts for VK1/2/3/5/8, 6 pts for VK4, 4 pts for VK7, and 10 pts for VK9/0 & overseas. Stations outside VK6 should claim 3 points per QSO. Multiply the total number of points by 2 per VK6 Shire worked. Note: VK6 stations north of the Tropic of Capricorn should apply a further multiplier of 1.3 to their overall score.

Log sheets should be headed with the date and operator's callsign, and include UTC time, callsign worked, RS(T) sent, RS(T) & shire code received, shire multiplier, and points claimed. Total the points on each page and bring the running total forward. Attach a summary sheet showing total points, Tx power, equipment and antennas used, declaration that the rules and spirit of the contest were observed, plus any comments. SWL participants score as above using the outgoing Tx score.

Address logs to "WAA Contest Committee, c/o 1 Cottrill Street, Myaree WA 6154" and posted in time to arrive not later than 5 August for both contests.

#### VK6 Shire Codes

AT Albany Town	BH Broomehill	CW Coorow
AL Albany	BL Belmont	CS Corrigin
AK Armadale	BR Bruce Rock	CO Cottesloe
AM Augusta/ Margaret River	BY Bunbury	CK Cranbrook
BA Bassendean	BN Busselton	CB Cuballing
BW Bayswater	CA Canning	CU Cue
BV Beverley	CL Capel	CD Cunderdin
BO Boddington	CH Carnamah	DU Dalwallinu
BD Boulder	CN Carnarvon	DN Dandaragan
BB Boyup Brook	CV Chapman Valley	DP Dardanup
BG Bridgetown/ Greenbushes	CI Chittering	DK Denmark
BK Brookton	CT Claremont	DB Donnybrook/ Balingup
BE Broome	CR Cockburn	DR Dowerin
	CE Collie	DG Dumbleyung
	CG Coolgardie	

DS Dundas	MW Mingenew	SB Shark Bay
EF East Fremantle	MA Moora	SP South Perth
EP East Pilbara	MR Morowa	ST Stirling
ES Esperance	MS Mosman	SU Subiaco
EH Exmouth	MU Mukinbudin	SW Swan
FM Fremantle	ME Mullewa	TP Tambellup
GG Gingin	MG Mundaring	TM Tammin
GP Gnowangerup	MH Murchison	TS Three Springs
GN Geraldton	MY Murray	TY Toodyay
GM Goomalling	MM Mt. Magnet	TG Trayning
GS Gosnells	ML Mt. Marshall	UG Upper Gascoyne
GR Greenough	NP Nannup	VP Victoria Plains
HC Halls Creek	NN Narebeben	WN Wagin
HY Harvey	NG Narrogin	WD Wandering
IN Irwin	NT Narrogin Town	WO Wanneroo
KA Kalamunda	NL Nedlands	WR Waroona
KL Kalgoorlie	NM Northam	WA West Arthur
KG Katanning	NO Northam Town	WS Westonia
KN Kellerberrin	NH Northampton	WP West Pilbara
KT Kent	NG Nungadin	WI Wickkepin
KP Kojonup	PG Peppermint Grove	WU Wiluna
KD Kondinin	PJ Perenjori	WL Williams
KO Koorda	PH Perth	WB Wongan/Ballidu
KU Kulin	PY Pingelly	WG Woodanilling
KW Kwinana	PT Plantagenet	WY Wyalkatchem
LG Lake Grace	PD Port Hedland	WE Wyndham/East Kimberley
LV Laverton	QG Quairading	WE West Kimberley
LA Leonora	RT Ravensthorpe	YO Yalgoo
MB Mandurah	RM Rockingham	YN Yilgarn
MP Manjimup	RB Roebourne	YK York
MK Meekatharra	SS Sandstone	
MV Melville	SJ Serpentine/ Jarrahdale	
MZ Menzies		
MD Merredin		

(Thanks to Cliff Waterman VK6NK for this information).

### Jack Files Memorial Contest

16 July (Phone), 23 July (CW); 0800-1600z Sunday.

This contest honours the late Jack Files, a long-serving VK4 WIA Councillor. The object is to encourage amateurs to work VK4s for the "Worked All Queensland" and other awards, to encourage portable/mobile activity from the less populated VK4 towns and shires, and to warm-up for the RD contest.

Categories are: Single Home; Club Fixed; Single Mobile/Portable; Club Mobile/Portable; Stations outside VK; SWL. Operate on 160, 80 and 40 m, but please avoid the DX window (1.815-1.835 MHz). No cross band. Exchanges will consist of RS(T) followed by: (for single operator stations) a serial number starting at 001 and continuing when changing bands; or (for multitranmitter stations) a serial number starting at 001 for each band; or (for VK4 entrants) a 2 letter shire code. Note: VK6 stations taking part in the West Australian 80 m contest are allowed to send their Shire Code in lieu of a serial number.

Score 1 point per QSO with non-VK6, and 2 points per QSO with VK6. Each VK4 Shire/Town Code per band counts as a

multiplier, also each prefix per band. Note that **VK6** Shire Codes do not count as multipliers in this contest, only **VK4**. To stimulate portable/mobile activity, portable/mobile stations can also claim 1 multiplier per band for each **VK4** Shire/Town from which they operate. The final score equals total points times total multiplier.

In this contest only, single operators are allowed to have a log keeper. Club stations can use multiple transmitters, providing there is only one station on each band at any one time. These transmitters need not be co-located, and may even be in different shires. Note: *Stations can be recontacted on the same band after 1 hour.* Contacts with entrants in other contests are valid, and those with **VK6** stations are encouraged.

Attach a summary sheet showing the name, address and callsign of the entrant, section entered, points claimed, and a declaration that the rules and spirit of the contest were followed. Send logs to: "Rick Chilcott **VK4LW**, Awards Manager **WIAQ**, GPO Box 638, Brisbane QLD 4001" to be received by 22 August. Trophies will be awarded to the highest scorer in each section providing there are at least 5 entrants in that section. Certificates will go to the 3 highest scores in each section,

the top novice, and top SWL. Participation certificates will go to all stations submitting logs.

Any **VK4s** who are unsure of their Shire Code should refer to the list printed in this column in the June 93 issue of *Amateur Radio*, or they can contact Rick 4LW either on (074) 98 3561 AH or else packet: **VK4LW @ VK4WIA-1**. (Thanks to Rick **VK4LW** for this information).

### Waltakere Phone Sprint 80 m

July 30, 1000z-1100z Saturday.

This contest is open to all **VK/ZL** amateurs. Any frequency between 3535 and 3700 kHz may be used. In fairness to other amateurs, it is requested that no linear amplifiers be used in the contest. Call "CQ Sprint", and exchange serial numbers commencing at 1 and incrementing by 1 for each contact. RS is not required. Logs must show callsign of station worked, serial sent, serial received. Attach a summary sheet and send the log to "Sprint Contest Manager **ZL1BVK**, 14 Takapu Street, Henderson, Auckland 1208, New Zealand" to arrive by 1 September. Alternatively, logs may be sent via packet, using 3 columns only with no commas or other delimiters, to: **ZL1BVK @ ZL1AB**. Certificates will be

awarded to the overall winner, the best score in each ZL call area, and the 3 best **VK** scores. (Thanks **ZL1BVK**).

### Addendum to **VK/ZL/Oceania DX Contest Results**

Due to severe postal delays in Russia, several logs postmarked well before the deadline did not arrive until a couple of weeks ago. The lesson for all readers is the importance of NOT waiting until the last possible moment before posting logs, and also to use airmail. Whereas most contest managers will do everything possible to accommodate late logs when the delay is beyond the control of the entrant, once results are published and certificates sent, the book is closed. So, please add the following to last month's results (\* = certificate):

#### Phone, Single Operator:

**RA3XO**, 20 m, 45 points  
**UA4AVN**, 20 m, 171 points

#### Phone, Multioperator:

**UZ4AYT\***, 396 (20 m), 18 (15 m), 585 points

#### CW, Single Operator:

**UA4AGP\***, 20 m, 66 points

#### CW, Multioperator:

**UZ4AYT\***, 104 (20 m), 72 (15 m), 372 points. ar

# amateur radio action

“ Ηουσε αδωερτισεμεντι Π φορ Αματευρ Ραδιο Αχτιον μαγαζινε το αππειαρ ιν ΩΙΑ φουρναλ Αματευρ ΡαδιοΠ. ”

For subscription details to just about anywhere, phone Grant Manson on (03) 601 4222

*If all this looks Greek to you, perhaps it's because you're not reading the authoritative source — Amateur Radio Action magazine... at your local news outlet every fourth Tuesday.*

Member CE 4019

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# Divisional Notes

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## VK2 Notes

John Robinson VK2XY

The AGM was another marathon effort again, this year, lasting seven hours. To cap it off, when called on to declare the results of the ballot for the Council elections, the Returning Officer, Peter O'Connell VK2EMU, refused to do so, gave a lengthy speech of complaint, declared the election "null and void" and then announced a new election! His actions were entirely beyond his powers, as subsequent advice has shown.

The meeting Chairman, Terry Ryeland VK2UX, read out the results and declared nine out of the 18 candidates elected. They were:

Pixie Chappie VK2KPC  
Mike Corbin VK2PFQ  
Roger Harrison VK2ZRH  
Peter Kloppenburg VK2CPK  
John Robinson VK2XY  
Ian Rosser VK2XB/VK2WAG  
Terry Ryeland VK2UX  
Eric Van De Weyer VK2KUR  
Jim Walker VK2XJW

A total of 729 votes were received (from a voting membership of 1599), arguably the biggest "turnout" ever recorded. There were 708 valid votes recorded and the results are as follows:

P Chappie VK2KPC 363  
M. Corbin VK2PFQ 520  
E. Fossey VK2EFY 296  
R. Harrison VK2ZRH 412  
D. Horsfall VK2KFU 147  
P Jensen VK2AQJ 321  
P Jeremy VK2PJ 301  
P. Kloppenburg VK2CPK 500  
T. Liolio VK2ZLT 346  
C. Miranda VK2TCM 255  
R. Murnane VK2SKY 245  
S. Pullan VK2QZ 296  
J. Robinson VK2XY 427  
I. Rosser VK2XB/2WAG 390  
T. Ryeland VK2UX 423  
E. Van De Weyer VK2KUR 524  
J. Walker VK2XJW 404  
R. Yorston VK2CAN 202

A group known as the "Ad Hoc Committee", who fielded a team of nine candidates for the election, have since carried on the "challenge" to the validity of the election, citing a host of what they claim to be "irregularities." Discussion among some of the successful candidates after the AGM resulted in a request for Roger Harrison VK2ZRH to put the then-known basic facts before the Division's solicitor for urgent advice. His answer was that the election was valid and the

Returning Officer had no power to do what he did.

The nine members declared elected held several meetings, considered the position and then decided to form a Council, based on the Division's legal advice. Before the due date (21 days after the AGM), the following Council Executive positions were filled:

President: Mike Corbin VK2PFQ  
Vice Presidents: John Robinson VK2XY,  
Terry Ryeland VK2UX  
Secretary: Roger Harrison VK2ZRH  
Treasurer: Terry Ryeland VK2UX

To cover immediate Divisional requirements, Jim Walker VK2XJW was elected Education Officer, Jim and John Robinson VK2XY were elected to cover the Parramatta Property portfolio and John retained the Security portfolio. Pixie Chappie VK2KPC was elected minutes secretary.

The Ad Hoc group, then renamed the "Concerned Amateurs Committee", latterly calling themselves the "Council of Concerned Amateurs", sought donations and paid \$1500 for legal advice on material put to their solicitors by the group. Their advice was that the Returning Officer had no power to do what he did but that the Division had no directors in their opinion.

Discussions have been held with this group and further advice is being sought through the Divisional solicitor once he's been furnished with more details.

A motion at the AGM sought to have a "supplementary balance sheet" published in this issue of *Amateur Radio* showing an extraordinary loss. However, advice says that, apart from flying in the face of past (and proper) practice, the effect would be misleading to members, which is illegal. The accounts were properly presented in accordance with current accounting standards. Somewhere along the way, common sense will prevail.

## VK7 Notes

### "QRM" News from the Tasmanian Division

Robin Harwood VK7RH

This month, I have some limited details of the latest WICEN exercise, recently held in Tasmania. VK7 WICEN operators participated in TARGA '94 by providing communications back-up to the organisers. TARGA '94 was a world class touring class race held around Tasmania and is usually held in the last week of April

every year. It traverses over 2000 km of the roads of this island State. This was the third year this event has been run here and we had 286 cars registered for TARGA this year. It is run under the auspices of CAMS and it is naturally subject to its tight regulations. It was estimated that the value of vehicles competing was in excess of 50 Million Dollars.

WICEN operators were stationed throughout the various stages. At one stage, the official TARGA communication network failed completely and WICEN had to provide total communication in addition to its other duties. This meant that the race was able to continue as scheduled.

Some of the well known names of motor sport participating in TARGA '94 were Dick Johnston, Jim Richards, Sir Jack Brabham, Kevin Bartlett along with some celebrity participants from entertainment and business.

The tour was divided into two stages. What is classed as "Touring Stages" was where the competitors travel on the open road, mixing with the general road traffic and have to obey the road rules as everybody else. The second stages were on sections of the main road system which were closed to normal traffic. There were 36 of these TARGA stages and they were from 6 to 53 km in length. Each competitor is individually timed over these measured distances and each participant is spaced at 30 second intervals. Quite often the faster vehicles would overtake slower vehicles before the end of the stage.

WICEN provided back-up communications to the TARGA officials' own system over most of the 36 racing stages of the event. Most of the activities involved tracking the vehicles through the Timing Stages. This tracking is a very critical part of the racing stages of Targa. Vehicles are recorded in lines of five, which were then relayed to the stage finish. As the vehicles proceed through the stage, they are tracked in their lines of five. If a vehicle on a previous line does not pass a WICEN operator, a process of checking for this vehicle begins. The WICEN operator advises the start that a vehicle is missing. It is the responsibility of the Targa Stage Commander to ask the next car to depart to report if he sees the missing vehicle en route. On most occasions it is located, broken down or off the road. The missing vehicle displays a card to indicate that all is OK, or another card if help is needed.

There was one example of where help was certainly needed as Barry Hill VK7BE, who was one of the WICEN Commanders in TARGA '94, reported. "I

was at the Finish of the Moriarty Stage of the event, with Peter Frith VK7PF. Peter was linked via 2 metre simplex. Midway through the race I just glanced up to see the flash of a red vehicle becoming airborne on completing the flying finish. The speed of the vehicle was estimated in excess of 220 km/H. The driver lost control of the vehicle, which slammed nose first into an electricity pole. I was in fact only 150 metres away and saw the base of the pole hit the high tension wires suspended from its top, which in turn pulled down another pole towards the road. The following car, not knowing of the accident, crashed through the electricity wires bought down across the road. I advised Peter VK7PF at the start of the accident and he advised the Stage start. As they had as yet not been officially advised, they continued to start new cars!

Upon this news from Peter, I advised that a power pole had been knocked out of the ground and that there were power lines all over the track. Peter immediately took this further information to the starter and the race was stopped at that stage. Through Peter, the Start asked me if any rescue vehicles were needed. From my observation, every ambulance and rescue vehicle available should be sent. These were then promptly dispatched. The driver of the crashed car, which was a bright red

Ferrari, was rushed to Hobart by Air Ambulance in a critical condition, while his navigator was taken to a local hospital with a broken leg and other minor injuries. Needless to say, this expensive car was a total write-off. Further racing on the stage was cancelled."

WICEN is under the control of Tony Bedelph VK7AX, who currently is the Divisional Co-ordinator. The Northwestern Group is perhaps the most active for, just a few weeks ago, the WICEN group successfully provided full ATV coverage of the National Rowing Championships, held at Lake Barrington, near Sheffield. They were also required to provide communications through the difficult West Coast TARGA stages. It is good to hear that WICEN is again becoming increasingly active in VK7 and I'm sure that we will hear more of its activities in the days ahead. My thanks to VK7BE for the above information.

In last month's column I reported that Tom Allen VK7AL had celebrated 60 years as a ham. What the anniversary was, in reality, was 60 years continuous membership of the Tasmanian Division of the WIA. Certainly a worthy achievement all the same! The "Spirit of Tasmania" Award has been finally sent to the printers and VK7PU, the VK7 Awards Manager, should be processing the applications by

now and dispatching them to the lucky recipients.

Meetings for the month of June are scheduled as follows:-

Southern Branch: 1 June at 2000 hours at Domain Centre.

Northwestern Branch: 8 June at 1930 at Penguin High School.

Northern Branch: 9 June at 1930 at Launceston Institute of TAFE, Block "C", Room 17.

If you have any news for inclusion in this column, please note the deadline for the July issue is 6 June at 52 Connaught Crescent, West Launceston, TAS 7250, or via VK7RH@VK7BBS.

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## QSP News

### New Federal Office Postal Address

After fifteen years, PO Box 300 Caulfield South is no longer the postal address for mail for the Federal Office and *Amateur Radio* magazine. A new post office has opened only a few doors along from the Federal Office and, as from 3 May 1994, the new postal address for the Federal Office is: **PO Box 2175 Caulfield Junction VIC 3161**

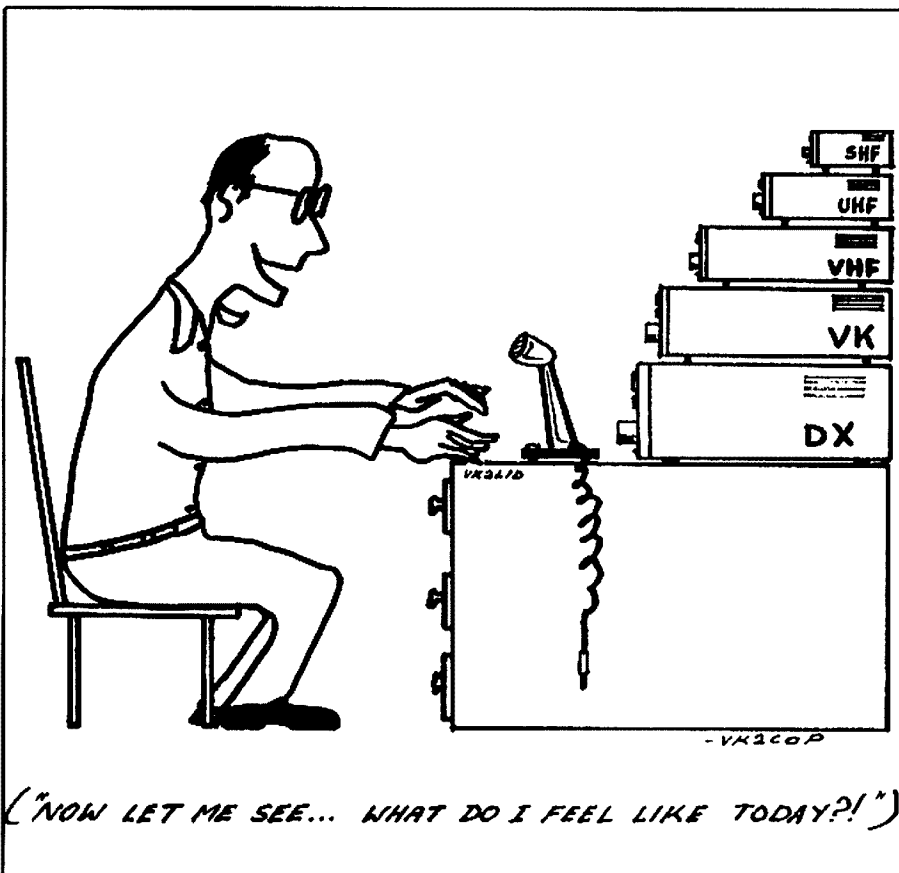
## WIA News

### US Amateur Statistics

Statistics from the US Federal Communications Commission show that there was a total of 631,598 licensed amateurs in America as at the end of 1993.

Technician class licenses comprised the biggest slice, at 227,681, followed by General, at 126,898. There were 112,637 Advanced and 65,277 Extra class licenses. Novice licences totalled 99,105.

The biggest growth for the year was in Technicians, with an 18.5% increase, followed by extras with a 6.5% increase. Advanced grew by 2.5% and General by 1.4%. Novice licensees were essentially unchanged, said the March 24th issue of *The ARRL Letter*.



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# How's DX

Stephen Pall VK2PS\*

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Talk about DX and propagation? Those who use the bands frequently know the answer through their own experience. The sunspot numbers are down in the vicinity of 25 and the corresponding 10 cm flux at the end of April was down to around the 81 mark.

Do you remember what the solar flux number was 12 months ago? It was an average of 115! And 24 months ago? It was an average of 158! All this decline of the solar flux and the corresponding deterioration of the propagation is caused by the sun, which is a huge glowing ball of gases at the centre of our solar system. To refresh our "schoolboy science memory", here are some facts about the sun.

1. The diameter of the sun is 865,000 miles (1,392,000 km), approximately 100 times the diameter of the earth.
2. The mass of the sun is approximately 99.8 per cent of the mass of the solar system, and about 333,000 times that of the earth.
3. The volume of the sun is 1.3 million times that of the earth so its average density is only 1/5th that of the earth.
4. As seen from the earth, the sun rotates on its axis once in 27 days. Unlike the earth, however, its rate of rotation varies with the distances from the equator. At the sun's equator the period is about 27 days, but at the poles it is greater than 30 days.
5. The distance from the sun to the earth is about 150 million kilometres. Light from the sun takes about 8 minutes and 20 seconds to reach the earth, travelling at a speed of 299,792 km per second.
6. The acceleration due to gravity at the surface of the sun is 28 times as much as on the earth. Therefore, a person on the surface of the sun would weigh 28 times as much as on the earth, if vapourisation could be avoided!
7. The temperature at the surface of the sun is 5500°C. The temperature at the centre is about 15,000,000°C and it is there that the energy of the sun is produced by nuclear process.
8. The age of the sun is about 4,600,000,000 years.
9. The sun radiates energy at the rate of  $3.8 \times 10^{28}$  watts. At the distance of the earth this corresponds to 1360 watts per square metre.
10. Chemical make up of the sun is about 75% hydrogen, about 24% helium and at least 70 other elements to make up the remaining 1 to 2 per cent.

## Migration of the Whales — V14WWA

The Hervey Bay Amateur Radio Club Inc will activate the special event station V14WWA (White Whale Award) to celebrate once again the migration of the hump back whales from the cold waters of the Antarctic to the warm and quiet waters of Hervey Bay. The activity on five HF bands will start on 1 August 1994 and will close on 31 October. The uncertain and very often low propagation was a deciding factor to spread the activity over a three month period.

Frequencies to be used will be in the vicinity of 3.794, 7.100, 14.235, 21.250, and 28.495 MHz and will include Australian Novice frequencies. A special award depicting a photograph of a very rare white whale will be available for \$5.00 from the club. The cost covers the printing and the posting of the award. Application for the award and QSLs (with SASE) to be sent to the QSL Manager, HBARC Inc, PO Box 829, Hervey Bay, Queensland, 4655, Australia.

## International Marconi Day — VK2IMD

The 24 hour activity by the members of the Wairoonga Amateur Historical Radio Association on 23 April proved to be a great success. Contacts were made on the 10, 15, 20, 40, 80 and 160 metre bands, on HF and VHF Packet and on 2 metres. Fifteen operators made well over 700 QSOs, worked over 200 prefixes and more than 60 countries were contacted. Send your QSL card with SASE to WAHRA, PO Box 600, Wairoonga, NSW, 2076, Australia for a beautifully informative reply card.

## North West Territory — VE8GO

In October last year I had a contact with Brian VE8GO who is located in Zone 2, a rare DX location. His card arrived first and shortly afterwards a long letter describing his experiences in the Canadian Arctic, the land of the midnight sun. The letter describes in detail his life in Rankin Inlet (62° 48' 33" North and 92° 05' 12" West) a small community of approximately 1700 people, 930 of whom are Inuit or, as we would say, Eskimo. The settlement is the centre of Government for the Keewatin Region of the North West Territories, and is located on the northwestern shores of Hudson Bay, very close to the Arctic Circle.

Let me quote from Brian's letter:- "Life here is indeed a great deal different than most places on this earth. We have very few things that you have become accustomed to. We have only two stores, no roads in or out and, of course, Rankin is well above the tree line in an area of continuous permafrost. The ground remains frozen all year around. All of our buildings are built up on piles (stilts) so that the heat from the structures will not melt the frozen ground (it turns into swamp if melted). The buildings are very well insulated with walls that can be as thick as half-a-metre. Rankin is considered to be isolated — there are no roads as mentioned so the only way in and out is by air. There is a regular air service to the rest of Canada south of the 60 parallel, three times a week. There is no doctor in the community but we do have a nursing station that can look after most general ailments, but if one requires more intensive treatment they are flown out to the south. Due to the weather this is often a very frightening experience, therefore we are all extra careful when doing things that have any possible dangers attached. I've been a ham radio operator for the past three years and have had a grand time telling people about life here in the North, a place that most people will never get the opportunity to see first hand. Here in Rankin there are two of us on the HF bands. VE8AJ Mike is most active on 10 and 15 meters, while I more or less hold down the fort on 17 and 20 meters. As we are the only operators on the West Coast of Hudson Bay we have developed an award that we send to any and all operators that have had the opportunity to work both of us. The "Worked All Stations Northwest Coast of Hudson Bay Award" (WASNCHB) has been presented to only a couple of dozen amateurs so far. My station is very simple, nothing fancy. The rig is an IC 751 putting about 100 watts into a "homebrew" vertical on 17 meters, and on the other bands into an R7 from Cushcraft. For those who are interested, you will find me chasing DX most of the time, but you have to consider that I, too, get chased. Being this far North makes me a DX station in my own country," says Brian closing his letter.

## The Changing World of DXCC Countries

The ARRL Awards Committee voted unanimously on 27 April to accept an ARRL DX Advisory Committee (DXAC) recommendation to delete Walvis Bay and Penguin Islands from the DXCC List. The deletion is effective from 1 March 1994, the date when the area was incorporated into the territory of Namibia.

There are now 326 countries on the DXCC List. The ARRL recently produced a list of the many changes which have taken part in the DXCC countries list in the last eight years. The information is sorted by the date the changes became effective. The number of active countries at that time is in parentheses. The dates following the country information are the effective dates for contacts from that country.

Jan 87 (317)

3Y Peter I added (25 Jan 87)

Apr 88 (319)

P4 Aruba added (1 Jan 86)

S0 Western Sahara moved from deleted to active

May 89 (321)

4JI Malyj Vysotskij Isl added

3D2 Rotuma added.

May 90 (324)

3D2 Conway Reef added

T33 Banaba Isl added

ZS9 Walvis Bay added (1 Sep 77)

Mar 91 (322)

7O Yemen added (22 May 1990)

Y2 East Germany deleted (2 Oct 90)

4W North Yemen deleted (21 May 90)

7O South Yemen deleted (21 May 90)

Sept 91 (323)

ZSI Penguin Island added

Jan 93 (326)

4N4 Bosnia Herzegovina added (15 Oct 91)

9A Croatia added (26 Jun 91)

S5 Slovenia added (26 Jun 91)

Jan 93 (327)

A1 Abu Ail deleted (31 Mar 91)

OK Czechoslovakia deleted (31 Dec 92)

OK Czech Republic added (1 Jan 93)

OM Slovakia added (1 Jan 93)

4N5 Macedonia added (8 Sep 91)

Jan 94 (328)

E3 Eritrea moved from deleted to active (24 May 91)

Apr 94 (326)

ZSI Penguin Isl deleted (1 Mar 94)

ZS9 Walvis Bay deleted (1 Mar 94)

**Oddities:** P5 North Korea will be a DXCC country as soon as an accredited operation takes place from there. Romeo's P5R57 operation is still not acceptable for DXCC.

### Future DX Activity

- St Paul Island — CY9. Two groups will be active. First group from 10 to 19 June. Operators N9JCL/CY9 Scott, K0SN/CY9 Tom, AA9GZ/CY9 Bob, WC9E/CY9 Paul and WB0BX/CY9 Ken. QSL to K0SN.
- Look for Larry TZ6VV. He has planned to return to Mali in May.
- Activity in Micronesia, V6. Seven US amateurs will be active as V63AD, V63BC, V63FC, V63KW, V63SB and

V63VA from 8 to 17 June on all bands using SSB, CW and RTTY modes. QSL to OKDXA, Box 88, Wellston, OK 74881, USA.

- The UK base in Antarctica, VP8GAV was heard operating on 14017 or on 14245 kHz at around 0030 UTC. QSL to GM0LVI.
- Kerguelen Island, FT5XJ was heard on 14288 kHz around 0400 UTC. QSL to F5NLL.
- 4S7/ON4IPA will be active from Sri Lanka until August. Try 14222 kHz at 1800 UTC. QSL to home call.
- Futuna Island now has its own amateur in residence, Joseph FW1DJ.
- 5R8DN is a new station situated in the Italian Embassy in Madagascar.
- Try to work BV0RI at the Rotary International Convention in Taipei, Taiwan between 12 and 15 June. QSL to the BV Bureau at PO Box 93, Taipei, Taiwan.

### Interesting QSOs and QSL Information

- YS1AG — Andy — 7038 — SSB — 1144 — Apr. QSL to Andres Goens, PO Box 3061, San Salvador, Republic of El Salvador.
- HP1/DL8RBR — Andy — 14210 — SSB — 0532 — Apr. QSL to Andy Kumpfmuller, PO Box 87-2450, Panama 7, Republic of Panama or via the DL QSL Bureau.
- T95X — Slaven — 14198 — SSB — 0514 — Apr. QSL to 9A2AA Tomislav Dugec, PO Box 255, 58001, Split, Croatia.
- S59EA — Dan — 14214 — SSB — 0525 — Apr. QSL via the S5 Bureau.
- SV5TS — Vassilis — 14271 — SSB — 0604 — Apr. QSL via the Bureau.
- 9A3HK — Dado — 14010 — CW — 0629 — Apr. QSL to The Manager, PO Box 82, 41330 Novska, Croatia.
- ZS6PN — Pete — 7011 — CW — 2022 — March. QSL to P J van Niekerk, Zebrinaln 6, Breananda, Krugersdorp 1740, Republic of South Africa.
- YV4AKK — Steven — 7070 — SSB — 0943 — May. QSL to PO Box 345, CP, 2126 Villa De Scura, Venezuela.
- FG5FC — John — 3998 — SSB — 1013 — May. QSL to F6DZU, Hubert Loubere, Box 107, F-40605, Biscarrosse, Cidex, France.

### From Here There and Everywhere

- Whilst the violent civil war is destroying Rwanda (9X), spare a thought for Hartmut 9X5HG who always had a strong signal to Australia from Kigali. I have not heard of Hartmut for many months.

- Are you visiting the United Kingdom in the European autumn? The RSGB 1994 International HF & IOTA Convention is on from 7 to 9 October in the Beaumont Centre, Old Windsor, Berkshire.
- Island chasers please note. The IOTA Directory is now available from HIDXA, Box 90, Norfolk Island, 2899, Australia.
- Joanie KA6V, well known QSL Manager for many DXpeditions, is a silent key. Our sympathy goes to her family and to her husband Gerald AA6BB, who is also well known in DX circles.
- Les 7Q7LA is going back to the UK after 5 1/2 years in Malawi. QSL to G0IAS.
- A variety of VK4 special events stations were on the air in April. VI4WGC was connected with the World Gymnastic Championships in Brisbane. VI4BEF and VI4MOO were connected with the Beef Expo in Rockhampton.
- Mai VK6LC is now working in the Northern Territory in Nhulunbuy as VK8LC. QSL to home call.
- X5BYZ is claiming to be a "new DX country" called "Srpska" and is located in Banja Luka, the Serbian part of Bosnia Herzegovina. Checking official records shows that there is no such country.
- Please note that the Brunei (V85) QSL Bureau at Box 73, Gadong has closed down. QSL direct only.
- The new address of the Taiwan (BV) QSL Bureau is CTARL, Box 73, Taipei, Taiwan, Republic of China.
- The new QSL Manager for 7Z1AB is now KN4F.
- The UN, UO, UP and UQ QSL Bureau is located at Box 112, Karaganda, 470055, Kazakhstan, CIS, Asia.
- VA3 callsigns are now being issued to stations in the Province of Ontario.
- The present Marion Island operation, ZS8MI, is closing down soon, if not already done so.
- In March the DXCC Desk of the ARRL processed 1004 applications with 75,045 cards.
- VU2DK reported in "The DX Bulletin" that the Indian postal workers have discovered that QSL requests often obtain IRCs and cash currency. The result has been the pilfering of and the disappearance of amateur mail. You are reminded again to use techniques which can reduce such a risk. No folded return envelopes (use envelopes of different sizes), no call signs of any sort on envelopes, no stamps (use postage labels issued by the post offices), and make sure that



the contents cannot be seen when the envelope is held up against the light. Also, seal envelopes with plastic glue, etc.

- The first RSGB IOTA Contest (1993) results show that out of 80 entries from the island stations, the first VK was VK6LC/P on OC-164 in 44th position and VK3EW (OC-001) in 68th position.
- Paul F6EXV, who operated as 9X5DX in Rwanda, has been evacuated to Burundi. Contrary to earlier reports he was able to take his equipment, including computer and logs, when he left 9X with only three minutes notice. F5FHI is with Paul. Both were heard signing with a 9Q5 callsign for a week or so, then they moved to Uganda.
- The question of the "new country" status for Pratas island (BV9) is back on the DXCA agenda. The Chinese Taipei Amateur Radio League has submitted further documentary and video evidence, including a statement from the Chinese Taipei Ministry of Foreign Affairs. Phil Weaver VS6CT has provided the DXAC with a statement confirming that, to the best of his knowledge, there are no islets or rocks above the water between Pratas and Taiwan, a distance of less than 225 statute miles. Phil is a senior marine officer in the Hong Kong Search & Rescue Authority. As the diplomats say, "negotiations are continuing".
- The DXAC is expected to vote on the Mt Athos question (whether or not Mt Athos meets the present DXCC criteria) sometime in May.
- There is now a new (probably safer) QSL route for the Costa Rican island station, Cocos T19CF and T19JJP. QSL these stations at Office Box Acat 321 CR, 3900 NW 79th Ave, Suite 64, Miami FL 33166. The mail will be delivered by courier service to Costa Rica.
- All cards for the Crimea (callsigns beginning with UU) should go to the QSL Bureau of the Crimean Republic at PO Box 38, Simferopol, 333000, Republic of Crimea, Ukraine. Do not send "green stamps", only IRCs.
- If you listen on 14275 kHz at 1100 and 1200 UTC, and later at 1400, 1800 and 2200 UTC (provided there is propagation) you might hear a weekly DX report transmitted by the "International Amateur Radio Network". The program changes every week on Sunday.
- Francisco HK0BKX, who provided many San Andreas Island contacts for the DX fraternity, is now a silent key.
- The German "Ham Radio" gathering

at Friedrichshafen in southern Germany (about 15 times as big as our own Gosford Field day) will take place from 24 to 26 June.

- Katashi Nose KH6IJ, a retired University of Hawaii physics professor and well known DXer, who obtained his first amateur licence in 1932, died recently at the age of 78.
- The new QSL manager for Bill VQ9TV is Floyd N5FG who has all the logs of the past contacts.

### QSLs Received

VI9XN (5M W5KNE) — VR6ME (5M OP) — A61AD (2M WB2DND) — 4K2BY

## Education Notes

Brenda Edmonds VK3KT\*

The recent WIA Federal Convention took the opportunity to welcome Michael Owen back to Australia. Michael VK3KI, who has a very long association with the WIA at both Divisional and Federal level, has been overseas for several years. Michael is also Vice-President of the IARU, and has spent considerable time over the years on IARU matters.

In a short response Michael outlined some of these activities, emphasising the need for the WIA to continue its involvement in, and representation at, international meetings such as WARC's and IARU Regional Conferences. He stressed the high standing of the WIA in international spheres and the fact that many societies look to the WIA for support and leadership. He also commented on the high level of rapport between the WIA and the administrative body, the SMA, a relationship that is rare in many other countries.

The report of the address by the SMA representative at the Convention was an insert to last month's issue of *Amateur Radio*. Members should be aware that there is continuous dialogue between the WIA and the SMA over a range of administrative matters. Although the release of the revised regulations still seems to be fairly far off, the extra privileges foreshadowed in that speech have come about as a result of extensive WIA negotiations and discussions.

On the world scene, a number of other countries have recently sought information from the WIA on aspects of deregulation. The examination system is a prime example of a field in which the WIA leads the world. We have already passed detailed information to the RSGB and to the Singapore Amateur Radio Transmitting Society, and have shared procedures and question banks with

(1 M KF2KT) — VP2EE (2M KA3DBN) — YS1X (1 W3HNC) — XF4CI (4M XE1CI) — 5R8DM (3M 7K1EHK).

### Thank You

Many thanks to the faithful who contributed to this column, but especially to VK2DSL, VK2KAA, VK2KCP, VK2KFU, VK4BX, VK6DX and VE8GO. Special thanks also to the following sources of information, *QRZ DX*, *The DX Bulletin*, *DX News Sheet*, *The W6GO/K6HHD QSL Managers List* and *IPS Radio and Space Services*.

\*PO Box 93, Dural, NSW 2158  
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NZART. We are currently preparing a package of training materials for use in another IARU initiative, the promotion of amateur radio in developing countries.

The IARU Region III Conference in Singapore in September will discuss devolvement of examinations and consider the proposal for a standard or "harmonised" set of conditions for amateur radio licences for countries within Region III. WIA delegates will contribute freely to these discussions.

Recent international agreements in Europe have led to a common licence throughout the Common Market countries, so that British or European amateurs travelling through Europe are able to use their radios without the need to obtain temporary licences in these countries. Such a scheme in Region III would greatly simplify the current reciprocal licence arrangements.

The syllabus proposed for these "harmonised" licences is that used by the UK. The theory section is basically very similar to the Australian AOCPIAOLCP syllabus, so it should be a good starting point for such discussions. The Regulations section, however, requires more extended knowledge of operating procedures and also of international bodies such as the ITU and the IARU. Whilst these topics have never been included in Australian examinations, I can see no problem with their inclusion.

As well as continually working for the benefit of its own members, the WIA has a moral obligation to contribute to the well-being and growth of the hobby world wide, and to assist countries which do not have those advantages and privileges that we take for granted.

\*WIA Federal Education Co-ordinator,  
PO Box 445, Blackburn, VIC 3130  
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# Over to You — Members' Opinions

All letters from members will be considered for publication, but must be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.

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## QSL Practice

I refer to the article in March 1994 *Amateur Radio* on the subject of QSL procedures. This was a thought-provoking article and introduced interesting questions, but no feedback letters have appeared in response. Therefore, because I am interested in the subject, I will respond with my own ideas.

It is easy to accept that many hams enjoy collecting cards and chasing the various awards associated with them. However, as we all know, there are many facets of enjoyment related to our hobby, and QSLing is not necessarily everyone's idea of fun. If people enjoy this aspect of ham radio enough, then they should bear the costs attendant to the practice. Perhaps expanding the Q code would be helpful in dealing with this problem (some of us see it as a problem!). Therefore, I suggest one means of expanding the Q code, as follows:

QSLN — I do not collect QSL cards.

QSLO — I respond only to those cards accompanied by sufficient return postage (IRCs, green stamps, or stamped SAEs).

QSLP — Please do not QSL. Thank you.

This procedure may help reduce "rubber stamp" QSOs, QRM, and overloads on our QSL bureaux. Those genuinely interested in obtaining awards (I am sure there are many) would stand a better chance of replies. Any comments?

**Bill Taylor VK6XA**  
68 Vahland Ave  
Riverton WA 6148

## WICEN Publicity

I have read with great interest the cover given to the recent bush fires in NSW in the April issue of *Amateur Radio*. The close liaison between WICEN and the SES was impressive to say the least.

As a member of the Coffs Harbour Combined Probus Club I listened to an informative address from our local SES Rescue Officer, Steven Bout.

During the question time which followed I asked whether the local SES availed themselves of the WICEN organisation but he replied that he had not heard of it, so I said I would contact WICEN.

He was genuinely pleased with my suggestion, hence this letter.

Would you please look into this matter and contact the appropriate people if you think action is warranted.

**B C Fleck VK2FS**  
PO Box 19  
Bonville NSW 2441

(A gap in WICEN local publicity? Ed)

## Ross Hull Rules

I would like to lend my wholehearted support to John Martin's proposed changes to the Ross Hull VHF/UHF contest (April *Amateur Radio*). The contest is popular amongst VHF DX operators; every year there is a big surge of activity, with many stations participating "just to hand out numbers", yet this is not reflected in the number of entries. The reason has always been obvious. Like most serious VHF DX operators, my interest is working over long distances, not loads of local contacts (although we all indulge in plenty of local rag-chewing). I simply can't spend three weeks continually in the shack "working anything that moves" as John so aptly puts it. Yet I keep very aware of propagation conditions so I still work as much DX as anyone in my region.

The contest ought to reflect the objectives of VHF DX work, and reward the operator who understands propagation, has assembled a capable station and is able to exploit it. John's proposal to base the scoring on the best 100 contacts on each band during the contest period would align the contest better with these objectives, and attract more entries. Additionally, I welcome his suggestion to lengthen the contest period to 8 weeks in order to cover more of the summer DX season which would give more scope for tropospheric work through January.

Perhaps operators with modest station capability might be deterred from entering the contest under the proposed rules. I think that is unlikely. How many could realistically expect to win under the current rules? As in any contest, these stations make up the numbers, and are sought after by the serious operators. In a contest that rewards quality rather than quantity, it is more likely that the big guns will make the effort and take the time to work the modestly equipped stations. Everyone is someone else's DX!

Is it appropriate to include 6 metres in the contest? My impression is that most

keen 6 m operators consider contest activity on 50 MHz a nuisance at best, yet to confine this activity to 52 MHz denies the reality that on 6 m DX lives on 50 MHz. Furthermore, the majority of contacts on this band in the summer are via sporadic-E, which is hardly a challenge. I would advocate deleting 6 m from the contest altogether.

Finally, congratulations to this year's winner, yet again, Roger VK3XRS.

**Charlie Gnaccarini VK3BRZ**  
66 Smeaton Close  
Lara VIC 3212

## Historical Plea

Recently the Federal Board approved my proposal to begin a series of oral histories of aspects of amateur radio with the aim of having worthwhile documentation for firstly the national centenary in 2001 and eventually the 100th anniversary of the WIA. To get this off the ground we are beginning with two projects, one on the RAAF Wireless Reserve, comparatively straightforward, and a more complex one on women in amateur radio.

These were deliberately chosen because they are good and useful topics but also because they will allow us to develop our methods and correct our mistakes. We hope to be able to hand on an operating system to our successors.

The late Bob Cunningham VK3ML has left us his history of the Wireless Reserve and we are fortunate to have the collaboration as well as the memories of several ex-members. I would like the Wireless Reserve history to be fully set down because it seemed to me to get less than fair treatment in a fairly recent RAAF history. In fairness to Bob and his cohorts that record should be set straight.

The role of women in amateur radio, from almost a curiosity to the present status, has changed dramatically. We now have the advantage of being able to seek support from ALARA. It is not so many years ago that a small YL 80 metre net was consistently jammed. It is about twenty years since VK3KT and VK3AFU were jumped on on 40 metres while operating between VK2 and VK3 by a male person who said it was just "some woman or other". It seems that there are good grounds for recording social evolution for posterity.

I will write to various organisations seeking support as the project develops. I have already been offered help by various people and groups but I will now go through official channels to Divisions, Divisional historians, ALARA and so on, particularly because of the legal requirements to protect both interviewer and interviewee. In the meantime I will be

pleased to hear from anyone who is interested in aspects of the history of amateur radio, either our first two topics or others.

One of the problems we amateurs have always had is our inability to communicate with each other. I would like to hear from other amateurs doing history projects. I know there are some out there. One of the aims of our oral history is collaboration.

The rationale for collecting oral history is clear but there are a couple of less obvious reasons. "... manipulating informants is not practical because it misfires on you. It is easier to manipulate documents. They don't come back and contradict you in person." Wendy Lowenstein. "They Stamped on Their Heads". Australia 1938, Bulletin 3 1980 p34.

And less cynically and most importantly, "Oral history ... can give back to the people who made and experienced history, through their own words, a central place". Paul Thompson. "The Voice of the Past: Oral History". Oxford University Press 1972 p2.

John Edmonds VK3AFU/ATG  
Federal Historian  
RMD 9320 Willowite Road  
Moriac VIC 3240

## Packet Identification

As a non-user of packet, I find myself in an awkward position regarding packet station identification. That is, unless one has access to packet equipment, it is not possible to identify a station transmitting packet, or any other digital mode (except CW). I have always thought it unusual that digital modes are not required, as are all other modes, to regularly identify their station in a manner readable by all.

An example is the emergence of packet stations on 7030 kHz, a long recognised international QRP CW frequency. The packet stations concerned operate 24 hours a day, thereby ruling out use of that frequency by anyone else. Because I am unable to identify the stations involved, I am unable to make a direct appeal to them regarding their use of this particular frequency.

With the international QRP day approaching (June 14) I hope that the stations concerned will stay clear of 7030 kHz, as well as the other international QRP frequencies of 1815, 3530, 14060, 21060 and 28060 kHz.

Ray Turner VK2COX  
6/276 Bunnerong Road  
Hillsdale NSW 2036

## Loss of Spectrum

Radio amateurs generally may not know that the amateur radio service in this country has recently lost 100 MHz of

spectrum. The band 2.3 to 2.4 GHz has been auctioned off for MDS pay TV.

This is a disaster, no question about it, for reasons which I will not go into at this stage. I am not making a noise just for the sake of it. Please read on.

I built my first transmitter and receiver for 2304 MHz in 1970, a varactor transmitter and crystal locked converter. I also built a four foot dish and the rigid coax to feed it. I have built several transmitters since then. In the last four months I have been working on transverters for myself and others for 2304 MHz. I have spent thousands of hours on these projects and I am not alone. Half a dozen other VK3s have put similar effort into the band, also groups in VK2, VK4 and VK5.

But there has been no mention in *Amateur Radio* magazine about the loss of the band, apart from a few words from VK3KWA. The people who are supposed to represent amateur radio in this country, the WIA Federal Body, the Federal Council, have been deathly silent on this issue. They must have known; MDS has been in the public media for months.

As I have stated before in this magazine, the safeguarding of amateur frequency allocations is top priority. It should take precedence above all other issues. But this has not happened. I have no evidence that the Federal Body has tried to save the lost 100 MHz. I could be wrong. But the band has gone.

The similarity between the 2.3 GHz situation now and the 6 m situation in 1960 is remarkable. The elected

representatives of that era did nothing to try to save 6 m. It was left to me and a few other private amateurs.

The future of amateur radio is in the microwaves. Only there is the bandwidth available for the hundreds of wideband systems which will be needed for packet, ATV, satellite links, etc in the years to come. Anyone who thinks otherwise is living in the past. Already we have seen the 2 m band is nearly full, with FM nets overflowing into the narrow band segment. 70 cm is nearly as bad with an ATV uplink and an ATV simplex channel taking up a large portion of the band.

I could go on and on about this, but, essentially, we amateurs cannot afford to surrender 100 MHz at a time to other services. It is the responsibility of the Federal WIA to do everything in its power to prevent this. It doesn't matter what the band is, 2.3, 3.5, 5.6 or 10 GHz. All the spectrum is going to be required in the years to come.

The technology is now available for these bands. I have on my workbench a transverter for 2.3 GHz with a receiver noise factor of 0.6 dB (yes, point 6 dB) and output power of 300 mW. With a four foot dish these units can work 100 miles with S9 signals. Technology nearly as good is available to commercial interests, so we had better watch out.

I am sorry to take up all this space, but this is very important.

Ian Berwick VK3ALZ  
107 Loongana Avenue  
Glenroy VIC 3046  
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## Packet World

Grant Willis VK5ZWJ\*

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### Packet Keyboard Contact Facilities

From time to time I have been asked what HF packet facilities are available apart from the very busy Australian mail and bulletin forwarding channels on 7.033, 10.149, 14.105, 14.107, 14.109 and 21.109 MHz. Recently a group of HF packet operators started up a new service to provide for user activity away from the forwarding. This led to the creation of KEYnet on 14.096 MHz. The following report comes from Chris VK5HB in Caloote on the Lower Murray River.

### KEYNET — HF Packet Keyboard Operators Network

Some 6 months ago, after battling on 14.107 MHz to make keyboard-keyboard connects, a group of HF "Packet Junkies" decided to rebel against the norm and

form their own net. Hence "REBNET" came about on 14.096 MHz. REBNET was perhaps an unfortunate choice of name, as it may conjure up images of a group of irresponsible pirates. NO. The rebellion was essentially against the concept that packeteering was all BBSs, message passing and little or no direct people-people contact.

As more packeteers came on frequency it was decided to run several BBSs to provide for personal message exchanges if skeds were missed or propagation was not good. Initially, John VK7AD in Hobart started up with VK5HB, with VK4GRC and VK2GCN following shortly after, helping to improve the net's coverage. VK5RQ and VK4FIL also participated providing HF to VHF gateways using KAM TNC systems.

As the net progressed some categories of bulletins were included from VHF,

honouring requests from users. Consequently, much of the VKNET and AMSAT traffic is available which allows the HF only packeteers access to information which is often hard to obtain on 14.107 MHz.

Now that the net is well and truly established more people are dropping down to 14.096 MHz to have a keyboard QSO or send some personal mail. Since the system operators feel we are providing a responsible service, the name has been revised to "KEYnet". So if you are in the mood to "Let your fingers do the talking" have a look on 14.096 MHz; check who is around, or has been, by connecting to one of the nodes and make a QSO or a sked. After all **Packet is for People.**

### **Sending Packet Bulletins Overseas:**

#### **The REDIST Message Re-distribution Server**

As a SysOp I've often been asked "I know how to send a bulletin to everyone at a BBS, but how do I send a bulletin to everyone in xxxxxx". xxxxxx might be a large city in Europe, a state in America or the whole of the UK. Sometimes it's to trace relatives or details for a forthcoming holiday in the area. Whatever the reason, people often want to address bulletins to different regions for various reasons.

The REDIST server for the F6FBB BBS software now solves that problem. It allows users to address personal messages to a server at a remote BBS, that will be translated into bulletins which will be forwarded using the local areas defined by the sysop.

The REDIST server is actually addressed using three different names, depending on the size of the area that you want the bulletin to cover. The three server names are LOCAL, REGION and NATION. If you want to send a bulletin to the few BBSs surrounding the remote BBS, then you would send a message to the LOCAL server. Similarly, to address messages to a larger area around the BBS you would use the REGION server and, for the entire country that the BBS is in, you would use the NATION server.

All three servers are used in the same way. In the following example just replace the "LOCAL" with "REGION" or "NATION" to use the other servers. SP LOCAL @ BBScall (You could also use REGION or NATION here) Test Message (Subject — put anything here)

This is the text of a test message to the LOCAL server at BBScall.

### **/EX or CTRL-Z**

It is essential that your message is sent to the server using "SP" and not "SB". If you use SB the server will NOT process

your message. "BBScall" is the callsign of the remote BBS that is running the REDIST server facility in the area you want the bulletin to be sent to.

When your message arrives at the remote BBS running the server it will be processed and re-distributed as a bulletin to "ALL @ xxxxxx" where "xxxxxx" is the translation the sysop has chosen for LOCAL, REGION or NATION, depending on which server you used.

After the server has distributed your message you will receive a reply to confirm that the distribution was successful. Remember that this reply may take a few days to get back to you if the remote BBS is in another country.

Redist support is growing around the world. Lists of BBSs running the server are available and are sent periodically to the VKNET packet bulletin designator in Australia and New Zealand. The REDIST server is (c) 1993 by Chris McMahon G6FCI and is freely available for amateur use.

### **Australian Packet Network News**

Over the coming months I will be seeking news and information about the various packet networks scattered around the country and presenting a summary of the facilities they provide to users, as well as giving a look at how to use some of the facilities. If you would like your local or state packet network featured in *Amateur Radio*, please write a description of what makes up your network and post it to the Packet Doctor address below.

### **The Packet Doctor**

This month a query was raised by an owner of a KAM KPC3 TNC with the Personal Mailbox Service Function, regarding a problem he was having with setting up the PMS forwarding to a full service BBS. PMS forwarding allows the KPC3 to automatically exchange mail with a full service BBS. The problem was that his KAM was adding a "R:" type header to any messages generated on the PMS which results in the rest of the national BBS network's "White-Pages Address Database" thinking that he was a full service BBS, not a PMS. This could have resulted in his mail being lost in his local network as none of the major BBS stations local to him would have known where to send his mail.

The solution is to make use of the KPC3 command "PBPERSON ON". This command tells the KPC3 NOT to add the BBS "R:" header. This also limits the PMS to receiving messages addressed ONLY to MYCALL or MYPBBS call. The PMS will only forward messages which are originated by the local user (thus no

third party message forwarding can occur) and it will NOT add the offending "R:" line to the routing!!!

There are several other TNCs around with this PMS mailbox forwarding capacity including the PacComm Tiny-2 and MFJ. So far I have not seen these TNCs generate headers that confuse the main stream network. If there are PMS owners out there wanting to perhaps experiment with their PMSs forwarding capabilities, contact your local BBS sysop.

If you have a query that you would like to ask the Packet Doctor, why not put pen to paper and send it to:

The Packet Doctor  
GPO Box 1234  
Adelaide, South Australia 5001

Queries will be selected and included in future editions of Packet World.

### **Conclusion**

Next month I will take a look at how the mail forwarding network operates to give users a better idea of how their mail is exchanged between BBSs around the world. Also coming up is an introduction to the CLIVE database and a look at finding your way around Rose and NET/ROM networks.

Cheers de Grant VK5ZWI till next month.....

\*C/O GPO Box 1234, Adelaide 5001  
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## **Stolen Equipment**

*The following equipment has been reported stolen. If you have any information that may lead to the recovery of the equipment, please get in touch with the advised contact as soon as practicable.*

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<b>Make:</b>	Yaesu
<b>Model:</b>	FT-290R Mk 1
<b>Serial Number:</b>	3E270928
<b>Type:</b>	2 m transceiver
<b>Modifications:</b>	Internal RF preamp
<b>Stolen:</b>	with car from Fitzroy
<b>Date:</b>	29th April 1994

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<b>Make:</b>	Kenwood
<b>Model:</b>	TR-851
<b>Serial Number:</b>	8100046
<b>Type:</b>	70 cm transceiver
<b>Stolen:</b>	with car from Fitzroy
<b>Date:</b>	29th April 1994

Both radios are engraved with the serial number and the callsigns VK3TRI and VK4ZTI.

**Contact details:** Fitzroy police on 03 419 4311 or Brian Cook VK3TRI AH on 03 754 2716

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## Pounding Brass

Stephen P Smith VK2SPS\*

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Remember to set aside the weekend 18-19 June for the "VK Novice Contest". I hope there is a better turn out in the CW section than we had last year. I will be on air leading up to this event on 3.525 MHz, starting from 1030 UTC, to assist any Novice who may like some extra CW training or revision.

Continuing on from last month's *Pounding Brass*, let's now focus our attention on Victoria, beginning with the "Early Bird Net". It should be noted that this net caters for the intermediate level Novices with basic grounding in CW who are striving for full call status.

The net came into being on 15 October 1983, when Colin VK3DEG overheard two Novice stations struggling through a QSO. Colin offered to assist these stations with correct Morse procedures. At the end of the QSO it was agreed to meet the next day at 0700 local for more Morse training to run for about one hour's duration. This training continued each morning for the next few weeks attracting more stations, both Novice and Full Call.

It was thus decided to establish a regular net being called the "Early Bird Net". The net meets on 3.539 MHz +/- each morning at 0700 local and runs through to about 0810 local. The Morse consists of 6 passages in all, and each passage consists of about 250 characters sent at speeds ranging from 8 wpm to 12 wpm.

Taking a closer look we have the following:

Passage No 1 sent at 8 wpm

Passage No 2 sent at 10 wpm

Passage No 3 sent by a volunteer designated by net control, so as to give practice in sending.

Passage Nos 4 & 5 sent at 10 wpm, and finally passage No 6 sent at 12 wpm. These passages are sent by VK3DEG, VK3AHU, VK3CJT and VK3NZO and the net control VK3EHZ, with each taking turns to send at different speeds.

On the conclusion of passage No 6 Colin VK3DEG sends 10, five character groups of mixed letters and numbers to give practice in instant recognition. Again, all groups are read back by volunteers.

During the morning's program, two 5 character groups are sent especially for "Short Wave Listeners". They are invited to collect 40 groups over a period, not longer than 6 months, and submit them along with \$2.00 worth of stamps to Colin. If the groups are correct an award will be issued called the "Short Wave Listeners Award". There is also an "Operators

Award" for sending and receiving at 10 wpm. Stars are awarded to encourage upgrading to 12 wpm and 15 wpm respectively.

If you cannot participate in the morning net, Colin runs an early evening net on 3.550 MHz +/- starting at 1900 — 1945 local at 12 wpm, run on similar guide lines to the 0700 net.

Leaving the "Early Bird Net" we will now focus our attention on the "15 WPM Net" which is run in the evenings. This net caters for the more advanced operators, with speeds ranging from 12 wpm to sometimes over 20 wpm. It is run nightly on 3.539 MHz from 0900 — 1000 UTC. Check-ins are conducted mostly by Vic VK3CQP, Colin VK3DEG, Bob VK3CAY and Jack VK3CJT.

Once check-ins are completed a passage of about three and half minutes duration is sent by one of the above operators consisting of about 200 characters including numbers and punctuation at a speed of 12 wpm. At the completion of the transmission the operator reads back the passage sent so any corrections can be made.

The next 6 — 7 passages are sent at a speed of 15 wpm, also ranging in duration from three and half to six minutes with 200 — 400 characters. Again each passage is read back so any corrections can be made. This continues until the net closure at 1000 UTC. The last passage of the evening is sent at speeds ranging

from 20 wpm to 23 wpm, just to clear any cobwebs away and keep you on your toes.

On Tuesday evenings, operators who check-in are given the opportunity to send a passage of about three and half to five minute duration at the required speed of 15 wpm. At the completion of this passage the sending speed is checked by the more experienced operators, and constructive criticisms are made.

If you join this net, you will probably shake at the knees and hope you don't get selected to send something. Well, relax! You have the opportunity to decline to send if you want too but, if the opportunity arises, give it a go!

If you plan to join the Tuesday net, prepare a short passage, then you are ready in case you are selected to send. Like they say in the army, "A switched on Digger".

One of the things I like about this net is the texts of the passages being sent. The subjects are so diverse. One evening I listened to a passage on early Australian Prime Ministers, and the next on Marine Biology. You not only improve your Morse, you also increase your general knowledge. (Keep up the excellent work, gents)

To finish off this month on nets, VK3RCW is the last. This is a WIA Victorian Division 2 m CW beacon permanently on air producing random Morse at speeds of 5 wpm to 10 wpm on 144.975 MHz.

Next month we will conclude with VK3COD and move to another state. Until then, 73 de Steve VK2SPS.

\*PO Box 361 Mona Vale NSW 2103  
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## Spotlight on SWLing

Robin L Harwood VK7RH\*

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Winter has arrived and the cold weather along with it. Autumn here was surprisingly mild and calm. The leaves didn't fall until early May. Radio conditions over the past months, however, have been atrocious, to say the least. It appears as if the sunspot minimum could pass very soon. Propagation on the higher frequencies has been poor to non-existent while the lower frequencies increasingly have become crowded as users scramble to find a clear channel or any propagation at all.

There are changes ahead for Radio Netherlands in Hilversum, with four language services being axed. Arabic, French, Indonesian and Portuguese will be discontinued while programming in English, Spanish and Dutch will remain.

The latter will be increased and the European Services will be brought back, following representations from the Dutch expatriate community for more home base programming. To this end, RN will increasingly co-operate with the existing Dutch domestic broadcasting structures. Another aim of RN will be to place programming over existing domestic broadcasting outlets in target areas to complement the shortwave broadcasting output. It also appears that the Bonaire site could conceivably be utilised by other broadcasters when it isn't required by RN.

I have noted the appearance of Radio for Peace International (RFPI), which is based in Costa Rica, on 9400 kHz from 0430z onwards. Programming is in English and takes an alternative point of

## QSP News

### The "Golden Antenna" of the Town of Bad Bentheim

Every year at the German-Dutch Radio Amateur Festival (DNAT), the Town of Bad Bentheim awards the "Golden Antenna" to radio amateurs for an exceptional humanitarian deed in the field of amateur radio.

This award has been given since 1982 to radio amateurs from many countries eg Brazil, Italy, Belgium, Netherlands, Romania and the former USSR.

In 1993 the award went to the Civil Emergency Services Wing of the National Institute of Amateur Radio, Hyderabad, India for service in floods, earthquakes and other catastrophes in India over a 10 year period.

The 13th award of the "Golden Antenna" is to take place on the occasion of the 26th German-Dutch-Radio Amateur Festival, on 26 August 1994 in Bad Bentheim.

Radio amateur organisations and people who have been helped by radio amateurs are asked to propose radio amateurs for the award. Detailed documents should go by 15 June 1994 at the latest, to: Stadt Bad Bentheim, PO Box 14 52, D 48445 Bad Bentheim, Germany.

The jury awarding the "Golden Antenna" comprises the Mayor of Bad Bentheim, the Patron of the Festival, the President of IARU Region 1, as well as the Presidents of VERON, VRZA, DARC and VFDB.

Proposals should refer to the period 1 September 1992 to 31 May 1994. Individuals or groups of licensed radio amateurs are eligible. The services may have been rendered in the humanitarian field or in connection with rescue operations on the occasion of disasters and catastrophes, which must have involved amateur radio.

## Repeater Link

Will McGhie VK6UU\*

### FM 828-6

This is number 6 in the series of circuits for the FM 828 transceiver. I found an error in the Audio & Power Supply circuit. There is a diode shown between the Collector of TR1 and the Emitter of TR2 that is not labelled. It is D4 and should be shown as a 3.6 volt Zener diode. The polarity of the diode is correct, just change the symbol to a Zener and label it D4 3V6.

This circuit is of the buffer, divide by 2 and phase comparator. Signals applied to IC1 are the phase modulated 18 MHz (depending on TX channel) and the divided by 2 VCO. The VCO signal is buffered by TR11 and divided by 2 before being applied to IC1. IC1 has a divide by 4 circuit so the result is around 18 MHz. These two 18 MHz signals, one from the VCO and one from the reference oscillator, are phase compared and produce an error voltage on pin 8 of IC1. This error voltage is applied to the VCO to lock it on to the same frequency as the crystal reference oscillator.

The reference oscillator signal contains FM modulation. These frequency variations are copied onto the VCO. The loop response of the PLL circuit is such that fast variations, such as audio, are not removed. The end result is our audio now is an FM signal on the VCO which is then amplified up to 25 Watts.

Also contained in IC1 is a search oscillator that sweeps the VCO over about 30 MHz when the VCO is not locked to the reference crystal oscillator. This is required to make alignment easier. If the VCO unlocked frequency is way off the reference frequency then it is difficult to adjust the VCO frequency to find lock. By sweeping the VCO it is easier to find lock. Once the VCO is locked the sweep oscillator is inhibited.

Might seem like a lot of messing around, but the end result is a very clean VHF signal with no unwanted signals.

All these circuits were produced on the CAD program Draft Choice and are available via packet radio in 7 Plus format.

\*21 Waterloo Cr Lesmurdie 6076 VK6UU @ VK6BBS

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view to the mainstream output of the major international outlets. I have quite often heard programming emanating from 3RRR in Melbourne over RFPI. The transmitter output is usually 1 kW on AM but they are also using a USB sender, especially on the above channel, which is much easier to hear here. RFPI is owned and operated by the University of Peace, which has campuses at Kamloops (BC) in Canada and in Singapore in addition to Costa Rica. I believe that RFPI is also hoping to have a sender in Canada but I don't have the latest status on this.

A few months back, I received a sample copy of the 2nd edition of the Southern Cross DX Club "Receiver Guide — A Non Technical Guide to New and Second Hand Receivers". It is compiled by Stephen Newlyn and contains some information on new receivers. However, I have found the segment devoted to secondhand receivers could be very useful to the beginner, or the more experienced listener, when contemplating acquiring a set. It is not a technical review but based on the experience of many listeners. It doesn't rubbish any set but simply states what it is capable of and what the average second hand price would be.

The price of this booklet is \$3.50 postpaid anywhere in Australia and can be obtained from :-

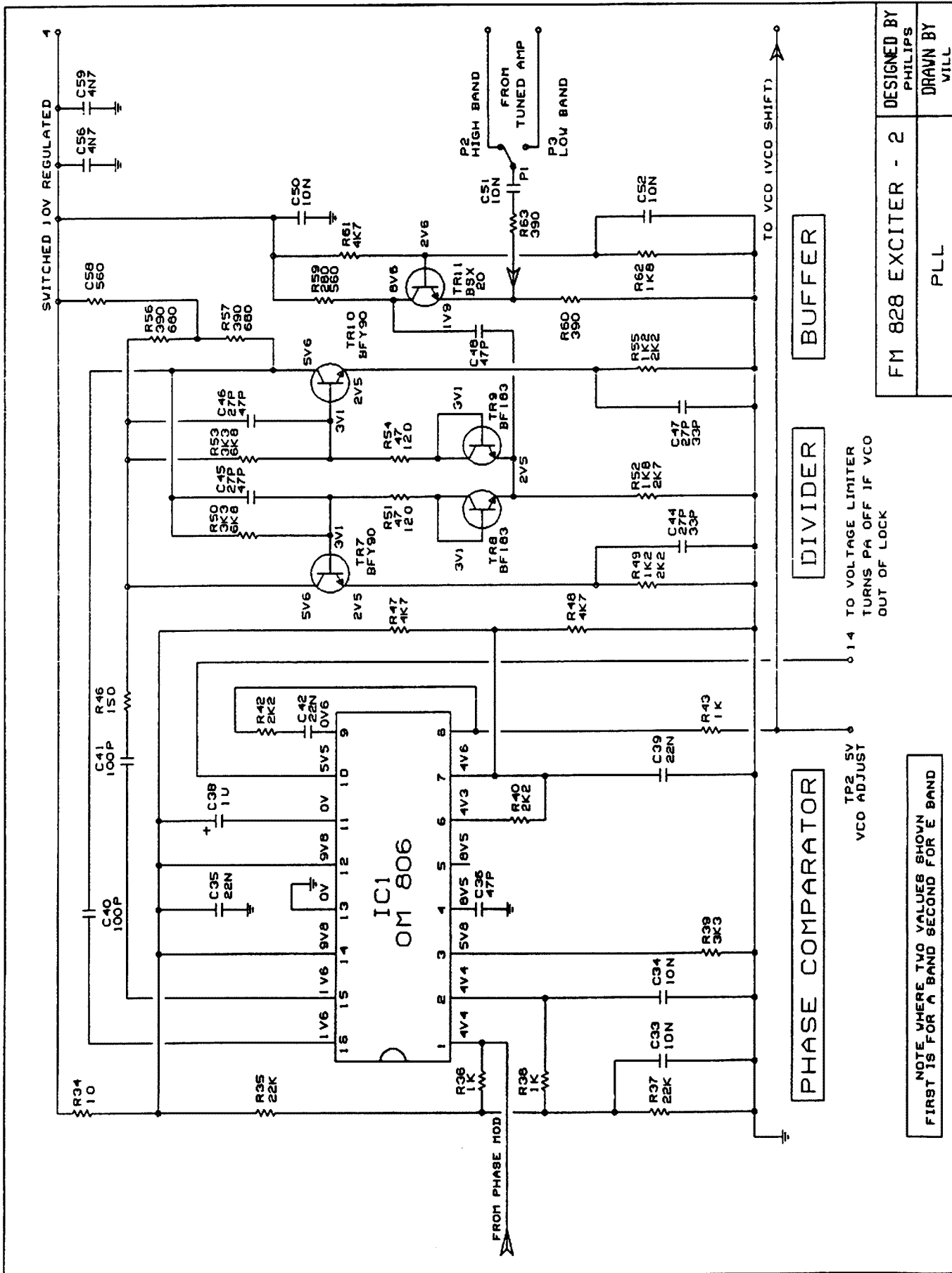
The Southern Cross DX Club INC  
GPO Box 1487  
Adelaide SA 5001

There are two frequency alterations worth noting. Firstly, Radio New Zealand International has moved to 6100 kHz from 0800 to switch off at 1210 UTC. There are many who have been using this for the relay of the BBC World Service at 1100z and may not have known where they have gone. This channel of 6100 kHz isn't new as RNZI used to employ it when they broadcast to this area from Titahi Bay (near Wellington) some years back. It is interesting to note that they are now using a 100 kW sender situated near Lake Taupo, compared to the puny 7.5 kW sender at the former site.

The Red Cross Broadcasting Service (RCBS) has notified me that they now broadcast on 6165 kHz at 0700 to 0730 UTC in English. This station only broadcasts on the last Sunday of the month. RCBS programming has also been incorporated into normal Swiss Radio International output to other areas. 6165 kHz has been made available to the Red Cross by the Swiss PTT and SRI.

Well, that is all for this month. Just remember, if you have any news please contact me at the addresses below. Until next time the very best of listening and 73.

\*54 Connaught Crescent, West Launceston TAS 7250  
VK7RH@VK7BBS LTN.TAS.AUS.OZ



DESIGNED BY  
PHILIPS  
DRAWN BY  
VILL

FM 828 EXCITER - 2  
PLL

NOTE WHERE TWO VALUES SHOWN  
FIRST IS FOR A BAND SECOND FOR E BAND

TO VOLTAGE LIMITER  
TURNS PA OFF IF VCO  
OUT OF LOCK

PHASE COMPARATOR

DIVIDER

BUFFER

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## Technical Correspondence

All technical correspondence from members will be considered for publication, but must be less than 300 words.

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### CW Versus SSB Power

At the risk of reviving an old spectre, I wish to address what I consider to be an anomaly in the regulations governing the output power levels applicable to the AOCPI/AOLCP.

Specifically, I refer to the 120 watt power limit for CW transmission compared to the 400 watt PEP limit for SSB. Whilst I am aware of the historic development of these power limits, to me it seems inconsistent that I can legitimately whistle into the microphone of my SSB rig and therefore transmit a 400 watt single-tone carrier (eg to adjust the amplifier) yet, if I then choose to use CW, I must reduce my power to 120 watts. Surely it makes more sense to alter the regulations so that the 400 watt peak power limit applies regardless of transmission mode.

As for any thoughts of TVI, it must be made clear that 400 watts of CW is no more likely to cause interference than 400 watts PEP of SSB.

I don't want this to become a political issue; we have enough of those already. But neither do I want the matter quietly shelved in the "too hard" basket. Purely from a technical point of view there are times when I have the necessity to use this much power in weak-signal VHF work. I therefore request that the WIA take steps to resolve this matter to a positive outcome. What do other members think?

*(The foregoing was dated 11 February 1994. After some discussion, including a comment in the May editorial, a telephone conversation between the author and myself shed more light on the matter. The following additional comments were dated 9 May 1994. Ed)*

Further to my letter concerning the power limits applicable to VK amateur stations and our subsequent telephone conversation, I enclose the calculations and references in support of my case. I trust that these will assist you and the technical editors in considering the merit of my proposal.

Note that, in contrast to your comments in the May editorial, the facts are not difficult to find, nor are they unduly complicated. Moreover, my suggestion has already been adopted in the United Kingdom (see enclosed references) with the additional (and I think sensible) point that the power is measured AT THE ANTENNA, thereby compensating for transmission line losses which, at VHF and above, can be significant. At the time of my first letter to you on this subject I

was unaware of the UK situation. I fortuitously came across it in "The VHF/UHF DX Book".

I am sure that after considering the matter you will agree it is worth pursuing. I don't want it to get mixed up in arguments as to whether the existing power limit of 400 watts PEP is adequate; this is a separate issue altogether.

**Chas Gnaccarini VK3BRZ**

**66 Smeaton Close**

**Lara VIC 3212**

*(The VHF/UHF DX Book states that 400 W PEP is 6 dB (4 times) greater than 100 W CW since, in the latter case, there is no varying envelope so PEP is the same as average. Space does not permit the references mentioned to be reproduced here. Ed)*

### Aircraft Enhancement

Summaries of two articles on the above topic from *Amateur Radio*, February 1986 and March 1989 issues, were published in *Radio Communication*, the journal of the Radio Society of Great Britain. These seem to have attracted little attention at the time apart from a rather dismissive response suggesting forward scattering from ice particles in contrails from the jet aircraft with the signals fading as the trails dispersed.

Back in the summer of '89 I had recently moved house to a location in the North West of England which appeared to be a "hole in the ground" in terms of propagation. In between sorting out the house I would have a listen around 2 metres using an HF receiver plus MOSFET converter plus a simple turnstile crossed dipole antenna to see what if any activity I could hear (mostly nothing!).

Much to my surprise, on some days I would hear a beacon in the South East of the country. The signal would appear out of the noise quite suddenly, remain at constant strength for periods of several minutes, and then very slowly fade back into the noise. After intervals of perhaps five to ten minutes the sequence would repeat for periods of several hours. There appeared to be no audible Doppler shift, no aircraft type flutter or fading.

Having later seen the initial comments on aircraft enhancement (AE) propagation in *Rad Com* I was convinced that this was what I was hearing — the baseline to the beacon was 400 km approximately, the signal path almost coincident with the main UK airway Amber 1 running NNW up through the country and passing a few

km to the east of my house and the frequency of the reappearance of the signals tied in with the aircraft I could see passing by.

Further thoughts led me to wonder why I could not hear a beacon some 230 km north of my location on an almost reciprocal bearing to the one in the South East of the country by a similar mechanism and also why did the signals appear on some days and not others.

In the meantime I have moved house again and now have some time to reconsider the AE problem. I believe that I now have an explanation to fit the observations, why AE worked for the signals from the SE only, why only on some days (despite continuing periods of settled weather) and why no flutter or Doppler is heard on the signals. A further question I am intrigued by is how big is the footprint of these signals on the ground — I hope to be in a position this summer to investigate this further.

My reason for writing is to ask if it is possible for you to send me copies of the original articles on AE and anything more recent which may have been published in your journal — nothing further on AE has appeared in the press since May '89. Has a definitive explanation been arrived at? In particular I am interested in path lengths, locations of stations involved, powers and equipment in use and time of year. The idea being to try out the observations against my explanation prior to attempting to put together an article on the subject.

**S J Edwards G8GEF**

**Fernlea**

**Meathop**

**Grange-over Sands**

**Cumbria**

**LA11 6RB**

**England**

*(Regular AE operators may like to respond to G8GEF. Ed)*

### "Choke" or "Current" Baluns

Coiled co-axial and ferrite sleeved coaxial inductors (wrongly named baluns) are an adaptation of a device used to "choke" in-phase (common mode) currents in parallel conductors without significantly impeding normal antiphase currents in the same conductors.

Those devices are receiving attention in several amateur magazines but, as usual, without quantitative supporting evidence; an omission which can cause what is stated to convey a false impression.

The theory supporting the useful properties of coaxial inductors is "primer" level and summarised in the statement:

$$L_i = L_1 + L_2 + -2M$$

$L_i$  is the insertion inductance



L1 and L2 are the inductor self inductances

M is the mutual inductance

The term 2M is positive if the inductor currents are in phase and negative if the inductor currents are antiphase.

The proof of that statement was proven in professional laboratories last century. Proof that it also applies to coiled or ferrite sleeved coaxial cable is within the capabilities of radio amateur laboratories if the length of the cable is much less than a quarter wave at the highest operating frequency (see appendix).

If the coupling factor is unity and the inductors are equal then the insertion inductance will be zero for antiphase currents and four times the inductance of one inductor for in-phase currents (0.95 is a typical coupling factor for 50 ohm coaxial cable).

There is a complication. The insertion shunt capacity is the inherent capacity of the cable for anti-phase currents and one quarter of that for in-phase currents. The capacity of RG58 and similar coax is 100 pF per metre.

The ferrite sleeved version made of 300 mm of coaxial cable has an insertion shunt capacity of 30 pF and with a suitable choice of sleeve permeability, the conductor inductance can be increased to a useful value. However, increasing conductor inductance increases the L/C ratio and the characteristic impedance. For example the inductance of 50 ohm coax 300 mm long is 0.075 microhenries and the capacity is 30 pF. The square root of the L/C ratio is 50. A sleeve will multiply that characteristic impedance (50 Ohms) by a factor determined by the permeability of the sleeve at the operating frequency.

Both versions of the device inserted in any transmission line will introduce an impedance discontinuity.

There is another factor which should be considered. In an aerial system the aerial and feeder induction fields are maintained by the transmitter generated feeder currents. Undesirable coupling, aerial to feeder and to nearby conductors, will be maintained by feeder current components but the predominant components will be anti-phase and the "choke" effect will be less than expected; certainly not enough to restore system balance.

The September '92 edition of *Radio Communications* gives details of the W2DU prototype sleeved version and the idea is further discussed in the January '93 edition of *Radio Communications*. The VK6BIL model seems to be a copy of the W2DU prototype.

I endorse the cautionary note in the January '93 *Radio Communications* article. Make sure that the insertion of either type coaxial inductors will improve

performance. Check feeder and aerial currents for balance before and after and "if it ain't broke — don't fix it!"

Lindsay Lawless VK3ANJ  
Box 760  
Lakes Entrance VIC 3909

## APPENDIX

Result of measurements on coiled coaxial model for possible use in the range 3.5 to 14 MHz.

Dimensions:

9 turns RG58 on 110 mm former.

Length of coil: 50 mm

Calculated self inductance: 9.1  $\mu$ H.

Measured parameters:

Inner conductor self inductance: 11.8  $\mu$ H

Outer conductor self inductance: 11.0  $\mu$ H

Coupling factor: 0.94

Inter conductor capacity: 343 pF

Insertion Inductance (Li):

In-phase currents: 44  $\mu$ H

anti-phase currents: 2  $\mu$ H

Insertion capacity:

In-phase currents: 85 pF

anti-phase currents: 343 pF

Insertion inductance calculated from measured parameters:

Li (in-phase currents): 43.3  $\mu$ H

Li (anti-phase currents): 2.3  $\mu$ H

The measurements were made within the range 2 to 12 MHz. The total length of coax was 3.4 metres; electrical length 4.5 metres, ie a quarter wave at 17 MHz.

I intend to do another set of measurements with a model suitable for 21 to 30 MHz to determine the effect of insertion in transmission lines. Space to accommodate suitable line lengths is a problem and it might be necessary to use 6 or 2 metre models. Also sleeved coaxial models await an opportunity

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## VHF/UHF — An Expanding World

Eric Jamieson VK5LP\*

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All times are UTC

### Auroral Opening

On 16/4 the south-eastern portion of Australia enjoyed enhanced conditions resulting from an aurora. I was not surprised that one had occurred as on the previous day, while returning from a trip to Adelaide, I drew my wife's attention to the unmistakable pattern of rising rays of light in the south-eastern sky, commenting, "Unless I am very mistaken, the bands will be open tomorrow afternoon." And they were!

From Meningie I managed fourteen SSB contacts on six and two metres to VK3, 5 and 7. Signals varied in signal strength and readability but some contacts were S9. I also heard VK1VP, VK1RX and VK1BG. The auroral conditions lasted from 0630 to around 0900. Beam headings were around 170-180° for most stations. I tried 70 cm with several stations but no contacts were made, the band did not seem to be alive with the customary background noise that accompanies an aurora.

At 0843 Roger VK5NY worked ZL3TY on 50 MHz with reports 5x3 each way. Charlie VK3BRZ said that if this contact was via aurora then it would be one of the longest from Australia as it exceeded the normally accepted auroral maximum distance of about 2000 km. I discussed the matter with Roger but he was not sure of the mode and said that he had moved his beam east to establish the contact. There remains the possibility that it was

an Es contact. Roger said the ZL had called CQ for some time but there were no other takers.

### Six metres

Ron VK4BRG sent a BBS message to me via Gary VK5ZK which indicated that six metres opened between VK4 and KH6 on 21/4 with Brisbane stations working KH6HH at 0440. Wally VK4DO worked the KH6 at 0450 and Ron worked him at 0534, signals were 5x9 each way. At this latter time there was a good opening to JA. Ron said that propagation to both areas was via TEP.

Emil Pocock W3EP in his "World Above 50 MHz" in *QST* has been providing a series of articles relating to 50 MHz propagation and, in particular, in-depth consideration to Sporadic-E. I have been following these articles with considerable interest and consider they should be recommended reading for those using 50 MHz. The articles have been re-printed in the *UKSMG Newsletter*.

In the May 1994 issue of *QST* Emil heads his article "Sporadic-E Mapping" and refers to the MUF reaching 144 MHz when 50 MHz contacts shorten to less than 700 km, thus opening the possibility for two metre contacts over 2000-km-plus paths.

The analysis of finding a mid-point for a short six metre path and a consequent mid-point for a 2000 km two metre path is contained in a handy MUF chart included in an article "Sporadic-E

Propagation at VHF" in QST for April 1988, pages 33 to 39.

For those living in the US there is a computer mapping programme by Jim Roop K0BI called ES-PROP 1.1 and this relates to an outline map of the US and adjacent parts of Mexico and Canada. As the programme runs on an IBM (MS-DOS) compatible PC, those keenly interested in Es propagation might like to contact Jim Roop K0BI, PO Box 255, Allegan, MI, 49010, to ascertain whether it is possible to adapt it to Australian circumstances as our continent and the USA are comparable in size.

## Two Metres and Above

Roger VK5NY reported that on 21/4 he worked stations in VK3 on 144 and 432. On 22/4 the bands 144, 432 and 1296 MHz were open during the day, working VK6AS Esperance and VK6WG Albany. Roger pointed out that it was a classic example how you should not pre-suppose certain conditions exist. He said the strongest signals were on 432, not 144, in this case particularly to VK6WG. Signals were 5x2/3 on 144, 5x8 on 432 and 5x2 on 1296.

Also on 22/4 at 2330 Roger worked Chris VK5MC at Hatherleigh on 10 GHz with signals 5x2 and a path distance of 270 km. Roger said contact could not be made at night but the next morning the contact was made, first from the hills north of Mount Magnificent, then to a location in a paddock near his home. In daylight he was able to observe that a stand of gum trees had blocked his night path.

From the reports which arrive on my desk, it seems quite remarkable the terrain over which various VK5 10 GHz contacts are being accomplished. If the current level of activity can be maintained it must only be a matter of time before the 1880 km path from Adelaide to Albany is bridged and that should set the world talking!

## Microwave Contests

Doug VK4OE forwarded details of an article in *Radio Communication* for April 1994 which outlines details of activities of the RSGB Microwave Committee which relate to their Summer and Winter Accumulatives. It is pointed out that technology has moved a long way in the last few years. No longer is it line-of-site, mountain-top to mountain-top only contacts which are made on 10 GHz, but paths of several hundred km are now covered on a daily basis.

The Summer Cumulatives are two separate days organised each month between April and October — one day each for 10 GHz and 24 GHz. The Winter Accumulatives encourage operation on

any band from 2.3 GHz upwards. The events are organised both as contests and a way of increasing activity, with a mix of portable and home locations.

In summer there are 70 or more UK stations taking part, plus a handful of continentals. The best DX in 1993 would do credit to the lower frequency bands, with G3FYX/p working HB9MIN/p at a distance of 780 km. Operation on 10 GHz during the cumulatives is now virtually all narrowband SSB/CW. 24 GHz is much less developed and is used more to try new equipment and paths and to investigate the vagaries of propagation. Up to now operation on this band has been with simple wideband equipment, but increasing numbers of people are now using narrowband equipment.

Briefly, this is how a typical microwave contact takes place. A CQ call is made on the microwave talk-back calling channel of 144.175 or occasionally 432.350 MHz and, when contact is established, the stations QSY to a working frequency on the 144 or 432 MHz bands.

Location details are exchanged using either the IARU locator, NGR or Lat/Long, and the dish headings either computed or obtained from a pre-computed table of sites. With antenna beamwidths often as small as 2° or 3° accurate headings are vital and the variance between true north and magnetic north must be taken into account. Both stations set their dishes accordingly, subject of course to being able to keep the dish aligned on a windy moor!

One station, normally the one with the greater transmit power, will send a carrier or CW beacon while the other listens and tweaks the dish in both azimuth and elevation for best signal. The reverse then takes place. Finally, the contest details are exchanged. When signals are weak it can take an hour or more to complete the exchange. It is also becoming frequent for the contact to be directly established on 10 GHz by "tail-ending" another QSO.

Equipment used varies widely, some using the G3WDG transverter modules plus a G4DDK local oscillator source, with 50 to 300 mW output, to a 45 cm dish with a prime mover such as the FT290 or IC202 which lend themselves to backpacking to a hilltop. The more ambitious portables and many home stations may have several watts to a 1.2 m dish, but the choice of site can be more important than the depth of your wallet!

Although derived from a European source, the above information is relevant to Australia, as more operators move to the 10 GHz band. If the inclusion of the above does no more than motivate a few more amateurs to explore the microwaves then the space used will have been worthwhile.

## From the UK

Ted Collins G4UPS said that Costas SV1DH worked stations in 7Q7 and A22 for the first Europe/Africa opening for 1994 on 24 and 26/2. The 7Q7SIX beacon was very strong during the opening.

Another first-for-the-year opening was on 17/3 when Peter PY5CC operating as PY0FM from Fernando de Noronha reported that at 1523 he was hearing the CT0WW beacon.

Ted reports two new beacons in Poland, SR5SIX, 50.023, Warsaw, KO02; SR6SIX, 50.028, Wolow, JO81. Also, the Namibia beacon V51VHF on 50.018 is still off air and likely to be for some time.

Equinoxial six metre activity from Europe almost non-existent. A number of beacons audible on 28 MHz. Auroral activity on 7/3 and 9/3. Ted is maintaining his daily CW propagation skeds with G3CCH and SM7AED, most days result in contacts but little else to work.

## Portable Operation

Doug VK4OE writes that he proposes operating portable from a hilltop site north-west of Brisbane, exact site unknown at writing, and using 144, 432 and 1296 MHz bands on Saturday evening of 25/6 and Sunday morning on 26/6. He will be primarily attempting aircraft enhancement contacts on 1296 MHz but, as always, he will be interested in VHF/UHF DX propagation and QSOs in any direction. Normal calling frequencies plus "decimal one-one-five" for each band if necessary. HF liaison on 7070 and 14340 kHz ± QRM, cellular telephone 018 191 066. He will take the same gear as used at Dorrigo last January and hopes to stir up some interest in longer-than-usual VHF/UHF contacts.

Also from Doug is a report from Peter VK4APG concerning two metre Es openings. On 9/4 during a strong short skip opening (Brisbane to VK2s), at 2157 VK4APG worked ZL1IU and at 2255 ZL3NE. At 2200 VK4VV worked ZL1GSN and ZL4AAA. On 17/4 at 2309 another brief opening occurred when VK4VV worked ZL4AAA with an incomplete contact VK4APG to ZL4AAA. A similar strong six metre opening occurred at the same time. When referring to the contacts, Peter made the comment that, "It takes calls to get results" so he was repaid for the time spent calling CQ at random intervals.

## Closure

Got to rush off to hospital for another round of pressure sore. Sorry, but the notes must finish here.

*73 from The Voice by the Lake*

*\*PO Box 169 Meningie SA 5264*

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## Silent Keys

*Due to space demands obituaries should be no longer than 200 words.*

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The WIA regrets to announce the recent passing of:-

T O	SUTTIE	VK2AST
E L	LLOYD	VK2ZV
C (Chris)	BELL	VK3DGN
V E (Vaughan)	MARSHALL	VK3UK

### Vaughan Marshall VK3UK

It is with regret we record the passing on 3 May 1994 of Vaughan Edward Marshall aged 83. Vaughan was a leading light in WIA Victoria affairs before World War II, serving on council and *Amateur Radio* magazine committee, and WIA Federal President in 1946.

The January 1939 Black Friday bushfire disaster saw him among those who took to the field to provide emergency communications. He was commanding officer of the WIA sponsored Wireless Reserve and, with Bob Cunningham VK3ML (SK), founded the group in recognition of the enormous potential role for radio amateurs in emergency and civil defence communications.

The Wireless Reserve provided 120 trained and skilled radio amateurs for call up in September 1939 and formed the basis of the RAAF radio and radar war effort. During war service Vaughan was Director of Radio Services in the RAAF. He was in charge of installations in the Pacific which were later to prove of great benefit to the United States Air Force. Those interested further in the era will find it useful to read "A Saga of Achievement, the RAAF Radio Story" written by Group Captain E R Hall, Bonall Publishing 1978.

Vaughan Marshall was described by his peers as being a good administrator with great capacity, good technical knowledge, and able to deal with problems and people in a considerate manner. He applied these attributes both during his time in serving the WIA, the RAAF, and as Director of Planning for Petersville Australia.

On behalf of the WIA and members I extend sincere sympathy to Vaughan's widow, Nel, their children Graham VK3GVM, daughter Pam, and to his surviving contemporaries in the amateur radio fraternity.

Jim Linton VK3PC

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## WIA News

### New Regulations to be Finalised by Year's End?

The long-awaited new regulations for the amateur radio service in Australia look like being completed by the end of the year.

This was the hope expressed by Spectrum Management Agency representative Peter Stackpole who was the guest speaker at the WIA Federal Annual Convention dinner on 30 April. He was standing in for the acting Spectrum Manager, Christine Goode, who sent her apologies.

Mr Stackpole explained the delay in introducing the new regulations had been caused primarily by the restructuring of the former Department of Transport and Communications, now the SMA.

The new regulations were first publicly foreshadowed nearly 18 months ago. The main aim of redrafting the regulations has been to simplify the present licensing conditions.

The new regulations are still expected to include the introduction of a no-code Novice licence and review of the frequency allocations and privileges for the Limited, Combined and Novice Licences.

A further bit of cautious good news for amateurs was delivered by Mr Stackpole: the SMA has proposed an electromagnetic compatibility (EMC) framework for Australia.

This means that there will be mandatory standards introduced for all electrical and electronic equipment that emits radio frequency energy which is not part of its purpose. Examples include electric motor driven appliances such as drills and food processors, and other equipment such as personal computers.

The electromagnetic compatibility requirements are planned to be effected from

January 1996, but will not be retrospective. That is, equipment manufactured before that date will not have to comply.

The EMC framework is proposed to apply for all equipment manufactured in or imported into Australia. The SMA will also work to develop immunity standards for equipment likely to be affected by electromagnetic interference. This will apply to equipment such as domestic television receivers and video recorders, for example.

Mr Stackpole also reminded WIA delegates and guests at the dinner about the SMA decision to toughen interference regulations. The SMA plans to include in the regulations new provisions relating to the operation of amateur stations in regards to interference. He said these provisions are being proposed to encourage radio amateurs to take more responsibility in the resolution of interference caused by their transmissions.

The philosophy behind the SMA's thinking is that radio amateurs and those suffering interference must work together to resolve interference problems. In a cautionary note for the amateur service, Mr Stackpole warned that, just because an amateur transmission is spectrally clean, will not in the future be a defence in cases where interference is being suffered by a neighbour. Sheer field strength can be a contributory cause to interference and this is likely to become an issue.

Guidelines for resolving interference problems will be developed.

Of necessity, this summary of important points from Mr Stackpole's speech has been brief. WIA Federal is actively considering many of the points raised and we will bring you further information as it comes to hand.

# HF PREDICTIONS

Evan Jarman VK3ANI

## The Tables Explained

The tables provide estimates of signal strength for each hour of the UTC day for five of the bands between 7 and 28 MHz. The UTC hour is the first column; the second column lists the predicted MUF (maximum useable frequency); the third column the signal strength in dB relative to 1 μV (dBU) at the MUF; the fourth column lists the "frequency of optimum travail" (FOT), or the optimum working frequency as it is more generally known.

The signal strengths are all shown in dB relative to a reference of 1 μV in 50 Ohms at the receiver antenna input. The table below relates these figures to the amateur S-point "standard" where S9 is 50 μV at the receiver's input and the S-meter scale is 6 dB per S-point.

μV in 50 ohms	S-points	dB(μV)
50.00	S9	34
25.00	S8	28
12.50	S7	22
6.25	S6	16
3.12	S5	10
1.56	S4	4

0.78 S3 2  
 0.39 S2 -8  
 0.20 S1 -14

The tables are generated by the GRAPH-DX program from FT Promotions, assuming 100 W transmitter power output, modest beam antennas (eg three element Yagi or cubical quad) and a short-term forecast of the sunspot number. Actual solar and geomagnetic activity will affect results observed.

The three regions cover stations within the following areas:  
**VK EAST** The major part of NSW and Queensland.  
**VK SOUTH** Southern-NSW, VK3, VK5 and VK7.  
**VK WEST** The south-west of Western Australia.

Likewise, the overseas terminals cover substantial regions (eg "Europe" covers most of Western Europe and the UK).

The sunspot number used in these calculations is 30.5. The predicted value for July 27.6.

## VK SOUTH — SOUTH PACIFIC

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	16.6	15	12.5	3	21	11	0	-16
2	17.2	16	12.9	4	22	13	2	-13
3	17.3	16	13.0	6	23	14	3	-13
4	17.1	17	12.8	15	24	14	3	-13
5	15.7	20	11.9	27	24	11	-3	-23
6	13.4	24	10.1	39	20	0	0	...
7	11.3	27	8.6	41	11	-15	...	...
8	9.6	29	7.3	40	0	-34	...	...
9	8.5	32	6.4	39	-12	...	...	...
10	7.7	33	5.8	37	-24	...	...	...
11	7.4	33	5.5	35	-29	...	...	...
12	7.4	33	5.5	35	-28	...	...	...
13	7.5	33	5.5	36	-27	...	...	...
14	7.5	33	5.5	36	-26	...	...	...
15	7.6	33	5.7	36	-25	...	...	...
16	7.0	34	5.4	34	-33	...	...	...
17	6.8	35	5.3	33	-37	...	...	...
18	7.1	34	5.5	34	-33	...	...	...
19	7.0	33	5.4	33	-35	...	...	...
20	8.0	26	6.3	29	-18	...	...	...
21	10.3	20	8.0	23	2	-25	...	...
22	12.6	17	9.7	14	12	-5	-24	...
23	14.5	16	11.1	8	17	4	-10	-32
24	15.6	16	11.8	4	19	8	-4	-23

## VK WEST — SOUTH PACIFIC

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	19.2	12	14.5	-23	17	14	8	-2
2	20.4	12	15.4	-24	18	16	10	1
3	21.1	12	16.4	-22	19	17	12	3
4	21.3	13	15.9	-16	21	19	13	4
5	20.9	14	15.7	-3	24	20	14	3
6	18.7	18	14.1	16	27	19	10	-3
7	15.8	22	11.9	32	26	13	1	-17
8	13.3	25	10.0	39	22	4	-13	-36
9	11.3	29	8.5	41	15	-7	-29	...
10	9.9	31	7.4	41	7	-20	...	...
11	9.3	32	6.9	41	3	-27	...	...
12	8.9	33	6.6	41	0	-32	...	...
13	8.9	33	6.6	41	0	-32	...	...
14	9.0	33	6.6	41	1	-31	...	...
15	9.0	33	6.8	41	1	-30	...	...
16	9.2	33	6.6	41	2	-28	...	...
17	8.5	34	6.5	40	-2	-37	...	...
18	8.2	34	6.4	39	-5	...	...	...
19	8.6	33	6.6	40	-1	-35	...	...
20	8.5	27	6.6	31	-3	-35	...	...
21	9.8	21	7.2	21	4	-19	...	...
22	12.7	18	9.8	10	14	-1	-16	-39
23	15.6	15	11.9	-3	17	9	-2	-18
24	17.9	13	13.6	-17	17	13	5	-7

## VK EAST — AFRICA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	8.5	13	6.8	9	-4	-29	...	...
2	7.8	5	6.0	-1	-5	-29	...	...
3	7.6	-2	5.8	-6	-6	-29	...	...
4	10.2	2	7.9	-20	2	-10	-26	...
5	14.9	7	11.5	...	7	3	-4	-17
6	17.7	7	13.8	...	7	7	2	-8
7	16.5	7	12.4	...	7	5	0	-11
8	14.2	7	10.7	-34	7	2	-7	-21
9	11.7	5	8.8	-23	5	-5	-18	-38
10	9.9	4	7.4	-12	1	-14	-32	...
11	8.6	4	6.4	-3	-3	-24	...	...
12	8.2	10	6.1	5	-5	-30	...	...
13	8.2	16	6.1	15	-5	-32	...	...
14	8.3	25	6.1	27	-4	-35	...	...
15	8.1	27	6.2	30	-7	...	...	...
16	7.8	30	6.0	33	-11	...	...	...
17	7.8	31	6.0	34	-11	...	...	...
18	7.9	30	6.0	34	-9	...	...	...
19	8.0	31	6.1	34	-8	...	...	...
20	7.9	31	6.1	34	-9	...	...	...
21	8.2	30	6.3	35	-7	...	...	...
22	8.1	30	6.3	34	-8	...	...	...
23	7.7	24	6.0	26	-11	...	...	...
24	7.6	17	6.0	16	-11	...	...	...

## VK SOUTH — AFRICA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	8.5	23	6.5	25	-1	-30	...	...
2	8.3	17	6.4	16	-3	-30	...	...
3	10.9	16	8.1	9	8	-8	-26	...
4	15.6	14	12.1	-5	16	8	-2	-17
5	17.3	11	14.0	-26	13	9	2	-9
6	18.6	10	15.0	-36	12	10	5	-5
7	17.6	9	14.1	-36	11	8	2	-8
8	15.7	9	12.5	-28	10	5	-2	-16
9	13.4	9	10.6	-19	8	0	-12	-29
10	11.0	8	8.6	-10	4	-10	-27	...
11	9.2	8	7.2	0	-2	-22	...	...
12	8.1	10	6.3	7	-8	-35	...	...
13	7.8	15	8.1	14	-11	...	...	...
14	7.8	24	6.0	26	-12	...	...	...
15	8.0	27	6.1	30	-11	...	...	...
16	8.2	29	6.2	33	-9	...	...	...
17	8.2	30	6.3	34	-8	...	...	...
18	8.3	30	6.4	35	-8	...	...	...
19	8.2	30	6.4	34	-9	...	...	...
20	7.8	30	6.1	33	-13	...	...	...
21	7.8	30	6.1	33	-13	...	...	...
22	8.6	29	6.6	35	-5	-39	...	...
23	8.1	30	6.3	35	-8	...	...	...
24	8.1	27	6.3	30	-9	...	...	...

## VK WEST — AFRICA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9	28.5
1	7.8	28	6.0	-9	...	...	...	...	...
2	7.5	19	5.8	-11	...	...	...	...	...
3	10.3	15	7.7	5	-13	-33	...	...	...
4	15.3	14	11.8	15	7	-3	-19	-37	...
5	17.8	11	13.6	13	10	4	-7	-21	...
6	19.0	10	14.4	12	11	6	-4	-16	...
7	19.5	9	14.6	11	11	6	-3	-14	...
8	18.6	9	13.9	10	9	4	-5	-18	...
9	16.7	9	12.5	10	7	0	-12	-27	...
10	14.4	10	10.8	10	2	-8	-24	...	...
11	11.9	10	8.9	7	-6	-21	...	...	...
12	9.9	12	7.4	2	-17	-38	...	...	...
13	8.6	17	6.4	-4	-31	...	...	...	...
14	8.3	25	6.2	-6	-39	...	...	...	...
15	8.3	28	6.2	-6	...	...	...	...	...
16	8.4	30	6.2	-6	...	...	...	...	...
17	8.4	31	6.3	-5	...	...	...	...	...
18	8.6	31	6.4	-4	-8	...	...	...	...
19	8.7	31	6.5	-2	-36	...	...	...	...
20	8.6	31	6.5	-3	-37	...	...	...	...
21	8.1	32	6.2	-8	...	...	...	...	...
22	8.0	32	6.1	-10	...	...	...	...	...
23	9.1	31	6.7	0	-31	...	...	...	...
24	8.4	32	6.4	-4	-39	...	...	...	...

## VK EAST — ASIA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9	28.5
1	22.0	12	16.7	16	17	13	6	-3	...
2	21.7	12	16.5	15	16	13	6	-3	...
3	21.6	12	16.6	14	16	13	6	-3	...
4	22.4	12	17.0	15	17	14	7	-1	...
5	22.8	13	17.4	17	18	15	8	0	...
6	21.9	13	16.8	19	19	15	6	-3	...
7	20.0	14	15.3	21	18	11	1	-12	...
8	17.4	17	13.2	24	14	4	-11	-28	...
9	14.9	20	11.4	23	7	-9	-30	...	...
10	12.7	23	9.7	15	-6	-28	...	...	...
11	11.6	24	8.6	10	-16	...	...	...	...
12	11.1	25	8.4	7	-22	...	...	...	...
13	10.7	26	8.1	3	-27	...	...	...	...
14	10.5	26	8.0	2	-30	...	...	...	...
15	10.3	26	7.8	0	-33	...	...	...	...
16	10.6	26	8.1	3	-28	...	...	...	...
17	9.8	27	7.5	-4	...	...	...	...	...
18	8.2	28	6.3	-25	...	...	...	...	...
19	7.8	28	6.1	-31	...	...	...	...	...
20	9.1	28	7.1	-10	...	...	...	...	...
21	12.9	21	10.0	16	-4	-23	...	...	...
22	18.8	16	14.5	23	17	9	-2	-17	...
23	21.7	14	16.7	21	20	15	6	-4	...
24	22.0	13	16.8	18	18	14	6	-3	...

## VK SOUTH — ASIA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	17.7	10	13.5	...	11	9	3	-8
2	18.6	10	14.1	...	10	10	5	-4
3	19.1	10	14.4	...	10	11	6	-2
4	19.2	10	14.4	...	11	11	7	-2
5	19.1	11	14.4	...	12	12	7	-2
6	18.3	11	13.8</					

VK EAST — EUROPE											VK SOUTH — EUROPE											VK WEST — EUROPE										
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5	UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5	UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5						
1	11.9	-2	8.5	3	0	-8	-21	-38	1	12.2	9	8.5	9	2	-8	-24	-37	1	12.7	19	8.8	16	4	-9	-28	...						
2	11.9	-6	8.6	0	0	-7	-19	-34	2	12.2	1	8.6	4	1	-7	-21	-37	2	12.6	8	8.8	8	1	-8	-25	...						
3	12.9	-6	9.4	-2	0	-4	-14	-26	3	13.3	-1	9.4	0	1	-3	-14	-27	3	13.8	4	9.6	4	2	-4	-16	-31						
4	14.4	-4	10.1	-5	1	-1	-8	-18	4	15.1	-1	10.4	-3	2	0	-2	-7	4	15.7	3	10.7	0	4	0	-7	-18						
5	15.9	-1	11.6	-7	1	1	-4	-13	5	16.8	1	12.0	-6	2	2	0	-2	5	17.7	4	12.4	-2	4	3	-2	-10						
6	16.8	0	12.3	-7	2	2	-2	-10	6	17.8	2	12.7	-7	2	2	3	0	6	18.8	4	13.2	-4	4	4	0	-7						
7	16.9	1	12.3	-6	3	2	-2	-10	7	17.9	2	12.7	-7	3	3	0	0	7	18.9	4	13.3	-5	3	4	0	-6						
8	16.9	3	12.4	-2	4	3	-2	-11	8	17.6	3	12.7	-4	4	2	-4	-4	8	18.9	4	13.3	-5	4	4	0	-8						
9	15.9	3	12.1	1	3	0	-9	-21	9	15.2	1	11.5	0	3	2	-2	-11	9	19.0	5	13.4	-3	4	4	0	-6						
10	13.4	2	10.2	3	0	-7	-20	-36	10	12.6	-1	9.5	1	1	-1	-7	-19	10	17.7	4	13.5	0	4	1	-6	-16						
11	11.5	2	8.7	4	-4	-16	-34	...	11	10.6	-3	7.9	1	0	-14	-31	...	11	15.0	3	11.4	3	2	-4	-15	-30						
12	10.6	4	8.0	3	-8	-23	...	...	12	9.2	-3	6.8	0	-1	-20	...	...	12	12.7	3	9.6	4	-2	-13	-29	...						
13	10.2	8	7.7	3	-11	-29	...	...	13	8.8	1	6.5	-1	-1	-23	...	...	13	10.9	4	8.3	3	-9	-25	...	...						
14	9.9	12	7.5	3	-15	-35	...	...	14	8.8	7	6.5	-1	-23	...	...	...	14	10.2	8	7.7	2	-15	-34	...	...						
15	9.7	16	7.3	3	-18	...	...	...	15	8.8	15	6.5	-2	-2	-29	...	...	15	10.0	15	7.5	2	-19	...	...	...						
16	9.7	20	7.3	3	-20	...	...	...	16	8.9	20	6.5	-2	-2	-29	...	...	16	9.8	19	7.4	2	-22	...	...	...						
17	10.0	25	7.6	6	-19	...	...	...	17	9.0	25	6.7	0	-30	...	...	...	17	9.7	24	7.4	2	-25	...	...	...						
18	9.4	27	7.2	2	-26	...	...	...	18	9.2	27	6.9	0	-29	...	...	...	18	9.8	26	7.4	3	-25	...	...	...						
19	8.1	29	6.3	-9	...	...	...	...	19	9.1	29	6.9	0	-31	...	...	...	19	10.0	27	7.6	5	-22	...	...	...						
20	7.9	30	6.1	-12	...	...	...	...	20	8.5	30	6.5	-5	-39	...	...	...	20	9.6	28	7.4	2	-27	...	...	...						
21	10.3	28	8.0	9	-17	...	...	...	21	8.4	30	6.5	-7	-24	...	...	...	21	8.6	29	6.6	-7	-22	...	...	...						
22	11.3	24	8.5	14	-4	-22	...	...	22	9.7	29	7.5	4	-24	...	...	...	22	8.3	29	6.4	-10	-10	...	...	...						
23	13.3	15	9.4	15	-7	-3	-18	-36	23	10.1	28	7.7	9	-16	-39	...	...	23	9.9	28	7.7	6	-21	...	...	...						
24	12.4	5	8.8	7	2	-6	-21	-38	24	12.9	20	9.0	18	7	-5	-23	...	...	24	10.2	27	7.8	7	-18	...	...	...					

VK EAST — EUROPE (Long Path)											VK SOUTH — EUROPE (Long Path)											VK WEST — EUROPE (Long Path)										
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9	UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9	UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9						
1	14.8	18	10.0	0	19	12	4	-8	1	14.0	16	9.7	-7	16	9	1	-12	1	13.6	7	9.5	-33	7	4	-3	-25						
2	13.6	19	9.3	7	19	10	0	-14	2	13.0	19	9.1	-7	17	8	-3	-19	2	12.7	10	8.9	-15	10	3	-6	-21						
3	12.7	21	8.7	14	18	7	-4	-21	3	12.3	22	8.6	17	18	5	-7	-26	3	12.0	12	8.5	-6	11	1	-10	-31						
4	12.2	25	8.4	27	20	6	-7	-27	4	11.9	25	8.4	27	19	4	-10	-31	4	11.6	15	8.3	3	11	0	-12	-31						
5	12.2	25	8.5	26	20	6	-7	-27	5	12.0	26	8.5	30	20	5	-9	-30	5	11.8	16	8.5	5	12	1	-11	-29						
6	12.4	23	9.2	26	18	4	-11	-31	6	13.0	24	9.4	23	12	-5	-23	6	12.7	17	9.1	7	15	4	-6	-23							
7	12.2	21	9.2	8	16	2	-13	-34	7	11.5	21	8.4	23	12	-5	-23	7	13.8	17	10.0	4	16	8	-1	-15							
8	10.5	15	7.8	7	7	9	-26	...	8	9.6	14	7.5	9	3	-17	-38	8	13.9	13	10.8	1	12	3	-8	-8							
9	8.8	5	6.7	-5	1	-15	-33	...	9	8.6	6	6.5	0	-3	-24	...	...	9	11.4	10	9.3	-4	6	7	-21	...						
10	8.6	-2	6.4	-6	0	-14	-31	...	10	6.1	-1	6.2	-8	-3	-22	...	...	10	9.5	1	7.4	-13	0	-15	-31	...						
11	8.7	-9	6.4	-26	0	-9	-26	...	11	6.1	-7	6.2	-16	-2	-18	-36	...	...	11	8.3	-8	6.4	-19	-4	-19	-36	...					
12	8.7	-14	6.4	-34	0	-7	-22	...	12	8.2	-12	6.3	-26	-1	-14	-30	...	...	12	8.0	-15	6.1	-25	-4	-17	-32	...					
13	8.8	-17	6.6	...	...	...	...	...	13	8.4	-16	6.5	-32	-1	-11	-25	...	...	13	8.0	-20	6.1	-25	-4	-15	-29	...					
14	8.9	-22	6.6	...	...	...	...	...	14	8.4	-30	6.4	...	-8	-17	-31	...	...	14	8.1	-35	6.1	...	-11	-21	-34	...					
15	9.0	-27	6.7	...	...	...	...	...	15	8.5	-30	6.4	...	-14	-22	-35	...	...	15	8.2	...	6.4	...	-17	-25	-39	...					
16	9.0	-35	6.7	...	...	...	...	...	16	8.4	...	6.6	...	-21	-28	...	...	16	8.3	...	6.3	...	-22	-28	...	...						
17	8.4	...	6.7	...	...	...	...	...	17	7.9	...	6.2	...	-30	-39	...	...	17	8.4	...	6.4	...	-26	-32	...	...						
18	8.2	...	6.3	...	...	...	...	...	18	7.9	...	6.2	...	-32	...	...	...	18	8.3	...	6.4	...	-30	-35	...	...						
19	8.4	-18	6.3	...	...	...	...	...	19	8.8	...	6.7	...	-20	-25	-37	...	...	19	7.8	...	6.1	...	-34	...	...						
20	12.1	-5	9.3	...	...	...	...	...	20	10.8	-13	8.6	...	-2	-3	-10	-23	...	20	7.8	...	6.1	...	-32	...	...						
21	14.9	4	11.4	...	...	...	...	...	21	13.2	5	10.6	...	-2	1	-6	-16	...	21	8.7	...	6.5	...	-18	-23	-35	...					
22	17.3	10	12.2	...	...	...	...	...	22	15.4	-1	11.7	...	0	2	-2	-10	...	22	10.7	-14	8.6	...	-3	-6	-13	-27					
23	16.6	15	11.5	-22	16	14	9	0	23	15.8	7	11.1	...	5	6	2	-6	...	23	13.1	-4	10.5	...	-2	-3	-9	-20					
24	15.8	17	10.7	-9	18	14	7	-4	24	14.9	12	10.3	-29	12	9	3	-7	...	24	14.4	2	10.1	...	2	1	-4	-14					

VK EAST — MEDITERRANEAN											VK SOUTH — MEDITERRANEAN											VK WEST — MEDITERRANEAN										
UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5	UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5	UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5						
1	13.2	7	10.0	8	3	-5	-19	-36	1	13.0	14	9.9	13	4	-7	-24	...	1	12.1	20	9.2	14	-1	-17	...	...						
2	13.6	2	10.2	3	2	-4	-15	-30	2	13.3	7	10.1	7	2	-6	-20	-37	2	12.4	11	9.4	9	-1	-13	-32	...	...					
3	16.4	3	12.2	0	4	2	-5	-15	3	13.3	6	12.8	3	5	2	-6	-18	3	15.0	7	11.8	7	5	-2	-14	-29	...	...				
4	19.7	6	14.9	-4	5	5	2	-4	4	19.7	7	15.0	0	7	6	2	-5	4	18.1	7	13.8	4	7	4	-3	-13	...	...				
5	21.2	6	16.3	-6	5	6	4	-2	5	21.3	6	16.0	-3	5	6	2	-4	5	19.5	6	15.1	7	7	5	-1	-10	...	...				
6	21.4	6	16.7	-6	4	6	3	-2	6	21.2	5	15.9	-4	5	5	2	-4	6	19.6	6	15.2	0	6	4	-1	-9	...	...				
7	20.7	5	15.7	-4	4	5	1	-6	7	20.2	5	15.1	-3	4	4	0	-7	7	20.0	5	15.2	0	5	4	-1	-9	...	...				
8	18.4	4	14.0	-1	4	3	-3	-13	8	18.1	4	13.6	-1	4	2	-4	-14	8	19.5	5	14.8	0	5	3	-2	-11	...	...				
9	15.6	3	11.8	2	3	-2	-11	-24	9	15.6	3	11.7	1	2	-2	-12	-25	9	18.0	4	13.6	1	4	1	-6	-17	...	...				
10	13.2	2	10.0	3	0	-9	-23	...	10	12.9	1	9.7	2	-2	-10	-25	...	10	15.8	4	12.0	3	3	-3	-14	-29	...	...				
11	11.3	3	8.6	3	-5	-18	-37	...	11	10.8	0	8.1	1	-8	-22	...	...	11	13.3	4	10.0	4	-2	-12	-29	...	...					
12	10.5	6	7.9	4	-10	-25	...	...	12	9.4	1	7.0	-1	-17	-36	...	...	12	11.2	5	8.5	3	-10	-25	...	...	...					
13	10.3	11	7.7	4	-12	-31	...	...	13	8.9	7	6.7	-2	-24	...	...	...	13	9.7	7	7.3	-1	-21	...								

# HAMADS

## TRADE ADS

● **AMIDON FERROMAGNETIC CORES:** For all RF applications. Send business size SASE for data/price to RJ & US Imports, PO Box 431, Kiama NSW 2533 (no enquiries at office please ... 14 Boanyo Ave Kiama). Agencies at: Geoff Wood Electronics, Sydney; Webb Electronics, Albury; Assoc TV Service, Hobart; Truscotts Electronic World, Melbourne; Alpha Tango Products, Perth.

● **WEATHER FAX** programs for IBM XT/ATs \*\*\* "RADFAX2" \$35-00, is a high resolution shortwave weatherfax, morse and RTTY receiving program. Suitable for CGA, EGA, VGA and Hercules cards (state which). Needs SSB HF radio and RADFAX decoder. \*\*\* "SATFAX" \$45-00, is a NOAA, Meteor and GMS weather satellite picture receiving program. Needs EGA or VGA & WEATHER FAX PC card, + 137 MHz Receiver. \*\*\* "MAXISAT" \$75-00 is similar to SATFAX but needs 2 MB of expanded memory (EMS 3.6 or 4.0) and 1024 x 768 SVGA card. All programs are on 5.25" or 3.5" disks (state which) plus documentation, add \$3-00 postage. ONLY from M Delahunty, 42 Villiers St, New Farm QLD 4005. Ph (07) 358 2785.

● **HOME BREW** your own shack (Steel Garage). Complete Engineering design (suitable for councils Aust wide). Workshop drawings standard slab. Detailed erection instructions. Parts list, fully bolt up or fully welded (state which). Send \$95.00 to Ken Byrne Sheds, PO Box 120, Yandina Qld 4561. Phone or Fax (074) 46 8423 or (018) 71 3434. VK4NUH.

## FOR SALE ACT

● **YAESU FT7** transceiver good cond, mic and manual \$275; **JUMBO 400 W PEP** solid state HF linear, good cond, no manual \$300; 3 **QUAD** ant hubs \$60. Eric VK1EP (06) 249 6437 LAO.

## FOR SALE NSW

● **B & W DUMMY** load wattmeter oil cooled ranges 0-10, 100, 300, 1000 W 52 ohms good condn \$150. Gordon VK2AVT QTHR (02) 580 4325.

● **DECEASED ESTATE HARRY HARMAN** VK2GH. Complete Ham Shack disposal at his QTHR address in call book. Garage type sale **NO PERSONAL CHEQUES** Saturday 18th June. Includes HF/2 m xceivers complete with mics, operate and service manuals, cartons. **KENWOOD TS440** s/n 70903357 \$1550, **TS140S** near new s/n 0101746 \$1100, **TR2400HT** with new batteries, charger s/n

0115014 \$120. Near new Auto ATU AT250 s/n 20800080 c/w manual carton \$550. Near new **ICOM IC28H** mobile s/n 26843 c/w manual accessories \$600. University Sig Gen H & P Sig Generator, GDO, AVO meter, test equipment etc. VK power master and various P/S. Radio books, antennas etc. ALL ONO/LAO. Contact Les (049) 33 4128 AH or Ted VK2UI on packet at BBS of VK2KLV or VK2CZZ.

● **KENWOOD TS830S** HF transceiver s/n 1070225 ext VFO s/n 1040087 service manual, MC50 desk mike, spare valves 1/12BY7A, 2/6146B \$1000 ONO. Franklyn VK2DYP QTHR (02) 452 5172 Licensed Amateurs only.

● **TS830** little used MC50 desk mike external speaker original packing, spare tubes 500 Hz filter \$800 ONO. David VK2BBT (043) 67 6688 after 6 pm.

**KENWOOD TS850S** with MC80 mike SP31 external speaker computer interface SSB CW narrow filters six months old \$3150. Merv VK2SML (047) 36 3738.

● **SONY ICF-2001** general coverage receiver \$200; **TELEREADER CWR-685A** \$400; **KENWOOD Multi-PS20** directional coupler \$30; **MARCONI TF-329G** Q meter \$170; **LDF5-50A** Hardline ca 18 m \$150. Tom VK2OE (046) 21 2228 evenings.

## FOR SALE VIC

● **SATELLITE** Receiver K or C band supplied with K band low noise converter and magnetic polariser feedhorn will separate \$290. Neil VK3BCU (03) 390 2609.

● **ICOM IC751A** HF xcvr with IC-EX310 voice unit, RC-10 frequency controller UT-30 tone encoder extra CW filter plus SM8 desk mic, SP3 external speaker \$1600. Ray VK3CDR QTHR (03) 726 9222.

● **STANDARD 528 144/430** hand held wide band RX spkr/mic, 2 antennas, 2 nicad batteries, charger, workshop & instr manual \$675. John VK3ZAB QTHR (03) 802 4212.

● **YAESU FT707** HF xcvr FP707 power supply Yaesu FC707 antenna tuner all in good working order \$1050 the lot. Please ring after 0900 Zulu Saturday and all day Sunday Keith (090) 71 2708 or Patrick (051) 99 2811.

● **ICOM IC-751A** s/n 05859 including internal P/S \$1400; **EMTRON TE-31** 14-28 MHz rotatable dipole \$50; **HI-MOUND** marble base key \$40; **MFJ-249** SWR meter new \$350; **SONY ICF-PRO70** 0.2-108 MHz radio \$190. Susumu VK3ERR QTHR (03) 598 0282 after 7 pm.

## FOR SALE QLD

● **COLLINS TCS-12** (JAN) separate TX & RX \$300; **MILITARY** whip antenna and multiband tuner \$50; **DRAKE** C-line valves (2) 6JB6A \$65; **MULTITESTER** Sanwa N-501 top of the range 17  $\mu$ A FSD, 10 A ac/dc etc \$80; **FUNCTION** Generator home brewed GWO \$40; **WHIP** antennas 80 m w/adjustable tip \$40, 10 m \$30. John VK4SZ QTHR (070) 61 3286.

● **VHF 3 band** converter **YAESU FRV7700** serial no. 11011641 vgc \$75. Gil VK4CF QTHR (07) 355 3969.

● **ICOM XCVR IC-720**, c/w **ICOM** power supply IC-PS15, **OSKER** SWR meter SWR-200, **KENWOOD** ant tuner AT-130 \$800 the lot, will not be separated. Les VK4CAF (070) 53 6492.

## FOR SALE SA

● **FT1000** limited use with original packing, manual and MD1 desk mike s/n 0J0900248 \$4700 ONO. Paul VK5TT (08) 645 3971 BH.

## FOR SALE WA

● **KENWOOD TS680S** HF & 6 m \$1025; 2 m **HAND HELD TH25A** many extras \$275; **BWD** Osc 804 10 megs \$150. All above units with hand books. Allan VK6LL QTHR (09) 446 1568.

● **YAESU FT75B** mobile 12-15 V 100 W PEP 5 band transceiver 10-80 m vgc with speaker power unit and mike also manual crystal control suit station rugged mount \$200. Tom VK6TL QTHR (09) 386 7692.

## WANTED NSW

● **COPY** of circuit for Kingsley radio type AR7, will return cost of photocopy and postage etc. John VK2CAF, RMB 419 Nowra Rd, Moss Vale NSW 2577.

● **OLD AND NEW** Morse keys magazines, books relating to Morse code. Need as much material as possible for future book. Top prices paid. Steve VK2SPS (02) 99 2933 after 6 pm.

● **WILL SWAP** AWA A-220 sig gen (solid state) both manuals for any HAM item, test gear or anything. Old and/or not working OK. 7 PIN valve sockets also wanted. Vic VK2EVD (02) 772 2411.

● **COLLINS** equipment 62S-1 converter, SM1 or SM2 microphone, 312B-5 control console, 52-S1 receiver, old valve type equipment — Hammarlund, Hallicrafters, good quality valve tester, large collection of CQ, HR. Tom VK2OE (046) 21 2228 evenings.

● **MANUAL** for general radio RF bridge model 1606B; **WANTED** for Tektronix CRO model 545A, a dual channel plug-in unit model CA or similar. Peter VK2CPK QTHR (02) 605 4790.

**WANTED VIC**

- YAESU FRG-8800 or KENWOOD R-1000 in top working condition. Roth VK3BG (03) 725 3550.
- MARCONI T1154 transmitter usable or capable of being restored for Scienceworks and proposed new Air and Space Museum at Point Cook. Please contact Allan Doble VK3AMD QTHR (03) 570 4610 or Arthur Evans VK3VQ QTHR (03) 589 3822.
- RADIO THEORY Handbooks by Fred Swainston second edition in good condition for SPARC students. Price etc to Max VK3YBE QTHR (059) 85 2671.
- CONTROLLER AWA p/n 1P2512 and power unit p/n H3080 for Aircraft transmitter type AS9 for Museum. Rod VK3TJ, 4 Thistle St, Pascoe Vale South Vic 3044, (03) 354 2401.

**WANTED QLD**

- FIF-232C Cat interface C/W and RS232 cable in vgc. Trevor VK4ARB QTHR (07) 269 8848.
- FLDX2000, Galaxy txcvrs, Heathkit HW16, SB200, SB201, SB220, SB104A, SB401, HW101, 8 F'glass Quad spreaders approx 4 m long, 6146B for homebrew TX, medium duty rotator, Argonaut 509 QRP txcvr. Granite Belt Amateur Wireless Group (076) 85 2167 AH.

**MISCELLANEOUS**

- THE WIA QSL Collection (now Federal) requires QSLs. All types welcome especially rare DX pictorial special issue. Please contact Hon Curator Ken Matchett VK3TLL, 4 Sunrise Hill Road, Montrose Vic 3765, Tel (03) 728 5350.

**Update**

**VK4 Membership Fees**

Please note that the gremlins struck with the listing of the VK4 Division 1994 membership fees on page 3 of the March and April issues of *Amateur Radio* magazine (the listings were correct in the December, January and February issues and are again correct in this issue).

**Master Henry Witherspoon Cartoon**

The clever cartoon which appeared on page 50 of the May 1994 issue of *Amateur Radio* magazine was supplied by Richard Murnane VK2SKY. Apologies to Richard for the mysteriously missing byline. We hope more cartoons are forthcoming, Richard.

**What's New? — New Range of Mobile Antennas**

The new *What's New?* column, appearing for the first time in last month's issue on page 48, had some teething troubles. Adrian Fell's callsign is, of course, VK2DZF, as could be seen in Adrian's cartoon appearing on page 51 of the same issue.

More importantly, however, Adrian's post office box was wrong. Global Aerials correct address is PO Box 344, Baulkham Hills, NSW 2153.

It might be a good idea if you correct last month's issue now.

ar

**Sign up a new member today —  
we need the numbers to protect our  
frequencies and privileges.**

**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 per issue 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.  
 \*Copy typed or in block letters to PD Box 2175, Caulfield Junction, Vic 3161, 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.

\*WIA policy recommends that Hamads include the serial number of all equipment offered for sale.  
 \*Please enclose a self addressed stamped envelope if an acknowledgement is required that the Hamad 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: \$25.00 for four lines, plus \$2.25 per line (or part thereof) Minimum charge — \$25.00 pre-payable.

State: .....


**Not for publication:**

Miscellaneous

For Sale

Wanted

Name:..... Call Sign:..... Address: .....

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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.

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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.

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## CONTRIBUTIONS TO AMATEUR RADIO

Amateur Radio is a forum for WIA members' amateur radio technical experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for possible publication. Articles on computer disk are especially welcome. The WIA cannot assume responsibility for loss or damage to any material. "How to Write for Amateur Radio" was published in the August 1992 issue of AR. A photocopy is available on receipt of a stamped, self addressed envelope.

## BACK ISSUES

Available only until stocks are exhausted. \$4.00 to members, which includes postage within Australia.

## PHOTOSTAT COPIES

When back issues are no longer available, photocopies of articles are available to members at \$2.50 each (plus \$2.00 for each additional issue in which the article appears).

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.

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## 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:.....

# WIA Morse Practice Transmissions

VK2BWI Nightly at 2000 local on 3550 kHz

VK2RCW Continuous on 3699 kHz and 144.950 MHz 5 wpm, 8 wpm, 12 wpm

VK3COD Nightly (weekdays) at 1030 UTC on 28.340 MHz and 147.425 MHz

VK3RCW Continuous on 144.975 MHz 5 wpm, 10 wpm

VK4WIT Monday at 0930 UTC on 3535 kHz

VK4WSS Tuesday at 0930 UTC on 3535 kHz

VK4WCH Wednesday at 1000 UTC on 3535 kHz

VK4AV Thursday at 0930 UTC on 3535 kHz

VK4WIS Sunday at 0930 UTC on 3535 kHz

VK5AWI Nightly at 2030 local on 3550 kHz

VK5RCW Continuous on 144.975 MHz, 5 wpm to 12 wpm

VK6WIA Nightly at 1930 local on 146.700 MHz and nightly (except Saturday) at 1200 UTC on 3.555 MHz.



# WIA Divisional Bookshops

The following items are available from your Division's Bookshop  
(see the WIA Division Directory on page 3 for the address of your Division)

	Ref	List Price		Ref	List Price
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Ant. Compendium Vol 2 Software 5.25" IBM Disk	BR293	\$22.00			
Ant. Compendium Vol 3 1st Ed. 1992	BR455	\$37.00			
Antenna Compendium Vol 2 — ARRL	BH292	\$32.00			
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G-QRP Antenna Handbook — RSGB — 1992 1st Edition	BF452	\$22.50			
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# RADIO **AMATEUR**

JULY 1994  
Volume 62 No 7



Journal of the Wireless Institute of Australia



## **IN THIS ISSUE:**

**Standard Operating Procedures — WICEN**  
**Adjusting and Cleaning Speed Keys**  
**Review of ICOM IC-736 HF-50 MHz Transceiver**

**and lots more**

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*Amateur Radio* is published by the Wireless Institute of Australia, ACN 004 920 745 as its Official Journal, on the last Friday of each month.

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Deadlines	Editorial	Hamads
August	11/07/94	13/07/94
September	08/08/94	10/8/94
October	12/09/94	14/09/94

Delivery of AR: If this magazine is not received by the 15th of the month of issue, and you are a financial member of the WIA, please check with the Post Office before contacting the registered office of the WIA. ©

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### Cover

The "Aussie" VK6CHI DX shack on Cheyne Island. Inset: The Cheyne Island March 1994 DXpedition operators, l to r, Ron VK6LG, Mai VK6LC and Andy VK6LLL (See page 34 of the May 1994 issue of *Amateur Radio* for the full story).

## Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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## Federal QSP

### Visitor Callsigns

Each year, most capital cities around Australia receive visits from American naval ships, typically to celebrate the battle of the Coral Sea. In Sydney, the ships usually arrive at the end of the week, allow inspection tours from members of the public over the weekend, and leave on the following Monday or Tuesday.

It should come as no surprise to members that many of these ships have radio amateurs amongst their crew; some of the ships even have on-board amateur radio clubs.

As you can imagine, with these "flying" visits there is little or no time for these hams to visit the local SMA office (let alone advise them beforehand) to obtain a reciprocal licence during their short stay in Australia. To further frustrate their amateur activities, they are not able to use their club equipment while in Australian waters. At other times during their visits, the ships are on manoeuvres and the hams on-board don't have time to use their US callsigns.

This situation came to the attention of last year's NSW Divisional Council. An approach was made by Roger Harrison VK2ZRH to the local American authorities for comment and to the then DOTAC (now the SMA) with a proposal that the WIA NSW Division would take out a limited series of "special purpose licences" to be used by visiting military personnel during such visits as a goodwill gesture from the Institute.

The good news is that the SMA has at last been able to process the proposal and they have agreed to it. The special licences will use the VI2 prefix and will most probably have USA, USN, USM, etc suffixes.

There are still a few minor administrative details to be put into place, but it is earnestly hoped that everything will be operational in time for this year's visits from the American navy.

John Robinson VK2XY  
Alternate Federal Councillor, VK2  
ar

## Editor's Comment

### The Blind Men and the Elephant

Many of you will know the story of the three blind men who were introduced to an elephant. One touched it on the side and said, "The elephant is like a wall". One touched it on the leg and said, "The elephant is like a tree". One touched it on the tail and said, "The elephant is like a rope". Had there been a fourth he might have felt its trunk and likened the elephant to a fire hose!

# WIA News

## Digital Conference

The American Radio Relay League has announced their 13th Conference on Digital Communications will be held in Bloomington, Minneapolis, over August 19-21 this year.

Likely topics to be covered include: data communications, computer networking via radio, protocols, packet radio hardware and software, digital voice communications, digital imaging communications, radio propagation effects, digital signal processing, spread spectrum, and state-of-the-art microelectronics. etc. Details from the ARRL.

However, I am sure that very few of those present at the Convention would agree with each other in every detail as to exactly what was said and done. Even the official minutes may be at variance with some people's recollections. The only way to achieve a perfect record is for each speaker to be tape-recorded and the tapes then used to augment written notes. This, in fact, used to be the practice at Conventions, but has largely now been discarded because of the many tedious hours of work involved in such detailed cross-checking.

Perhaps our annual elephant needs more blind men to touch it! Perhaps some need to be only partly blind! And perhaps some things that were said are best left unrecorded.

Bill Rice VK3ABP  
ar

The essence of the story is, of course, that all were right, but all had found out only part of the full truth. I was reminded of this the other night by a conversation with someone, who was also there, regarding the accuracy of my report last month on the WIA 58th Annual Federal Convention. The Convention itself was the elephant, and I was one of the blind men!

My account was lacking in a few details (partly due to necessary condensation to fit limited space). In several places I referred to motions being "set aside for re-drafting". It would have been better had this been "postponed to permit more discussion later". And eventually all of these motions, only slightly modified, were carried unanimously.

## 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.

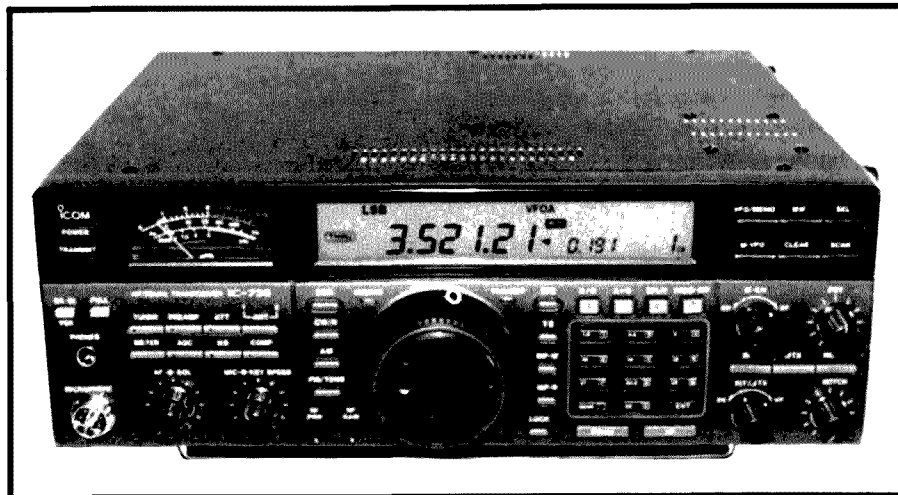
Division	Address	Officers	Weekly News Broadcasts	1994 Fees
VK1	ACT Division GPO Box 600 Canberra ACT 2601 Phone (06) 247 7006	President Rob Apathy Secretary Len Jones Treasurer Don Hume	VK1KRA 3.570 MHz LSB, 146.950 MHz FM, 438.525 MHz FM each VK1NLJ Monday evening (except the fourth Monday) commencing at VK1DH 8.00 pm. Repeated on Wednesday evening at 8.00 pm on 146.950 MHz FM.	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK2	NSW Division 109 Wigram Street Parramatta NSW (PO Box 1066 Parramatta 2124) Phone (02) 689 2417 Freecall 1800 817 644 Fax (02) 633 1525	President Michael Corbin Secretary/ Roger Harrison Treasurer Terry Ryeland (Office hours Mon-Fri 11.00-14.00 Wed 1900-2100)	VK2PFO From VK2WI 1.845, 3.595, 7.146*, 10.125, 24.950, 28.320, VK2ZRH 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 VK2UX (*morning only) with relays to some of 14.160, 18.120, 21.170, 584.750 ATV sound. Many country regions relay on 2 m or 70 cm repeaters. Sunday 1030 and 1930. Highlights included in VK2AWX Newcastle news, Monday 1930 on 3.593 plus 10 m, 70 cm, 23 cm. Voicemail highlights on (02) 724 8739. Some broadcast text is occasionally available on packet.	(F) \$66.75 (G) (S) \$53.40 (X) \$38.75
VK3	Victorian Division 40G Victory Boulevard Ashburton Vic 3147 Phone (03) 885 9261	President Jim Linton Secretary Barry Wilton Treasurer Rob Hailey (Office hours Tue & Thur 0830-1530)	VK3PC 1.840MHz AM, 3.615 SSB, 7.085 SSB, 53.900 FM(R) Mt Dandenong, VK3XV 146.700 FM(R) Mt Dandenong, 146.800 FM(R) Mildura, 146.900 VK3XLZ FM(R) Swan Hill, 147.225 FM(R) Mt Baw Baw, 147.250 FM(R) Mt Macedon, 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday.	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK4	Queensland Division GPO Box 638 Brisbane QLD 4001 Phone (07) 284 9075	President Murray Kelly Secretary Lance Bickford Treasurer Roger Bingham	VK4AOK 1.825, 3.605, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, VK4ZAZ 28.400 MHz. 52.525 regional 2m repeaters and 1296.100 0900 VK4HD hrs Sunday. Repeated on 3.605 & 147.150 MHz, 1930 Monday	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK5	South Australian Division 34 West Thebarton Road Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Garry Herden Secretary Maurie Hooper Treasurer Bill Wardrop	VK5ZK 1820 kHz 3.550 MHz, 7.095, 14.175, 28.470, 53.100, VK5EA 147.000 FM(R) Adelaide, 146.700 FM(R) Mid North, VK5AWM 146.900 FM(R) South East, ATV Ch 34 579.000 Adelaide, ATV 444.250 Mid North Barossa Valley 146.825, 438.425 (NT) 3.555m 146.5000, 0900 hrs Sunday	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK6	West Australian Division PO Box 10 West Perth WA 6872 Phone (09) 388 3888	President Cliff Bastin Secretary Ray Spargo Treasurer Bruce Hedland-Thomas	VK6LZ 146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 1.825 3.560, (F) VK6RR 7.075, 14.115, 14.175, 21.185, 28.345, 50.150, 438.525 MHz. VK6OO Country relays 3.582, 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 146.700 at 1900 hrs.	(F) \$60.75 (G) (S) \$48.60 (X) \$32.75
VK7	Tasmanian Division 148 Derwent Avenue Lindisfarne TAS 7015 Phone (002) 43 8435	President Andrew Dixon Secretary Ted Beard Treasurer Peter King	VK7GL 146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on (F) VK7EB 147.000 (VK7RAA), 146.750 (VK7RNW), 3.570, 7.090, 14.130, VK7ZPK 52.100, 144.150 (Hobart) Repeated Tues 3.590 at 1930 hrs (X)	(F) \$69.00 (G) (S) \$55.65 (X) \$40.00
VK8	(Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).		Membership Grades Full (F) Pension (G) Needy (G) Student (S) Non receipt of AR (X)	Three-year membership available to (F) (G) (X) grades at fee x 3 times.

Note: All times are local. All frequencies MHz.

## Equipment Review

# ICOM IC-736 HF/50 MHz Transceiver

Reviewed by Ron Fisher VK3OM\*



The ICOM IC-736 HF/50 MHz transceiver.

I often wonder if manufacturers of amateur equipment ever read reviews published in various magazines around the world. With the introduction of the IC-736 I am beginning to think they just might. Why? Well, most of my predictions in my review of the IC-737 in the August 1993 issue of *Amateur Radio* have come about in the new IC-736. The only thing I got wrong was the type number. I guessed it would be the IC-739. If you have a copy of August 1993 *Amateur Radio*, get it out as a comparison between the IC-737 and 736.

In basis, the difference between the two is the addition of an inbuilt AC power supply and 100 watts of RF on six metres. There are other improvements as well, but more about them later. Appearance is identical to the IC-737 and all the excellent features of that model have been retained in the 736. The superb LCD multi function readout is retained. This is possibly the clearest display being produced at the present time. But, if you don't have a copy of the IC-737 on hand, let's make a clean start and give you a full description of the new IC-736.

### IC-736 Features and Facilities

The IC-736 is a reasonably large transceiver but not as big as, say, the ICOM IC-765. Dimensions, excluding a few projections on the rear panel, are 330 mm wide, 111 mm high and 285 mm deep. The overall weight is 10.5 kg. When you consider that all of this includes an all band transceiver that also covers six metres, a built-in AC power supply and an automatic antenna tuner which also operates on six metres, then you will have some idea of just what can be done these days. It is by far the most compact and lightest transceiver on the market with all of those facilities. In fact, it might well be the only transceiver of any type to include all of this.

The light weight is helped by the fact that the power supply is of the switched mode type. ICOM is one of the very few amateur gear manufacturers who have consistently produced high quality switched mode power supplies. I know that opinions are divided on these supplies but at least this one works very well indeed. Only time will tell on its reliability but my guess is that it will be OK.

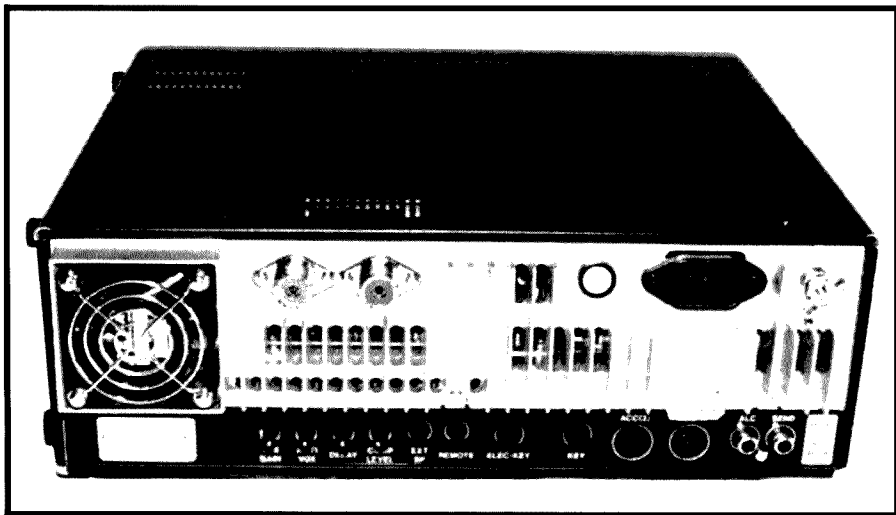
One of my complaints with the IC-737 was the lack of metering. This has been greatly improved on the IC-736. Front panel metering selection is available for power output, SWR and ALC with the meter switching to "S" meter on receive. All of this is not perfect but lots better than the earlier model. The various metering positions are selected in sequence by pushing the "meter" button which has now been added to the front panel.

Another of my complaints with the IC-737 was the lack of an RF gain control. The IC-736 has one but in the strange way that Japanese manufacturers seem to think, the RF gain has been positioned on the front panel as a very minor control. I have always been of the opinion that RF gain should be with the AF gain. For some reason ICOM (and others) prefer the squelch control to be ganged with the AF gain. I wonder why? At least now there is an RF gain which works well despite its poor positioning and the extremely small size of the control knob.

The IC-736 covers all amateur bands including six metres with all modes available. Take your choice of SSB, CW, AM and FM. The transceiver is fitted with three filters as standard, a 2.1 kHz one for SSB and CW, a 6 kHz one for AM and a 12 kHz filter for FM. Four narrow CW filters are available as options. Two working at 455 kHz give either 500 or 250 Hz bandwidth and two for 9 MHz with the same bandwidths. ICOM recommend either one or two of the same bandwidth should be installed. They were not included in our review transceiver so I am unable to comment on their performance.

Another new feature on the IC-736 is one Hz tuning and readout. I guess it had to happen. I well remember when transceivers first featured 10 Hz readout. The one Hz tuning rate and readout is selected by pushing and holding down the "TS" button. In its standard state the stability and accuracy of the IC-736 is not quite up to a one Hz readout. Perhaps it might be with the optional high stability master oscillator. It would be interesting to see. However, it does give a very smooth and slow tuning





Rear view of the IC-736.

rate which would be excellent for digital modes.

Actually, the tuning system of both the IC-737 and 736 is one of the most comprehensive offered on any transceiver with the "TS" button being programmable for various tuning steps to suit all tastes.

On the transmit side, the automatic antenna tuner covers all amateur bands from 160 to 6 metres. There are, again, two antenna connectors, now of course more important with the six metre coverage. The selection of antenna connector is either via the front panel "ANT" switch or they can be programmed to operate from the band selection mode.

Again the transmitter includes a speech compressor to add some punch to the audio. The compressor control has been relocated to the rear panel to make way for more important controls. Unfortunately, the improved transmitter metering does not include a compression scale so its adjustment is still a bit hit and miss.

### IC-736 On The Air

I am going to reverse the usual procedure and put the transmitter tests first. For SSB I used the supplied HM-36 hand microphone and also an SM-6 desk microphone that I keep as spare. I will have a bit more to say about the HM-36 later in a separate, short review.

Like the IC-737, reports showed that intelligibility was good but the overall quality was not all that good. At least, now with ALC metering, it is easier to

set the transmitter up to avoid over driving. The speech compressor was most effective in adding some extra talk power to the signal and even appeared to improve the speech quality slightly. The main complaints with the audio were lack of low frequency response and a degree of harshness. It appears that the harshness is introduced in the low level stages of the transmitter as the actual signal is quite clean as far as intermodulation distortion is concerned.

---

*"The speech compressor was most effective in adding some extra talk power to the signal . . ."*

---

The SM-6 desk microphone was reported as having a smoother sound but still lacking in low frequency response. The transmitted wave form looked good on the scope and our IMD tests showed that the new high voltage final amplifier was distinctly better than the usual 12 volt operated final stages.

AM transmit quality was not checked this time. FM appeared to be OK but again with similar characteristics to the SSB audio reports. On CW the IC-736 keyed very smoothly with no reported key clicks or spreading. I used a normal straight key for my tests. The rig features full break-in keying.

The cooling system on the IC-736

is most effective. There are two large fans, one on the rear panel (see photo) and one internal. They are very quiet in operation.

Now to the receiver. The first thing noticed is the smoothness of the main tuning control. The RIT and XIT have a range of  $\pm 9.999$  kHz (yes, the RIT reads out to one Hz). They are controlled by two push buttons in a very ingenious manner. A quick push selects either function but if the button is held down for a second or so the offset returns to zero. Band selection is very straight forward with a button on the keyboard for each band. To include six metres the 29 MHz button on the IC-737 has been reallocated for 50 MHz on the IC-736 but, with the double band stacking register, you will probably not miss this.

The superb memory system of the IC-737 is again with us in the new rig. There are 101 memory channels which include 10 split memories and 2 scan edges. In addition there are the 10 memo pads for quick memory writing.

VOX is now fitted to the IC-736. The original IC-737 did not have this but it was later included in the IC-737A. The VOX controls are all mounted on the rear panel which is a little inconvenient but, once set up, they appeared to be very stable. I used the VOX for several contacts and none of them picked that I was, in fact, using VOX. Clipping of the first syllable was not noticed. If you use VOX (not many amateurs do these days) you will find it excellent.

Rear panel interfacing is, as usual with ICOM gear, comprehensive. In addition to the two antenna connectors there are two accessory sockets for connection to ICOM linear amplifiers and other options. Another socket is used for a TNC for data communication. If you wish to use a non ICOM linear amplifier two phono connectors provide relay control and ALC output. One very good point about the rear panel is that the heat sink does not protrude very far out so it is easy to reach over the top of the cabinet to make connections.

To summarise. The IC-736 is a delight to operate. The receiver is top quality on SSB and CW (with the optional filters), good on FM but could

be better on AM. As with the earlier IC-737, the receiver front end is bomb proof. The tuning will amaze you with its selectable one Hz steps (200 Hz per knob revolution). The transmitter puts out a very clean signal but with less than perfect SSB audio quality. CW transmission is first class and the whole transceiver runs very cool.

### ICOM MH-36 Hand Microphone

The microphone supplied with any transceiver is an important part of the whole setup. I intend to make a separate report on microphones in each review I do in future. The HM-36 is better known as the HM-12 which has been supplied with ICOM equipment over the last several years. The difference is that the HM-36 does not have the rear switch to disable the up/down buttons. It uses an electret element but, contrary to popular opinion, does not have a built-in pre-amp. There is an internal circuit board containing a few components to feed the required DC voltage to the electret microphone. The PTT switch bar operates a micro switch which gives an excellent feel. You know exactly when it operates. The microphone fits into the hand very well and the up/down buttons are easy to use.

However, the audio quality from this microphone has always left me in some doubt and I intend to do some modifications on the internal circuit in

the near future. I would like much more low frequency output and this might be possible with a change to the size of the microphone blocking capacitor. I will keep you posted. Sometime in the future, I hope I might be able to report on some other ICOM desk microphones.

### IC-736 On Test

I carried out the usual series of tests on the IC-736 but this time I looked at the six metre performance in some detail. However, as usual, I started with transmitter power output. As the transceiver is AC operated with no provision for external DC input, no tests for current drain were possible. Power output is variable on all modes via the small "RF PWR" control.

#### Power output CW Mode

Band	Power Out
160	124 watts
80	120 watts
40	116 watts
30	115 watts
20	113 watts
18	110 watts
15	110 watts
13	110 watts
10	107 watts
6	100 watts

On SSB the PEP output was just slightly higher than the above figures. Maximum AM power output was 40 watts but I found it was necessary to reduce this to about 25 watts in order

to achieve 100% modulation. FM output was the same as the CW output and the IC-736 has a 100% duty cycle which means you can run full output all day.

The IC-736 specification does not include a figure for transmitter intermodulation distortion, but the advertising brochure does show a spectrum analyser graph of the IMD characteristics. Although the actual figure is not mentioned it appears to be about -30 dB referred to a two tone signal. The same IMD tests were carried out that we have used before on HF transceiver tests (see TS-50S review, *Amateur Radio* June 93) and we arrived at a figure of -32 dB which is 5 dB better than the IC-737. This improvement is due to two factors. The MOS-FETs in the driver and final stages of the transmitter, and the 50 volts applied to them courtesy of the built in AC power supply.

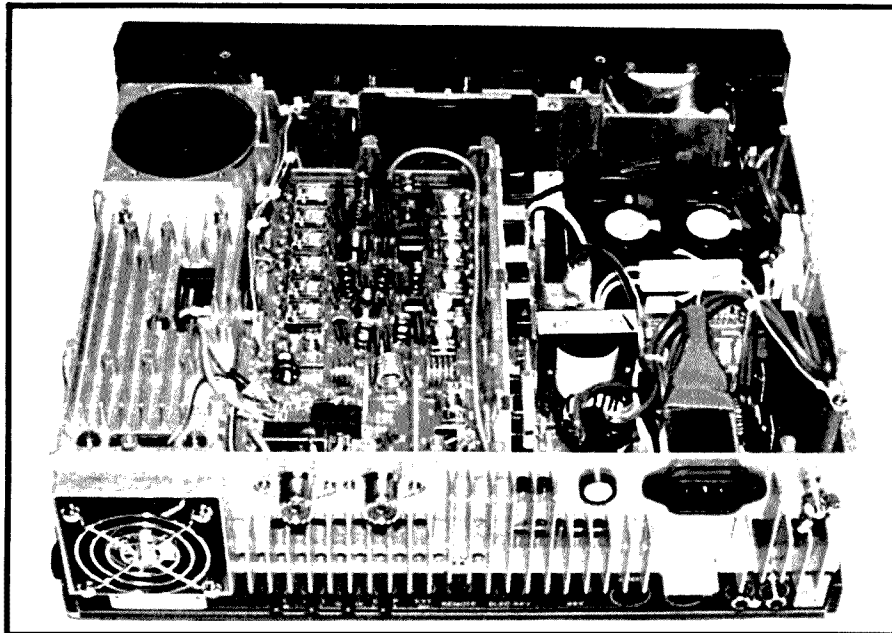
### Receiver Tests

Firstly, the "S" meter calibration was checked. I did two sets of figures, one at 14.2 MHz and the second at 51 MHz. The difference is surprising. I had the pre-amp switched in and used the USB mode.

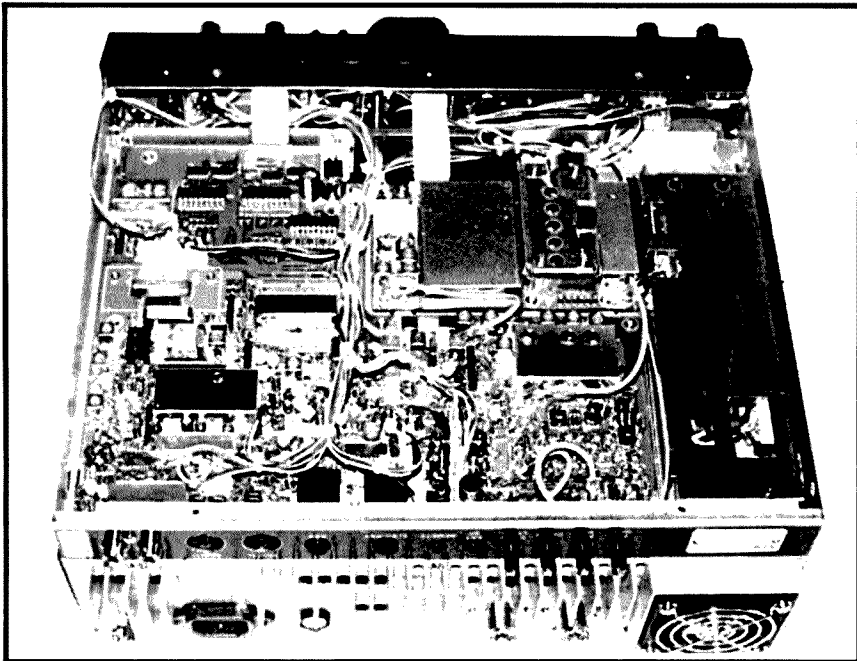
"S" Reading	14.2 MHz	51 MHz
S1	1.4 $\mu$ V	.38 $\mu$ V
S2	1.6 $\mu$ V	.45 $\mu$ V
S3	2.0 $\mu$ V	.6 $\mu$ V
S4	2.7 $\mu$ V	.75 $\mu$ V
S5	3.6 $\mu$ V	1.0 $\mu$ V
S6	5.0 $\mu$ V	1.3 $\mu$ V
S7	7.0 $\mu$ V	1.8 $\mu$ V
S8	12 $\mu$ V	2.5 $\mu$ V
S9	20 $\mu$ V	5.0 $\mu$ V
+20dB	280 $\mu$ V	—
+40dB	2000 $\mu$ V	—
+60db	.015 V	—

I did not make any measurements on 51 MHz above S9. Readings for S9 between 1.8 and 30 MHz were consistent with a maximum variation of less than 2 dB. The pre-amp was measured at exactly 10 dB and the attenuator at -20 dB.

AGC threshold was about 1.5  $\mu$ V and increasing the output of the signal generator to full level produced an audio output increase of less than .5 dB, an excellent figure. The AGC action was very well controlled but I would have preferred a slightly slower decay time for SSB. With an RF gain



Top view of the IC-736 with the top cover removed.



Bottom view of the IC-736 with the bottom cover removed.

control now included this can be compensated for quite easily.

Receiver sensitivity was measured in the SSB mode at 14.2 MHz with

the pre-amp in. It was  $.14 \mu\text{V}$  for 10 dB SINAD, a slight improvement over the IC-737. AM sensitivity was the same as the IC-737,  $2.0 \mu\text{V}$  at 14 dB

SINAD. Sensitivity at 51 MHz, again in the SSB mode, was  $.12 \mu\text{V}$  for 10 dB SINAD. I thought this time a frequency response run on AM might be of interest. I was not happy with the sound of AM on the IC-737 and the 736 didn't sound any better. Here are the results. A modulation depth of 30% was used.

100 Hz 250 Hz 500 Hz 1 kHz 1.5 kHz 2 kHz 2.5 kHz 3 kHz  
-16 dB -6 dB -1dB 0 dB -1 dB -3 dB -8 dB -15 dB

Not exactly hi-fi is it? I know we are talking about a communications receiver but I think it should be better than this.

The next tests were for audio power output and distortion on SSB and CW. An audio power meter and a noise and distortion meter were connected to the external speaker socket on the rear of the IC-736. The specified load impedance is 8 ohms but tests were also carried out with a 4 ohm load. Maximum audio power at 8 ohms was 3.4 watts and at 4 ohms this increased to 4.8 watts. Of course the distortion was very high at these figures but the specified 2.6 watts at 10% distortion was easily

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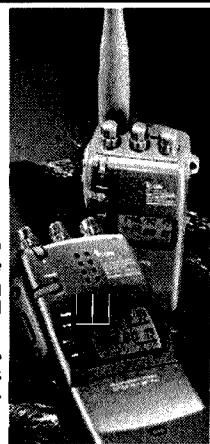
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met. Note that this is a slight improvement over the IC-737. However, the best is yet to come.

At an output of 250 milliwatts the distortion at 1 kHz was only .3%. This is the best that I have ever measured on an amateur transceiver.

The audio frequency response for SSB was measured with the -6 dB points at 250 Hz and 2.5 kHz with a high end roll-off of -10 dB at 2.75 kHz. I next measured the effectiveness of the notch filter. When reporting on the IC-737, I noted that there was a drop of 6 dB as soon as the filter was switched in. This problem has been eliminated. There is only a .5 dB drop in audio level on the IC-736 when the filter is switched in. The overall range of the notch filter is 500 Hz to 3 kHz and the overall notch depth was measured at -28dB.

Finally, I did an extended test on frequency stability and readout accuracy. Over a several hour period the drift did not exceed 40 Hz. With the one Hz readout on the IC-736 it was easy to follow any drift that occurred but I would like to try a transceiver fitted with the optional CR-282 high stability crystal unit. I still wonder why equipment manufacturers don't fully option transceivers for reviewers to test. If they don't do this, just how do they evaluate these options themselves. I can't imagine that they wouldn't want

to try them out. The same thing applies to CW filters. The only time we get to evaluate them is when they are included as standard which is not too often these days.

With the exception of the AM receive frequency response, the performance of the IC-736 is almost beyond reproach. The SSB transmit quality is not to my liking but perhaps this is a matter of opinion. Many amateurs contacted reported that it sounded fine. However, I think that ICOM should take a hard look at this aspect of their transceiver's performance.

### IC-736 Instruction Manual

The IC-736 instruction manual is typical of all ICOM manuals. It is clear and to the point with no frills. With the exception of some clear photos at the rear of the book that indicate many of the adjustment points and location of the main circuit boards, all other illustrations are line drawings. In many ways, these line drawings are clearer than photos.

In general, operating instructions are very well covered and I would recommend that new owners should read the manual first off. Many of the rig's functions are not self evident and you just might miss out on many things that will add to the pleasure of operating this fine transceiver.

Unfortunately, ICOM still deny us an insight into the technical aspects of how this transceiver works. Again, I score the manual eight out of ten.

### IC-736 Conclusions

The changes that ICOM have made to the IC-737 to convert it into the IC-736 have produced a completely new class of transceiver. I imagine that ICOM must be wondering about the future of the big and expensive IC-765 which, in comparison to the IC-736, is now looking very outdated. In the same way, the IC-736 must now make the IC-737 redundant. By the time you add the cost of a power supply, the obvious way to go is to spend the little extra and go for the IC-736 with all the extra benefits that it offers. If the transmitted audio quality is to your liking then the IC-736 is the best value base station transceiver on the Australian market. It is, of course, compatible with the full line of ICOM ancillary equipment that includes linear amplifiers, automatic antenna tuners (not really needed with the IC-736), microphones and external speakers.

The IC-736 sells for \$3692.43. My thanks to ICOM (Australia) Pty Ltd and Duncan Baxter for the loan of the review transceiver.

*\*24 Sugarloaf Road, Beaconsfield Upper, VIC 3808*  
ar

## WIA News

### Audience boost for Radio Australia

Australia's shortwave broadcaster, Radio Australia, is aiming to boost its listening audience round the world with the completion of a \$9.5 million transmitter facility at its Cox Peninsula site outside Darwin in the Northern Territory.

Two new 250 kW transmitters were officially turned on in late May by Senator Bob Collins, Minister for Primary Industries and Energy, standing in for the Minister for Communications, Mr Lee.

This brings the number of transmitters at the site to five, three

of which will be operational at any one time. Senator Collins said the new transmitters will ensure Australia's voice is heard reliably in many countries of the world.

The new transmitters, built by the French communications specialist Thomcast, feature a fully solid-state drive chain right through to the single vacuum tube output stage, and a full solid-state modulator.

They replace 1969 vintage transmitters built by the Collins company. An ironic twist of fate that Senator Collins commissioned the Collins transmitters' replacement.

### Same hat, new name

David Wardlaw VK3ADW, the WIA's Federal International Regulatory and Radiocommunication Study Group (RSG) Coordinator, in his report to the annual Federal Convention recommended a name change to his position owing to the considerable changes occurring in the structure and operations of the International Telecommunications Union.

His recommendation was adopted by the Federal Convention and David is now the ITU Conference and Study Group Coordinator.

# WICEN Standing Operating Procedures

Trevor Connell, VK8CO\* Northern Territory WICEN Coordinator

I have recently observed that a couple of States are writing or intending to write WICEN Standing Operating Procedures (SOP). I am surprised that it has taken so long and VK8 is no exception.

The purpose of this article is to stimulate thought and discussion on how and what we write up before it's all done eight different ways.

My observations are that several States' WICEN have a variety of books which provide (sometimes) voluminous amounts of information to operators and, I assume, they are expected to sift through it for the odd bit which may indicate procedures to be followed.

Why is there not something specifically dedicated to listing any

plan/procedure which would, in the first instance, be followed? These are usually called Standing Operating Procedures (note Standing not Standard).

I recall reading a manual once but at the end of it I couldn't help thinking that if I was new to the organisation there, I still didn't have much idea as to what I would be expected to do or how things would be done.

The purpose of an SOP is to explain or list a series of actions which are to occur automatically given specific conditions, eg search and rescue comms, cyclones, etc. It should not be ambiguous but still have a degree of flexibility when required. They should not be waffly but short and concise. The flexibility

I feel is important because as most will agree, events don't always unfold as we would want them to.

SOPs should be written about everything. A few suggestions are:

## Administration

- WICEN organisation and policy.
- Everyone's duties. Everyone needs to know who is expected to do what.
- Uniform requirements and any other supplies required.
- The paperwork required of a State Co-ordinator down to the operator, how to fill them out, what to do with them and when.
- What procedures are required to run an exercise.
- How to make a claim for expenses.

## Operations

- How are activations effected.
- What does the operator do when activated — assembly point, mobile comms.
- Details of installations — patch leads required
- How does the NCS run — duties, radios, furniture, layout?
- Administration and logistics procedures.

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- Network operation — free, directed, Ireqs PRI and ALT for each mode, callsign allocation, Log requirements.
- Radio Net Diagrams
- Who will feed you.
- What hierarchy exists.
- How will briefings be conducted — format.
- How will debriefs be conducted — format.
- Who is responsible for...

#### Specific Occurrences

- What occurs when a cyclone threatens. How will comms be organised, timings, modes, callsigns, frequencies, stages.
- Bushfires — who is called out first, then later. Who deploys repeaters, digipeaters and at what point in time. How would an operator expect to be called out, briefings. What equipment is required. Resupply arrangements, mobile comms, etc.
- Comms support for..... How.

SOPs should be numbered, eg SOP 1 — ACTIVATION, as should each paragraph, 1.01, 1.02 for easy reference. Each SOP should deal with only one subject. They should be definitive, eg This person is to do this at..., These reports are to be submitted... Annexes to an SOP provide for Radio Net diagrams, Equipment Lists, Sample paperwork and the like, not suited to be included in the procedure description.

There are not too many options for the format for SOPs. My suggestion is that used by the NDO Manuals.

There must be provision for amending. There must be an Amendment List page. I would be suspicious of a book full of procedures that doesn't require amending at some stage. Each SOP would, ideally, be numbered to ensure that each receives amendments.

The SOPs can be in a ring binder for ease of page replacement and protection for them. How does the operator carry them? Right beside his ID card. My suggestion is that they be in A5 size. This fits into packs and boxes without getting destroyed from folding. A plastic bag over them keeps the water off.

It would be difficult to cover every possible heading. Each Division will

have differing commitments and procedures. This is not a problem so long as your operators know and aren't mushrooms. Operators from outside your district would have some idea before arrival if SOPs exist.

It is obvious that all the above information is known by someone, hopefully those that need to know but I sometimes think that too much is in the heads of Coordinators and the experienced few. I have yet to come across any procedure that is not advantageous for the operator to be aware of even though he/she may not be directly affected. This point is probably open for debate.

Other organisations that you work with will possibly need a copy for their information. It presents an organised, professional approach if you can flash a set of these. Given the level of organisation in WICEN now, SOPs are the next logical step.

If you are writing SOPs the acid test is to give them to someone not

familiar with them. Having read them they should have a fair understanding of what you are trying to get across. If not it's back to the drawing board.

To recap, SOPs should be:

- a. Numbered
- b. Paragraphed and set out in a logical sequence.
- c. Each SOP to deal with one subject.
- d. Short, concise and definitive.
- e. Easily understood.
- f. Able to be amended.
- g. Be a convenient size.

In this article I have given a description of what is generally considered to be Standing Operating Procedures. They are necessary for standardising responses and are an important document in recording the actions to occur and responsibilities. Maybe nationally we can standardise on something before much more is done.

\*PO Box 40441, Casuarina, NT 0811 VK8CO@VK8DA  
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## WIA News

### Federal WIA Appointments

The annual Federal Convention saw some changes to the Federal Council and Executive which, for 1994-95 consists of:

Richard Jenkins VK1RJ  
Roger Harrison VK2ZRH  
Alan Noble VK3BBM  
Ross Marren VK4AMJ  
Bill Wardrop VK5AWM  
Bruce Hedland-Thomas VK6OO  
Jim Forsyth VK7FJ

As already advised, Kevin Olds VK1OK stepped down as Federal President. Council thanked him for his efforts over the past year which was very active for the Federal company.

Neil Penfold VK6NE, the 1993-94 Vice-President, was elected 1994-95 Federal President, and Roger Harrison VK2ZRH was elected 1994-95 Federal Vice-President.

In addition, Gavan Berger VK1EB, Alternate Federal Councillor for VK1, was appointed the WIA-SMA Liaison Officer.

### Support for ARDF team

Intrepid Amateur Radio Direction Finding enthusiast and veteran of international ARDF contests, Wally Watkins VK4DO, has been allocated funding of \$500 to assist attendance at the IARU Region I ARDF contest in Europe in September.

Wally headed a team of three representing Australia at the IARU Region III ARDF contest held in the Peoples Republic of China last October. These contests are a cross between a pedestrian foxhunt and cross-country marathon. You need not just good DF skills but have to be quite fit into the bargain!

Wally is to be an accredited observer for the WIA at the IARU Region III meeting in Singapore in September as he will be there on his way to the European ARDF contest.

# Adjusting and Cleaning Speed Keys (Bugs)

*"Doc" Wescombe-Down VK5HY/VK4CMY\* provides some useful tips on caring for your "bug".*

Apart from the single page instruction sheet which accompanies "Vibroplex" speed keys (known in the operators' trades as "Bug Keys") there is very little information readily available on how to adjust a bug. Perhaps the onslaught of electronic keyers has nulled the necessity for such information to exist, but that would seem a pity. In the author's opinion, straight hand keys and bugs are the only true Morse senders around — the electronic keyers and keyboard Morse generators have dehumanised the basic skill of Morse code, which is the making and spacing of characters, numbers and symbols correctly by hand.

Successful bug operation depends on two factors:

- \* Operator experience
  - \* Correct maintenance/adjustment.
- Seasoned cw operators take pride

in the upkeep and adjustment of both straight and bug keys, this never being seen as a "chore". The most important aspect is correct adjustment for proper dots, because all other adjustments are quite minor and the dot is the key element in the formation of the Morse language.

It must be realised that, because no two operators key the same way, the dot adjustment is very individual and each operator must determine the bug adjustment that gives the right "feel" to his/her arm. It is also worth realising that, just as your handwriting continually changes as a reflection of your attitude at the time, so too does the "feel" of the bug change, and you need to be able to adjust it to suit.

Whether the bug is a "Simplex", "Vibroplex", "Katsumi" or homemade, Fig 1 provides the key to

adjustment points since these will all be common and their function is basically the same.

Firstly, adjust both the left and right trunnion screws so that the vibrator arm (pendulum) lies perfectly straight and butts lightly against the damper wheel. This sets up your initial "hands off" key position.

Secondly, slide the speed weight(s) on the vibrator arm to the end position giving the slowest dot speed. Tighten the weight(s) ensuring they do not contact the damper wheel.

Now you are ready to adjust your bug and please allow for some experimenting as one adjustment always affects another. Take your time.

**Step 3** Hold the flat thumb paddle in the constant dot position and adjust the left trunnion screw so that the vibrator dot can move to the left about 0.4 mm (1/64 inch). Use a small scale ruler to check this distance. Tighten the left trunnion screw.

**Step 4** Hold the paddle for steady dots and allow the vibrator arm to stop vibrating. Now adjust the dot contact screw (on the dot post) so that the contact just makes firm connection with the vibrator dot. At this point you will have steady cw tone from your monitor. Tighten the contact screw and release the paddle.

**Step 5** To check your dot adjustment, hold the paddle to activate a string of dots — you should detect at least 40 dots for each paddle movement. Reposition the dot contact screw (on the dot post) to obtain the 40 or more dots. When the vibrator arm stops oscillating, the vibrator dot should come to rest lightly touching the contact screw.

**Step 6** If you have a two-speed weight key and you want to speed up the dot rate, slide the innermost weight toward the paddle end — always keep the outermost weight at the end of the vibrator arm regulating the dot speed with the innermost weight.

**Step 7** For dash adjustment, position the dash contact for a lateral movement of 0.4 to 0.8 mm (1/64 to 1/32 inch). As commercial/military operators we used the thickness of a sheet of typing paper or a business card. This is all a matter of personal preference, but the smaller this

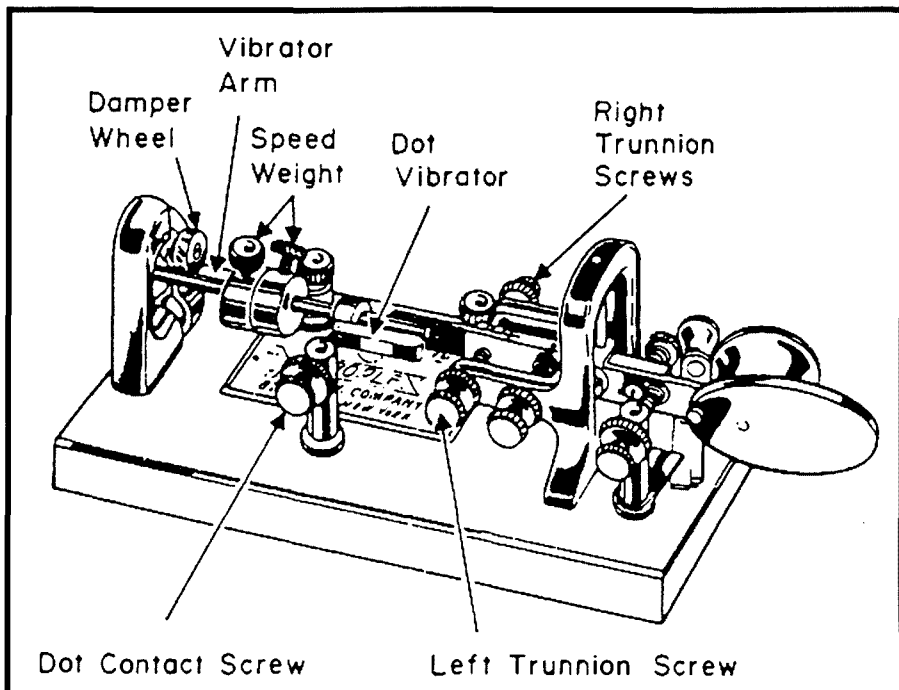


Fig. 1.

spacing, the better and easier is the feel of the key.

**Step 8** Adjustment of spring tensions is also a matter of personal preference. Operators usually use about 1/3 (20 to 40%) of the spring tension available. The less tension, the easier the feel and it all depends on whether you have a "light" or "heavy arm" action.

**Step 9** Some bug users have been seen to use finger touch operation such as electronic keyer users might prefer, but since the bug was developed to prevent "glass arm" in protracted operation, I suggest the following:- set the key side on to you (ie vibrator arm longways to your body front) located directly in front of the shoulder of your non-keying arm and rest the non-keying forearm parallel to the key.

Now rest the keying arm forearm also flat on the desktop so that your body weight is evenly taken by both forearms. The key is now operated by wrist rotation towards (dashes) and away (dots) from your body front.

This posture immobilises whole

arm action and encourages rolling of the wrist — just as in the straight hand key, wrist action produces rhythmical Morse, not "nerve Morse" or "tension Morse". **Relaxed, Rolling and Rhythmical!** Once this basic action is acquired, the bug can be repositioned to suit individual situations.

### **Maintenance**

Periodically inspect the gold or silver contacts' condition. They should be clean and bright. Use clean typing or copying (bond) paper between the contacts and pull it through several times to wipe the contacts. Use switch contact cleaner also but PLEASE no matchbox striker paper, wet'n'dry, Brasso, Silvo or any abrasive cleaner

These should only be used if attempting to resurrect badly pitted and burned contacts. In such cases, it is better to have new contacts or replat old ones, but if you are trying to resurrect them here is the order of operations:

1. Very fine emery paper.
2. Very fine wet'n'dry paper.

3. Crocus cloth or toothpaste on a polishing cloth.

4. The bond paper (as above).

To remove leftover polishing debris, use cotton buds and rubbing alcohol or petrol. Clean the areas thoroughly.

Don't use CRC, or sewing machine oil, etc on your bug as these only attract lint and dust. Use tiny dabs of silicone lubricant at pivot points.

After all this good work, your next best friend will be a bug dust cover. I have seen plastic ones, hand sewn calico, revamped shoe boxes sprayed to match the rig, and freezer bags etc. The cover should remain on your bug when it is not in use.

If anyone out there has a bug key they no longer want, please let me know as I can usually find a good home for it.

### **Acknowledgments**

- 1... "Adjusting and Cleaning of Speed Keys (Bugs)"  
by W2PRQ CQ Aug 72 P36
- 2... "CW Forever: More Keys, Keys, Keys!"  
by K4TWJ CQ May 92 P112
- 3... The Vibroplex Company Inc, 98 Elm St,  
Portland MAINE USA 04101

\*Via PQ Daiveen QLD 4374

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# SOME THINGS HAVE NO COMPARISON

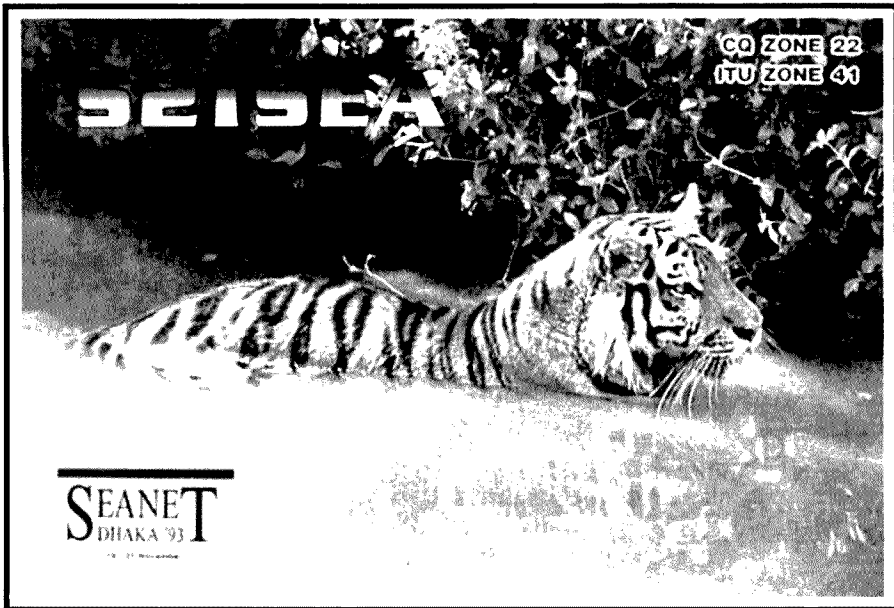
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# SEAnet '93 Convention

David Rankin 9V1RH/VK3QV\*



As with the 1992 Darwin SEAnet Convention, new ground for the venue of the 1993 event was again broken. SEAnet '93 was held in Dhaka, Bangladesh, from 19 to 21 November 1993. This was the 21st Convention which, up until 1992, had been held exclusively in an ASEAN country. The Dhaka convention was the first to be held at a venue on the Indian subcontinent. But maybe not the last. Read on.

The Host Society was the IARU Member society for Bangladesh, BARL (acronym for "Bangladesh Amateur Radio League") and the convention hotel was the Sonargaon. The SEAnet station used the call S21SEA and operated from the hotel most of the time. The QSL manager for S21SEA is I Kobayaski JA0AD. A home brew 2 band 2 element cubical quad, a G5RV and a T2FD on the roof of the 10 storey hotel ensured that the station got out quite well.

BARL followed the conventional program of events with registration on the Friday morning and early afternoon. As SEAnet time (1200 hrs UTC) is at 6 pm Dhaka time the official opening had to be held at 4.30 pm so as to allow the Chief Guest,

The Honourable Tariqul Islam, Minister of Post and Telecommunications to open the Convention and then listen to the net on 14 MHz. The first day concluded with a Welcome Dinner and a Bangladeshi Cultural Show.

The second day was spent on a cruise vessel, the LCT Kajal, sailing up-river and then returning to Pagla and the hotel for the Grand Banquet. Whilst on the river some of the more enthusiastic delegates operated "maritime mobile" using a rig kindly loaned by Rashid S21AR.

The third and final day was the traditional Plenary Session during which the business of SEAnet was discussed by all delegates present. The agenda ranged from short presentations on the current status of amateur radio in his/her country by a spokesman from each country present, to the SEAnet Contest, to the on-air 20 metre net itself.

The final and rather important item of business was the date and venue for the 1994 SEAnet and two invitations were placed before the meeting. The first presentation was by Mrs Mumtaz VU2KAN who proposed Hyderabad in Andhra

Pradesh, India whilst the second was by Rashid 9M2RS, President of MARTS. Rashid mentioned that 1994 was "Visit Malaysia Year" and since the proposed venue was Malacca, a very historical city on the West Coast of 9M2, he believed that MARTS could receive support from Malaysian tourist organisations.

This seemed to sway the delegates present as there was majority support for the MARTS invitation and so the 22nd SEAnet Convention will be held in Malacca between 11 and 13 November 1994. MARTS will be the host society and may be contacted at PO Box 10777, 50724 Kuala Lumpur, West Malaysia. Mark "For the Attention of Sangat Singh, 9M2SS Secretary — Organising Committee".

Note well, though, that India has now shown a positive interest in SEAnet Conventions so who can say what venues may come up for future SEAnets?

The airline schedules into and out of Dhaka were neither convenient nor numerous and, as a consequence, a number of familiar "SEAnet faces" were missing. There were no attendees from Australia, Brunei, Indonesia, New Zealand or Philippines and only two or three each made it from Japan, Malaysia and Thailand.

In the meantime the actual South East Asia net continues to meet daily at 1200 hours UT on 14,320 kHz +/- QRM. Propagation conditions permitting, try and join in, and then meet the faces behind the microphones next November in Malacca.

PO Box 14 Pasir Panjang, Singapore 9111  
(Chairman IARU Region 3)

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# Technical Articles in Radio Rivista

Abstracted by George Cranby VK3GI\*

Here is a list of technical articles in the last six months of *Radio Rivista*. If any readers would like further information, let me know the details for possible further translation.

In this context I have pointed out previously that the technical standard of the magazine is very high; many of the technical articles are very complex and written for the consumption of specialists in the field. The constructional articles frequently require the availability of special materials and components and access to a variety of machine tools well beyond the reach of most amateurs. It is clear that Italian amateurs — at least those using the magazine — are prepared to spend lots of money on their hobby. Much space is devoted to computerisation and to satellites.

## July 1993

1. Noise generator, with reference to *VHF Communications*, Jan 1979
2. 11 element 2 m Yagi, 5.8 m boom, gain 12.5 dB, with complicated bazooka. No feed point details.

## August 1993

1. 7 pages of continuing description of home made transceiver. Looks nice but I doubt whether anybody would have the tools, the parts or the will to make it.
2. A portable 2 m antenna similar to the J-pole, but with somewhat negative comment by the editor.

## September 1993

1. A low-noise preamplifier for 432 MHz, using a very specific piece of extruded tubing, plus some small items using almost watchmaker's facilities, including a small milling machine. All items silver plated.
2. 5 pages continuing the homebrew transceiver.
3. A frequency counter, 5 pages, with only a three figure readout.
4. A very basic introduction to wave forms — part of a section for beginners.

5. A fun device using fruit — apples, oranges or potatoes — as a power source, called "ecological receiver and transmitter". 12 potatoes in series produce 1.8 V!

## October 1993

1. A 20 W FM power amplifier using a device 8GY 36CW, max input 150 mW. Requires a very specific heat sink. The bypass relay is a Siemens type V23154, only 12.5 x 29.2 mm, possible replaceable by something equivalent. This article could be of interest.
2. Another beginner's article dealing with the basics of amplification.
3. A fox-hunt receiver which may be attractive, but without parts list, omitting some ratings and very unclear description.

## November 1993

1. A discussion of resonance effects due to support towers, mainly affecting 40 and 80 m. Experiments only — no clear results.

2. A parabolic dish, the construction of which shows the extent to which Italian amateurs will go to achieve a desired result. Weighs 150 kg, uses two three phase motors fed from special speed control frequency converters. Position readout by "optical encoders" with 0.5° resolution.
3. A low-noise preamplifier, 22 to 27 dB amplification from 900 to 1900 MHz. Refers to "A very low noise amplifier for L-band", *VHF Communications* 2/92.
4. A depressing forecast of solar activity showing a drastic decline for 1996.

## December 1993

1. Preamplifier for VHF and UHF based on "An unconditionally stable, low noise, GaAsFet pre-amplifier in *VHF Communications* 4/90.
2. Cheap MosFet amplifier for 29 MHz satellite downlink, 14 dB gain, only -3dB from 10 to 34 MHz. Very simple.
3. A device, quite complicated, to prevent a problem with CDE-EM rotators when the brake hold is released prior to the antenna having stopped. The device retards the brake release. Not too difficult to construct.

\*PO Box 22 Woodend VIC 3442

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## QSP News

### AX and VI Prefix Callsigns

The Spectrum Management Agency (SMA) confirmed to the WIA Federal Office in writing during May the procedures regarding the issuing of special callsign prefixes for radio amateurs.

All amateurs should be aware of the following.

The use of AX prefix callsigns is reserved for occasions or events of national or international significance. The allocation of the AX prefix for an event is not on an exclusive basis as the prefix is made available to all amateurs.

Alternatively, the use of VI prefix callsigns is available for

events of state or local significance. Unlike the allocation of AX prefix callsigns, applications for the use of VI prefix callsigns will be accepted from any group or individual.

With both the AX and VI prefixes the allocation is subject to the following:

- approval being granted by the Spectrum Management Agency;
- that the callsigns are not required by the Australian Administration for use by other services; and
- the allocation of these prefixes is restricted to the duration of the occasion or event.

# Technical Abstracts

Gil Sones VK3AU

## Comparison of Dual Band Handhelds

A comparison of Dual Band Handhelds was published in *QST* for March 1994 in which five handhelds were compared. The author was Steve Ford WB8IMY and, in addition to the features and usage data, the handhelds were tested technically. The handhelds tested were all purchased normally and were not special review samples. They would be representative of the sort of radio a user would obtain over the counter.

The performance figures obtained are given in Table 1.

The figures do need some interpretation. Sensitivity is not the sole indication of good performance. Intermodulation has a great bearing on the ability to receive signals. The disturbance experienced from

adjacent services is a frequent cause of complaint.

All the handhelds tested have intermodulation performance which could be improved. All the bells and whistles will be of no use if they are issuing forth from the speaker of a radio experiencing disturbance from other services.

*"The tests . . . show that a relatively crunch proof front end can be produced for VHF and UHF."*

The turnaround time gives some indication of the delay between transmit and receive. This is of importance to Packet users and

determines some of the TNC parameters. The major factor in these times is the settling time of the Phase Locked Loop.

## Multimode Multiband Comparison

The March 1994 issue of *OZ* magazine, the Danish Society Journal, carried a comparison test of the multimode multiband radios from ICOM, Kenwood, and Yaesu. The tests were by OZ8NJ Niels Rudberg and OZ1MY Ib Christoffersen. The tests are interesting in that they compare top end radios from the major manufacturers.

Comparison with tests in *QST* and other publications is possible but some of the measurements are to slightly different standards and use different techniques. The tests do, however, give a good comparison of the radios.

Transmitter characteristics were all within the expected and specified parameters. The receiver performance is given in table 2.

The tests do show up some differences between the radios which are due, in part, to the relative time they were designed as well as the expected use for them on the part of the designers. They do show that a relatively crunch proof front end can be produced for VHF and UHF. They also show the desirability of a mast head preamplifier for weak signal work.

## Battery Tester as RF Ammeter

A cheap RF ammeter can be made using one of the battery testers packed with Mallory Duracell Alkaline batteries. These are strips which, when connected across a battery cell, provide an indication of the state of the battery by the length of the strip which changes colour.

The tester is not polarity sensitive in spite of the markings. It consists of a resistive strip attached to a liquid crystal strip. When current flows the strip heats up and the liquid crystal strip changes colour. The length of the changed colour strip being proportional to the current flowing. The liquid crystal actually becomes clear when heated, exposing

**Table 1 Dual Band Handheld Transceiver Test**

		Alinco DJ580T	Icom ICW21A	Kenwood TH78A	Standard C558A	Yaesu FT530
Rx Sens	146 MHz	-123	-124	-123	-123	-123
dBm for 12 dB						
SINAD	440 MHz	-124	-123	-123	-123	-123
Two Tone 3rd	146 MHz	65	56	58	70	58
Order IMD						
Dynamic Range	440 MHz	67	61	69	63	60
dB						
Adj Channel	146 MHz	60	65	61	61	64
Rejection						
20 kHz Offset	440 MHz	58	60	58	68	64
dB						
Mute Sens		-130 to	-128 to	-134 to	-132 to	-125 to
dBm at 146 MHz		-121	-120	-123	-122	-120
Rx Af OP		231	224	320	202	296
mW into 8Ω 10% Dist						
Tx PWR Watts	146 MHz	3	2.8	2.3	2.6	2.6
Std Batty						
	440 MHz	2.6	2.0	2.3	2.0	2.1
Tx PWR Watts	146 MHz	6.0	6.1	6.0	5.5	5.7
12 V/13.8V						
Nom Batty	440 MHz	6.2	6.1	5.9	5.3	5
Tx Rx Turnaround	Squ	140	150	230	125	110
Time PTT release	On					
to 90% Full Audio	Squ	120	120	110	115	65
m/S	Off					

**Table 2 Multimode Multiband Comparison**

		IC970H		TS790		FT736
		Main	Sub	Main	Sub	
Rx Sens	2 M	0.064	0.064	0.064	0.064	0.064
$\mu$ V						
SSB	70 cm	0.056	0.056	0.056	0.056	0.064
Rx Sens FM	2 M	0.23	0.23	0.23	0.23	0.32
12 dB						
SINAD	70 cm	0.23	0.23	0.23	0.23	0.26
$\mu$ V						
Recip Mix	2 M	58	48	25	25	27
100 db						
kHz	70 cm	70	68	205	205	180
3rd Order	2 M	-48	-49	-65	-65	-55
IMD						
dBm	70 cm	-42	-42	-61	-61	-62
Intercept	2 M	-3.5	-5	-29	-29	-14
IIP3						
dBm	70 cm	+6.0	+6.0	-22.5	-22.5	-24.5
2 Mx						
Spurious Free		89	88	72	72	82
Dynamic Range						
SFDR3 dB						

fluorescent ink to provide the colour change.

Maximum current for these strips is in the region of 200 to 400 mA. Their inclusion in a 50 ohm circuit should have minimal effect on SWR which should only rise to 1.1 to 1. To

use at higher RF currents you could use a shunt of carbon or metal film resistors.

If you burn one out then a quick trip to the corner shop will secure a replacement and recharge your torch.

This tip appeared in QST Feb 1994 and the author was K4ERO John Stanley.

### Helpful EMC

In *Radio Communications* for April 1994, G4JKS Hilary Claytonsmith devotes some space to the EMC problems experienced with Passive Infrared Detectors used as sensors for alarms and for activating security lights. He recounts the following anecdote where poor EMC was put to good use.

*"Recently we heard of a police officer in Leicestershire who was called to a house where a suspect had been reported in the back garden. He took advantage of the fact that, with the mobile radio in his patrol car acting as a repeater, he could use his handheld transceiver to cause nearby security lights to switch on. This forced the suspect in the garden to beat a hasty retreat over the back wall where the officer was waiting for him!"*

Well, it may be another urban myth but it does make a good story.

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## WIA News

### Members transferring Divisions

If a member of one Division wishes to transfer to another Division without changing their state of residence, it is now Federal policy that there is consultation between the Divisions, except where applicants reside less than 50 km from a State border or outside Australia.

There has been for many years a "gentleman's agreement" between Divisions that there will be no "poaching" of members from one Division by another Division.

The policy was formalised at the annual Federal Convention in Melbourne over April 30th-May 1st. The formal motion noted that the

Federal Office had written a letter to certain members advising that they may join any Division regardless of their state of residence, and further noted the adverse effect of this on the Divisional structure.

A WIA member belongs to an individual Division. The Federal WIA, on the other hand, has *only the seven Divisions as members*. It's a pretty simple structure.

From now, when a member wishes to transfer membership to another Division without changing their State of residence, it is not "automatically" effected by the Federal Office, but both Divisions will be notified and it is then up to the Divisions what action is appropriate.

## A. J & J COMAN ANTENNAS

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6 ele 6M	\$188
Duo 10-15M	\$259
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M B Vert NO TRAPS 10-80 M	\$249
Tri band beam HB 35 C 5 ele	\$665
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40M linear loaded 2 ele	\$449
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# Truckies Travels

*Ian Rosser VK2XB/VK2WAG\* entertains us with his stories of ham radio on the road.*

"Let me tell you a story 'bout a man named Jed"...so starts a song that we have all heard (I'm sure) at the beginning of the Beverly Hillbillies. I would NOT want you to think that the subject of this dissertation was a hillbilly. He isn't! He is, however, a REAL TOUGH mountain man! The following is, I assure you, true. I know. I was there!

About 4 years ago a certain truckie, who is an amateur radio enthusiast, was on sick leave recovering from a collapsed lung. The decision was made that he and a friend should see the snow....something she had never seen. My friend NEVER wants to see the adjectival snow EVER again! You will doubtless see why shortly.

After having been to Wagga and visited various people, snow chains were hired for the little Datto (of the 200B variety). The Nissan 4WD was left at home for some reason. It was decided to head off to Tumut, Talbingo and places higher, to see the snow.

At Talbingo, the road was blocked by sudden snow falls and, acting on advice from a couple of RTA deviates, it was off up this DIRT road ("She'll be right mate. It's good travelling and there is only a bit of snow on the ground") to Batlow. From there to Tumba Bloody Rumba (as Banjo once called it). Now remember, I have 4 million km up in TRUCKS but not a lot in cars! I have driven in ALL conditions in a truck (and even worse in a 4WD) but I have hardly been ANYWHERE in a conventional car!!

Well, we struck snow on this narrow gutted mongrel of a dirt road. It was only a little cover so we stopped and fitted the chains (as per directions....they worked well too). Because of the narrowness of the road at that point it was impossible to turn around. So we forged ahead!

We were going well, too, until we came around a bend and what WAS 10 cm of snow became what seemed

like 2 metres of the stuff! Needless to say we became bogged! I'm sure my friend learnt a whole new vocabulary in the next few minutes as I uttered every curse I could lay my tongue to (I suspect I invented a few new ones too!).

HAM RADIO TO THE RESCUE! I had 2 metres and HF on board so, basically, I screamed "Help" over the 2 metre box. My calls were answered by a few of the locals, too many to mention really, but eventually VK2KMK Peter Doyle indicated that he would rescue us. It would take a while as the Land Rover was getting the welder put back on it and he would have to do a couple of things first.

Now it was LATE afternoon by this stage, and it began to snow again. I had confidence in my soon-to-be rescuer, but I was starting to get a little concerned. My friend was becoming less and less impressed with snow with every new flake that

fell!! In fact the word PANIC seems appropriate here!! Never being one to just give up, my lady friend got out and started to dig the snow out from under the car with a HAIR COMB! This with no gloves on or any protection whatsoever! This may explain the frostbite that she suffered!

At last Doyle turned up....in a battered looking old Valiant. He got out of the car and walked towards me. Now remember that I had NEVER met him before and at this stage I was ABSOLUTELY utterly FREEZING!

This is what I saw.

A little bloke (I'm 6'2" (188 cm) and 15 stone (95 kg)....so most everyone is little to me) in a pair of "stubbies" and a T shirt! His one concession to the cold was a pair of work boots! To cut a long story short, Doyle produced a couple of shovels and proceeded to dig us out.

THERE IS A MORAL HERE....if you go into strange country or new conditions be PROPERLY prepared!!

I've since spoken to the locals and this bloke is "Action Man" personified! He regularly fishes people out of difficulties in the mountains (I am told he knows those parts like you do your lounge room) and on another occasion rescued two young girls (one with a broken leg) BEFORE the Rescue Squad even got organised!



**VK2KMK in a cave. "Doyle" is hard to get a photo of!! Photo courtesy of Terry VK2ETR.**

This doesn't mean the Rescue mob is slack....he's just jolly efficient! Apparently he is a diver, bushwalker and just about everything else you can think of!

It's worth noting here that Doylee thinks hand phones (handheld radio — that's what these mountain men call them) are the greatest thing since sliced bread but that Nicads are USELESS....they ALWAYS run out of guts when you need them!!

My friend and I will be eternally gratefully to this man. Ahhhhh, Barb just informed me that I may sort of identify her as my friend!!

Over the years Amateurs have been good to me, offering advice, shelter, companionship and friendship over the air. In previous columns I have mentioned a few in the New England area. There have been many, MANY more who have assisted me in my tripping around. It is impossible to mention them all, BUT there are a few that I SHOULD give some thanks to publicly.

VK4KE (Garry) and VK4HZ (Robin). This is a husband and wife team in Brisbane who have told me that if I stay over in Brizzy and DON'T stay at their place I am in BIG, ahhhhhh, trouble! Incidentally, I have Robin's old callsign (VK2XB) which will explain the R Suell and Brisbane address in the callbook; my name ISN'T R Suell!!!

VK4AVX....Arthur at Millmerran whose hospitality has been second to none.

Almost ALL the amateurs in the Wagga Wagga area....especially Barry (VK2KUZ) and his wife, Anne (she has a Novice call)....Muddy Jack (VK2MUD), and Harley Davidson (VK2AHD) whose surname cannot possibly be that!!

Maybe his surname is right but surely the first name can't be....unless he REALLY is a HOG!!

Laurie (VK2ILK) and his wife Vicki (VK2IVK) who put me up at their home near Canberra when I was stranded there a while ago. By stranded, I mean I was a day early to unload!!

Janusz (is that how you spell it Jan?) who writes for ARA (yes the "other magazine!!") VK3OK and his lovely wife (also an amateur) who entertained me when I was held over

in Melbourne. Believe me, Melbourne is the pits if you know nobody!

More recently (like the long weekend just gone....12 to 14 June 1993) the people of Albury/Wodonga....especially Ted VK2ARA who came half way to Holbrook to pick me up, took me home and his family fed/entertained me (and gave me my first taste of 160 metres) THEN returned me to my truck when I dropped a big end in my Cummins powered Kenworth; although I can't bleat about the big end; the motor only did 1.25 MILLION km before it said "sorry, I don't want to go anymore!"

The many other amateurs who stay up late at night periodically just to talk to me and to help me kill a few kilometres. Many of these people would NORMALLY be in bed but time and again they burn the midnight oil just to help keep me going. They tell me they are enjoying the company,

but I am convinced in many cases they are just trying to maintain MY level of alertness. It is appreciated, folks, but really, I am a professional and I know when I'm tired! THANKS TO YOU ALL.

If any of the 100 or so truckies who are Hams wish me to set my packet system up as a special purpose BBS JUST for you folks (ie NO GENERAL BULLETINS....just industry related...like Fred Bloggs going to Adelaide etc) let me know as my computer runs 24 hours a day anyway. You could send mail here and I could AUTOMATICALLY send it to those interested. Perhaps we could extend it to a TRAVELLERS BBS. Just a thought!!

Until next time...ooooorooooo from the wag VK2WAG/VK2XB.

*\*13 Pemworth Close Wyoming NSW 2250  
Packet address VK2XB@ VK2EHQ NSW AUS.OC  
TCP/IP address 44.136.16.23*

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## QSP News

### Special Event to Commemorate 25th Anniversary of First Landing on the Moon

On 23 and 24 July the VK1 Division of the WIA will establish a field station on the old Honeysuckle Creek Tracking Station site in the Brindabella Mountains south west of Canberra.

The tracking station was originally responsible for receiving the historical signals from the Apollo 11 Lunar landing module and retransmitting them around the world. Members of the VK1 Division intend to erect a multi-band facility on the concrete slab where the receiving dish itself stood and will go to air on frequencies of 3.595, 7.225, 14.250, 18.130, 21.185, 28.400, 53.225 and 146.950 (Mt Ginini repeater) MHz from midday Saturday 23 July to midday Sunday 24 July, local time.

The special callsign V1HSK has been applied for, HSK being the original Honeysuckle Creek identification, and it is hoped that original employees who were present at the station during the

historical event will spend some time at the field station to answer questions on air. A certificate will be issued to all contacts for this once-only event.

For further information, contact Len Jones VK1NLJ, Secretary WIA VK1 Division, on 06 296 2907 AH.

### What's New

The introduction of the new column "What's New", a showcase for new amateur equipment, in the May issue of *Amateur Radio*, proved popular with readers.

"What's New" is to be a regular monthly column and should have appeared in the June issue. However, as is often the case when publishing a monthly magazine, last minute hiccups do occur in production.

Despite the enthusiastic work by "What's New" columnist Bob Tait VK3UI in providing the June column, it had to be pulled from publication because of the last minute arrival of a page of paid advertising.

That "June" column is published this month. Make sure you read it.

**Production Editor**

# Experimental Antenna for 160 Metres

Dave Thompson VK1DT\* has developed a 160 metres antenna for the suburban back yard

For a few years I have been using various forms of loop antennas on 160 metres on my suburban block. As I had no reference antenna, performance comparisons were at best a guess, but reports were encouraging. Room being at a premium I decided to build a reference antenna into the loop itself. Now, by switching relays and ATUs, I can make direct comparisons. Apart from saving room, problems with antenna intercoupling are avoided. The only restriction is that experiments include a common reference section.

## The Design

Fig 1 gives a plane view of the antenna in its current configuration. The reference section consists of an 18 metres-a-side, inverted V running diagonally across the block (15 m x 30 m). It is supported by a 13 m wooden mast in the centre and by trees at 3 m at the ends. The antenna wire and the open wire feeder are made from surplus RG59 computer coax. The inner conductor is not used; the surface area of the braid helps reduce copper losses.

The relays should be of solid construction and water proofed. High voltages are present in some configurations, sufficient to cook the plastic insulation on power relays I tried. Old clunker switchboard relays have proved reliable. I sealed mine in a short length of PVC pipe. The relay control wires need to be RF decoupled. Winding the excess length around a ferrite loopstick works fine. The relays and ATU should preferably be controlled from a single switch. Quick switching helps to detect small performance differences.

## Performance

Switches 1 and 2 off gives the reference inverted V. With 18 metres of insulated wire per side it is near resonant on 80 metres. It works well on 160 metres compared to other G5RV arrangements I have used. Heavy

construction appears to compensate for the low feed point resistance on 160 metres.

Switches 1 and 2 on, with 3 and 4 off, gives a 160 m dipole, bent in a "Z" shape. The 66 metres total length is 0.41 of a wave length, a bit short of the 0.43 required for resonance with insulated wire. On air tests show about 3 dB gain over my reference.

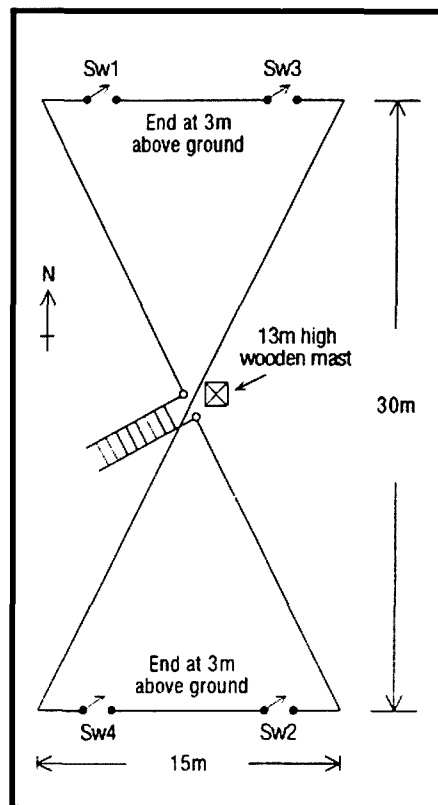
All switches on gives the full loop configuration of 102 metres. This is physically about 0.64 of a wavelength and electrically 0.74 of a wavelength. On air tests show about 6 dB gain over the inverted V reference.

I have tried many loading arrangements with the loop. Some change in the radiation angle or polarisation was evident with local and DX signals affected differently. No gain was achieved compared with being unloaded.

Currently I have loading coils across switches 3 and 4. No difference has been noted in signal strength from any station. However, a significant improvement in readability on marginal signals from VK4 has been observed. More observations over varying band conditions will be made before drawing any conclusions.

## Evaluation

I hoped to confirm my experiments with computer models. The program I use is NEC-81 (Ref 1). While not the easiest to use, it provides the best ground model I am aware of, an important factor on this band. The computer models show little difference among the three unloaded antennas. With about 80% of the power going into the ground, copper losses are greatest in the reference antenna, but not significant. The current pattern on the loop appears to be that predicted. A maximum occurs opposite the feed point, at the top of the second "V", with the minimums near the ends of the reference section. The position of the minimums was confirmed.



The discrepancy in results is either due to some limitation of the software or insufficient modelling of the local environment. The near field extent includes power lines, phone lines, roofs, and who knows what below the ground. Perhaps the antenna has been optimised for this QTH. Testing at a second QTH would be useful.

## Conclusion

The loop design was inspired by an article "The 80 Metre Pyramid Antenna" by WB0AOF in the July 1980 issue of the American CQ magazine from a design in the February 1961 issue of CQ. This design has a smaller base area with 80 metres of wire.

Being able to switch configurations has been very useful. While the results are not conclusive, they provide incentive for more study and experimentation. This is the best way to learn. All configurations perform well for their size, so if you can fit a G5RV at your QTH you have no excuse. Hope to meet you on top band.

Ref 1 — NEC-81 available as part of the NEEDS package from: R. W. Adler, ACES Secretary, Code EC/AB, Naval Postgraduate School MONTEREY, CA 93943 USA

\*46 Tallara Parkway Narrabundah ACT 2604

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## Book Review

# NOSintro TCP/IP over Packet Radio An introduction to the KA9Q Network Operating System

Written by Ian Wade G3NRW

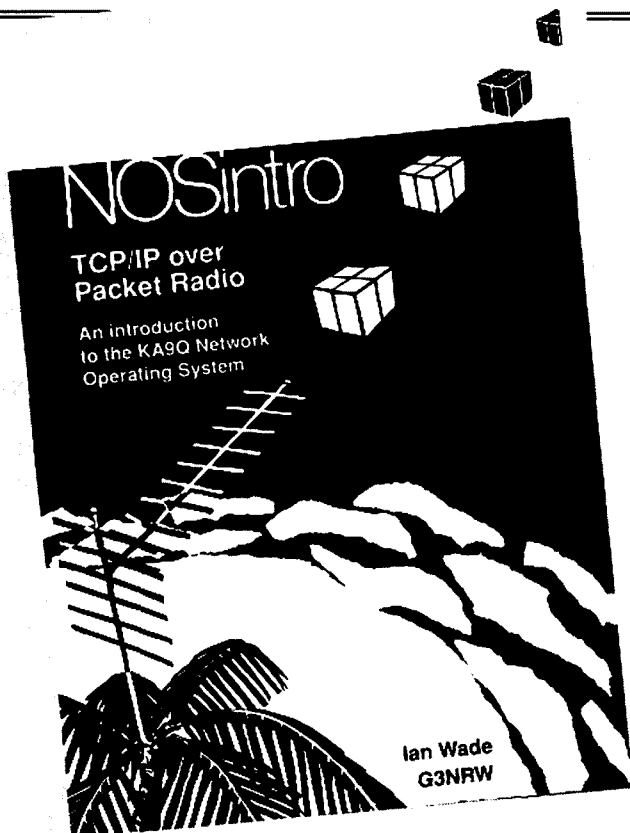
Published by Dowermain Ltd 1992

Paperback 356 pages 210 mm by 148 mm

Reviewed by Evan Jarman VK3ANI

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system operational. The control file examples alone would be worth the value of the book. The program requires these control files to configure the system and having a known base can save a lot of heartache in getting established. Once established it is far easier to customise a system than it is to create the customised system from scratch. Files such as autoexec.nos are not simple but are set and forget type files.

Once installed the author shows how to test the system and demonstrates some of the features of NOS. All of the commands are listed in the appendix and most are described in the body of the book. NOS operates on a format similar to the DOS prompt. The command set, what they do and where to use them constitute the bulk of the book. It is best to have the software operating when reading. Learning computing is very much a hands on process; it is better learned through experience. It is amazing that this software was written by one person; it is so versatile. While not having as many features as commercial packages, it supports the main protocols (AX25, etc) and so would enable the user to be part of a larger network. Being shareware it comes at the right price.

The last step the author describes is what to do after turning the radio on. It goes through some on air tests, then connection to a BBS. By this time the user has an operational system ready for many hours of mail and data transfer.

One point that the author mentions deserves repeating. When setting up this software it is best to use a subdirectory. Outside users are not able to access any files higher on the tree than the base directory of the NOS software. Putting NOS in a subdirectory protects all those pieces of valuable software from prying eyes. Never use the root directory for applications unless essential. The DOS "subst" command is recommended for those who hate the sight of long subdirectory lists on a DOS prompt.

Language throughout the book uses computer and electronic mail jargon. It is well illustrated using the diagrams, symbols and operators common to this field. While the author does recommend that it be read through first, it is not a novel. It relies heavily on the software to complement it and is far more descriptive than the help files included in NOS. For those wanting to implement KA9Q NOS the book is well worth reading.

Review copy received direct from the overseas publishers. Local enquiries can be made through the WIA Divisional Bookshops and DAYCOM Communications Pty Ltd. ar

This book is a driver's manual to the KA9Q network operating system. The intention is to demonstrate and then guide the reader in the use of KA9Q NOS. The program is shareware and sources are listed if any reader is not able to get a copy through bulletin boards (NOSVIEW.ZIP or NOSGAS.ZIP). The software does not come with the book.

The KA9Q software for transmission control protocol/internet protocol (TCP/IP) has been in use for a few years. Written by Phil Karn KA9Q, it is a program that allows any PC (DOS is the quoted platform) to be used as a communications node. The book is designed for the user who wants to migrate from the dumb terminal, native mode TNC to an internet protocol on packet radio, using the KA9Q NOS programs. The programs utilise the

computing ability of the PC to provide the networking environment. The TNC is reduced to a KISS mode packet assembler/disassembler.

The book describes how the software sets up an internet node in the PC and how it relates to other nodes. The communication medium receives a cursory mention. Things like interface protocol signals are named (CTS, RTS, etc) but not described. It is assumed that the user is already familiar with their use. This is not a book for hardware devotees; the only mention electrical activity gets is disabling the battery to overcome software lockup in a TNC.

The author guides a user in the process of installing and setting up the NOS software. Examples are given of the various control files needed to make the



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## Book Review

# The ARRL Radio Buyers Sourcebooks Volumes 1 and 2

Published by the ARRL

Reviewed by Ron Fisher VK3OM

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However, that still leaves quite a bit of coverage. Volume 1 contains reviews of 140 pieces of equipment and volume 2 covers about 80 pieces. To pad things out volume 2 includes new product information and book reviews.

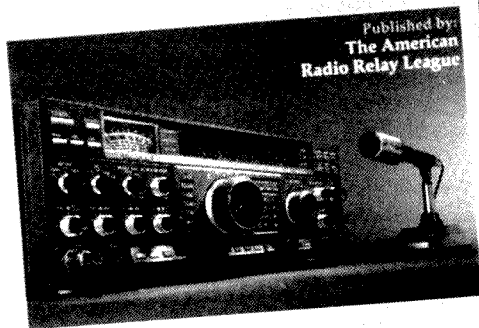
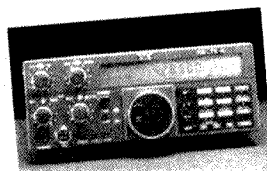
So, do these books do a good job in covering amateur gear built over the last twenty years or so? The answer is yes and no. *QST* uses a large team of writers to do their reviews and some are much better at the job than others. Many of the earlier reviews were little more than a run around the front panel and a "we hooked it up and it worked fine" type of report. However, *QST* reviews have improved out of all sight over the last ten years or so with very complete technical tests now being carried out. One thing that stands out with both volumes is the poor quality of the photographic reproduction. The articles have been scanned straight out of *QST* magazines making many of the photos look like black blobs. Editing of the articles also leaves something to be desired. References to other articles in *QST*, but not in the Radio Buyers Sourcebook, have been left in. Another strange thing is that the introductory chapters of volume 1 are repeated in volume 2. While they are of considerable interest, we don't need them twice.

So, back to the original question. Do these books do a good job? The answer is yes. They will answer most of your questions and while they have a few rough spots, they are certainly the best currently available publications reviewing amateur equipment.

The review books were supplied by Daycom Communications Pty Ltd, and are available also from WIA Divisional Bookshops at \$40.00 each.

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**Have you  
advised the WIA  
Federal Office  
of your new  
callsign? Use  
the form on the  
reverse side of  
the Amateur  
Radio address  
flysheet.**



How many times do you scan the Hamads in *Amateur Radio* and wonder just what all of those type numbers mean? Just how can you make a reasoned judgement on whether you should buy this rig or that rig?

Well, for a start, the reviews in *Amateur Radio* are a big help but, of course, we don't have the resources to review everything that comes on to the market. I guess no magazine does, but *QST*, the American Radio Relay League (ARRL)

journal, has a better chance than most. These two volumes include most of the equipment reviewed in *QST* from around the mid 70s to the end of 1992. Volume one covers up to the end of 1990 and volume two covers 1991 and 1992. As both volumes are similar in size, this means that more recent equipment gets better coverage. The cut off has been determined by the second hand price in the USA. Anything with a value of less than about \$150 has been omitted.

# THE 21st CENTURY COMM. RECEIVER IS HERE TODAY

## THE FABULOUS SoftWave

SoftWave is the first fully integrated digital communications receiver for Microsoft Windows. SoftWave combines a high performance receiver, digital signal processor, spectrum analyzer, database and Windows program in one product. It opens the door to wireless communications on the PC.

### GENERAL FEATURES:

Includes HF receiver, VHF Scanner, AM DX Radio, World Map Radio, Digital Signal Processor, Spectrum Analyzer, Oscilloscope, Signal Constellation, Multi-Mode Demodulator, Decoder, Database and Windows program in one product.

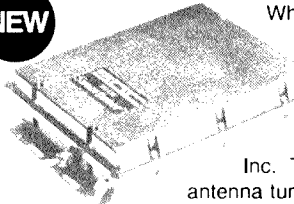
All power and signal for the external receiver unit come from the PC by way of the RS-232 cable (included).

Will operate in the background while you use other Windows applications. Simple installation, does not require changes to jumpers or bus address.

Accurate display of signal strength in dBm. Seven digital demodulators including: AM, Synchronous AM, FM-XP (Cross Prod.), FM-PLL, CW, CW-NB (Narrow Band), CW-TT (Tone Tag). 48 digital IF filter bandwidths from 11kHz to 49Hz. Continuous coverage in HF, 0.5 to 30 MHz and VHF, 108 to 174 MHz. One hertz tuning resolution. Tunable notch filter with 60 dB attenuation. Real time spectrum analyser. Real time oscilloscope or a signal constellation and many other features- **TOO MUCH TO TELL YOU - GET YOUR BROCHURE!**

# The SG-230 Smartuner™ HERE AT LAST

**NEW**



Whether you are a **HAM, LAND MOBILE, MARINE or AIR BAND** operator, you need an efficient antenna coupler. The best on the market today is definitely the SG-230 made in USA by SCG,

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JRC: NRD535G \$ call, NRD535D...\$call  
KENWOOD: R5000 \$ call,  
ICOM: R1 \$ call, R100 \$ call  
R72 \$ call, R7100 \$ call, R9000 \$ call  
**CALL FOR FURTHER INFO & BROCHURE**

## DIGITAL SYSTEMS

AEA DATA CONTROLLERS represent the most exciting value in amateur radio today.



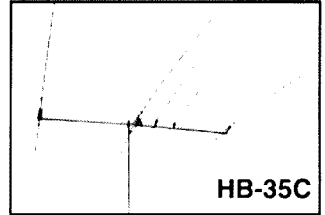
DSP-1232 \$1495, DSP-2232...\$1895  
PK-900...\$1250, PK-232MBX...\$695  
PK-88...\$295, PK96...\$499  
PC-PAKRATT for Windows...\$250  
AEA FAX...\$275  
ST-1 Satellite tracker...\$775

# TET-EMTRON ANTENNA SYSTEMS

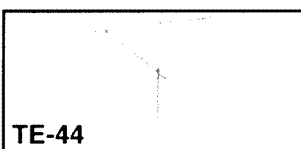
TET-EMTRON antennas are Australian designed and made and are now exported and known all over the world. You will find TET-EMTRON in Europe, South Africa, New Zealand, Japan and Korea and America. Why? Because TET-EMTRON systems are innovative, reliable and manufactured from top grade materials.

## THREE BAND BEAMS FOR 14-21-28 MHz BANDS

TE-13	rotatable dipole .....	\$199
TE-23	2-element beam.....	\$414
TE-23M	2-ele. mini-beam.....	\$440
TE-33	3-element beam.....	\$575
TE-43	4-element beam.....	\$750
HB-35C	5-element trapless beam .....	\$770



## FOUR BAND BEAMS FOR 7-14-21-28 MHz BANDS

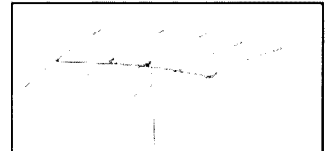


TE-14	rotatable dipole.....	\$275
TE-34	3-ele beam on 14-21-28MHz, 1-ele on 7MHz.....	\$695
TE-44	4-ele beam on 14-21-28MHz, 1-ele on 7MHz.....	\$870

**BEAT THE DX "SUN-SPOT" PROBLEM WITH THE NEW FOUR-BAND ANTENNAS**

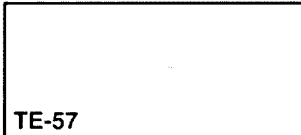
## SIX BAND BEAMS FOR 10-14-18-21-25-28 MHz BANDS

TE-26	dual rotatable dipole.....	\$380
TE-46	3-ele beam on 14-21-28MHz, 1-ele on 10-18-25MHz.....	\$750
TE-56	3-ele beam on 14-21-28MHz, 2-ele on 10-18-25MHz.....	\$950



**THE IDEAL ANTENNAS FOR WARC BANDS AS WELL**

## SEVEN BAND BEAMS FOR 7-10-14-18-21-25-28 MHz BANDS



TE-27	dual rotatable dipole.....	\$440
TE-47	3-ele on 14-21-28MHz, 1-ele on 7-10-18-25MHz.....	\$850
TE-57	3-ele on 14-21-28MHz, 2-ele on 10-18-25MHz, 1-ele on 7MHz...\$1025	

**THE DX'sers DELIGHT**

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**THE MOST ECONOMICAL 20A POWER SUPPLY AVAILABLE!**

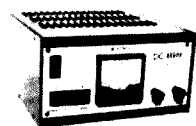


MODEL  
**K205**  
\$395

This unique regulated power supply will run all your

HF/VHF/UHF transceivers and can also be used for many other applications as well. Input 240Vac, Output 13.8Vdc, at 20Amp.

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**EPS-30**

EMTRON EPS-30 IS THE EXCITING NEW DC POWER SUPPLY FOR PROFESSIONAL AND AMATEUR APPLICATIONS. This unique power supply incorporates '4X' protection (voltage, current, temp. & RF), and a dual cross-needle V-A meter! **\$575**



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JOHN HILL  
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# AWARDS

John Kelleher VK3DP — Federal Awards Manager\*

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Recently I wrote to IARU Headquarters for information on the IARU Regions 1, 2 and 3 Awards. Dave Sumner K1ZZ relayed my request to the Regional Secretaries involved. The answers came in the affirmative for Regions 1 and 3, but at this time Region 2 was not sponsoring any Awards. At the same time, the RSGB, sponsors of the Region 1 Award, were in the process of appointing a new HF Awards Manager. He is Fred Hanscombe G4BWP, Heath Farm Road, Red Lodge, Bury St Edmunds, Suffolk IP28 8LG, England.

My underlying reason for initially seeking information on these Awards was to ascertain whether recent changes to geographical boundaries and some deletions from the DXCC listings had been incorporated into the qualifying countries lists. The Region 1 award will be updated again in September, but member societies will count from the date of their joining the IARU. Here now is relevant information on the IARU Region 1 Award.

This Award, available in 3 classes, may be claimed by any licensed radio amateur eligible under the general rules (which I will publish later, under the heading of RSGB awards), and who can produce evidence of having contacted amateur radio stations in the required number of countries, whose national societies are members of the Region 1 Division of the International Amateur Radio Union.

The 3 classes are for contacts as follows:

Class 1 All member countries on the current list.

Class 2 45 member countries.

Class 3 30 member countries.

Members of IARU Region 1 are:

Albania	Germany	Malta
Algeria	Ghana	Mauritius
Andorra	Gibraltar	Monaco
Austria	Greece	Mongolia
Bahrain	Hungary	Morocco
Belgium	Iceland	Namibia
Botswana	Ireland	Netherlands
Bulgaria	Israel	Nigeria
Croatia	Italy	Norway
Cyprus	Ivory Coast	Oman
Denmark	Jordan	Poland
Djibouti	Kenya	Portugal
Egypt	Kuwait	Romania
Estonia	Lebanon	Russia
Faeroes	Lesotho	San Marino
Finland	Liberia	Senegal
France	Liechtenstein	Sierra Leone
Gabon	Lithuania	Slovenia
Gambia	Luxembourg	South Africa

Spain	Syria	Yugoslavia
Swaziland	Turkey	Zambia
Sweden	United Kingdom	Zimbabwe
Switzerland		

A special version of this award is available in the same three classes for confirmed contacts on the 28 MHz band since 1 July, 1983.

To qualify, a statement from the applicant's National Society that the necessary cards have been checked will be accepted except that the (RSGB) HF Awards Manager reserves the right to see some, or all, of the cards.

Each claim must be accompanied by a fee of US\$6.00 or 9 IRCs

The Secretary of IARU Region 3, Masayoshi Fujioka, has supplied the following information on the Region 3 Award.

1. The award is available to licensed Amateurs and SWLs.
2. Contacts made after 5 April 1982 are eligible, but certificates will date from 1 January 1983 as part of WORLD COMMUNICATIONS YEAR.
3. QSL cards are not required. Send certified list of eligible contacts from your Log Book.
4. The fee is \$1.00 surface (\$2.00 Airmail) for return postage only.
5. The basic Award requires 7 countries; Silver Star endorsement requires 15 countries, while the Gold Star endorsement requires 20 countries.
6. Awards may be endorsed for any mode or band.
7. Eligible countries are those in Region 3 whose amateur radio societies are members of IARU Region 3. These are Australia, Bangladesh, Brunei, China

(PRC), Chinese Taipei, Fiji, French Polynesia (FO8 only) Hong Kong, India, Indonesia, Japan, Korea, Malaysia, New Zealand, Pakistan, Papua New Guinea, Philippines, Singapore, Solomon Islands, Sri Lanka, Thailand, Tonga, and Vanuatu. PLUS: One country credit from US Territories in the Pacific from Guam, Northern Marianas, American Samoa, Wake Island, Baker-Howland Group, as represented by the ARRL.

ALSO: One country credit from Pitcairn Island (VR6) and Chagos Archipelago, as represented by the RSGB.

The current total of available "countries" is 25.

8. Applications go to NZART Awards Manager, Peter Kenny ZL2QK, 5 Townley Street, Gisborne 3801, New Zealand.

From VK3CHN comes a correction to the postcode for the German DLD Award. The new Zip is 34216. The unification of the two Germanies forced a correction to the four figure postcodes, and a cancellation of the DARC postcodes Award, until further advised.

Stations affected by the deletion of Walvis Bay and Penguin Islands are hereby listed:

VK1ZL  
VK2PU, CKW, FGI  
VK3DD, JA, JI, KS, OT, QI, UY, VQ, XB, YJ, YL, AKK, CSR, DYL  
VK4DP, KS, LC, OD, OH, RF, UA, AAR  
VK5EE, MS, QW, UO, WO, XN  
VK6HD, NE, PY, RO, VS  
VK7BC  
PS7AB, SM6PRX, KA1TFU, ON6DP, and ZS6IR.

The next summary of WIA DX listings will be published in the August edition of the Awards column.

\*PO Box 2175 Caulfield Junction 3161

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## ALARA

Christine Taylor VK5CTY

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### Advance Notice

The District Radio Ladies (DYLs) are organising a QLDMEET to be held in Bundaberg on 2 to 4 September 1994. All YLs and their families are welcome. Input about what YLs would like to see and do there will also be most welcomed by the organisers.

Contacts for this event are Robyn VK4RL, tel 079 281 700; Mary VK4PZ, tel 079 342 910; and Julie VK4JJB, tel 071 534 480, all QTHR.

If you are likely to be in the area of Bundaberg around September, why not

re-arrange your schedule to include the QLDMEET. More information will be published in this column and in the Newsletter as it comes to hand.

### Annual General Meeting on 23 May

As always we had more members on air for our AGM than we normally have for our Nets, and that is a very good sign of the interest we all take in our association.

Thanks were extended to the outgoing committee, especially to Poppy VK6YF as she quits the position of Sponsorship

Secretary, and a welcome was extended to the incoming committee and especially to Bev VK4NBC who joins the committee for the first time. Office bearers are President, Christine Taylor VK5CTY; Secretary, Bron Brown VK3DYF; Treasurer, Margaret Schwerin VK4AOE; and Editor, Dorothy Bishop VK2DDB.

We do still have a vacancy for a Publicity Officer. If you would like to do something for ALARA, this may be the way to do it. Please contact your State Rep or a member of the committee. A list of the new committee, with phone numbers and addresses, will be published in the next Newsletter. Keep this inside your phone book for future reference.

### At the Hamfests

Dorothy VK2DDB represented ALARA at the Gosford hamfest in February. There she met Mary VK4BEM, Pixie VK2KPC, Marjorie VK2AMJ, and Aimee FK8FA. Pauline VK2GTB was working on the WICEN table. A new member joined ALARA that day, Margaret VK2MAS.

Margaret VK4AOE's last outing as State Rep was to the Barfest (Brisbane) early in May where she met up with Pat VK4PT, Bev VK4NBC, Kathy VK4XYL, Val VK4VR, Ann VK4ANN, Joy VK4AT, and Cathy VK4FG.

On the same day the DRL (District Radio Ladies) accompanied the CQ Branch to a primary school at Yeppoon

where they set up an attractive display. This group of ladies are mainly involved in social activities but they also run a JOTA station for the Girl Guides and help the Guides gain their radio badges. This is the group who are organising the QLDMEET later this year. A busy group enjoying radio their way.

ALARA was represented at the Midland Hamfest held at Renmark on 21 May. This is the first Hamfest to be held at Renmark though the Riverland Radio Club members have assisted in the running of the previous Hamfests held in Mildura. The Midland event will be held alternately in Mildura and Renmark from now on. Remember it next year if you missed this one.

ALARA was represented by Marilyn VK3DMS, Meg VK5AOV, and Christine VK5CTY and gained three new members on the day with two or three other ladies interested enough to take our pamphlets. Marilyn, Meg and Christine with two of the new members, Jean and Tina are together in the photograph.

Margaret VK4AOE showed the flag for ALARA at the Barfest in Brisbane and Dorothy VK2DDB represented us at the Gosford field days again. I hope you took the opportunity to meet them there if you also attended.

### Other News

Recently Marlene VK3WQ had a most enjoyable visit with Jill ZL2BHJ whom she sponsors into ALARA. Jill was in

Melbourne with her OM Dave when they attended the WIA Federal Convention. It is not often possible to have an eyeball with your sponsored girls, but we do keep in contact on the air or by mail as often as possible. ar

## AMSAT Australia

Bill Magnusson VK3JT\*

### National co-ordinator

Graham Ratcliff VK5AGR

Packet: VK5AGR@VK5WI

### AMSAT Australia net:

Control station VK5AGR

Bulletin normally commences at 1000 UTC, or 0900 UTC on Sunday evening depending on daylight saving and propagation. Check-ins commence 15 minutes prior to the bulletin.

Frequencies (again depending on propagation conditions):

Primary 7.064 MHz. (Usually during summer).

Secondary 3.685 MHz. (Usually during winter).

Frequencies +/- 5 kHz for QRM.

### AMSAT Australia newsletter and software service

The newsletter is published monthly by Graham VK5AGR. Subscription is \$25 for Australia, \$30 for New Zealand and \$35 for other countries by AIR MAIL. It is payable to AMSAT Australia addressed as follows:

AMSAT Australia  
GPO Box 2141  
Adelaide SA 5001

### 25 Years in Space — AMSAT Celebrates 25th Anniversary

The Radio Amateur Satellite Corporation (AMSAT) was formed on 3 March 1969. The amateur radio satellite service can trace its roots back at least 5 years earlier to the work done by the PROJECT OSCAR team. An excellent account of the early days is contained in the Mar/Apr 1994 edition of the *AMSAT-NA Journal*. A couple of items will be of interest to readers. The first satellite launch organised by AMSAT was OSCAR Australis-5. AO-5 was designed and built at the University of Melbourne. Previous launches had been handled by the PROJECT OSCAR team through contacts in the military. AO-5 was the first OSCAR to be launched by NASA. AO-5 was already built and awaiting a launch. It was selected as a ready made device to quickly get the fledgling AMSAT off the ground (sorry) and get good publicity for the new organisation and its plans for the future. It did both those things.



At Renmark, L to R, Jean Kopp, Meg VK5AOV, Marilyn VK3DMS, Christine VK5CTY, and Tina Klogg.

**Six monthly update of current amateur radio satellite frequencies and modes. The previous list was in January Amateur Radio.**

Satellite	UPLINK (MHz)	DOWNLINK (MHz)
<b>OSCAR 10 (AO-10)</b>		
General Beacon (Carrier only)		145.810
Engineering Beacon (irregular and garbled)		145.987
Mode B (SSB, CW-Inverting)	435.030-435.180	145.825-145.975
Note: AO-10 is out of control but still provides good communications via mode "B" when the batteries are charged by the solar cells.		
<b>OSCAR 11 UoSAT-2 (UO-11)</b>		
Beacon (1200 AFSK,FM)		145.826 (normal)
Beacon (1200 AFSK,FM)		435.025
Beacon (1200 AFSK,FM)		2401.500 (on at present)
Note: UO-11's 2401.5 MHz beacon has been turned on since Jan 1994.		
<b>Radio Sputnik 10 (RS-10)</b>		
Mode A (SSB,CW-Inverting)	145.86-145.90	29.360-29.400
Beacon/Robot (CW)		29.357
Beacon/Robot (CW)		29.403
Robot Mode A (CW)	145.82	29.357 or 29.403
Mode K (SSB,CW-Inverting)	21.160-21.200	29.360-29.400
Beacon/Robot (CW)		29.357
Beacon/Robot (CW)		29.403
Robot Mode K (CW)	21.120	29.357 or 29.403
Mode T (SSB,CW-Inverting)	21.160-21.200	145.86-145.90
Beacon/Robot (CW)		145.857
Beacon/Robot (CW)		145.903
Robot Mode T (CW)	21.120	145.857 or 145.903
<b>Radio Sputnik 11 (RS-11)</b>		
Mode A (SSB,CW-Inverting)	145.91-145.95	29.410-29.450
Beacon/Robot (CW)		29.407
Beacon/Robot (CW)		29.453
Robot Mode A (CW)	145.83	29.407 or 29.453
Mode K (SSB,CW-Inverting)	21.210-21.250	29.410-29.450
Beacon/Robot (CW)		29.407
Beacon/Robot (CW)		29.453
Robot Mode K (CW)	21.130	29.407 or 29.453
Mode T (SSB,CW-Inverting)	21.210-21.250	145.91-145.95
Beacon/Robot (CW)		145.907
Beacon/Robot (CW)		145.953
Robot Mode T (CW)	21.130	145.907 or 145.953
<b>Radio Sputnik 12 (RS-12)</b>		
Mode A (SSB,CW-Inverting)	145.91-145.95	29.410-29.450
Beacon/Robot (CW)		29.408
Beacon/Robot (CW)		29.454
Robot Mode A (CW)	145.831/840	29.408 or 29.454
Mode K (SSB,CW-Inverting)	21.210-21.250	29.410-29.450
Beacon/Robot (CW)		29.408
Beacon/Robot (CW)		29.454
Robot Mode K (CW)	21.129	29.408 or 29.454
Mode T (SSB,CW-Inverting)	21.210-21.250	145.910-145.950
Beacon/Robot (CW)		145.912
Beacon/Robot (CW)		145.959
Robot Mode T (CW)	21.129	145.912 or 145.959
<b>Radio Sputnik 13 (RS-13)</b>		
Mode A (SSB,CW-Inverting)	145.96-146.00	29.460-29.500
Beacon/Robot (CW)		29.458
Beacon/Robot (CW)		29.504
Robot Mode A (CW)	145.84	29.458 or 29.504
Mode K (SSB,CW-Inverting)	21.260-21.300	29.460-29.500
Beacon/Robot (CW)		29.458
Beacon/Robot (CW)		29.504
Robot Mode K (CW)	21.138	29.458 or 29.504
Mode T (SSB,CW-Inverting)	21.260-21.300	145.960-146.000
Beacon/Robot (CW)		145.862

Satellite	UPLINK (MHz)	DOWNLINK (MHz)
Beacon/Robot (CW)		145.908
Robot Mode T (CW)	21.138	145.862 or 145.908
<b>AMSAT-OSCAR-13 (AO-13)</b>		
General Beacon (400 BPSK,CW,50 Baud RTTY)		145.812
Engineering Beacon (PSK,CW,RTTY)		145.985
Mode B (SSB,CW-Inverting)	435.420-435.570	145.825-145.975
Mode S (SSB,CW,FM)	435.601-435.639	2400.711-2400.747
Beacon (PSK,RTTY) seldom turned on		2400.325
Beacon (PSK,RTTY) ON 1st 3 mA counts mode S		2400.664
Note: Modes "L" and "J" are no longer operational on AO-13.		
<b>UoSAT-OSCAR-14 (UO-14) (Taken out of amateur service)</b>		
Note: This (Surrey) satellite is now given over to the "SatelLife" organisation and is being used to deliver humanitarian medical aid to developing countries. DO NOT attempt to communicate with or via this satellite. It is no longer available to the amateur service and the amateur transponders have been turned off.		
<b>AMSAT-OSCAR-16 (AO-16) (Pacsat)</b>		
Mode J (1200 BPSK BBS,FM-SSB)	145.90/92/94/96	437.025 or 437.050
Mode S (1200 BPSK BBS,FM-SSB)		2401.1 or 2401.1428
<b>AMSAT-OSCAR-17 (DO-17) (Dove)</b>		
Beacon 1 (1200 bps AFSK,Digital Voice,FM)		145.82516 (normal)
Beacon 2 (1200 bps AFSK,Digital Voice,FM)		145.82438
Beacon 3 (1200 BFSK,Digital Voice,SSB)		2401.2205 (on at present)
<b>AMSAT-OSCAR-18 (WO-18) (Webersat)</b>		
Mode J (1200 BPSK,RC,SSB)	144.30-144.50	437.075 or 437.10
ATV (TV,AM)		1265.000
<b>AMSAT-OSCAR-19 (LO-19) (Lusat)</b>		
(1200 AFSK,FM-SSB)	145.84/86/88/90	437.15355 or 437.1258
<b>FUJI-OSCAR-20 (JAs-1b) (FO-20)</b>		
Beacon JA (CW,Analog)		435.795
Mode JA (SSB,CW)	145.90-146.00	435.80-435.90
Beacon JD (CW)		435.910
Mode JD (1200 BPSK,FM-SSB)	145.85/87/89/91	435.910
<b>OSCAR-21 (AO-21), Radio Sputnik 14 (RS-14)</b>		
Mode B (SSB,CW-Inverting)	435.022-435.102	145.852-145.932
Beacon (CW)		145.822
Beacon (BPSK,FM)		145.952
Beacon (BPSK,SSB)		145.983
Rudak 2 (A/BPSK,FM)	435.016/155/193	145.983 or 145.987
Rudak 2 (Various Modes)	435.041	145.983 or 145.987
Mode B (SSB,CW-Inverting)	435.043-435.123	145.866-145.946
Beacon (CW)		145.948
Beacon (BPSK,FM)		145.838
Beacon (BPSK,FM)		145.800
Note: AO-21's current 10 minute cycle includes FM repeater, WEFAX image and 1200 baud AFSK telemetry.		
<b>UoSAT-OSCAR-22 (UO-22)</b>		
Mode JD (9600 Baud FSK,FM)	145.90/975	435.120
<b>KITSAT-OSCAR-23 (KO-23)</b>		
Mode JD (9600 Baud FSK,FM)	145.85/90	435.175
<b>KITSAT-OSCAR-25 (KO-25)</b>		
Mode JD (9600 Baud FSK,FM)	145.980	436.500
<b>ITAMSAT-OSCAR-26 (IO-26)</b>		
	145.875	435.867
	145.900	435.822
	145.925	
	145.950	
<b>AMRAD-OSCAR-27 (AO-27)</b>	145.850	436.800
<b>POSAT-OSCAR-28 (PO-28)</b>	145.925	435.250
	145.975	435.275
The ARSENE satellite has not yet responded to rescue attempts.		

## FBB BBS Satellite Tracking Facility

Readers may not be aware of this facility which is contained in the now widespread F6FBB packet radio bulletin boards. It is a useful feature for casual satellite users who may not want to maintain and keep updating their own satellite tracking program. Space shuttle flights and MIR are two examples of "satellite" operations that appeal to many who are not actively engaged in day to day amateur satellite work. Both of these support packet radio and if you are in range of an FBB BBS you can have access to the latest tracking data for these and many other amateur and commercial satellites via the file server on the BBS.

To attain maximum accuracy you will need to have entered your grid square at the BBS when you first signed on as a user. A lot of people are uncertain how to answer but don't panic, the F6FBB board has an inbuilt facility to calculate your grid square. Enter file server mode with the command F, then enter Q from the file server prompt and answer the questions re latitude and longitude. Then exit file server mode with F and enter your grid square, eg QF22KE, using the command NQ QF22KE. After you do this the BBS won't ask you for your QTH each time you connect. If all the above is too troublesome you can still use the tracking feature but in the absence of your QTH the program will default to the BBS location. Go back to the file server with an F command and look at the sub-menu. Enter T for satellite mode. Then at the next prompt enter T for tracking. You will be asked for a satellite by number. The command L will give you a list. When you have selected a satellite you will be asked for a date and time. Most BBSs default to the current time and date if you hit enter a couple of times. Have your disk capture turned on or be prepared to write fast, hi.

## Appeal for Feedback from RS Control Station

The following message came through the packet BBS system recently.

*From: RK3KPK@RK3KPM.SK.RUS.EU*

*To : AMSAT@WW*

*Hello dear friends,*

*Here is RK3KPK. My name is Andy.*

*I am op of RS3A — Command Station of RS satellites.*

*I would like to know any news about your work via RS satellites. Pse send your comments to RK3KPK@RK3KPM.SK.RUS.EU i thank you very much! 73,*

*Andy and RS3A command. 27/04/94*

Andy would not have gone to the trouble of circulating the message unless he was anxious to obtain feedback. I'm sure there are many VK operators who

use RS-10/11/12/13 occasionally or regularly. Please take the time to drop Andy a short reply.

## Next Month

New software for the digital satellites. In the May 1994 issue of the *Amsat-VK Newsletter* Graham VK5AGR reviewed a new software package. Called WiSP and written by Chris ZL2TPO, it has been very

well received by beta testers around the world. I hope to have a good look at it over the next month and give a short review in this column.

Also the phase 3D T/R switching matrix, held over due to the frequency table taking up a lot of space in the month's column.

\*359 Williamstown Rd, Yarraville VIC 3013  
Packet: VK3JT@VK3BBS

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## Club Corner

### Moorabbin and District Radio Club Inc

More than 460 people paid at the door to visit the club's annual Hamfest on Saturday, 14 May. Trade exhibitors reported a very satisfactory level of enquiries and sales on the day and in subsequent days. A couple of tons of preloved gear was thoroughly turned over and a lot of visitors went home with something from this amazing mass.

The standard of entries for the home brew competition was very high in the opinion of the judges Ron Cook VK3AFW and Drew Diamond VK3XU, who thoroughly examined each entry. The very happy winner of the main prize of \$100 was John Cengia VK3VHD from Korumburra with his low power station

made up of an 80 metre CW/SSB transmitter, a 25 watt PA and an antenna tuner which included an SWR and power meter. The Club committee is very grateful to all who came along and made the event such a success.

The annual general meeting and election of office bearers will be held on Friday, 15 July at 8 pm. Nomination forms are now available from club secretary Keith Turner VK3CWT.

Among components available from the club are very high quality power transformers rated at 30 amps and 20 amps at attractive prices. Three club members provide an approved examination service.

Allan Doble VK3AMD



**Drew Diamond VK3XU and Ron Cook VK3AFW assessing one of the entrants, a power supply built into a discarded external floppy drive case, in the Moorabbin and District Radio Club home brew competition.**

**DICK SMITH**  
**ELECTRONICS**



new '94

# FT-11R Micro Deluxe 2m Handheld



**2 year warranty**



One of the world's smallest 2m FM handhelds with a full-size keypad, the Yaesu FT-11R has been reduced in size, but not in features. Designed to fit comfortably in your hand, it's just 57 x 102 x 25.5mm (W.H.D) including the FNB-31 NiCad pack, and weighs only 280 grams.

The result of the latest in miniaturisation, microprocessor control and FET technology, the FT-11R provides a large back-lit LCD screen with full frequency readout, 150 memories (75 in alpha-numeric mode), full function keypad with easy SET mode, and up/down thumb control Volume and Squelch settings. A new high efficiency FET RF amplifier provides 1.5W output standard from the compact 4.8V battery pack, and up to 5W output from 9.6V (using an optional battery pack or PA-10 mobile adaptor). A range of battery life extenders, including Auto Battery Saver, Tx Save, and Auto Power Off (with ultra-low 20uA consumption) are included. Australian version Auto Repeater Shift, DTMF based selective calling and paging, extended 110-180MHz receiver coverage (including the AM aircraft band), and a variety of scanning modes are also provided.

Other new features include naming of memory channels, DTMF Auto-dial memories, and DTMF Message Paging with up to 6 alpha-numeric characters. A large range of accessory lines are also available for easier customisation of your transceiver.

The FT-11R comes with an FNB-31 600mA/H NiCad, belt-clip, approved AC charger, CA-9 charge adaptor and antenna.

Cat D-3640

# \$699

Shown approximately full size

**Now Available!**

# Mobile Or Base, See Us First!

## Yaesu FT-840 HF Transceiver

Blending the high-performance digital frequency-synthesis techniques of the FT-890 with the operating convenience of the FT-747GX which it replaces, the all new FT-840 HF mobile transceiver sets the new standard for high performance in affordable transceivers.

Covering all HF amateur bands from 160m-10m with 100w P.E.P. output, and with continuous receiver coverage from 100kHz to 30MHz, the FT-840 provides SSB/CW/AM operation (FM optional), 100 memory channels, a large backlit LCD screen, two independent VFOs per band, an effective noise blanker and an uncluttered front panel, all in a compact case size of just 238 x 93 x 243mm (WHD).

Unlike some competing models, small size doesn't mean small facilities. The FT-840 provides easily-accessible features such as: Variable mic. gain and RF power controls, SSB Speech processor for greater audio punch, and IF Shift plus CW Reverse to fight interference. Dual Direct Digital Synthesizers ensure clean transmitter output and fast Tx/Rx switching, while the low-noise receiver front-end uses an active double-balanced mixer and selectable attenuator for improved strong signal handling. The FT-840 weighs just 4.5kg and uses a thermally-switched cooling fan, surface-mount components and a metal case for cool, reliable operation.

An extensive range of accessory lines are available, including the FC-10 external automatic antenna tuner, so you can customise the FT-840 to suit your operating requirements.

Cat D-3275



# \$1895

**NEW FOR '94**

**2 Year Warranty**



# \$699

**NEW FOR '94**

**2 Year Warranty**



## FT-2200 2m Mobile Transceiver

The new FT-2200 is a compact, fully featured 2m FM transceiver providing selectable power output of 5, 25 and 50 watts, and includes the latest convenience features for more enjoyable mobile or base station operation. Built around a solid diecast chassis, it provides 49 tunable memories, a large variety of scanning modes, an instant recall CALL channel, 7 user-selectable channel steps from 5kHz to 50kHz and is just 140 x 40 x 160mm (not including knobs).

Backlighting of the large LCD screen, knobs and major buttons is even automatically controlled to suit ambient light conditions. Also provided is a 38 tone CTCSS encoder, DTMF based paging and selective calling with Auto-Page/Forwarding features, and 10 DTMF auto-dial memories. The LCD screen provides a highly legible bargraph Signal/P.O. meter plus indicators for the various paging and repeater modes. An optional internal DVS-3 digital recording/playback board can also be controlled from the front panel, giving even greater messaging flexibility. Supplied with an MH-26D8 hand microphone, mobile mounting bracket and DC power lead.

Cat D-3635

## FT-5200 2m/70cm Mobile Transceiver

The FT-5200 uses the latest innovations in compact cross-band full-duplex and detachable front-panel design for brilliant mobile performance. It has 32 tuneable memories, a built-in antenna duplexer, dual full-frequency LCD screen (with signal strength/power output bargraphs for each band), 8-level automatic display/button lighting dimmer and dual external speaker jacks (one for each band.) A thermally-activated fan allows up to 50 watts output on the 2-meter band and 35 on the 70cm band. Plus, scanning features include programmable scan limits, selectable scan resume modes, memory skip, priority monitoring and one-touch recall CALL channels. In addition, 6 user-selectable channel steps are provided and a FRC-4 DTMF paging selcall option lets you program a three-digit ID code so you can be paged by other transceivers, or page up to 5 other stations yourself. An optional YSK-1 remote panel lets you relocate the main rig (under the front seat, for example) and mount the control panel on the dash. The FT-5200 comes with hand-mic, mobile mounting bracket and DC power lead.

Cat D-3310



# \$1499

**2 Year Warranty**



## MasterCharger 1 Fast Desktop Charger

New for '94! At last, an intelligent, fast desktop charger that not only suits most current Yaesu handhelds but also many previous models. Made in USA, the MasterCharger 1 operates from 13.5V DC and uses switch-mode technology plus a Philips battery charge monitor I.C. (with  $\Delta V$  full charge detection) to charge NiCad batteries between 6V and 13.2V. Suitable for the FT-2373, FT-411/411e, FT-470, FT-26, FT-415/815 and FT-530, its charging cradle can easily be replaced, allowing for the insertion of a new cradle to suit earlier Yaesu transceivers (eg FT-209R) or different brands/model handhelds. The MasterCharger 1 requires 12-15V DC at 1.3A, and is supplied with a fused cigarette lighter cable for vehicle use.

Cat D-3850  
Now available - charging cradles to suit various Kenwood, Icom, and Alinco handhelds.



## 2m RF Power Amplifier

Boost your 2m hand-held's performance with this compact amplifier. Works with 0.3 to 5W input and provides up to 30W RF output, plus has an inbuilt GaAsFet receive pre-amp providing 12dB gain. A large heatsink and metal casing allow for extended transmissions at full output, and a mobile mounting bracket is supplied for vehicle use. Requires 13.8V DC at 5A max. Size 100 x 36 x 175mm (W x H x D).

Cat D 2510



**\$16995**

**NEW FOR '94**

**\$16995**

## Revex W560N HF/VHF/ UHF SWR/PWR Meter

Another quality Revex wide-band SWR meter, offering 2 inbuilt sensors for 1.8MHz to 525 MHz coverage! Provides measurement of 3 power levels (3W, 20W, 200W), SWR (at low and high power levels) and uses an N-type socket for the VHF/UHF sensor to ensure minimal loss. Measures 120 x 80 x 85mm.

Cat D-1375

## With PEP reading! HF/6m Power/SWR Meter

A quality wide-band SWR/power meter with accurate PEP metering. Manufactured in Japan, it's very well constructed with an all-metal case. Features include a large, back-light meter 1.8-60MHz coverage with less than 0.1dB insertion loss, 20W, 200W and 2kW power scales, and LED indicators for Average/PEP operation. Requires 13.8VDC

at 200mA.  
Revex model W502

Cat D-1360

## VHF/UHF Power/SWR Meter

A high quality SWR/Power meter suitable for amateur, UHF CB and commercial applications. High-quality Japanese construction assures you of maximum reliability. It has an all-metal case, large meter display, 140 525MHz coverage with less than 0.3dB insertion loss, and 4W, 20W & 200W power scales. Revex model W540

Cat D 1370

**NEW FOR '94**



**\$369**



**\$199**



**\$199**

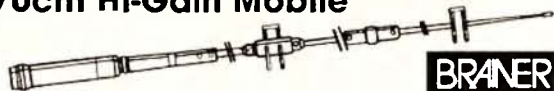
## 2m/70cm Magnetic Mobile

The black TM-723M is a slimline Japanese dual-band mobile antenna supplied with a low-profile magnetic mount and low-loss coax cable. While only 0.7m high, it provides 1.7dB gain on 2m and 4.7dB gain on 70cm and has a conservative maximum power rating of 50W

Cat D 4812

**\$6995**

## 2m/70cm Hi-Gain Mobile



The ST-7800 is our best long-range, dual-band mobile antenna providing high gain (4dB on 2m and 7.2dB on 70cm), while only 1.5m in length. It incorporates an inbuilt tilt-over mechanism and has a maximum power rating of 150 watts. Requires an SO-239 antenna base.

Cat D 4815

**\$12995**

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NEW STORE OPEN AT Unit 2, Cnr Gibberd & Erindale Roads BALCATT, WA Ph: 240 1911  
STORES ACROSS AUSTRALIA AND NEW ZEALAND

\*MAJOR AMATEUR STOCKIST STORES SHOWN IN RED

## Australian Naval Amateur Radio Society

Last December members of the Australian Naval Amateur Radio Society took part in the annual International Naval Contest as a flag-waving exercise in order to put Australia on the map. It was an unqualified success. On a per-capita basis the ANARS has proved itself to be the second most active naval amateur radio society in the world following the German MF-Runde and well ahead of the Roumanian MARC, the Dutch MARAC, the Italian INORC and the British RNARS, who finished in that order. To all concerned our thanks for making the world sit up and take notice of Australia. Despite the rather poor conditions ANARS members came 1st and 2nd world-wide in the SSB section, 5th world-wide in the mixed CW/SSB section and were highly placed in the ferociously contested CW section.

As a result the International Naval community has requested that Australia's ANARS host the International Naval Contest in 1995 and again in our centenary year of 2001. This is a task that the ANARS will gladly accept on behalf of our country.

During March the Society operated the special event station V14VHF to mark the de-commissioning of the RANR Depot in Brisbane, HMAS Moreton. Over 700 contacts were made into 55 DXCC countries, which makes this by far the most successful special event ever organised by a naval amateur radio society in Australia.

The ANARS has also been going out to meet our fellow amateurs. Following successful stands at the Gold Coast Hamfest and the Gosford/Wyong Field Day the ANARS was also at the BARCFest

and the Moorabbin Hamfest. We shall be at the next Riverina Field Day, Gympie's Gold Fest and the Ballarat Convention.

Membership of the ANARS continues to grow. We are past the 150 mark and in nautical terms it is "full ahead" towards 200. Any amateur or shortwave listener who has a professional naval or maritime background (ie a little salt water in the blood stream) is invited to join Australia's very own naval amateur radio society. Full details can be obtained from the Hon Secretary, Terry Clark VK2ALG, 467 McKenzie Street, Lavington NSW 2641 or by telephone on (060) 253 292 or by checking into the Australian Navy Net every Monday at 0930 UTC on 3.532 kHz CW, or every Wednesday at 0930 UTC on 3.620 kHz SSB or on the DAILY Australian Navy Net on 7.075 kHz SSB at 0330 UTC.

## Twin Cities Radio and Electronics Club

The Twin Cities Radio and Electronics Club will be hosting the 1994 Riverina Field Day on 13 August at the Murray High School in Albury. This is the third annual field day which is hosted alternately by the Wagga Wagga Radio Club and ourselves.

The field day will be held in the main hall at the school and there will be light refreshments available from the school canteen. The Albury area has some of the most breathtaking scenery in Australia so that, apart from the attractions of the field day, there are opportunities for sightseeing as well as numerous tourist attractions.

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## Repeater Link

Will McGhie VK6UU\*

### FM 828-7

This is number seven in the series of circuits for the FM 828 transmitter. This circuit shows the transmit VCO and its buffer and amplifier. All of this circuit operates at the final 2 metre output frequency. If you are transmitting on 146.5 MHz then the VCO is oscillating at 146.5 MHz. This signal is amplified in the PA module up to a power level of 25 Watts.

Note the all important VCO control line that feeds back a DC voltage that keeps the VCO on frequency. This DC voltage is produced by the earlier stages and is referenced by the transmit crystal oscillator, a separate oscillator for each channel.

The FM 828 transmitter is part of the way there to being a synthesised radio. If a programmable divider was placed in the VCO divider chain then, with one crystal oscillator, different transmit frequencies could be selected.

There are many requests for a synthesised VCO design for the FM 828, and the first to produce such a design will have a big demand. If you are the first to produce such a circuit I could help with the drafting and publishing of the circuit.

All these circuits were produced on the CAD program Draft Choice and are available via Packet radio in 7 Plus format.

\*21 Waterloo Crescent Lesmurdie 6076  
VK6UU @ VK6BBS

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# OUTBACKER™

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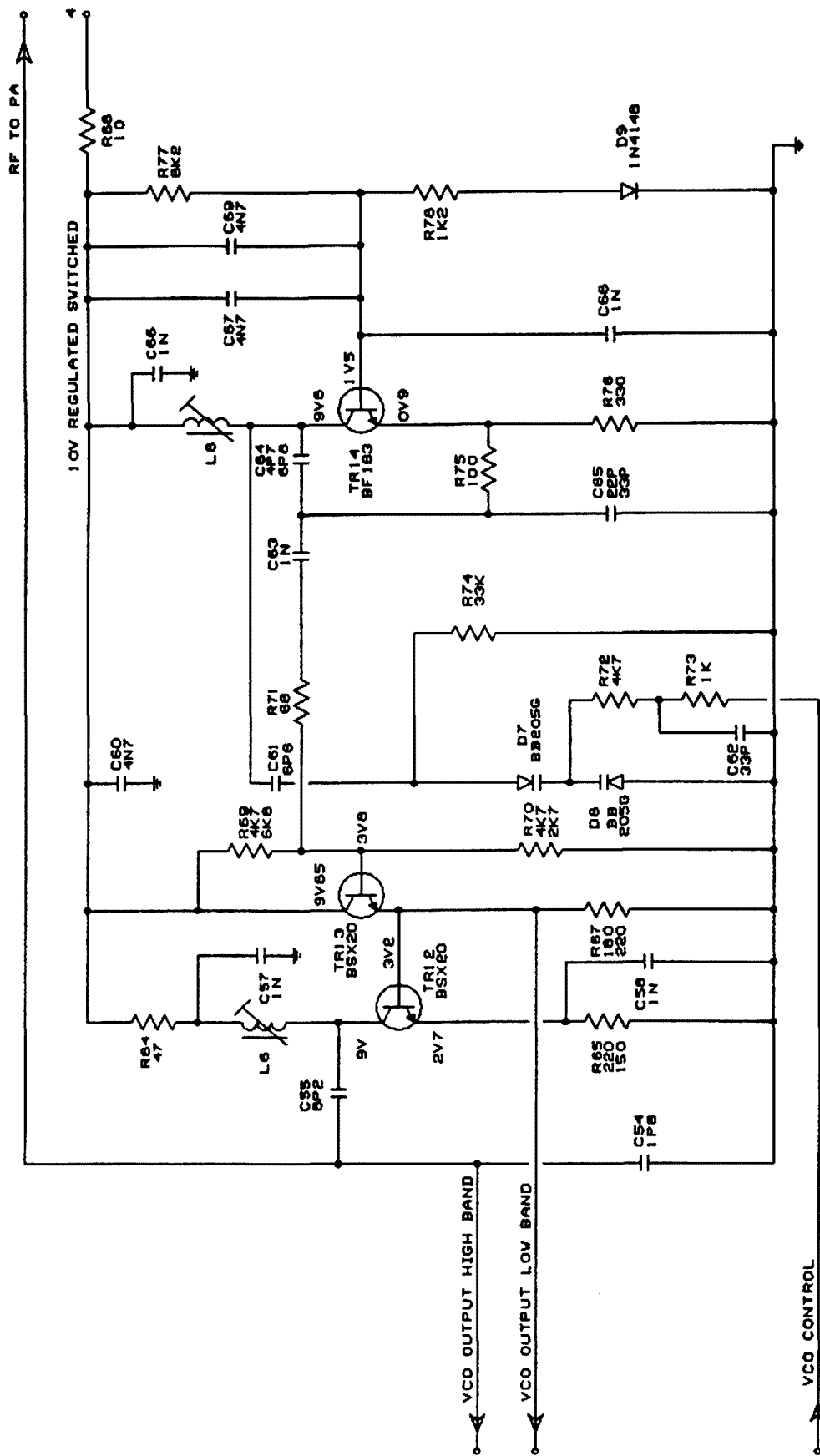
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VCO & BUFFER & TUNED AMP	

# Contests

Peter Nesbit VK3APN\* — Federal Contest Coordinator\*

## Contest Calendar July-Sept 94

Jul 1	Canada Day CW/Phone	(Jun 93)
Jul 2	Australasian 80 m CW Sprint	(Jun 94)
Jul 2	NZART 80 m Memorial CW/Phone	(Jun 94)
Jul 2/3	Venezuela DX Phone	(Jun 94)
Jul 9	Australasian Phone Sprint	(Jun 94)
Jul 9/10	IARU HF Championship	(Jun 94)
Jul 16	Colombian Independence Day	
Jul 16	Jack Files Memorial Phone	(Jun 94)
Jul 16/17	SEANET DX Contest CW	
Jul 17	VK6 Annual 80 m Contest Phone	(Jun 94)
Jul 23	Jack Files Memorial CW	(Jun 94)
Jul 24	VK6 Annual 80 m Contest CW	(Jun 94)
Jul 23/24	Venezuela DX CW	(Jun 94)
Jul 23/24	Goodwill Games/CIS (Phone/CW)	
Aug 6/7	YO DX Contest	
Aug 13/14	Remembrance Day Contest	
Aug 13/14	Worked All Europe CW	
Aug 20/21	SEANET DX Contest Phone	
Aug 20/21	15th Keyman's Club of Japan CW	
Sep 3/4	All Asia DX Contest Phone	(May 94)
Sep 3/4	Bulgarian DX Contest	
Sep 10/11	Worked All Europe Phone	
Sep 17/18	SAC DX CW	
Sep 24/25	SAC DX Phone	
Sep 24/25	CQ WW RTTY DX Contest	

What with work, part-time study, and the demands of various contest matters, there are never enough hours in the day. My own contesting has been pared to the minimum, and ragchewing has become a distant memory! However, I enjoy this task, and your many kind letters and comments have been appreciated. Speaking of letters, my apologies to those who have written but have yet to receive a reply. Rest assured all letters are answered.

Australia's favourite contest, the RD, is coming up next month, and I urge you to take part and make it the best one ever. This year signal reports have been reintroduced, to assist (and attract) newcomers, amongst others, who may need the reports for QSLs and/or checks on how well they are being received. Even the largest contests where top entrants routinely make three or four thousand QSOs in a weekend (eg CQ-WPX), require signal reports, so there is no reason why this should not also apply to the RD. Another change is that the separate category for digital modes, trialled last year, has been absorbed back into the CW category. Finally, this year marks the handover of the contest from Neil Penfold VK6NE to Alex Petkovic VK6APK. On behalf of members I wish to thank Neil for his splendid efforts as RD Contest Manager over many years, and to

congratulate him in his new role of Federal President. Also, a warm welcome to Alex as the new RD manager.

Thanks to VK4BAY, VK5AJS, VK5FOX, VK5UE, VK6NE, ZL1AAS, ZL3ADF, JA1DD, CQ, QST, and Radio Communications. Until next month, good contesting!

73s

Peter VK3APN

## Addendum

VK6NK has advised corrected dates for the West Australian Annual Contests reported last month, which are Sunday 17 July for Phone, and Sunday 24 July for CW. (Since these contests will now not coincide with the Jack Files Memorial Contests, VK6 entrants in the Jack Files Contests should send RS(T) plus serial number, not shire code as per last month's rules.)

## Contest Details

The following contest details are supplemented by the "General Rules & Definitions" published in April 1993 *Amateur Radio*.

## Colombian Independence Day

July 16, 0000z — 2400z Sat.

This is a worldwide contest, all bands 80-10 m, phone/CW. Categories are single operator, single and all band; multioperator, single and multitransmitter. "Call CQ HK". Exchange RS(T) plus serial number. Score 5 points for each HK QSO, 3 points for each QSO with stations in another country, 1 point for each QSO with stations in same country, and 10 points for QSOs with official HK HQ Stations. The multiplier is the total countries including HK plus HK call areas worked on each band. "HK" means all other Colombian prefixes as well. Final score is total QSO points from all bands x sum of multipliers from all bands. At least 2% of QSOs must be with HK, and at least 10% with stations outside your country. Comprehensive awards include achievement certificates to each station making 100+ QSOs. Send logs postmarked by 31 August to Colombian Independence Day Contest, Apartado 584, Santafe de Bogota, Colombia.

## SEANET DX Contest

CW: Jul 16/17, 0000z Sat — 2400z Sun  
SSB: Aug 20/21, 0000z Sat — 2400z Sun

This annual event is sponsored by the Radio Society of Thailand. The objective

is to promote contacts between amateurs worldwide and stations in the "SEANET" area on 160-10 m (this area includes Southeast Asia, neighbouring oceanic countries, VK, and ZL). Categories are single operator, single and all bands; and multioperator single transmitter all bands. Exchange RS(T) plus serial number starting at 001 on each band. Multipliers are SEANET country prefixes A4, A5, A6, A7, A9, AP, BV, BY/BZ, DU/DV/DX, EP, HL, HS, JA, JD1, JY, KH2, P2, S7, VK1-9, VQ9, VS6, VU, V8, XU, XV, XW, XX, YB/YC/YE, ZK, ZL/ZM1-4, ZL/ZM6, ZL/ZM7, ZL/ZM8, ZL/ZM9, 3B6/3B7, 3B8, 3B9, 4S, 4X/4Z, 8Q, 9K, 9M2, 9M6/9M8, 9N1, 9V.

Scoring is complicated. For QSOs with stations outside the SEANET area, SEANET stations should score 10 points for each QSO on 160 m, 5 points on 80/40 m, and 2 points on 20/15/10 m. For SEANET to SEANET QSOs, count 6, 3, 1 points respectively. Exception: **double** points apply for QSOs with DU/DV/ DX, HS, YB/YC/YE, 9M2/6/8, 9V, V8. Contacts with stations in one's own country are not permitted for contest credit. The multiplier equals the number of SEANET countries worked times 2, plus the number of non-SEANET countries worked (ie DXCC) times 3. The final score equals the total points times the total multiplier.

No update for this year's contest has been received, so it is suggested you send your log to SEANET 94, Eshee Razak 9M2FK, Box 13, 10700 Penang, Malaysia. Include 3 IRCs for results. Logs must be received by 31 October.

## International "Goodwill Games 94" (CIS)

Jul 23/24, 2100z Sat — 2100z Sun.

This contest, sponsored by the Krenkel Radio Club, is open to all amateurs worldwide. Categories are all band only, single and multioperator. Use 160-10 m, exchanging RS(T) plus serial number. Score 3 points per QSO with other continents, and 1 point per QSO with other countries in the same continent (WARC boundaries apply). The rules from the CRC also state "2 points value for each CW QSO", which I imagine means that CW QSOs have twice the points value of phone QSOs. The multiplier is the total R-150-S countries per band, and the final score equals the total all band points times the total multiplier. Awards will go to the top station in each category (and presumably each country), and stations making 94 QSOs will receive the CRC RF Diploma and memorial souvenir (the rules are unclear on whether this includes stations making more than 94 QSOs, which presumably it does). Send logs no later than 22 August to "CRC RF, PO Box 88, Moscow, Russia".

## YO DX Contest

August 6/7, 2000z Sat — 1600z Sun.

In this annual event, everyone can work everyone on SSB and CW. Classes are single operator, single or multiband; and multioperator. Use 3510-60, 7010-40, 14010-060, 21010-060, 28010-060 (CW); 3700-75, 7040-90, 14150-250, 21200-300, 28400-600 (SSB). Exchange RS(T) plus ITU zone (P2=51, VK4/8=55, VK6=58, VK1/2/3/5/7=59). YOs will send RS(T) plus 2 letter county code. Score 8 points for YO QSOs, 4 points for QSOs outside Oceania, and 2 points for QSOs within Oceania. The multiplier equals YO counties plus ITU zones, and the final score equals total QSO points x total multiplier. Send logs, to arrive by 2 September, to RARF, Box 05-50, R-76100 Bucharest, Romania.

## Worked All Europe DX Contest

August 13/14 (CW), September 10/11 (SSB), November 12/13 (RTTY); 0000z Sat — 2400z Sun.

The CW section of this popular European contest unfortunately coincides with our RD contest, however, with some finesse it is possible to mix the two. The object is to work European stations (except in the RTTY section, where anyone works anyone). Bands are 80-10 m. In the contest, avoid 3550-3800 and 14075-14350 on CW, and 3650-3700 and 14300-14350 on SSB. The minimum time of operation on a band is 15 minutes, although bands may be changed within this period, if and only if, the station worked is a new multiplier. Categories are single operator all bands; multioperator single or multi-transmitter (TXs must be within 500 m dia area); and SWL all bands. DX cluster support is allowed. A maximum of 30 hrs is allowed for single operator stations, with up to 3 rest periods (mark them in the log).

Exchange RS(T) plus serial number. Additional points can be gained using QTCs, as follows: After working a number of European stations, details of those QSOs (ie QTCs) can be reported during a current QSO with another European station. In the CW and phone sections, QTCs are sent from non-European stations to European stations. In the RTTY section, QTCs can be sent to any station outside one's own WAC continent. A QTC contains the time, callsign, and QSO number of the station being reported, eg "1307/DA1AA/431" means you worked DA1AA at 1307z and received serial number 431. Commence QTC traffic by sending the QTC series and number of QSOs to be reported, eg "QTC 3/7" indicates this is the 3rd series and that 7 QTCs will be sent. A QSO may be reported only once, and not back to the originating station. A maximum of 10

QTCs can be sent to the one station, who can be worked more than once to complete the quota. Only the original QSO, however, will have points value.

The multiplier is determined from the number of European countries worked on each band (or on RTTY only, the number of DXCC/WAE countries). On 80 m the number of countries is multiplied by 4, on 40 m by 3, and on 20/15/10 m by 2. The total multiplier is the sum of the individual band multipliers. Final score = (QSOs + QTCs) x multiplier.

SWLs log each station only once per band. Logs must contain both callsigns and at least one of the control numbers. Count 1 point for each station logged, and 1 point for each complete QTC received (max 10 per station).

Use standard log and summary sheet format. Include a checklist for more than 100 QSOs on any band, and if more than 100 QTCs have been sent, include another checklist to show that the quota of 10 QTCs per station is not exceeded. Logs can be submitted in ASCII on DOS disk, providing a paper summary sheet is included. Send logs to: WAEDC Contest Committee, Box 1126, D-74370 Sersheim, Fed Republic of Germany. Deadlines are 15 Sept (CW), 15 Oct (SSB), 15 Dec (RTTY).

European countries are: C3 CT CU DL EA EA6 EI EM/N/O ER ES EU/V/W F G GD GI GJ GM GM (Shetland) GU GW HA HB HB0 HV I IS IT JW (Bear) JW (Spitzbergen) JX LA LX LY LZ OE OH OH0 OJ0 OK/L OM ON OY OZ PA RA1-RZ6 S5 SM SP SV SV5 SV9 SY T7 TA1 TF TK UA1-UI6 UR1-UZ6 YL YO YU ZA ZB2 1A0 3A 4K 4N 4U (Geneva) 4U (Vienna) 9A 9H. This list shows the current European CIS prefixes (zone 16), according to recent information from Russia. However, they seem to change almost weekly, so no guarantees are given! All I can say is good luck sorting out all those special R- and U- prefixes which the Russians seem to like so much in contests.

## 15th Keyman's Club of Japan CW

Aug 20/21, 1200z Sat — 1200z Sun.

This contest is designed for CW enthusiasts, and will particularly suit those who are collecting Japanese prefectures for awards. An interesting variation is the inclusion of 6 m. The only category is single operator multiband. Suggested frequencies are 3510-3525, 7010-7030, 14050-14090, 21050-21090, 28050-28090, and 50050-50090. Exchange RST plus continent code (OC), JAs will send RST plus district code. Score 1 point per QSO. The multiplier on each band is the total number of JA districts (max 60). Final score equals total points x total multiplier.

Show duplicate QSOs with zero points, attach a summary sheet showing all usual information, and send the log to "Yasuo Taneda JA1DD, 3-9-2-102 Gyoda-cho, Funabashi, Chiba 273, Japan", to be received by 30 September 1994. ASCII logs on DOS disk are most welcome.

## 1994 REMEMBRANCE DAY CONTEST

This contest commemorates amateurs who died during WWII, and is designed to encourage friendly participation and help improve the operating skills of participants. It is held annually during the weekend nearest 15 August, the date when hostilities ceased in the south-west Pacific area.

It is preceded by a short opening address by a notable personality, transmitted on various WIA frequencies during the 15 minutes immediately before the contest. During this ceremony, a roll call of those amateurs who paid the Supreme Sacrifice is read.

A perpetual trophy is awarded annually for competition between divisions of the Wireless Institute of Australia. It is inscribed with the names of those Australian amateurs who made the Supreme Sacrifice, to perpetuate their memory throughout amateur radio in Australia.

The name of the winning Division each year is also inscribed on the trophy and, in addition, that Division receives a certificate. The winning Division also holds the trophy for the next 12 months, after it is presented at the Annual Federal Convention.

**Objective:** Amateurs in each VK call area will endeavour to contact other amateurs in other VK call areas, P2 and ZL on 1.8-30 MHz (10, 18 and 24 MHz excluded). On 50 MHz and above, amateurs may also contact other amateurs in their own call area.

**Contest Period:** 0800 UTC Saturday 13 August to 0759 UTC Sunday 14 August 1994. Stations are requested, as a mark of respect, to observe 15 minutes silence prior to the commencement of the contest. It is during this period that the opening ceremony is broadcast.

## Rules

- The contest categories are:
  - High Frequency (HF) — for operation on bands below 50 MHz;
  - Very High Frequency (VHF) — for operation on the 50 MHz band and above.
- Within each category the applicable sections are:
  - Transmitting Phone (AM, FM, SSB, TV);
  - Transmitting CW (CW, RTTY, AMTOR, FACTOR, packet, etc);
  - Receiving (a) or (b).

3. All amateurs in Australia, Papua New Guinea and New Zealand may enter the contest, whether their stations are fixed, portable or mobile.

4. Cross mode operation is permitted. Cross band operation is not permitted.

5. Stations may be contacted once on each band using each mode, ie up to twice per band using Phone and CW.

6. On the 50 MHz band and above, 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 previous contact on that band and mode.

7. Multi-operator stations are not permitted (except as in Rule 8), although log keepers are allowed. Only the licensed operator may make a contact under his or her own callsign. Should two or more operators wish to operate a particular station, each will be considered as a separate contestant and must submit a log under their own individual callsign.

8. Club stations may be operated by more than one operator, but only one operator may operate at any time, ie no multi-transmission.

9. For a contact to be valid, numbers must be exchanged between the stations making the contact. The number will comprise RS (for phone) or RST (for CW), followed by 3 figures commencing at 001 for the first contact, and incrementing by 1 for each successive contact.

10. Contacts via repeater (including satellite) are not permitted for scoring purposes. Contacts may be arranged through a repeater. The practice of operating on repeater frequencies in simplex is not permitted.

11. A log of all contest contacts must be kept, and should be in the format shown below.

12. Score 1 point per completed valid contact.

13. A summary sheet for each category entered must be submitted to the RD Contest Coordinator (RDCC) showing the following information:

Category (HF or VHF); Section (Phone, CW, or Receiving); Callsign; Name; Address; Total score.

Declaration: "I hereby certify that I have operated in accordance with the rules and spirit of the contest."

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

14. Only the summary sheets for each category/section entered should be submitted. DO NOT send the contest log unless requested by the RDCC. The log should be retained by the entrant.

15. Forward the summary sheet/s to: "RD Contest Coordinator, A. Petkovic VK6APK, 26 Freeman Way, Marmion, WA 6020". Endorse the envelope "Remembrance Day Contest" on the front. Entries must be forwarded in time

to reach the RDCC by Friday, 9 September.

16. All entrants making 10 contacts or more are eligible for awards. Certificates will be issued according to the Guidelines for Certificate Issue Remembrance Day Contest.

17. The RDCC may, at his discretion, request a log for checking. If your log is requested, ensure it contains the information shown in the example below before sending it.

18. Any station observed as departing from the generally accepted codes of operating ethics may be disqualified.

**Determination of Winning Division:** Scores of VK0 stations are added to VK7. Scores of VK9 stations are added to the mainland VK call area which is geographically closest. Scores of P2 and ZL stations are not included in those of any VK call area, but are considered separately. The scores of entrants located outside their allocated call area will be credited to the call area in which they operate, ie the score of VK5XY/2 will be credited to that of the VK2 Division.

The formula applied to determine the winning WIA Division is: (Total Contacts per Division)/(Total Licences per Division) x (Weighting Factor). The Weighting Factors are calculated such that if each WIA Division were to perform as well this year as during the preceding 4 years (averaged), the result would be a 7 way dead-heat. Consequently, the most improved Division will win the trophy, and also earn a revised and lower weighting factor for the following year.

### Receiving Section Rules

1. This section is open to all SWLs in Australia, Papua New Guinea, and New Zealand. No active transmitting station may enter this section.

2. Rules are the same as for the Transmitting Section, as applicable.

3. Only completed contacts may be logged, ie it is not permissible to log a station calling CQ. The details shown in the example must be recorded.

4. The log should be in the format shown below.

### Example Front Sheet

Remembrance Day Contest 1994  
Callsign: HF  
Section: Transmitting phone  
Callsign: VK1XXX  
Name: Joe Brown  
Address: PO Box 123, Farm Orchard,  
ACT 2611

Total Score: 105

Declaration: I hereby certify that I have operated in accordance with the rules and spirit of the contest.

Signed: J Brown Date: 20/8/94

### Example Transmitting Log

Remembrance Day Contest 1994  
Callsign: VK1XXX  
Category: HF  
Section: Transmitting phone

Date	Band	Mode	Call	No.	No.	Pts
Time	(MHz)			Snt	Rcd	
(UTC)						
0800	14	SSB	VK2QQ	58001	59002	1
0802	14	SSB	VK6LL	59002	59001	1
0805	14	SSB	VK5ANW	59003	58011	1
0807	14	SSB	ZL2AGQ	57004	57003	1
0809	14	SSB	VK4XX	59005	59007	1

### Example Receiving Log

Remembrance Day Contest 1994  
Name/SWL No: L30371  
Category: HF  
Section: Receiving phone

Date	Band	Mode	Calling	Called	No.	No.	Pts
Time	(MHz)				Snt	Rcd	
(UTC)							
0800	14	SSB	VK1XXX	VK2QQ	59001	59002	1
0802	14	SSB	VK1XXX	VK6LL	57002	57001	1
0805	14	SSB	VK5ANW	VK1XXX	59011	59003	1
0807	14	SSB	ZL2AGQ	VK1XXX	58003	59004	1
0809	14	SSB	VK7AL	VK2PS	59007	58010	1

Neil Penfold VK6NE

RD Contest Coordinator

\*PO Box 2175, Caulfield Junction, VIC 3161  
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## Divisional Notes

### VK2 Notes

John Robinson VK2XY

This month's notes contain some *real* amateur radio news for a change.

### Telecom donates more equipment

The arrangement negotiated by yours truly and Roger Harrison VK2ZRH with Telecom late last year for the Institute to receive donations of surplus equipment has again borne fruit. No sooner had the last of the Philips FM828 transceivers been despatched but Telecom donated a very large quantity (by our standards) of printed circuit boards and modules from some of their redundant equipment. This most generous offer was gratefully received on behalf of the Division by Michael Corbin VK2PFQ and your scribe.

The pc boards and modules contain many useful electronic components, such as crystal ovens, low frequency crystals (12 kHz), pot cores, assorted transistors, transformers, etc. To date, we have collected three Econovan loads of these "goodies", along with many pieces of rack mounted equipment.

If you or your club would like to obtain any of these items, please contact the Divisional Office for details. If any interstate clubs are interested and you can

arrange your own transport for many kilos of freight at cheap rates, again please contact the NSW Divisional Office.

### VK3 Notes

Jim Linton VK3PC

#### New Life Member

A quiet achiever, John Ambler VK3WF, was made Honorary Life Member of WIA Victoria at the Annual General Meeting. Those attending heard how John, then VK3DJE, had served on council for three years and made a worthwhile contribution. But, due to work and family commitments, he was unable to continue in that role. Wanting to keep up his involvement in WIA Victoria affairs John became the Outwards QSL Bureau Manager. Many in the membership would not know of him and the efficient and dedicated voluntary work he's carried out for nearly ten years. The Life Membership is in recognition of his outstanding service to fellow radio amateurs, and WIA Victoria.

#### Electric Wireless Wins

Ardent DXer David McAulay VK3EW worked extremely hard to gain his winning 1.4 million point score in the last VK/ZL/O contest. He won the Oceania Single Operator Phone Section of the contest to further add to his record of contest achievements. David received his VK/ZL/O winners certificate at the WIA Victoria annual general meeting. Proudly holding the framed certificate, David told those in attendance how his favourite computerised contest program helped him pull off the victory. The President relayed the congratulations of the WIA Contest Manager, Peter Nesbit VK3APN, who praised the high presentation standard of the winning log. Peter found David's log easy to check, and lamented that was not the case with many of the nearly 300 entered in the contest.

#### Council for 1994-95

All sitting councillors re-nominated for the WIA Victoria Council and there were

no other nominations. The council consists of Peter Mill VK3ZPP, Bill Trigg VK3JTW, Rob Hailey VK3XLZ, Barry Wilton VK3XV, George Hunt VK3ZNE, and Jim Linton VK3PC. Office-bearers, under the constitution, must be appointed at the Council's first meeting, which at time of writing had not been held. However, it was unlikely there would be any major changes to the portfolios held.

### 5/8 Wave — VK5/VK8 Notes

Rowland Bruce VK5OU

Avid readers of this column would notice that it didn't appear last month. It has always been difficult to glean interesting information to fill it and, now I am no longer a Council member, virtually impossible. All being well, from next month you will have another scribe. I must say that within my limitations I have enjoyed compiling 5/8 Wave, and I thank all those who helped by providing copy for me to use, but the time has come for a new face.

The Council members for 1994-95 are:

Garry Herden VK5ZK, President.  
Maurie Hooper VK5EA, Secretary, Membership Secretary.  
Bill Wardrop VK5AWM, Treasurer.  
Bob Allan VK5BJA; Don Wilton VK5KDW;  
Ian Watson VK5KIA; Grant Willis VK5ZWI;  
Jenny Warrington VK5ANW; Colin McEachern VK5KDK; Mark Spooner VK5AVQ; and Phil Pavey VK5VB.

My final duty is to welcome the following new members. May your involvement in Amateur Radio be long and happy.

John Hinsch VK5ZJG; Adolfo Pereira VK5PP; John Edwards VK5TD; J Scheiffers VK5NJO; Brenton Milne VK5BKM; Trevor Munn VK5NDD; J D Woolner VK8ZAO; D M Sumkins VK5KWY; S B Renshaw VK8SR; D J Richards VK5NDR; Henry Kop VK5KUJ; Lionel Lawton VK5OG; Neville Trezise VK5NXB; and Max Strugnell VK5PCI.

The last four are all from the Lower Eyre Peninsula ARC, bringing that club to 100% WIA membership. Well done Port Lincoln!

### VK7 Notes

#### "QRM" Tasmanian Divisional News

Robin L Harwood VK7RH

In the May column I mentioned that Phil VK7PU was the Divisional Awards Manager, replacing Bob VK7NBF. Phil was only handling the "Spirit of Tasmania" Award. All other Divisional awards are handled by Clarrie Hilder VK7HC. His address is 5 Speed Street, Cooe, TAS 7320. Incidentally, the "Spirit of Tasmania" Award has now been issued and dispatched. If you have any queries about this award, contact Phil Harbeck VK7PU at 14 Kennedy Street, Burnie, TAS 7320.

The Hobart Repeater 2 Group has been recently conducting tests on VHF in case they have to shift from their present site. The group also now meets monthly at the Domain Centre on the second Wednesday at 7.30 pm. Don't forget the Domain Centre is open every Wednesday from 12 noon till 5 pm. So, if you are in Hobart, why not pop along and have a cuppa with the gang there.

The Northern Branch of the Tasmanian Division recently elected Joe Gelston VK7JG, as its president, replacing Barry Hill VK7BE, who resigned recently. Barry will continue as SYSOP of the VK7BBS bulletin board and editor of "Network", the branch's bi-monthly newsletter.

The Southern Branch is still looking for a WICEN co-ordinator. We would like to have all three state regions operational, so if you could assist, please indicate at the next Branch meeting.

At the May meeting of the Northern Branch, memories were re-kindled of the Heard Island DXpedition in the late 70s, when Al VK7AN showed a video of the "Anaconda II". It was very interesting and brought back memories of an ex-VK7 operator, the late Hugh Spence who had the call of VK7DS. To hear his voice brought back memories to several in the room who worked with him in the "DCA". Hugh moved to VK6 and his call of VK6 FLYING SAUCERS was heard around the DX nets.

The meetings for July are as follows:-  
Southern Branch: 6 July at 8 pm.  
Northwest Branch: 12 July at 7.30 pm.  
Northern Branch: 13 July at 7.30 pm.

Don't forget the Divisional broadcast is on at 2330 UTC Saturdays on 3570, 7090, and 14130 kHz, plus VHF. The Northern Branch Net, "The Amateur Hour", is rebroadcast on Wednesdays at 0930 UTC on 3590 by Boyd VK7KBL. ar



A proud David McAulay VK3EW accepts his VK/ZL/O winner's certificate from WIA Victoria President, Jim Linton VK3PC.

## How's DX

Stephen Pall VK2PS\*

Propagation is continuing to be generally depressed with a few short openings on the 20 and 15 metre bands. The low bands, 40 and 80 metres, are generally usable for DXing at corresponding sunrise/sunset times, provided one can get used to high noise levels and one can cope with the variety of interference which is typical on the low bands.

You might have noticed that propagation generally is much disturbed in the beginning of each month, then follows a more or less normal pattern for about ten days from the middle of the month, then becomes disturbed again.

The reason for this, according to the experts, is a huge coronal hole which has been growing in intensity for the past several months on the surface of the sun and moves around as the sun rotates on its axis. This coronal hole returns to the visible surface of the sun at approximately the beginning of each month and plays havoc with the bands.

What is the "corona"? One of the outer layers of the sun is called the corona where the temperature rises to about two million degrees Celsius. X-ray photographs taken from spacecraft showed large dark structures called "coronal holes" in which the density and the temperature of the corona is relatively low.

Coronal holes are the sources of high speed streams in the solar wind which, upon reaching the earth, can cause geomagnetic or ionospheric disturbances. Coronal holes have lifetimes of up to 18 months and thus the disturbances they produce tend to repeat at intervals of 27 days, the apparent solar rotation period. So, this disturbed propagation pattern will be with us for some months to come.

### Herschel Island — VY1AU

This island, which lies in the Beaufort Sea, is to be activated for the first time in amateur radio history and the callsign to be used will be VY1AU. Members of the activating team are Bill VY1AU, Brian VY1BE, Richard N6IV/KL, Larry KF6XC and Carl VE8CF.

The group will leave on 23 July from Inuvik in a charter float plane to Herschel where they intend to stay for five days and operate from Pauline Cove, a safe harbour on the east side of the island.

Herschel Island belongs to the Yukon's first Territorial National Park complete with historic old building and graveyards. The

island lies at 69° 60' North and 138° 40' West. It is about 15 km long, about 8 km wide, 183 metres in height and is about one kilometre off the Yukon coast. It is accessible only from mid-May to mid-September by float plane.

The group hopes to have stations operating from a park building. The operating IOTA (Islands on the Air) SSB frequencies will be on 21260 kHz, 14130 kHz, 14260 kHz and some activity on 40 and 80 metres. QSL direct only to John NL7TB.

### RSGB IOTA Contest 1994

The second IOTA Contest will take part from 1200 UTC Saturday, 30 July to 1200 UTC on Sunday, 31 July. The aim of the contest is to promote contacts between stations on qualifying IOTA Island groups and the rest of the world. Bands to be used are 3.5, 7, 14, 21 and 28 MHz on both CW and SSB. IARU band plans must be observed and CW contacts must be made only in the recognised CW end of the bands. No operation must take place on the following sub-band segments: 3560 to 3600 kHz, 3650 to 3700 kHz, 14060 to 14125 kHz, and 14300 to 14350 kHz.

For a contact exchange send RS(T) and serial numbers starting with 001 plus the IOTA reference number if applicable. Contest entries, postmarked 26 August at the latest, should be mailed to RSGB IOTA Contest, c/o S Knowles G3UFY, 77 Bensham Manor Road, Thornton Heath, Surrey CR7 7AF, England. The IOTA

contest is interesting, not only to the "island chasers" but also to DXers as a number of Island DXCC countries will be activated.

### St Peter and St Paul Rocks — ZYO

This was the third expedition to these rocks by the Brazilian Natal DX Group. Unfortunately, this expedition was not as successful as the previous ones as the group ran into a lot of mechanical problems requiring battery operation for quite some time. Also band conditions were not the best during their stay there.

By courtesy of Austin VK5WO I received a detailed report from Karl about the activity. Here are a few details. Four operators used the callsigns ZY0SK (SSB) and ZY0SP (CW). The rocks lie almost on the equator, 0° 56' North and 29° 22' West, 1089 km from Natal which is the capital city of the Rio Grande Do Norte state in Brazil. The rocks are composed of five larger and four smaller rocks and four pinnacles. The highest point on the island is around 35 metres.

The day temperature is 40° to 45° C, which reduces to 20° to 30° C during the night. Rainfall and strong winds occur daily. There is no vegetation or drinking water on the island, only crabs and seabirds. The activity was from 3 to 9 February 1994. They left the mainland with 800 kg of baggage on the fishing boat "Rio Turi". After 70 hours of sea voyage the group reached the island of Fernando Noronha where they had lunch with Andre PY0FF. Five hours later they were on their way again, arriving at the "rock" at 2100 UTC on 2 February.

Activity started on 3 February and



St Peter and St Paul Rocks DXpedition. Tino PT7AA and Ricardo PS7RT making generator repairs.





**St Peter and St Paul Rocks DXpedition. Landing on the Rocks.**

continued, including satellite contacts, until 9 February. The stay on the island was quite difficult due to winds and rain almost every day. Minor injuries, like the sprained ankle of Karl, kept spirits low.

On 6 February the Honda 300 generator stopped. Fortunately they had fully charged batteries which, together with the second generator, which also stopped running due to a leaking fuel tank, kept them operating for 24 hours. In the end they used only batteries which were charged on the fishing boats doing commercial fishing whilst Karl and his friends were DXing on the top of the rocks. Vertical antennas were used for 10, 12, 15, 17, 20 and 30 metres and an inverted "V" for 40/80 metres. Satellite operation was through AO-10 and AO-13, mostly with European stations.

There was no propagation on 6 metres despite 24 hours monitoring on that band. A total of 4934 QSOs were made on the HF bands and 251 contacts via the satellites. According to an average percentage table supplied by the expedition the ratio of the continents worked was North America 46.76%, Europe 38.54%, Asia 6.43%, South America 6.3%, Africa 1.61%, and Oceania 0.36%. The last percentage number shows only 17 QSOs with the whole Oceania region.

The group finished the expedition with a \$US2500 loss due to the difficult financial times in Brazil (monthly inflation rate is 45%) and there were no commercial sponsors. They had to rely on their own financial resources and help from hams, friends and even strangers. The operators were Neto PS7JN, Karl PS7KM, Ricardo PS7RT and Pergentino

PT7AA. QSL managers are PT7AA (CW) and PS7KM (SSB).

### **New CIS/Russian Callsigns**

The spokesperson for the Republic of Belarus DX Club, Serge, has supplied information about the Belarus callsigns. The prefixes currently in use in Belarus are EU, EV and EW, but most amateurs use only EU and EW.

The EV prefix is used for memorial stations. Club stations have suffixes commencing with the letters W, X and Z. Regions of the Republic have different numbers in the prefix. Minsk City is 1, Minsk Region 2, Brest Region 3, Grodno Region 4, 5 is not used, Vitebsk Region 6, Mogilev Region 7, Gomel Region 8, 9 not used, and visiting amateurs 0.

The situation is even more confusing in the Autonomous Region of Karelia which is situated east of the Finnish border. They currently use the series UA1NVA — NZZ (but UA1NA — NZ aren't Karelians, they are old timers in the City of St Petersburg), RA1NAA — NZZ, RA1NA — NZ, RN1NA — NZ, and RK1NA — NZ. The Club stations are the ones in the three letter suffixes where the second letter of that suffix is either W, X, Y or Z. It is of vital importance when having a contact with a former Soviet Union station to ask in what republic it is situated. Write the name of the republic under the callsign on the back of the QSL card when sending cards through the Bureau.

### **Future DX Activity**

- The Gove Amateur Radio Group will attempt, for the "second" time, to land on Truant Island, OC-185, weather permitting on 15, 16 and 17 July.

Operators will be Harry VK8CR, Mac VK8LC and Terry VK8TT. The callsign to be used is VK8TI. QSL to Gove Amateur Radio Group, Arnhem Land, PO Box VK8TI, Gove, 0881, NT. The Group will be operational on 40, 20 and 15 metres.

- Try looking for PY0TUP, Trindade Island, on the "222" net or on John's net (7205 kHz) around 0700 — 0730 UTC. A message was sent to the Trindade station via PS7KM that the VKs are waiting for him.
- Dave KA1NCN will be active from the Hotel Robert on St Pierre et Miquelon from 19 to 25 July (including the IOTA contest) as FP/KA1NCN. The SSB, CW and RTTY operation will be on 10-160 metres including the WARC bands .QSL to AA1AS.
- F50IJ/TT8 was heard during the middle of May on 21 MHz. He will be there for three to four months and hopes to be issued with the callsign TT8PS.
- Canadian amateurs will use XK, XL, XO and VG prefixes from 28 May to 28 July in commemoration of the 50th anniversary of D Day, the landing of the Allied forces in Europe during World War II on 6 June 1944.
- Robert N4GCK has received permission to operate from Yemen as 7O0CW. He intended to be active as from July 94, however the present civil war in that area might stop radio amateur activity for an indefinite period.
- Cliff 5W1GC is active on 7001 kHz and on 10103 kHz around 0900 UTC. QSL to Cliff Luxion, PO Box 1117, Apia, Western Samoa.
- A large group of Dutch operators will be active from Malta between 21 June and 4 July. They all will be issued with 9H3 prefixes. QSL to the operators' callbook addresses.
- A group of nine Canadian amateurs will operate from St Paul Island as CY9CWI from 12 to 16 August, concentrating with large wire antennas on 40, 80 and 160 metres.
- A third group of four USA amateurs, who planned to operate from St Paul Island in July, have now changed their plans. They will now operate from the 19 to 25 September, hoping to have better propagation at that later date.
- As reported by the French Les Nouvelles DX Bulletin, Pierre HB9AMO is active from Angola for 3 months, signing D2/HB9AMO. QSL to his home call.
- V31PA is now active for the next 3-4 months. Look for him on 14150 kHz from 2030 UTC on weekends. QSL to G6MDM.

## Interesting QSOs and QSL Information

- RKOFNA — Vit — 14040 — CW — 0828 — April. QSL to PO Box 75, Sakhalin Island, 693000, Russia.
- HLOCBD — Kka — 14040 — CW — 0907 — April. QSL via the Bureau.
- ZS94E — Don — 14164 — SSB — 0610 — May. QSL to ZS6SA Don Soper, PO Box 2934, Johannesburg, 2000, South Africa.
- J79W — Adriano — 7083 — SSB — 1002 — May. QSL to IK2GNW Adriano Nero, Via Soave 24, I-20136, Milano, Italy.
- 5N0BHF — Franz — 14276 — SSB — 0620 — May. QSL to OE6LAG, Alexander Lenger, Rote Kreuz Str 23, A8662, Mitterndorf, Muerztal, Austria.
- 4N7OAT — Zika — 14012 — CW — 0650 — May. QSL to DC3SZ, Radivoje Vasic, Ludwigstr 5, D-75417, Muehlacker, Germany.
- 4U9ITU — Seppo — 14195 — SSB — 0634 — May. QSL to OH1VR Seppo Sisatto, Lansirinteenk 23, SF-33400, Tampere, Finland.
- 6Y5HN — Nigel — 7080 — SSB — 0748 — May. QSL to Nigel Hoyow, Box 135, Kingston, Jamaica 15, Caribbean.
- YJ0AVH — Vince — 7080 — SSB — May. QSL to VK4CRR, W Horner, 26 Iron St, Gympie, QLD 4570.
- VR6MW — Meralda — 7091 — SSB — 0742 — May. QSL to Meralda Warren, PO Box 27, Pitcairn Island, South Pacific, Via Auckland, New Zealand.
- OA4AWE — Ted — 7008 — CW — 1108 — May. QSL via Bureau.
- 9G1SD — David — 14243 — SSB — 0635 — May. QSL to N0NLP, Jean D Schneider, 5236 E Weaver Ave, Littleton, CO, 80121 USA.

## From Here There and Everywhere

- International Communication Day, ITU Day, was celebrated around the world on 17 May. This year Spain was quite active in operating from all the Spanish call areas, stations using both the EG prefix and the ITU suffix. In Australia AX2ITU was active on the 40, 30, 20, 17 and 15 metre bands with a total of 230 QSOs. QSL to VK2WI.
- If you worked TY1DX and TY2FG, please send your QSL card, direct only, to IK6FHG before the end of August. The logs will be closed after that date.
- The cards for contacts with A35RK should not be sent to Tonga, but to the home call, KK6H.
- The "mysterious" South Pacific operator who worked as VR8B then as ZK2DX operated a "new call", ZL9A

mid-May, CW only, on the lower edge of the 40 metre band. The response from the Japanese stations was overwhelming. He/she did not reply to calls from VK. Save your money and IRCs.

- Paul W8GIO advises that he is the QSL manager for Dave C91W and also for a new resident Thai station, HS0ZBJ and also for C9RDM who became C91S after 6 March 1993. Incidentally, C91S has now returned to the USA.
- Financial restrictions in the Russian budget have caused 4K1C, the Vostok Antarctic Research station, to close down. Vostok had the reputation of being the coldest place on Earth, -54° C, or 129°F below zero, on 21 July 1983.
- C9RJ, who became C91J after 6 March 1993, now has a new manager. The former manager, W8GIO, has transferred the logs to the new manager N5FTR.
- The ARRL DXCC 1993 yearbook lists the following VK amateurs as at 30 September 1993. Mixed: VK5WO 361, VK3YL 360, VK6HD 350, VK3DYL 330, VK9NS 330, VK1DH 328, VK5QW 328, VK9NL 325, VK2FH 322, VK3AKK 320. Phone: VK6RU 372, VK5MS 371, VK4LC 364, VK5WO 358, VK6HD 349, VK6LK 347, VK3DYL 330, VK9NS 330, VK5QW 328, VK1ZL 327, VK9NL 324, VK1DH 322, VK3AKK 301, VK2AGA 292, VK6VS 283, VK6LC 138. CW: VK9NS 330, VK6HD 326, VK9NL 306, VK1DH 245. A total of 18 VK callsigns for 30 listings. Congratulations.
- Brian VK5FV tells me that he received his TI9JJP QSL card for the November 1992 activity after he sent his second card in November 1993. He received his reply in February 1994 from TI2AOC. On the second occasion he used a larger envelope and a smaller one for reply, unfolded of course. He believes that this arrangement would have rendered detection of cash or IRCs much more difficult. He believes, also, that an isolated envelope arriving at a time when the QSL manager was not deluged with a flood of similar requests would also have been to his benefit. Incidentally, Jose TI9JJP has now organised a more reliable address for QSLing for his March 1994 activity. Send your card to Jose Artinano de Pastora, Office Box Acct 321, CR, 3900 NW 79th Ave, Suite 564, Miami FL-33166, USA. Do not use this address for cards to TI9CF which still go direct to TI2CF.
- An Australian radio amateur, whose name and callsign is known to me and who now lives in the Philippines, is on

"home leave". After reading about Bill's (VR2BZ) experiences (*Amateur Radio* April 1994) he commented as follows: "Just a few days prior to my departure to VK, I was presented with a "permission to operate class A" permit after 12 months of frustrated effort. Whilst there is VHF equipment around (in the Philippines), more often than not illegally imported and used, there is almost no new or quality HF gear available, resulting in very high prices being asked for very worn and well used HF transceivers. Illegal operation in the VHF bands is common. Everyone, licensed or not, has a handheld. Even the amateurs themselves "pollute" this band by using directional aerials with base equipment to conduct business deals between the islands and/or cities. So they are, consequently, in no position to complain when Government Departments conduct, as they do, their communication in this 2 metre band allocation. It is accepted as the "done thing". So ends the comment of our expatriate.

- It is with regret I report that Jack VK2CX is now a silent key. Jack was a great supporter of the ANZA net and the "14222" net. He did not enjoy good health in the past 12 months.
- "QST", the official monthly magazine of the ARRL, will be sold from selected newsstands in the USA as from 1 June 1994.
- Tom VK4OD reports that, after many tries over the years to receive a QSL card from Romeo for the Sept 1991 contact with 1S0RR, he just received a card sent by Alyona Stepanenko, XYL of Romeo, from the address Box 110, Sevastopol, 335011, Ukraine. To me, the W8BLA route (see *Amateur Radio* May 94) looks safer and speedier.
- The address of Tod Z31ET is Box 44, Kocani, 92300 Macedonia.
- The recently deceased Lloyd Colvin W6KG, a DX legend in his own time, had one of his life assurance policies assigned to the ARRL and the proceeds of the policy, more than \$150,000, became available to the League. It was Lloyd's intent that the income generated by this endowment, to be called the Colvin Award, would be used to strengthen the international friendship through DXing. The administration details of this award will be known in the near future.
- The DXCC advised that, as from 1 August 1994, the application form for the DXCC award has to be the form numbered MSD-505 (194) or a later number. Please do not use the older

forms as they lack spaces needed for critical information used for processing at League headquarters. Bear in mind that these forms, ie the DXCC booklet with some other vital information (price US\$2.00) are posted to you by the DXCC by surface mail. Therefore, calculate for a delay of approximately 7 weeks.

### QSLs Received

HL9HH (1M op), YZ9Z (1Y DLIFDV), T93M (1Y DLIFDV), VK9XO (5M VK4CRR), VK2IMD (3W VK2KAA), 8P9DX (8W VE3ICR), D2EGH (4M CT1EGH), V31UO (2M DL7UJU).

### Thank You

Thank you to all of you who kept me informed and who assisted me in compiling these notes, especially to VK2DSL, VK2KCP, VK2KFU, VK2OE, VK4AAR, VK4OD, VK5FV, VK5WO, VK8LC, KI4RU, PS7KM, W8GIO, and the following sources of information, *QRZ DX*, *The DX Bulletin*, *The DX News Sheet*, The W6GO/K6HHD QSL Managers list and IPS Radio and Space Services.

\*PO Box 93, Dural, NSW 2158  
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## WIA News

### WIA to seek primary status for amateurs on UHF-SHF bands

The Institute is to make representations to the Spectrum Management Agency seeking primary or exclusive status for amateurs on the bands 420 MHz through 10.5 GHz on which the amateur service only has secondary status at present.

A motion at the recent annual Federal Convention, adopting the annual report of the Federal Technical Advisory Committee (FTAC), noted particularly a recommendation that "...action be taken to seek exclusive/primary status on the stated bands."

In his annual report, the FTAC Chairman John Martin VK3KWA noted that 100 MHz of spectrum (on the 13 cm band) will shortly be lost to the Multi-point Distribution Service (MDS). Action should have been taken to protect the Amateur Service's interests in the band more than five years ago when it was foreshadowed by the regulatory authorities that amateur privileges on the band would be curtailed, John Martin said in a separate, more lengthy report.

"The WIA must take a more alert and active approach to the problem of protecting these bands," John Martin said in his report. His third recommendation was: "That the WIA develop plans and policies to protect all shared amateur bands from future threats.

Specifically, that the WIA seek to obtain exclusive or permitted status for amateurs in a portion of each shared band from 420 MHz to 10.5 GHz."

The principle is that it would be better to have exclusive use of segments of these bands rather than share the whole of the bands as a secondary service, with the possibility of them being allocated to some new primary service that may arise in the future as we have seen happen time and again over the years.

This and other issues will be pursued during regular discussions between the Institute and the SMA.

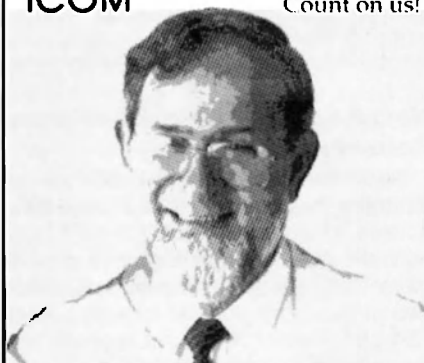
The issue of the Amateur Service's status on the UHF-SHF bands was also canvassed by the Institute's International Regulatory Coordinator, David Wardlaw VK3ADW, at the Federal Convention.

In his report to the Federal Convention, David noted that: "The Amateur Service has no primary allocation between 440 MHz and 24 GHz in any region. With the introduction of new services and the pressure for additional allocations to make room for them, it is inevitable that our five bands between 1 GHz and 24 GHz will be under scrutiny.

"The WIA will need to take a close look at the situation of these microwave bands and provide input to the IARU on the matter."

ICOM

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# "VK3LZ calling!"

The latest snippets from Icom.

### SPECIAL OFFER!

A limited quantity of IC-W21A dual band handhelds were snapped up by dealers at special prices recently. Call me and I'll let you know where to find them!

### IC-820H ARRIVES

The dual band base unit for satellite use has now arrived. Call for a brochure or watch out for it at forthcoming conventions.

### LINEAR AMPLIFIER

The 4KL is the top of the range linear amplifier. Normally priced at \$10,800, one unit is available at a discounted price. Call me or your nearest dealer for details.

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# Packet World

Grant Willis VK5ZWI\*

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## New Packet Network Software Releases

Depending on where you are in Australia, it is possible that you will have access to either a Rose or NETROM network switch. These switches provide more intelligent packet repeating facilities. Two of the more popular systems, Rose v3.4 and TheNet X-1J have recently had the following updates included.

### Rose Version 3.5

Rose Version 3.5 will be available soon, which includes a bug fix for TCP/IP which will allow any size datagram to be passed through the network when using the AX25 fragmentation protocol available in the NOS programs. This means you could have a 10 kbyte TCP/IP packet with only one TCP and IP header passed over a Rose network.

Also coming in the new version is support for 64 k EPROMS. This will allow the Rose application software, which is currently manually loaded into the switch by the repeater manager, to be permanently available in the EPROM. This includes the CONFIG, INFO, USERS and HEARD applications. The 64 k EPROM size support is currently only for a TNC-2 although support for the other Rose capable TNC types will be added in future versions.

The next item to be worked on once v3.5 is completed is the NODE Application (I am not sure if that is its real name) which will provide a Netrom style interface to the Rose switch.

Another new feature being added to ROSE, which we hope will appeal to TCP/IP and TPK users, is the ability to transport UI frames across the network. The ROSE Network will setup a Virtual Circuit to pass the first UI frame, and leave the VC up until a timer expires. All further UI frames across that path will travel, as far as ROSE is concerned, along that VC. However, to the outside world (TCP/IP users, and others) it will appear that the network is passing unconnected UI frames (datagrams).

If anyone has comments for this (and other) ROSE development, Tom Moulton can be reached via the Internet as w2vy@ram.com.

### TheNet X1J Release 2 Packet Node Software

This release includes several new gadgets for X1J node operators and users.

The node now supports four analogue input ports:-

Port 1 is for the previously announced Deviation meter

Port 2 is for the new Signal strength meter addition

Ports 3 & 4 are general purpose input ports.

Other changes include a fix to the BBS, ALIAS and DXCLUSTER commands, support for the TexNet "\*\*\*\* LINKED to" syntax, the ability to change the user's command prompt list and the ACL function has had a feature added to speed it up.

A menu driven windowing patch utility with context sensitive help is included. Utilities for printing passwords in a sysop-friendly manner and a utility for changing the help text are also provided. Modifications for the MFJ1278C TNC for the bank switching which allows a 64 k EPROM to be used are now also included.

## Packet BBS Message Authentication Developments in the USA

The FCC, in consultation with the ARRL, have recently changed the requirements for packet radio BBS mail handling in the United States. I received the following from the US and reproduce it here for everyone's information.

Report No. DC-2582, ACTION IN DOCKET CASE, April 4, 1994  
COMMISSION AMENDS RULES CONCERNING MESSAGE FORWARDING SYSTEMS IN THE AMATEUR SERVICE: (PR DOCKET NO. 93-85)

The FCC has relaxed the amateur service rules to enable contemporary message forwarding systems to operate at hundreds of characters per second while retaining safeguards to prevent misuse.

A message forwarding system is a group of amateur stations participating in a voluntary, cooperative, interactive arrangement where communications from the control operator of an originating station are transmitted to one or more destination stations via forwarding stations, which may or may not be automatically controlled.

Currently, the control operator of each station is held individually accountable for each message retransmitted, resulting in unnecessary content review and delays. The American Relay League, Inc (League) stated that the obligation of the

control operator of the first forwarding station should be the establishment of the identity of the station originating the message. Only when this is not done should these control operators be held accountable for improper message content. Also, there is currently no central supervisory authority in an ad hoc amateur service digital network, making these unsupervised systems easy targets for misuse by uncooperative operators and non-licensees. Moreover, the Commission said that it could be difficult to establish after the fact that a particular VHF station originated a fleeting high speed digital transmission. For these reasons, the Commission said there must be on-going oversight of the system and the control operators of the first forwarding stations are in the best position to provide such oversight.

Therefore, the Commission will hold accountable only the licensees of the station originating a message and the license of the first station forwarding a message in a high speed message forwarding system. The licensee of the first forwarding station must either authenticate the identify of the station from which it accepts communications on behalf of the system, or accept accountability for the content of the message.

The Commission also clarified that the station that receives a communication directly from the originating station and introduces it into the message forwarding system is the first forwarding station.

The League and the Colorado Council of Amateur Radio Clubs suggested that the Commission substitute the word "simultaneously" for "instantaneously" in the redefinition of a repeater. The Commission concurred and adopted this modification.

The Commission believes that these rule changes will enable contemporary high speed message forwarding systems to operate as their designers intended, while retaining the minimum safeguards necessary to prevent misuse.

## HF Packet Keyboarders: An Update

Following my article in last month's edition of Packet World, there were some frequency changes implemented to the Keyboarder Groups on HF Packet. You will now find many of the keyboard stations operating on 14.102.9 MHz while there are some still remaining on 14.096 MHz. There are also some user access BBS stations experimenting on 10.145 MHz that would benefit stations particularly in the SE of the continent. These are VK5HB and VK7AD.

One thing that is disappointing to see

is some HF packet users have taken to clogging up 10.149 MHz which is primarily used for mail and bulletin forwarding. Their recent activities have dramatically slowed packet mail flow between some eastern and western states as well as to Tasmania. I wish to encourage all HF Packet User stations to access some of the new keyboarder frequencies in preference to the mail forwarding channels. Clogging up the mail forwarding disadvantages not only the BBSs directly but hundreds of packet

users around the country as their mail is delayed.

### The Packet Doctor

If you have a query that you would like to ask the packet doctor, why not put pen to paper and send it to:

The Packet Doctor  
GPO Box 1234  
Adelaide, South Australia 5001

Queries will be selected and included in future editions of Amateur Packet World.

### Conclusion

I have held over the discussion on mail forwarding till next month due to time constraints with work and study commitments. I am also interested in hearing from any Packet BBS SysOps using the CLIVE database software about which I hope to include some information in the August edition. I am also preparing some feature articles on using Rose and NET/ROM including some usage examples. \*C/O GPO Box 1234, Adelaide 5001

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## FTAC Notes

John Martin VK3KWA, Chairman, Federal Technical Advisory Committee\*

### 13 cm Band Plan — "Plan B"

The suggested new band plan for 2400 MHz has been revised in response to comments and information received from VK3UM, VK4KZR, VK5MC and ZL2SX. The main change is that the weak signal segment will have to move higher in the band due to satellite operation below 2401 MHz.

There is some concern about equipment bandwidth and the need for new crystals but we have no choice in the matter. In many areas it may be possible to stay on 2304 for some time, but for DX operation the only option will be to go above 2400 MHz where everyone will still be able to operate.

The proposed "Plan B" is shown in the diagram. The major change is a move for the weak signal segment to 2424 MHz, as used in other Region III countries. Repeater and link segments use 20 MHz offset on 2426 and 2446 MHz. FM simplex segments are located close to the repeater and link outputs.

The upper ATV channel can be used for any mode but it is suggested that the lower channel be AM only. It should be possible for MDS equipment to receive

ATV on this lower channel with little or no modification.

Any comments would be welcome as soon as possible.

### 23 cm Band Plan — 1275 MHz Radars Closing Soon

Some 1275 MHz radars have already closed and it is assumed that we will soon regain the use of the 1270 — 1280 MHz radar guard band. Several enquiries have been received about the situation.

At present we are waiting to hear from the SMA on when it will be possible for us to start "moving in". When the guard band becomes available, several changes can be made to the band plan.

One is to add an extra weak signal segment alongside the satellite band at 1270 — 1271 MHz. This will follow the international trends towards moving terrestrial operation closer to the frequencies used by satellite operators.

Another change, although not related to the radars, is the growing amount of FM simplex activity around 1290 MHz (within the 1285 — 1292 MHz ATV channel). It is not likely that this operation will shift, and the result will be interference problems.

It is proposed to get around the problem by moving the band plan FM simplex segment to 1290 MHz, where the existing activity is.

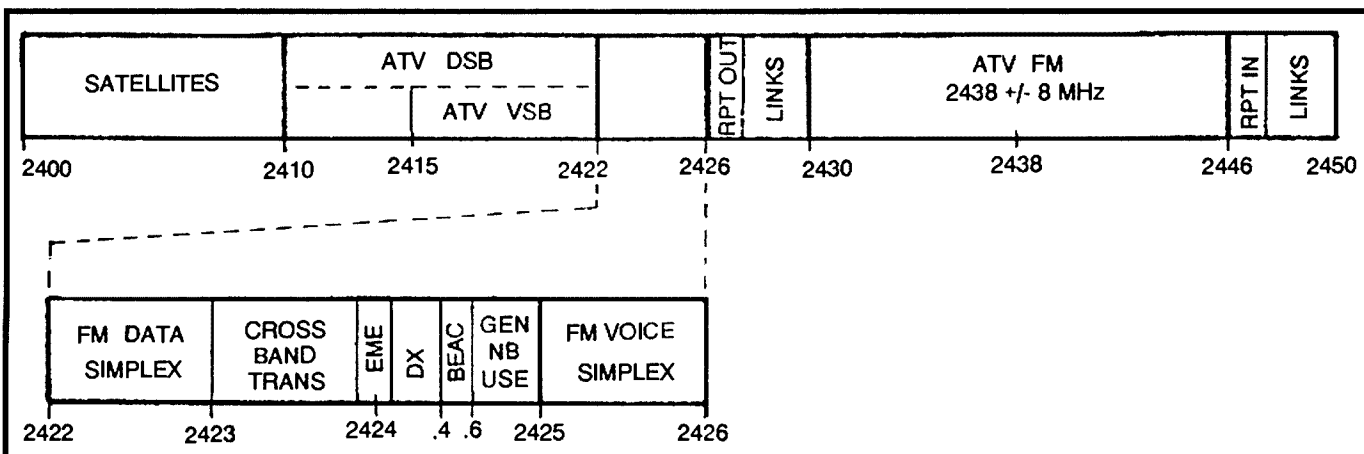
I feel that it is reasonable to make this change now while the level of activity is still fairly low. However, we cannot keep on changing the band plan every time a new group comes on the air and picks a frequency. It would help a great deal if everyone familiarised themselves with the band plan and avoided causing clashes with other people.

The major change relating to the closure of the 1275 MHz radars will be that we can choose whether to change over to the international standard 20 MHz repeater split. If this were done, the repeater and link outputs would move down to 1271 — 1274 MHz. Combined with moving the FM simplex segment to 1290 MHz, this would clear 1274 — 1290 MHz for all ATV modes (VSB, DSB or FM).

This change is NOT certain and will NOT happen before repeater licensees have been consulted. I have written to Technical Advisory Committees and other groups in all states with a detailed proposal and a request for their comments. If anyone else would like to receive a copy, please contact me via the WIA Federal Office and ask for a copy of FTAC paper 94/0508.

\*PO Box 2175, Caulfield Junction, VIC 3161

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## Over to You — Members' Opinions

All letters from members will be considered for publication, but must be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.

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### WIA Frequency Plan

Recently I helped a student to study for his regulations exam, and during our research we came across the Spectrum Management Agency's amateur frequency plan (see SMA brochure RIB 71, revised Dec '93, Appendix B).

It then struck me that, in accordance with the Radiocommunications Act 92, anyone who had the appropriate certificate could transmit legally anywhere in the frequency bands listed using any mode he wished subject to the footnotes listed for each band. For example, he could use Morse code anywhere in the bands 3.5 MHz to 30 MHz, restricted only by the footnotes.

We know that this is not so, for a gentleman's agreement exists, sponsored by the WIA, which recommends that certain modes be used on certain band segments only, in an attempt to satisfy all operator requirements.

This is fine in theory, but how does the novice know of these plans? They are published in the WIA Call Book and in occasional issues of *Amateur Radio* magazine. Less than 50% of amateurs are members of the WIA and would have easy access to these publications. How do other amateurs know of these plans? Perhaps by word of mouth, radio clubs, on air information, etc.

This, to my mind, is a very unsatisfactory state of affairs.

To remedy this situation I suggest that the WIA may consider issuing a booklet on amateur frequency plans something like other ham booklets which are readily available through commercial channels, eg 1000 Questions for Novice candidates, Novice Electronics, etc.

It could be a simple black and white booklet costing about two to three dollars with the frequency bands shown horizontally rather than as in the RIB booklet. This would be cheaper than buying a Call Book just to find out about amateur frequency plans.

Furthermore, it would seem appropriate at a time of SMA licence review to ask the Agency to include a reference to the WIA Frequency Plan. Maybe something more could be done to advertise Amateur Frequency Plans widely and make them more cheaply and readily available to everyone.

**Quinton Foster L30720**  
77 Church Street  
Beaumaris VIC 3193

*(Some years ago the WIA published a cheap Band Plans booklet, but there was little interest from amateurs. It seems that amateurs, WIA members or not, preferred the full band plans to be published and updated each year in the WIA Call Book which is available to all amateurs from both WIA and commercial outlets. Ed)*

### Limiteds on Ten

We are constantly being told that we should be members of the WIA because, among other things, the WIA is the only body which can sensibly negotiate with the licensing body on behalf of us amateurs. One would like to believe that there is some truth in this but an opinion I have often heard expressed during my 37 years as a licensed amateur is that WIA "negotiations" have frequently been pussyfooting and weak.

We amateurs expect that now the rights of the individual are being recognised and discriminatory practices outlawed our WIA negotiators can approach the licensing authority secure in the knowledge that we have as much right to the use of the radio spectrum as anyone and more right than most. Our use of it is concerned directly with the quality of life rather than commercial interest which is the main motivation of other users. This means that there is now no reason for WIA negotiators to be over-ridden by the SMA.

Right? Good. Now consider the following. There is a move to allow limited licensees some access to the ten metre band. I assume this was initiated by the WIA and some may consider it a big deal, particularly since the WIA has never done anything for limited licensees before. *(The Limited licence was a WIA initiative in the first place. Ed)* The essence of amateur radio resides with limited licensees. Big deal? Certainly not if the modulation mode is to be restricted to FM as reported.

Now I cannot believe that such a ridiculous idea was actually proposed by the WIA so I must assume that it is another case of our "negotiators" having their proposal for normal limited licensee operation on ten metres once again quashed by the SMA!

This is simply not acceptable. Everybody knows that FM is not real amateur radio operation and to accept such a restriction is to further the demeaning and trivialising of amateur radio which is already advanced on repeaters.

If the WIA cannot negotiate the use of ten metres for limited licensees with the same conditions as apply to their operation on other VHF bands amateur radio would be better served to have the idea dropped altogether.

DO IT PROPERLY OR NOT AT ALL!!!

**G J McDonald VK2ZAB**  
59 Wideview Road  
Berowra Heights NSW 2082

### Kit Problems

The article by Alex Edmonds VK3BQN on "Home Brew/Kit Building" in May's *Amateur Radio* does great discredit to homebrewers and kit builders.

In a hobby in which we are trying to foster the "build it yourself" approach and not to be "black box" operators, it was an article I felt was not necessary.

As an oldie and home brewer from way back I believe we want to encourage amateurs and SWLs to have a go at "rolling their own". In regard to Alex's comments on things not being correct, I was always told that the only way to learn was by correcting one's mistakes!

The ultimate in kitsets was the Heathkit company in the USA, unfortunately no longer in the business. Any oldies who had experience with a Heathkit know what I mean. I believe they started many building their own amateur radio station. No other kit suppliers came up to their standards. Take note Mr Dick Smith, Jaycar, and others.

*Electronics Australia* has an article on the availability of kits both here and overseas last year, well worth referring to. I have never had any trouble importing kits from overseas, provided you do not get greedy and want more than one at a time. A builder should choose the kit project whose complexity suits his/her technical ability. I like the way Dick Smith rates his kits in this way.

So don't let Alex's article put you off "home brew". As I said at the commencement of this letter, you only learn by correcting your mistakes!

73 and keep your soldering irons hot....

**Steve Mahony VK5AIM**  
19 Kentish Road  
Elizabeth Downs SA 5113

*(Alex was only making fun of kit building, Steve, not home brew in general, where one finds one's own components by all sorts of devious means! Perhaps his real point is that we should be more self-confident and not so dependent on the kit supplier to include every tiny item. Ed)*

### Military Radio

I read with interest Colin Mackinnon's article "A Russian Military Aircraft Radio" in May's *Amateur Radio*. Having seen the

particular set "in the flesh", before it disappeared into a shed (or was it a well?), I can vouch for its similarity to an SCR522.

Unfortunately Colin's opening paragraph is not quite correct. The original set was the TR1143, which was built in the UK. This set appears outwardly to be an SCR522, but the innards are quite different. The two types were designed to be interchangeable as whole units, hence the un-American sockets on the front of the SCR522.

When the 522s were built they had dual identification plates, the black plates having the US Army Signal Corps ident and the red plates the Air Ministry ident. The TR5043 is the UK ident number for the transceiver known more commonly as

the SCR522. (The receiver BC624 is also R5019, the transmitter BC625 is also T5017 — depending on where you are!)

While Colin claims the 522 was still in use in the 1950s, I can remember a truck arriving in my front yard about six years ago containing the purchases from a government auction, which included a quantity of just released 1942 version SCR522s. I'll leave you to work out who was driving the truck!

Ian O'Toole VK2ZIO  
Castle Hill Military Radio collection  
222 Old Northern Road  
Castle Hill NSW 2154

(The TR1143 was still in use as a "ship to air" radio when I spent some "sea time" on board the British submarine, HMS Telemachus, in 1955. Prod Ed)

## Callsign Review

The SMA is currently reviewing the amateur radio callsign system within Australia. This review will be covering such issues as usage of callsigns throughout Australia, visiting overseas amateur callsigns and the continued use of special callsigns beyond specified time limits.

If you have thoughts or ideas on a system or enhancement, please let your Federal Councillor know them, and also let others know by writing a letter to *Amateur Radio* for publicity in these columns.

Neil Penfold VK6NE  
2 Moss Court  
Kingsley WA 6026  
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# International Amateur Radio Union Monitoring Service (IARUMS) — Intruder Watch

Gordon Loveday VK4KAL\*

Unconfirmed reports of intrusions into the amateur satellite frequencies have caused great concern. The satellites in question are RS10 and 11. The intruders use 2 metre equipment on the "uplink" when the satellite footprint is over the Indonesian Islands. The "downlink" operates in the 10 metre band, which is where the intruders have been heard. More information is sought, so the problem can be brought to the appropriate authorities. Downlink frequencies are 29.360 and 29.400 MHz.

A noticeable falling off of a number of Government RTTY and CW intruders in the 7, 14 and 21 MHz bands has been noticed. Whether this is permanent or seasonal, time will tell! Those noticeably down are UHF3 on 7014 and 7048, UMS on 21284, 7008 and 7139 (not heard often

in VK), and UID80 on 14170 MHz.

From our own region we have an influx of Indonesian intrusions, causing considerable problems for us in the 40 m band, mainly from 7.000 to 7.055 MHz, both on USB and LSB between 0000 and 1600 UTC.

Keep in mind that information is still needed. For those not familiar with the language (most of us) a few clues may help. The language most used is a lower standard of Bahasa Indonesian, but they do use some amateur codes, eg 73, 88, YL. The following may be of assistance. Cangulan = office, place of work. Kibek = house, place of stay. TM = pirate hams (from teman = friend). Cewek = YL. Rambut panjang = YL (long haired one). Perangkap = transceiver/radio. Buka perangkap = switch the transceiver on.

Koma = QRT (from comma, to continue later). MD = to bathe (from mandi = to bathe). Turun = QSY down. Naik = QSY up. Lanjut = go ahead. Jumpa di darat = QSO eyeball.

I now quote part of a letter from a Norwegian observer, LA7NK, to the Region 1 co-ordinator about "obscene language from intruders". From time to time we have all come across this bad practice. I quote, "This is not a new problem for the Monitoring Service and the manner in which to deal with these people is extremely difficult to define. I would submit that we as self disciplined ethical amateurs would, I believe, be contravening the conditions of our licence if we actually engage in direct on-air communication with unlicensed operators. We should not demean ourselves by entering into discussion or swearing matches with these people. Certainly the aggravation is not worth the while. I realise that each amateur must treat the matter in the manner he so wishes, but if I may offer my personal opinion, listen and try to obtain as much information as possible. These operators frequently give names and addresses and sometimes telephone numbers. With this information I am happy to write to the national society of the country concerned asking them to take appropriate action. We are using our frequencies by right so never lose your temper. It only brings you down to their level. They are simply not worth it."

\*Federal Intruder Watch Co-Ordinator, Freepost No 4  
Rubyvale QLD 4702 or VK4KAL@VK4UN-1  
ar

From Region 1 comes a report of some regulars, many familiar to VK observers:

Freq	Baud shift	Mode	Location	Details	Admin
7010.00		CW	MNR Moscow	"UMS"	Rus
7038.90		CW	Arkhangelsk	"S" beacon	Rus
7039.00		CW	Moscow	"C" beacon	Rus
7039.00		CW	Odessa	"D" beacon	Ukr
7048.00		CW	Nr Moscow	UHF3	Rus
7080.00	40.5/500	8181			Rus
14000.00		CW	Coast stn Haifa	"4XZ"	Isr
14340.00	50/850	Bd1.5Stb	Beijing	"BAF47"	Chn
18072.00	81/503	8181			Rus
18101.50	100/170	Sitor A	Jakarta	MFA Jakarta	Ind
21284.00	50/248	Bd1.5Stb	MNR	"UMS"	Rus
21327.00		CW	Naval HQ Vladivostock	"RJS"	Rus
21369.10	50/993	Bd1.5stb	Pyongyang		Kre

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## Pounding Brass

Stephen P Smith VK2SPS\*

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Continuing on from last month on nets, we will focus our attention onto VK3COD, last of the Victorian nets. This net came about when VK3DES and VK3DXE (now a silent Key) helped to train Len VK3COD to overcome that 10 wpm barrier and achieve full call status under the "condition" that, when he passed his exam, he would establish a "net" and help others to obtain their licence. A trial period of 12 months was proposed and some 14 years later, Len VK3COD is still teaching Morse.

This I believe to be the longest single-handed-run net in Australia. I should also mention that Steve VK3CSD has assisted Len over the years by keeping the net active whilst Len, a member of the EMDRC, attended committee meetings.

The net is run nightly from 1030 UTC to 1130 UTC on 28.340 MHz and 147.425 MHz. At one stage the net Morse was sent using a hand key but now is computer generated. The passages are of plain text with numbers and punctuations. They range in duration from four to five minutes in length, at speeds ranging from five to thirteen wpm, thereby catering for all levels of operators.

At the completion of a passage the text is read back and corrections made. This continues until the net's closure at 1130 UTC.

I would like to say well done Len on a magnificent job and something to be very proud of.

We will now move from Victoria to South Australia. VK5WI/VK5AWI. This net was originated in early 1975 by Jack VK5JT who was asked by the Divisional Council to organise a Morse practice net. The original panel consisted of Jack VK5JT, Norm VK5NM, Jim VK5LU, Ian VK5LI, Rob VK5RA and Leith VK5LA. The abovementioned six operators had to cover seven nights, with the seventh night being covered by one operator on a six week roster.

The first session went to air on 16 June 1975 under the call VK5WI, which was changed to VK5AWI in 1979.

Ron VK5AAC and Emlyn VK5AEJ, whilst not members of the original panel, date back almost to the inception, and are still involved with the net to this day. The current panel, as of May 1994, consists of Ivan VK5HS who has the Monday session, Kingsley VK5AKN on Tuesday, John VK5ARK on Wednesday, Doug VK5GA on Thursday, Ron VK5AAC on Friday, Emlyn VK5AEJ on Saturday and Trevor VK5BWE on Sunday. Kingsley

VK5AKN took over from Wayne VK5AC as Morse co-ordinator in April this year.

The net commences at 1030 UTC on 3550 kHz Sunday through to Sunday. Speeds range from four to fourteen wpm. Text with numbers and punctuation is sent again at four to six minutes duration. Corrections are made at the end of each passage.

After the Saturday session, Emlyn VK5AEJ usually sends for an extra 30 minutes at high speed (20-30 wpm) to cater for the more advanced operators.

We will now leave South Australia and look at the Queensland nets. Slow Morse sessions in VK4 are co-ordinated from the Townsville Amateur Radio Club. At the beginning of 1982 seven clubs participated, covering each night of the week. The clubs involved were Townsville, Rockhampton, Mackay, Dalby, Gladstone and Redcliffe.

When Sally VK4SHE took over from Bill VK4XZ in 1990, the number of clubs involved in Morse transmission had decreased somewhat in strength, the reasons being lack of volunteers, lack of interest, and volunteers being discouraged when no one called in on the session. Sound familiar?

Attempts to recruit new volunteers has met with limited success. At present the number of stations sending practice Morse are VK4WIT Townsville, on Monday at 0930 UTC on 3535 kHz; VK4WCH Central Highlands on Wednesday at 1000 UTC on 3535 kHz; VK4AV Gladstone area

on Thursday at 0930 UTC on 3535 kHz; and lastly VK4WIS Sunshine Coast on Sunday at 0930 UTC on 3535 kHz.

3535 kHz is the WIAQ standard Morse practice frequency. It should be noted that VK4WIT and VK4WIS are clubs with a roster of operators. VK4WCH and VK4AV are single operators with the occasional stand-in.

Nigel VK4AV runs his net by introducing himself and explaining how the net will proceed. He transmits text of about five minutes duration at five wpm and at the completion of this he goes straight into seven wpm. At the completion of seven wpm he reads back the last two passages and any corrections made. He then proceeds with 10 and 12 wpm following the same guide lines. At the completion of the evening session, call backs are asked for so Nigel can get an idea of the number of operators on frequency, and to answer any questions they may have regarding the evenings activities.

Looking at the other clubs, they usually commence with identification, followed by three to five minute segments at speeds of 5, 8, 10 and 12 wpm with read backs after each segment.

The TARC supplies Morse tapes of different speeds to operators who wish to use them for the evening sessions, or the operators can use other means ranging from hand key and keyer combinations to computer generated Morse.

This concludes Morse Practice Nets. If anyone requires a print out (will be in column format) just drop me a SAE. I will submit NSW Nets at a later date as I am currently chasing up further information on the subject.

\*PO Box 361, Mora Vale, NSW 2103

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## Spotlight on SWLing

Robin L Hardwood VK7RH\*

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HF conditions lately have been extremely poor and I have been mostly concentrating on frequencies on the lower end of the spectrum. It has been rather surprising with a new country logged for the first time. It is Mexico and is on 6185 kHz at around 0730 UTC. The modulation was good and the signal level varies from day to day. The call sign of the station is "Radio Education" and is based in Mexico City. It may be operated by the Ministry of Education. I noted bilingual tourist promotion spots plus I/D announcements in English and Spanish. The music is very distinctive, being quite different from the Andean folk music styles one hears from other Latin American stations.

Another station from Central America has also been well heard here. It is "Adventist World Radio — Costa Rica". This religious station is on 6150 kHz and I heard English programming at approximately 0800 UTC. Ironically, the particular program I noted, "Your Radio Doctor", was produced in Sydney. The signal level was fair to good, yet this is not surprising as station "TIWR" is utilising the same 50 sender and channel that "Radio Impacto" used in the 80s. The latter broadcast to the Nicaraguan Contras and to Panama, reportedly being backed by the CIA. When the political climate altered in Central America, the station became redundant and Adventist World Radio purchased the sender,



moving it to another site within Costa Rica. They also moved most of their existing operations from Honduras.

Swiss Radio International in Berne recently axed the popular "Swiss Shortwave Merry-go-Round" with the two "Bobs". I have heard this program, off and on, ever since I commenced shortwave listening almost 40 years back. The program catered for the casual listener or active DXer who had technical queries and wanted simple explanations. I did note on Internet that there were some who were trying to drum up support for the program's retention, but I think SRI are locked into satellite programming and delivery and wish to phase out HF broadcasting. SRI programming to European targets is almost exclusively now on satellite transponders for rebroadcasting over cable systems or domestic stations.

However, other international broadcasters are not so sure that there will be more listeners to satellite transponders than on shortwave, despite the technical advantages of the newer systems. There are, significantly, an increasing number of national administrations who have banned or placed restrictions on the private installation of satellite dishes. This is primarily aimed at TV. Also, as Jonathon Marks of "Media Network" points out, mass-produced commercially available satellite radio receivers have not been developed or promoted, compared to the millions of shortwave receivers now available at a fraction of the cost of a satellite receiver/decoder.

Also some program makers are questioning the wisdom of placing satellite feeds to domestic stations for rebroadcast. The host station can edit or suppress items down the system. Several international broadcasters also have had difficulties, particularly in Paris, getting foreign language programming to air, because of the insistence of French administrators for broadcasts to be exclusively in that language. I believe that the BBC World Service is no longer on Paris FM stations, nor the VOA English output. Therefore, it is clear that shortwave broadcasting will continue for some time and won't disappear overnight, as some have maintained.

The US Congress recently passed legislation to create "Radio Free Asia", similar to "Radio Free Europe/ Liberty". It will broadcast to China, Cambodia, Vietnam, North Korea and Burma. No commencement date has been announced yet but I expect that we will note it by the presence of jammers on the frequency. "Radio Free Asia" will be

independent of the existing VOA operations.

I have received a request from Don Graham VK6HK, who has been approached by Radio Station WEWN in Birmingham Alabama. This shortwave broadcasting station is looking for monitors in this region of their signals. This station is part of the Catholic Eternal Word Television Network, founded by Mother Angelica Rizzo. Programming is in a variety of languages and consists of devotional readings, prayers and discussions. It is best heard here on 9350 kHz from 0700 UTC onwards. Other frequencies in parallel are 9370 and 7465 kHz but not all the time. If you are able to assist, I suggest that you write to:- Don Graham VK6HK, 42 Purdum Road, Wembley Downs, WA 6019. The address

of Radio WEWN is PO Box 100234, Birmingham AL 35210, USA.

Those SWLs who mainly concentrate on Utility Services, may be interested to know that the 9th edition of "Ferrell's Confidential Frequency List" will be published shortly in the USA. Well-known DXer Arthur Cushen has notified me that limited copies will be available later this year at a cost of \$50.00. Further details from Arthur Cushen, 212 Earn Street, Invercargill NZ.

Well, that is all for this month. Don't forget, if you have any news, you can contact me at the addresses below. There will possibly be also an e-mail facility available soon. All the best of listening and 73.

\*54 Connaught Crescent, West Launceston TAS 7250  
VK7RH@VK7BBS.LTN.TAS.AUS.OC  
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## Technical Correspondence

*All technical correspondence from members will be considered for publication, but must be less than 300 words.*

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### Standing Waves

Bill Rice is right. Antennas and feedlines are at once the most interesting, and the most misunderstood, of all of the aspects of ham radio.

In his "Update" in May *Amateur Radio*, Bill seeks to clarify some of the several misconceptions contained in John Gazard's original article "Tuned Feeders and Multiband Antennas" (April *Amateur Radio*).

Bill's first two points are well phrased but, in the third, he states, "The ATU . . . giving a better match to the transmitter . . . Thus, by optimising the power transfer, it will change the amplitude of the standing waves on the feeder and on the antenna."

The beginner is likely to read that as meaning, "change the amplitude of the standing wave RATIO"; but, of course, the ATU cannot do that.

It would have been better to say, "The ATU will optimise power transfer into the system, but cannot affect the standing wave ratio, NOR THE POSITION OF THE STANDING WAVES IN SYSTEM".

Al Rechner VK5EK  
PO Box 12

Old Noarlunga SA 5168

*(Agreed, completely, Al. Most of our problems are caused by ambiguous wording, aren't they? Ed)*

### Good News for Experimenters

Good news for genuine amateur radio experimenters. The two terminal oscillator (TTO) has been rediscovered, by *Radio*

*Rivista* in March '93, G6RO in March '94 *Radio Communication* and brought to VK attention by VK3GI in May '94 *Amateur Radio*.

The relative merits of the TTO and the Dip Meter can be debated at length but I recommend every amateur radio lab should have both.

The TTO and the DM, coupled with a knowledge of passive circuit analysis, and assistance from a scientific calculator, enables an experimenter to do all the things expected of a Noise Bridge, a Q Meter, an RF R-X Bridge, et al, and many things those expensive items can never do.

I suggest you all now get crackin' and build yourself the TTO described in May *Amateur Radio* and learn how to use it to measure both lumped and "in circuit" L & C; then you will be in a position to question the pronouncements of experts and gurus awarded those titles by credulous admirers and sponsored by some magazine editors.

Lindsay Lawless VK3ANJ  
Box 760

Lakes Entrance VIC 3909

*("Guru" means "teacher", Lindsay. What did George Bernard Shaw say about teachers? Ed)*

### Technical Correspondence

Further to the discussion on the theory for termination of antenna transmission lines and the "facts" as presented in *Amateur Radio*. These should not be the major concern of the Editor and

associated Technical Editors when the article is published under the byline of the author!

These "facts" are the concern of those who reply in **Technical Correspondence** to promote healthy debate and interest by, and for, the readers.

If technical articles are edited to be strictly in accord with established facts then nothing will be published that has not been in texts for the past fifty years. Also the voluntary staff will be swamped checking detail and probably rewriting or even plagiarising the information!

Another example of these "facts" is the true power represented by the peak amplitude of a SSB signal. That argument, and the meaning of the terms used, has been controversial ever since Art Collins publicised the transmission method over 40 years back.

If the article is topical, of reader interest, and well presented then publish and, rest assured, errors will very soon be notified whether by author or by editor.

As in this case the misunderstood areas of amateur radio theory are best highlighted in **Technical Correspondence**. There is no need for apology by the Editor except for production errors.

Keep up the good work Bill.

**William A McLeod VK3MI**  
42 Capon Street  
Chadstone VIC 3148

## More on the Z Match Antenna Coupling Unit

I rate the September 1993 version Z match as the one most likely to provide a perfect match and maximum possible power transfer from transmitter to antenna system input. That episode is probably the final, so it might be informative to review some of the foundation basics of matching. These were rarely referred to during progress of the development.

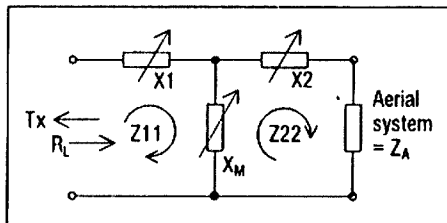
The purpose of a matching unit, transmatch, or aerial coupling unit (never an aerial tuning unit) is to enable the best power transfer between the transmitter and the aerial system input. The best might not be the maximum possible because of unit limitations.

Referring to Fig 1, a typical matching unit system consists of two circuits coupled by a reactance.

Circuit 1 connects to the transmitter output.

Circuit 2 includes the complex impedance/admittance present at the input of the aerial system.

The coupling reactance can be a capacitance, an inductance, or, as in the Z match, the mutual inductance between coils.



### Notes:-

**(i) X1 and X2 include transformer leakage inductance if a transformer is used. It also includes any shunt reactance.**

**(ii) A pi/T transform of a pi coupler will show the same conditions apply to that type of coupler.**

**(iii) The basic statement is  $R_L = z_{11} - (XM)^2/z_{22}$ .  $z_{11}$  with circuit 2 open and  $z_{22}$  with circuit 1 open.**

If maximum possible power transfer and a perfect match is required, then:-

(a) The input must present to the transmitter a resistance equal to the design resistance (usually 50 Ohms).

(b) The output impedance/admittance must be a conjugate match of the aerial system input.

Those essentials can only be achieved by:-

(i) adjustable reactance in both circuits or,

(ii) adjustable reactance in circuit 1 or 2 and adjustable coupling reactance.

The 9/93 version nearly meets those requirements. It provides circuit 1 adjustment and limited coupling adjustment.

Adjustable reactance in circuit 1 or circuit 2 or the coupling can load the transmitter with unity power factor but not maximum possible power transfer.

The VK3TO circuit provides three adjustments; circuit 1 and 2 and coupling. If I were to use the unit I would include the circuit 2 adjustment. It makes a perfect match much easier to achieve and there is no need for switched inductances, which appears to be the main object of the exercise.

To determine the maximum possible power transfer condition, a SWR measurement between transmitter and matching unit is not enough; it is also necessary to measure the power available at the aerial system input, which is not possible with the instruments available to most amateurs. The solution is to ensure that the matching unit provides the necessary two adjustments and preferably the third.

The basic principles are included in amateur texts, even the ARRL Handbook, but these are usually presented as unconnected facts. I hope the above provides the missing connections.

**Lindsay Lawless VK3ANJ**  
Box 760  
Lakes Entrance VIC 3909  
ar

## Silent Keys

*Due to space demands obituaries should be no longer than 200 words.*

The WIA regrets to announce the recent passing of:-

J T (Jack)	EVANS	VK2CX
J R F (Ray)	PETITH	VK2PH
A G (Alan)	EDGE	VK2TAE
P E (Peter)	LINDEN	VK3BX
A (Alan)	REDENBACH	VK3MCR
F (Frank)	PRESTIPINO	VK4NFP
E G (Eddy)	JENNINGS	VK5NEH
C J (Charles)	FRISBY	VK7CF

### Peter Linden VK3BX

With deep regret we record the death of Peter Linden VK3BX who died in a tragic accident on May 14. He had just completed an installation at Alice Springs and went sight-seeing. While taking a photograph, Peter slipped, fell down a gorge, and was killed.

Peter Linden was first licensed in the 1950s and was primarily interested in HF. His home-brew gear was admired by fellow radio amateurs for its construction and immaculate appearance. Working

with AWA and STC he got excellent grounding on valve VHF radio, and later Motorola and Telstat.

At the time of his death he ran his own company called Long Distance Communications.

Peter Linden also found time to volunteer his services and knowledge to both WIA Victoria, and the Westernport Safety Council. He was the inaugural chairman of the WIA Victoria Repeater Committee. Peter established the first Melbourne VHF repeater VK3RML, originally on top of Housing Commission flats in inner suburban Carlton. He instigated the original planning with the Victoria Police for the WICEN repeater at Mt Macedon in Central Victoria. As foundation member of the Westernport Safety Council, Peter planned its vast communications system, now the biggest and most disciplined volunteer marine network in Australia. He was responsible for the original negotiation with the then

Postmaster General's Department to set up the 27.880 MHz inshore marine service.

Peter Linden VK3BX, a genuine, friendly and hardworking individual, will be sadly missed among the ranks of radio amateurs. On behalf of the WIA Victoria Council, and members, sincere condolences to his widow, Maggie, family, and close friends.

Peter Mill VK3ZPP

### Bert David Clark VK4KU

It is with sadness that we announce the passing of Bert David Clark VK4KU at Pindara Hospital on Wednesday, 23 March, just short of his 78th birthday. He was cremated at Allambe, Nerang on Friday, 26 March.

Bert was born in Tasmania. In 1939 he enlisted in the AIF and saw service in Africa and the Pacific. After the war he joined the PMG in Tasmania and obtained his amateur licence with the call of VK7BC. He was transferred to the HF Monitoring station at the Melbourne suburb of Mont Park. His call became VK3KU. He then became OIC of the new location at Kilmore 60 km north of Melbourne. In 1969 Bert was put in charge of doing work for NASA and Bert and staff received an award of excellence from them.

Om retirement in 1981, he headed to Lower Beechmont, a high spot in from Southport. His call became VK4BKU, and eventually VK4KU. He joined the Gold Coast Amateur Radio Society, the Southport RSL, the Rats of Tobruk Association, and Old Timers" clubs.

Bert is survived by his wife, Pegg, three sons and their wives plus six grandchildren.

Bill Harder VK4YAL

### Alan Redenbach VK3MCR

The death is announced of Alan VK3CMR on Wednesday, 25 May at Gippsland Base Hospital.

Alan was well known on the various 80 metre nets and more recently on the local 2 metre repeater VK3RMM, as his beloved 2 metre set accompanied him on the increasing trips to the Repatriation Hospital. Alan was a man who enjoyed life and had a real sense of fun. He was also a man who thrived on a challenge, and never viewed his loss of sight as a handicap. Everything in his workshop had been modified by himself to conquer a difficulty that had been presented.

A more recent project was the construction of a six element 2 metre beam, and the finish and workmanship was outstanding in every detail.

Alan, while sadly missed by all, will not be forgotten because of the hope and determination he showed, and the infectious optimism he dealt out so freely.

Jeff Daly VK3MFR

### Charles Frisby VK7CF

The North West Branch of the Tasmanian Division of the WIA was dealt a sad blow on 1 June 1994 when Charles VK7CF became a silent key.

Charles was known to many as "Seven Charlie Fox" and during his fifty years in

radio helped many in their effort to gain proficiency in Morse code, the mode he enjoyed immensely. He was born in Gympie, Queensland on 23 March 1907. As a nine year old he had experienced the loss of his mother and the loss of his foster parents of "in excess of eight years". At the age of 14 years he joined the Navy as a boy seaman and eventually reached the rank of leading signalman. In 1923, at the time of the police strike in Melbourne, he met his wife to be. They married at North Brighton on 4 June 1928.

He was called to escort Kingsford-Smith across the Tasman Sea during that historic flight and, as a result of his posting in Sydney, was one of the first people to walk across the new Sydney Harbour bridge. Charles was discharged from the Navy in 1932. He spent some time around Neerim, Romsey and Melbourne, before taking the post of signalman at Macquarie Heads on the west coast of Tasmania in 1940. That job involved maintenance of navigation lights around the general area.

He also served as a power station operator at Lake Margaret, then later as an electrician at Queenstown. From 1952 until 1977, when he retired, saw him serving as an electrician at the public hospital at Burnie.

He was a long time member of the WIA and a very active amateur radio operator. Charles VK7CF is QRT but we will remember him as a fellow amateur and a gentleman.

Clarrie Hilder VK7HC  
ar

## VHF/UHF — An Expanding World

Eric Jamieson VK5LP\*

All times are UTC

At last, the list you for which you have been waiting!

### Countries First Worked from Australia on 50-54 MHz

STATION	DATE	TIME	COUNTRY	CLAIMED BY	MODE	STATION	DATE	TIME	COUNTRY	CLAIMED BY	MODE
3D2SM	20/05/90	1112	Conway Reef	VK4FXX (VK4FP)	SSB	9L1US	08/10/90	0107	Sierra Leone	VK4BRG	SSB
3D2AG	23/03/92	2256	Rotuma Is	VK2QF	SSB	9M2DQ	26/09/59	0628	Malaysia	VK6BE	am
4S7AVR	29/03/89	0740	Sri Lanka	VK6KXW	SSB	9M8STA	13/08/89	1246	Eastern Malaysia	VK8ZLX	SSB
4X11F	25/10/91	1312	Israel	VK8AH	CW	9N1BMK	02/05/79	1100	Nepal	VK8GB	SSB
5B4AZ	25/10/89	1259	Cyprus	VK8AH	CW	9Q5EE	06/04/91	2348	Zaire	VK3OT	CW
5H1HK	04/04/89	0555	Tanzania	VK8AH	CW	9V1ES	17/11/89	1330	Singapore	VK8ZLX	SSB
5W1AU	05/04/82	0232	Western Samoa	VK4ZNC (VK4CV)	SSB	9Y4LL	10/04/82	2241	Trinidad	VK8GB	SSB
5Z4CS	28/03/82	1503	Kenya	VK8GB	SSB	A22BW	26/04/91	0730	Botswana	VK6JJ	CW
6W1QC	12/11/90	0035	Senegal	VK4BRG	SSB	A35JT	10/04/82	2210	Tonga	VK4ZNC (VK4CV)	SSB
6Y5FS	24/03/90	2044	Jamaica	VK2BA	SSB	A45ZM	04/04/90	1159	Oman	VK8RH	CW
7Q7JA	27/03/91	0616	Malawi	VK6RO	CW	AH8A	19/04/81	2237	American Samoa	VK2VC (KH8)	SSB
8P6JW	18/04/89	0031	Barbados	VK2QF	SSB	BV2DQ	30/08/91	1312	Taiwan	VK6JQ	CW
8R1AH	02/04/89	0044	Guyana	VK8RH	SSB	BY5RA	28/09/84	1247	China	VK8GB	CW
9H1BT	25/03/89	1047	Malta	VK8RH	SSB	C21AA	20/12/70	0105	Nauru	VK4ZRW (VK4IT)	SSB
9K2ZR	03/04/92	0849	Kuwait	VK6JQ	CW	C6ANY	21/04/92	2240	Bahamas	VK2QF	CW

STATION	DATE	TIME	COUNTRY	CLAIMED BY	MODE	STATION	DATE	TIME	COUNTRY	CLAIMED BY	MODE
CE0DFL	24/04/90	0009	Easter Is	VK4ZJB	SSB	LX1SI	27/10/90	0946	Luxembourg	VK6JQ	CW
CE3/KB6SL	14/10/90	0102	Chile	VK4BRG	SSB	OA8ABT	23/10/89	1330	Peru	VK8AH	SSB
CN8ST	20/10/91	1000	Morocco	VK8RH	SSB	OE5PAM	01/03/91	0917	Austria	VK6JQ	CW
CO2KK	16/04/89	2200	Cuba	VK2BA	CW	OH1YP	25/02/89	0907	Finland	VK6KXW	SSB
CR9AJ	24/09/78	1305	Macao	VK8GB (XX9)	SSB	OK1DIG	29/01/91	1136	Czechoslovakia	VK6PA	SSB
CT1LN	03/03/90	1013	Portugal	VK4RO	SSB	ON7YD	28/10/90	1101	Belgium	VK6JQ	CW
CU3/N6AMG	27/11/91	0923	Azores	VK2QF	CW	OZ8RW	19/10/90	0950	Denmark	VK8ZLX	SSB
CX4HS	16/04/92	1355	Uruguay	VK4FP	SSB	P29GR	27/12/74	2325	Papua N Guinea	VK4AAL	SSB
DL8HCZ	12/10/89	0902	Germany	VK8GF	SSB	P43AS	26/03/89	2130	Aruba	VK4KJL	SSB
DU6/WB5LBJ	11/10/77	1250	Philippines	VK8GB	SSB	PA0RDY	12/10/89	0822	Netherlands	VK4ZJB	SSB
EA8/G3JVL	02/11/89	1255	Canary Is	VK8RH	SSB	PJ9JT	02/03/89	2134	Curacao/Bonaire	VK4PU	SSB
EI6AS	12/10/89	0850	Ireland	VK8ZLX	SSB	PY0FF	26/03/92	0243	Fernando/Noronha	VK6PA	SSB
EK0JA	20/04/92	0344	Asiatic Russia	VK8ZLX (UA0)	SSB	PY5CC	20/04/91	2350	Brazil	VK7IK	CW
ES6QB	15/02/92	0957	Estonia	VK6PA	SSB	PZ1AP	30/03/89	0037	Suriname	VK4BRG	SSB
F9DI	14/10/89	0905	France	VK8ZLX	SSB	S21ZE	12/10/92	1413	Bangladesh	VK8RH	CW
FK8AX	15/12/78	0929	New Caledonia	VK3AMK	SSB	SM6PU	25/02/89	0922	Sweden	VK6KXW	SSB
FM5WD	11/04/90	2247	Martinique	VK8ZLX	SSB	SV1DH	17/10/89	1335	Greece	VK8RH	SSB
FO0CI	13/03/92	0111	Clipperton I	VK4DDC	SSB	T3AZ	17/03/80	0855	West Kiribati	VK4RO (T30)	SSB
FO8DR	12/04/81	2055	Fr Polynesia	VK2BA	CW	T20AR	15/12/87	1042	Tuvalu	VK2XJ	SSB
FW/W6JKV	23/03/90	2216	Wallis & Futuna	VK4ZJB	SSB	T32AB	15/03/82	2145	East Kiribati	VK2DDG (VK4DDG)	SSB
FY5AU	30/03/89	0138	French Guiana	VK4BRG	CW	T33JS	19/05/89	1033	Banaba Is	VK4BRG	SSB
G4FJK	20/03/89	0833	England	VK6KXW	SSB	T70A	20/10/91	0929	San Marino	VK6JQ	CW
GD3AHV	28/02/90	1005	Isle of Man	VK6HK	CW	TG9AWS	28/03/89	2328	Guatemala	VK2BA	SSB
GI4OPH	12/10/89	0909	Northern Ireland	VK8ZLX	SSB	TI2NA	26/03/81	0222	Costa Rica	VK2DDG (VK4DDG)	SSB
GJ4ICD	12/10/89	0846	Jersey	VK4DDG	SSB	TL8MB	03/04/91	2323	Central Africa	VK6JQ	CW
GM4GDT	28/02/90	1001	Scotland	VK6HK	CW	V31PC	19/04/89	2145	Belize	VK4ZAZ	SSB
GU2HML	01/11/89	0934	Guernsey	VK4JH	CW	V51E	25/04/91	0740	Namibia	VK6KXW	SSB
GW3LDH	12/10/89	0857	Wales	VK8ZLX	SSB	VE7AOQ	06/04/59	0505	Canada	VK2ADE (VK4QM)	am
H44DX	26/04/79	1222	Solomon Is	VK8GB	SSB	VK0AQ	19/11/93	1208	Antarctica	VK30T	SSB
HB0AHB	13/10/91	0931	Liechtenstein	VK6PA	CW	VK0WW	10/12/72	0725	Macquarie Is	VK2NN	SSB
HB9SJV	03/01/92	0822	Switzerland	VK6PA	SSB	VK2BKE	05/01/75	0103	Lord Howe Is	VK3AMK (VK9L)	SSB
HC5K	26/03/89	0348	Ecuador	VK2MQ	SSB	VK2WJ	20/01/47	1000	Australia	VK7NC	CW
HH7PV	19/09/89	2113	Haiti	VK2BA	SSB	VK9NT	01/06/58	0755	T New Guinea	VK4ZAZ	SSB
HI8WPC	02/04/89	2237	Dominican Repub.	VK2BA	SSB	VK9XK	29/11/51	0720	Papua	VK4BT	am
HK0/W6JKV	01/04/92	2352	San Andreas	VK2QF	CW	VK9XT	10/03/80	1305	Christmas Is	VK8GB	SSB
HK1JXV	19/03/90	0221	Colombia	VK4ZNC (VK4CV)	SSB	VK9ZM	13/01/89	0438	Melish Reef	VK2BA	SSB
HL9WI	04/09/69	2307	South Korea	VK4ZAZ	am	VK9ZM	22/11/78	0925	Willis Is	VK2BNN (SK)	SSB
HP3XUH	25/01/89	0221	Panama	VK4ZNC (VK4CV)	SSB	VK9ZNG	27/11/75	1325	Norfolk Is	VK2ZRU	SSB
HS0B	10/11/91	0335	Thailand	VK30T	CW	VK9ZYX	22/11/81	1301	Cocos-Keeling Is	VK8GB (VK9C)	SSB
I4ICL	15/02/91	1015	Italy	VK4FP	SSB	VP1MT	13/04/79	1020	Honduras	VK5RO (HR1)	SSB
IS0AGY	10/11/91	0935	Sardinia	VK4FP	SSB	VP2MO	01/04/89	2226	Montserrat	VK2BA	SSB
J73PD	03/04/89	2116	Dominica	VK4KJL	SSB	VP2VGR	17/03/81	2301	Br Virgin Is	VK30T	CW
JA1AHS	22/01/56		Japan	VK4NG (SK)		VP5D	25/03/89	2145	Turks/Caicos Is	VK2QF	SSB
JD1ADP	05/05/79	1215	Ogasawara	VK8GB	SSB	VR2BC	18/12/49	0638	Fiji	VK2AH (3D2)	am
JD1YAA	31/03/84	0832	Minami Torishima	VK8GB	SSB	VR6JJ	13/03/93	0605	Pitcairn Is	VK4BRG	CW
JT1CO	28/09/91	0637	Mongolia	VK6HK	SSB	VS2DQ	19/04/58		Malaya	VK6ZAV	am
KA2CW	12/03/60	0705	Japan/US forces	VK4PU	am	VS5DX	26/11/80	1335	Brunei	VK8GB (V85)	SSB
KC6IN	23/03/80	1215	East Caroline Is	VK8GB (V63)	SSB	VS6HK	05/05/78	0839	Hong Kong	VK4RO	SSB
KC6SZ	14/10/79	1247	Yap — W Car Is	VK4JH	CW	VU2JPN	17/03/81	1328	India	VK8GB	SSB
KG4SM	25/03/89	2148	Guantanamo Bay	VK2QF	SSB	W6PUZ	14/03/58		USA	VK4HD (SK)	SSB
KG6/K7HIX	22/03/69	2320	Guam	VK4ZAZ (KH2)	am	XE1FU	01/05/59	0030	Mexico	VK3ALZ	am
KG6RO	24/09/78	1158	Saipan/Mariana	VK8GB (KH0)	SSB	XF4L	14/04/89	2140	Revilla Gigedo	VK2QF	SSB
KH1/VK9NL	03/04/88	0150	Howland Is	VK4TL	CW	XU0UN	23/02/93	1356	Cambodia	VK8AH	SSB
KH3AB	28/03/81	1040	Johnston Is	VK8GB	SSB	YB0X	01/05/79	0835	Indonesia	VK4RO	SSB
KH4AE	28/02/91	0715	Midway Is	VK4BRG	SSB	YJ8KM	01/11/76	0017	Vanuatu	VK4ZSH	SSB
KH5/W6HHT	17/04/81	0040	Palmyra/Jarvis	VK5RO	SSB	YO7VJ	21/10/91	0812	Romania	VK8RH	SSB
KH6/W7ACS	26/08/47	0310	Hawaii	VK5KL	am	YS1ECB	06/04/84	0134	El Salvador	VK2DDG (VK4DDG)	SSB
KH7/KH6JEB	23/03/90	0644	Kure Is	VK4ZNC (VK4CV)	SSB	YU3GO	12/10/91	1010	Slovenia	VK6JQ	CW
KL7/WA4TNV	13/03/79	0305	Alaska	VK4PU	SSB	YU3EA	03/03/91	1006	Yugoslavia	VK6JQ	CW
KP2A	26/03/89	2237	Virgin Is	VK30T	SSB	YV5/DL3ZM	18/03/81	2147	Venezuela	VK4RO	CW
KP4AAN	13/04/81	2130	Puerto Rico	VK2DDG	SSB	ZA1ZJ	27/10/91	0743	Albania	VK6JQ	CW
KR6AK	05/04/59	1205	Okinawa	VK4ZAZ	am	ZB0T	22/10/91	1001	Gibraltar	VK8RH	SSB
KX6AF	20/03/58		Marshall Is	VK4NG (SK)		ZC4MK	31/10/90	0902	Sov/Bases Cyprus	VK6RO	CW
KZ5NW	04/03/79	2318	Canal Zone	VK4RO	CW	ZD7BW	21/03/81	0051	St Helena	VK4TL	CW
LA3EQ	25/02/89	0811	Norway	VK6WD	SSB	ZD8TC	20/03/82	0037	Ascension Is	VK4RO	CW
LU8OB	28/04/58		Argentina	VK4NG (SK)		ZF2DN	28/03/81	2112	Cayman Is	VK2BA	CW

STATION	DATE	TIME	COUNTRY	CLAIMED BY	MODE	STATION	DATE	TIME	COUNTRY	CLAIMED BY	MODE
ZK1WL	28/03/89	2158	North Cook Is	VK2QF	CW	ZL9TPY	21/01/90	2304	Auckland Is	VK2VC	SSB
ZK1WZ	28/03/89	2232	South Cook Is	VK4ZAZ	SSB	ZM8OY	10/12/85	2158	Kermadec Is	VK4PU (ZL8)	SSB
ZK2RS	29/12/82	0231	Niue	VK2BA	SSB	ZP6XDW	28/04/91	2257	Paraguay	VK4BRG	CW
ZK3KY	13/10/90	2347	Tokelau	VK4BRG	SSB	ZS6LN	18/05/81	0831	South Africa	VK6WD	CW
ZL2MF	21/12/47	0750	New Zealand	VK5GF (SK)	am	ZS9H	25/04/91	0808	Walvis Bay	VK6KXW	SSB
ZL4OY/C	19/06/83	0349	Chatham Is	VK2BA (ZL7)	SSB						

The above list represents 173 countries which have been worked from Australia on 50-54 MHz. The four megahertz span is emphasised because up to 1963 Australian amateurs had the use of 50-54 MHz then, for the next 25 years, 52-54 MHz after which we were again allowed the use of 50 MHz. Australia is the only place in the world to have worked a seventh continent, Antarctica, on six metres.

During my research I found a number of amateurs had, in fact, made contacts as early as 1936 when using the band known as Five Metres (56-60 MHz). (These have not been included as they may be the subject of a separate article in due course). The use of that band continued until the outbreak of World War II in 1939 and for a short period after the end of the war until we were granted the use of 50-54 MHz.

In presenting the above list there are a number of points which you should keep in mind.

1. The list is as accurate as I can make it given the information presented to me. It is inevitable that there will be the odd error. If so, I regret such an occurrence but, after all, I am only human! I also know of several more countries which have been worked by amateurs who have declined to be included. The list spans a period of about 47 years and some of the early operators are now silent keys (SK) so we do not have access to their logs.

2. It is inevitable that, as a result of publishing this list, someone will turn up an earlier entry. Preliminary lists were published three times requesting amendments; those which came were duly noted. As I have spent many months and considerable expenditure preparing the list I don't propose entering into correspondence or discussions on what might be changed in the list. What is presented is it. Finish!

3. In a number of instances only a minute or two have separated operators working the same station. With the publication of a call sign I do not think that it should be seen as a "personal glory" to have been the first to work a station or country. In many cases it was your good luck. What is important is that the country was worked and, if by more than one operator around a particular time, as was usually the case, then that makes good

insurance for the working of a country. However, someone has to be first!

4. I found that a QSL card endorsed "First VK station to be worked from ....." was not always reliable. It may well have been that particular operator's first working of a VK station but the risk always remained that another station, unknown to him at the time, may have done so earlier, sometimes by many days. I was forced into making the best decision in such circumstances.

5. I have a mountain of information at my disposal so, where necessary, I have referred to QSL cards to verify dates and times. I have also consulted overseas lists and operators to ensure the highest degree of accuracy and it has been to my satisfaction to see that claims made here have also appeared in comparable lists from other countries.

6. The list is in accordance with the ARRL DXCC Countries List. Where deleted prefixes are included the present prefix is included in brackets after the working station's call sign. Those countries/areas entering the six metre scene in later years are not faced with the problems of deleted countries. The names of the countries have been included to differentiate between areas, eg 3D2 can be Fiji, Conway Reef, Rotuma Island etc, all three of which are included in this list.

7. New Guinea proved to be a problem area but I was eventually able to get it right. The details were the subject of a paragraph in my notes in a previous issue of *Amateur Radio*. Simply stated, the dates in the ARRL DXCC List are not correct!

Summing up, I congratulate the Australian amateurs for their dedication and perseverance when making difficult contacts. Many of those made did not come easily, particularly at distances of 15,000 km and beyond. I think we can be pleased with our tally of 173 countries. We are not ideally situated geographically for contacts into many areas of the northern hemisphere but we do have an advantage when it comes to the Pacific Ocean island nations, most of which we have worked, so I suppose it does average out.

Difficult areas have always been Africa and South America but we seem to have a representative sample from each

continent. The fact that Australia is a large country (4000 km wide) means that sometimes contacts were made to certain countries only from the eastern or western areas of our country, not from both parts, so at times this has been to our overall advantage but not necessarily so to any one operator. This can be seen by the large number of northern hemisphere operators who have attained DXCC but Australia has one only, VK3OT.

### Six metres

Ron Seager **VK4ZJR** from Cairns sends a list for inclusion in the Standings List and comments that six metres has been relatively quiet except for JA openings most days between 0900-1030. KH6 beacons are often heard between 0400-0640 but despite strong signals there are no answers to calls. Occasionally the band opens south to Brisbane and VK2.

Can anyone assist Ron with a QSL route for FO8QT, YU3ZU, BT4YHY, JH6VAS/KH3 and VR6JJ?

**Nev VK2QF** worked sixteen JAs on 9/4 around 0630.

**R Elms VK3CN** will shortly return to the Philippines and, in addition to HF operating, would like to be active on six metres. We look forward to hearing from him when such operation is possible.

**Gil VK3AUI** sent a copy of a list from the Japanese *CQ Ham Radio* which gives prefixes worked in Japan from 1978 to 1993 with the times of day that the openings occurred. This in itself is interesting. The greatest number of countries were in Oceania followed by Asia, followed by Africa, South America, North America and Europe in that order. It is unfortunate that the list appears incomplete as it represents about 105 countries when some of the top JA operators have around 140 countries to their credit. The list gives some idea of the spread of contacts:

3D2, 3D2R, 4S, 5B, 5H, 5N, 5R, 5W, 5Z4, 6W, 7J1, 7P, 7Q, 8Q, 9H, 9K, 9L, 9N, 9Q, 9Y4, A2, A3, A45, BV, CE, CE0A, CP, CT, CX, DU, EA8, EL, F, FK, FM7, FO, FO0C, FR, H4, HL, HP, HS, I, JA, JD1, JD1M, JD1O, KC6, KH0, KH2, KH3, KH5J, KH6, KH8, KH9, KP2, KP4, LU, OA, P2, PY, PY0F, S0A, S7, SV, T2, T30, T32, TI, TR8, UA0, V6, V7, V8, VE, VK,

VK0, VK9N, VK9W, VK9X, VK9Y, VP2M, VP2V, VQ9, VR6, VS6, W, XE, XQ0X, XU, XX9, YB, YJ, YN, YU3, Z2, ZD8, ZK1-N, ZK1-S, ZK2, ZL, ZL0, ZL7, ZL8, ZP, ZS.

## Europe

Geoff GJ4ICD from Jersey reports excellent Es conditions during May. On 14/5 5T5JC in Mauritania worked most of the UK and Europe and OD5SK in Lebanon had openings to OH, PA, YU, S5, ES and others. 16/5 was the big day with Es on both 50 and 144 MHz. On 50 MHz prefixes worked included 5B4, OD5, SV, DL, OK, YU, C31, EH, 5T5, F, I, IT9, Z32, SP, OZ, SM, YO, TK, OE, OM, 9H plus others amongst the chaos. On 17/5 CN8ST worked the US and Z32BU continued to give operators a new prefix. On this occasion the opening extended down to 7Q7RM at 5x9. Geoff heard the FY7 beacon at 1820 at the same time as EA8/DJ3OS heard the VO1 beacon in

Canada. Following on from our good Es season last summer, it appears that the northern hemisphere is about to enjoy a good period of Es.

A new beacon is JY6ZZ on 50.075 MHz with a power output of eight watts. It is operated by the Royal Jordanian Amateur Radio Society, was built by Lawrence GJ3RAX and Geoff GJ4ICD and delivered personally to the Jordanian club by Geoff. That's dedication for you! Their next beacon project is one signing 8R1SMC and located at Guyana in South America. They are also investigating the installation of a beacon, D44SIX, in the Cape Verde Islands in the Atlantic. Their Malaysian beacon 9M6SMC went to air in April/May.

## 1000 QSOs on Oscar

The Geelong Amateur Radio Club Newsletter for May reports that Arch VK3BW recently achieved the amazing feat of working 1000 stations on amateur

satellites (OSCARs). Arch's long and illustrious pursuit of the hobby of radio communication began in the 1930s when he broadcast music to interested listeners prior to the establishment of commercial radio stations. His broadcasts were heard as far away as New Zealand.

## Closure

This month's closure was not as fast as that of last month but all is OK again. Closing with two thoughts for the month:

1. Love is not measured by how many times you touch each other but by how many times you reach each other, and
2. Nothing lowers the level of conversation more than raising the voice.

73 from The Voice by the Lake.

\*PO Box 169, Meningie, South Australia 5264  
Fax: 085 751 043. Packet to VK5ZK for VK5LP

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# QSP News

## Anonymous Agitator

Many members will have seen an item in the May issue of *Electronics Australia* (in its "Forum" section on page 38). It was a letter from an unidentified member of the NSW Division of the WIA and expressed highly critical views on amateur radio in general, the WIA and the NSW Division in particular.

The WIA cannot allow such derogatory remarks to pass without comment. The following letter, to clarify the WIA position, was sent by the Federal President to the Editor of *Electronics Australia*.

Dear Sir,

The WIA notes with considerable concern your comments in the "Forum" section of the May 1994 issue of *"Electronics Australia"*.

You saw fit to publish a letter from an unidentified longstanding member of the New South Wales Division of the WIA, who shows by his comments that he fails to understand the structure and function of the WIA. He also argues that, since there has been a problem in one Division, the whole body is senescent. The WIA disputes this.

The WIA enjoys considerable

standing both nationally and internationally. It is represented on advisory committees of the International Telecommunications Union (the world regulatory body) and supplies a Director to the International Amateur Radio Union. The WIA is also represented on the Radio Communications Consultative Council and Standards Australia committees.

WIA delegates have attended all post-war WARC's and all IARU Regional Conferences. The 10, 18 and 24 MHz bands were gained for the amateurs as a direct result of such participation.

From negotiation between the WIA and the (then) DoTC, Australian amateurs gained the original Novice licence and its subsequent extensions of privileges, a considerable level of deregulation and an examinations service geared to the needs of the candidates. Other WIA initiatives have resulted in avoidance of import duty on amateur transmitting equipment. Ongoing negotiations between the WIA and SMA will further deregulate the amateur service, increase privileges for Novices and Combined licensees and create a new licence entry level.

The future of amateur radio need not be as bleak as your correspondent claims. While commercial interests are indeed providing vastly improved services, no modern technology can replace the amateur's ability to call "CQ" and receive a reply from a like-minded enthusiast on the other side of the world, free of charge and in an international language. The amateur service has a unique ability to contribute to international goodwill and understanding between diverse peoples. If for no other reason, the WIA must continue its effort to maintain and extend privileges for all amateurs. It can only succeed if it has the support of the whole amateur population.

I appeal to your readers who are interested in the activities and functions of the WIA to seek the information from the appropriate source, their State Division or the Federal body of the WIA, rather than from biased comments from a disenchanted but anonymous correspondent to a commercial magazine.

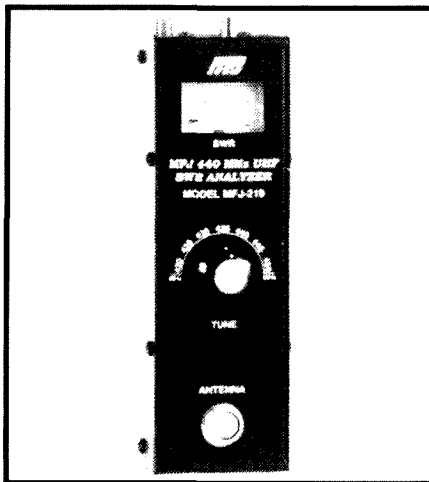
Yours faithfully,

Neil Penfold VK6NE  
Federal President

## What's New

Bob Tait VK3UI

### MFJ-219 UHF SWR Analyser



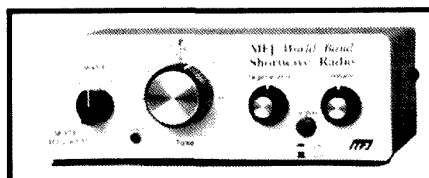
The MFJ-219 lets you read the SWR of any antenna from 420 to 450 MHz by just plugging in the coax from your antenna, setting the frequency and reading the SWR; it's that simple.

Because the MFJ-219 is portable you can take it right to the antenna feed point where it matters.

The MFJ-219 uses the latest high tech microwave ICs and stripline technology to produce an affordable analyser that really works.

For further information contact DAYCOM on (03) 543 6444.

### MFJ-8100K Shortwave Regenerative Receiver Kit. AM, SSB, CW, RTTY



Have you ever wished that you could relive some of those moments as a youth, when you strained to hear those rare DX stations. Well you can with the MFJ8100 which can be built in an evening and give you and your friends many hours of fun. It has an RF stage to pull out the weak ones, and the regeneration control operates smoothly with no clicks, plops or dead spots.

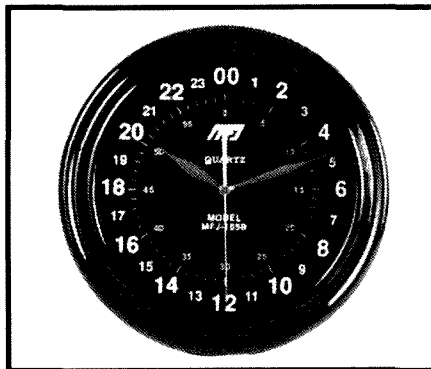
The receiver operates from 75 metres to 13 metres in 5 bands, and incorporates a vernier tuning control for easy tuning, a band switch, a regeneration control and a volume control.

The cabinet is brushed aluminium

which is screen printed and is easy to read, measuring 178 x 152 x 64 mm. Plug in one or two sets of earphones and share with your friends.

For further information contact DAYCOM on (03) 543 6444.

### MFJ-105B 24 hour Quartz Wall Clock.



The MFJ-105B is a true 24 hour clock featuring a very accurate quartz movement.

The face is 250 mm in diameter with well defined lettering for easy reading from across your shack or computer room. It is powered by a single AA battery (not included) to give over a year's operation.

For further information contact DAYCOM on (03) 543 6444.

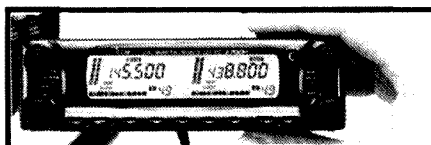
### ICOM VOX Unit EX-1514

The ICOM EX-1514 allows any ICOM mobile or base station, with a standard 8 pin microphone connector, to incorporate VOX operation. Connect the EX-1514 between the microphone and the rig, turn the power on, adjust the controls and you're away.

The unit has 3 preset delay times, selectable from the rear panel, of 0.5, 1.0 and 2.0 secs. The unit is powered by the mic socket (8 V DC at 35 mA) so there are no additional cables to connect. Sensitivity is at least 2 mW at 1 kHz. The unit measures 100 x 26 x 97 mm, weighs just 300 g and is priced at \$175.20

For further information contact ICOM at 7 Duke St, Windsor, Victoria or on (03) 529 7582 Fax (03) 529 8485.

### ICOM IC-2700H High Power Dual Band FM Transceiver



Watch for a comprehensive review of this new Transceiver in *Amateur Radio* soon. Many mobile transceivers are

confusing to use, but the IC-2700H solves this problem by providing two sets of controls. Separate LCD displays for each band provide instant information at a glance with 4 levels of back lighting.

The unit has a detachable front panel to allow boot mounting of the unit if required. The DTMF microphone supplied provides access to all the transceiver's functions, or use the optional HM-90A remote wireless microphone which also provides full functions via an infra-red link. You can even operate from the back seat.

Transmitted frequencies are automatically entered in scratch pad memories for instant recall. Each band has 6 scratch pads, 3 for duplex, 3 for simplex. A total of 100 memories is available to assign as you please, which can be split between VHF or UHF. Power output is selectable at 50, 10, and 5 watts on VHF and 35, 10, and 5 watts on UHF.

The price of this unit is \$1781.20 and it should be available this month.

For further information contact ICOM at 7 Duke St, Windsor, Victoria or on (03) 529 7582 Fax (03) 529 8485.

### ICOM IC-820H Dual Mode VHF/UHF Transceiver



The IC-820H is about half the size of the IC-970H, but don't let the size fool you. This latest unit is packed full of features including a DDS (direct dial synthesiser) capable of resolving 1 Hz tuning steps for super fine tuning. Features include normal and reverse tracking, independent uplink/downlink control for Doppler shift compensation, separate satellite VFO and 10 satellite memories. Satellite operation has never been easier.

The transceiver provides simultaneous reception of both bands, separate "S" meters, exchangeable main or sub bands a press of a switch away, and two VFOs on VHF/UHF.

Additional features include, 9600 baud packet operation, an AF speech compressor, one touch repeater operation, CW semi break-in and side tone, and IF shift control.

The IC-820H will be available in late May at a cost of \$7457.99

For further information contact ICOM at 7 Duke St, Windsor, Victoria or on (03) 529 7582 Fax (03) 529 8485.

# HF PREDICTIONS

Evan Jarman VK3ANJ

## The Tables Explained

The tables provide estimates of signal strength for each hour of the UTC day for five of the bands between 7 and 28 MHz. The UTC hour is the first column; the second column lists the predicted MUF (maximum useable frequency); the third column the signal strength in dB relative to 1  $\mu$ V (dBU) at the MUF; the fourth column lists the "frequency of optimum travail" (FOT), or the optimum working frequency as it is more generally known.

The signal strengths are all shown in dB relative to a reference of 1  $\mu$ V in 50 Ohms at the receiver antenna input. The table below relates these figures to the amateur S-point "standard" where S9 is 50  $\mu$ V at the receiver's input and the S-meter scale is 6 dB per S-point.

V in 50 ohms	S-points	dB( $\mu$ V)
50.00	S9	34
25.00	S8	28
12.50	S7	22
6.25	S6	16
3.12	S5	10
1.56	S4	4

0.78	S3	2
0.39	S2	-8
0.20	S1	-14

The tables are generated by the GRAPH-DX program from FT Promotions, assuming 100 W transmitter power output, modest beam antennas (eg three element Yagi or cubical quad) and a short-term forecast of the sunspot number. Actual solar and geomagnetic activity will affect results observed.

The three regions cover stations within the following areas:

**VK EAST** The major part of NSW and Queensland.

**VK SOUTH** Southern-NSW, VK3, VK5 and VK7.

**VK WEST** The south-west of Western Australia.

Likewise, the overseas terminals cover substantial regions (eg "Europe" covers most of Western Europe and the UK).

The sunspot number used in these calculations is 26.3. The predicted value for August is 23.9.

## VK EAST — SOUTH PACIFIC

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	20.5	6	15.5	1	7	6	0	-8
2	20.5	9	15.5	7	10	8	1	-7
3	19.6	13	15.6	15	15	11	3	-7
4	17.7	17	14.1	21	16	9	-1	-14
5	16.5	22	13.1	26	17	7	-6	-22
6	15.6	24	12.3	28	16	5	-11	-29
7	14.8	25	11.6	26	12	-1	-20	...
8	13.3	25	10.1	21	3	-13	-37	...
9	11.6	27	8.8	15	-7	-29	...	...
10	10.7	28	8.0	10	-15	-39	...	...
11	10.2	28	7.7	7	-20	...	...	...
12	9.7	28	7.3	4	-25	...	...	...
13	9.4	27	7.0	1	-29	...	...	...
14	6.9	20	8.9	-1	-27	...	...	...
15	9.1	12	7.0	0	-23	...	...	...
16	6.7	3	6.6	-3	-24	...	...	...
17	7.5	-9	5.8	-7	-29	...	...	...
18	7.5	-16	5.8	-6	-24	...	...	...
19	9.9	-9	7.7	-1	-11	-24	...	...
20	13.9	-1	10.8	0	-1	-7	-19	-34
21	17.3	2	13.3	-2	2	0	-8	-18
22	19.0	3	14.6	-4	3	2	-3	-12
23	19.7	4	15.0	-3	4	3	-2	-10
24	20.1	5	15.2	-2	5	4	-1	-9

## VK WEST — SOUTH PACIFIC

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	17.6	12	13.3	15	11	3	-9	-25
2	18.4	12	13.9	16	12	5	-6	-20
3	19.0	12	14.7	17	14	7	-4	-18
4	19.1	13	14.3	19	15	7	-4	-18
5	19.0	14	14.2	22	16	8	-4	-18
6	17.3	17	13.1	24	15	4	-11	-29
7	15.0	21	11.3	24	9	-5	-25	...
8	13.0	25	9.8	20	0	-17	...	...
9	11.2	28	8.5	13	-10	-33	...	...
10	9.9	30	7.4	6	-23	...	...	...
11	9.2	32	6.9	1	-31	...	...	...
12	8.8	32	6.5	-2	-37	...	...	...
13	8.7	32	6.4	-4	-39	...	...	...
14	8.5	32	6.3	-5	...	...	...	...
15	8.5	32	6.4	-5	...	...	...	...
16	8.6	32	6.4	-4	...	...	...	...
17	7.7	34	5.9	-13	...	...	...	...
18	7.7	34	5.9	-13	...	...	...	...
19	7.9	33	6.1	-11	...	...	...	...
20	8.1	26	6.2	-9	...	...	...	...
21	9.5	20	7.0	1	-25	...	...	...
22	12.2	16	9.4	11	-4	-22	...	...
23	14.7	14	11.3	15	5	-7	-24	...
24	16.6	12	12.6	15	9	0	-14	-31

## VK EAST — AFRICA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	8.2	11	6.4	-7	-34	...	...	...
2	7.1	1	5.5	-11	-38	...	...	...
3	7.1	-6	5.5	-10	-34	...	...	...
4	9.7	0	7.5	0	-14	-31	...	...
5	13.9	5	10.7	5	0	-8	-23	...
6	16.1	6	12.6	6	4	-3	-14	-29
7	15.5	6	11.6	6	3	-4	-16	-32
8	13.7	6	10.3	6	0	-10	-26	...
9	11.7	5	8.7	4	-6	-20	...	...
10	10.0	4	7.5	1	-15	-33	...	...
11	8.7	5	6.5	-3	-25	...	...	...
12	8.2	9	6.0	-7	-32	...	...	...
13	8.0	15	5.9	-8	-38	...	...	...
14	7.9	24	5.8	-10	...	...	...	...
15	7.9	27	5.8	-11	...	...	...	...
16	7.8	29	5.9	-13	...	...	...	...
17	7.6	30	5.8	-16	...	...	...	...
18	7.5	30	5.7	-17	...	...	...	...
19	7.3	31	5.6	-17	...	...	...	...
20	7.5	30	5.7	-17	...	...	...	...
21	7.5	30	5.8	-17	...	...	...	...
22	7.4	30	5.7	-18	...	...	...	...
23	7.0	23	5.5	-21	...	...	...	...
24	7.2	15	5.7	-16	...	...	...	...

## VK SOUTH — AFRICA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	7.7	21	5.9	-10	...	...	...	...
2	7.7	15	6.0	-9	-39	...	...	...
3	10.3	14	7.6	4	-14	-33	...	...
4	14.5	13	11.2	13	4	-7	-24	...
5	16.0	9	12.9	11	6	-2	-16	-32
6	16.8	8	13.5	10	6	0	-13	-27
7	16.1	8	12.9	9	5	-3	-15	-31
8	14.8	8	11.8	8	2	-7	-22	...
9	13.1	8	10.3	7	-2	-15	-34	...
10	11.1	8	8.8	3	-11	-27	...	...
11	9.5	8	7.5	-1	-22	...	...	...
12	8.4	9	6.5	-8	-35	...	...	...
13	7.8	14	6.0	-13	...	...	...	...
14	7.5	23	5.8	-18	...	...	...	...
15	7.5	26	5.7	-19	...	...	...	...
16	7.4	28	5.7	-20	...	...	...	...
17	7.4	29	5.7	-20	...	...	...	...
18	7.4	29	5.7	-20	...	...	...	...
19	7.3	29	5.7	-22	...	...	...	...
20	7.1	30	5.5	-26	...	...	...	...
21	7.3	29	5.8	-22	...	...	...	...
22	7.7	30	6.0	-15	...	...	...	...
23	7.4	30	5.8	-19	...	...	...	...
24	7.6	25	6.0	-15	...	...	...	...

## VK WEST — AFRICA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	7.1	26	5.5	-18	...	...	...	...
2	7.1	17	5.5	-17	...	...	...	...
3	9.8	13	7.3	2	-19	...	...	...
4	14.2	12	11.0	12	3	-9	-27	...
5	16.5	10	12.6	12	7	-1	-14	-30
6	17.4	9	13.2	10	8	1	-10	-24
7	17.6	8	13.2	9	7	1	-10	-23
8	17.0	8	12.7	9	6	0	-12	-27
9	15.7	8	11.7	8	4	-4	-18	-35
10	13.8	9	10.4	8	0	-11	-29	...
11	11.8	10	8.8	6	-8	-23	...	...
12	10.1	12	7.5	1	-18	-39	...	...
13	8.8	17	6.5	-4	-32	...	...	...
14	8.2	24	6.1	-9	...	...	...	...
15	8.1	27	6.0	-11	...	...	...	...
16	7.9	29	5.9	-12	...	...	...	...
17	7.9	31	5.9	-13	...	...	...	...
18	8.0	31	5.9	-12	...	...	...	...
19	8.1	31	6.0	-11	...	...	...	...
20	7.9	31	6.0	-13	...	...	...	...
21	7.4	31	5.7	-19	...	...	...	...
22	7.5	31	5.8	-17	...	...	...	...
23	8.3	31	6.3	-8	...	...	...	...
24	7.7	31	5.9	-14	...	...	...	...

## VK EAST — ASIA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	20.0	11	15.2	15	14	9	0	-11
2	20.3	11	15.7	14	14	9	1	-10
3	20.4	11	15.5	14	14	10	1	-9
4	20.6	11	15.7	14	15	10	2	-8
5	20.7	12	15.8	16	16	11	3	-8
6	20.0	13	15.2	18	16	10	0	-11
7	18.3	14	14.0	20	14	6	-6	-20
8	16.3	17	12.4	22	11	0	-17	-37
9	14.4	20	11.0	21	4	-12	-35	...
10	12.6	23	9.6	15	-7	-29	...	...
11	11.6	24	8.8	10	-17	...	...	...
12	11.1	25	8.4	6	-23	...	...	...
13	10.5	26	7.9	1	-31	...	...	...
14	10.0	26	7.7	-2	-37	...	...	...
15	9.7	26	7.4	-6	...	...	...	...
16	9.7	26	7.4	-5	...	...	...	...
17	8.9	27	6.9	-15	...	...	...	...
18	7.5	28	5.8	-38	...	...	...	...
19	7.4	28	5.7	...	...	...	...	...
20	8.5	28	6.6	-18	...	...	...	...
21	12.1	21	9.5	12	-10	-31	...	...
22	17.8	16	13.8	22	15	6	-7	-23
23	19.6	13	15.0	19	16	10	0	-13
24	19.8	12	15.2	16	15	9	0	-12

## VK SOUTH — ASIA

UTC	MUF	dBU	FOT	14.2	18.1	21.2	24.9	28.5
1	16.2	9	12.3	9	6	-2	-15	-31
2	16.8	8	12.7	9	7	0	-12	-26
3	17.2	9	12.9	9	7	1	-9	-23
4	17.2	9	13.0	9	8	1	-9	-23
5	17.2	9	13.0	10	8	2	-9	-24
6	16.7	10	12.6	12	8	0	-12	-28
7	15.5	11	11.7	13	6	-4	-20	-39
8	13.7	14	10.4	13	0	-15	-36	...
9	11.8	17	8.					



VK EAST — EUROPE									
UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9	
1	10.6	-5	7.6	...	2	-5	-15	-33	
2	10.5	-10	7.6	...	0	-4	-13	-29	
3	11.5	-9	8.3	...	-1	-2	-9	-22	
4	13.2	-6	9.3	...	-3	0	-4	-14	
5	15.0	-2	11.0	...	-5	1	-1	-8	
6	16.2	0	11.9	...	-5	1	0	-5	
7	16.7	1	12.2	...	-4	2	1	-4	
8	16.9	3	12.4	...	-1	3	1	-6	
9	15.0	2	11.4	...	1	2	-3	-13	
10	13.0	2	9.9	...	3	0	-9	-23	
11	11.4	3	8.6	-30	4	-5	-17	-37	
12	10.5	5	7.9	-17	3	-10	-25	...	
13	10.0	8	7.6	-6	3	-14	-32	...	
14	9.6	12	7.2	4	1	-19	...	...	
15	9.2	16	6.9	13	0	-25	...	...	
16	9.1	20	6.9	21	-1	-28	...	...	
17	9.2	24	7.0	28	0	-30	...	...	
18	8.5	27	6.5	31	-6	...	...	...	
19	7.4	29	5.7	31	-20	...	...	...	
20	7.4	29	5.7	31	-20	...	...	...	
21	9.7	28	7.4	38	4	-25	...	...	
22	10.0	23	7.6	24	7	-15	-38	...	
23	11.7	13	8.3	-6	10	0	-14	-34	
24	11.0	3	7.8	-29	5	-4	-16	-34	

VK SOUTH — EUROPE									
UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9	
1	10.9	6	7.6	-20	6	-4	-18	-38	
2	10.8	-2	7.6	...	2	-4	-15	-32	
3	11.8	-5	8.3	...	0	-1	-9	-23	
4	13.8	-3	9.5	...	-2	0	-3	-13	
5	15.9	0	11.3	...	-4	2	0	-6	
6	17.2	1	12.3	...	-6	2	2	-3	
7	17.6	2	12.5	...	-5	2	1	-3	
8	16.5	1	12.4	...	-3	2	0	-7	
9	14.5	0	10.9	...	0	1	-3	-13	
10	12.4	-1	9.3	...	1	-2	-10	-24	
11	10.6	-2	7.9	-36	1	-7	-19	-39	
12	9.2	-2	6.9	-21	0	-15	-32	...	
13	8.6	2	6.4	-8	-2	-22	...	...	
14	8.5	8	6.3	2	-4	-27	...	...	
15	8.4	15	6.2	12	-5	-33	...	...	
16	8.4	20	6.2	21	-7	-38	...	...	
17	8.5	24	6.3	27	-6	-39	...	...	
18	8.6	27	6.4	32	-6	-39	...	...	
19	8.4	29	6.3	34	-8	...	...	...	
20	7.8	29	6.0	33	-15	...	...	...	
21	7.9	29	6.1	33	-13	...	...	...	
22	9.2	29	7.1	37	0	-30	...	...	
23	8.7	26	6.7	29	-3	-34	...	...	
24	11.5	18	8.0	8	12	-2	-17	...	

VK WEST — EUROPE									
UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9	
1	11.4	17	7.9	8	10	-5	-21	...	
2	11.2	6	7.8	-20	5	-6	-19	...	
3	12.2	1	8.5	...	3	-2	-12	-27	
4	14.4	1	9.8	...	1	1	-4	-14	
5	16.7	3	11.8	...	-1	3	1	-6	
6	18.2	3	12.8	...	-3	3	3	-2	
7	16.8	3	13.1	...	-4	3	3	-1	
8	18.8	3	13.2	...	-4	3	3	-2	
9	18.4	3	13.5	...	-2	3	1	-4	
10	16.5	3	12.6	...	0	3	-1	-10	
11	14.4	3	10.9	...	3	0	-6	-19	
12	12.5	3	9.5	-35	4	-3	-15	-32	
13	10.9	5	8.2	-17	2	-10	-28	...	
14	10.1	9	7.6	-3	1	-17	-37	...	
15	9.8	15	7.3	11	0	-22	...	...	
16	9.4	20	7.1	21	-1	-28	...	...	
17	9.2	24	7.0	28	-2	-33	...	...	
18	9.1	26	6.9	32	-3	-34	...	...	
19	9.2	27	7.0	36	-2	-34	...	...	
20	8.8	28	6.7	35	-7	...	...	...	
21	7.8	28	6.0	32	-18	...	...	...	
22	7.8	28	6.0	32	-18	...	...	...	
23	8.9	29	6.8	35	-4	-37	...	...	
24	9.1	29	6.9	33	-2	-33	...	...	

VK EAST — EUROPE (Long Path)									
UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9	
1	13.0	15	8.8	-2	14	5	-5	-21	
2	12.1	17	8.2	5	14	2	-10	-29	
3	11.3	19	7.7	13	13	-1	-16	-37	
4	10.8	24	7.5	26	14	-4	-21	...	
5	10.8	23	7.5	25	13	-4	-21	...	
6	11.8	24	8.2	28	17	1	-14	-36	
7	11.7	22	8.8	24	15	-1	-17	-39	
8	10.3	16	7.9	10	7	-9	-27	...	
9	8.3	4	6.3	-3	0	-19	-39	...	
10	8.1	-5	6.2	-13	-1	-17	-34	...	
11	8.4	-9	6.2	-23	-1	-14	-29	...	
12	8.3	-14	6.1	-30	-1	-11	-25	...	
13	8.3	-23	6.2	...	-3	-13	-26	...	
14	6.3	-34	6.1	...	-8	-17	-30	...	
15	8.4	...	6.2	...	-12	-20	-32	...	
16	8.2	...	6.1	...	-18	-25	-39	...	
17	7.7	...	5.8	...	-24	-34	...	...	
18	7.8	...	6.0	...	-21	-30	...	...	
19	9.1	-23	6.6	...	-4	-9	-20	-37	
20	11.7	-6	9.0	...	0	-3	-10	-23	
21	14.2	2	10.8	...	2	1	-4	-15	
22	15.8	9	10.9	...	8	6	1	-9	
23	14.8	12	10.1	-22	13	8	1	-10	
24	13.8	14	9.4	-10	14	7	-2	-16	

VK SOUTH — EUROPE (Long Path)									
UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9	
1	12.3	13	8.5	-8	11	2	-9	-26	
2	11.5	16	8.0	6	12	-1	-15	-36	
3	10.8	19	7.6	15	11	-5	-21	...	
4	10.5	23	7.4	25	11	-7	-26	...	
5	10.5	24	7.5	26	11	-7	-26	...	
6	11.5	24	8.2	27	16	-1	-17	...	
7	11.5	21	9.3	24	12	-6	-24	...	
8	9.9	15	7.7	11	3	-17	-37	...	
9	8.6	7	6.7	1	-3	-24	...	...	
10	8.0	0	6.2	-7	-4	-24	...	...	
11	7.8	-7	6.0	-14	-4	-21	...	...	
12	7.7	-12	5.9	-20	-2	-17	-34	...	
13	7.7	-27	6.1	-36	-8	-22	-39	...	
14	7.7	...	5.9	...	-16	-29	...	...	
15	7.7	...	6.0	...	-23	-35	...	...	
16	7.6	...	5.9	...	-31	...	...	...	
17	7.2	...	5.7	...	...	...	...	...	
18	7.4	...	5.9	...	-39	...	...	...	
19	8.5	...	6.5	...	-23	-30	...	...	
20	10.5	-13	8.4	...	-1	-4	-11	-25	
21	12.6	-5	10.1	...	-2	-2	-7	-19	
22	14.4	0	10.5	...	0	0	-4	-14	
23	14.0	4	9.8	...	4	3	-2	-12	
24	13.1	9	9.1	-27	9	3	-5	-19	

VK WEST — EUROPE (Long Path)									
UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9	
1	12.0	3	8.4	-31	4	-2	-12	-27	
2	11.2	6	7.9	-16	5	-4	-17	-35	
3	10.6	9	7.5	-6	5	-7	-22	...	
4	10.3	12	7.3	2	5	-9	-25	...	
5	10.4	13	7.4	5	6	-9	-25	...	
6	11.3	14	8.1	6	9	-4	-18	-39	
7	12.6	16	9.1	7	13	2	-10	-28	
8	13.4	13	10.2	2	12	0	-11	-29	
9	11.4	10	9.4	-2	5	-8	-23	...	
10	9.8	3	7.6	-11	0	-15	-31	...	
11	8.5	-5	6.6	-18	-4	-19	-36	...	
12	8.0	-13	6.1	-23	-4	-18	-35	...	
13	7.8	-23	5.9	-33	-7	-20	-35	...	
14	7.7	...	5.8	...	-16	-29	...	...	
15	7.6	...	6.0	...	-25	-36	...	...	
16	7.7	...	5.8	...	-31	...	...	...	
17	7.7	...	5.9	...	-35	...	...	...	
18	7.5	...	5.8	...	...	...	...	...	
19	7.2	...	5.6	...	...	...	...	...	
20	7.4	...	5.8	...	-38	...	...	...	
21	8.4	...	6.3	...	-21	-29	...	...	
22	10.4	-14	8.3	...	-3	-7	-15	-29	
23	12.6	-5	9.6	...	-2	-4	-11	-23	
24	12.7	-1	8.9	...	1	-1	-8	-20	

VK EAST — MEDITERRANEAN									
UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5	
1	11.4	3	8.6	5	-3	-15	-34	...	
2	11.9	-1	8.9	2	-2	-11	-26	...	
3	15.0	1	11.1	0	2	-2	-11	-23	
4	18.7	4	14.1	-3	4	4	-1	-9	
5	20.4	4	15.4	-4	4	4	0	-7	
6	20.1	4	15.2	-5	3	4	0	-8	
7	19.0	3	14.4	-3	3	2	-3	-11	
8	17.1	3	13.0	0	3	0	-7	-18	
9	14.9	3	11.2	2	2	-4	-15	-29	
10	12.9	2	9.8	3	-1	-10	-26	...	
11	11.3	3	8.5	3	-6	-20	...	...	
12	10.4	6	7.9	3	-11	-28	...	...	
13	10.1	11	7.6	3	-15	-35	...	...	
14	9.7	17	7.3	2	-20	...	...	...	
15	9.4	24	7.2	1	-26	...	...	...	
16	9.3	27	7.0	1	-27	...	...	...	
17	9.4	28	7.2	2	-27	...	...	...	
18	8.9	29	6.8	-2	-34	...	...	...	
19	7.9	30	6.0	-1					

# HAMADS

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● **AMIDON FERROMAGNETIC CORES:** For all RF applications. Send business size SASE for data/price to RJ & US Imports, PO Box 431, Kiama NSW 2533 (no enquiries at office please ... 14 Boanyo Ave Kiama). Agencies at: Geoff Wood Electronics, Sydney; Webb Electronics, Albury; Assoc TV Service, Hobart; Truscotts Electronic World, Melbourne; Alpha Tango Products, Perth.

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● **ICOM RC-10 key pad freq controller for IC-751, IC-751A \$120 ono;** ICOM SM6 electret desk mike with built-in preamp \$95 ono; MICROWAVE Modules 144/28 MHz converter \$95 ono. All units in A1 condition. Art VK2AS QTHR (02) 416 7784.

● **KEYBOARD Info Tech 300 C and code receiver converter Info Tech M 200 F,** as brand new, imported from USA, top level equipment, cost \$1170, sell \$500. Mrs V Van Louwersen (02) 958 5412.

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## FOR SALE VIC

● **KENWOOD TS440S transceiver excellent** cdn inbuilt antenna tuner SSB filter installed 100 W HF \$1800. John VK3BIL (03) 762 2119.

● **BARLOW WADLEY XCR30 MK2 HF comms** RX, 0-30 MHz continuous, AM, SSB, internal & external antenna, C/W service manual, excellent condition. Bruce Kendall VK3WL (03) 741 7654 AH (03) 480 0111 BH (03) 480 5320 FAX (018) 377 165 Mobile.

● **VALVES Brand new 12BY7A \$10 each, 6146 \$20 each, QCEO6/40 \$15 each, QCEO3/12 \$5 each, QCEO3/20 \$5 each, YL1240 \$20 each;** TOA Desk mike \$20; 3 MTR43 High Band 144-174 MHz 25 W mobiles, ideal for packet, \$20 each. A Bartel VK3ZOT (03) 700 3578.

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● **ESTATE OF EVAN FELL TENDER.** Military radios, comms, receivers, Morse keys, earphones, measuring instruments, power supplies, books, magazines, general items. Send 85c stamp. Peter Hadgraft, 17 Paxton St, Holland Park Old 4121, (07) 397 3751 AH.

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● **EARLY crystal set radios using cats whisker** in timber cabinets or other plus parts in any condition; also IC22S in gc, Ken VK2SX (02) 413 1846 anytime.

● **CHIRNSIDE antenna, any information,** dimensions, assembly and tuning instructions, etc for 4 element 20 metre antenna, probably model CA4/20. Scout project. All costs gladly refunded. VK2BMZ QTHR (02) 869 2498.

● **WANTED FOR Restoration projects:** Type "A" MK3 (B2 minor) spy set any condition for spare parts, particularly need TX section plate tuning capacitor. Microphone, plug and socket for "3BZ" Tele-radio. Top price paid for good example of Type 3 MK2 (B2) spy set. Bill VK2FKE QTHR Phone (043) 43 2339 Fax (043) 43 2036.

● **INFO RE Conversion to gearing of Prop** Pitch motor to increase speed rotation. This mod appeared in CQ/QST around 1950; PROP Pitch electric motor (only) complete with brake solenoid. Art VK2AS QTHR (02) 416 7784.

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● **DIAGRAM and/or service manual for FT101Z** HF transceiver, copy or original, costs reimbursed; CW filter and digital readout option for same; DATA on or equivalents for DC/DC converter power transistors used in FT101Z 12 V supply; DATA or spec sheet for 6146W HF output valves. Ross VK3WAC (03) 728 3597.

**WANTED QLD**

● COPY OF ARRL Book "Understanding Amateur Radio" and W6SAI Bill Orr's Book "All about Vertical Antennas"; buy, borrow or photocopy some sections, safe return assured; ALSO any unwanted valve transceivers, transmitters, receivers. "Doc" VK4CMY (076) 85 2167.

**WANTED SA**

● FOR Copying or copy of manual, Telequipment CRO model D65. Barry VK5BQ, PO Box 176, Stansbury SA 5582 or (08) 852 4482.

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● EARLY AWA Teleradio, 3BZ consisting of C6770 or 3C6770 RX, J50062 TX and a D13503 matching spkr/spares box, or a 3B for a museum diorama. Cash or w/s No. 109 MKII\*\*, Serial No 913 to swap. Tony VK5UA QTHR or (08) 269 4095 AH.

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● FOR BWD 504 CRO CRT 13 cm 130BE — P31. Vic VK7VK QTHR (002) 57 8471.

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VK4	GPO Box 638 Brisbane Qld 4001
VK5	PO Box 10092 Gouger Street Adelaide SA 5000
VK6	GPO Box F319 Perth WA 6001
VK7	GPO Box 371D Hobart Tas 7001
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VK9/VK0	C/o Neil Penfold VK6NE 2 Moss Court Kingsley WA 6026





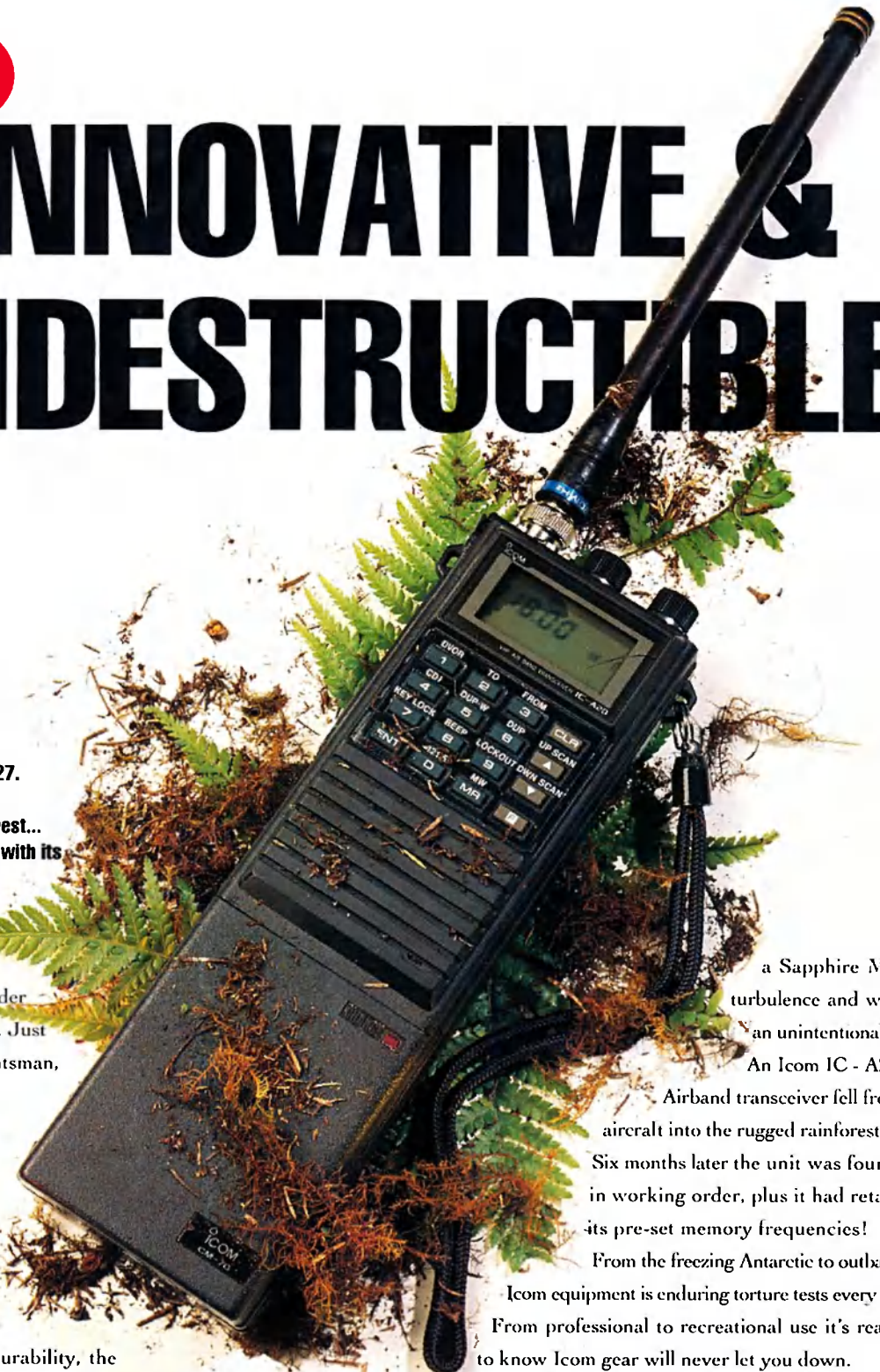
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# RADIO **AMATEUR**

AUGUST 1994  
Volume 62 No 8



Journal of the Wireless Institute of Australia



## **IN THIS ISSUE:**

**Beam Antennas with Bent Elements**  
**Review of ICOM IC-281H and Kenwood TM-251A**  
**The Chinese Connection**

**and lots more**

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*Amateur Radio* is published by the Wireless Institute of Australia, ACN 004 920 745 as its Official Journal, on the last Friday of each month.

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Deadlines	Editorial	Hamads
September	08/08/94	10/8/94
October	12/09/94	14/09/94
November	10/10/94	12/10/94

Delivery of AR: If this magazine is not received by the 15th of the month of issue, and you are a financial member of the WIA, please check with the Post Office before contacting the registered office of the WIA. ©

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### Cover

David VK5KK was photographed on 9 February 1994 during a contact with VK5NY on 10368.050 MHz SSB between 1003 and 1035 (twilight). David operated portable on a hill behind his home near Salisbury Heights water tanks. He used a DB6NT transverter with an output of 200 mW SSB to a 600 mm dish. Signals were 5x9 both ways for the non line-of-sight path (beaming through the western side of Mount Lofty which is at least 200 metres higher than VK5KK) of 55 km.

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# Federal QSP

## Wonderful Hobby — Amateur Radio

Have you noticed how the number of amateurs on the bands is not increasing? Every issue of *Amateur Radio* brings a few more Silent Keys. It's not just me that's getting "greyer" — we all are! Is there something we could be doing to build up the numbers of amateurs, and to guarantee the survival of this wonderful hobby?

Firstly, I believe we need to recognise the need to sell our hobby. Never before has there been such a wide range of pastimes available for enthusiasts. Never before has the worker had such large amounts of "free time". Never before have people had such long periods of retirement, not always voluntarily. We need to be out there competing with other hobbies for bodies. We need to be demonstrating more overtly what a wonderful hobby amateur radio can be.

I have interests in other hobbies including sailing, computing, riding an older motor cycle, beer-making, and caravanning. Interesting and challenging as these pastimes are, not one of them has the capacity to include such a wide range of interests within the overall scope of the single hobby. Consider packet, QRP operation, contexts, VHF—UHF operation. DX chasing, rag-chewing, awards, community involvement, radio astronomy, etc, etc. The list just goes on and on. There really is something for everyone's taste in amateur radio.

What's my point, you say? Well, I beg you to do something about recruitment this year. Don't put it off. You could get run over by the proverbial bus! Even run down by a taxi, as my wife was last year. Join the active brigade, that small bunch of amateurs who volunteer. Speak up at club meetings, join the team for JOTA or the demonstration station at the mall, consider going along to your local primary school to give a talk, particularly when they organise Science Week, activities afternoons, and so on. Ask your radio club to give a small "bookpack" of amateur radio books to a local school library.

Offer to assist a new amateur to get on air. You WILL be welcomed! You may even enjoy it! You will experience the thrill of those first few contacts all over again. Make a commitment NOW to give it a go! Amateur radio needs YOU just as much as some of us need amateur radio!!

**Richard Jenkins VK1RJ**  
**Federal Councillor**  
**VK1 Division**

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# Editor's Comment

## Economies of Scale (1)

The title phrase is popular with economists and accountants. In its usual field, of manufacturing, it shows that many costs remain nearly constant even when output is considerably increased, so the production cost per item becomes less. This may be extended to imply that the larger an organisation the more efficiently it should be able to work; hence becoming more prosperous, larger still, and even more efficient!

Whether, in fact, these predictions are realised depends on many other factors, such as the relative size of the

market and the efficiency of other organisations in the same field.

Does this type of reasoning fit our own organisation, the WIA? Obviously we are not manufacturing motor vehicles or mousetraps, but we do produce this magazine and the Call Book, and some of the same arguments still apply. In particular, it involves just as much work by just as many people and costs just as much to prepare our 60 pages for the printer, irrespective of whether the printer then produces 1000, or 10,000 copies, or even 100,000! But as things are we have only about 6,000

members, although some years ago it was more like 8,000.

If we had more members, the cost of *Amateur Radio* to each member would be less. Our membership fees could be lower and we would attract more of Australia's 18,000 amateur licensees, thus improving our ability still more, not only to provide the magazine but also to provide other representative services. Our strength in negotiating would be improved if we represented more than half Australia's licensees instead of only 30 odd percent.

However, increased size does not always bring increased efficiency. Next month, I will look at the effect on radio amateurs of the increasing size of Australian cities.

**Bill Rice VK3ABP**  
Editor  
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## 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	1994 Fees
VK1	ACT Division GPO Box 600 Canberra ACT 2601 Phone (06) 247 7006	President Rob Apathy Secretary Len Jones Treasurer Don Hume	VK1KRA VK1NLJ VK1DH	3.570 MHz LSB, 146.950 MHz FM, 438.525 MHz FM each Monday evening (except the fourth Monday) commencing at 8.00 pm. Repeated on Wednesday evening at 8.00 pm on 146.950 MHz FM.	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK2	NSW Division 109 Wigram Street Parramatta NSW (PO Box 1066 Parramatta 2124) Phone (02) 689 2417 Freecall 1800 817 644 Fax (02) 633 1525	President Michael Corbin Secretary Roger Harrison Treasurer Terry Ryeland (Office hours Mon-Fri 11.00-14.00 Wed 1900-2100)	VK2PFQ VK2ZRH VK2UX	From VK2WI 1.845, 3.595, 7.146*, 10.125, 24.950, 28.320, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 (*morning only) with relays to some of 14.160, 18.120, 21.170, 584.750 ATV sound. Many country regions relay on 2 m or 70 cm repeaters. Sunday 1030 and 1930. Highlights included in VK2AWX Newcastle news, Monday 1930 on 3.593 plus 10 m, 70 cm, 23 cm. Voicemail highlights on (02) 724 8739. Some broadcast text is occasionally available on packet.	(F) \$66.75 (G) (S) \$53.40 (X) \$38.75
VK3	Victorian Division 40G Victory Boulevard Ashburton Vic 3147 Phone (03) 885 9261	President Jim Linton Secretary Barry Wilton Treasurer Rob Hailey (Office hours Tue & Thur 0830-1530)	VK3PC VK3XV VK3XLZ	1.840MHz AM, 3.615 SSB, 7.085 SSB, 53.900FM(R) Mt Dandenong, 146.700 FM(R) Mt Dandenong, 146.800 FM(R) Mildura, 146.900 FM(R) Swan Hill, 147.225 FM(R) Mt Baw Baw, 147.250 FM(R) Mt Macedon, 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday.	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK4	Queensland Division GPO Box 638 Brisbane QLD 4001 Phone (07) 284 9075	President Murray Kelly Secretary Lance Bickford Treasurer Roger Bingham	VK4AOK VK4ZAZ VK4HD	1.825, 3.605, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, 28.400 MHz. 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday. Repeated on 3.605 & 147.150 MHz, 1930 Monday	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK5	South Australian Division 34 West Thebarton Road Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Garry Herden Secretary Maurie Hooper Treasurer Bill Wardrop	VK5ZK VK5EA VK5AWM	1820 kHz 3.550 MHz, 7.095, 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 34 579.000 Adelaide, ATV 444.250 Mid North Barossa Valley 146.825, 438.425 (NT) 3.555, 7065, 10125, 146.700, 0900 hrs Sunday 146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 1.825 3.560, 7.075, 14.115, 14.175, 21.185, 28.345, 50.150, 438.525 MHz. Country relays 3.582, 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 146.700 at 1900 hrs.	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK6	West Australian Division PO Box 10 West Perth WA 6872 Phone (09) 434 3283	President Cliff Bastin Secretary Ray Spargo Treasurer Bruce Hedland-Thomas	VK6LZ VK6RR VK6OO	146.700 FM(R) Perth, at 0930 hrs Sunday relayed on 1.825 3.560, 7.075, 14.115, 14.175, 21.185, 28.345, 50.150, 438.525 MHz. Country relays 3.582, 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 146.700 at 1900 hrs.	(F) \$60.75 (G) (S) \$48.60 (X) \$32.75
VK7	Tasmanian Division 148 Derwent Avenue Lindisfarne TAS 7015 Phone (002) 43 8435	President Andrew Dixon Secretary Ted Beard Treasurer Peter King	VK7GL VK7EB 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, 144.150 (Hobart) Repeated Tues 3.590 at 1930 hrs	(F) \$69.00 (G) (S) \$55.65 (X) \$40.00
VK8	(Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).			Membership Grades Full (F) Pension (G) Needy (G) Student (S) Non receipt of AR (X)	Three-year membership available to (F) (G) (X) grades at fee x 3 times.

Note: All times are local. All frequencies MHz.

## Equipment Review

# A Case of Parallel Evolution — the ICOM IC-281H and KENWOOD TM-251A

Reviewed by Paul McMahon VK3DIP\*

### What are they?

These are two very similar transceivers, both intended primarily for use as 2 metre FM mobile units, but with extra features that would make them ideal for the shack. The review sets had serial numbers of 00000024 for the TM-251 and 01705 for the IC-281.

### First Impressions

The release of new radios, and the search for new features, continues apace with the release of these devices from their respective makers. When handed these two radios to review, the first thing to strike me (after the "Oh no, not more reviews" thought) was that they both seemed to have a similar claim to fame. That is, they were the first VHF mobiles I had heard of with specific built-in packet capability (including 9600 baud). Closer inspection showed that this was not all that was similar, as will

become more obvious throughout this review. So, rather than bore people with two very nearly identical reviews, I decided to combine the two into one.

What I call the basic features and statistics of these two boxes are summarised in Table 1. As you can see, both sets are very nearly the same size and weight and, even though the Kenwood has a slightly larger display, the basic layout and feel is similar. Both are physically small with large rear heat sinks, both have top mounted speakers, both use similar looking microphone connectors, and both have about the same number of buttons and knobs to do the same things. Other vital statistics are also similar with only relatively minor differences which tend to balance out. Both rigs basically transceive on two metres and additionally receive on 70 centimetres. Both have a high output

power of 50 watts, with a large range of frequency steps available. In fact, probably the biggest difference here would be the fact that the TM-251 came in cardboard "egg carton like" formed packaging, while the IC-281 came in the more traditional foam.

Some comment on the controls and layout is necessary. The IC-281 used a concentric type volume/squelch knob setup which I felt would be a little fiddly to use when mobile. The TM-251 setup of two separate knobs for these functions is probably a better option. Having said this, however, as the top mounted speakers and packet radio connectors attest, many of both of these units will never leave the shack and, as such, the question of concentric or not is probably academic. A similar argument could be made for the displays. The extra information on the TM-251 display is probably wasted when mobile, yet could be useful in the bench mounted situation.

### Technical Bits

The next area of interest is what I have called the normal extras. These are shown in Table 2. These things are the features, etc that amateurs have come to expect as being supplied with this sort of rig. Things like memories, scanning, a microphone, etc. Again, in this area, there is little real difference between the models on review. The IC-281 comes standard with more memories, 60 odd versus 40 odd, but the TM-251 can, if necessary, be expanded to have 200. In both cases memories can be allocated to either the main 2 m band or the 70 cm receive band as required. The scanning features are pretty much the same, offering the normal band or VCO scans, as well as memory scans. There is some difference in the supplied microphones with the IC-281 coming with a keypad or touchtone version, while the TM-251 supplies a more basic unit as standard.

Both models provide sophisticated forms of code squelch and pager operation which are, as far as I can tell, proprietary systems. Great, if you need them and have bought the extra modules. However, again I would have preferred some form of standard (across brands) approach.

FEATURE	KENWOOD TM-251	ICOM IC-281
Bands	2m RX/TX 70 cm RX	2m RX/TX 70 cm RX
Freq. Step (KHz)	5,10,12.5,15,20,25	5,10,12.5,15,20,25,30,50
TX out (Watts)		(IC-281H)
High	50	50
Medium	10	10
Low	5	5
Rec.		
Type	Dual Superhet.	Dual Superhet.
1st IF (MHz)	45.05	30.85
2nd IF (KHz)	455	455
Sensitivity (uV) @ 12 dB SINAD	<0.16	<0.16 (2 m) <0.2 (70 cm)
Selectivity (KHz) @ - 6dB	>12 <28	>15 <30
Spurious (dB)	60	60
Audio Output	> 2Watts at 5% Distortion	> 2.4 Watts at 10% Distortion
Weight (Kg)	1.0	0.93
Current (Amps)		
TX (Max)	11	10.5
RX (Min)	0.6	0.8
Size (mm)	140x40x160	140x40x171
Packing	Formed "egg carton" cardboard	Std. Foam

Table 1 — The Basics.

FEATURE	KENWOOD TM-251	ICOM IC-281
Memories	41 (200 with option)	60 +12 scan edge
Scanning	Full Band, Programmed, Memory	Full Band, Programmed, Memory
Priority Channel Watch	Yes ( 2 types)	Yes (4 Types)
Code Squelch and Pager etc.	Yes (Proprietary, Some Options Required)	Yes (Proprietary, Some Options Required)
Supplied Microphone	STD. Up/Down + 4 others	Touch Tone Keypad etc.
Supplied Accessories	Mic. Manual Mobile Mounting Bracket Power Cable Misc Screws.(Plus spanner) Spare Fuses.	Mic. Manual Mobile Mounting Bracket Power Cable Misc Screws. Spare Fuses.
Manual	123 Pages + CCT + Block	56 Pages + Block

**Table 2 — Normal Extras.**

There is one area here where I want to say well done to both models, and that is in providing something other than just a users manual. In the IC-281 case a reasonably detailed block diagram is provided and, in the case of the TM-251, a block and a circuit diagram are provided. This is the first case I have seen in quite a while that such have been provided as standard and I applaud it. The presence of this information gives me quite a bit more information on how the sets work. For example, it is interesting that, while both sets have very similar sensitivity figures, the receiver front end arrangements are quite different (see Figures 1a and 1b).

The TM-251 uses three separate bipolar (2SC4901) transistors, as far as I can tell, as front ends for 2 m, 70 cm, and Other in three separate chains. The IC-281 on the other hand

uses only two chains, a MOSFET (3SK166) for UHF and a bipolar (2SC4405) for VHF. The differences in style would have made some noise figure, and intermod, measurements interesting. However, my shack does not run to that level of test equipment at this time, and no figures for these were given in the included manuals. Examination of the circuits, however, would tend to suggest that the "Other", or extended band on the TM-251, may not provide as good an intermod performance as provided by the IC-281 on these extended frequencies.

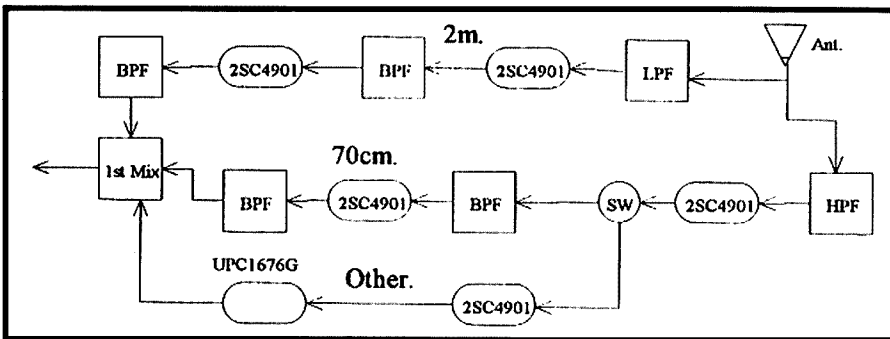
Unfortunately, the TM-251 set supplied for review did not have the extended receive coverage enabled, so I was unable to see if this is a problem in practice. Likewise, the circuits suggest that the IC-281 70 cm and up front end might have a little bit more trouble with intermod than

the TM-251 70 cm only front end although, in this case, I could not find any actual evidence of this in practice. Both sets from the front end on are more or less the same, using pretty standard single chip IF chains. The only departure being that direct detector outputs are made available for 9600 baud packet use.

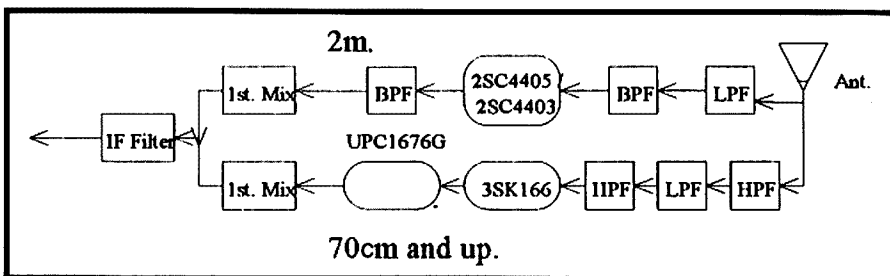
This brings us on to what I have called here the "Extra" extras; those things that you don't find, or at least haven't usually found till now, on mobile transceivers of this class. Table 3 shows these features for both rigs.

Again, there is little difference between the offerings. As has already been mentioned, the TM-251 reviewed did not have the extended frequency capability enabled, and details of so enabling this feature were not provided in the user manual. From experience, however, I would be pretty certain that all that would be required to do this would be, perhaps, the cutting or moving of something like a single link. Given this, the extended coverage claimed is approximately the same, with both sets also offering AM modes for the VHF AIR band. This is actually an interesting thing with these two radios. Nowhere in the IC-281 user manual supplied is there a mention of extended receive coverage, or auto AM. However, this seems to be what it does! The TM-251 manual, on the other hand, mentions both the extended coverage and the AM mode, yet the supplied set did not have it enabled! This is, at least in part, explained by the greater detail of the TM-251 manual (at 123 pages it is over twice as large as that of the IC-281). The TM-251, as well as having the Auto AM mode, also claims to be able to over-ride the auto selection of mode and has a front panel display indicator for this purpose. It should, of course, be noted that neither set will actually transmit outside the 2 metre amateur band.

Perhaps the single most useful of these extras is the explicit provisions made for packet operation. This consists of connections and modes intended just for packet operation. Of the two implementations the TM-251 is probably the most extensive, with



**Fig 1a — Partial TM-251 receiver front end.**



**Fig 1b — Partial IC-281 receiver front end.**

FEATURE	KENWOOD TM-251	ICOM IC-281
Packet	1200/9600	1200/9600
Extended Freq. Rec.	Not available on review set. (Note 1.)	118 -174 MHz 320-999 MHz (Note 2.)
Auto AM.	Yes (118 - 136 MHz)	Not Claimed. (Note 3.)
Duplex Operation	Yes	Yes
Demo Screen.	Yes	Yes
Lamp Dimmer.	Yes (5 steps)	Yes (4 Steps)
TX Time Out.	Yes (Off, 3, 5, 10, 20, 30 Mins)	Yes (Off, 3, 5, 15, 30 Mins)
Auto Power Off	Yes (Off, 60, 120, 180 Mins)	Yes (Off, 30, 60, 120 Mins)
Front Panel Lock	Yes	Yes

**Note 1.** Versions available with receive coverage 118 to 174, 300 to 470, and 800 to 1000 MHz.

**Note 2.** The 320-999 MHz is covered in two bands with a hole in between. Limited time, etc prevented determining the exact edges. The display coverage is continuous.

**Note 3.** No mention of AM receive capability is made in either the manual or block diagram. However, there have been some reports that this mode is available automatically in the Aircraft band. Available time and equipment prevented further investigation.

**Table 3 — "EXTRA" extras**

a single six pin connector providing all those lines found on the IC-281 plus a squelch active indication line (see Figure 2).

The IC-281 implementation left the impression of perhaps being a last minute add-on, with some quite confusing aspects. For example, for 1200 baud operation you had to ensure that packet mode was actually turned off! This mode is only used for 9600 baud operation. In the TM-251 case you use packet mode for both 1200 and 9600, with a configuration menu determining if 1200 or 9600 is required. Another example is the IC-281 use of a single 3.5 mm stereo socket for both extension speaker and packet out. It seems from the supplied diagram that, if you used a 3.5 mm mono plug for an extension speaker, you could run the risk of shorting the FM detector output. Anyway, the provision of 9600 baud connections on both the review sets is probably not as useful as it would

be on, say, the TM-451 (the 70 cm equivalent of the TM-251). As far as I am aware most of the 9600 baud activity in Australia is on 70 cm and just being able to receive is of very limited use on packet. It is also interesting, though disappointing, to see that, even though both rigs have adopted the same 8 pin flat microphone socket, they have gone for totally incompatible wiring. This is yet another perfect example of one of the big problems with many of the little things in amateur radio. Amateurs are very good at talking, perhaps in some cases far too good at talking; however, when it comes to actually agreeing on something, well, that is a different matter. At least they got the power connectors the same way around.

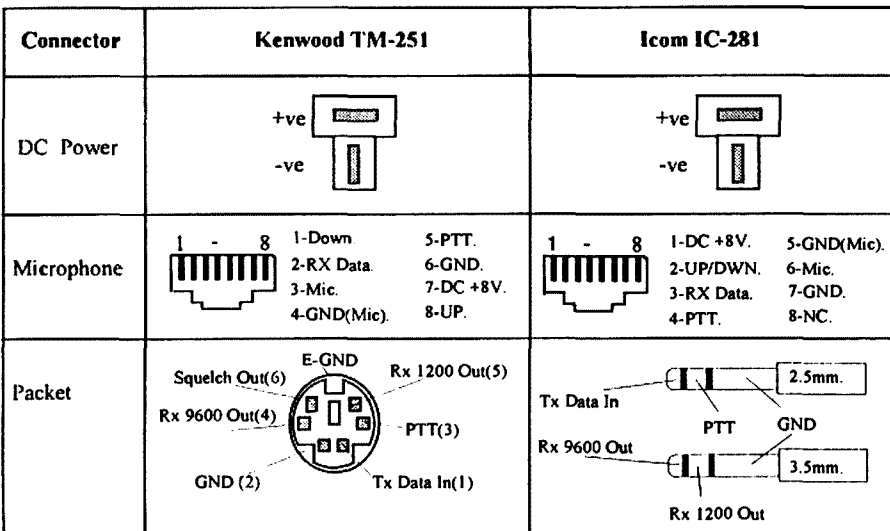
Anyway, enough soap box. I also think the transceiver lock or disable is a good feature. I have, on a number of occasions, been none too amused to pick up my car after a service and

find the transceiver on some strange frequency. In both sets reviewed the lock is active despite powering the set on and off. However, there is some indication on the front panel as to which buttons will unlock the set and the determined fiddler would probably figure it out eventually.

The final area to cover in this section is the actual features that one set has but the other does not. As you can see from Table 4 there are not too many of these.

In the TM-251 case the S Meter Squelch ability allows for an alternative to the more usual noise level operated squelch. If enabled this could, for example, allow you to effectively squelch out a fully quieting, but low signal level, station yet still hear a strong station with the same quieting level. The recording feature is also quite novel. Used in conjunction with the code squelch, and or paging, it will actually record the first eight seconds of audio after the last two openings of the squelch (or last one for 16 seconds if so configured), and allow you to play it back at some later time. An option is available in the US that allows the use of this feature as a sort of voice mailbox, which can even be remotely accessed over the air and used to play back the messages, *a la* a telephone answering machine! The Fuzzy tuning is a fancy name for a very simple thing, that can sometimes be useful and sometimes just confusing. The aim is to have the set figure out what tuning step you want based on how fast, etc you are turning the frequency knob. If you are turning fast then it moves to larger steps, slow and it moves to smaller ones. This can be confusing if you haven't read this bit of the manual before you go to move from the bottom to the top of the band. The AM indication and control has already been mentioned.

For the IC-281 the idea of scratch pad memories is an interesting one. The idea here is that the set will remember the last five frequencies, etc that the set operated on, like a five level last number redial. You can step through this stack and save or re-use frequencies as required. The fact that the IC-281 had a voice synthesiser option but the TM-251 did



**Fig 2 — Plugs and connectors.**

KENWOOD TM-251	ICOM IC-281
S Meter Squelch	Scratch Pad Memories (5 levels)
Digital Recording ( 2x8 Seconds)	Optional Voice Synthesiser.
Fuzzy Tuning	
AM Indication and Control.	

**Table 4 — Unique Extras.**

not is actually surprising. This is especially so as the previous models from Kenwood did have this option. Perhaps they have decided that this feature is not really required. I must admit to never having actually seen, or heard, of anybody purchasing or using this option.

**Operation**

Most of my comments about the operation of the two rigs have already been made above, so I will not go through these again.

The basic operation of the two sets was very straight forward. In both cases there has been a move away from masses of buttons and knobs

and towards a series of "menus" to set or configure infrequently used functions. Once you get the hang of this it becomes quite easy to do. The positive side of this is that normal day to day use of the sets is easy. The negative side is that your radio may have some interesting or useful features that you won't know about unless you have a good read of your manual.

In both cases transmit and receive audio quality was good. In the case of the IC-281, for example, when receiving around about the 800 MHz mark it is actually remarkably easy to hear and understand both sides of the conversation.

**Conclusions**

This is a pair of quite similar sets with quite similar features. I would be very happy to own either of them. I am sure that there will be people who will passionately prefer one or the other, but there really just aren't any important differences. Hopefully, there is sufficient information in the above for you to make up your own mind.

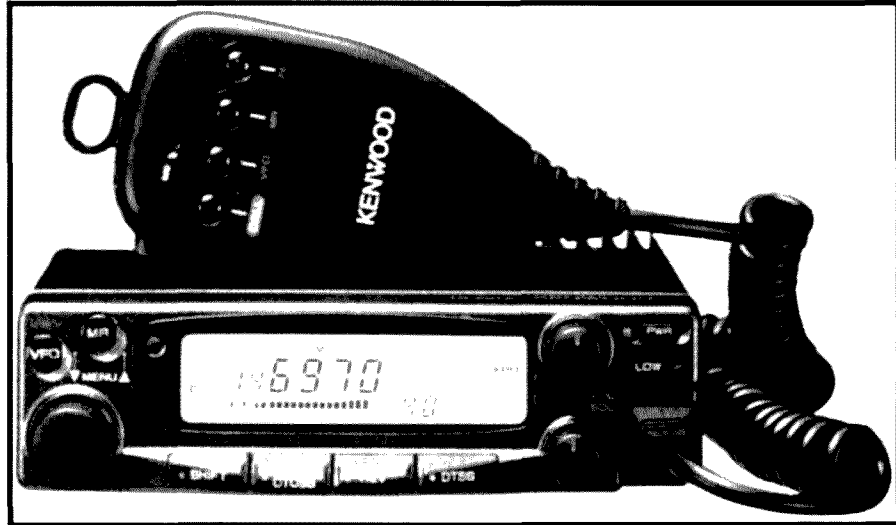
The ICOM IC-281H recommended retail price is \$729.24. Thanks to ICOM (Australia) Pty Ltd for the loan of the review transceiver.

The Kenwood TM-251A recommended retail price is \$879.00. Thanks to Kenwood Electronics Australia Pty Ltd for the loan of the review transceiver.

*\*47 Park Avenue, Wattle Glen VIC 3096*  
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**ICOM IC-281H.**



**Kenwood TM-251A.**

**WIA News**

**New WIA Members**

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of June 1994.

- L30891 MR G DA SILVA
- L50323 MR S J CLADINGBOEL
- L60335 MR R J BOWEY
- L70117 MR M R HARRIS
- L70119 MR A C CORDWELL
- VK3DBI MR B GEKAS
- VK3FLO MR A ZATSEPIN
- VK3GDK MR H D KRAUSE
- VK3KPU MR J BAKER
- VK3MKI MR J WALLIS
- VK4BCZ MR G FALCONI
- VK4BYR MISS I L WHYTE
- VK4CAB MR A BEIMERS
- VK4CWC MR W C CARLISLE
- VK4FAC MR E COOK
- VK4GCQ MR J W KENNY
- VK4KPH MR P G HUTCHINGS
- VK4SWC MR S W COOK
- VK5KUJ MR H W KOP
- VK5NXB MR N H TREZISE
- VK5OG MR L E LAWTON
- VK5PCI MR M R STRUGNELL
- VK5PMC MR R A MCINTYRE
- VK5ZJG MR J H HINSCH
- VK6BBY SOUTH WEST AR GROUP
- VK7FC MR F C HARLAND
- VK7MGG MR G W GERKE
- VK7XYZ MR C BOOTH

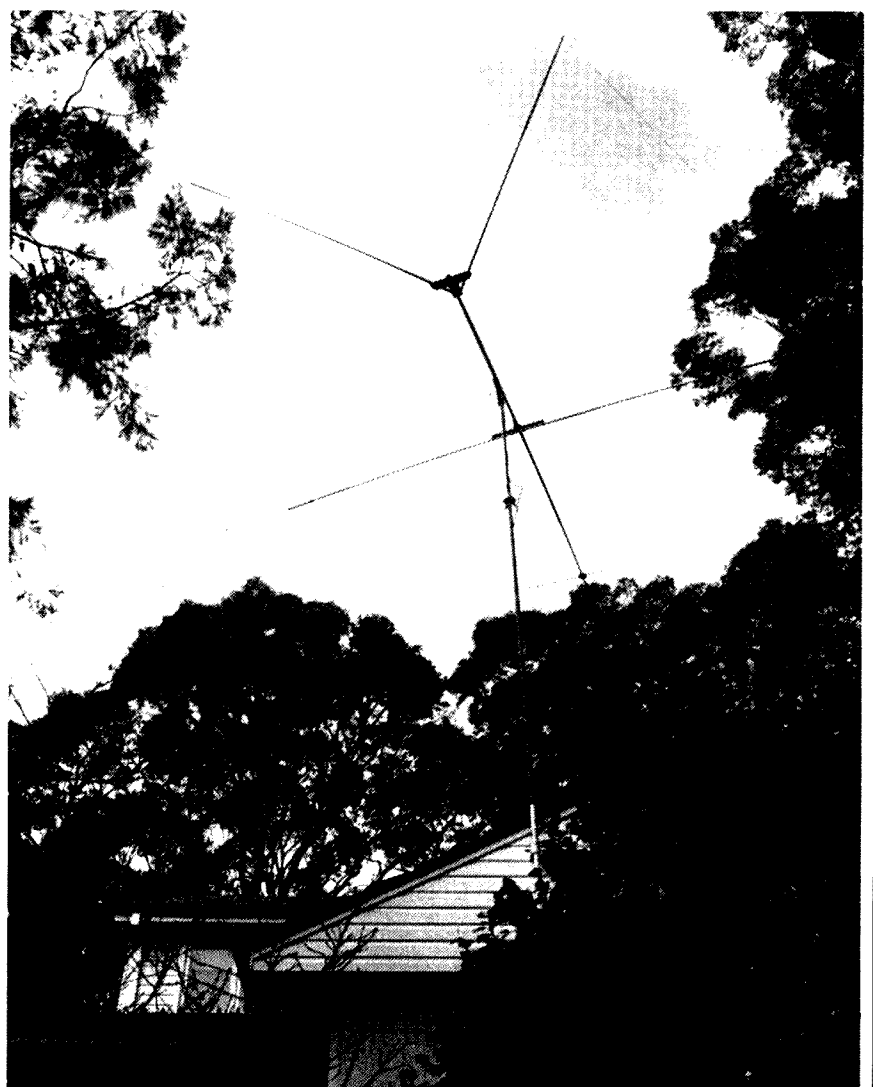
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# Beam Antennas With Bent Elements

## — Part 1

*John Sproule VK2AGT\* has put many hours into an experimental and theoretical analysis of a popular but little understood antenna.*

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**The V-5 beam up in the air.**

When I obtained a licence several years ago the sunspot cycle was approaching its peak and, having regard to the limited space available for a beam antenna and some other considerations, I settled on a 3-element 15 m Yagi. I soon hankered after 20 m operation and was attracted to the "V-5" tribander

developed by Dick Bird F6IDC/G4ZU and described in Refs 1 and 2.

His claims for its performance were impressive, its mechanical construction looked simple and sturdy, it had about the same turning circle as the 15 m beam it would replace and it could be supported on the same light mast and boom. One

was duly constructed using a commercial trapped dipole and bare wire reflectors for 20 and 15 m, both of truncated V shape. In the 15 m band the antenna matched well and had good directivity. At 20 m an ATU was very necessary with an indication of high input resistance and there was practically no directivity.

Having followed the design closely and having understood that no special adjustment would be necessary, I was at a loss to know what to do. A preface to Ref 1 indicated that the design was based on the technique of "critical coupling" that was said to be due to L A Moxon G6XN. So I turned to his book (Ref 3) for further information. This led to an attempt to measure the ratio of element currents using a loop suspended under them. These tests were not a great success, due to the difficulty of calibrating the loop to give comparative readings of currents in a tube and a wire of very different diameter. However, they showed that, to obtain much current in the reflector, it was necessary to reduce the 20 m reflector length to nearer 10.2 m than the design figure of 10.8 m given in Ref 2.

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*No similar sets of characteristics have been published for bent beams.*

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The cut-and-try method without any guiding design theory did not look promising to me and I decided that the only way to understand what was going on was to investigate fully the mutual impedance between the elements. One thing led to another and the investigation extended to computing the main performance characteristics of the V-5 and of other types of bent beam, including 3-element beams.

This two-part article summarises the investigations and how the V-5 was finally adjusted. Part 1 goes straight to results. Part-2 gives enough basic theory to introduce some comments on the results given in the first part, and shows how the self and mutual impedances were computed and the steps taken to obtain an independent check on them.



## Performance Of Representative 2-Element Bent Beams

It is generally recognised that the surest method of comparing different designs of antenna is to compute their theoretical "free-space" performance characteristics. For Yagis, such information has been widely published, most notably in recent times in Dr Lawson's book *Yagi Antenna Design* (Ref 4) published by the ARRL. No similar sets of characteristics have been published for bent beams.

The equations that have to be solved to determine element currents for bent beams, and from these gain and front/back ratio, etc, are identical with those for Yagis. The only difference is in the values to be inserted in them for the self impedances of the elements and the mutual impedances between them.

Using impedances determined by the methods that will be outlined in Part 2, I have computed the main

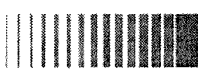
Tip Spacing ( $\lambda$ )	Gain (dBd)	Front/Back (dB)	Current Ratio
.001	4.05	17.8	1.12
.005	4.15	16.7	1.08
.01	4.25	15.2	1.04
.02	4.35	12.9	0.99

**Table 1 — Variation of performance and Current Ratio with adjustment of Tip Spacing for case C of the double-II design.**

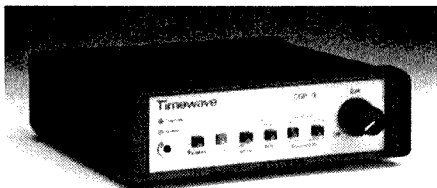
characteristics for a representative range of beams comprising a driven element and a reflector, and these are shown in graphical form in Figure 1. The types covered are Yagi, Straight driven/V Reflector (St/ V for quick reference), Double-V and Double-U. The Yagi is included as an essential basis of comparison. There are three variations (A, B, C) in spacing or degree of bending for each type. Cases B and C of the St/ V type are similar to the V-5 design of Dick Bird, except the driven element is full-length and not trapped (although at

15 m the trap can probably be disregarded). Case A of the Double-U type is the original VK2ABQ design. The three cases are identified by the dimensions or angles on the small diagrams below the graphs. The dimensions were chosen as being representative and allowing comparisons between the four types of beam, except that the angle for Case B of the Double-V type was determined by a series of calculations to give a current-ratio of exactly 1.0 with a resonant reflector. Thus, this case corresponds to G6XN's basic rule of bending the tips of a Yagi towards each other until the currents in the reflector and the driven element are equal in magnitude.

## Cut the noise three ways!

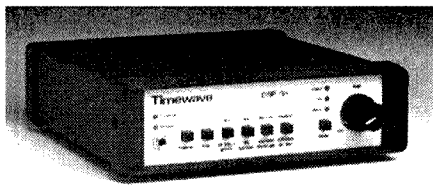


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Other points to note are:

1. (repeating) All are "free-space" characteristics.
2. Gains are relative to a half-wave dipole, ie dBd.
3. The graphs are plotted for a range of values of  $X_{22}$ , the self-reactance of the reflector.  $X_{22}$  is zero for a self-resonant reflector, positive for a greater length and negative for a shorter than resonant length. The graphs in Dr Lawson's book are plotted against deviation from the self-resonant frequency, in order to show bandwidth. He first calculated gain, etc for a range of  $X_{22}$ , as I have done, and then converted  $X_{22}$  to deviation from self-resonant frequency, by applying a fairly well known relationship for a dipole. I was doubtful about applying this to bent reflectors. However, Figure 1

- does indirectly indicate bandwidth. A graph that is more peaky than another will clearly indicate a smaller bandwidth.
4. Graphs of current-ratio (ratio of reflector current to driven current) have been included to be viewed in relation to the claim that design and adjustment for unity ratio produces the best performance.

### Comments on Performance Characteristics

Some observations on Figure 1 follow:

**Gain** — There is no indication that bending of elements can result in increased gain compared with a Yagi and, in fact, there is some reduction, increasing with the degree of bending.

**Front/Back** — Bending can produce remarkable increases compared with a Yagi, although the very high figures, approaching a null condition, have a very narrow bandwidth, as might have been expected.

**Input Resistance** — Bending raises the input resistance, and a very high value can result.

**Input Reactance** — With a self-resonant parasitic, detuning is greater for a bent beam than for a Yagi, not less as has been claimed.

**Length of Reflector** — Broadly speaking, a self-resonant reflector ( $X_{22}=0$ ) gives the best compromise between gain and front/back ratio for the three types of bent beam, whereas a longer reflector is best for a Yagi.

**Current Ratio** — Assuming a self-resonant reflector to have been decided on, there remain two more design or adjustment decisions to be made — the element spacing and either degree of V truncation for the St/V type, or the V angle for the Double-V type, or the length of the parallel sections of the elements (and therefore the tip spacing) for the Double-U type. Constructional aspects will naturally restrict the selection. But it appears that making a final selection to give a current-ratio of 1.0 will not necessarily lead to the best combination of gain and front/back ratio. Before leaving the design and adjustment variables of the basic types, it may be of some interest to see the effect on performance of the Double-U type of changes in the spacing between the tips of the elements.

### Double-U Tip Spacing

The tip spacing for all three examples of the Double-U type in Figure 1 was 0.001 wavelength or about 20 mm for a 20 m beam. This is a little more than the spacing in the original VK2ABQ design, but much less than for some subsequent variations of that design. The design favoured by G6XN, with an element spacing of .18 wavelength, has a tip spacing of .026 wavelength in Ref 3, but reduced to .01 wavelength in Ref 5.

The large range of tip spacings determined experimentally suggests that this spacing is not a very critical

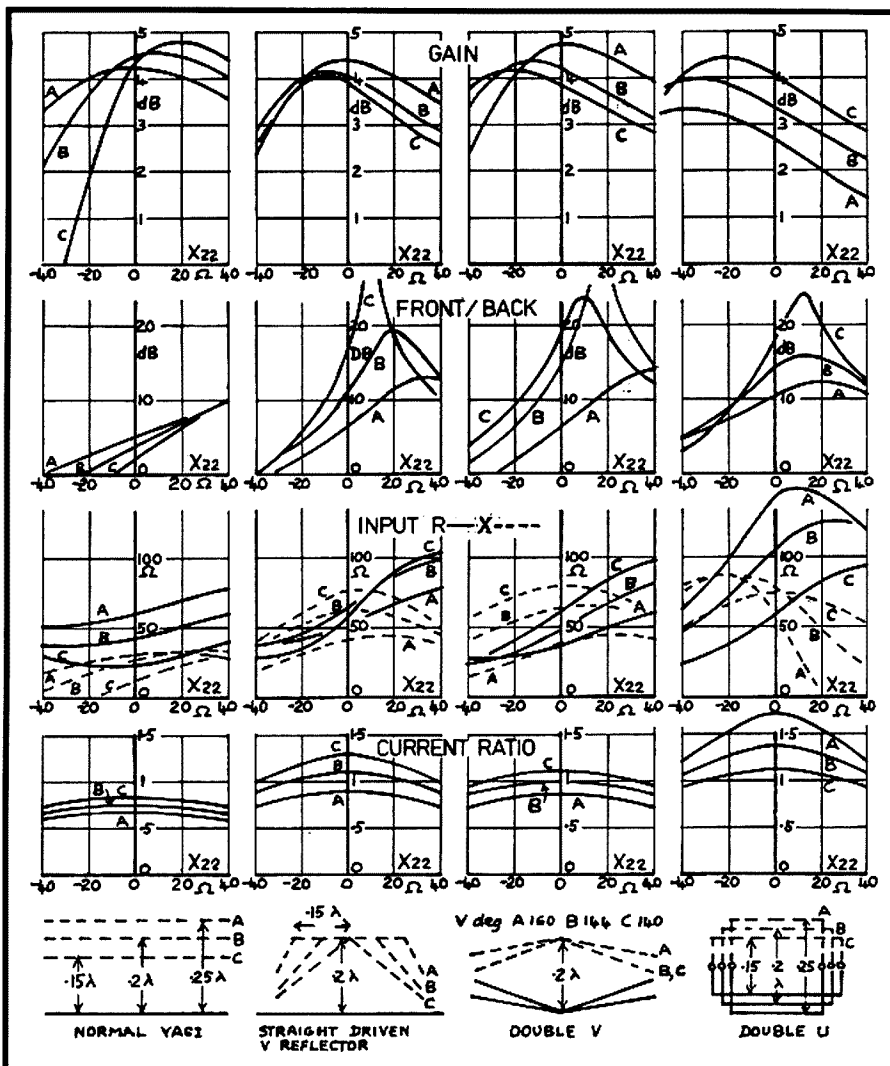


Figure 1 — Computed characteristics of representative 2-element beams.

factor. Theoretical support for this conclusion is provided by Table I, which shows the change in gain, front/back and current-ratio for Case C of the Double-U design in Figure 1, if the tip spacing is increased from .001 to .02 wavelength by widening the element spacing from .15 to approximately .17 wavelength.

### Commissioning Adjustments and Performance of the V-5 Beam

My original V-5 beam was badly damaged in the storm that carved a path through northern Sydney in January 1991. During re-building, a toroidal current transformer/rectifier was fitted at the centre of the 20 m reflector and an identical unit was made to fit over one of the feeder connections to the driven element. The 15 m reflector and director were not fitted with similar toroids.

Adjustment of the length of the 20 m reflector started with measuring the driven element current ( $I_1$ ) and the reflector current ( $I_2$ ) for a series of reflector lengths with a constant power input to the beam. Although the transformer/rectifiers were checked to be a matched pair, they were not calibrated and only DC mA output could be recorded. The input resistance of the beam was also measured with a noise bridge. Figure 2 was drawn from these measurements and includes the current-ratio  $I_2/I_1$ , which peaked for a

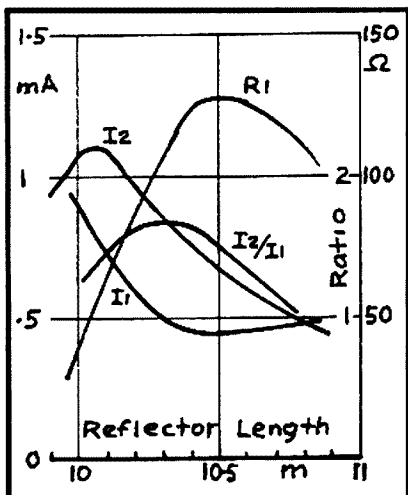


Figure 2 — Measurements on 20 m V-5 beam.

reflector length of 10.3 m, indicating this to be its self-resonant length. The reflector current  $I_2$  peaked at a reflector length of 10.1 m.

Figure 3 was drawn from computer calculations using the as-constructed shape of the 20 m reflector (allowing for the shorter length of the trapped driven element to which it was tied off) and shows maximum gain to occur with a reflector reactance ( $X_{22}$ ) equal to about half of the reactance for which the reflector current reaches its peak value. Being most interested in gain, and wanting to minimise mismatching, I selected a reflector length of 10.2 m; ie mid-way between the self-resonant length (10.3 m) and the length (10.1 m) for peak reflector current as read from Figure 2.

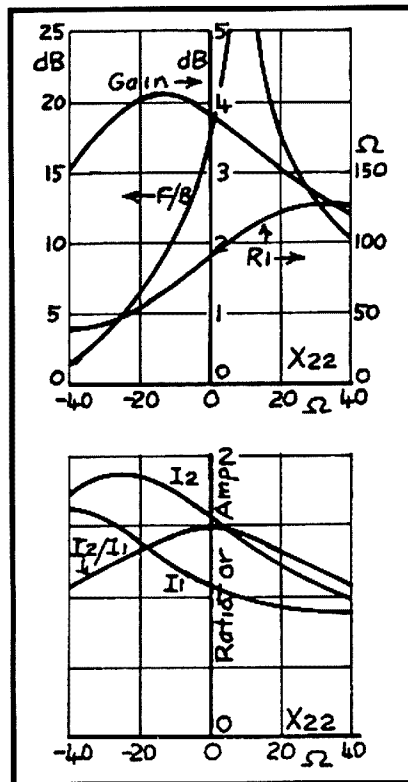


Figure 3 — Computed characteristics of 20 m V-5 beam.

Figure 4 shows the computed characteristics of the three-element 15 m beam with the director self-reactance set at -60 ohm, which a series of calculations indicated to be optimum. I decided to accept a self-resonant reflector, taking its length as 6.82 m from some grid-dip tests done at the very beginning of my

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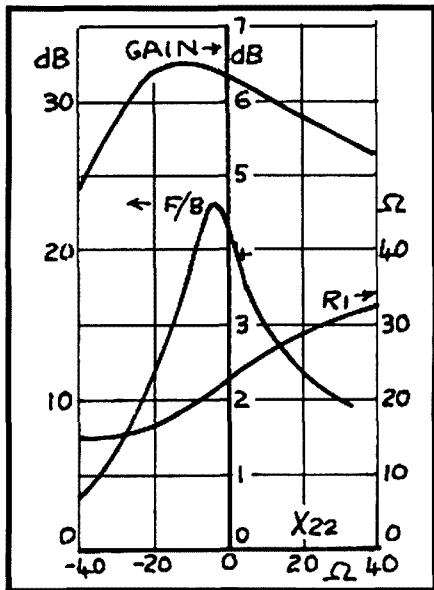


Figure 4 — Computed characteristics of 15 m 3 el V-5 beam.

investigations. Since the director had approximately the same shape as the reflector, its self-resonant length was also taken to be 6.82 m, but the problem was how much to shorten it to give it a capacitive self-reactance of 60 ohm. I decided I could do no

more than use the same percentage reduction that would apply to a straight element, arriving at 6.52 m.

Table II gives an idea of the beam's directivity based on reception at a distance of 20 km, but I am unable to give any reliable information on gain.

Azimuth (°)	20 m (dB)	15 m (dB)
0	0	0
45	-7	-9
90	-18	-25
135	-16	-25
180	-10	-20
225	-18	-24
270	-18	-27
315	-6	-9

Table II — V-5 beam directivity.

Qty	Yagi			Strt Drvn V-Refl			Double-V			Double-U		
	A	B	C	A	B	C	A	B	C	A	B	C
Z <sub>12</sub>	50	55	61	54	58	62	59	67	73	69	69	67
θ <sub>12</sub>	-35	-21	-7	-32	-42	-40	-24	-37	-44	-76	-63	-45
R <sub>11</sub>	73	73	73	73	73	73	70	67	65	40	50	59
R <sub>22</sub>	73	73	73	60	52	48	70	67	65	40	50	59

Table III — Impedance data. Z<sub>12</sub> = magnitude and θ<sub>12</sub> = phase angle of mutual resistance. R<sub>11</sub> = self-resistance of driven element. R<sub>22</sub> = self-resistance of reflector. Note: As losses are assumed to be zero, radiation resistance and self-resistance are the same.

## References

1. Dick Bird, The V-5 System, *Amateur Radio Action* vol 11 No 9
2. G A Bird, The G4ZU V-5 Triband Beam, *The Short Wave Magazine* Nov 1986.
3. L A Moxon G6XN, *HF Antennas For All Locations*.
4. Dr James L. Lawson, W2PV, *Yagi Antenna Design*.
5. *HF Antenna Collection*, RSGB 1991.

## Appendix

Table III shows the impedance data (ohm and degrees) for the beams of Figure 1.

(to be concluded next month)

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Member CE design

# The Chinese Connection

Joe Ellis VK4AGL\* tells the story of a Sister-Club relationship with Chinese Amateurs



Tsinghua University Amateur Radio club members and friends.

Early in 1993 a packet message appeared on Australian bulletin boards from the Tsinghua University Amateur Radio Club in Beijing, Peoples' Republic of China, with a request for Australian or foreign radio magazines.

The Sunshine Coast Amateur Radio Club responded by sending off packages of magazines, and a further request for an Australian flag was met. As a result of this, a correspondence developed both by airmail and digital radio, with Rick Niu, Public Relations Manager at the University. In a packet message dated Friday, 4 June 1993 Rick asked about the possibility of a sister club arrangement between the University amateurs and our Sunshine Coast Club. A file was opened by us called "The Chinese Connection" to handle this matter.

Our radio club had no previous experience with such a relationship so we set about requesting information from various organisations with knowledge in this field. The Australian Sister Cities Association, and Dr Ray Barrett, Principal of Toowomba State High School, were of help, and we also made contact by letter and telephone

with Wally Watkins VK4DO. Wally has been a frequent visitor to China since 1980, staying up to 3 months in the country. He was about to leave for Beijing and Nanjing in connection with the IARU Region 3 ARDF contest.

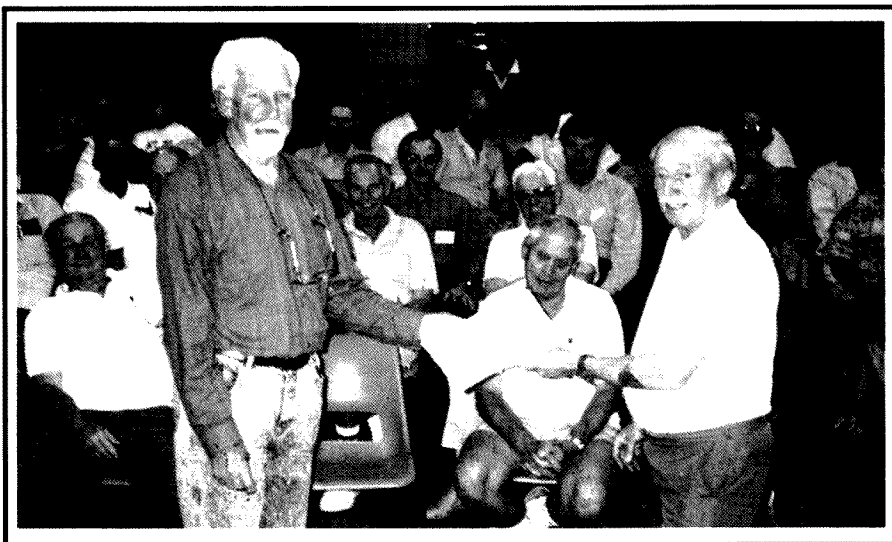
Wally advised that there were no formal rules in establishing relations with an Amateur Radio Club in China. The main purpose was to foster friendship and understanding. In a

sample protocol the Chinese students summed it up this way: *Amateur Radio fosters and encourages international fellowship among all people and nations of the world. The purpose of the agreement is to promote communication and co-operation among amateur radio operators of Australia and the Peoples' Republic of China.*

The final protocol prepared by the Chinese students contained eleven clauses, and was accepted unchanged by the Sunshine Coast Amateur Radio Club. The document, signed by all parties, was ceremonially accepted at a general meeting of the club on 3 November 1993 and, as a result, each member of one club becomes an honorary member of the sister club.

For the majority of people in the Republic of China, amateur radio is a relatively new hobby. The Tsinghua University Club is one of the oldest in the country having been established on 29 April 1984, and operates with the callsign BY1QH. The members are young students from the engineering department who are enthusiastically into amateur radio. They also find time to cooperate with a nearby High School radio station BY1BH which was founded by ten students in 1988. There are 82 clubs throughout the nation with 20 or so of these operating club stations in Beijing, Shanghai and Guangzhou.

Regular communication between the Sunshine Coast Amateurs and



Joe VK4AGL hands the completed protocol to club president Ken VK4IS at the conclusion of project "The Chinese Connection".

## New 80 m Sub-band for JA

Japanese amateurs have been permitted to operate in a new sub-band on 80 metres from 20 May this year.

The new sub-band runs from 3747 to 3754 kHz. This is additional to their existing 80 m allocations covering 3500-3575 kHz and 3791 to 3805 kHz.

## Intruder cleared from 20 m

Maintaining a watch on amateur band intruders does work.

The Radio Society of Great Britain's (RSGB) Intruder Watch has scored a success in having a French military station cleared from an exclusive part of the 20 metre amateur band.

The French station was monitored using a 96 baud radioteletype transmitter on 14322 kHz.

Information passed to the British Radiocommunications Agency (RA) bore fruit when the RA brought the intrusion to the attention of the French authorities.

The transmitter was located on Reunion Island in the Indian ocean and has not been reported on 20 metres since the end of January, according to the RSGB's *Press Bulletin for July*.

## Commercial Transceivers Covering Two Metres?

In June 1993 the WIA wrote to the then Department of Transport and Communications (DOTAC) over concerns that an application had been made to the Australian Customs Service for a tariff concession on VHF transceivers imported by Motorola.

The concern was that the transceivers' operating range overlapped the top two MHz of the two metre amateur band, 146-148 MHz. The amateur service is a primary service on the four MHz wide 144-148 MHz band in Australia.

The Acting Director, Canberra Customer Services & Technical Team, from the Spectrum Management Agency (SMA), Geoff McMillan, replied to the inquiry in late May this year.

The WIA requested assurance that these Motorola transceivers would not be used on the 146-148 MHz section of the two metre band.

In his reply, Mr McMillan said, "Under the Spectrum Management Agency's present policy, the frequencies in the band 144 MHz to 148 MHz are intended exclusively for amateur service use."

"Similarly our current frequency assignment procedures would not permit non-amateur use of this band without consultation with the WIA."

He concluded by adding a note of regret over the delay in replying.

## Stolen Equipment

WIA Federal receives enquiries from time to time as to whether something is on the Stolen Equipment Register, particularly if the inquirers are buying equipment.

It is important that anyone who has had equipment stolen or who is looking to buy secondhand equipment knows that this register exists and that it is kept up to date.

To ensure it's kept up to date, all information for inclusion on this register should be sent in writing to:

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PO Box 2175  
CAULFIELD JUNCTION Vic 3161  
or by fax to (03) 523 8191.

As a new service to members, this stolen equipment register will be available from your Division's office. It is updated on a monthly basis. All enquiries regarding the register should be directed to your Division's office or contact address.

## Stop Press

*(This news item was received as we were preparing this issue of Amateur Radio. Prod Ed)*

## China Ham News July 2 1994

TUARC will be greatly honoured to meet with Hon Tom Burns MLA, Deputy Premier of Queensland, Australia if and when his official visit to the People's Republic of China can be rescheduled later this year.

Mr Burns responded to our sister group Sunshine Coast Amateur Radio Club in May, expressing his willingness to include a Tsinghua University visit in his China tour when Queensland Cabinet Chief Kevin Rudd will also be present. We very much look forward to their showing up in Beijing, and hope this will not only promote amateur radio relationship between Queensland and Beijing, but also trigger international collaborations in a variety of areas between Australia and China.

Rick Niu BZ1QL  
Public Relations Manager  
TUARC

# Random Radiators

with Ron Cook VK3AFW and Ron Fisher VK3OM

First off this month, our thanks to Keith Bainbridge VK6XH of *Antenna West*. Keith sells a most impressive range of antennas for HF, VHF and UHF. Keith, why haven't you told us about this before? Anyhow, amongst Keith's range is an antenna that looks very much like our compact loop antenna described in the April 94 edition of *Random Radiators*.

He says he has been importing this antenna for several months. Unfortunately, he didn't tell us where the antenna is made, how it is supposed to work and who has one on the air. We wait with interest, Keith, to find out more about it. By the way, the one pictured in the April issue is still collecting dust in one Ron's garage. If there is anyone out there who would like to try it out on a loan basis, its available. Drop a note to us care of *Amateur Radio*, first in first served.

Another antenna note of interest. Recently, a "G" friend of one Ron went shopping for a new antenna. He wanted a three element monoband Yagi for 20 metres. He soon found that no such thing was manufactured in the UK and that the only ones available were imported either from the USA or Europe and sold for around \$AUS1000. Well, the outcome was that an antenna imported from Australia could be landed in the UK, with all taxes paid, at well under half that price. Not only that, but I suspect the Australian product might also be of superior quality. Thanks to Andy Coman VK3WH of COMAN ANTENNAS for arranging the whole thing. Andy is a regular advertiser in *Amateur Radio* and deserves your support.

## Another Antenna For 80 Metres

Thanks to Rod Torrington VK3TJ for his idea for a short antenna for 80 metres (Fig 1). I know that many amateurs just don't have the space for a half wave on 80, or possibly even

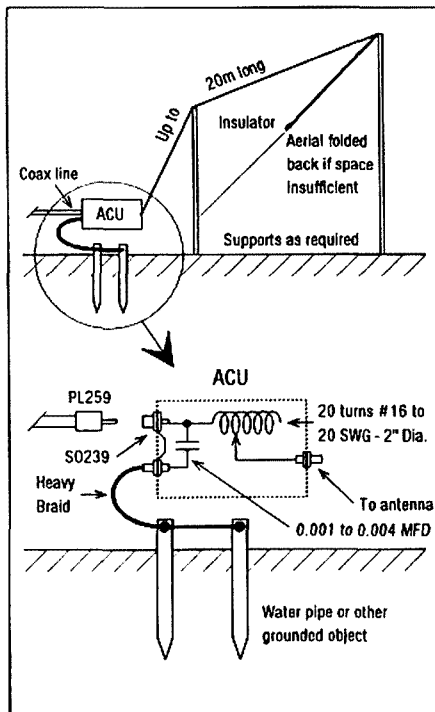


Fig 1 — "Another 80 Metre Antenna".

the 30 metres or so for a G5RV. Rod's antenna requires less than 20 metres. Give it a try, I suspect it will work very well. Over to Rod.

*"I am sure that this antenna could be used on all bands with an appropriate ATU, maybe even a Z Match. Now, the Editor has told us that we have more than enough on Z Matches for the time being and that*

*we should go quiet for a while. OK, but how about this. A certain Adelaide radio club had a Z match night a while ago. (See "Club Corner" in this issue. Prod Ed.) Seems that members brought along their versions of the Z match and compared notes.*

*Now that's a wonderful way to encourage home brewing.*

*On to the 80 metre antenna. There is nothing new in the concept of this antenna. In fact, it is the same as used with spark transmitters nearly 100 years ago. Perhaps it is not as well known now as it was then.*

*As amateurs often want an 80 metre antenna in a confined space, it is brought to attention. It may be known by various names, but the Grounded Marconi is thought to be the favourite identification for this type of aerial coupling.*

*The aerial may be of any length up to approximately a quarter wavelength on 80 metres (20 metres, or 66 feet) and aerials shorter than a quarter wavelength are built up to approximately a quarter wavelength by the inductor in the aerial coupling unit (acu). The acu (the inductor and the capacitor — 0.001 to 0.004 mfd) may need to be enclosed in a box and is located adjacent to the ground connection.*

*While extensive ground mats are ideal with this type of antenna, experience has shown that grounding arrangements occupying a minimum of space, which may be considered quite inferior, will work and get a signal on the air. As a start for the grounding system, try a couple of pipes, say 3/4 inch water pipe or similar, into the ground to a depth of 50 cm or deeper*

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if possible. If more than one pipe is possible, they are bonded together with high conductivity braid or heavy copper wire. An old metal TV chassis about 50 to 60 cm square, buried 50 to 60 cm and well watered, has been used with success (We recommend the use of a 2 metre long earth stake driven at least 1.5 metres into the ground as a minimum earth. These stakes can be bought from electrical trade stores. Of course, a better arrangement for RF earthing is 20 radials, 0.1 wavelength long, buried under the feed point. The two Rons).

The earth terminal on the acu should be adjacent (50 cm or less) to the earth point and should be joined with heavy braid. A short piece of co-axial cable (RG8U) using both the inner and outer braid is good for this purpose. It is suggested that the cable be soldered to the pipes or chassis to ensure a trouble free connection.

Co-axial feeder line (50 ohm) is used from the transmitter to the acu and should be terminated in a plug (PL259, for example); the acu will require a mating socket (SO239). While these plugs and sockets are not essential, it is very convenient to insert the VSWR meter at this point when adjusting the aerial as there are three variables to consider.

It is also desirable to be able to key the transmitter from the acu position,

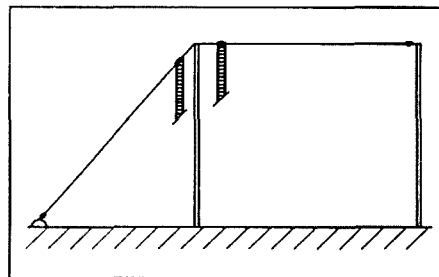
so temporarily extend the key leads out to this location. Firstly, adjust the transmitter controls on low power with the transmission line terminated into a dummy load at the acu. The transmitter should then be able to accept, for short periods, the out-of-resonance aerial condition during aerial tuning. The inductor should be of such construction that each turn can be readily tapped. The amount of inductance required will depend on the length of the aerial compared to the quarter wavelength but, as a starting point, a coil of, say, 5 cm (2") diameter and of 20 turns should accommodate most proposed aerials. Preferably, the aerial length should be adjusted so as to require only one or two turns of the inductor to achieve resonance at the desired frequency.

If a grid dip oscillator (gdo) is available, probably all aerial tuning can be done with the gdo coupled to a one or two turn loop connected to the SO239. Starting with a 0.001 mfd capacitor across the input to the acu, adjust the inductor and the aerial length to be resonant at the desired frequency. This resonance can be placed at any part of the 80 metre band, usually at a favoured frequency of operation. Then, with the transmitter feeding the aerial, adjust the capacitor and the inductor for minimum VSWR. As an example of what can be expected, an installation

adjusted for 3670 kHz gave 1:1 at that frequency, while at 3800 kHz it was 1.5:1, at 3550 kHz 1.6:1, and 3500 kHz 2.25:1.

If it is found that the aerial is too long when adjusting at the desired frequency, it is preferable, at this stage, to wind the excess length back along the aerial itself instead of cutting it off, in case the aerial has to be lengthened at a later stage in the tuning procedure. The terminating capacitor used was a 500 volt mica type from a valve broadcast receiver of other years. This has been quite satisfactory in this application.

This method of aerial loading is used in aircraft where aerials as short as 32 feet (9.7 m) on small aircraft are required to operate on frequencies of 2.8 and 3.4 MHz."



**Fig 2 — Layout of the special multiband antenna.**

## A Special Multiband Antenna

It's said there is nothing new under the sun. When it comes to antennas I am sure that's true. A letter from Dave Jenkin VK4CEU (ex VK3ABR and VK7XO) brought an old one back to mind that we thought might be worth describing. After all, not many of our current readers have *Amateur Radios* back to 1953. I will let Dave tell the story.

"I lived in Box Hill, Victoria, for many years going back to the early fifties and there was one antenna which fired me up. A seemingly simple thing, it was written up in *Amateur Radio* for March 1953. Its author inspired me greatly with this antenna and other things. He was Hans J Albrecht VK3AHH (ex DL3EC). The title of his article was "A Special Multiband Antenna". I tried this antenna from three different locations and found it very good on 20 metres. In the late 70s I put one up at Box Hill with three

## WIA News

### Tower Standard

Standards Australia has released a new standard on the design of steel lattice towers and masts for communications purposes, which would be of wide interest to amateurs.

Standard AS 3995 sets out procedures for determining design wind speeds and wind loads to be used in the structural design of such steel lattice towers and masts.

The basis for the strength assessment of members and lattice connections is set out in the Standard, which also incorporates design and analysis of guyed masts of this type, the design of

cable tension members, footing design and criteria for assessment of existing structures.

In fact, as if the foregoing weren't comprehensive enough, the Standard provides additional guidance on maintenance, inspection and access in appendices.

Standards Australia notes that AS 3995 is not intended to apply to the design of transmission line structures. In addition, the design of aluminium and cold-formed steel structures, other than those complying with AS 1163, is not covered by AS 3995, except in relation to access to the lattice towers and masts, says Standards Australia.



masts at 30 feet and a three wire feeder which Hans states in his article would do the same job as his four wire system. It was possible to change the lobe directions by feeding the two sections either in or out of phase. Hans claimed 5 to 6 dB gain with it fed in phase and 6 dB out of phase, compared to a 20 metre dipole. I never came across anyone who had actually tried this antenna apart from Hans and myself."

Well, Dave, at least one of the Rons remembers the signal that Hans put out and the DX he worked (the other Ron is too young!). So back to 1953 for an edited version of the original article.

"The antenna consists of a horizontal section and a semi vertical section. Each section is 67 feet long, thus a full wavelength on 20 metres which we shall take as the reference band for this description. Two poles hold the horizontal section at a height of about 30 feet while the semi-vertical section slopes down at an angle of about 26 degrees with respect to ground. The bottom end is held about one foot above ground. The feeder

used consists of two separate open-wire lines, each of which supplies RF to one section of the antenna. However, a triple wire feeder may be substituted without effecting the final result. The separate feeders (or three wire feeder) allow both sections to be used separately or both combined and fed in or out of phase. The length of the feeder has to be such that it operates as a resonant open wire line on all bands. Thus the lines were made about 34 feet long.

Fig 3 shows how the different phase connections are obtained at the antenna coupling unit which is of ordinary construction."

We recommend the use of a Z match for the antenna coupling unit and this will give operation on all bands from 80 to 10 metres. Hans calculated the radiation patterns for 20 metres and these are published in the original article but, due to space, will not be reproduced here. In basis, the in phase condition gives major lobes at 60, 120, 240 and 300 degrees, while the out of phase condition gives lobes at 40, 140, 220 and 320 degrees.

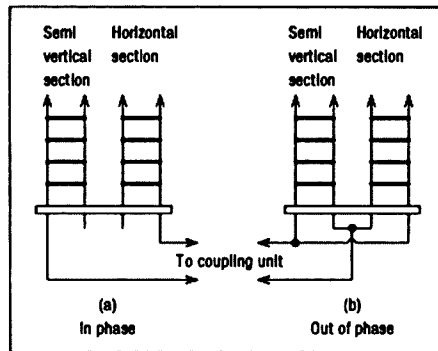


Fig 3 — Connection of feeder lines from the special multiband antenna at the antenna coupling unit. (a) In phase. (b) Out of phase.

A three wire feeder can be easily constructed using plastic spacers to give a total width of about 5 cm or two runs of slotted 300 ohm ribbon could be substituted. In many cases it would be simple to modify an existing antenna. Give it a try.

Well that's enough to keep you going for the time being, so its good bye from him and good bye from me.

The two Rons.  
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# Technical Abstracts

Gil Sones VK3AU1

## Simple 10 GHz Transmitter

A simple transmitter, consisting of a GaAsFET oscillator with the printed circuit tuned lines acting as the antenna, was described in the April 1994 issue of the Swiss magazine *Old Man* by Dr Angel Vilaseca HB9SLV and Jean-Pierre Morel HB9RKR. The output is 1 mW approx, which is adequate for short range using a small dish. The receive system used was a converted satellite TV system.

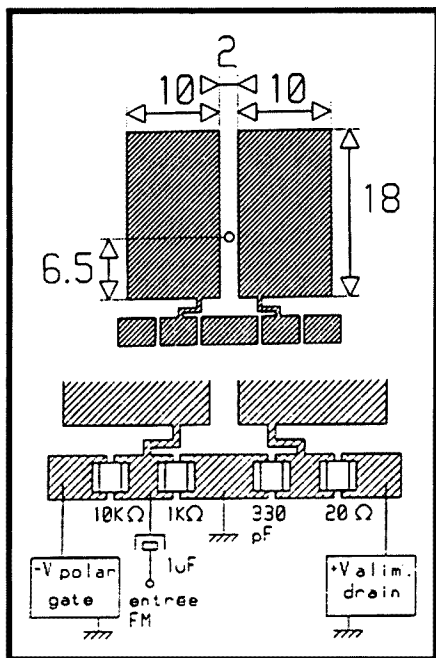


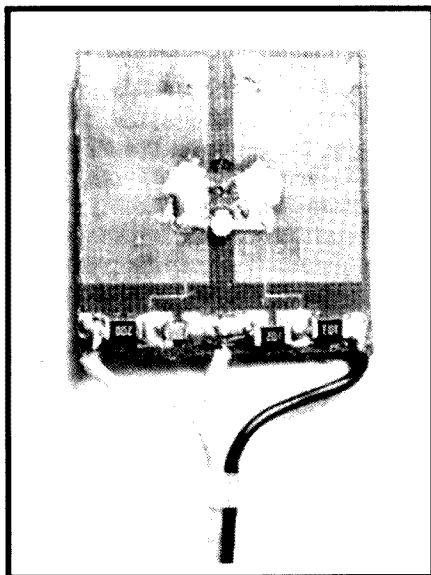
Fig 1 — Circuit Board Layout and Components.

The circuit uses the layout shown in Fig 1. The FET is the dot 6.5 mm up the lines. The lines have a 20 ohm impedance. The lines radiate and act as the antenna. The Drain voltage is between 3 and 4 volts and the Gate voltage -4 volts.

Frequency and output depend on the 6.5 mm dimension as well as the 18 mm line length. Some experimentation is necessary. The prototype used a range of 6.5 mm to 8.5 mm with oscillation ceasing at 8.5 mm. The GaAsFETs used were surplus types from satellite TV

service. Locally, MGF1302s are readily available and should work. Try the VK5 component service.

A photo of the circuit board is shown below.



Complete Oscillator.

The whole oscillator is placed at the focus of a small parabolic antenna. A satellite dish could be used or some other small dish would be suitable. The authors tried a lampshade sold in Europe by IKEA with some success. Imperfections in the curve of the dish will reduce gain but are not catastrophic.

Video is coupled to the gate and FM modulates the oscillator. The receiver used was a satellite TV system coaxed onto the 10 GHz band. The receiver used has good sensitivity and compensates for the low output of the oscillator.

Thanks are due to John Martin VK3KWA for his translation of the original article in *Old Man*.

## Cable Length Measuring Circuit

Estimating the length of coaxial cable in a coil or on a drum is a difficult task without unrolling and measuring it. You could count the

coils and estimate the circumference but, without actually unrolling the cable, the result is a guess even if it is reasonably intelligent. In the ARRL publication *QEX* for April 1994, George Brown G1VCY described a simple circuit for estimating the length of a coaxial cable.

The circuit uses a delay line oscillator with the cable acting as the delay line. A Schmitt trigger inverter is used in the oscillator circuit. The inverter is a TTL NAND gate and the only proviso is that the gate propagation delay is small compared to the cable delay to be measured. The circuit is shown in Fig 2. The delay of the cable is equal to half the period of the oscillation. For cables down to 5 m in length a 74LS00 is only just acceptable and a 74AC00 is preferable.

For coaxial cable with 0.66 velocity factor, Fig 3 graphs length and signal delay. The velocity factor of various cables is given in Table 1.

To measure the delay you could use an oscilloscope or a counter. If the delay is too short for your oscilloscope then you could feed the oscillator output through a divider circuit to obtain a lower frequency and a longer period.

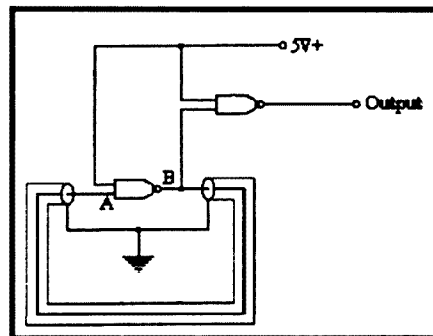
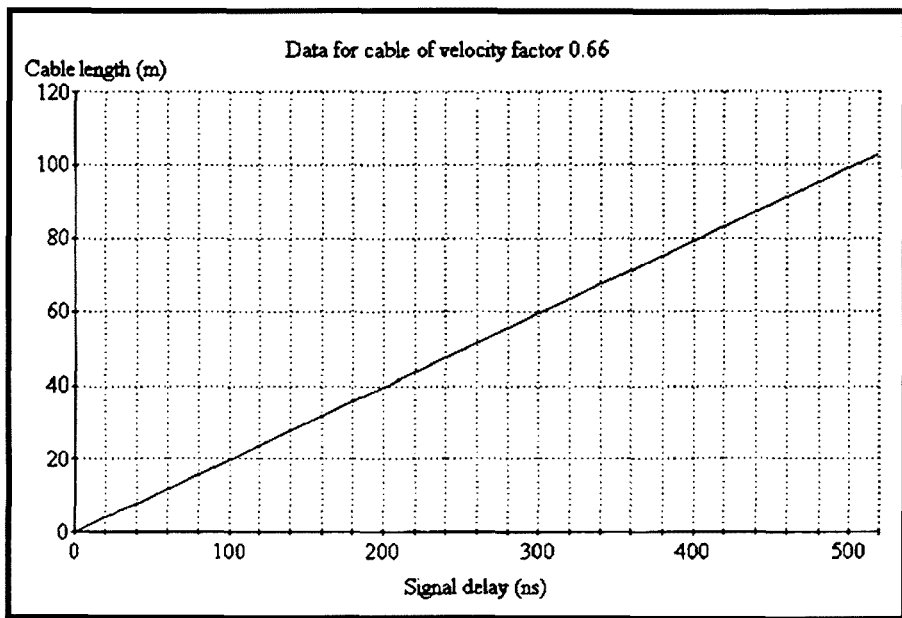


Fig 2 — Delay Line Oscillator.

## Recovering Small Parts

Often small parts fall on the floor and disappear into the carpet or are invisible on the vinyl. In the "Hints and Kinks" section of *QST* for May 1994, Jim Roux W4YA has a technique for recovering small parts.

Jim holds a nylon stocking over the vacuum cleaner hose with a rubber band. The vacuum cleaner will suck the part up and it will be held by the nylon mesh of the stocking.



**Fig 3 — Signal Delay for Cable Lengths of 0.66 Velocity Factor Cable.**

**Table 1 — Characteristics of Some Well Known Coaxial Feeders**

Cable Type	Impedance ( $\Omega$ )	Velocity Factor	Approx UR Equivalent
RG58/U	53.5	0.659	UR43
RG213/U	50.0	0.66	UR67
RG58C/U	50.0	0.659	UR76
—	0.0	0.96	UR83

### Handy Padded Handheld Case

An oven mitt makes a handy padded holder for a handheld transceiver. The thumb of the mitt can hold an adaptor or other small item. The padded mitt protects the handheld when carried in your brief case or suit case.

This tip was also published in the "Hints and Kinks" section of *QST* for April 1994. The tip came from Nona M Norman N8CKS.

### RF Sniffer Meter

An RF sniffer, which can be used to sniff out the presence of RF, is a handy item. You can find out where RF has appeared in odd places and you are then well on the road to a cure to unexpected power supply and audio amp, etc behaviour.

An interesting design for a sniffer appeared in the "Hints and Kinks" section of *QST* for April. The design is that of Emerson Hoyt WX7E and it is a neat and simple unit. The meter should be fairly sensitive and a 100 microamp or better meter is desirable.

The circuit and construction is shown in Fig 4. Germanium diodes are preferable due to their low forward voltage.

Alternative construction can be used but the main thing is adequate support for the components and the

probe wire. You could use a tag strip or a scrap of Vero board.

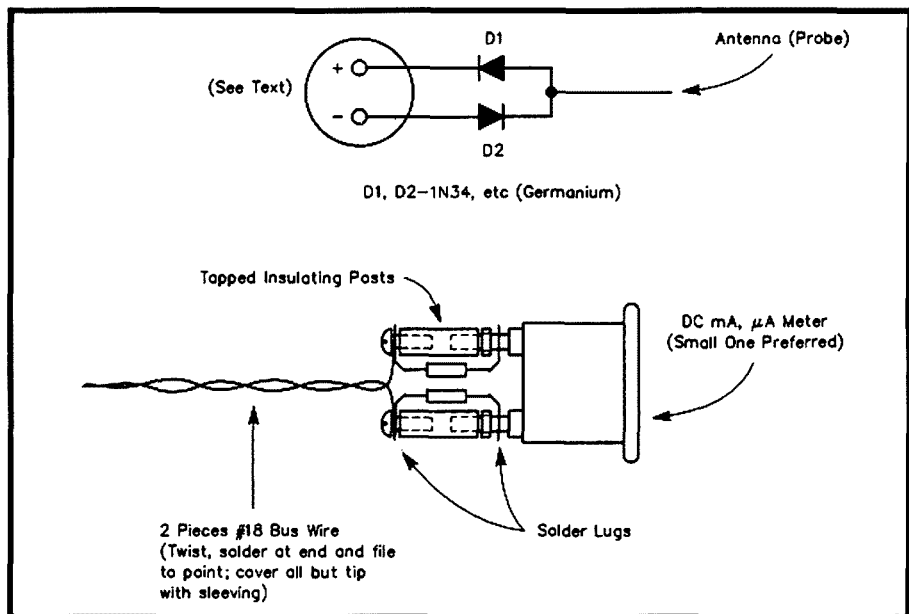
The unit is used to probe about for an indication. Be careful in the vicinity of high voltages. Hot spots in circuitry or coax cable leakages should be readily apparent.

### Auroral Sounds?

A very interesting item concerning instantaneous sounds from a variety of natural phenomena appeared in the May edition of the *Solar Geophysical Summary* from IPS Radio and Space Services. The author was Colin Keay.

Sounds have been reported which are instantaneous with the phenomena from a variety of phenomena such as Aurora, Fireballs, Lightning, and Earthquakes. These sounds would appear to be due to the interaction of a strong electric field from the phenomena with objects surrounding the observer.

The item was brief and those interested should obtain a copy of the *Solar Geophysical Summary* for May 1994 from the IPS Radio and Space Services. Larger libraries and, in particular, the libraries of large educational institutions may be able to help. The article has references to other publications and you will need a good library to track them down.



**Fig 4 — RF Sniffer.**

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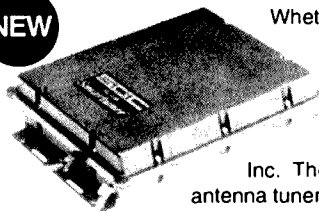
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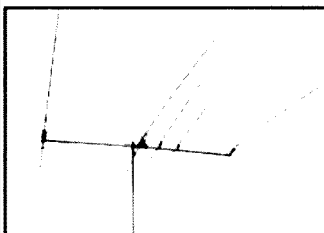
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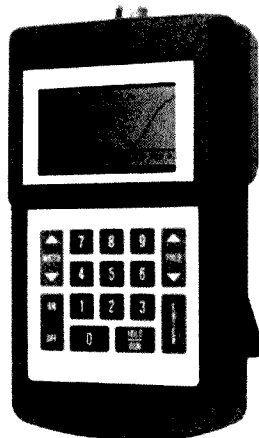
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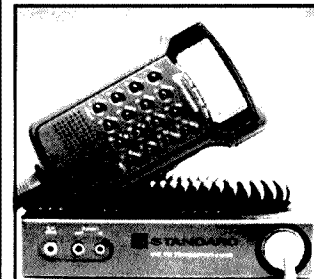
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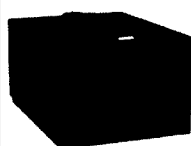
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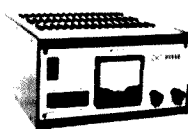


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## Please Note.....

As indicated in the header, Graham has had to increase the membership subscription fees. The fees have remained static for some time now but inflation has finally caught up. Considering the wealth of information in the newsletters and the other benefits of membership, such as the software service and access to ordering various bits of hardware, etc, etc, the subs represent great value.

## WiSP Software

I recently had the opportunity to watch this program in action. It's great. WiSP is a "Windows" program which will completely automate a satellite ground station using the digital MicroSats. It was reviewed comprehensively in the May 1994 AMSAT-VK Newsletter No. 109. WiSP was written By Chris ZL2TPO and he is to be congratulated on a remarkable job. I believe WiSP will go on being refined and eventually become the "industry standard" for digital micro satellite operation in much the same way that InstantTrack has become for satellite tracking.

Chris has made his program available to AMSAT as a fundraiser and has given

the registration rights to AMSAT-NA. As a result of a recent approach to Chris by Graham VK5AGR, AMSAT-VK is now authorised to issue registration of WiSP. To register your copy send \$AUS40 to Graham at AMSAT-VK at the above address. All funds so raised will go towards the planning, building, launching and commissioning of more amateur radio satellites. This is a wonderful gesture by Chris and it deserves all our support.

It is a joy to watch WiSP in action. The screens are very user friendly and informative. Anyone having some experience with MicroSoft Windows will have no difficulty coming to grips with WiSP. A couple of minutes before the pass, WiSP springs into life announcing with a chime that an "event" is about to happen and giving the operator the opportunity to cancel if required. It can be set to totally ignore passes below a maximum of (say) 10 degrees. Clicking on the OK button initiated an immediate response with the rotators automatically moving into position and the transmitter

and receiver tuning racking around at a fast rate of knots to keep track of the changing Doppler shift on both up link and down link. When the satellite eventually rises a degree or two above the horizon (the signal should be 9++ at this stage), the program begins automatically intercepting files being broadcast by the satellite.

WiSP allows the operator to select all manner of options for downloading priorities. The priorities range from selection of specific files, including the option to reject certain categories all together, right through to the "grab all" mode. You can also set to accept or ignore the comprehensive telemetry information being broadcast. Telemetry interpretation is a passion of mine so this feature is of particular interest.

At the same time the software is displaying the current status of uploading. It shows the "queue" of ground stations waiting their turn to upload data to the satellite. If you have outgoing mail in the queue your callsign appears highlighted in red and you can watch it advance up through the queue. When it reaches the top of the queue the transmitter springs into life. Uploading and downloading proceed simultaneously as the system is full duplex. The software continuously monitors the state of your uploading and

## QSP News

### VK4JAW and the Balloon Attempt

Steven Griffin VK4JAW, the lone balloonist is on firm ground again in his Brisbane home.

He left Carnarvon (VK6) during the night of 6-7 June, and landed after 56 hours and 30 minutes of flying, at Mt Wilkin (near Clermont just north of Emerald in Northern Queensland) in the early hours of Thursday 9 June. The total distance covered was approximately 3200 kilometres, which is about 440 kilometres short of the distance travelled by Dick Smith VK2DIK and John Wallington in the same balloon a year ago. Steven set a new record having reached 26,200 feet in altitude.

During the flight Steven wore heavy protective clothing, as the night temperatures were as low as -25 degrees Celsius. He also kept on the oxygen mask most of the

time and managed only one and a half hours sleep during his flight. He had some problems with the gas burners and ran out of his oxygen supply when he started the descent. His electrical power supply on board was car batteries, which he charged with two 53 watt solar panels during the day. Steven listened on the 80 metre amateur band on 8 June, but the frequency of 3605 KHz was very busy on that evening with local and interstate traffic.

Quite a number of VK5, VK3, VK2 and other amateurs kept a listening watch on the nominated frequencies during the flight, but Steven was unable to become active due to his more important tasks as a balloonist. He asked me to thank the amateur fraternity on his behalf, for the interest shown in his venture and for the anticipated assistance should the need have arisen.

Stephen Pall VK2PS

displays a summary of what's going on including a percentage count and a success rate in characters per second.

The multi-tasking aspect allows you to select editor mode and compose a reply to a bulletin or personal mail while all the rest is going on in the background. When you are happy with the file it will be automatically queued and transmitted. In this way it is possible to exchange messages with another station in the footprint as a pass progresses. In the meantime, of course, the auto-track application is moving the antennas and tuning the transmitter and receiver. A small pop-up window allows monitoring of the footprint in an "InstantTrack-like" screen. Any files received are put away into their appropriate directories ready for reading after the pass.

There are six programs in the WiSP suite. They are: GSC, Ground Station Control; MSPE, MicroSat Protocol Engine; View-Dir, View Directory; MsgMaker, Message Maker; ProcMail, Process Mail; and MsgView, Message Viewer. They are all interactive in that they let each other know of any events that may be of importance to another part of WiSP, eg messages composed in MsgMaker are automatically queued ready for uploading by MSPE.

The uploading and downloading of files and messages to and from a MicroSat is a very complex business. With WiSP, Chris has succeeded in producing a ground station controller that is comprehensive and yet easy to use. It is quite exciting to see it all happening. Anyone contemplating a move to the digital satellites, in particular UoSAT-22, KitSat-23 or KitSat-25 would do well to go with this software.

## Review of OSCAR-10's Attitude

In a recent packet radio bulletin, James Miller has announced that further examination of the signals from OSCAR-10 has indicated it is moving into a much more favourable attitude with the antennas pointing towards earth more often than they have been over the past several years. This is great news and warrants mention in this column.

OSCAR-10's receiver was, and probably still is, very sensitive. I can recall having put a readable signal through OSCAR-10 with an uplink power of 100 mW to a 20 turn 70 cm helix with the satellite at 40,000 km range. If the old bird is coming good again it should be worth watching.

Remember, however, that it is quite out of control. Radiation damage to the CPU rendered it uncontrollable several years ago and it has been drifting ever since. This means that it is not possible for

control stations to adjust the attitude so that it receives enough solar power to keep the battery charged. Sometimes it's on and sometimes not. You will have to take pot luck.

If, however, squint angles are improving then the solar power situation may also improve as a result of the better attitudes. I have run the figures through InstantTrack and it seems that quite useable squints

may occur for the next couple of years. James is looking for confirmation or otherwise of his observations so he is asking for folks to gird up their loins, listen to or work through OSCAR-10, and report your findings to him (or me and I'll pass them on).

\*359 Williamstown Road, Yarraville VIC 3013  
Packet: VK3JT@VK3BBS

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## ALARA

Marilyn Syme VK3DMS

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Unfortunate news from VK4 is that the GYLS have had to disband, but they did plant a tree, in memory of Eleanor VK4BEM, which is flourishing. Mary, the present holder of VK4BEM, is leaving VK4 to take up residence in VK2. Recently she and her OM Ray VK4QH spent a week at Camp Quality on the Tweed. She says it was exhausting but exhilarating operating the special event station VI2CQ, during which she made contact with Christine WB2YBA (YLRL President) who was visiting Australia with the call VK4AZJ. Christine passed greetings to all ALARA members.

Another reminder is in order about the YL Meet in Bundaberg on the weekend of 2 to 4 September next. All interested YLs and families are welcome to attend. More information can be had by contacting Robyn VK4RL on 079 228 1700, Mary VK4PZ on 079 342 910 or Julie VK4BJJ on 071 534 480. Packet messages can be sent to Robyn VK4RL @ VK4WIR.

Judy VK3AGC took herself off to Kambalda in May to visit her new

grandson. Her route went via Mildura, where she had lunch with me the same day as THE wedding. She caught up with Poppy VK6YF in Perth, and then came back through Adelaide where she spent a night with Christine VK5CTY, had coffee the next day with Jenny VK5ANW and Denise VK5YL, then went on to Murray Bridge to stay a night with Meg VK5AOV.

We all know that Joan VK3BJB does all sorts of unusual things involving activities of her Japanese amateur friends but recently she surpassed herself. This latest foray created all sorts of hassles never dreamt of! A friend of some 12 years standing, Shuzo JE2RQC, asked her if she could organise his Australian western style wedding IN MILDURA!!! Now, if you think organising your own daughter's or son's wedding takes time — well, double the difficulty! With only two months to complete details the telephone and fax between Japan and Australia ran hot. With very little idea of what expense the couple could really afford, things were set in motion. Even trying to hire formal wedding outfits in a country town is an



Shuzo JE2RQC, Satomi, Joan VK3BJB and Ray VK3BRB in the shack of VK3DMS.



**Shuzo JE2RQC and Satomi, with Ray VK3BRB and Joan VK3BJB in the background, outside the chapel after the wedding.**

interesting exercise, but somehow it all fell into place. Everybody who was approached to help was delighted to be involved because it was the first time that a Japanese couple had flown to Mildura especially to be married. Eventually even the Mildura City Council became so interested that they arranged a mini civic reception for the bridal couple after the ceremony to formally welcome them to Mildura.

So we come to THE days of what was a very short visit. With only 9 days annual holiday, Shuzo and Satomi arrived in Mildura on Monday 23 May on the morning flight from Adelaide. The rest of that day was spent rushing around meeting the minister, rehearsing at the chapel, and having fittings for their formal wear. In between they managed to fit in a quick tour around the district, including a visit to the home of Marilyn VK3DMS.

Tuesday morning was spent catching their breath before the ceremony. By 1 pm the chauffeur had arrived and the action began. Shuzo got himself ready first so Satomi could see him in his formal gear before she dressed. After he had left with Ray VK3BRB, Joan wrestled with the many pearl buttons and loops. These

gave considerable trouble, leading to the bride being almost 20 minutes late. By this stage Shuzo was VERY edgy! Then when Satomi arrived, we all thought the wedding march would never start! Finally everybody was in place and the ceremony proceeded. It was a very lovely service in a chapel that is situated at the elderly peoples' home, and many of the residents came in to enjoy the wedding. Coming out of the chapel, Shuzo and Satomi were completely overwhelmed by the interest and welcome shown by everybody around. Next followed a trip to the photographer for formal photos, and on to the civic reception. After a rest back at Ray's and Joan's home, Satomi changed into a formal kimono for dinner at a local restaurant.

The following morning the couple flew out of Mildura for a four day honeymoon in Melbourne and Sydney before returning to Japan. Joan reports that they rang her as soon as they arrived home, but that she is still recovering! Little did Joan realise when she decided to learn some basic Japanese for QSOs to J land, that it would all lead to maritime nets, yacht rescues, tourist information AND arranging weddings!

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# AWARDS

John Kelleher VK3DP — Federal Awards Manager\*

The following information on Spanish HF Awards was graciously sent to me by Julio EA4KR, with the permission of URE (Union de Radioaficionados Espanoles).

## Diploma Espana

This Award can be earned by all licensed Amateurs (and SWLs) for making contact with Spanish stations on SSB and CW. Contacts with or from Mobile stations are not valid.

Applicants are required to work and confirm 10 stations from each EA area 1-8 with five contacts from EA6 and EA9. All applications must show Callsign, Date, Frequency, and Mode, and be in numerical order of EA district, and indicating the Province worked.

Send your application and a fee of five IRCs to URE, Vocalia de Diplomas, Box 220, Madrid 28080, Spain. This address applies to almost all applications.

## Diploma 100 EA CW

This certificate may be earned by all licensed Amateurs. Operators from CQ Zones 1, 2, 3, 6, 7, 10, 12, 13, 19, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 38, 39 and 40 require 25 confirmed CW contacts, each earning four points to complete the 100 points necessary for the Award.

The URE will accept a certified list, in lieu of QSL cards, but reserves the right to call for and inspect cards if necessary.

Minimum requirements are to use at least three bands and seven EA districts, with stations worked once per band, and at least three days between contacts. The only exception to this rule is for stations worked during the EA DX CW contest.

Special trophies can be earned. Silver Medal for 500 contacts and Gold Medal for 1000 contacts. The fee for this award is also five IRCs. All contacts must have been made on or after 1st January, 1966.

## Diploma CIA (Comunidad IberAmericana)

All applicants must be licensed amateurs, operating within their licence category. This award can be earned for confirmed two-way contacts on CW and SSB on all HF bands, excluding WARC bands.

The award is issued in two categories, silver and gold. To obtain CIA Gold, work 20 IberAmerican countries, plus Spain and Portugal. To obtain CIA Silver, work 15 IberAmerican countries plus Spain and Portugal. The list of IberAmerican countries includes Argentina, Bolivia,

Columbia, Costa Rica, Cuba, Chile, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Republic of Dominicana, Uruguay, Venezuela, and Brazil (plus Spain and Portugal).

URE will accept a certified list of contacts, in alphabetical order of countries, with the usual proviso regarding the authenticity of QSL cards. The fee is again five IRCs.

## Diploma TPEA

Applicable to all licensed amateurs. It is valid for contacts after 1 March 1979, using SSB or CW. To earn the award, confirmed contacts must be made with ALL the Spanish Provinces, plus Ceuta and Melilla. A certified list of contacts will be accepted by URE. General rules apply. The following is a list of EA Provinces.

EA1: Asturias, Avila, Burgos, La Coruna, La Rioja, Leon, Lugo Orense, Palencia, Pontevedra, Salamanca, Santander, Segovia Soria, Valladolid, Zamora.

EA2: Alava, Guipuzcoa, Huesca, Navarra, Teruel, Vizcaya, Zaragoza.

EA3: Barcelona, Gerona, Lerida, Tarragona.

EA4: Badajoz, Caceres, Ciudad Real, Cuenca, Guadalajara, Madrid, Toledo.

EA5: Albacete, Alicante, Castellon, Murcia, Valencia.

EA6: Balearic Islands.

EA7: Almeria, Cadiz, Cordoba, Granada, Huelva, Jaen, Malaga, and Sevilla.

EA8: Las Palmas (which includes the Islands of Gran Canaria Fuenteventura, Lanzarote, Graciosa and Alegranza), Tenerife (which includes the Islands of Tenerife Gomera, La Palma and Hierro).

EA9: Ceuta and Melilla.

## Diploma EA DX 100

This award is similar to DXCC, and follows the general rules which apply to the DXCC countries list plus GM Shetlands, JW Bear Island, IT Sicily, UN Karelia, and 4U1VIC Geneva. The one exception is EP Iran. The list must also include those countries which qualify for the WAE (Worked All Europe) award.

This award is issued for CW or SSB only, on any bands 160-10 metres, with no repeaters, satellite, or other special systems.

Endorsements will be given for each 50 countries up to 200, each 25 up to 300, and for each 1 above 300. The top DXers will appear in the Honour Roll list, published monthly in the URE magazine.

Julio EA4KR is QRV daily on 28550 kHz between 2200z and 0000z.

## VK6 Division

Nearer to home, here is information from the West Australian Division of the WIA.

1. The Worked West Australian Shires Award.
2. The Worked West Australian Post Codes Award.

To become eligible for these Awards it is necessary for Amateurs to work 40 Shires and 50 Post Codes, respectively.

Satisfactory evidence of contacts is required to obtain these Certificates. This information should be forwarded to The Contest Committee, c/o 1 Cottrill Street, Myaree WA 6154.

(Perhaps the above Committee would consider compiling a list of Shires to help those considering applying for above award).

## VK DXCC Listings

Here now are the WIA DXCC Listings current as at 30th June 1994.

WIA DXCC STANDINGS			
PHONE		VK5QW	325/329
Honour Roll		VK4UA	324/337
		VK4OH	323/329
		VK1ZL	322/327
		VK2FGI	321/326
		VK6RU	320/373
		VK6NE	320/335
		VK5XN	318/338
		VK5EE	317/322
		VK3OT	315/327
		VK3YJ	315/320
		<b>General Listing</b>	
		VK3AMK	313/329
		VK3CSR	312/320
<b>CALLSIGN</b>	<b>COUNTRIES</b>		
VK6LK	328/350		
VK5MS	326/379		
VK4KS	326/372		
VK4LC	326/372		
VK5WO	326/361		
VK6HD	326/350		
VK4RF	326/344		
VK3QI	326/339		
VK3AKK	326/336		
VK3DYL	326/331		



VK6AJW	312/317	VK2BQS	162/165	VK3DP	222/225	VK4AAR	303/306		
VK7BC	310/319	VK4BAY	158/160	VK4DA	217/219	VK3DP	293/296		
VK3RF	304/311	VK4AU	154/154	VK2CWS	210/212	VK2APK	292/328		
VK6PY	304/309	7J1AAL	149/150	VK4DP	203/214	VK4BG	292/310		
VK5WV	303/322	VK4ARB	149/150	VK4LV	200/207	VK2SG	289/314		
VK3AWY	303/310	VK4DMP	147/148	VK4OD	179/182	VK2AKP	289/294		
VK3WJ	303/308	VK3DNC	141/142	VK6PY	178/181	VK6RO	285/290		
VK6VS	303/306	VK6LC	139/140	VK3CIM	173/174	VK3CYL	283/290		
VK2WU	292/296	VK2SPS	135/137	VK5BO	159/184	VK4OD	279/282		
VK3JI	290/304	VK4VJ	135/137	VK6MK	157/159	VK3VQ	270/287		
VK4DP	289/300	VK6LG	135/135	VK3DNC	154/157	VK5BO	264/301		
VK2AKP	289/294	VK2NO	128/	VK4XJ	150/163	VK3UY	263/265		
VK2DTH	287/289	LU5EWO	125/	VK4UA	143/155	VK2ETM	239/240		
VK4BG	286/301	SM6PRX	122/126	EA6AAK	138/	VK4XJ	233/249		
VK2APK	285/313	VK7YP	122/124	VK7DQ	137/138	VK4CY	228/240		
VK6RO	284/289	VK4LV	115/117	VK2SG	136/148	VK3CIM	224/225		
VK3CYL	283/290	VK7WD	115/116	VK4KS	126/134	VK5UO	222/225		
VK3DU	282/290	VK3BRZ	114/116	VK6BHW	124/126	VK4DA	218/220		
VK5OU	281/286	VK4CY	112/	VK2TB	123/125	WA5VGI	216/218		
VK4AAR	281/283	VK4NJQ	111/115	VK3AGW	119/120	VK2CWS	214/216		
VK3VU	272/275	VK4VIS	108/110	VK2AKP	115/117	VK4LV	212/219		
VK4OD	269/272	VK5AGM	105/107	VK5QJ	107/109	VK2VFT	202/205		
VK3GI	261/264	N4JED	104/105	VK4ICU	104/	VK4ICU	189/191		
ZS6IR	259/262	VK2EQ	104/	VK8KV	102/103	VK3DNC	185/187		
VK3VQ	255/272	VK3EHP	103/105	VK2CXC	101/103	VK2BQS	176/179		
VK2SG	253/274	VK4BJE	102/104	VK4CY	100/	PR7CPK	174/175		
VK2AVZ	251/257	VK3YH	102/103	<b>WIA DXCC STANDINGS</b>				VK7TS	171/172
VK4QO	251/255	JH3OHO	101/103	<b>OPEN</b>				VK6MK	162/164
VK3DP	240/243	VK5ZH	100/104	<b>Honour Roll</b>				VK6NV	154/156
VK2PU	237/240	VK2CMV	100/102	<b>CALLSIGN COUNTRIES</b>				VK2CXC	150/152
VK6YF	237/240	VK6APH	100/101	VK3YL	326/372	VK6LC	142/144		
PS7AB	233/237	VK3TI	099/101	VK4KS	326/372	VK4NJQ	133/139		
VK3DS	226/336	VK4KGE	099/101	VK5WO	326/364	VK4CHB	129/131		
VK2ETM	226/227	<b>WIA DXCC STANDINGS</b>				VK4RF	326/361	YB8GH	127/129
VK2BCH	223/226	<b>CW</b>				VK6HD	326/351	VK4EZ	122/131
VK2CKW	222/225	<b>Honour Roll</b>				VK3QI	326/340	VK5BWW	111/112
VK5IE	219/221	<b>CALLSIGN COUNTRIES</b>				VK3AKK	326/337	VE7BS	106/107
VK5BO	218/222	VK3QI	324/335	VK5QW	325/329	VK3COR	102/104		
VK1PS	211/212	VK6HD	323/343	VK4UA	324/339	SM7WF	101/		
VK3UY	210/211	<b>General Listing</b>				VK3JA	321/367	VK7DS	099/102
VK4XJ	204/216	VK3XB	309/343	VK6RU	320/373	<b>WIA DXCC STANDINGS</b>			
VK3DD	200/204	VK4RF	306/332	VK3OT	318/330	<b>RTTY</b>			
ON6DP	200/202	VK3YL	301/340	VK7BC	317/325	<b>General Listing</b>			
VK4KRP	199/201	VK3KS	295/322	<b>General Listing</b>				<b>CALLSIGN COUNTRIES</b>	
VK2VFT	198/201	VK5WO	295/310	VK3AMK	313/329	VK3EBP	198/200		
VK3DVT	196/198	VK2APK	274/304	VK3XB	311/340	VK2SG	157/160		
VK6BQN	186/190	VK6RU	273/317	WA3HUP	306/330	VK2BQS	115/117		
VK3CIM	179/182	VK3AKK	266/272	VK3JI	305/333				
KA1TFU	176/179	VK3JI	257/280	VK6PY	305/312				
VK4DDJ	175/175	VK7BC	224/233	VK4DP	304/317				
VK4ICU	168/170								

\*PO Box 2175 Caulfield Junction 3161  
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**Prevent pirates  
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**WIA News**  
**Space Symposium**  
The amateur satellite organisation, AMSAT, has scheduled 7 to 9 October for the AMSAT-NA Annual Meeting and Symposium, to be held in Orlando, Florida USA, notes the 15 June issue of *The ARRL Letter*.

AMSAT has been seeking papers for the symposium, even if the author is unable to attend. Papers covering the gamut of satellite activities are expected, including everything from tutorials through satellite operations to new applications and techniques. Inquiries to Steve Park WB9OEP, 12122 99th Ave North, Seminole FL 34642, USA.

## Book Review

# DXpeditioning Basics

Published by the International DX Association and the ARRL  
Reviewed by Stephen Pall VK2PS

## DXPEDITIONING BASICS



Wayne Mills N7NG

Have you ever had a dream that you were on a DXpedition on an island in the middle of the Pacific, on your own, and the pile-up was such that you could not handle it? Do you still remember pulling the "big switch" and waking up in a sweat?

Dream no more. To cure yourself from these real or imaginary nightmares, the remedy is to read the booklet "DXpeditioning Basics". Quite seriously now, this book should be mandatory reading material for every DXer. This 26 page, spiral bound book by Wayne Mills N7NG, a well known and experienced DXer who took part in the ZA1A, AH3C/KH5J, XF4L, 9M0S, V51Z and other DXpeditions, sets out quite clearly the guidelines under which any reputable and successful DXpedition should be conducted.

The topics discussed and the advice given is the result of the practical experiences of the author and other personalities. The booklet deals with DXpedition objectives and organisation, which areas of the globe to work, and when and on what bands. How to control the inevitable pile ups. How to handle the QSOs and how to overcome the frustrations of the DXers and the DX chasers. There are detailed observations about QSLing practices, ethics and other allied subjects. The author emphasises that "under no circumstances is it ever necessary to listen to more than 30 kHz on SSB and about 10 kHz on CW (in a split operation)". Further on he says that "frequencies should be selected according to the requirements dictated by the area of the world in which the operation is taking place". In another part

of the book we read that "the operation should take advantage of all openings to the target areas with all its resources".

The book identifies the DX target areas of the world for maximising the QSO rate. These areas are Europe, Asia (Japan) and the USA. We, here "down under", always suspected that, with our small numbered ratio of 1.3% of the world amateur population, we are at the tail end of the preferred areas for a DXpedition. However, to be fair, one has to admit that lately some DXpeditions are paying special attention to our needs by calling "VK/ZL/Pacific only".

This booklet is not only useful for prospective DXpeditioners but also for the "armchair" DXers. It will let you into the secrets of the operational mechanics and tactics of the DX stations and will assist you to be successful in "getting into the log".

Wayne Mills has produced a very useful read for the DX fraternity. The book is a joint publication by the International DX Association (INDEXA) and the American Radio Relay League (ARRL). Send your order with \$US5.00 (surface mail) or \$US10.00 (airmail) to INDEXA, PO Box 607, Rock Hill, SC 29731, USA.

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3 ele 20M	\$289
M B Vert NO TRAPS 10-80 M	\$249
Tri band beam HB 35 C 5 ele	\$665
30M linear loaded 2 ele	\$360
40M linear loaded 2 ele	\$449
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# DICK SMITH ELECTRONICS



## Yaesu FT-530 Custom-Programmed For Australian Users

A deluxe 2m/70cm dual-band hand-held transceiver offering easier operation and more features than ever before! The FT-530 provides a flexible dual receiver facility with separate volume and squelch controls, allowing you to listen on two frequencies in the same band, or one frequency on both bands! Plus, the exclusive Australian version features full 70cm band coverage (420-450MHz), selectable Auto Repeater Shift on both 2m and 70cm (suits Australian band plan), and extended receiver coverage as standard. Two VFOs and 41 tunable memories per band are provided, together with keypad or dial frequency entry, seven tuning steps and a one-touch CALL channel. The dual 5.5-digit LCD screen includes many functional indicators plus separate signal/P.O. bargraphs for both receivers. An LCD voltmeter function is provided so you can even monitor your battery's performance under load and estimate remaining battery life.

Other top features include: Inbuilt dual CTCSS encode/decode, CTCSS scanning, an auto battery saver (ABS) for extended battery charge life, a cross-band repeater facility and inbuilt clock with alarm and snooze functions. Also provided is VOX circuitry for use with the optional YH-2 headset, a user replaceable lithium back-up battery, and DTMF selective calling and paging. A DC supply jack allows transceiver powering and NiCad charging, with RF output in four steps up to 5W at 12V. For enhanced battery life, an auto power-off function turns the radio off after a pre-set period of inactivity, so you won't return to a flat battery. The FT-530 comes complete with a high-capacity 1000mAh NiCad battery, belt-clip, carry case and approved AC charger.

### Specifications

#### Frequency range:

Transmit 144-148MHz, 420-450MHz  
Receive 130-174MHz, 420-500MHz,  
800-950MHz

#### Current Consumption:

Auto power off 150uA  
Standby (saver on) 16.8mA (both bands)  
Dimensions: 55(W) x 163 (H) x 35mm(D)

#### Transmitter:

Power Output: 5, 3, 1.5, 0.5 (at 12V)  
RF Power Output 2.0W (2m), 1.5W (70cm)  
(Supplied 7.2V 1000mA/H NiCad)

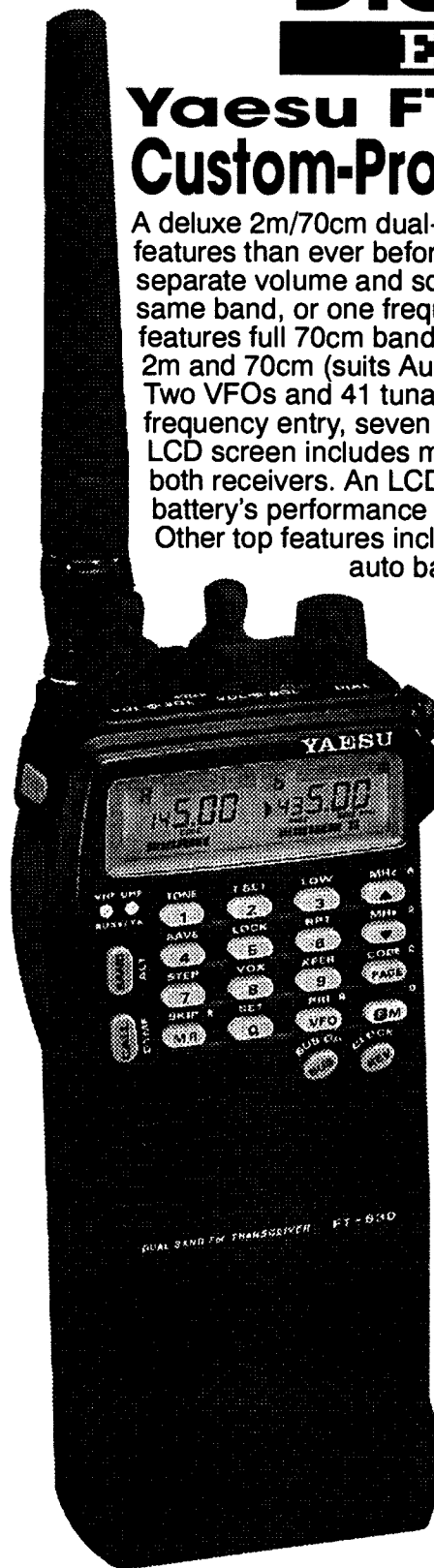
#### Receiver:

Sensitivity: 2m: <0.158uV  
(Ham bands only, 70cm: <0.18uV  
12dB SINAD)  
Audio Output (12V) 300mW at 8 ohms

Cat D-3620

# \$999

## 2 year warranty



### MH-29A2B Remote Control Mic

A compact speaker/microphone that provides a remote LCD screen with backlighting! Has duplicate keys for Call channel, VFO and memory selection, plus busy/Tx LED. Supplied with a user-programmable key. Suits FT-530 only.

# \$199

Cat D-2119

# Mobile Or Base, See Us First!

## Yaesu FT-840 HF Transceiver

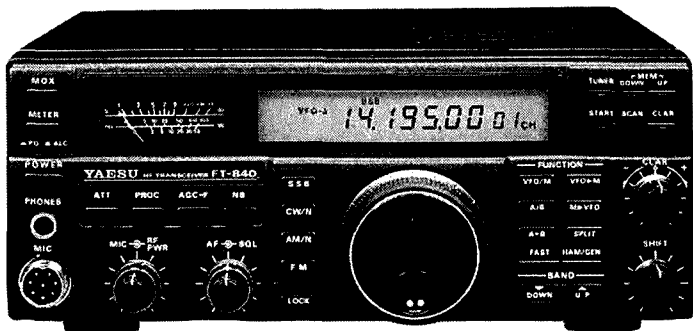
Blending the high-performance digital frequency-synthesis techniques of the FT-890 with the operating convenience of the FT-747GX which it replaces, the all new FT-840 HF mobile transceiver sets the new standard for high performance in affordable transceivers.

Covering all HF amateur bands from 160m-10m with 100w P.E.P output, and with continuous receiver coverage from 100kHz to 30MHz, the FT-840 provides SSB/CW/AM operation (FM optional), 100 memory channels, a large backlit LCD screen, two independent VFOs per band, an effective noise blander and an uncluttered front panel, all in a compact case size of just 238 x 93 x 243mm (WHD).

Unlike some competing models, small size doesn't mean small facilities. The FT-840 provides easily-accessible features such as: Variable mic. gain and RF power controls, SSB Speech processor for greater audio punch, and IF Shift plus CW Reverse to fight interference. Dual Direct Digital Synthesizers ensure clean transmitter output and fast Tx/Rx switching, while the low-noise receiver front-end uses an active double-balanced mixer and selectable attenuator for improved strong signal handling. The FT-840 weighs just 4.5kg and uses a thermally-switched cooling fan, surface-mount components and a metal case for cool, reliable operation

An extensive range of accessory lines are available, including the FC-10 external automatic antenna tuner, so you can customise the FT-840 to suit your operating requirements.

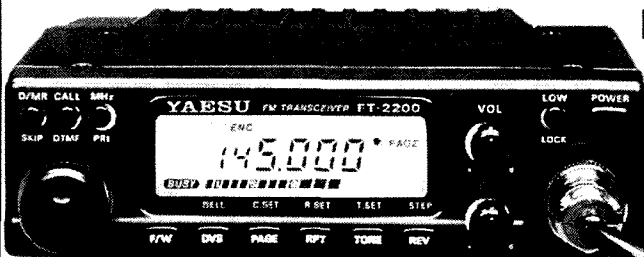
Cat D-3275



# \$1895

**NEW FOR '94**

## 2 Year Warranty



## FT-2200 2m Mobile Transceiver

The new FT-2200 is a compact, fully featured 2m FM transceiver providing selectable power output of 5, 25 and 50 watts, and includes the latest convenience features for more enjoyable mobile or base station operation. Built around a solid diecast chassis, it provides 49 tunable memories, a large variety of scanning modes, an instant recall CALL channel, 7 user-selectable channel steps from 5kHz to 50kHz and is just 140 x 40 x 160mm (not including knobs).

Backlighting of the large LCD screen, knobs and major buttons is even automatically controlled to suit ambient light conditions. Also provided is a 38 tone CTCSS encoder, DTMF based paging and selective calling with Auto-Page/Forwarding features, and 10 DTMF auto-dial memories. The LCD screen provides a highly legible bargraph Signal/P.O. meter plus indicators for the various paging and repeater modes. An optional internal DVS-3 digital recording/playback board can also be controlled from the front panel, giving even greater messaging flexibility. Supplied with an MH-26D8 hand microphone, mobile mounting bracket and DC power lead.

Cat D-3635



# \$699

**NEW FOR '94**

## 2 Year Warranty

## FT-5200 2m/70cm Mobile Transceiver

The FT-5200 uses the latest innovations in compact cross-band full-duplex and detachable front-panel design for brilliant mobile performance. It has 32 tuneable memories, a built-in antenna duplexer, dual full-frequency LCD screen (with signal strength/power output bargraphs for each band), 8-level automatic display/button lighting dimmer and dual external speaker jacks (one for each band.) A thermally-activated fan allows up to 50 watts output on the 2-meter band and 35 on the 70cm band. Plus, scanning features include programmable scan limits, selectable scan resume modes, memory skip, priority monitoring and one-touch recall CALL channels. In addition, 6 user-selectable channel steps are provided and a FRC-4 DTMF paging selcall option lets you program a three-digit ID code so you can be paged by other transceivers, or page up to 5 other stations yourself. An optional YSK-1 remote panel lets you relocate the main rig (under the front seat, for example) and mount the control panel on the dash. The FT-5200 comes with hand-mic, mobile mounting bracket and DC power lead.

Cat D-3310



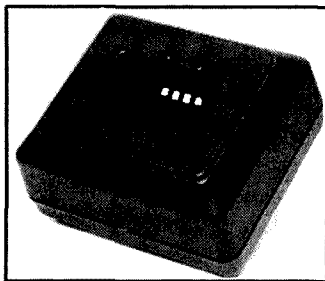
# \$1499

## 2 Year Warranty

## MasterCharger 1 Fast Desktop Charger

New for '94! At last, an intelligent, fast desktop charger that not only suits most current Yaesu handhelds but also many previous models. Made in USA, the MasterCharger 1 operates from 13.5V DC and uses switch-mode technology plus a Philips battery charge monitor I.C. (with  $\Delta V$  full charge detection) to charge NiCad batteries between 6V and 13.2V. Suitable for the FT-2373, FT-411/411e, FT-470, FT-26, FT-415/815 and FT-530, its charging cradle can easily be replaced, allowing for the insertion of a new cradle to suit earlier Yaesu transceivers (eg FT-209R) or different brands/model handhelds. The MasterCharger 1 requires 12-15V DC at 1.3A, and is supplied with a fused cigarette lighter cable for vehicle use.

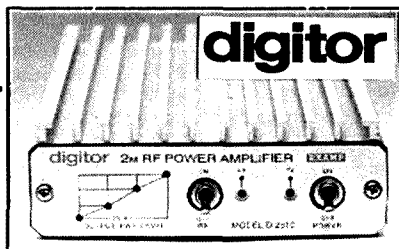
Cat D-3850  
Now available - charging cradles to suit various Kenwood, Icom, and Alinco handhelds.



## 2m RF Power Amplifier

Boost your 2m hand-held's performance with this compact amplifier. Works with 0.3 to 5W input and provides up to 30W RF output, plus has an inbuilt GaAsFet receive pre-amp providing 12dB gain. A large heatsink and metal casing allow for extended transmissions at full output, and a mobile mounting bracket is supplied for vehicle use. Requires 13.8V DC at 5A max. Size 100 x 36 x 175mm (W x H x D).

Cat D-2510



**\$16995** NEW FOR '94

**\$16995**

## Revex W560N HF/VHF/ UHF SWR/PWR Meter

Another quality Revex wide-band SWR meter, offering 2 inbuilt sensors for 1.8MHz to 525 MHz coverage! Provides measurement of 3 power levels (3W, 20W, 200W), SWR (at low and high power levels) and uses an N-type socket for the VHF/UHF sensor to ensure minimal loss. Measures 120 x 80 x 85mm.

Cat D-1375

Limited Stocks

NEW FOR '94

## With PEP reading! HF/6m Power/SWR Meter

A quality wide-band SWR/power meter with accurate PEP metering. Manufactured in Japan, it's very well constructed with an all-metal case. Features include a large, back-lit meter, 1.8-60MHz coverage with less than 0.1dB insertion loss, 20W, 200W and 2kW power scales, and LED indicators for Average/PEP operation. Requires 13.8VDC

at 200mA.  
Revex model W502  
Cat D-1360

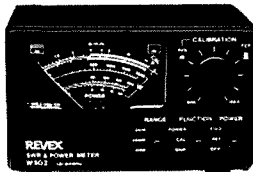
## VHF/UHF Power/SWR Meter

A high quality SWR/Power meter suitable for amateur, UHF CB and commercial applications. High-quality Japanese construction assures you of maximum reliability. It has an all-metal case, large meter display, 140-525MHz coverage with less than 0.3dB insertion loss, and 4W, 20W & 200W power scales. Revex model W540.

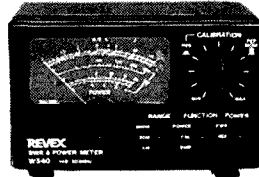
Cat D-1370



**\$369**



**\$199**



**\$199**

## 2m/70cm Magnetic Mobile

The black TM-723M is a slimline Japanese dual-band mobile antenna supplied with a low-profile magnetic mount and low-loss coax cable. While only 0.7m high, it provides 1.7dB gain on 2m and 4.7dB gain on 70cm and has a conservative maximum power rating of 50W.

Cat D-4812

BRANER

**\$6995**

## 2m/70cm Hi-Gain Mobile



The ST-7800 is our best long-range, dual-band mobile antenna providing high gain (4dB on 2m and 7.2dB on 70cm), while only 1.5m in length. It incorporates an inbuilt tilt-over mechanism and has a maximum power rating of 150 watts. Requires an SO-239 antenna base.

Cat D-4815

**\$12995**

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# Contests

P Nesbit VK3APN — Federal Contest Coordinator\*

## Contest Calendar Aug-Oct 94

Aug 6/7	YO DX Contest	(Jul 94)
Aug 13/14	Remembrance Day Contest	(Jul 94)
Aug 13/14	Worked All Europe CW	(Jul 94)
Aug 20/21	SARTG RTTY Contest	
Aug 20/21	SEANET DX Contest Phone	(Jul 94)
Aug 20/21	15th Keyman's Club of Japan CW	(Jul 94)
Sep 3	Panama Anniversary Contest	
Sep 3/4	All Asia DX Contest Phone	(May 94)
Sep 4	Bulgarian DX Contest	
Sep 10/11	Worked All Europe Phone	(Jul 94)
Sep 17/18	SAC DX CW	
Sep 24/25	SAC DX Phone	
Sep 24/25	CQ WW RTTY DX Contest	
Oct 1/2	VK/ZL/Oceania DX Contest Phone	
Oct 2	RSGB 21/28 MHz Contest Phone	
Oct 8/9	VK/ZL/Oceania DX Contest CW	
Oct 8/9	Iberoamericano Contest Phone	
Oct 15/16	Worked All Germany Contest Mixed	
Oct 16	RSGB 21/28 MHz Contest CW	
Oct 29/30	CQ WW DX Contest Phone	

In midwinter, at the low point of the sunspot cycle, it is tempting to dismiss conditions as being poor, and to put contesting on the backburner. That may be so for the higher frequency bands, but don't forget that good DX can still be found on the lower bands, with good openings (for instance) to South America. Many of us shy away from 40 m and below due to the higher noise levels and weaker signals, however, close listening often reveals good DX waiting to be worked. Although one has to work harder to make good scores, the fact that the openings are briefer than on 20 or 15 means that one can often put in quite a competitive effort, without necessarily wiping out the whole weekend as far as other activities are concerned. In addition, the new countries worked on the low bands never go amiss! So, why not take advantage of the lower QRN levels prevailing around this time of year, and see what you can do in one of the upcoming DX contests. You may be pleasantly surprised!

I had hoped to present the results of the recent John Moyle Field Day Contest this month, however, the floppy disk arrived scrambled, and there wasn't enough time to key in the accompanying printout. The results should appear next month. Whilst on the subject of floppy disks, it seems that the ordinary mail system may not be the safest way to send them, as out of about 50 disks (mainly 5-1/4") exchanged with contributors and others, about 10% appear to have become scrambled in transit! (I'm told that letters which fall near the edge of the conveyor belts, onto which

they are dumped for sorting, are exposed to magnetic fields from the motors driving the belts). If this is indeed the case, it appears that Australia Post has a significant problem to resolve if they don't want to lose business to private couriers! Have you had similar problems, and if so, do you know of a practical solution?

Thanks this month to VK1PJ, ZL1AAS, CQ, QST and *Radio Communications*. Until next month, good contesting!

Peter, VK3APN

## Contest Details

The following details are supplemented by the "General Rules & Definitions" published in April 1993 *Amateur Radio*.

## SARTG RTTY Contest

August 20/21, 0000-0800z & 1600-2400z Sat, 0800-1600z Sun.

This is the 24th annual contest sponsored by the Scandinavian Amateur Radio Teleprinter Group. Use 80-10 m; classes are single operator, single and multiband; multioperator single Tx SWL. Exchange RST and QSO number. Claim 5 points for QSOs with own country, 10 points for other countries on the same WAC continent, and 15 points for other WAC continents. Multiplier is total DXCC countries plus each call area in USA, VE/VO, and VK. Final score equals total QSO points (all bands) times total multiplier (all bands). Use a separate log for each band. Send logs and summary sheets to be received by 7 Oct to: SARTG Contest Manager, Bo Ohlsson SM4CMG, Skulsta 1258, S-710 41 Fellingsbro, Sweden.

## Panama Anniversary Contest

September 3, 0000-2400z Sat.

The Panama Radio Club invites all radio amateurs to participate in their 23rd annual contest. There is one category, single operator SSB. Use 40/20/15 m. Exchange RS plus serial number. Score 3 points for QSOs with HP club members, and 2 for non-members. Certificates of participation will be sent to all amateurs working 10 or more HP stations upon receipt of 3 IRCs. Send log postmarked by 30 November to "Radio Club Panama Contest, Box 10745, Panama 4, Panama".

## Bulgarian DX CW Contest

September 4, 0000-2400z Sun.

This contest is organised by the Bulgarian Federation of Radio Amateurs,

and runs on the first Sunday of September each year on 80-10 m. Classes are: single operator, single and all band; multioperator single transmitter all band; SWL. Exchange RST plus ITU zone (P2 = 51, VK4/8 = 55, VK6 = 58, VK1/2/3/5/7 = 59). Score 6 points for each QSO with an LZ, 3 points for each QSO outside your WAC continent with a non-LZ, and 1 point for each QSO within your WAC continent. SWLs score 3 points if both exchange numbers are copied, and 1 point if only one exchange number is copied. Multiplier equals the total ITU zones worked on each band. The final score equals the total QSO points (all bands) times the total multiplier (all bands). Send logs postmarked by Oct 4 to: Central Radio Club, Box 830, 1000 Sofia, Bulgaria.

## 35th Scandinavian Activity Contest

September 17/18 (CW), September 24/25 (Phone); 1500z Sat — 1800z Sun.

The CW section of this contest runs on the 3rd full weekend of September each year, and phone one week later. The aim is to promote contacts between Scandinavian and non-Scandinavian amateurs on 80-10 m (no WARC bands). Scandinavian prefixes are: LA/LB/LG/LJ (Norway); JW; JX; OF/OG/ OH/OI (Finland); OH0 (Aland Isl); OH0M (Market Reef); OX; OY; OZ; SJ/SK/SL/ SM (Sweden); TF.

Categories (all band only) are: single operator; single operator QRP (max 10 W O/P); multioperator single transmitter; SWL. Exchange RS(T) plus serial starting at 001. For each QSO, non-European stations should score 1 point on 20, 15 and 10 m, and 3 points on 40 and 80 m. The multiplier is the number of call areas (0-9) for each Scandinavian country worked on each band. Portable stations without a district number count as area 0, eg G3XYZ/LA counts as LA0. OH0 and OH0M are separate call areas. The final score is total QSO points (all bands) times total multiplier (all bands).

Use standard format for logs and summary sheets. Show duplicate QSOs with 0 points. Dupe sheets are required for 200+ QSOs. Forward separate logs for CW and phone sections. Logs on DOS disk in lieu of paper are welcome. Summary sheet must be on paper. Disk logs must be in ASCII, 1 QSO per row. Include an SASE if you want your disk returned. Send logs postmarked by 31 Oct to: Liv Johansen LA4YW, NRRL HF Contest Manager, Box 142, N-7078 Saupstad, Norway. Comprehensive awards to top scoring stations.

## CQ WW RTTY DX Contest

Sep 24/25, 0000z Sat — 2400z Sun.

This contest is jointly sponsored by *CQ Magazine* and the *RTTY Journal*. The object is to contact as many stations worldwide as possible, using Baudot, ASCII, AMTOR (FEC & ARQ), or Packet on 80-10 m (no unattended operation or operation through gateways or digipeaters).

Categories are: Single operator unassisted, single and multiband; Single operator assisted, all band; Multioperator single TX, all band ("10 minute" rule applies to this category EXCEPT that one — and only one — other band may be used during the 10 minute period, if — and only if — the station worked is a new multiplier); Multioperator multi TX, all band. Single operator entrants can enter the low power section (up to 150 W) or high power (more than 150 W). Single operator stations can operate 30 hours max. Rest periods must be at least 3 hours each, and the on and off periods must be clearly marked in the log. If single operator stations operate more than 30 hours, only the first 30 hours will count towards the official score. Multioperator stations may operate for the full 48 hours.

Stations may be contacted only once per band, regardless of the mode used. Send RST plus CQ zone; W/VE will send RST, state or area, and CQ zone. Count 1 point for each QSO with stations in your own country, 2 points for each QSO outside your country but inside the same WAC continent, and 3 points for each QSO with stations outside your continent. On each band, the multiplier equals the sum of US states (max 48) and Canadian areas (max 13) PLUS DXCC countries (including W and VE) PLUS CQ zones (max 40). Note: KL7 and KH6 are claimable as country multipliers only, not state multipliers. Canadian areas are VO1, VO2, VE1 (NB), VE1 (NS), VE1 (PEI), VE2, VE3, VE4, VE5, VE6, VE7, VE8, VY. The final score equals total QSO points times total multiplier from all bands.

Submit a single summary sheet including scoring calculations for all bands, plus for each band a separate log, duplicate check list, and multiplier check sheet. Send logs postmarked by 1st December to: Roy Gould KT1N, CQ WW RTTY Contest Director, Box DX, Stow, MA 01775, USA. (Box "DX" is not a misprint!) A comprehensive range of plaques and certificates is offered.

## Addendum to 1993 VK/ZL/Oceania DX Contest Results (May 94)

In the Single Operator Phone section, due to a spreadsheet hiccup V85BJ was shown scoring 1254 points on 160 m,

whereas this score should have appeared under 20 m.

In the Single Operator CW section, following further checking, VK2APK has been disqualified. Consequently, under "Top Single Operator CW scorer in each continent (Oceania)", change VK2APK to VK8AV.

## 1994 VK/ZL/OCEANIA DX CONTEST

**When:** This contest takes place each year on the 1st and 2nd full weekends of October (SSB and CW sections respectively). For 1994 the dates are: SSB: 1/2 October 1994,

1000 UTC Saturday to 1000 UTC Sunday  
CW: 8/9 October 1994,

1000 UTC Saturday to 1000 UTC Sunday  
**Object:** The object is for stations throughout the world to contact as many amateur stations in VK, ZL and Oceania as possible on 1.8-30 MHz (no WARC bands). The boundaries for Oceania are as for WAC.

Contacts between different countries in Oceania are permitted on all bands, (eg VK to ZL, ZL to 5W, VK4 to VK9), but contacts within the same country in Oceania are permitted on 160 m and 80 m only (eg VK5 to VK6, ZL4 to ZL4, 3D2 to 3D2).

**Categories:** Single operator all band; single operator single band; multioperator all band; and SWL. Single operator stations are where one person performs all operating, logging, and spotting functions. The use of DX spotting nets will place the station in the multioperator category.

**Exchange:** RS(T) plus a 3 digit number starting at 001 and incrementing by 1 for each contact. If 1000 is reached, go to 4 digits.

**Multiplier:** On each band this is the number of prefixes worked on that band. A "prefix" is the letter/numeral combination forming either the first part of the callsign, or else the normal country identifier for stations using their home callsign in another DXCC country. For example: N8, W8, AG8, HG7, HG73 are all separate prefixes. The prefix for both N8ABC/KH9 and KH9/N8ABC is KH9. Portable designators without numbers are assumed to have zero after the letter prefix, eg N8ABC/PA becomes N8ABC/PA0. Any calls without numbers are assumed to have a zero after the first two letters, eg RAEM becomes RA0EM. Suffixes indicating maritime mobile, mobile, portable, alternate location, and licence class do not count as prefixes (eg /MM, /M, /P, /A, /E).

**Scoring:** For each contact score 20 points on 160 m; 10 points on 80 m; 5 points on 40 m; 1 point on 20 m; 2 points on 15 m;

and 3 points on 10 m. The final score will be the total QSO points multiplied by the total number of prefixes worked. The same prefix can be claimed on different bands.

**Logs:** Use a separate log for each band, with times in UTC. Show new prefix multipliers the first time they are worked. Logs should be checked for duplicates, correct points, and prefix multipliers. Logs must be accompanied by a sorted list of prefix multipliers, and a summary sheet showing callsign, name, address, category, score calculations, and a signed declaration that contest rules and radio regulations were observed. Logs may alternatively be submitted on DOS disk in ASCII format, although the summary sheet must be on paper. Please include any interesting anecdotes, and any comments on the contest are also invited.  
**SWL Logs:** SWL logs should show date/time, the callsign of the station heard, the callsign of the station being worked, RS(T) and serial number sent by the heard station, points claimed, and new multipliers.

**Log Submission:** Send logs postmarked by 15 November 1994 (SSB) or 22 November 1994 (CW) to:

John Litten ZL1AAS,  
NZART Contest Manager,  
146 Sandspit Road,  
Howick 1705,  
NEW ZEALAND.

Overseas entrants please use airmail. Indicate SSB or CW on the envelope.

**Awards:** Special certificates will be awarded to the top scorers on SSB and CW in each category in each prefix area, and on each band for single band entries. Where returns justify, 2nd and 3rd place awards may also be made.

\*PO Box 2175, Caulfield Junction, VIC 3161  
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# International Amateur Radio Union Monitoring Service (IARUMS) — Intruder Watch

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Gordon Loveday VK4KAL\*

For the last couple of months, band conditions have not been favourable above 20 metres. On the other hand, 40 metres is being heavily plundered by long term intruders. Many of these can be heard world wide and often feature in reports from other monitoring services.

In our region the ITU Radio Regulations state that the frequencies 7.000 to 7.100 MHz are reserved for exclusive use of the amateur service ONLY. One of the reasons we suffer from this type of interference problem is that amateur operators are permitted only a comparatively small amount of transmitting power. ALL of the intruders monitored use very powerful transmitters, the outputs being measured in kilowatts.

Many amateurs say why bother to report these intruders, as they have been

reported many times and are still there. Fair comment! BUT, the monitoring services of the world are constantly bringing these intrusions to the forefront in many international forums. This type of exposure does cause embarrassment to the governments controlling most of the intruders, and HAS resulted in the eventual removal of some from our bands.

We in the monitoring service have plenty of patience and will continue in the same manner. To maintain our pressure, however, we must have constant reports being sent in. PLEASE DON'T IGNORE INTRUDERS — REPORT THEM!!

## Region 3 News

Another report of satellite intrusions has come from our man in Taipei, Paul

BV5OC. The band in question is 10 metres from 29.000 to 29.500 MHz. Indications are that the bulk of the intruders are from the south east coastal area of China. More reports are sought.

JARL (Japanese Amateur Radio League) monitors report that Vs are being heard frequently from 14.063 to 14.074 MHz. This is a common method to keep a frequency occupied. The origin of these transmissions is not known at present.

Military stations have been heard using F1b signals in the top part of 20 metres. These are easily identified by the use of the switching signal ZCZC at the commencement of a transmission. 14.340 MHz is where they have been active.

A few emission updates to conclude. "Piccolo" should be listed as J1BF, often as Ui (unidentified); and "Twinplex" as F1BCX. F1BCN covers SITOR. The Chinese have a 16 tone type on 14.255 MHz, J1BF.

\*Federal Intruder Watch Co-Ordinator, Freepost No 4 Rubyvale QLD 4702 or VK4KAL@VK4UN-1

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## Club Corner

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### Adelaide Hills Amateur Radio Society

The April 1994 meeting of the Adelaide Hills Amateur Radio Society was a special technical night where members displayed their home constructed "Z Match" Antenna Tuning Units. Of our 50 members, 23 presented some form of Z-Match, some units being made out of "junk" gleaned from our Annual Buy and Sell day, and others being from high quality commercial and ex surplus Defence components. The meeting was a great success.

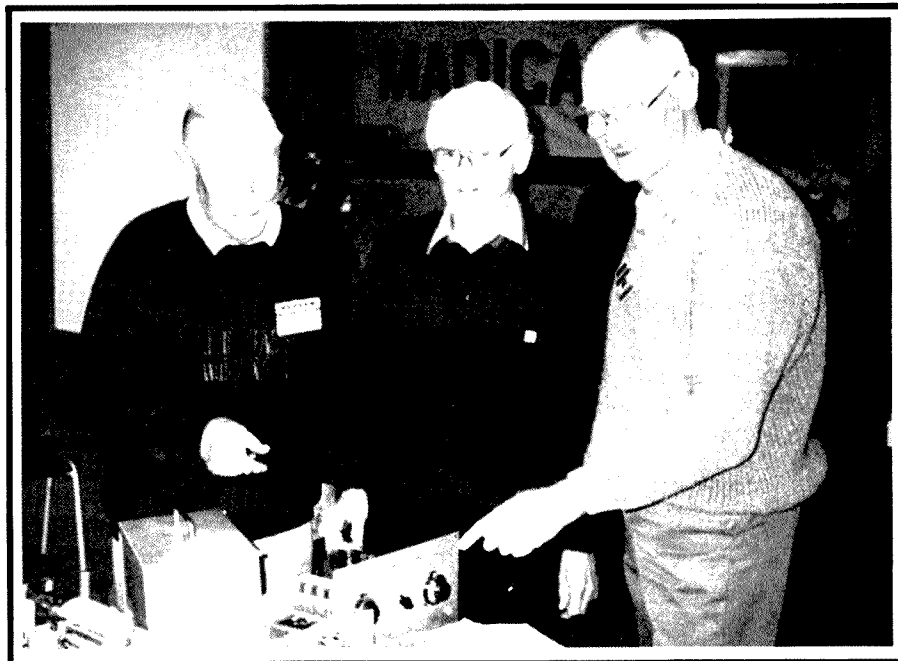
Three well known Amateur Radio authors led the members into a spirited discussion, with LLOYD Butler VK5BR giving a talk on the evolution of this form of coupler and a demonstration of his latest experiments, Rob Gurr VK5RG presenting a simplistic and practical approach for a beginner to follow, and Phil Williams VK5NN continuing with more practical hints from his vast experience. Other members gave brief discussions of their efforts, most giving credit to one or other of the above for their success with this ATU.

The Chairman of the AHARS is Geoff Taylor VK5TY who, together with a very active committee, leads one of the most popular Radio Clubs in South Australia, the program for which has a pleasant mix of amateur operating, technical and social meetings. The club meets at the

Blackwood High School, in the Adelaide Hills, at 7.30 pm on the third Thursday of each month. Details of the meetings are publicised on WIA Sunday morning broadcasts, and generally a call on the Adelaide Ch 7000 repeater will find at least one member listening, and able to assist at any time. Our weekly net on Ch 7000 at 8 pm local time each Monday night is supported by an average of 12

members. We usually have about 35 members and visitors attending our monthly meetings. Technical lectures delivered at our meetings are often video recorded, and played on the Adelaide ATV repeater on the Wednesday night following the meeting. Four AHARS members are also ATV enthusiasts.

Rob Gurr VK5RG  
Public Officer



(l to r) Phil Williams VK5NN, Lloyd Butler VK5BR and Rob Gurr VK5RG admiring some of the home constructed "Z Match" tuners displayed at the April meeting of the AHARS.



## South Coast Amateur Radio Club

### 2nd Annual South Australian Technical Symposium

The second annual South Australian Technical Symposium is to be held on Saturday, 17 September in Adelaide at the Onkaparinga Institute, O'Halloran Hill Campus (formerly the Kingston College of TAFE), Majors Road, O'Halloran Hill. This event presents a series of lecturers on various technical aspects of amateur radio and the electronics and communications industries. Topics this year include:

#### Key Note Speakers:

How Cellular Mobile Phones Work  
The Spectrum Management Agency

Telecom Australia  
SMA Adelaide

#### General Lectures:

FM ATV Equipment Construction and Operation  
FAX and SSTV using your home PC  
Electronic Test Equipment & Measurements  
HF Antennas  
HF QRP Operation & Equipment  
EME Communications  
The TPK Packet Radio Terminal  
TCP/IP, The Internet and Amateur Packet Radio  
An Introduction to Microprocessors

David Minchin VK5KK  
Colin McCarthy VK5EB  
Mark Spooner VK5AVQ  
Rob Gurr VK5RG  
Bernie Samuel  
Al Rechner VK5EK  
Rod Baker VK5ZTV  
Steve Fraser VK5ASF  
Peter Cockburn VK5TZX

I hope to see you all in Adelaide on 17 September!

Grant Willis VK5ZWI

### Philips World-wide QSO Party

All amateurs who are currently employed by, or retired from, the Philips Organisation are invited to take part in the 1994 QSO Party to be held, probably, during October or November. The QSO Party is similar to a normal contest where all modes of communication can be used. Any Philips personnel not aware of the existence of this contest and who would like to participate, should contact Ray Dobson, VK5DI @ VK5WI, QTHR in Callbook, or via Philips Components, PO Box 1, Alberton SA 5014.

Ray Dobson VK5DI

### Moorabbin & District Radio Club

M&DRC runs a "happy hour" every Tuesday morning between 10 and 11 am. Visitors from the country and other states are always made welcome for a cup of coffee and a chat with 30 to 50 like minded people. They will also find the club's fully equipped station VK3APC and the club's museum well worth seeing. The location is the Combined Club Rooms, Turner Road, Highett, map reference 77-G-9.

Allan Doble VK3AMD  
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The general lectures are held in three streams. Lunch, morning tea and afternoon tea are all provided and everyone who attends will receive a copy of the symposium proceedings.

The doors open at 9.00 am with the first lecture starting at 9.30 am. It should finish around 5.30 pm.

Last year this event was very popular with people attending from around Australia including Perth and Melbourne. Many also came to Adelaide from country SA.

If you wish to book your tickets, or would like more information, you can contact Grant Willis either by post at "SA Tech Symposium, PO Box 333 Morphett Vale SA 5162" or by telephone on (08) 277-3077 between 7.30 pm and 9.00 pm CST. Tickets are available for \$20 ea. Last year all the seats were snapped up very quickly so get in early! Payment can be made by way of cheque or money order made out to the South Coast Amateur Radio Club Inc.

## Divisional Notes

### VK2 Notes

John Robinson VK2XY

By now, many of the Division's members will know the outcome of the opinion poll regarding the 1994 election, as suggested by the Division's barrister, Richard Parson, through our solicitors, Lewarne & Goldsmith.

The opinion poll, posted to all financial members in June, brought 752 replies, like the votes in the 1994 election, another record response. For the benefit of those members who haven't caught up with the results, broadcast via VK2WI on Sunday 10 July, the responses were as follows:

Those answering "yes" to Question 1, that they were satisfied with the election and supported an application to the appropriate court to have the Council ratified, numbered 551.

Those answering "yes" to Question 2, that they were not satisfied with the election and requested an approach to the court to call another election, numbered 149.

Those answering "yes" to Question 3, indicating they would oppose the court application and providing their name and address, numbered 15.

There were a total of 37 invalid responses. An overwhelming majority of responses received support the outcome of the Council election. Further developments are expected to be announced on Sunday broadcasts as they become known.

On a happier note, your scribe attended a packet meeting held at Nowra on Sunday 10 July. It was held to plan the future direction of packet development on the State's South Coast and to find immediate solution to packet congestion in the region. Members of many clubs within the region attended.

At the meeting, I advised those present of another generous donation of superseded equipment from Telecom. This was radio bearer equipment which particularly lends itself to solving packet network problems encountered by club members in this and other regions.

The equipment presently operates on the 900 MHz band and is most readily modified to operate on several existing amateur bands. It provides a baseband some 300 kHz wide and usually handles some 60 telephone channels. It has been observed that this system can be easily used to provide an inexpensive way to form a high speed packet "backbone" for many packet networks using various protocols. In addition, the equipment can also be used to provide the linking of separate voice repeaters, plus many other applications — all at the same time!

One future application suggested would be to provide a multiple channel voice link between capital cities and regional areas.

### VK3 Notes

Jim Linton VK3PC

### RD Contest Campaign to Win

Can Victoria win the contest again? Well, we're going to do our best on the weekend of August 13-14. In recent weeks

a number of groups, clubs and individuals have pledged their support. Some of these have featured in a series of reports on the weekly VK3BWI broadcast.

To win, Victoria needs to once again substantially boost the number of valid contest entries. The rules are simple, and were on pages 33 and 34 of last month's *Amateur Radio magazine*.

A word of warning! Don't be confused by the fact that two people have been named in the magazine as holding the title of RD Contest Coordinator. Only send your summary sheets and declarations to the new RD Contest Coordinator, A. Petkovic VK6APK, mentioned under point 15 in the rules.

### **New Council Appointments**

The 1994-95 WIA Victoria Council held its first meeting on Saturday, 2 July. It resolved that officers currently serving in positions continue. They are President Jim Linton VK3PC, Secretary Barry Wilton VK3XV, Treasurer Rob Hailey VK3XLZ, Broadcast Coordinator George Hunt VK3ZNE, Ait Federal Councillor Bill Trigg VK3JTW, VTAC Coordinator Peter Mill VK3ZPP. The Council dealt with a busy agenda of corporate and financial matters, the acceptance of new members, and Federal WIA topics.

### **Special Projects Fund**

The Council considered in-depth all of the submissions for funding received by the closing date of June 30. As previously announced by way of these notes, the VK3BWI Sunday broadcast, and elsewhere, some funding was made available for projects which were shown to be of benefit to members, and met a set criteria. The response to this initiative was disappointing in that it did not attract a wide range of submissions, and a variety of projects.

Nine initial inquiries were received from clubs and individuals. Each were sent a copy of the criteria. Council had four final submissions to consider, and each of the applicants has now received an individual written response.

A successful submission was made by the WIA Eastern Zone Amateur Radio Club, whose entire membership of 22 are WIA Victoria members. Council resolved to provide WIA EZARC equipment and financial assistance for its project which was well documented in the submission. The club has raised its own funding for a packet radio link between Gippsland and Melbourne, and needed additional assistance. The link, due to be completed in a few months, is set to be of considerable benefit.

Another project planned by the Twin Cities Radio and Electronics Club will also

receive part-funding for some equipment to be used on a packet facility.

Both of these projects provide network infrastructure for packet radio.

### **VK7 Notes**

#### **"QRM" Tasmanian Divisional News**

*Robin L Harwood VK7RH*

Charles VK7PP, who is the Divisional QSL Officer, recently reported that there had been difficulties in getting QSL routes to the Commonwealth of Independent States (CIS) following the break-up of the former Soviet Union. Several suggested routes appear from time to time, but the QSL bureau receives conflicting advice. Charles is working on obtaining a reliable route and correct information. Also, several calls have been noted from the former Yugoslavia and, if you work these, it is highly unlikely that you will get a QSL as there is no bureau covering the entire former nation. The legitimacy of some of these prefixes in so-called "liberated" areas is somewhat questionable. Some of these don't tally up with ITU prefixes.

The QSL Bureau has incoming cards for over 100 VK7s that haven't been collected yet. Some operators, we are aware, do not wish to QSL whilst others may not know what to do about using the VK7 Divisional Bureau. We recommend that you get in touch with the Bureau at

GPO Box 371D, Hobart TAS 7001 to ascertain if there are any outstanding cards held for your call. Also note that cards are forwarded to both the Northern and Northwest Branch for distribution in those areas.

Tony Bedelph VK7AX is the FTAC Coordinator for VK7. Tony, who is also the Divisional WICEN Officer, can be reached at 5 Kywong Crescent, Ulverstone TAS 7315.

The Southern Branch Clubrooms on the Hobart Domain are on the former site of VIH Hobart Radio. To commemorate this historical link, the Branch has obtained the call of VK7OTC. It was the OTC who operated VIH until it closed down in February 1993. The station is activated every Wednesday afternoon between 12 noon and 5 pm when the Domain Centre is open. So pop in and have a chat. Visiting amateurs from interstate are most welcome.

Meetings for the month of August are:  
Southern Branch — Wednesday 3 August 2000 hours Domain Centre  
Northwest Branch — Tuesday 11 August 1945 hours Penguin High School  
Northern Branch - Wednesday 12 August 1930 hours Launceston Institute of TAFE, Alanvale Campus Block "C".

Don't forget to participate in the Remembrance Day Contest on 14 and 15 August and help the VK7 tally.

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## **FTAC Notes**

*John Martin VK3KWA, Chairman, Federal Technical Advisory Committee\**

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### **13 cm Band Plan — "Final for the Time Being?"**

I have received a number of comments on the draft band plans for 2.4 GHz published in the April and July issues of *Amateur Radio*. All agreed on the proposals for 2425 MHz and above. However, most felt that the 2424 MHz segment is too high in the band, and preferred an NB segment far closer to the satellite segment.

There were conflicting suggestions relating to the lower end of the band. The majority opinion seems to be that the lower ATV channel should be VSB only and that space should be found for a wideband data simplex segment.

The proposed plan was based on the assumption that the satellite segment should extend up to at least 2405 MHz, with flexibility for possible future expansion up to, say, 2410 MHz. But there is a new spanner in the works. The American FCC is now following the policy that the RF spectrum is a marketable

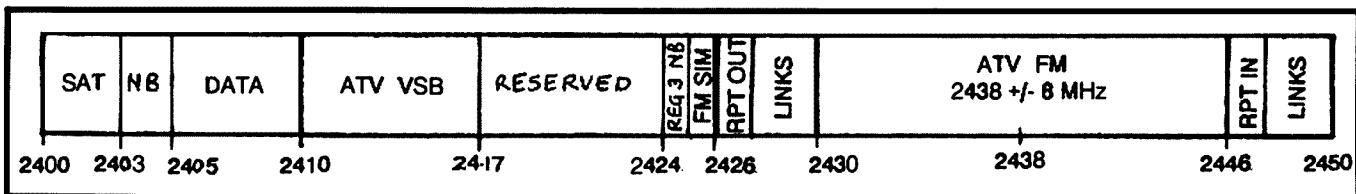
commodity, and has announced that it intends to sell off 2402-2417 MHz for commercial use.

This will make it virtually certain that any future satellites will operate only below 2402 MHz or above 2417 MHz. It would, therefore, be a good idea if our band plan kept some clear space above 2417 MHz in case it is required for future satellites.

So we come to "Plan C" as shown below. This plan takes into account the comments and suggestions received so far, and also the possible impact of the FCC's auction proposals on satellite allocations. I will wait until the end of August for any comments on this "Plan C". Unless there are any strong objections during that time I would then propose to adopt this plan as the "final as possible" version.

### **23 cm Band Plan**

Responses on the 23 cm band plan have been received only from VK5 so far.



**Proposed Australian 2.4 GHz Band Plan.**

I would appreciate hearing the views of all ATV and repeater groups. No major changes will be made until affected groups in all states have made their comments.

There is no objection to the proposed 1270 — 1271 MHz narrow band segment, with space for linear translators included within the 1270 and 1296 MHz NB segments, so it is proposed to write these into the band plan straight away. To avoid pre-empting other possible later changes, it is suggested that, for the time being, any new repeaters should operate only in the segment below 1282/1294 MHz. This will have effect on existing operation.

Please note also that, although some 1275 MHz radars have already closed, the 1270 — 1280 MHz radar guard band still applies until we hear otherwise and

amateur stations should continue to avoid transmitting there.

**Illegal Use of 80 Metre DX Window**

The 80 metre "DX window" is often overcrowded and there are problems with out of band operation and interference to other services. Use of frequencies around 3795 kHz LSB is very common but is no more legal than it would be to operate on 3500 kHz LSB. Some activity has been heard as low as 3792 kHz, and there is no excuse for this. Everyone should know the limits of the DX window and follow the rules.

The DX window is 3794-3800 kHz, with the proviso that amateur stations must not operate within 1 kHz of 3794 kHz. Therefore, no amateur signal should

extend below 3795 kHz. If you have a narrow filter (say 300-2500 Hz), using LSB with a suppressed carrier frequency of 3797.5 kHz would put you only just within the DX window, provided your frequency readout is spot on. Many radios have wider filters and would need more leeway than this.

Some radios have readouts which indicate the passband centre, and for LSB they normally display a frequency 1.5 kHz lower than the suppressed carrier frequency. This should be taken into account if you have this type of radio.

All this might seem pedantic, but the rules are clear and we break them at our own risk. A number of operators often use the DX window for local conversations. This is amazingly selfish and can only add to the problems.

*\*PO Box 2175, Caulfield Junction, VIC 3161*  
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**Education Notes**

*Brenda Edmonds VK3KT\**

For some time now I have commented on the need for a revision of the examination syllabuses, which have been in place for ten years. Well, at last, I have some action to report. With the considerable help of a small group of volunteers who have been working on the question bank review, the AOCPI/AOLCP syllabus has been reviewed and the NAOCP review is under way.

It has been a very interesting exercise. Technology has advanced by quantum leaps in ten years, but not always in the directions which were predicted then. Those of you who have compared a modern HF transceiver with one from 1984 will agree. For example, the item "Appreciation of control functions on modern transceivers" could well take up about six weeks of class instruction, so we have tried as far as possible to define the bounds of such topics to help avoid the waste of class time.

There is always a tendency to add in a whole lot of "state of the art" technology, and to discard topics which seem to be outdated.

However, we decided not to make too

much radical change, and took care to remember that we were looking at an examination syllabus, not a text book on the latest marvels. Where a topic seemed to be out of date, we considered whether or not it might still be relevant to a newcomer using second hand equipment. In a few cases we deleted an item because of disagreement between the standard texts, or lack of suitable references.

Throughout the exercise, we kept in mind both the class instructor trying to work at a suitable level with a mixed group and the remote student trying to be self-sufficient. Hopefully, we have made the situation easier for both. We have also made the completion of the question banks a lot easier.

The section order has been changed, so that it now agrees with that in the NAOCP, and there have been many small editorial changes.

Preliminary discussions with the SMA have clarified a few of our questions, and have led to a significant rewrite of the section on Interference. (Resolution of interference disputes will be an important

aspect of the new Regulations when they are released).

I hope to be able to present the final version to the SMA early in August, but I would be very pleased to receive further comments before then, particularly from persons experienced in running AOCPI classes or in writing examination questions. Copies of the draft have been sent to all Divisions, and should be available from them or from Divisional Education Officers. By the time you read this, the NAOCP syllabus should also be in draft form. If any readers wish to comment on that, please feel free to contact me.

One final re-assurance! The syllabuses are not going to be changed overnight! I do not see the changes coming into effect for some time yet, probably not until after the question banks are finalised and approved. There will have to be a phasing-in period, and due consideration will be given to those who are being examined in the change-over period. I will keep you informed of progress.

*\*Federal Education Co-ordinator,  
PO Box 445, Blackburn VIC 3130*  
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## How's DX

Stephen Pali VK2PS\*

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I have just listened to the recorded message of IPS Services, the Ionospheric Prediction Service here in Sydney. Have you ever phoned them before you sat down in front of your trusty rig to hear whether there is any activity on the bands? If not, please do it next time.

A recorded report on the state of the sun, the earth's magnetic field and the ionosphere is available by telephoning (02) 414 8330 at any time of the day. The contents of the message are updated at about 000 UTC (10 am Australian Eastern Standard Time) and more often at times of high solar, geomagnetic or ionospheric activity. The duration of the message is between 45 and 90 seconds, allowing you to obtain solar-geophysical information from anywhere within Australia at a very modest cost. The message is available on only one line. If this is engaged, you should try again.

The message will include the following details:-

(a) The current status of IPS disturbance warnings, ie whether a warning is currently in operation.

(b) The current state of solar activity and the expected course of solar activity over the next day (or longer if possible).

(c) The current state of the magnetic field and its expected behaviour in the next 24 hours.

(d) A report on ionospheric conditions in the Sydney area and a forecast of future conditions.

(e) The Ottawa 10.7 cm solar radio flux for the previous day.

(f) The estimated magnetic A index measured at Fredericksburg USA for the previous day.

So, what did the IPS Report predict for today? *Solar activity is low. The T index is slightly rising.* (Good! The higher the value of the T index, the higher are the ionospheric critical frequencies for today.) *Geomagnetic activity is low and expected to remain low for the next 24 hours. The F2 layer is near the predicted values with some sporadic E layer activity. The 10.7 centimetre flux is 83* (it was in the 70s last week). *The A index was 12 yesterday and the estimated value is 4 for today* (Again, good news! The higher bands should be open today and there is some possibility of activity on 10 metres. Let's go for it!)

### Scarborough Reef — BS7H

On 24 April, Martti OH2BH/VR2BH and Claus DL5VJ surveyed, in a chartered plane, Scarborough Reef known to the

Chinese as Huang Yan Dao, Yellow Rock Island, situated in the South China Sea. The Reef (15° 07' N and 117° 51' E) lies more than 225 statute miles west from the Philippine mainland and is claimed by the Peoples Republic of China, despite the fact that it is located within the 200 mile economic zone of the Philippines.

The 45 minute aerial survey showed that at high tide there are several rocks or coral heads which are protruding from the water. Among these only two of them were of significant size. The rocks are estimated to be five by six feet with a height of approximately six feet above sea level.

Staying and operating from the solid soil of the reef is impossible at high tide. The only possible operating site would be one of the shipwrecks lying on the reef "which were well above sea level at the time of the survey", says Martti in his report.

This survey was followed by a mini-DXpedition organised by the Chinese Radio Sport Association (BY1PK) together with JA1BK and OH2BH, to the coral rocks on the weekend of 25-26 June. A party of eight amateurs, BZ1HAM, DL5VJ, DU1IOG, JA1IST, KJ4VH, OH2BH, OH2MAK and DU1RAA, in a 70 foot PNG (P29) oceanographic research vessel, the M/V Tabibuga under the command of an Australian, Captain Tony Hookway, with an Australian crew, arrived at the reef on 25 June at 0700 UTC. At about 0820 the DX activity started. In a very brief 12 hours of activity, about 2000 contacts were made, mostly with Japan and the USA. A handful of VKs (VK6RU and VK6UE were the first) were also successful in contacting the reef. The last contact was at 2258 UTC on 25 June.

One of the participants, JF1IST (of Okino-Torishima platform constructions fame) surveyed the rocks for drafting all the necessary plans for additional safety features and construction that may be needed for a full scale operation.

Prior to the activity, the special call sign BS7H was issued by the PRC telecommunication authorities together with an official landing permit. An application has been sent to the DXAC for consideration of Scarborough Reef as a new DXCC country.

The DXAC is now in a very difficult, sensitive and delicate situation. Shall it recognise each of the Pratas and Scarborough operations? Both of them? Only one of them? Which one? Or none of them?

To QSL the BS7H activity, send your card with the usual SAE and return postage to W6CF, James A Maxwell, PO Box 473, Redwood Estates, CA 95044 — 0473, USA.

### 9X5HG — DK2SC

In the June 94 issue of *Amateur Radio* I expressed my hope that Hartmut, who was well known to the VK/ZL fraternity over the years as 9X5HG from Rwanda (see also page 32, October 1990 *Amateur Radio* and cover photo on February 1992 issue of *Amateur Radio*), has escaped from the civil war which is destroying that beautiful country.

After I made a number of enquiries in Germany, I was delighted to receive a long letter from Hartmut at the end of June from Germany. I am sure Hartmut will not mind sharing some of his experiences with you. To understand some of his references in his letter you must know that the German International Broadcaster "Die Deutsche Welle" had a relay station in Kigali where Hartmut was employed as a professional electronic engineer.

So let's read some parts of Hartmut's letter together.

*"Let me report what happened after our last QSO in October 1993"* writes Hartmut. *"The life on Kinyinya Hill, 10 kilometres from Kigali was really some kind of a "splendid isolation". Whilst the local inhabitants down in the valley were cutting down the vegetation for firewood our German headquarters allowed us to build a stone wall around the "Deutsche Welle" transmitter site. The big gardens around our bungalows under the expert fingers of Heidi, my XYL, were in full bloom. Even the trees were growing faster. Consequently my wire antennas moved higher and higher.*

*Later, an old 25 metre high guy-wire tower became redundant for the transmitting station. I got the tower and erected it in our garden. That was in December. My plan was to build more monoband log-periodics and put them all on the top of that tower.*

*In January my dream was over. A lot of aluminium piping was cut into pieces, for nothing! The transmitting station manager advised me to remove the tower. It was never explained to me why I should remove it, but I did.*

*Later on, as a result of a political agreement between the two Rwandan groups, the people who were fighting in the North against the Rwandan President were permitted to send some of their leaders into the Rwandan Parliament, along with 600 well trained and heavily armed Tutsi fighters to protect them. They lived half way between Kigali and our hill. Around their camp was a fence and on the outside were the blue-helmeted soldiers of Belgium, Bangladesh and Uruguay. This was a strange configuration. Heidi said*



**Pepi Z3IPK, a member of the Macedonia DX Group, on contest location at 1700 m above sea level.**

*that we are now sitting on a "powderkeg". She was right when one considers what happened afterwards.*

*Two weeks before the plane carrying the Presidents of Rwanda and Burundi was shot down, Heidi and I travelled to Germany on our annual vacation, without thinking that we might not return. We followed the dramatic events as they unfolded in Rwanda on German television. All our personal belongings were in three aluminium boxes which were our travelling luggage. In one box was the little laptop computer that I am using now. Stored on the hard disk was a writing program and, luckily, the whole log of 9X5HG. (I used the laptop always as a back-up for the big computer in the shack.)*

*The very sad thing is that we lost all our belongings which were left in our bungalow in Kigali. We are almost certain that our house was broken into and our things were either stolen, destroyed or burned. Books from my father and grandfather, a collection of priceless china, one room full of "radio junk" collected over 45 years of hamming, my total QSL card collection, etc.*

*I am glad that we were not hurt. Life goes on and I concentrate on our future. We assume that the "Deutsche Welle" relay station in Kigali will be closed and we will never return there. I work now in our Cologne (Köln) headquarters. We live here in Köln in a tiny furnished apartment. I bought a little rig, the Scout, from Ten-Tec. Tomorrow I will connect it to a multiband vertical antenna on the balcony. There are no expectations regarding DXing, but perhaps I can reach some of*

*my old friends again. My greetings to all the DXers in your area. It was good fun to have always the relatively good conditions between Rwanda and Australia. Now I wish I would have been more active", says Hartmut ending his letter.*

In some other parts of his letter Hartmut said that, if there is an amateur operator in VK (and I assume he also meant ZL) who still has not received a card from an 9X5HG contact, he will be glad to send a card to them. Please enclose a self addressed reply envelope, your QSL card and two US\$ "green stamps" or two IRCs for the return postage. His present address is Hartmut Gumpert, Gustav Heinemann Ufer 112, 50968, Köln, Germany.

### **EY — Tadzhikistan**

Nodir EY8MM, formerly UJ8JMM, via N7RO provides the following information about amateur radio in Tadzhikistan as it appeared in the *QRZ DX* bulletin.

Tadzhikistan is divided into six call areas which do not correspond with the government administrative divisions. The number in brackets [ ] shows the number of operators in the call area.

EY1-3 Reserved to the Tadzhikistan Amateur Radio League.

EY4 Region of Gornyj (ex UJ-R) [1]

EY5 Region of Kulab City (Khatlonskaya Oblast, ex UJ-X) [2]

EY6 Region of Kurgan Tyube City (Khatlonskaya Oblast, ex UJ-X) [2]

EY7 Region of Khujant City (Leninabadskaya Oblasts, ex UJ-S) [27]

EY8 Capital Region (Dushanbe City, ex UJ-J) [28]

EY9 Region of Dushanbe City (Raiony Respublicanskogo Podchinenia and Khatlonskaya Oblast, ex UJ-J and UJ-X) [4]

EY Reserved by the Tadzhikistan Amateur radio League.

Club call signs have a suffix beginning with Z (EY-Z). There are four classes of licence. Third class 50 watts, Second class 100 watts, First class 200 watts and Extra class 200 watts (500 watts in a contest). Extra class operators may operate on the 160 and 80 metre bands. Tadzhikistani Amateur Radio League officers are, President EY8AA, Vice Presidents EY8MM and EY8CQ, and QSL Bureau Manager EY8WW. QSL cards for the EY and UJ stations should be sent via the TARL QSL Bureau and not via Box 88 Moscow. The bureau's address is TARL QSL Bureau, PO Box 303, Glavpochtamt, 734025, Dushanbe, Tadzhikistan, CIS. Note that they have not received any QSL cards from Box 88 in two years.

### **DXAC and DXCC News**

The DX Advisory Committee decided not to reinstate the previously deleted Aldabra Reef to the DXCC list. In another decision the DXAC approved the call area guidelines. The DXAC guidelines call on DX stations to operate in a manner perceived to be fair and balanced to all areas and work portable stations in the specific call area they are listening for.

The DXCC Desk produced a long list of recently approved operations. The date in brackets is the date of the operations beginning. 3D2KR (25 Feb 94), 3D2LA (25 Feb 94), 3Y0PI (29 Jan 94), 5R8KH (21 Oct 93), 9N1BD (25 Aug 93), 9U5DX (8 Oct 93), A25/WD8NMV (15 Mar 93), ET3RA (22 Nov 92), S21ZW (26 Oct 93), TU4EI (22 Sep 93), VP2EDK (23 Sep 93), XF4CI (15 Dec 93), XU9M (3 Mar 93), XU9R (3 Mar 93), ZF2CF (1 Mar 94), ZF2QA (21 Jan 93), 3D2MD (25 Jun 91), 3S2/ON4QM (24 Sept 90), 5W1JW (9 Sep 91), A35DM (8 Aug 90), C56/ON4QM (30 Oct 89), DP0RIM (count for 5T5) (13 Feb 93), H44QM (30 Oct 91), S92QM (16 Mar 92), T2OCB (9 Sep 92), T3OMD (24 Sep 92), V63SB (24 Mar 94), V56/WA6TJM (2 June 92), XT2TX (19 Nov 93), YJ0AMD (1 Oct 90), ZK1DM (25 Sept 91), ZK2XX (29 Oct 93), ZK3DM (9 Aug 93).

Applications for DXCC and QSLs received at the DXCC Desk continue to run ahead of last year's rate. For the first five months of 1994, applications were up by 30% and QSL cards were up by 40%, compared to the same period last year.

### **Future DX Activity**

- Jaime PP5LL will lead a DXpedition to Mel Island (IOTA SA-47) from 2 to 16 September. Callsign to be used is ZZ5LL on the usual IOTA frequencies.

QSL to PP5LL, Jaime Lira Do Valle, PO Box 8, 88010-970, Florianopolis, SC, Brazil.

- 9V1ARU will be active in September at the IARU Region 3 Conference to be held in Singapore.
- CN2VA will be active from 2 to 22 August. QSL to IK4JQQ.
- Watch out for ZS6IR on 80 m (3780-3800 kHz) and on 40 m (7045-7055 kHz). QSL to DL4JZ.
- ZD8OK will be active from Ascension Island for 6 months starting 1 August. Operator is GW0FJT. QSL to N8ABW.
- Tom LA4LN and Magne LB3RC will operate from Swalbard Island from 1 to 20 August as JW5LN and LB3RC/JW. QSL to the following correct addresses: JW5LN via LA4LN, Tom Victor Segalstad, PO Box 15, Kjelsas, N-0411, Oslo, Norway; and LB3RC/JW via LB3RC, Magne Nicolaysen, Ostgaardsgt 23B, N-0474, Oslo 4, Norway.
- Sanyi XU7VK is still active until Feb 1995. QSL to HA0HW.
- 9L1MV will be active from Sierra Leone until 1996.
- FR5ZQ/G on Glorioso Island will be active during July and August.
- Pavel OK2FUN is a member of the Czech embassy staff, and operates as SU1KR.
- EX3Q/UA4FAO, EX4Q/UA4FAY and EX7Q/RZ4FXT are active from Kyrgyzstan until 25 September. QSL to home calls.

### Interesting QSOs and QSL Information

- ZA1MH — Mike — 14250 — 0607 — May. QSL to Mike Holman, PO Box 19, Tirana Albania.
- VR6DB — Dave — 14226 — SSB — 0550 — May. QSL to Dave Brown, PO Box 13, Adamstown, Pitcairn Island via New Zealand.
- KH3AP — Richard — 14226 — SSB — 0555 — May. QSL to Richard Giles, Box 976, APO AP96558, USA.
- HR2BDC — Dean — 14226 — 0713 — June. QSL to PO Box 2424, San Pedro Sula, Honduras.
- YS1XS — Bill — 18127 — SSB — 0102 — June. QSL to WD4PDZ, David L Purifoy Jr, PO Box 3437, New Bern, NC 28564 USA.
- TG9AOP — Oscar — 7205 — SSB — 0647 — June. QSL to Box 1-1 Guatemala City 01907, Guatemala.
- XX9AS — 14192 — SSB — 1329 — June. QSL to KU9C, Steven M Wheatley, PO Box 5953, Parsippany, NJ 07054 USA.
- C53HG — Gary — 7205 — SSB — 0724. QSL to W3HCW, Carl F McDaniel, 2116 Reed St, Williamsport, PA 17701 USA.

- R0/UR8LV — Oleg — 14018 — CW — 1119 — June. QSL to Bureau or to PO Box 32, Dikson Island, 663241, Russia.
- N9JCL/CY9 — Scott — 14195 — SSB — 1129 — June. QSL to K0SN, Tom Hellem, W 6321 Two Mile Road, Porterfield, WI 54159, USA.
- H44NC — 3799 — SSB — 1145 — June. QSL to PO Box 168, Munda, New Georgia, Salamon Island.
- KH8BB — Noni — 3799 — SSB — 1146 — June. QSL to Noni Que, Box 5247, Pago Pago, AS 96799, American Samoa.
- 4K4POL/A — 14023 — CW — 2011 — June. QSL to UA0KCL, Yuri Lobachev, Box 44, 686610, Pevek, Russia.
- 4L1AA — Omar — 7059 — SSB — 2101 — June. QSL to collecting point CT1CJJ, Jose Manual Farto Lopes, Lugar da Igreja, Sao Martinho da Gandara, 3720 Olivera de Azemeis, Portugal (Note — direct only, no bureau cards).

### From Here There and Everywhere

\* The well known "W6GO/K6HHD List of QSL Managers" which began in 1980 is no more. Well, not in the printed form, anyhow. The No 170, 17 June issue was the last newsprint edition. Jan and Jay "downsized" their business because family and health matters are demanding more of their time and they had to cut back to keep their heads above water. The "Go List", as it is known, will still be available on Packet cluster nodes, on floppy disks via mail and in the telephone modem download edition. In the future, instead of the monthly newsprint edition, an expanded QSL information column will appear in *The DX Magazine* published by Chod Harris VP2ML.

- Bill VK4CRR, the well known DXer, is planning a "YL" DXpedition to Cocos (Keeling) Islands, VK9C. He is looking for 4-6 experienced YL operators to spend 10 to 14 days on the island in September 94 or in April 1995. Bill says that all logistics and accommodation will be handled for the participants. For further details contact Bill Horner VK4CRR, 26 Iron St, Gympie, QLD 4570.
- Jack T30JH returned to Tarawa Atoll for a brief visit in the beginning of July and was heard on the 15, 20, 40 and 80 metre bands.
- According to Dave VR6DB, Pitcairn Island stations are now allowed to operate in the 12 and 17 metre bands.
- Japanese radio amateurs can use the following "windows" on the 80/75 metre band: 3500 — 3575 kHz, 3747 — 3754 kHz, and 3791 — 3805 kHz.
- If you have worked Aves island,

YW0RCV, send your QSL card to IARU Bureau via YV5AJ, YW0RCV, Radio Club Venezoleano, PO Box 2285, Caracas, 1010-A, Venezuela with two IRCs and a SAE.

- Do you have difficulty finding French QSL addresses in the International Callbook? Please note the following. The F5 + three letter suffix calls are the result of a new French callsign reassignment policy. Until an upgraded version of the callbook is published look for these suffixes under the following prefixes in the 1994 and earlier callbooks: F1, FC1, FD1, or FE1.
- The Japanese airmail charges were increased in January. A "green stamp" is worth only 100 Yen. Send one IRC, worth 130 Yen, which is sufficient.
- If you still need a QSL card for the 1992 4J1FS activity, try again via OH3BU.
- KC4USB, a US Antarctic station, is active from time to time. If you want a card, send your card with the appropriate enclosures to Department of the Navy, Byrd Surface Camp, Antarctica, FPO San Francisco, CA 96601 USA.
- JA3IG was active early in July from Christmas Island with a peculiar callsign, VK9IG. QSL to his home call.
- Do not contact or QSL the following "stations": 7P8RQ, 7P8EQ, ZB2X, ZL9RV and T71BT. They are all suspected pirates. Save your time and money.
- Argentine postage rates have increased. One "green stamp" is not adequate for return postage. One IRC is sufficient.
- DK0WCY is transmitting daily propagation forecasts on 3553 kHz, between 0600 and 0700 and from 1130 to 1600 UTC. It comprises a computer controlled 25 watt transmitter and a dipole antenna.

### QSLs Received

4L0JA (6W JP1BJR), 9V1YC (3W AA5BT), CR3W (6W DF5UL), PJ2/OH6XY (3M OH3GZ), RW0AJ (4M W3HNC), S21YD (1M SM6CST), TL8NG (2W WA1ECA), 5N0BHF (2W op), VR6CB (4M op), 9N1KY (5M op), Z31PK (3M op).

### Thankyou

Many thanks to my contributors to this column. Your help is greatly appreciated. Special thanks to VK1FF, VK2BEX, VK2DEJ, VK2KCP, VK2KFU, VK4AAR, VK4CRR, VK6DX, DL2SC, PP5LL, and the following sources of information, *QRZ DX*, *The DX Bulletin*, *The DX News Sheet*, *The W6GO/K6HHD QSL Managers list* and *IPS Radio and Space Services*.

73 and Good DX  
\*PO Box 93, Dural NSW 2158  
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## An Old Timer Reflects....

*Des Greenham VK3CO\* looks back over 50 years of amateur radio operation.*

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Recently, I went into a Dick Smiths store to buy a few odd bits to make a Morse Code oscillator and I got to thinking how easy it is now to make these things. Just a 555 chip and a few bits and away she goes! All so very easy. Just an odd piece of PCB, a few holes in the right place, a little soldering and the things works like a dream!

This set me thinking and reflecting on what it was like in the "good old days". We had no Dick Smith, only Homecrafts and Vealls in Swanston St. Here we could buy resistors, capacitors (condensers, in those days!) and a valve, all at great expense. No disposal gear then.

Then we would go home and, after buying a sheet of aluminium, we would plan our project, be it a receiver, transmitter or just a Morse code practice oscillator. No kits then and only information from *QST* or *Amateur Radio* magazines. In 1939 we had a new magazine known as "*Radio & Hobbies*".

In our workshop we would bend the aluminium to the required shape to form our chassis. We then got our faithful socket punch and punched the holes for the valve sockets and other components. We then drilled the screw holes (no "Pop" rivets then). We fitted all the components and then came the wiring. This was point to point wiring and was done using "hook up" wire or tinned copper wire with "spaghetti" covering.

After many hours of laborious work the job was done. After a careful wiring check

then came the big moment — switch on! Either of two things happened. The thing just sat there and did nothing or there was a "bang" or "splat" and something got hot. Then another wiring check. Ah, yes. Here was a mistake, a component wired incorrectly. Not far out — only hooked to HT instead of earth !!

Remember that, in these times, ALL gear worked at high voltage. None of this soft 12 volts. The working voltage was at least 250 volts DC and 750 Volts AC — not to be taken lightly.

Then the switch on again. This time perhaps nothing! Then, with the trusty 1000 ohms/volt multimeter we would trace along the circuit to see what else was wrong. After a few corrections, we would try again to be greeted with an ear piercing squeal. Ah, this is good. Something is working with a bit of RF feedback. A few bypasses here and there and she is a "goer". Then the lineup and "on air" test; another story.

Yes, they were the "good old days" when we made our own gear and solved our own problems. Of course, we received lots of HT shocks and never really learned how NOT to get "boots". Through it all we made our gear and got it working and received that wonderful thrill of achievement when it worked.

Oh, well. Back to the 555 timer, a few bits and away she goes — dits and dahs.

Were the old days THAT good?

\*16 Clydesdale Court, Mooroopna VIC 3629  
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## Packet World

*Grant Willis VK5ZWI\**

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### Mail Forwarding

The amateur packet radio BBS network is able to handle many messages a day. Packet operators all over the world send and receive messages to each other via the system, but not many understand HOW the mail gets from point A to B. I am only going to consider personal traffic this month. Bulletins are a different case again.

When you lodge a personal message on your local BBS that is destined for a friend who uses another BBS station elsewhere, be it on the other side of the city or the other side of the world, you will always need to supply an ADDRESS of where that message has to go. A packet mail address can be thought of as similar to the postal address, albeit with different components to suite transport via computers. The BBS will take the message with its address, and make a decision on how to get the message one step closer to its destination.

Based on the address on the message, the BBS stations will pass it along the chain in a similar fashion to a bucket brigade. At each step in the chain, the BBS stations look at the address and decide which of their available neighbouring BBSs can pass the message one step closer to its destination. The links in the chain can be many and varied. Your message may start off on a 1200 baud VHF network, be transferred via a high speed 9600 baud link to a gateway station, who might then send it on HF packet to another more distant BBS. The next BBS may take the message via 6 m to another gateway via satellite (eg the UoSAT-22 Satellite Mail Gateway Network) or perhaps via an Internet Wormhole. This would continue until it reached its destination.

What does an address consist of? It has several parts:

(1) The Destination Callsign — who the message is being sent to.

(2) The Destination BBS Callsign — the BBS station where (1) will read the message from.

(3) The Location Address or Hierarchal Address — which gives information on where the BBS station is located which is used in choosing the path the message is sent along.

The address format looks like:  
VK6ABC @ VK6XYZ.#PER.#WA.AUS.OC  
In this example, VK6ABC is the destination callsign, VK6XYZ is the destination BBS and the #PER.#WA.AUS.OC part is the Hierarchical

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## Stolen Equipment

*The following equipment has been reported stolen. If you have any information that may lead to the recovery of the equipment, please get in touch with the advised contact as soon as practicable.*

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**Item:** ICOM 720A HF Transceiver — serial No. 06619  
GE 27 MHz 18 channel SSB CB rig  
Home Brew ATU  
5/8 wave 2 m whip antenna  
1/4 wave 27 MHz whip antenna

**Stolen from:** Car

**Where:** Coolangatta, QLD

**Date:** 2/6/94

**Reported to:** Coolangatta Police

**Owner:** Alvin de Quincey

**Callsign:** VK7NDQ

**Contact details:** Bus: 002 353 698  
Home: 002 476 724

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Address. This Hierarchical Address tells us that the BBS is located in Perth, which is located within Western Australia, which is located within Australia, which is located in the region known as Oceania. Use of these addresses by the BBS stations is what helps get the messages to their destinations. Finding out these addresses is sometimes the more difficult part, however!

To aid in this, originally the W0RLI and MSYS packet BBS software programs started including a database system which extracted this address information called White Pages. Next month we will take a look at the White-Pages system, how it works and how to access its information. We will also look at how you can manually guess approximate addresses if you only know the BBS address.

## PaKet6 Released

The following news comes from Tony VK2DHU on the release of the new version of the paKet 6 terminal program.

It has been difficult to prepare this list of changes in paKet 6 because there has been continual change, development and refinement over the past two or more years since paKet 5 was released. However, a quick review of the paKet 5 Manual has helped me to produce the following brief summary of some of the changes.

The paKet manual is now 350 pages. The entire manual has been revised. While a few sections remain intact, most of the manual has been revised to cover the new version. The Introductory section has been expanded too, and the Scripts Section has been fully rewritten in a tutorial format.

The PMS (Personal Message System) has been completely rewritten. It now includes Auto Forwarding to/from the BBS using the standard MBL/RLI conventions.

There are now 10 TNC Help Files included (for the following TNCs):

DSP-12, KAM, KPC-3, MFJ-1278, PTC (PacComm PacTOR Controller), PK-232, PK-88, TNC-1, TNC-2, TNC-231 (release 2.31 firmware).

A new Online Configuration Help facility provides some additional information for the paKet operator while using paKet's Online Configuration. For each item in the configuration, a small window will pop up offering some help and suggestions for that item. This feature can be turned off if desired.

In addition to the Word Wrap that proved popular with paKet 5 and is now considered an essential feature of any communications software, paKet 6 now supports Justified Text as well. This provides an aligned right hand margin such as you see here in this paragraph.

This style is popular with some people and may be toggled on or off during a paKet session.

The Online Manual and TNC Help Files now load significantly faster, especially on an older, slower machine.

There is a Morse Code option in paKet 6 to uniquely identify different Alerts strings. So, if you are using the Alerts facility to alert you to the presence of a particular string of text and one of the specified strings is detected, paKet can make a unique sound to identify not only the fact that an Alert has occurred, but now it can identify WHICH alert string was detected! (Very useful if paKet is running as a background task under Windows or OS/2).

There has been a lot of attention to Scripts in paKet 6. There are several new Commands and the Scripts section of the manual has been completely rewritten in a tutorial format.

A new Quiet Mode is available at the touch of a key to silence all paKet sounds, including incoming beeps and warning bells.

PaKet 6 includes a Serial Number Registration scheme so registered users can be readily identified. However, I am pleased to advise that there is no form of copy protection at all and unregistered users will still have access to the full paKet facilities while evaluating the software.

The Flashback Dump facility of paKet 5 has been further enhanced and now allows selective, partial dump of the Flashback Buffer.

There is improved support for Kantronics TNCs, including dual port operation.

There is a user programmable KISS OFF sequence to reset the TNC for normal operations after some other software has left the TNC in KISS Mode.

A new "Pass Control Codes" facility has been introduced especially to provide for more convenient transmission of Control Chars (eg <Ctrl-T>) which are often used in TCP/IP operations.

Keyboard Macros and Script texts now support substitution parameters (eg \$T for current time or \$D for today's date).

Message duration is now user configurable as some paKet users asked for longer display times and some asked for shorter times!

New keyboard commands:  
<Alt-F3> to manually initiate a Forwarding session with our BBS.  
<Alt-G> to get and redisplay the previous message that was displayed.  
<Alt-Y> (yawn) to add a half second delay to various command texts such as Keyboard macros or Script command strings.

New Remote command that allows a

remote user to perform selected Scripts on your paKet system.

Contest Mode has been removed in paKet 6. It appears very few people were using this mode and it was finally decided the overheads in memory and support effort were too much!

To obtain your copy, the new version is available to all registered users without any additional registration fee. Yep, FREE. But if you want a disk in the mail please send \$5 to cover the costs of postage, diskette, etc.

For those not yet registered, paKet is still the same price as it has been since version 1.0 — it is \$25. And again an additional \$5 covers the mailing costs so it is \$30 for a disk in the mail.

Mail Orders (with cheque/Money Order or details of Bankcard/Mastercard/VISA) may be sent to M A Lonsdale, 6 Marsden Cres, Port Macquarie NSW 2444.

## The VK3 Packet Conference

Over the weekend of 4 and 5 June I was able to attend the VK3 Packet Conference in Ballarat. This event was run jointly by the Melbourne Packet Radio Group and the Ballarat Amateur Radio Group. The Saturday was the user information day where a series of talks was presented by people from MPRG on all aspects of packet operation. The day was well attended with about 20-30 people present and all went away hopefully with something new.

The Sunday session was for the packet BBS system operators and repeater groups. Various topics were covered including BBS header address standards, packet radio bandplan additions on 2 m and 70 cm, network management within VK3 and network growth and planned extensions. Network operational quality was also discussed by Lee VK3PK from the Geelong group, which led to the creation of a sysop mailing list to discuss the formalisation of some network standards. A report was also presented by each group represented on their activities and how they saw the network developing.

Overall the weekend was very useful and I would like to encourage more people to attend the next one which I believe will be held in Melbourne in December.

## Conclusion

If you have anything you would like to see covered in the "Packet World" column, please either send your suggestions or contributions to me. I can be reached on packet at VK5ZWI@VK5TTY.#ADL.#SA.AUS.OC or by post to GPO Box 1234 Adelaide 5001.

*\*C/o GPO Box 1234, Adelaide SA 5001*

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## Over to You — Members' Opinions

All letters from members will be considered for publication, but should be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.

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### Limited Licensees and 10 Metres

Reading G J McDonald's (VK2ZAB) opinions in the "Over To You" page in the July issue of *Amateur Radio*, I couldn't but help feel sympathy for that writer's approach to Limited licensees not being allowed access to 10 metres on all modes.

Perusing the 62 page Report To The Minister for May this year, regarding the discussion paper inquiring into the Apparatus licensing system, little is revealed about the Amateur Service.

The writer is currently updating to a Full or Combined Call and will probably go chasing DX on those HF bands other than 10 metres. Having said that, I hear some readers say, what's he on about?

A couple of relevant points. Firstly that 10 metres is STILL not being occupied by the fraternity. If you ask a ham if he uses the band, an awkward silence follows, then the usual remark that it's a good band when it's open but nobody uses it much, etc.

Secondly, if 29 MHz is granted to Limited licensees using FM only, the 28 MHz allocation will still sit there idle for the most part, just waiting for some outfit to make a bid.

Thirdly, VK2ZAB is correct when he states that FM on HF is not the real thing for a fair dinkum ham to cop! If the WIA needs members then there's a whole bunch of Limited calls waiting to sign up, given the right incentive,

The writer instructs in both levels of theory and is very much aware of the extra study the Full Theory students do to get their licence. The SMA should be alerted to this fact and urged to reward these people with 10 metres all modes.

Max Morris VK3YBE  
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Rye VIC 3941

### Stolen

While holidaying on the mainland with my family, all my radio equipment was stolen from my car. At the time of the theft my car was locked, with an alarm set, and was parked in a key controlled, supposedly SECURITY CAR PARK under our apartment block in Coolangatta.

We had just completed many thousands of kilometres up through the middle and across the east coast of Australia and had used the equipment, not only for day to day contact with friends in Tasmania (and many new and helpful friends on the 15 metre Travellers Net), but

also for emergency backup communication for other members of the family who had potential medical problems.

As you can imagine I was angered, depressed and a mixture of many other emotions for several days until it finally sank in that the equipment had really gone. The thief/thieves knew exactly what they wanted. The car was undamaged, the alarm turned off and nothing else touched except the obvious radio gear. They didn't even look under the seat where a 2 metre handheld had been left accidentally overnight.

Some of the equipment had strong personal value to me as I had owned it from brand new and some was generously loaned by my friend Maurice VK7SA. But what really angered me, apart from the time it took to mount all this gear in the car to survive the rigours of dirt and bitumen driving, apart from the days it took off our holiday seeing the police, insurance, etc, and apart from the all up cost to replace the equipment being over \$3,000 and I only had insurance to \$2,500, was the knowledge that the bloody quick sale of the gear would probably only net the thief/thieves around \$200 for the job.

Apart from the police being informed of the theft, I also reported the incident immediately to the 8.00 am, 2 metre net on the Gold Coast, where I received much appreciated sympathy and help in passing on equipment details and serial number to other amateurs in the area.

Lessons learned:

- Make sure you have itemised insurance that fully covers all your gear to replacement value and that your equipment is mounted in the vehicle to the insurer's specifications.
- If you wish to, or have to, leave your gear in the car then make sure that you have the most undefeatable alarm you can afford. It can be simple, but make it painful and impossible to switch off easily.
- Don't trust anything that says SECURITY!

Alan de Quincey VK7NDQ  
154 Carella Street  
Tranmere TAS 7018

### Radio Australia

I read with interest your "WIA News" item in the July issue of *Amateur Radio* regarding the increased voice Radio Australia has acquired through the addition of two new transmitters at the

Cox Peninsula, Darwin site. I would, however, like to set the record straight on one seemingly popular misconception about the new facilities which, I note, has also been promulgated in other print media.

Your article is correct in that the two new units bring the total number of transmitters at the Cox Peninsula site to five, but it then goes on to effectively write off the other three. To the best of my knowledge, Senator Collins has no reason to fear that the original three transmitters which bear his name will be pensioned off for quite some time. In fact, given the normal lifespan that Australian Governments have traditionally come to expect from their transmission facilities, I suggest (with due respect to the good Senator) that the Collins name may well survive longer at Cox Peninsula than in Canberra.

As you might have gathered, I have rather a soft spot for the Collins 821 A-2 transmitters which, at the time of their installation (circa 1969), were very much state of the art devices — so much so that it took a very experienced team of engineers and technical officers several years to fully comprehend their operational idiosyncrasies and maintenance requirements. Regrettably, at the peak of the learning curve, and just when the Cox Peninsula station was becoming a powerful and stable part of the Radio Australia network, cyclone Tracy totally destroyed the antenna system and severely damaged much of the ancillary equipment, including the vital computer control facility.

The Collins transmitters themselves suffered only minor damage and some ten years later, after numerous inquiries, reports, and cabinet submissions, were restored to active service and have since carried a major share of Radio Australia's South East Asian and Chinese programs. The late Arthur Collins, as well as being head of a large manufacturing organisation, was a true pioneer and highly innovative engineer, as I'm sure those who were fortunate enough to own any Collins amateur radio equipment will agree. When he decided to bid for the Darwin transmitter contract in the early sixties, he virtually locked his design staff in a room with instructions to produce a tunable 250 kW HF power amplifier which did not use the normal lumped circuit elements (which he considered totally inefficient), and was capable of being linearly modulated to one hundred and ten percent. He suggested that they should adapt those techniques which had already been proven in VHF and UHF transmitters.

In the final prototype large rectangular

cavities with servo driven shorting planes replaced the normal tank circuit, output coupling and balun inductors and, when these were resonated with proportionately large vacuum variable capacitors, the desired very high Q tuned circuits were achieved. Despite the inertia of these rather massive mechanical components the transmitter could be retuned from one end of the HF spectrum to the other (6 to 26 MHz) fully automatically in a matter of twelve seconds or less — a task which, with the existing transmitters of the day, occupied two or three experienced technical officers for up to twenty minutes.

Much of the servo control and automation technology was adapted from recent developments in the aero-space industry in which Collins was also heavily involved. The sole interface with the transmitter was via the keyboard of a teletype machine and all log keeping, fault reporting and diagnostic routines were output through the same medium.

There were only eight Collins 821A-2 transmitters ever commissioned, the other five being installed at Sackville, Canada where they have operated continuously since about 1970. As an example of lateral thinking and innovation they stand alone in the past half century of transmitter development and, I'm sure, will not be replaced while ever they are capable of performing the service for which they were designed.

**Max Chadwick VK3WT**  
15 Norray Avenue  
Mount Waverley VIC 3149

## VI Prefix

I cannot agree with the proposal on page two of July *Amateur Radio* to grant visitors the "VI" prefix; it is ironic that it appeared in juxtaposition to the item on page 14 explaining the use of the AX/VI prefixes.

In the past, amateurs have been allowed to use VI instead of AX. What would happen if VK2USA (listed in the Call Book) were to ask for a VI prefix, only to find that it had been allocated to some visiting American?

What, exactly, was wrong with allocating the hitherto-unused "H" suffixes, or "O", or (heaven forbid!) the "Q" suffix; does anyone seriously believe that (say) VK2QXX will be confused with the Q-code, now that we are no longer using spark-gap technology?

**David I Horsfall VK2KFU/VK2ZTB**  
PO Box 257  
Wahroonga NSW 2076

## FM is Not Real Amateur Radio?

I note with interest Gordon McDonald VK2ZAB's comments in July *Amateur Radio* that "FM is not real amateur radio",

and wonder what he meant. Surely he did not mean that, because other services use such a mode, we shouldn't because, in some way, we should be above that? After all, we amateurs pioneered the use of every mode I can think of. I cannot understand why Gordon would seek to denigrate those pioneers who have gone before us both.

In reference to his comments about extra privileges for Limited licensees. At the time of the review, I was VK4 Alternate Federal Councillor and was present at the quarterly Council meeting at which the WIA's position on the Review of Licence Conditions was discussed in great detail. A total of 41 submissions were received from the 18,000 plus amateurs in Australia, and only two went to a second page. Did VK2ZAB send one in? My own submission covered all aspects of the licensing grades, privileges, operating conditions, modes, power and so on and went to seven pages of detail. Many of the points I made were included in the WIA's discussions with the Department.

It should be recognised that the WIA does not establish a pre-determined position of intransigence, as bully-boy tactics on the part of either party are never as productive as meaningful discussions based on mutual satisfaction. As Gordon notes, our use is concerned with the quality of life. The amateur bands are like the national parks of the radio spectrum

and we are like the naturalist conservationists. The WIA enters all discussions with the SMA from that perspective, coupled with our great technical base.

The aspect of Limited licensees being given access to 10 metres FM was included in my paper and is a logical extension of the technical areas of experimentation which lies with all amateurs, not just Limited licensees. Its major benefit is to increase the population base in the FM segment of the band, since Novices keep the bottom segment very active.

The whole 10 metre band is under threat from pirate commercial interests. This was seen as a way to populate the band, to give the Limited licensee a further taste of DX and, hopefully, to give that bit of extra incentive to upgrade his/her licence. Note that all privileges and band structures use this "incentive concept" as a way to keep us on our toes.

Gordon, I hope this sets your mind at ease and you now recognise that it was NOT the Department which instigated this proposal, but was indeed the WIA. Give us the chance and we will DO IT PROPERLY.

**David Jones VK4OF**  
18 Browning Ct  
Strathpine QLD 4500  
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## Pounding Brass

*Stephen P Smith VK2SPS\**

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It is hoped you reaped the benefits from the last two issues of *Pounding Brass* covering "Morse Practice Nets". Whether you are a newcomer to the ranks of amateur radio, or already hold a licence and intend to upgrade in the near future, I am sure you would have found something for your particular level that would have assisted you to increase your Morse receiving capabilities. In this day and age we all take things for granted, spending modest amounts of money on equipment for the shack, etc. We can tune into Morse transmissions virtually day or night, whether it is nets or DX, allowing us to improve our receiving abilities. Some people have the technical knowledge and can home brew a simple DC receiver and thus copy Morse.

Just take a minute to think about people who, due to circumstances, have no equipment or technical knowledge. How can they learn Morse and be expected to pass the required examinations? You may be fortunate and belong to a club, thus receiving the required training from the

more experienced operators, or be lucky enough to borrow a receiver. You could obtain the required books on Morse, learn the alphabet, numbers, etc and then sit the exam. We all know the outcome, the big "F". Remember, Morse is learnt by sound and I emphasise "Sound". You have to train your brain to read the letters by their "sound equivalent" and not as "dots and dashes".

Which brings me to the topic for this issue, the humble "Morse Cassette". I hope to guide you through the more reputable brands which are currently on the market. To give you an idea of what's around we have the following sources: WIA, RSGB, ARRL, Dick Smith, Gordon West Radio School, W5YI tapes, Kawa Records, 73 code, and the list goes on and on. With so many varieties of Morse tapes, how is the beginner going to make the right choice? Some of the most asked questions from a beginner are:

- (a) How many tapes do I require to pass my exam?
- (b) Am I getting value for money?

(c) Will I benefit from it?

All valid points. Answers are as follows:  
(a) Being individuals we all learn at different rates; some people can pick things up faster than others. With the Morse cassettes it takes a minimum of six to completely learn the code without any additional "outside" practice. Some people may need more, some less.

(b) Cassettes are cheap at \$2.50 — \$5.00 a cassette, or more if supplemented with a theory text book. Imported cassettes will cost you a lot more than stated above. You would be far better off purchasing your cassettes through your particular radio society where you are guaranteed a high standard type cassette

(c) "Yes, you will benefit" as you are learning by sound. Remember, short and consistent practice lessons are the key.

Note, however, that with all Morse tapes, regardless of speed, a point will be reached in your training when you subconsciously memorise the code practice exercise thus giving you a false sense of security of having learned the code at the specific speed. When this happens, or your copy of the exercise is around 85% or more each time you play your cassette, it's time to either:

(a) Change to a new cassette with a different exercise, or

(b) Increase the speed of the Morse cassette. If you don't, you will become static and further training will be of limited benefit to you.

When your copy is 85% or more, as mentioned above, double the speed of your cassette. I would advise this instead of going on to another cassette of the same speed.

If you do decide to increase your speed and you can only manage 10% or less of the exercise, don't despair! This is quite normal, your brain is going through a transitional period adjusting itself to the faster speed. This might sound extreme, but you will be surprised at how quickly your receiving ability is greatly increased.

We will now have a look at the "Novice Study Kit". This kit is available through Dick Smith Electronics stores Australia wide. The kit consists of a C60 minute Morse cassette along with a theory text book. Recommended price \$19.95.

The cassette is produced by Graeme VK2KE (ex VK3ZR) who has been making Morse tapes since the 70s. Taking a close look at the contents of the tape, it starts with an introduction from Graeme looking at Morse code in this day and age, the structure of the course, and how you can approach the exercises for maximum benefit. At the completion of the introduction, Graeme starts with the alphabet by saying the letter first, followed by the Morse equivalent of that letter sent

three times by computer. He then reconfirms the letter again in English. Graeme follows these guide lines throughout the alphabet and then continues with numbers through to 9. A number of groups are then sent with each group consisting of 50 — 65 characters sent in random order. Group 1 consists of the letters E T M A N I, group 2 of R D U C S O, group 3 of K P B G W F, and group 4 of Q H L Y. At the end of each group, Graeme reads back what was sent so that any mistakes can be corrected.

Side 2 of the cassette continues with group 5 finalising the alphabet with the letters J X V Z, group 6 consisting of numbers only, and groups 7 and 9 being random letters of the alphabet. Group 8 is a trial Novice Exam with numbers, with the last few moments of the tape consisting of alphanumeric code groups. This tape is an introduction to Morse for the complete beginner. Once mastered you can move onto other Morse tapes or nets that will assist you in obtaining the required speed for your Morse exams.

Graeme has not changed the price of his cassettes in over twenty years. He is still selling C60s (1 hr tapes) for \$5 each. Some of the tapes that are available include the abovementioned Beginners Course, 5 wpm sample exams, 10-15 wpm sample exams and tapes at 20 wpm. For further information, you can contact Graeme through his VK2KE Call Book address.

We will now move along and have a look at the ARRL Morse Course. This course was produced by Larry WA3VIL, Bruce KB1MW and Kathy N1GZO. The course is computer generated as are the majority of the tapes produced today. There are four sets of tapes available, each set consisting of two 90 minute cassettes ranging in various speeds. (1) 5-10 wpm (2) 10-15 wpm (3) 15-22 wpm and (4) 13-14 wpm. Each set also includes a 14 page guide outlining the required

Morse exercises, and is contained in a neatly packaged thick blue plastic type booklet giving the cassettes good protection. The above sets are available through the WIA at \$16.00 per set or, if you are a member, \$14.40. So, it makes sense to be a member of the WIA. These cassettes can also be purchased from Daycom in Victoria at \$18.50 per set. Further enquires can be made on 03 543 6444. You should also be advised this course doesn't cater for the beginner. I have yet to see a beginners course from the ARRL in VK.

I believe you should have had some Morse training before attempting set (1) above. Let's have a look at how the course is structured. Most cassette courses on the market today follow a similar pattern in that the Morse is sent in random groups, alphanumeric along with short paragraphs covering virtually any subject. Note, however, the Morse in the ARRL course is about 75% QSO format. Candidates in Britain are now tested using QSO style examinations with greater emphasis on the use of pro-words and Q code, etc. This actually gives the student an idea of what to expect when he/she makes that first CQ call.

Speed wise the tapes are broken down as:

Tape (1) Side A 5-5.8 wpm; Side B 6.7-7.5 wpm

Tape (2) Side A 8-8.7 wpm; Side B 9.3-10 wpm

As the speed slowly increases, so does the difficulty of the Morse transmissions. This is a well thought out course and is certainly good value for money. Sets 2 through to 4 follow the same guide lines except at a faster speed.

Next month we will look at the WIA course as well as the rules for the QRP EU Contest.

\*PO Box 361, Mona Vale NSW 2103  
ar

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# Repeater Link

Will McGhie VK6UU\*

For a change this month, no FM 828 circuit diagram. There are two circuits to go, the RF power amplifier and the mic amplifier. Both these circuits are drawn and available, so if you need them now, contact me and I can send them to you in the mail as hard copy or computer disk, or via Packet radio.

## Pager Notch Filter

The accompanying drawing shows a full size cavity filter frequency response when used as a parallel notch filter. It is primarily intended to be used in a repeater receiver that is being overloaded by pager transmissions. As you can see from the drawing, a repeater receiver with an input as close as 200 kHz from a pager transmission, can have the pager transmission reduced by more than 20 dB, with 2 dB of loss on the receive

frequency. If your repeater receiver is more than 300 kHz away from the pager transmission there is almost no loss on the receive frequency.

The cavity filter is "T"ed into the coax feed to the repeater's receiver and only one of the coupling loops is used in the cavity filter. The notch can, of course, be tuned up or down to notch out the main pager problem. The 148.050 MHz in the drawing is an example showing just how close the notch can be placed for pagers that are very close to 148 MHz.

The improvement can be dramatic; from unusable, to no pager overload at all. I suffered vast amounts of pager overload on a receiver used for monitoring to the point where there was no way any sense could be made out of the 2 metre band. The receiver mute was opening almost continuously and the receiver had to be turned off. With the cavity notch filter in there is no pager overload.

The notch depth varied a little between cavity filters, perhaps due to different amounts of coupling in each filter, but

averaged 20 dB. Note the non symmetrical response of the notch. If pagers were on the low side of 2 metres extra loss would be incurred to the received signal, but for once a win.

## 29 MHz FM

At long last VK6 has a 29 MHz gateway to one of our 2 metre repeaters, VK6RLM. It is an idea that I have mentioned in *Repeater Link* before. Connect a 29 MHz simplex input output onto an existing repeater. This opens up for the repeater users the potential to work other stations on 29 MHz over large distances.

The advantage of a simplex gateway, rather than a 29 MHz repeater with different input output frequencies connected to an existing 2 metre or 70 cm repeater, is considerable. The 29 MHz equipment is simpler and easier to put on air. There are no desensing problems on 29 MHz, a big plus. However, the greatest benefit, I believe, and time may prove me wrong, is the ability to link up any number of these systems around the world, depending on propagation. Something that can not be done easily, if at all, with 29 MHz repeaters. Any existing VHF or UHF repeater connected to a 29 MHz simplex system, that is on the same frequency as another 29 MHz system connected to a VHF or UHF repeater, links the repeaters together.

At the moment there are three 29 MHz simplex gateway stations in Australia. The first on air was VK2RVW Wollongong, linked to two 70 cm repeaters, followed by VK4RLB linked to a six metre repeater, and now VK6RLM Perth. The term "linked" may be confusing as the 29 MHz equipment is co-sited with the VHF or UHF repeater and hard wired into the existing repeater.

There has already been a link up between the VK2 gateway and the VK4 gateway with amateurs talking on 70 cm in VK2 to amateurs on six metres in VK4. Amateurs in VK6 on 2 metres have also talked to amateurs in VK2 on 70 cm noise free.

There may or may not be a licensing problem with retransmitting all grades of licence onto 29 MHz. The systems in VK2 and VK4 are open access and transmit all stations onto 29 MHz that use the local repeater. The system in VK6 (and this may change) requires a CTCSS tone of 88.5 Hz on the amateur transmission on 2 metres to activate the 29 MHz re-transmission. All gateways are open access on 29 MHz.

The choice of 29.040 MHz was made because it has been, up to now, a quiet frequency. If you think your repeater could benefit from such a gateway and require any extra information, please let me know.

\*21 Waterloo Cr Lesmurdie 6076 VK6UU @ VK6BBS

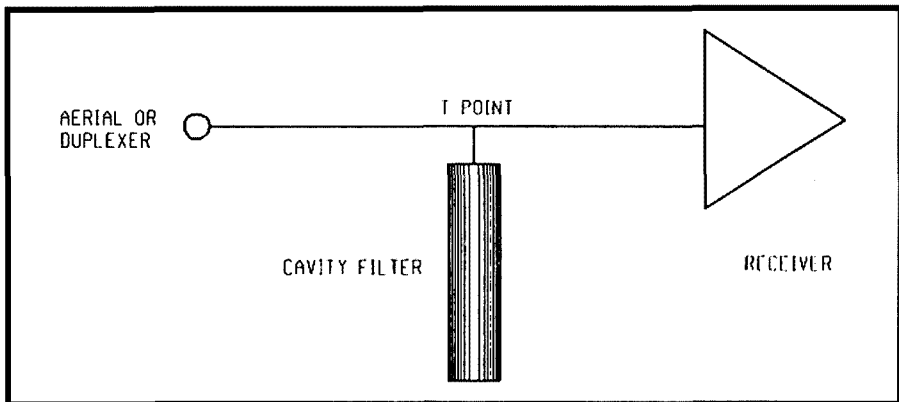


Fig 1.

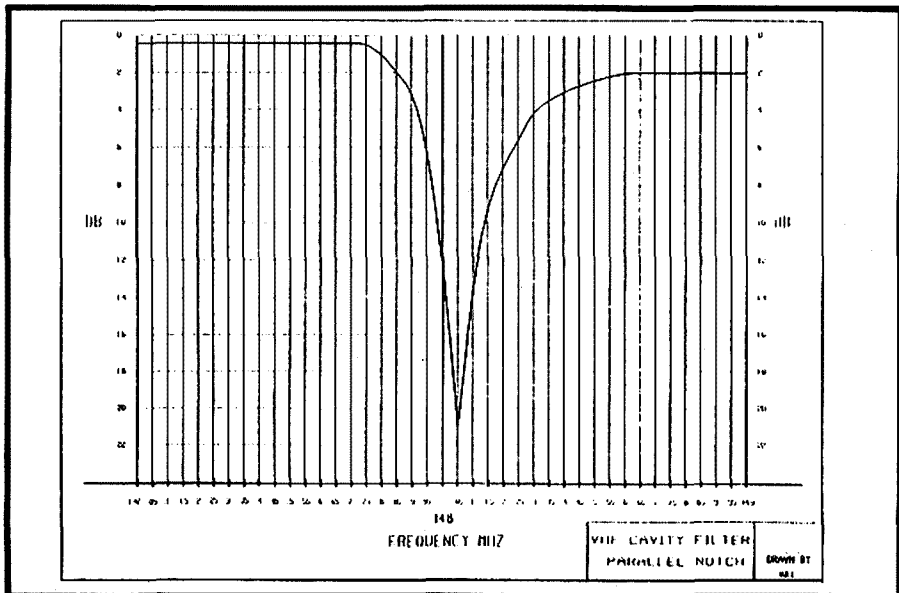


Fig 2.

# QSLs from the WIA Collection

Ken Matchett VK3TL\* Honorary Curator WIA QSL Collection




**OI 5 AY**

**Laskuvarjojääkärikoulu  
UTTI  
FINLAND**

radio amateur  
stations of the  
finnish defence  
forces

THE HEADQUARTERS OF THE UNITED NATIONS, NEW YORK



**4U 42 UN**

United Nations Day  
24 October 1987

TO	DATE	TIME UTC	BAND MHz	MODE ZE	RST	OPERATOR
VK9NS	31 OCT 1987	0625	19	SSB	49	Ken

THX OLLI MAZK  
*Ken*

United Nations Staff Recreation Council ARC  
Amateur Radio Club, United Nations, Box 20, New York, NY 10017

## OI5AY

The special Finnish prefix of OI has been used on special occasions such as anniversaries, JOTA and international contests. Finnish Defence Forces radio club stations, such as the one shown, have also been issued with the prefix. The particularly long Finnish word printed above the QTH of Utti, an army base in Central Finland, can be translated "Parachute Infantry School". The recipient was DXer Mike Bazley VK6HD who, some years ago, was one of the first operators to work WAS on 160 metres.

## CU3/N6AMG

The originator of this card, Joel Paladino N6AMG, who passed away recently, did much to foster activity on the 6 metre band. The card was from a VHF DXpedition to Terceira in the Azores. A dramatic three minute path gave him the first contact with VK on that band from the Azores, at that time a long distance record. The successful Australian operator was Nev Mattick VK2QF who kindly donated this card to the collection.

## 3G9SBY

A particularly rare QSL from the South Shetlands, an archipelago of some twelve islands south-east of Cape Horn. This Chilean prefix has been used only a few times before, such as to celebrate the visit of Pope John Paul II (3G87 PAX). The donor was well known Australian DXpeditioner, Ronald "Bing" Crosby VK2BCH of Forster who, incidentally, has donated his entire QSL collection of over 23,000 cards to the National WIA collection.

## 4U42UN

In February 1978 the United Nations HQ in New York joined the growing list of DXCC countries, making the total 319. As in the past, a special prefix was issued in 1987 to mark United Nations Day (24 October), the date of the founding of that organisation 42 years before. The recipient of the QSL was well-known DXer and writer, Jim Smith VK9NS, on Norfolk Island.

## 6D4EB

There have been several unusual prefixes issued for the rare DX country, Revilla Gigedo, a small island group lying about 640 km west of the Mexican coast. Amongst these have been 6J5, XF4, XE4, XE5 and 4A4. The one shown here, 6D4, is a new one. The card was one of many rare DX QSLs from the estate of silent key Joe Boell VK3AIF (Australia invites Friendship) donated by his widow, Greta.

## VI2AUS

Radio amateurs played an important role in the successful non-stop crossing of the Australian continent by balloon recently achieved by Dick Smith VK2DIK. The helium-hot air balloon reached heights up to 22,000 feet whilst covering a distance of 3640 km, thus breaking all previous records. This QSL donated by DXer Barry Clarke VK5BS was received for a SSB QSO on 15 metres.

JOEL PALADINO 5070 HILLTOP DR., EL SOBRANTE, CA. USA 94803

**CU3/N6AMG**

A VHF DX-EXPEDITION IN TERCEIRA AZORES

OPERATION FROM THE TOWN OF BOSQUITOS ON THE ISLAND OF TERCEIRA IN A MOUNTED SUMMER HOME QND 14MS OPERATED FROM NOV 23 TO DEC 4 N6AMG/RS, SW1P, VK9LA, CW2LP

QX TOTALS ON 6M AFR: 6 COUNTRIES, WITH 11 Qs  
QX TOTALS ON 2M AFR: 3 COUNTRIES, AND 5 Qs  
FIRST AZORES CONTACT TO VK

EQUIPMENT USED: TS-800S, 800W 8.5M REL. PROTOTYPE PORTABLE YAGI TR-751A 8 X 8 RP CONCEPT'S AMP'S 4 X 8 ELE M SQUARED PROTOTYPES

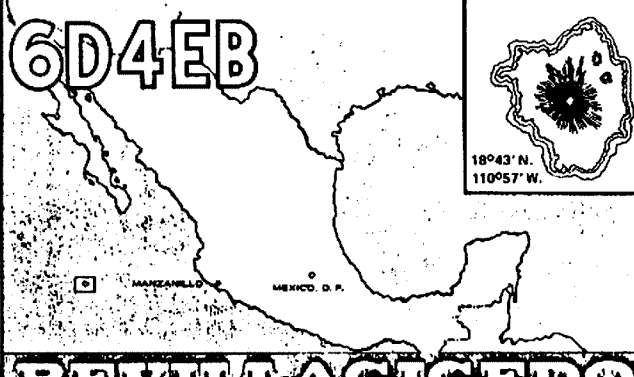
THANKYOU TO: NERYC, WJBY, NELA, WEDNO, WDBLY, CUSAA AND DAD SPECIAL THANKS TO CUSAA AND NERYC

THANKYOU 78 DE OGL MANAGER NANELY STEVE LUND

I AM CONFIRMING THIS QSO WITH


CALLSIGN	DATE			TIME UTC	FREQ MHz	RTT	MODE
	DAY	MONTH	YEAR				
VK2QF	27	11	1991	1024	50	SS	SSB

**6D4EB**



18°43' N  
110°57' W

REVILLA GIGEDO




REPUBLICA DE CHILE

3G9SBY

DECEPCION ISLAND: Lat. 63° 01' S. Long. 60° 38' W.

CONFIRMING OSO WITH	DATE			UTC	MHZ	RS /	2-WAY
	DAY	MONTH	YEAR				
VK2 BCH	18	DEC	86	0856	14	59	SSB

No 0258



**VI2AUS**  
**SYDNEY AUSTRALIA**  
**FIRST NON-STOP CROSSING OF AUSTRALIA**

**Thanks**

The WIA would like to thank the following for their kind contribution of QSL cards to the Collection (supplementary list):  
 Jim VK9NS, Arnold VK3AGW, Mike VK6HD, Ossie VK3AHK, Marilyn VK3DMS, Peter VK4NJQ, Andy VK4KYM, Terry VK2ALG, Ron VK4NRZ, Geoff VK2POA, Shiela G3HCQ, Roth VK3BG, Tom VK5TL, Stan VK3TE, Al W2MEL,

Terry VK2ALG (Australian Naval Amateur Radio Society), Henry VK4OX, "Bing" VK2BCH, Tom VK2QT, Barry VK5BS, Andy VK3BEL, Owen VK1CC, Nev VK2QF, Murray VK4KX, WIA Central Old Branch V14MOO.  
 Also the friends and relatives of the following "Silent Keys" (supplementary list):  
 Col Chirnside VK3WQ, Jeff Whyte VK2AHM (courtesy Marilyn VK3DMS), Bill Wallace VK4KHZ, Bob Smith VK3YU,

Norm Cameron VK3NC, Joe Boell VK3AIF, Lindsay West VK2EI.

**Note from the Author**

The collection is still in need of QSL cards. Those most in demand are rare DX cards, pre-war, pictorial and thematic cards and special issue (commemorative) QSLs. Please contact the author.  
 \*4 Sunrise Hill Road, Montrose VIC 3765  
 Tel (03) 728 5350  
 ar

**Spotlight on SWLing**

Robin L Harwood VK7RH\*

I have found conditions of late to be rather discouraging. Wintertime propagation, especially during the daylight hours, was fair to good. The 49 metre band openings from 0200 UTC were audible this year and signals became stronger. I did notice Radio Sweden on 6155 kHz at around 0230 UTC to North America provided quite good signals here. Naturally, old time listeners will query this as Radio Austria International has been using that channel for some time. That is the case and eventually both cause co-channel interference. They are also targeting the same area.  
 I also noted many Latin stations stayed on all-night during the World Cup in the USA. Although monitors in the Americas had a field day, I managed to hear the Caracol Network in Colombia on 5075 and 6150 kHz. The latter clashed with AWR in Costa Rica. European stations also aired live commentaries of the matches, which meant that regular programming was dumped or alternative channels employed.  
 One June Saturday evening, I was tuning across the Medium wave allocation and noted several strong heterodynes in 10 kHz spots. It was an opening to the US

mainland with KCWW in Arizona on 1580 kHz booming in at S 9. I was positively able to identify it because it was so strong. Incidentally, KCWW has been noted as early as 0730 UTC here. Other signals were observed on 1410 and 1420 kHz yet, unfortunately, no identification announcements were heard. I have an idea that the latter frequency is used in Hawaii. The Californian signal on 1540 kHz was also there but mixing in with the New Zealand station 1 kHz lower. Sadly, this marker channel is now blocked by a narrowcast broadcaster in Adelaide.  
 When I started out listening to shortwave, one of the first stations I logged and confirmed was the "Voice of Free China" in Taipei, Taiwan. Now I have come across this station after quite an absence. It is on 9610 kHz and 7130 kHz at 1200 UTC, transmitting in English to Australasia and Japan. Signals are quite good, particularly on the 31 metre band frequency. The VOFC also is relayed by WYFR in Okeechobee, Florida on 5950 kHz and 11740 kHz as part of a co-operative sharing scheme. WYFR is also heard on 9280 kHz in Chinese via VOFC, Taiwan, from 1000 UTC.  
 I noted that there is a new 10 minute Midweek edition of the "DX Partyline" on

Radio HCJB in Quito, Ecuador on Wednesdays at approx 0700 UTC. Accordingly, "DX Partyline" at 0740 and 1010 UTC Saturdays has been shortened by 10 minutes. Also, on Wednesdays at approximately 0800 or 1030 UTC, "Ham Radio Horizons" with John Beck HC1QT is aired. HCJB is on 9745 and 11925 kHz between 0700 and 1100 UTC.  
 I now have facilities for receiving e-mail. If you have any news you wish to pass on, contact me at FIDONET 3:670/301. I have also accessed SPECTRUM BBS and found many SWL related files available there. It's number is (03) 455 1309. I'm pleased to find that these Bulletin Boards are providing a service for SWLs and DXers and will fill a need. If you do make use of SPECTRUM BBS, tell them you saw it in this column.  
 Well, that is all for August. Until next time, the very best of listening and 73.  
 \*54 Connaught Crescent, West Launceston TAS 7250  
 VK7RH@VK7BBS.LTN.TAS.AUS.OZ  
 ar

**Tell the advertisers  
you saw it in the WIA  
Amateur Radio Magazine.**

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## Silent Keys

*Due to space demands obituaries should be no longer than 200 words.*

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The WIA regrets to announce the recent passing of:-

R (Bob)	STEPHENS	VK3OJ
J (Jock)	VAILE	VK3PZ
E (Eric)	NORRIS	VK4ZEN
K J	GRIMES	VK6AKG
E F (Ted)	DAVIES	VK6ED

### Ted Davies VK6ED

A man active in his church, a keen worker for local repertory theatre, State Emergency Service communications officer and instructor, and a keen radio amateur will be sadly missed from the Busselton (WA) scene. He was Ted Davies who died suddenly on 20 May.

His early career embraced training at the Marconi School of Wireless, Sydney, followed by several years at sea as a marine radio officer, taking out an amateur callsign (VK2FE) and in subsequent years pursuing amateur radio. Ted was an active member of the WIA for many years. He

enjoyed participation in events like the Remembrance Day Contest and continually tried to drum up support in the RD from old and new CW operators.

Since the early 1980s VK6ED was a valued part of the Sunday morning WIA News network with his reliable 3582 kHz relay. One of his many friends echoed what must have been in numerous minds when the news circulated about his passing. "Ted was one of Nature's few true gentlemen; he'll be missed by us all".

Ron Baker VK6QB and VK6WZ  
Harry Atkinson

### Jock Vaile VK3PZ

Jock Vaile VK3PZ passed away on 3 June at the age of 79. Although he had been ill for a considerable period, he had continued his work as a Repetition Engineer right up to a few weeks before his admission to hospital.

Jock was one of the early venturers into

SSB and he participated in the SSB Group picnics to Hamilton and other places. He also served on the *Amateur Radio* Publications Committee for a period.

Jock was also a versatile sporting enthusiast, being not only accomplished in ice speed skating and water skiing, but indulging also in Formula V motor racing at such venues as Calder and Phillip Island. He was also a skilful portraitist in pencil. His areas of conversation were remarkable.

Among Jock's products as an engineer was an excellent automatic (bug) Morse key which the Police Department was pleased to use for some years.

So that he could listen on the ham bands while working on his lathes, Jock fitted up an ingenious audio-derived AVC and a series of speakers to enable him to read the "ham mail" no matter at which bench he was engaged.

To his widow, Jill, and his four sons we extend our deep sympathy.

Ivor Stafford VK3XB  
Mavis Stafford VK3KS  
ar

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## Technical Correspondence

*All technical correspondence from members will be considered for publication, but should be less than 300 words.*

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### "TCF" Transceiver for 80 m

During development of a 40 metre version of the "TCF" transceiver, a couple of improvements were found which may be of interest to those who have made, or are making, the 80 m model.

Significantly improved frequency stability between Tx and Rx overs may be obtained by replacing the two 6.2 V zeners which supply +6.2 V (T) and +6.2 V (R) with 7806/1A chip regulators (much better thermal stability than zeners). The zener "warmup" which causes a drift of about 10 Hz is thus eliminated. Remove the zener and the 470 ohm dropping resistor from each of the Tx and Rx boards respectively. There is sufficient copper foil for the common pin of the 7806 to be soldered in the spot vacated by the 470 ohm resistor(s). The input pin of the chip connects to +12 V and the 6 V output pin becomes +6 V (T) and +6 V (R) accordingly. The chips should have a 0.1  $\mu$ F monolithic bypass capacitor to ground near each of the input and output pins. Whilst holding the chip with pins pointing down and the type number facing you, the 12 V input pin is on the left, common (ground) is middle, and output 6 V is on the right.

More audio power on receive may be obtained by connecting a small

electrolytic or tantalum capacitor between pins 1 and 8 of LM386, positive pole to pin 1.

May I say that the "TCF" 80 has been (or is) a popular project. Numerous individuals, clubs and even students of one of the TAFE colleges have shown an interest, and many sets are up, going, and "on air". Work on a 40 metre model is well in hand and will appear in *Amateur Radio* in due course. Thanks to those who took the trouble to send suggestions.

Drew Diamond VK3XU  
**Choke Balun**

In *Amateur Radio*, June 1994, Lindsay Lawless VK3ANJ had quite a lot to say about the so called Choke Baluns used to interface coax cable to a balanced antenna. One arrangement involves coiling the coaxial line to make an inductive choke and the other does the same using a ferrite sleeve around the cable. According to Lindsay, this causes a discontinuity in the impedance of the line. He supports this argument with some theory on mutual inductance and measurement results carried out on 9 turns of RG58 cable wound on a 110 mm former.

Not convinced, I duplicated his 9 turn test choke and carried out some tests my own way. In October 1989, *Amateur Radio* published my article entitled

"Transmission Lines — Measurement of their Characteristics". This article included a method of deriving characteristic impedance by measuring the line constants. To reiterate, a short length of cable is used not greater than one eighth wavelength at the frequency of measurement. Shunt capacitance (C) is measured at one end with the other end open circuit. Series inductance (L) is measured at one end with the other end short circuited. At high frequencies the following formula applies:

Characteristic Impedance  $Z_0 = \sqrt{L/C}$   
where L = Series Inductance per unit length

C = Shunt Capacitance per unit length

Now I used this method to measure the characteristic impedance of the coiled up sample of cable. A Q meter was used to determine inductance and capacity using frequencies between 2 and 6 MHz and capacity was also checked using a digital capacitance meter. The measured capacitance was close to 330 pF and the measured inductance close to 1  $\mu$ H giving a derived impedance of 55 ohms (close enough to the 53.5 ohm specification for the RG58 cable).

The cable was then uncoiled making a length of 3.3 metres and the tests were repeated. Guess what? The tests produced precisely the same result. This did not surprise me at all as I could relate to experience in my old work place where I had carried out a lot of measurements on transmission line cables both rolled up

on drums and run out. On various cable samples tested, I do not recall noticing any significant difference in the value of characteristic impedance measured on the drum from that with the cable unrolled.

So I do not support Lindsay's concern that the coax choke balun upsets the impedance continuity. If there is an effect, it is probably insignificant.

Anyway, I feel that Lindsay's analysis using mutual coupling between the common mode currents and the differential currents is not relevant to the coaxial cable. The whole idea of the concentric outer conductor in the cable is that the fields generated are confined to an area inside the perimeter of the outer conductor. The confined fields are prevented from causing radiation and are unaffected by fields outside the outer conductor. Transmission line current in the outer conductor is confined by skin effect to the inside edge of the outer conductor. However, what does concern us is current which is allowed to pass down the outside edge of the outer conductor thus creating an external field which does cause radiation. By inserting the choke arrangement, we are aiming to impede the flow of this external current and reduce radiation from the cable.

Lindsay's analysis is based on unwanted current flowing in common mode with its field mutually coupled with fields from the differential currents. Whilst this might be a valid form of analysis for a balanced line, it does not apply to the coax line. In the latter, the undesired current is neither common to both inner and outer conductors nor is its field mutually coupled to the confined field inside the coaxial line.

In our balun choke, the inductance in a section of the outside of the outer conductor is increased by winding the cable in a coil or enclosing it with a ferrite sleeve. As the fields between the inside and outside of the cable are prevented from intercoupling, the change in inductance does not affect the inductance per unit length on the inside of the cable and hence the characteristic impedance is unchanged.

One can expect that the undesired external current will have its own nodes and anti-nodes down the cable. It seems to me that, if you can pick a high current point, then that is the best place to incorporate the choke for maximum effect. Providing the choke has sufficient inductive reactance, it seems like a fine idea to reduce radiation from the cable with minimal impedance discontinuity.

**Lloyd Butler VK5BR**  
**18 Ottawa Avenue**  
**Panorama SA 5041**  
**ar**

## VHF/UHF — An Expanding World

Eric Jamieson VK5LP\*

All times are UTC

### Six Metres Standings List

DXCC Countries based on information received up to 20 June 1994.

Column 1: 50/52 MHz two-way confirmed contacts

Column 2: 50/52 MHz two-way claimed as worked but not confirmed

Column 3: Crossband 50/52 MHz to 28 MHz confirmed

Column 4: Crossband 50/52 MHz to 28 MHz worked

Column 5: Countries heard on 50/52 MHz

Callsign	1	2	3	4	5
VK3OT	100	102			
VK4KK	93	93			4
VK4BRG	86	90			
VK2QF	85	85			3
VK2BA	69	69			
VK4ALM	68	70			
VK4ZAL	68	68			
VK2BBR	54	64			
VK4JSR	53	56			8
VK4TL	51	54			
VK6HK	47	47			3
VK8ZLX	45	60		1	
VK3AMK	45	47			
VK8GB	42	42			3
VK5RO	39	48		3	
VK6RO	39	39		1	1
VK1RX	39	39			9
VK6PA	36	57			
VK3AUI	36	36			
VK5LP	35	36			9
VK3AWY	34	36			
VK3BDL	32	32			
VK3NM	31	34			
VK5BC	29	63			
VK2DDG	25	26		2	3
VK4ZJR	25	25			
VK4KHZ	23	34			
VK3XQ	23	25			2
VK2KAY	21	23			
VK2BNN	20	21			
VK9LG	20	20			
VK7JG	20	22			2
VK4BJE	19	25			
VK4KAA	19	20			
VK3TU	17	19			
VK2ZRU	16	19			4
VK4ZSH	16	16			
VK2ZSC	16	29			
VK9LE	14	14			
VK3ALM	13	15			7
VK3KTO	11	11			
VK5KL	11	19		1	7
VK6OX	10	10		1	
<b>Overseas</b>					
JA2TTO	48	48			6
YJ8RG	25	25			

After fourteen years this is the last "Standings List" I propose publishing. There seems little interest in its continuation and I refer you to the May issue of *Amateur Radio* if you need further information on the matter. However, I am pleased that this last list has at its top an operator who has finally confirmed 100 countries from Australia and three others at 85 and above, all of whom should be pleased with their results.

I thank those operators who have been very loyal to me during the fourteen years that the list has been operational, particularly those who promptly and regularly sent updates. Most operators sent photocopies or original cards in support of their claims and for this I am grateful as it did involve you in expense and time. It has been quite a task and expense (phone calls and letters) for me to keep the list updated but it has been a very interesting exercise.

Your submissions were a very useful source of information when it came to preparing the "First Worked List" which was published last month in *Amateur Radio* and which will appear in the *UK Six Metre Group Newsletter* in due course. The information I have will not be destroyed but kept on file as a source of material should it be required in the future.

### 10 GHz Operations

The South East Radio Group Convention over the Queen's holiday weekend saw a very enthusiastic group of VK5s display their narrow-band 10 GHz equipment. The equipment design varied from the early German, late German and English circuitry. Each unit provided an output of around 200 mW and, when fed into the 60 cm dishes, resulted in an ERP of about 200 watts. David VK5KK also displayed his 3.5 GHz equipment.

The five operators were Mark VK5EME, David VK5KK, Chris VK5MC, Trevor VK5NC and Roger VK5NY. John VK5DJ, who judged the home-brew competition, said the entry of all this superbly built 10 GHz equipment would rival anything likely to be produced elsewhere. All the equipment is based upon transverters with two metres as the tuneable IF. All the equipment has been designed to be used portable and moved to a suitable site at very short notice.

The equipment was not taken to Mount Gambier simply for show purposes — it was in fact put to good use. Details of



some contacts as follows. On 11/6 at 0500 VK5MC/p at Hatherleigh, west of Millicent worked VK5NY/p in Mount Gambier at the Browns Lake Lookout car park, height around 120 m and a distance of about 60 km with signals up to 5x9. VK5KK/p went to the 187 m Mount Gambier Centenary Lookout and found the extra height above VK5NY gave him solid 5 x 9 + 20dB signals to VK5MC and more than comparable signals to VK5NY several hundred metres below him! The contacts continued until 0545.

### First VK5-VK3 10 GHz Contact?

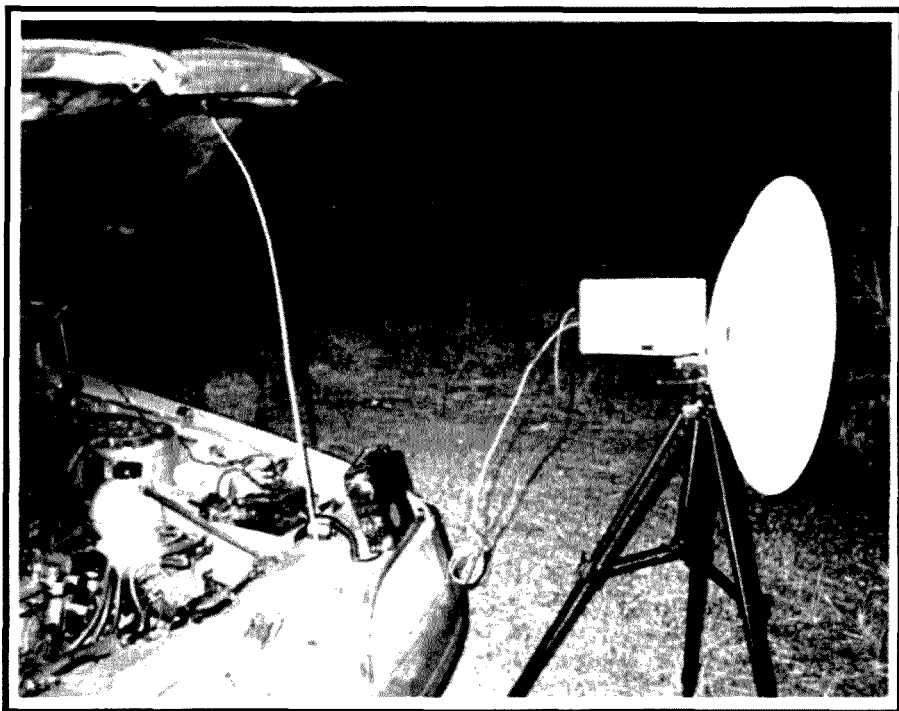
On 13/6 it was decided to attempt what would probably be the first VK5 to VK3 contact on 10 GHz. Roger VK5NY was east of the crater at Mount Gambier and David VK5KK went to a fire lookout at Rennick and all of 0.5 km inside Victoria! David climbed to the 16 m level of the tower, carrying all the equipment, including the gel battery, on his back. The first half of the ladder was open and straight up. David hung the dish over the side of the railing and took a compass bearing and found the tower was orientated E-W which meant little re-direction of the dish was involved. At 0030 he contacted VK5NY over the 16.5 km path with signals to 5x9 despite the need to look through some trees at the VK3 end. This somewhat "tongue-in-cheek" contact raised a few eyebrows!

Obviously the 10 GHz gang had quite an interesting time testing the high spots around Mount Gambier and they hope this will inspire the VK3s to match their efforts. Of course, from the VK5 viewpoint, all eyes are enviously cast towards the west in the hope that eventually they will crack the 1880 km distance to Albany in VK6.

While on the subject of microwaves, VK6CC has put together a Packet listing of 22 callsigns in VK and ZL who have displayed an interest in 10 GHz operation. Most are using wide-band equipment but, with the VK5 successes, they are now looking towards narrow-band equipment. Information is swapped and problems sorted out. The idea has been running for about two months.

### Maritime Mobile

From the *Geelong Amateur Radio Club Newsletter* are a few lines which said that Bert VK3TU operated two metre portable from VK7 over the period 18-20 May. On the way he worked Charlie VK3BRZ using only 10 watts PEP and a dipole from his cabin inside the *Spirit of Tasmania*, when halfway across Bass Strait. He also made contact from Gladstone, Burnie and Wynyard in Tasmania to VK3, in the process activating three rare locator grids, QE28, QE29 and QE49.



Another view (see front cover) of the equipment used by David VK5KK in his portable, twilight adventures on 10,368.050 MHz SSB.

### Hill-topping on 1296 MHz

Following the earlier successes using aircraft enhancement by stations situated on the Melbourne-Sydney path, it was reasoned similar results should be possible between Sydney and Brisbane. However, in earlier years, Rod VK4BRP in Ipswich had consistently better results working Gordon VK2ZAB at Berowra Heights north-west of Sydney, than those stations in Brisbane, when using a site 30 km north of Kilcoy near Jimna in the Connondale Range which is about 120 km north-west of Brisbane.

Doug VK4OE reports on his excursion on 25-26 June to this site reasoning that he too would probably stand a better chance of working to the greater Sydney region than from Brisbane but also being north of Ipswich it would provide a further extension of the path length. If successful it would create a new Queensland distance record for the 1296 MHz band.

Doug spent much time listening to receiver noise on 144 and 1296 MHz with liaison on 40 metres or cellular phone to Lyell VK2BE in south-east Sydney and Ross VK2DVZ near Taree about 200 km north of Sydney. On two occasions Lyell's 1296 CW ident rose out of the noise for ten to fifteen seconds but the duration was too short and too infrequent to allow a completed contact to occur.

Doug writes, *When using 144 MHz it was discovered that signals between my portable location and Taree were more reliable (when they were there) than to Berowra Heights, peaking to 5x7 for about*

*one minute. Ross and I quickly realised that when 144 MHz was "up" 1296 MHz was also propagating and it was during such short windows that Ross heard my 1296 MHz SSB signal once (he was doing most of the transmitting) and I heard his beacon ident on two occasions.*

*Although the windows to Ross were a little longer than those to Lyell in Sydney, contact between Ross and myself was not completed mostly due to the time required by Ross for necessary transmitter adjustment (water cooled 2C39s) when changing from beacon transmit mode to SSB.*

*Whilst the fact that propagation over the paths was demonstrated to occur and it was quite exciting to observe, the "windows" were too short. This can be explained by the fact that in the case of the Melbourne-Sydney path the aircraft travel nearly on a straight line and passing more or less over Canberra allowing sustained enhancement for contacts between those three cities.*

*When travelling between Sydney and Brisbane the aircraft track inland a little, fly parallel to the coast for most of the way and when over northern NSW they change direction to complete the journey to Brisbane airport which is essentially on the coast on the north-eastern side of Brisbane. This "dog-legged" path clearly is not ideal for aircraft enhancement of VHF/UHF signals but it does work to some extent. The known 144 and 432 MHz contacts between VK2ZAB and Brisbane and Ipswich stations attest to this.*

I believe that this non-aligned path is the reason for the usually marginal signals between Brisbane and Berowra Heights, and for the virtually complete absence of aircraft enhanced propagation to stations within the city of Sydney. It also explains the short "windows" of propagation which I experienced as being due to aircraft only crossing the line between us rather than flying along the line.

Another observation is that signals between my location and Taree were consistently better than to Sydney-area stations indicating that the Sydney path length was close to the limit for propagation by this mode.

Doug concludes by saying the results obtained indicate it should be possible to successfully complete a contact on 1296 MHz and maybe higher frequencies providing that alignment with aircraft flight paths is made more accurately. Given the "dog-legged" path between Sydney and Brisbane those in Queensland may need to travel to places more in alignment with the paths used by aircraft travelling between Sydney and Asian ports.

He also said that, as the use of digital mode increases, with sufficient signal strength contacts could be completed due to the faster transfer of information. He was most impressed with the results from using a Timewave DSP9 signal enhancer which allowed him to receive signals which otherwise were well down in the noise. He was able to prove this as he had the facility of being able to switch the enhancer in and out of circuit.

## Technical Symposium

The South Coast Amateur Radio Club will hold its second annual SA Technical Symposium at the Onkaparinga Institute, O'Halloran Hill Campus with a tentative date of 17 September.

Further information appears in the *Amateur Radio* "Clubs Corner" section this month, and will appear on Packet and on Divisional WIA broadcasts. A ticket is necessary for attendance.

## Closure

Specific information on band usage is scarce this month so it appears operators prefer to sit by the fire than operate from a cold shack!

Closing with two thoughts for the month:

1. I prefer the errors of enthusiasm to the indifference of wisdom, and
2. It is a tribute to the spontaneous vitality of truth that we never say somebody "blurts out" a lie.

**73 from The Voice by the Lake.**

\*PO Box 169 Meningie SA 5264

Fax: 085 751 043 Packet: VK5LP@VK5ZK ar

## What's New

with Bob Tait VK3UI\*

### ARRL Announces Third Edition of The ARRL Satellite Anthology

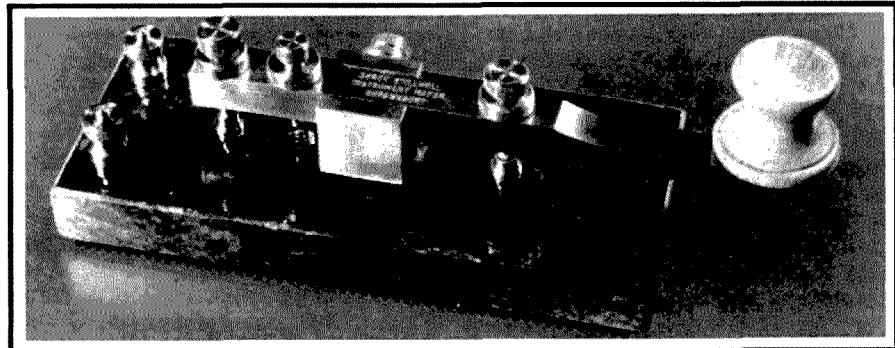
In order to keep up with the ever expanding amateur radio satellite activity, the American Radio Relay League (ARRL) has published the third edition of its popular Satellite Anthology.

This edition contains QST satellite articles published from 1986 to 1993. Profiles are given for the latest OSCAR satellites such as KITSAT-OSCAR 25, ITAMSAT-OSCAR 26, and AMRAD-OSCAR 27. Seven pages are devoted to the new Phase D satellite which is scheduled for launch in 1995 or 1996. The

phase D project promises to provide satellite access to most amateurs. A detailed analysis of this ambitious project is given.

The Satellite Anthology provides technical support for both veterans and beginners. Packet enthusiasts can get information on how to access FUJI-OSCAR 20; you can find out about the humorous guide to this satellite in "KICE's Secret OSCAR 20 station". If you are interested in viewing images you will want to read "Webersat step by step". This book is available from DAYCOM Communications Pty. Ltd, 37 Fenton St, Huntingdale, VIC 3166. Ph (03) 543 6444. Order code BR476. Price \$22.00.

### Hand Built Straight Key



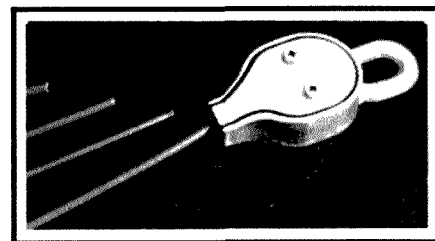
From Derek Stillwell comes what must be the finest looking straight key that we have seen for some time. Being an instrument maker and giving attention to detail, Derek has indeed produced a key which would be a pleasure to use and become a much treasured possession. Each key is individually hand-crafted, has a solid brass arm and bearing block, and has fully adjustable ball and cone bearings so you can get the contact gap as fine as you like, and it will not vary during the longest of contest sessions.

The whole assembly is mounted on a black marble base, measuring 178 x 76 x 19 mm, which has a ribbed rubber mat fitted to its underside to reduce noise and

prevent slippage. The knob is an improved design having a concave upper surface to prevent fatigue during long over, and is available in three types of timber, Box, Zebrano or Padauk. Each key is engraved with the makers name and serial number and, if required, your call sign.

These keys will only be made in limited numbers and are therefore destined to become a collectable. Further information about these keys can be gained by sending a SASE and 2 IRCs to Derek Stillwell, Instrument Maker, 27 Lesley Owen Way, Shrewsbury, Shropshire England SY1 4RP.

### Debeglass Wire



This product is a non conductive fibre glass yarn which is ideally suited for non conductive guys for towers and masts where the radiation pattern would be affected by metallic guys. All that is required is the special Debeclip and a Philips screwdriver. This makes installation very easy in the field.

Sizes from 4 mm to 12 mm, and tensile strengths from 430 kg to 3420 kg, are available. For further information contact GFS Electronics, 17 McKeon Road, Mitcham, VIC 3132. Phone (03) 873 3777. Fax (03) 872 4550.

## The Quad Antenna

Did you know that the Quad Antenna was invented in 1942 in Quito Ecuador to solve a problem with corona discharge? Do you ever get into discussions with your friends about the merit of Yagis versus

Quads. Well, if you read this excellent book by Bob Haviland W4MB you should become well versed on Quads; you may even become a convert. This book contains in depth information on all manner of Quads, how to feed them, polar plots, the mathematics, impedance charts and much more. It is written in such a way it can be understood by beginners and engineers alike.

It is sometimes difficult to find data on Quad and Loop antennas. This book has it all. Bob Haviland has devoted a life's work to this antenna. The book includes

all the Quad families, such as Delta Loops, Skeleton Slots, Circular Loops, Horizontal Loops, Swiss Quad, Bird Cage, Folded Dipoles, the Shorted Transmission Line Antenna and much more. Bob uses the MININEC program to provide the reader with polar plots, ground effects and radiation patterns for most Quads.

This book is available from DAYCOM Communications Pty Ltd, 37 Fenton St, Huntingdale, VIC 3166. Ph (03) 543 6444. Order code BR41. Price \$37.50.

\*PO Box 2175, Caulfield Junction VIC 3161  
ar

## QSP News

### No Proof That Cellular Phones Cause Cancer

Recent reports based on ignorance and confusion

(A media statement by the Institution of Engineers, Australia, dated 17 May 1994)

The Institution of Engineers, Australia today expressed concern at disturbing reports that cellular phones are causing brain cancer.

Alex Baitch, a vice president of the Institution, said that recent reports originating from the United States should be treated cautiously as studies have failed to produce scientifically sound evidence to support a connection between cellular phones and cancer.

"Claims of this nature are unjustified. Two very different types of fields have been subject to study: extremely low frequency fields, such as power lines and operating electrical equipment, and microwave-fields, such as those surrounding cellular phone antennas", Mr Baitch said.

The results of studies in the two areas are totally unrelated but in neither case is there any conclusive evidence, he said.

Mr Baitch said that a lack of understanding had also resulted in other types of telephones, which are not part of the cellular network, also being questioned.

"It was important to differentiate between cellular telephones which might warrant further investigation, and telephones which we know constitute no risk at all".

Cellular phones transmit by radio to a transmission tower

which is part of a national grid. Cordless phones — which have a separate base which allows the user to wander freely — are not cellular and have very much lower signal power levels. They communicate directly with the base unit which is wired to normal phone lines, he said.

According to Mr Baitch, car phones have also been wrongfully implicated. The car phone's antenna is mounted outside the car, on the car's roof, boot or rear window, at a sufficient distance from the user to have a negligible effect.

Further research is being done to clarify the cellular phone situation as some past research had produced contradictory results, he said.

"Most cellular phones in Australia transmit at a frequency between 825-915 MHz. Significant testing has been done into the effects of microwave radiation at this frequency, and most researchers agree that these waves would not initiate cancer growth", Mr Baitch said.

"However, there have been studies which have found changes in the function of the cells exposed to microwaves. It is worth pointing out that some of these studies have included the treatment of animals with cancer-causing chemicals and exposing them to radio frequency energy for up to 22 hours a day. While the studies have said that changes occurred, they did not claim that they caused

damage, or could aggravate cancer", he said.

According to Mr Baitch, research has also indicated that microwaves could accelerate a reaction already occurring between carcinogens and the body tissue. It has also been proposed in other studies that microwaves could damage the blood brain barrier which protects the brain against certain toxins, or could upset the uptake of calcium by cells, thereby disrupting normal cell functions.

Each of these findings have been contradicted by other research, including that by Telecom Australia, Mr Baitch said.

"People should remember that cellular phones in Australia conform to international safety standards. These standards are the result of years of work by engineers, biophysicists and medical researchers", he said.

"Given that the weight of scientific research has not found any link between cellular phones and cancer, allegations of health risks should be viewed as unsubstantiated and unwarranted", Mr Baitch said.

"A *'class action'* by cellular phone users in the United States has been disallowed by the courts. Two law suits are currently being processed in the U.S.

Further information:  
Mr Alex Baitch  
Vice President  
Institution of Engineers, Australia  
Ph: (02) 899 7790

# HF PREDICTIONS

Evan Jarman VK3ANI

## The Tables Explained

The tables provide estimates of signal strength for each hour of the UTC day for five of the bands between 7 and 28 MHz. The UTC hour is the first column; the second column lists the predicted MUF (maximum useable frequency); the third column the signal strength in dB relative to 1  $\mu$ V (dBu) at the MUF; the fourth column lists the "frequency of optimum travail" (FOT), or the optimum working frequency as it is more generally known.

The signal strengths are all shown in dB relative to a reference of 1  $\mu$ V in 50 Ohms at the receiver antenna input. The table below relates these figures to the amateur S-point "standard" where S9 is 50  $\mu$ V at the receiver's input and the S-meter scale is 6 dB per S-point.

V in 50 ohms	S-points	dB( $\mu$ V)
50.00	S9	34
25.00	S8	28
12.50	S7	22
6.25	S6	16
3.12	S5	10
1.56	S4	4

0.78	S3	2
0.39	S2	-8
0.20	S1	-14

The tables are generated by the GRAPH-DX program from FT Promotions, assuming 100 W transmitter power output, modest beam antennas (eg three element Yagi or cubical quad) and a short-term forecast of the sunspot number. Actual solar and geomagnetic activity will affect results observed.

The three regions cover stations within the following areas:

**VK EAST** The major part of NSW and Queensland.

**VK SOUTH** Southern-NSW, VK3, VK5 and VK7.

**VK WEST** The south-west of Western Australia.

Likewise, the overseas terminals cover substantial regions (eg "Europe" covers most of Western Europe and the UK).

The sunspot number used in these calculations is 23.0. The predicted value for September is 21.6.

## VK EAST — SOUTH PACIFIC

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	22.1	25	16.6	11	35	32	26	18
2	22.1	25	16.6	12	35	32	27	18
3	22.0	25	16.6	16	36	32	27	18
4	21.7	26	16.4	22	37	33	27	18
5	20.6	27	15.6	31	39	33	26	15
6	18.8	30	14.2	47	41	32	23	10
7	16.7	33	12.7	51	40	28	17	1
8	14.8	35	11.2	53	37	22	8	-9
9	13.0	37	9.8	53	32	14	-1	-23
10	11.9	39	8.9	54	28	8	-9	-34
11	11.3	39	8.4	53	26	4	-14	...
12	10.6	40	7.9	52	22	0	-21	...
13	10.1	41	7.5	51	19	-4	-27	...
14	9.9	41	7.4	51	18	-6	-29	...
15	9.6	41	7.4	51	18	-7	-29	...
16	9.1	42	6.9	50	13	-13	-39	...
17	8.0	43	6.1	47	4	-27	...	...
18	8.3	43	6.4	48	6	-24	...	...
19	10.9	39	8.4	51	23	1	-18	...
20	15.1	31	11.7	39	34	21	9	-8
21	18.4	28	14.2	27	36	28	20	7
22	20.2	26	15.4	19	35	30	24	13
23	21.0	25	16.0	14	35	31	25	15
24	21.5	25	16.3	12	34	31	25	16

## VK WEST — SOUTH PACIFIC

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	18.5	11	14.0	-26	15	12	5	-6
2	19.1	11	14.4	-27	16	13	7	-4
3	19.6	12	15.2	-25	17	14	8	-2
4	19.6	12	14.7	-20	18	15	9	-2
5	19.6	13	14.7	-9	21	17	9	-1
6	18.3	16	13.8	8	24	16	7	-6
7	16.3	20	12.3	27	25	14	1	-16
8	14.4	24	10.8	39	24	8	-7	-29
9	12.6	26	9.5	42	20	0	-19	...
10	11.1	29	8.3	43	13	-11	-34	...
11	10.1	31	7.6	43	8	-20	...	...
12	9.7	31	7.2	42	5	-25	...	...
13	9.3	32	6.9	41	2	-29	...	...
14	9.0	32	6.6	40	0	-33	...	...
15	8.9	32	6.7	40	-1	-35	...	...
16	8.9	32	6.7	40	0	-33	...	...
17	7.8	34	6.0	37	-10	...	...	...
18	8.1	33	6.2	38	-8	...	...	...
19	8.1	32	6.2	37	-9	...	...	...
20	8.5	24	6.5	26	-5	-37	...	...
21	10.2	19	7.5	16	5	-17	...	...
22	13.2	15	10.2	3	13	0	-14	-36
23	15.8	13	12.1	-11	15	8	-2	-17
24	17.5	12	13.4	-20	15	11	3	-9

## VK EAST — AFRICA

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	8.6	9	6.6	3	-2	-25	...	...
2	7.3	-2	5.6	-4	-8	-33	...	...
3	7.5	-8	5.8	-12	-7	-27	...	...
4	10.3	-1	8.0	-28	1	-10	-24	...
5	14.7	4	11.4	...	4	1	-5	-18
6	16.9	5	13.2	...	4	4	-1	-11
7	16.7	5	12.5	...	5	4	-1	-11
8	15.1	5	11.3	...	5	2	-5	-18
9	13.1	5	9.8	-32	5	-1	-12	-28
10	11.4	5	8.5	-20	4	-7	-21	...
11	9.9	6	7.4	-9	1	-15	-33	...
12	9.0	8	6.7	0	-1	-23	...	...
13	8.6	14	6.4	11	-3	-29	...	...
14	8.4	21	6.2	21	-5	-35	...	...
15	8.2	25	6.0	28	-6	-39	...	...
16	8.3	28	6.1	32	-6	-39	...	...
17	8.2	29	6.2	34	-8	...	...	...
18	8.0	30	6.0	34	-10	...	...	...
19	7.5	31	5.7	33	-14	...	...	...
20	7.8	30	6.0	33	-12	...	...	...
21	7.8	30	6.0	33	-12	...	...	...
22	7.6	29	5.8	30	-14	...	...	...
23	7.2	19	5.7	19	-16	...	...	...
24	7.6	14	6.0	13	-11	...	...	...

## VK SOUTH — AFRICA

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	7.9	16	6.1	15	-7	-36	...	...
2	8.2	11	6.3	7	-5	-31	...	...
3	11.0	11	8.1	-2	6	-9	-25	...
4	15.4	11	11.9	-19	12	6	-2	-16
5	17.2	9	13.9	-37	10	8	1	-10
6	18.0	8	14.6	...	9	8	3	-7
7	17.6	8	14.1	...	8	7	1	-9
8	16.6	8	13.2	-39	8	6	-1	-13
9	15.1	8	11.9	-29	9	3	-5	-20
10	13.3	9	10.4	-18	8	-1	-13	-31
11	11.5	9	9.0	-8	5	-8	-24	...
12	10.0	11	7.8	2	1	-18	-38	...
13	9.0	15	6.9	12	-3	-29	...	...
14	8.4	21	6.5	23	-7	-39	...	...
15	8.1	25	6.2	28	-10	...	...	...
16	7.9	28	6.0	31	-12	...	...	...
17	7.9	29	6.0	33	-13	...	...	...
18	7.8	30	6.0	33	-14	...	...	...
19	7.7	30	6.0	32	-16	...	...	...
20	7.5	30	5.9	32	-18	...	...	...
21	8.0	30	6.3	34	-12	...	...	...
22	8.0	30	6.2	34	-11	...	...	...
23	7.7	29	6.0	31	-14	...	...	...
24	6.2	22	6.4	24	-8	...	...	...

## VK WEST — AFRICA

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	7.4	23	5.7	23	-14	...	...	...
2	7.5	14	5.8	13	-11	...	...	...
3	10.5	12	7.8	2	4	-13	-32	...
4	15.0	11	11.6	-16	12	5	-5	-21
5	17.3	9	13.2	-34	11	8	1	-10
6	18.2	8	13.7	...	10	9	3	-7
7	18.3	8	13.7	...	9	8	3	-7
8	17.8	8	13.4	...	8	7	1	-9
9	16.8	8	12.6	...	9	6	0	-12
10	15.2	9	11.4	-28	9	4	-5	-20
11	13.2	10	9.9	-13	9	-1	-14	-33
12	11.5	12	8.6	-1	7	-9	-26	...
13	10.0	16	7.4	12	2	-19	...	...
14	9.1	21	6.7	23	-2	-30	...	...
15	8.7	26	6.4	30	-4	-36	...	...
16	8.4	28	6.2	33	-7	...	...	...
17	8.3	30	6.2	35	-8	...	...	...
18	8.3	31	6.2	36	-7	...	...	...
19	8.4	31	6.3	36	-7	...	...	...
20	8.0	31	6.1	35	-11	...	...	...
21	7.6	32	5.8	34	-16	...	...	...
22	7.9	31	6.1	35	-12	...	...	...
23	8.4	31	6.4	37	-6	...	...	...
24	7.8	31	6.0	34	-12	...	...	...

## VK EAST — ASIA

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	20.8	12	15.8	...	15	15	11	3
2	21.3	12	16.3	...	15	16	12	4
3	21.4	12	16.3	...	14	16	12	4
4	21.6	12	16.4	...	15	16	13	5
5	21.6	12	16.5	-38	17	17	13	5
6	20.8	13	15.9	-28	18	17	12	3
7	19.3	14	14.8	-13	21	16	9	-1
8	17.6	17	13.3	11	24	15	5	-9
9	15.9	21	12.2	37	27	12	-2	-21
10	14.2	22	10.8	42	22	4	-14	-38
11	13.1	24	10.0	44	18	-3	-24	...
12	12.4	25	9.4	45	15	-8	-31	...
13	11.6	25	8.8	44	10	-16	...	...
14	10.8	26	8.3	43	5	-25	...	...
15	10.4	26	7.9	42	1	-32	...	...
16	10.2	26	7.8	41	-1	-35	...	...
17	9.2	27	7.1	38	-11	...	...	...
18	7.7	28	6.0	32	-33	...	...	...
19	7.9	28	6.1	33	-30	...	...	...
20	8.8	28	6.8	38	-14	...	...	...
21	12.6	22	9.8	32	15	-6	-26	...
22	18.5	16	14.4	-1	23	17	9	-3
23	20.3	14	15.6	-20	20	17	12	2
24	20.5	12	15.7	-32	17	16	11	2

## VK SOUTH — ASIA

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	16.9	9	12.9	...	10	7	0	-11
2	17.3	9	13.1	...	9	8	2	-9
3	17.8	9	13.4	...	9	9	3	-7
4	17.8	9	13.4	...	10	9	3	-7
5	17.7	10	13.4	...				

VK EAST — EUROPE										
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9		
1	9.6	-6	6.9	-34	1	-9	-22	...		
2	9.5	-12	6.8	...	0	-8	-20	-39		
3	10.4	-11	7.6	...	0	-5	-14	-29		
4	12.4	-7	8.7	...	-2	-1	-7	-19		
5	14.6	-2	10.7	...	-4	0	-2	-10		
6	16.2	0	11.9	...	-4	1	0	-6		
7	17.0	2	12.4	...	-4	3	1	-4		
8	17.5	4	12.8	...	0	5	3	-3		
9	16.1	5	12.3	...	3	4	0	-9		
10	14.4	6	11.0	...	6	3	-4	-17		
11	12.8	7	9.7	-29	7	0	-11	-14		
12	11.7	9	8.9	-14	7	-4	-18	-39		
13	11.1	12	8.4	-2	7	-7	-24	...		
14	10.5	16	7.9	10	6	-13	-32	...		
15	9.9	19	7.4	19	4	-19	...	...		
16	9.6	24	7.3	29	3	-24	...	...		
17	9.5	27	7.2	33	2	-26	...	...		
18	8.8	29	6.7	35	-4	-37	...	...		
19	7.6	30	5.8	32	-17	...	...	...		
20	7.8	30	6.0	32	-14	...	...	...		
21	9.2	30	7.0	37	2	-27	...	...		
22	9.5	22	7.2	22	4	-20	...	...		
23	10.6	12	7.5	-2	7	-8	-25	...		
24	10.0	1	7.1	-22	2	-9	-24	...		

VK SOUTH — EUROPE										
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9		
1	10.1	4	7.1	-18	3	-9	-25	...		
2	9.8	-4	6.9	-33	1	-8	-22	...		
3	10.9	-7	7.7	...	0	-4	-14	-30		
4	13.1	-3	9.0	...	-1	0	-6	-17		
5	15.6	0	11.1	...	-4	1	0	-8		
6	17.3	2	12.3	...	-5	2	1	-3		
7	18.0	3	12.8	...	-5	3	2	-2		
8	17.6	3	13.2	...	-3	3	2	-4		
9	15.9	2	11.9	...	0	3	0	-9		
10	13.8	2	10.4	...	2	1	-5	-18		
11	12.0	2	9.0	-39	4	-3	-13	-30		
12	10.4	3	7.8	-21	3	-9	-24	...		
13	9.5	7	7.1	-5	1	-17	-36	...		
14	9.1	12	6.8	6	0	-23	...	...		
15	8.8	18	6.6	16	-2	-29	...	...		
16	8.7	24	6.5	27	-4	-34	...	...		
17	8.9	27	6.6	32	-3	-34	...	...		
18	8.9	29	6.7	35	-2	-35	...	...		
19	8.5	29	6.4	35	-6	...	...	...		
20	8.0	29	6.1	33	-12	...	...	...		
21	8.3	29	6.4	34	-9	...	...	...		
22	9.9	29	7.7	38	6	-21	...	...		
23	9.0	23	6.9	24	0	-27	...	...		
24	10.6	15	7.4	4	8	-9	-26	...		

VK WEST — EUROPE										
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9		
1	10.6	15	7.3	7	6	-11	-30	...		
2	10.2	4	7.1	-16	2	-12	-28	...		
3	11.3	0	7.9	-37	2	-6	-18	-36		
4	13.7	0	9.3	...	1	0	-7	-19		
5	16.5	2	11.6	...	-1	3	0	-8		
6	18.3	4	12.9	...	-3	3	2	-3		
7	19.1	4	13.4	...	-4	4	3	-1		
8	19.6	4	13.7	...	-4	4	4	0		
9	19.3	4	14.1	...	-2	4	3	-2		
10	17.6	4	13.4	...	1	4	1	-6		
11	15.7	5	11.8	...	4	3	-2	-13		
12	13.9	6	10.5	-35	6	1	-8	-23		
13	12.2	9	9.2	-15	7	-4	-18	-38		
14	11.2	13	8.5	2	6	10	-27	...		
15	10.7	17	8.1	16	6	-14	-35	...		
16	10.2	23	7.6	29	4	-21	...	...		
17	9.8	25	7.4	33	2	-26	...	...		
18	9.7	27	7.3	36	1	-28	...	...		
19	9.6	28	7.3	37	1	-29	...	...		
20	9.0	28	6.8	35	-4	-38	...	...		
21	7.9	29	6.1	32	-15	...	...	...		
22	8.2	28	6.3	33	-12	...	...	...		
23	8.9	29	6.8	36	-4	-37	...	...		
24	9.0	25	6.9	30	-2	-33	...	...		

VK EAST — EUROPE (Long path)										
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9		
1	11.6	11	7.9	-9	9	-1	-14	-32		
2	11.0	13	7.5	0	9	-4	-19	...		
3	10.3	15	7.1	7	8	-8	-25	...		
4	9.9	18	6.8	14	7	-11	-30	...		
5	9.7	23	6.7	24	7	-14	-35	...		
6	10.7	24	7.4	28	12	-6	-25	...		
7	12.4	23	8.9	27	18	3	-12	-32		
8	10.8	19	8.2	14	11	-5	-21	...		
9	8.6	8	6.6	1	1	-17	-37	...		
10	8.3	-2	6.4	-12	0	-15	-33	...		
11	9.1	-5	6.7	-25	0	-11	-26	...		
12	8.8	-12	6.4	-32	0	-10	-23	...		
13	8.6	-17	6.4	-38	0	-8	-20	-38		
14	8.7	-27	6.4	-5	-12	-23	...	...		
15	8.7	-37	6.5	...	-10	-16	-28	...		
16	8.3	...	6.3	...	-16	-23	-35	...		
17	7.8	...	5.9	...	-23	-32	...	...		
18	8.2	...	6.3	...	-18	-25	-39	...		
19	9.8	-16	7.1	...	-1	-5	-13	-28		
20	12.7	-4	9.7	...	-1	-1	-7	-18		
21	15.2	2	10.9	...	1	2	-2	-11		
22	14.4	5	9.9	...	5	4	-2	-12		
23	13.3	7	9.1	-32	7	3	-5	-19		
24	12.4	9	8.5	-18	9	1	-9	-25		

VK SOUTH — EUROPE (Long path)										
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9		
1	10.9	7	7.6	-15	5	-5	-18	-39		
2	10.3	10	7.2	-3	5	-9	-25	...		
3	9.7	14	6.8	7	4	-14	-33	...		
4	9.4	18	6.6	15	3	-18	-39	...		
5	9.3	22	6.6	24	3	-20	...	...		
6	10.3	24	7.3	28	9	-12	-32	...		
7	12.0	22	8.6	25	16	0	-16	-38		
8	11.5	18	9.0	17	11	-6	-23	...		
9	10.0	13	7.8	5	4	-14	-33	...		
10	8.6	4	6.6	-5	-1	-19	-38	...		
11	8.5	-2	6.6	-14	-2	-18	-36	...		
12	8.3	-9	6.3	-21	-2	-16	-32	...		
13	8.1	-16	6.4	-29	-2	-14	-28	...		
14	8.1	-34	6.2	...	-11	-22	-37	...		
15	8.0	...	6.2	...	-19	-29	...	...		
16	7.8	...	6.1	...	-27	-38	...	...		
17	7.5	...	5.9	...	-35	...	...	...		
18	7.9	...	6.3	...	-31	...	...	...		
19	9.3	...	7.0	...	-14	-19	-29	...		
20	11.6	-10	9.2	...	-2	-3	-9	-20		
21	13.8	-3	10.5	...	-3	0	-5	-14		
22	13.6	-2	9.5	...	-1	0	-4	-14		
23	12.6	0	8.8	...	2	0	-8	-20		
24	11.6	3	8.1	-32	4	-2	-13	-29		

VK WEST — EUROPE (Long path)										
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9		
1	10.6	-3	7.4	-34	0	-7	-19	-36		
2	9.9	0	7.0	-21	0	-11	-25	...		
3	9.4	2	6.6	-12	0	-15	-31	...		
4	9.1	5	6.5	-4	-1	-18	-36	...		
5	9.1	9	6.5	2	0	-19	-39	...		
6	10.1	12	7.2	5	3	-13	-31	...		
7	11.7	14	8.4	7	9	-4	-19	...		
8	13.5	15	9.8	6	14	3	-8	-25		
9	13.1	13	10.8	1	11	0	-12	-31		
10	11.4	8	8.8	-8	5	-7	-22	...		
11	9.7	0	7.4	-17	0	-13	-28	...		
12	8.9	-8	6.8	-25	-3	-15	-30	...		
13	8.4	-14	6.4	-30	-3	-14	-28	...		
14	8.2	-29	6.2	...	-8	-19	-33	...		
15	8.0	...	6.3	...	-19	-29	...	...		
16	8.0	...	6.1	...	-25	-34	...	...		
17	8.0	...	6.1	...	-31	-39	...	...		
18	7.7	...	6.0	...	-36	...	...	...		
19	7.4	...	5.8	...	...	...	...	...		
20	7.8	...	6.2	...	-32	...	...	...		
21	9.2	-37	6.9	...	-13	-18	-29	...		
22	11.5	-11	9.2	...	-4	-5	-12	-24		
23	12.2	-8	8.6	...	-3	-4	-10	-21		
24	11.2	-6	7.9	...	-1	-5	-14	-28		

VK EAST — MEDITERRANEAN										
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9		
1	10.3	0	7.8	-27	2	-8	-22	...		
2	10.9	-4	8.2	...	1	-5	-16	-34		
3	14.3	...	10.7	...	0	1	-4	-14		
4	18.6	4	14.1	...	-2	4	3	-2		
5	21.1	5	16.0	...	-4	4	5	1		
6	20.9	5	15.8	...	-5	4	4	1		
7	19.9	4	15.1	...	-3	4	4	1		
8	18.2	4	13.8	...	0	4	2	-4		
9	16.2	4	12.2	...	3	4	0	-10		

# HAMADS

## TRADE ADS

- **AMIDON FERROMAGNETIC CORES:** For all RF applications. Send business size SASE for data/price to RJ & US Imports, PO Box 431, Kiama NSW 2533 (no enquiries at office please ... 14 Boanyo Ave Kiama). Agencies at: Geoff Wood Electronics, Sydney; Webb Electronics, Albury; Assoc TV Service, Hobart; Truscotts Electronic World, Melbourne; Alpha Tango Products, Perth.
- **WEATHER FAX programs for IBM XT/ATs \*\*\* "RADFAX2"** \$35-00, is a high resolution shortwave weatherfax, Morse and RTTY receiving program. Suitable for CGA, EGA, VGA and Hercules cards (state which). Needs SSB HF radio and RADFAX decoder. \*\*\* **"SATFAX"** \$45-00, is a NOAA, Meteor and GMS weather satellite picture receiving program. Needs EGA or VGA & WEATHER FAX PC card, + 137 MHz Receiver. \*\*\* **"MAXISAT"** \$75-00 is similar to SATFAX but needs 2 MB of expanded memory (EMS 3.6 or 4.0) and 1024 x 768 SVGA card. All programs are on 5.25" or 3.5" disks (state which) plus documentation, add \$3-00 postage. ONLY from M Delahunty, 42 Villiers St, New Farm QLD 4005. Ph (07) 358 2785.

## FOR SALE ACT

- **YAESU FT-77S** 10 watt HF transceiver in good condition, little use, microphone and handbook, suit mobile/portable use \$325; **YAESU FV-707** digital VFO, twelve memories, suits above rig and/or FT707, excellent condition \$225. Richard VK1RJ (06) 258 1228 after hours.

## FOR SALE NSW

- **AR-3000A** brand new, still under guarantee \$1650. Bob VK2YBR (066) 45 3004.
- **KENWOOD TS440SAT** txcvr auto ATU, MC80 mic, mint \$1550; **KENWOOD PS50** h/duty power supply \$450; **YAESU FRG7700** HF RX memory \$350; MFJ tuner/amp new \$185. Can't separate RX and tuner, all vgc. Colin VK2AHD (069) 21 1004.
- **STEEL tower** 22 m, rotating, tilt over, professionally made, free standing \$900. Ron VK2BKN Tel/Fax (069) 72 2021.
- **TET EMTRON TE 23** m three element three band antenna \$300; **EAT300A Tuner** \$225; **MICRONTA** world clock \$50. Peter VK2FFA (043) 24 4160.
- **YAESU FT101E** txcvr, spare finals 6JS6C x 2, manual s/n 7G280520, \$450; **YAESU** digital display YC-6018, manual, s/n 81010498, \$120; **YAESU** desk mic, imp 50 kohms, YD-844, \$60. **MARINE** 12 ch txcvr, AM, s/n 4060695, **Teleradio** model GT84, cradle, ant, \$130. Albert VK2NJS QTHR.
- **YAESU FT-101Z** HF xcvr s/n 94090677; **YAESU** FC-901 antenna tuner s/n 8L030340; **YAESU** FV-107 external VFO s/n 0H040066, tuner plus 3 Mic and spare finals, \$600; **YAESU** FT-757GX HF xcvr s/n 5F580138 with hand mike, \$900. Karl VK2DYX QTHR (065) 51 2024.

- **KENWOOD TS-520** HF xcvr, s/n 550408, with remote VFO-820, s/n 730047, manuals plus extras, MC-50 desk mic, LAO \$500 the lot. Graham VK2FGI (066) 24 2219 QTHR.
- **SATELLITE** alum dish 2.2 m with rods (no base); **NEC** 1022 receiver with audio board fitted and working, \$240 the lot, will separate. Bruno VK2BPO QTHR (02) 713 1831.
- **STANDARD CNB161** nicad battery pack, 700 mAh, for Standard 2 m h/held, gc, \$60. **YAESU FT-4700** dual band 2 m/70 cm mobile with front panel separation kit for secure boot mounting (YSK1L long 6 m cable version), brand new, never unpacked, \$1190 (\$400 under new price incl mounting kit). Brad VK2KQH, day and early evening (02)906 5855, other times 018 640 377.

## FOR SALE VIC

- **VERTICAL HF antenna** Hidaka 5 band trap VS-41/80KR 35 to 28 MHz with 7 MHz radial loading coil, 9 metre high, gc, \$120. David VK3DNG QTHR (03) 859 4698.
- **YAESU FRG7700** very good condition \$400; **KENWOOD** desk mic MC60, vgc, \$75. Andy VK3BEL QTHR.
- **QUANTITY** of teletype equipment, models 15, FRXT 14, tape readers, reperforators, loop supplies, paper rolls, tape, manuals, etc. Free to genuine collector. Steve VK3ZY QTHR (03) 807 4748.
- **SATELLITE** tuner (C band), 950 MHz — 1750 MHz made by "Advance" named "model Galaxy BS Tuner AGC and system" brand new in box with instruction book \$185. W. Babb VK3AQB (03) 337 4902.
- **KENWOOD TS-430S** fully optioned FM-band CW, AM, SSB filters, PS-50 power supply, AT-250 automatic ATU, SP-430 extension speaker, hand-mic, complete with manuals and boxes in perfect condition, \$1975. Paul VK3DA (059) 83 1771 or (03) 789 1237.
- **YAESU FT707** HF 100 W mobile transceiver, good condition, complete, \$650. George VK3ZF (03) 435 1697.
- **YAESU FT101E** xcvr plus spare valves s/n 6J201420 \$400. Lindsay VK3ANJ QTHR (051) 55 1380.
- **KENWOOD TS850S/AT** current model HF base xcvr with auto ATU and DRU-2 digital recording unit, voice module s/n 20800698 \$3000; SP31 speaker to suit \$100. All mint cond. Chris VK3BRT QTHR (057) 84 3215.
- **SYSTRON** Donner model 1327B radio comms analyser, 1 MHz to 990 MHz, 100 Hz resolution, FM/CW, RF op 0.1  $\mu$ V to 10 mV, off air receiver 1 mV sensitivity, measure deviation to 20 kHz, c/w oscilloscope 20 kHz resolution, frequency error meter \$2100. Lee VK3GK (03) 544 7368.
- **KINGSLEY AR-7** coil boxes A,B,C,D,E and spares B,C,D, offer; **TECHTRONICS** model 535 dual beam oscilloscope, gc, partly restored c/w 2 plug-in units "CA", "B" and all h/books, offers over \$350. R Hill VK3RC QTHR (057) 99 1388.

- **YAESU FT-707** xcvr c/w service manual, \$600; **YAESU FRG-7** comms rx, \$200. Craig VK3DSG (03) 887 3870.
- **KU brand LNC**, \$25; **SATELLITE** TV receiver, Model 1022A, \$110. Vincent VK3AJ0 (03) 872 3503.
- **DTMF Decoder board** (Silicon Chip) May 91, control appliances via telephone, \$130 ONO; **IBM XT 8088** mother boards, \$40; **APPLE IIE** 128 k RAM card, \$80; **AWA VHF FM** carphone, Tx OK, \$25; **VHF** receive valves, \$4 each; Tx tubes, \$12 each. Vin VK3AJ0 (03) 872 3503.
- **SHACK CLEAROUT.** Military radios, Ken KP202 2 m FM h/h tcvr (s/n PD13729), valve test equipment, cables, power supplies, transformers, magazines, hi-fi, old computer parts, components old and new, 30 year accumulation of maybe-useful stuff. Make an offer and help me move house; it's a nightmare! Kim VK3ZZH (03) 836 6908 AH.
- **ICOM IC-W2A** dual band h/held, expanded rcvr, crossband repeat, leather case, BP82, BP83, charger, ext mic, CP13 12 V lead, gc, \$890. **BC72V** desk top charger, \$160. **DIAMOND RH77** dual band ant, \$50. **VK3KFC** (059) 96 3580.
- **BRAND NEW VALVES:** 815, \$25. **QQEO6/40**, \$15. **QQEO3/12**, \$5. **QQEO2/5**, \$5. **QQEO4/5**, \$5. **Motorola** lowband Maxar conv to 6 m, 25 W, manual, \$80 ONO. **AWA RT80** 10 ch lowband mobile with spares, \$80. **A Bartel** VK3ZOT (03) 700 3578.

## FOR SALE OLD

- **VALVES** for restorers, collectors, some unused in cartons, octals, novals, metals, military, all tested, sockets, ceramics, shields, all types. Send 9" x 4" SASE for new list. Reduced prices. Ted VK4YG PO Box 245, Ravenshoe Qld 4872, (070) 97 6387.
- **KENWOOD TS520S**, vgc, mic, handbook, \$450; **YAESU FRG7700** receiver 0.5 to 30 MHz, 12 memories, handbook, \$450. For the restorer, **Swan** xcvr SW120, circuits, spare tubes, \$25. **Trevor** VK4ATS (07) 265 4974.
- **ICOM IC471H** 70cm all-mode, vgc, \$1200; **ICOM IC730** HF xcvr, vgc, \$750; **UHF PA** module DJGHO, \$250. Rod VK4KZR (07) 353 3379.
- **5 ELEMENT** triband yagi CE35DX, \$250 plus P & P. Alan VK4AAR (076) 85 2417.
- **KENWOOD TS820**, digital readout, VFO820, MC50 mic plus service and owners manuals, gc, \$540. **Aubrey** VK4AFO, 8 Charles St, Malanda QLD 4855.
- **COLLINS TCS-12**, 1.5 to 12 MHz. 1625s in modulator and finals. Converted from anode to cathode keying. Elegant working example of wartime JAN (joint army/navy) transmitter and receiver combination, \$300; **MILITARY** whip antenna, 2 piece x 3 m long, \$30; **MULTITESTER**, Sanwa N-501 (top of range), 2  $\mu$ A FSD, 10 A AC/DC, etc. \$95; **FUNCTION** Generator, home brew, gwo, \$30. John VK4SZ QTHR (070) 613 286.

**FOR SALE SA**

- ICOM IC-271A 2 m all mode, \$850 ono; ICOM IC471A 70 cm all mode, \$850 ono; KENWOOD TS450SAT HF all mode, \$1800 ONO; KENWOOD TS520S, AT200, SP520, \$500 ono; KENWOOD SM220 station monitor, \$350. Barry VK5KXC QTHR (085) 22 4528.
- Amateur Radio Action magazines, Vol 1 (1978) to Vol 10 (1986), best offers; also various editions of other electronics magazines. Bruce VK5KJ (08)255 3566 after 1900 CST.

**FOR SALE WA**

- ICOM IC490A all mode 70 cm transceiver with backup memory power supply and manual, excellent condition, \$650. Ron VK6QB QTHR (097) 52 2651.
- ICOM IC735 HF 100 W, top condition, \$1300, s/n 17303; EMTRON tuner 300A with dummy load, \$250; CODAN wire tuner, \$100; ICOM RC10 remote controller, \$90; ICOM 720A band change switch, \$80. Graham VK6RO (09) 451 3561.
- TH3 Tri-band beam, 80 ft wind up tower 3 sections with rotator and coaxial cable. Offer wanted to dismantle and remove. Ian VK6XX QTHR (09) 458 3898.

**FOR SALE TAS**

- ICOM IC-25A 25 W 2 metre mobile transceiver, s/n 03074, with mike and manual, good condition, \$250. Jim VK7JO QTHR (003) 44 3314.
- AOR 3030 comm rcvr, new, 150 kHz — 30 MHz, commercial quality built in collins mech filter, AC, DC, int batteries, ECSS Fax SSB AM FM, must sell, brand new, paid \$1599, what offers? Allen Burke VK7AN (003) 27 1171.

**WANTED NSW**

- FLARE and driver for Amplion horn speaker Dragonfly and Dragon junior models. Receiver section type A MK3 spy radio complete or any parts particularly coils and IFTs. Morse keys any type. Swap or cash. Ric VK2AZQ QTHR (02) 817 0337.
- ARGONAUT 509 and Microbee software. Ray VK2FW QTHR (063) 65 3410.

**WANTED VIC**

- MARCONI TR1154 transmitter, preferably working order or capable of restoration, for soon-to-be-announced Australian National Museum of Aeronautics and Space at Point Cook, VIC. Please contact Allan Doble VK3AMD (03) 570 4610 or Authur Evans VK3VQ (03) 587 5600.
- POWER transformer to suit AR88D, partly stripped chassis with power-transformer acceptable; also required AR88D steel case; Satellite dish, 2.2 meters diameter for C band operation. W Babb VK3AQB (03) 337 4902.
- FT200 power supply for restoration project. C Jarvis VK3CYD QTHR (051) 27 4248 AH.
- Manuals original or photocopy of ATU leader LAC895; SWR/Watt Leader LPM885; Sig gen B & K 2050; Oscilloscope BWD 539; Sig gen MI TF2015. Andy VK3BEL QTHR.
- HF linear amplifier FL2100 or similar in good condition. Ken VK3NJ QTHR (03) 561 4124.
- MARCONI 2955, 2960/57 radio test set with amps or MPT1327. Lee VK3GK QTHR (03) 544 7368.
- COMM RCVR RCA AR88, any parts, any condn, also power transformer; any Morse keys, telegraphic equipment, etc. Maurie VK3CWB QTHR (050) 22 2120.

- ASSISTANCE with research into Leopold Gilbert Cohen (late) maker and founder of the Simplex auto "Jigger" or semi auto Morse key. Next of kin or oral history sought. Maurie VK3CWB QTHR (050) 22 2120.

**WANTED QLD**

- AR88 receiver urgently required, also give a museum home to old Heathkit amateur equipment, basket cases or not. "Doc" VK4CMY, Granite Belt Amateur Wireless Group, Dalveen (076) 61 6204 BH or (076) 85 2167 AH.
- ICOM SM-8 desk mic; Auto-transformer, variable, 0-260 V 10 A. John VK4SZ QTHR (070) 613 286.

**WANTED SA**

- AUTO manipulator MK701 keyer single paddle, new or second hand, reas price. Bert VK5AUS QTHR (08) 344 5011.
- OWNERS manual and workshop manual for Akai solid state X 150D reel to reel tape deck. Prefer to borrow to photocopy (unless someone has a spare). All expenses (phone calls, postage, etc) reimbursed. Bruce VK5KJ (08) 255 3566 after 1900 CST.

**WANTED WA**

- FTDX560 transceiver in good working condition with manual, any spare valves an advantage. All offers considered. Terry VK6ATM (096) 82 5061.

**MISCELLANEOUS**

- THE WIA QSL Collection requires QSLs. All types welcome, especially rare DX pictorial cards special issue. Please contact Hon Curator Ken Matchett VK3TL, 4 Sunrise Hill Road, Montrose Vic 3765, Tel (03) 728 5350.

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.

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\*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 2175, Caulfield Junction, Vic 3161, 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.

\*WIA policy recommends that Hamads include the serial number of all equipment offered for sale.

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## CONTRIBUTIONS TO AMATEUR RADIO

Amateur Radio is a forum for WIA members' amateur radio technical experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for possible publication. Articles on computer disk are especially welcome. The WIA cannot assume responsibility for loss or damage to any material. "How to Write for Amateur Radio" was published in the August 1992 issue of AR. A photocopy is available on receipt of a stamped, self addressed envelope.

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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.

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VK2RCW Continuous on 3699 kHz and 144.950 MHz 5 wpm, 8 wpm, 12 wpm

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VK3RCW Continuous on 144.975 MHz 5 wpm, 10 wpm

VK4WIT Monday at 0930 UTC on 3535 kHz

VK4WSS Tuesday at 0930 UTC on 3535 kHz

VK4WCH Wednesday at 1000 UTC on 3535 kHz

VK4AV Thursday at 0930 UTC on 3535 kHz

VK4WIS Sunday at 0930 UTC on 3535 kHz

VK5AWI Nightly at 2030 local on 3550 kHz

VK5RCW Continuous on 144.975 MHz, 5 wpm to 12 wpm

VK6WIA Nightly at 1930 local on 146.700 MHz and nightly (except Saturday) at 1200 UTC on 3.555 MHz.



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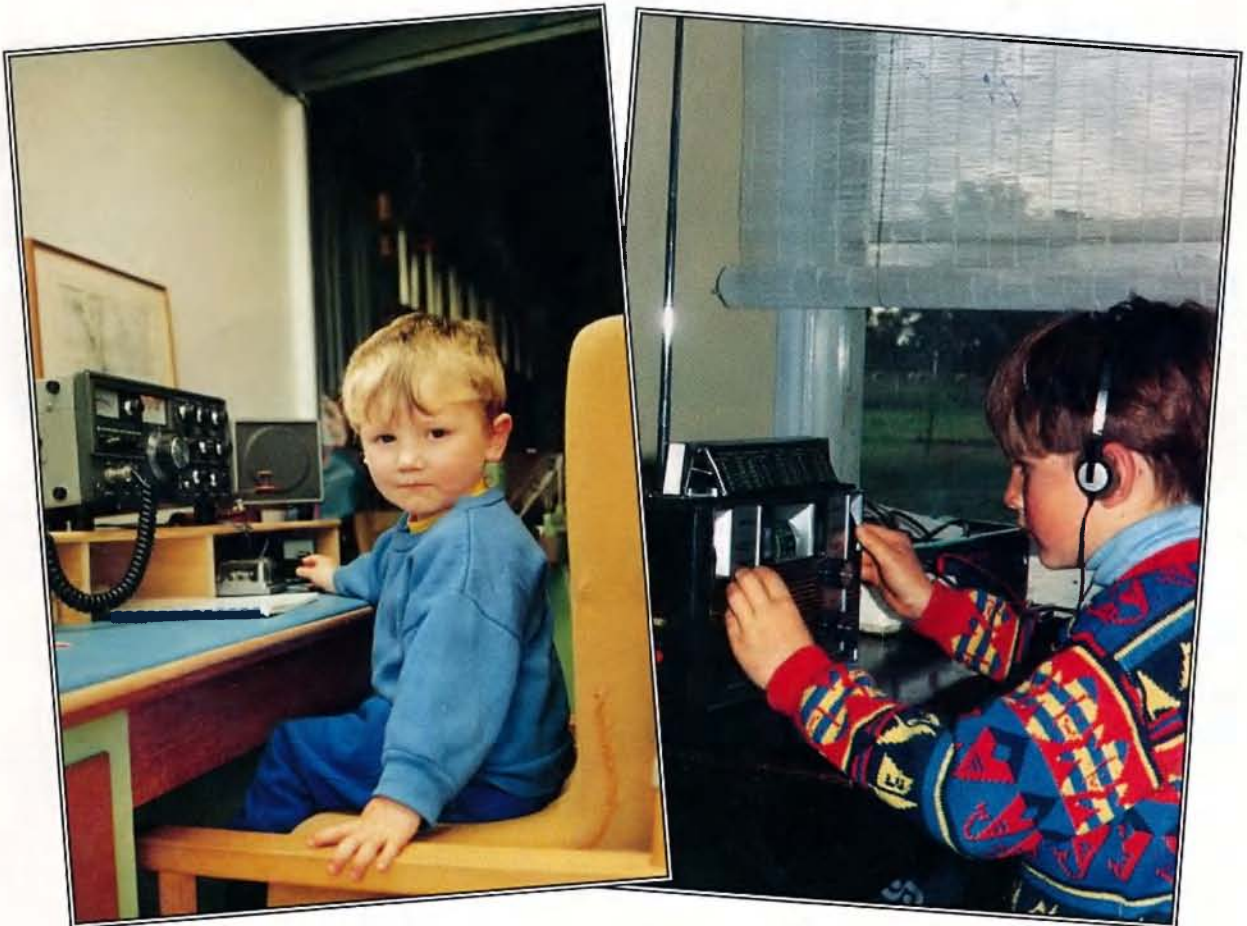
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SEPTEMBER 1994  
Volume 62 No 9

# AMATEUR RADIO



*Journal of the Wireless Institute of Australia*



Full of the latest amateur radio news, information and technical articles including:

- \* Part 2 of Beam Antennas with Bent Elements
- \* Review of ICOM IC-2700H VHF Transceiver
- \* WICEN Training Conference

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Business Hours: 9.30 am to 3 pm weekdays

Deadlines	Editorial	Hamads
October	12/09/94	14/09/94
November	10/10/94	12/10/94
December	07/11/94	09/11/94

Delivery of AR: If this magazine is not received by the 15th of the month of issue, and you are a financial member of the WIA, please check with the Post Office before contacting the registered office of the WIA. ©

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### Cover

Budding hams! At left is Willis, the two year old grandson of Keith Sherlock VK2WQ, operating a Morse paddle and monitoring the tone. At right is John, the nine year old grandson of John Bennett VK3ZA, tuning his Barlow-Wadley receiver to listen to his grandfather on his morning sched.

# Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

## Wireless Institute of Australia

The world's first and oldest National Radio Society Founded 1910

Representing the Australian Amateur Radio Service

Member of the International Amateur Radio Union

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# Federal QSP

## Strength and Numbers

It is often stated that the strength of an organisation such as ours can be gauged by the number of members in its ranks.

To define "strength" can be difficult and, in terms of an organisation such as the WIA, is frequently presumed to be the power to influence governments and local administrations.

I question this qualification of strength because, for an organisation to be in a position to influence any government simply by the weight of numbers, it would need to boast a membership which could have a significant effect in the electoral arena.

Strength can also stem from knowledge, technical expertise, financial resource and, more importantly, perseverance.

I believe that the real future of the WIA lays not simply in membership numbers but the ability to unite together, with a common cause, the exponents of our great hobby.

A comparatively small group of people, who are dedicated of purpose and united in their efforts to achieve a common goal, will self generate financial support and gain strength.

We need to be responsive to changing technology and society attitudes toward our hobby, and we need to appreciate now, more than ever, the commercial value of the spectrum we are privileged to use at minimal cost.

One of the key factors that makes the hobby of amateur radio so attractive to so many from all walks of life and social standing, is the wide diversity of specialised interest areas which can be enjoyed and provide scope for experimentation.

Regrettably, the diversity of interests has, in recent time, bred a degree of intolerance, misunderstanding and friction within our own ranks.

For the WIA to endeavour to recruit members with a primary interest in a hobby for which amateur radio is only an adjunct, simply to "populate the bands", can give rise to a great number of problems for those who have a genuine interest in amateur communication and experimentation.

Similarly, those who would extol the merit of a situation where all radio amateurs should be required to be members of our society in order to hold a licence flirt with long term danger.

Obvious financial benefits could well be outweighed by having an organisation in which members are recruited by force rather than attraction and the resultant internal conflict of aims and objectives.

Not unlike religion, I believe that the strength of the WIA must come from within and this can only be achieved with tolerance of others, understanding, and a genuine desire to preserve our great hobby interest for all.

Barry Wilton VK3XV  
Secretary  
WIA Victorian Division  
ar

# Editor's Comment

## Economies of Scale (2)

Last month I discussed how we, the WIA, could be a more efficient organisation if only we had more members. But there is one other consequence of size which goes in the opposite direction. Not, in this case, the size of the organisation, but the size of cities in which so many Australians live.

Australia is probably one of the most urbanised nations on earth. Of our relatively small population of 18 million, occupying about 10 million square kilometres of land, much more than half live in eight capital cities.

Sydney and Melbourne between them are home to nearly seven million people, and at least 7,000 of them are radio amateurs.

Once upon a time (about 40 years ago) each Division of the WIA held monthly meetings of its capital city members. Often these meetings were "packed houses" in sizeable auditoriums. The individual member had a feeling of direct influence on the WIA's activities and policies. Once a month he (or she) could say what he thought, and feel he was part of the action (there were very few lady members in those days, but that is irrelevant!).

Time went on and cities grew. It became more and more an example of "the tyranny of distance" (with thanks to Geoffrey Blainey for his picturesque phrase). The outer suburbs expanded ever further away from the city centre, and the traffic grew thicker and slower! One by one the monthly WIA meetings faded away as less and less amateurs felt inclined to brave the two-way night journey, by private or public transport.

Sydney was the first to go, with its population at the time probably around two million (now nearer four). Melbourne followed a few years later, then Brisbane, quite recently. Adelaide and Perth still have central city meetings, but they each have only about one million population. Hobart and Darwin are still flourishing meeting centres, with populations of

Continued on page 55

## 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	1994 Fees
VK1	ACT Division GPO Box 600 Canberra ACT 2601 Phone (06) 247 7006	President Rob Apathy Secretary Len Jones Treasurer Don Hume	VK1KRA 3.570 MHz LSB, 146.950 MHz FM, 438.525 MHz FM each VK1NLJ Monday evening (except the fourth Monday) commencing at VK1DH 8.00 pm. Repeated on Wednesday evening at 8.00 pm on 146.950 MHz FM.	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK2	NSW Division 109 Wigram Street Parramatta NSW (PO Box 1066 Parramatta 2124) Phone (02) 689 2417 Freecall 1800 817 644 Fax (02) 633 1525	President Michael Corbin Secretary Roger Harrison Treasurer Terry Ryeland (Office hours Mon-Fri 11.00-14.00 Wed 1900-2100)	VK2PFO From VK2WI 1.845, 3.595, 7.146*, 10.125, 24.950, 28.320, VK2ZRH 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 VK2UX (*morning only) with relays to some of 14.160, 18.120, 21.170, 584.750 ATV sound. Many country regions relay on 2 m or 70 cm repeaters. Sunday 1030 and 1930. Highlights included in VK2AWX Newcastle news, Monday 1930 on 3.593 plus 10 m, 70 cm, 23 cm. Voicemail highlights on (02) 724 8739. Some broadcast text is occasionally available on packet.	(F) \$66.75 (G) (S) \$53.40 (X) \$38.75
VK3	Victorian Division 40G Victory Boulevard Ashburton Vic 3147 Phone (03) 885 9261	President Jim Linton Secretary Barry Wilton Treasurer Rob Hailey (Office hours Tue & Thur 0830-1530)	VK3PC 1.840MHz AM, 3.615 SSB, 7.085SSB, 53.900 FM(R) Mt Dandenong, VK3XV 146.700 FM(R) Mt Dandenong, 146.800 FM(R) Mildura, 146.900 VK3XLZ FM(R) Swan Hill, 147.225 FM(R) Mt Baw Baw, 147.250 FM(R) VK4HD Mt Macedon, 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday.	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK4	Queensland Division GPO Box 638 Brisbane QLD 4001 Phone (07) 284 9075	President Murray Kelly Secretary Lance Bickford Treasurer Roger Bingham	VK4AOK 1.825, 3.605, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, VK4ZAZ 28.400 MHz. 52.525 regional 2m repeaters and 1296.100 0900 VK4HD hrs Sunday. Repeated on 3.605 & 147.150 MHz, 1930 Monday	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK5	South Australian Division 34 West Thebarton Road Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Garry Herden Secretary Maurie Hooper Treasurer Bill Wardrop	VK5ZK 1820 kHz 3.550 MHz, 7.095, 14.175, 28.470, 53.100, VK5EA 147.000 FM(R) Adelaide, 146.700 FM(R) Mid North, VK5AWM 146.900 FM(R) South East, ATV Ch 34 579.000 Adelaide, ATV 444.250 Mid North Barossa Valley 146.825, 438.425 (NT) 3.555, 7065, 10125, 146.700, 0900 hrs Sunday	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK6	West Australian Division PO Box 10 West Perth WA 6872 Phone (09) 434 3283	President Cliff Bastin Secretary Ray Spargo Treasurer Bruce Hedland-Thomas	VK6LZ 146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 1.825 3.560, (F) VK6RR 7.075, 14.115, 14.175, 21.185, 28.345, 50.150, 438.525 MHz. Country relays 3.582, 147.350(R) Busselton 146.900(R) Mt William (Bunbury) 147.225(R), 147.250(R) Mt Saddleback VK600 146.725(R) Albany 146.825(R) Mt Barker broadcast repeated on 146.700 at 1900 hrs.	(F) \$60.75 (G) (S) \$48.60 (X) \$32.75
VK7	Tasmanian Division 148 Derwent Avenue Lindisfarne TAS 7015 Phone (002) 43 8435	President Andrew Dixon Secretary Ted Beard Treasurer Peter King	VK7GL 146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on VK7EB 147.000 (VK7RAA), 146.750 (VK7RNW), 3.570, 7.090, 14.130, VK7ZPK 52.100, 144.150 (Hobart) Repeated Tues 3.590 at 1930 hrs	(F) \$69.00 (G) (S) \$55.65 (X) \$40.00
VK8	(Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).		Membership Grades Full (F) Pension (G) Needy (G) Student (S) Non receipt of AR (X)	Three-year membership available to (F) (G) (X) grades at fee x 3 times.

Note: All times are local. All frequencies MHz.

# Beam Antennas With Bent Elements

## — Part 2

John Sproule VK2AGT\*

Part 1 of this article presented the findings of an investigation into the characteristics of representative types of bent beam, comparing them with a normal Yagi. Promise was given that Part 2 would back it up with sufficient theory to enable a better understanding of the characteristics, and would show how the necessary self and mutual impedances were computed and checked.

### Relationships For a 2-Element Beam

The driven element will be numbered 1 as previously and the parasitic reflector will be numbered 2. No matter what the shapes of the two elements, the well known equations below relate the voltage  $V_1$  applied to the centre of the driven element, the current  $I_1$  at the same point and the current  $I_2$  at the centre of the reflector.

$$V_1 = I_1 Z_{11} + I_2 Z_{12}$$

$$0 = I_1 Z_{12} + I_2 Z_{22}$$

where:

$Z_{11}$  = self-impedance of element 1 and in general is a complex number and may be expressed as  $R_{11} + jX_{11}$  (self-resistance and self-reactance) or  $|Z_{11}| \angle \theta_{11}$  (magnitude and phase angle) when appropriate.

$Z_{22}$  = self-impedance similarly of element 2

$Z_{12}$  = mutual impedance between elements 1 and 2 and may be expressed as  $R_{12} + jX_{12}$  (mutual-resistance and mutual-reactance) or  $|Z_{12}| \angle \theta_{12}$  (magnitude and phase angle) when appropriate.

The notion that the reflector of the Double-U type, for example, is not a true parasitic governed by these same equations is wrong.

The steps in solving the two equations are not important at the moment. All that matters is that they

lead to the expressions listed below for the basic beam characteristics. These are listed in the sequence in which they are used in a computer program to calculate the performance of a beam. In order to clarify some comments I wish to make, the mathematical expressions are written in full for the case of a self-resonant reflector ( $X_{22} = 0$ ) with the addition of notes to cover the case of a non-resonant reflector. Reference will be made in the comments to the beams covered in Figure 1 of Part 1.

### Input Resistance of Beam

$$R_1 = R_{11} - \frac{|Z_{12}|^2}{R_{22}} \cos 2\theta_{12}$$

For a non-resonant reflector replace  $R_{22}$  by  $|Z_{22}|$  and the angle by  $(2\theta_{12} - \theta_{22})$ .

This equation shows that, for a self-resonant reflector, the input resistance is equal to, less than, or greater than the self-resistance of the driven element depending on the phase angle of the mutual impedance.

If  $\theta_{12} = 45$  deg, then  $\cos 2\theta_{12} = 0$  and therefore  $R_1 = R_{11}$ . This is so for cases C of the double-V and double-U types.

If  $\theta_{12} < 45$  deg, then  $\cos 2\theta_{12}$  is positive and therefore  $R_1 = R_{11}$ . This is so for a Yagi.

If  $\theta_{12} > 45$  deg, then  $\cos 2\theta_{12}$  is negative and therefore  $R_1 > R_{11}$ . This is so for cases A and B of the Double-U type.

### Input Reactance of Beam

$$X_1 = - \frac{|Z_{12}|^2}{R_{22}} \sin 2\theta_{12}$$

For a non-resonant reflector, make same changes as for resistance. Since the driven element has been taken to be self-resonant, the input

reactance shows the detuning due to the presence of the reflector.

De-tuning is zero only if  $\theta_{12} = 0$ . The nearest approach to this condition is with a close-spaced Yagi. The phase angle for bent beams can be much larger and de-tuning can become quite high. This is opposite to the claims of some proponents of bent beams.

### Driven Element Current

$$I_1 = \sqrt{\frac{W}{R_1}}$$

Where  $W$  is the power input to the beam and taken as 100 W for convenience in all my programs.

A high input resistance (due to  $\theta_{12}$  being greater than 45 degrees) results in a relatively small current in the driven element, and gain then depends more heavily on the reflector current.

### Reflector Current

$$I_2 = - I_1 \frac{|Z_{12}|}{R_{22}} \angle \theta_{12}$$

For a non-resonant reflector, replace the phase angle by  $(\theta_{12} - \theta_{22})$ .

For a self-resonant reflector, the phase angle of the mutual impedance ( $\theta_{12}$ ) alone determines the phase angle of the reflector current (relative to the reverse of the current in the driven element) and has a greater influence on gain and front/back than the current-ratio.

### Gain and Front/back ratio

No mathematics is included for vector summation of the remote fields of the driven element and the reflector since, in the general case of a bent beam, the spacing between the elements varies over their length. It is necessary to divide the elements into a number of small sections, each with its particular spacing and current and then vectorially add the fields of all the sections.

### Current-ratio

$$\frac{|I_2|}{|I_1|} = \frac{|Z_{12}|}{R_{22}}$$

For a non-resonant reflector replace  $R_{22}$  by  $|Z_{22}|$



This ratio is included only because it has featured so prominently in most published descriptions of bent beams, often under the name "coupling factor". The relationship above shows that the ratio can be increased, either by increasing the magnitude of the mutual impedance ( $Z_{12}$ ), or by decreasing the self-resistance of the reflector ( $R_{22}$ ). Ref (3) mentions only the mutual effect. But with a pocket calculator you can quickly see from the values of  $Z_{12}$  and  $R_{22}$ , listed in the Appendix of Part 1 (Table III), that the decrease in  $R_{22}$  with bending is more significant than the increase in  $Z_{12}$ , except for the Double-V type. Finally, it may be noted that, with the low value of  $R_{22}$  of Case A of the Double-U type, the current ratio would exceed unity, even if the mutual impedance were no greater than that of a Yagi of the same element spacing. I wonder about the method of measuring currents when I read of adjusting the tip spacing of such a beam for unity current-ratio.

Before moving on to the method of computing the self and mutual

impedances, I might emphasise the very significant effect on all the performance characteristics of the phase angle of the mutual impedance. Bending increases the angle, due to both decrease in the mutual resistance and increase in the mutual reactance.

### Mutual and Self Impedances

I was unable to find any published figures for the mutual impedance between bent antenna elements and, initially, none for self impedance. Early in my attempts to understand the V-5 antenna, VK2IJ had referred me to the two classical papers by Carter and Brown of RCA (Refs 6 and 7). Brown's figures for the mutual impedance between straight elements were reproduced in all antenna handbooks until well into the computer age. His methods of calculation could be applied to elements of any shape and, in fact, he applied them to vertical broadcast antennas of a T shape. So I set out to apply his methods, initially to a V-5 type of antenna using a pocket

calculator. Then I obtained access to a computer and tackled the much longer calculations of the Double-V and U shapes.

The mutual impedance between two antenna elements, say a driven element numbered 1 and a reflector numbered 2, is obtained from:

$$Z_{12} = \int -E_{12} \sin(2\pi S) dS$$

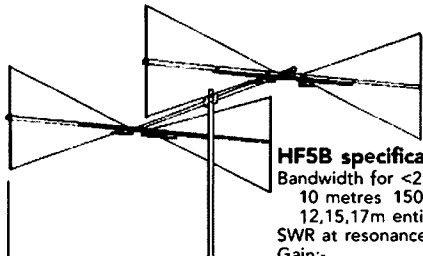
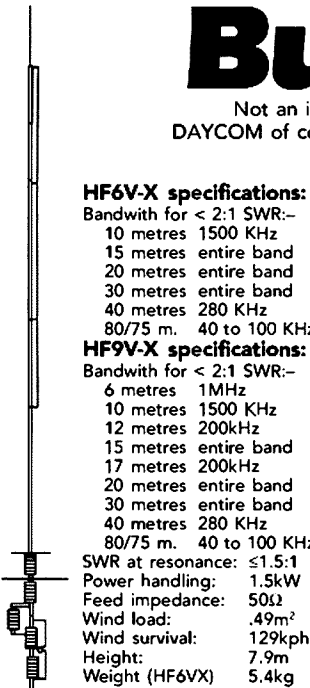
Where  $E_{12}$  = the intensity of the electric field due to 1 amp input to the driven element, at a point on the reflector a distance S from one of its ends, and parallel to the reflector at this point.

The integration indicated by this equation simply means that, if a curve is plotted of  $(-E_{12} \sin 2\pi S)$  against S, then  $Z_{12}$  is equal to the area under this curve. It is interesting to note that, to get each value of mutual impedance, Brown had to plot such a curve and measure the area with a planimeter. Numerical integration with a computer is now the method.

The electric field surrounding the driven element cannot be easily

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40 metres 280 KHz  
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Wind load: .49m<sup>2</sup>  
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Height: 7.9m  
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12,15,17m entire band  
SWR at resonance:  $\leq 1.5:1$

Gain:-  
10 metres 5dBd  
12 metres 5dBd  
15 metres 5dBd  
17 metres 0dBd  
20 metres 3dBd  
Front to back ratio: 20dB  
Front to side ratio: 30dB  
Power handling: 1kW  
Feed impedance: 50Ω  
Wingspan: 3.84m  
Boom length: 1.83m  
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pictured, and four equations are needed to describe it mathematically. Two of them give the real and reactive components of the field intensity parallel to the driven element, and the other two give the real and reactive components perpendicular to the driven element. The reactive component appears because of time phase differences.

For the normal Yagi, only the electric intensity parallel to the driven element has to be calculated, since it is parallel to the reflector also. But if the reflector is bent, the intensities parallel and perpendicular to the driven element are needed to calculate the total intensity parallel to any section of the reflector.

Figure 5 gives an idea of the four components of the electric field produced by a straight half-wave dipole. Figure 6 shows curves of  $(E_{12}\sin 2\pi S)$  plotted against position

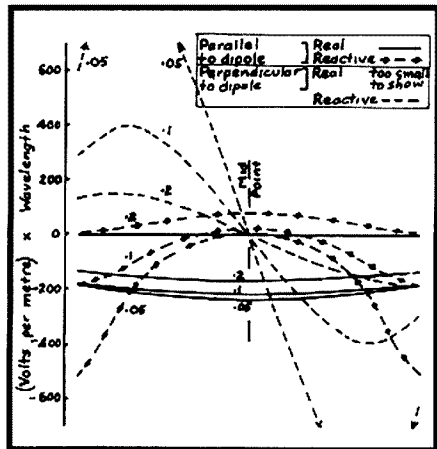


Figure 5 — Electric field components at distances of .05, 0.1, 0.2 wavelength from a straight half-wave dipole with 1 amp input.

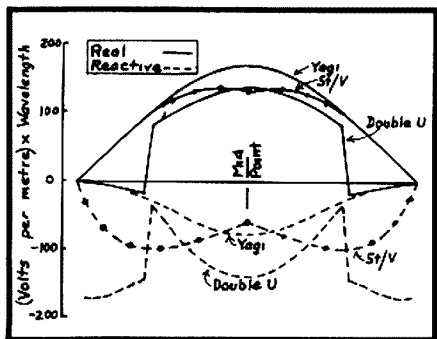


Figure 6 — Real and reactive components of  $(-E_{12}\sin 2\pi S)$  plotted against position along reflectors of Yagi, Straight/V 103 degree, and Double-U beams. All elements spaced 0.2 wavelength. 1 amp input.

along the reflector for a Yagi and two bent beams. The net area between the curves and the base line is proportional to the mutual resistance or reactance as the case may be, and examination of them shows which parts of the reflector contribute most to the change in resistance or reactance when the reflector is bent. It is not just the parts near the open ends that affect the mutual reactance as is often thought.

### Self Impedance

Self impedance is computed in much the same way as the mutual impedance, except that the electric intensity is that due to the current in the element itself, not in a coupled element. Only the resistance component was needed for my purpose.

### Checks on Impedance Values

The performance graphs of Figure 1 in Part 1 are no better than the impedance values used in the computations and it was vital to get some check on them, apart from the usual checks on programs, etc.

I was pleased one day to come across a graph in Ref 8 of the self resistance of a V-shaped dipole plotted for a range of angles, and this agreed closely with the figures I had computed. Ref 4 gives the self-resistance for a range of shortened straight dipoles, and these figures gave a reasonable check on my figures for the Double-U designs.

No figures came to light to give a check on mutual impedance between

bent elements. Exact agreement with published figures for straight elements was only a partial check since, in this case, the large reactive field components perpendicular to the driven element are not involved.

Being confident about the self-resistance values for a reflector, it occurred to me that a check on the magnitude of the mutual impedance, although not phase angle, could be obtained by setting up a test bent-beam with a self-resonant reflector and measuring the current-ratio. As shown earlier, this ratio is equal to the ratio of the mutual impedance to the self-resistance of the reflector.

The first test was with a straight driven element and a V-shaped reflector. Then, some time later, when I had extended the computer programs to handle a Double-U type, a second group of tests was performed on this type of beam (see photo of VK2ABQ type of structure). All tests were done in the 10 m band, measuring the currents in the driven element and the reflector with toroidal current transformers/rectifiers. In the double-U series, measurements were made with spacings between the tips of the elements ranging from 10 mm to 290 mm. This variation was achieved by changing the spacing between the elements. Included in both series of tests was a normal Yagi for comparative purposes.

Table IV shows a comparison between computed and measured current-ratios. Taken overall, the agreement between computed and test figures was good enough to give me the final bit of confidence I needed.

Shape of elements:		Spacing between:		Current Ratio:		Current Ratio rel to Yagi:	
rflr	drvn	elements	tips of elements	computed	test	computed	test
strt	strt	.2λ	-	.75	.65	1.0	1.0
strt	103°V	.2λ	-	1.3	1.0	1.7	1.6
strt	strt	.258λ	-	.7	.65	1.0	1.0
U	U	.258λ	290 mm	1.2	1.0	1.75	1.6
U	U	see text	65 mm	1.45	1.35	2.1	2.15
U	U	see text	27 mm	1.55	1.4	2.25	2.2
U	U	see text	10 mm	1.6	1.5	2.3	2.35

Table IV — Comparison of calculated and measured Current Ratios for various antennas. The second set of readings represents the second series of experiments.



Tests being carried out on the author's VK2ABQ type antenna.

### Concluding Remarks

Although now satisfied that many of the performance claims that originally attracted me to the V-5 design are not supported by theory, the concept of using a trapped tubular driven element with full-length wire parasitics still appeals to me for its simplicity and light weight. Provided it is fitted with a director as well as a reflector for each band, making a symmetrical layout with little

or no increase in turning circle, its performance should be comparable with the usual tribander. As for some of the theoretical results in this article being at odds with others that have received fairly wide recognition in amateur radio circles, I point out that, to the best of my knowledge, figures for the mutual impedance between bent elements have not previously been determined. Mine being just an amateur effort, verification of these

figures by test is clearly called for. I have done what I could with limited resources and I believe that the computed impedances are sufficiently correct for a broad comparison of beams. Nevertheless, my hope is that others may be able to go further with better instrumentation and more space. My attention was recently drawn to the RSGB book *HF Antenna Collection*, which has a chapter on modelling and testing, including some very excellent work carried out by G3LDO at 144 MHz with small scale models of HF antennas. His efforts show what a fruitful field this is for antenna experimentation — better still if it can be accompanied by theoretical analysis!

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6. P S Carter, Circuit Relations In Radiating Systems, *Proc IRE*, June 1932.
7. G H Brown, Directional Antennas, *Proc IRE*, Jan 1937.
8. L Lewin, Mutual Impedance of Wire Aerials, *Wireless Engineer*, Dec. 1951.

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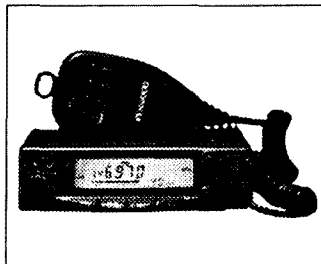
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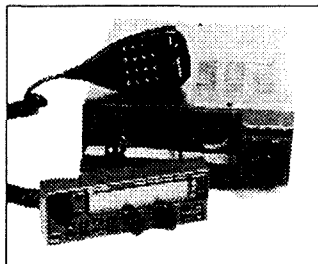
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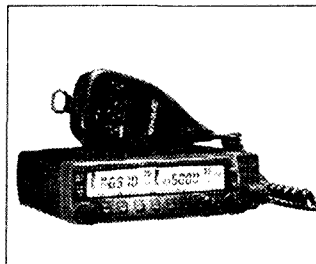
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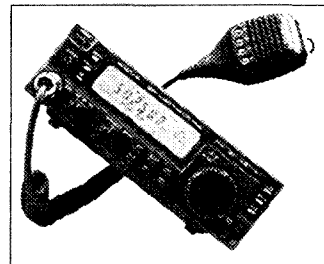
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# JOTA

## 37th Jamboree-On-The-Air

*Scout Commissioner Peter Hughes VK6HU, National Co-ordinator for JOTA, encourages all amateurs to participate in the 1994 Jamboree*

Jamboree-On-The-Air is the biggest event in the world calendar of the amateur service, especially in Australia. It is one week-end in the year when amateurs invite scouts and guides to talk on the air to other scouts and guides "elsewhere".

Early rapid increase had 30,000 international participants by 1961 and IT IS STILL GROWING. Although in the past few years we appear to have reached a plateau of numbers in Australia, world numbers have grown by an enormous 30% in two years — by 11.5% from 1991 to 1992 and another 17.5% to 1993.

### The Numbers Are Interesting Too —

In 1993, 429,000 Scouts and 88,000 Guides took part in JOTA at nearly 11,000 stations run by 33,500 radio amateurs in at least 104 countries

around the world. This is the first time over 100 countries has been reported and it represents 98% of members of the World Organisation of Scout Movements. It is the first year that over 500,000 have taken part. No wonder the air waves were crammed that week-end! Truly, it is an international event.

Some of this latest rapid increase is due to nations emerging from behind the iron curtain with their young people rejoining scouting and embracing JOTA. They are fascinating to talk to and are hungry for information on our activities. It is very rewarding to be part of this excitement.

### In Australia

Scouts have participated in all 36 Jamborees-on-the-Air. In 1993, 1344 amateur callsigns were active at 653

JOTA stations looking after 15,459 Scouts, 2,368 Leaders, 8,135 Girl Guides and 1,429 Leaders who recorded 8,207 visitors to their activities. When all the reports were tallied those numbers reflected a 9% increase in Scout and Guide participation over 1992 and operators made nearly 7,000 contacts, well down on over 10,000 contacts made in both 1990 and 1991, but 5% up on 1992.

Regulations have always allowed Australian Scouts and Guides to speak directly over the air (under licensed supervision of course) and overseas scouts are still gaining this privilege. We are deeply indebted to the SMA for their constant help and consideration.

### How to Take Part

- Agree to operate your station at a Scout or Guide Hall or camp or invite a few scouts or guides at a time to your shack, perhaps on roster?
- Offer to help at another station.
- If you can volunteer, please ring Scout HQ in your capital city for your JOTA organiser, or a deputy, to make some arrangements and contact you.
- If you know your local Scout Group or Guide Unit, please go straight to them.

### There are a Few Rules

- The 37th JOTA week-end is 15 and 16 October 1994.
- JOTA is not a contest; quality of contact is the most important factor.
- Stations operate within the licence of any operator present using any legal frequency or mode. JOTA provides an opportunity for holders of Limited and Novice calls to work within a Full Call licence when one is present.
- Stations may operate for 48 hours or any part thereof (dependent on time availability of the operator) from Saturday 0000 hrs to Sunday 2400 hrs LOCAL TIME. This means that all stations around the world could be active for the full 24 hours from 2200 hrs EAST Saturday.
- Call "CQ Jamboree", or answer JOTA stations calling, to establish

## 37<sup>th</sup> Jamboree-on-the-Air 37<sup>e</sup> Jamboree-sur-les-ondes



The 1994 International JOTA Logo.

a contact ("CQ JOTA" is also used).

It is recommended that stations monitor the agreed World Scout Frequencies and call around the dog pile to find each other. This process helps to avoid losing a contact in a QSY away from a spot frequency, but please QSY if you do "spot" on these frequencies. Please leave intervals for DX stations to come in.

### World Scout Calling Frequencies

Band	CW	DX Phone	VK Phone
80 metres	3.590MHz	3.740MHz <*	3.590MHz
40 metres	7.030MHz	7.090MHz	7.090MHz
20 metres	14.070MHz	14.290MHz	14.190MHz
17 metres	18.080MHz	18.180MHz	
15 metres	21.140MHz	21.360MHz	21.190MHz
12 metres	24.910MHz	24.960MHz	
10 metres	28.190MHz	28.990MHz	28.590MHz

(<\* - not legal in Australia)

(VK frequencies are also advertised in ZL)

### Official Opening of 37th JOTA

The official opening of JOTA for Australia will be broadcast as usual over VK1BP from Government House Canberra at 0400z on Saturday, 15 October 1994 on frequencies of 7.090 MHz, 14.190 MHz and 21.190 MHz. Testing is necessary, so it would be appreciated if the broadcast frequencies were kept clear from 0330z. Following the broadcast a "callback" is taken to give our dignitaries some idea of the enormous scope of JOTA in Australia. I will take this on each frequency in turn, returning to the frequencies in turn until there are no more callers or by 0500z.

**Good luck with JOTA and 73**

\*58 Preston Street, Como WA 6152

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**Repeaters — additions, deletions, alterations. Have you advised the WIA of changes needed to the repeater list?**

## Equipment Review

# ICOM IC-2700H VHF/UHF FM Transceiver

Reviewed by Paul McMahon VK3DIP

### What is it?

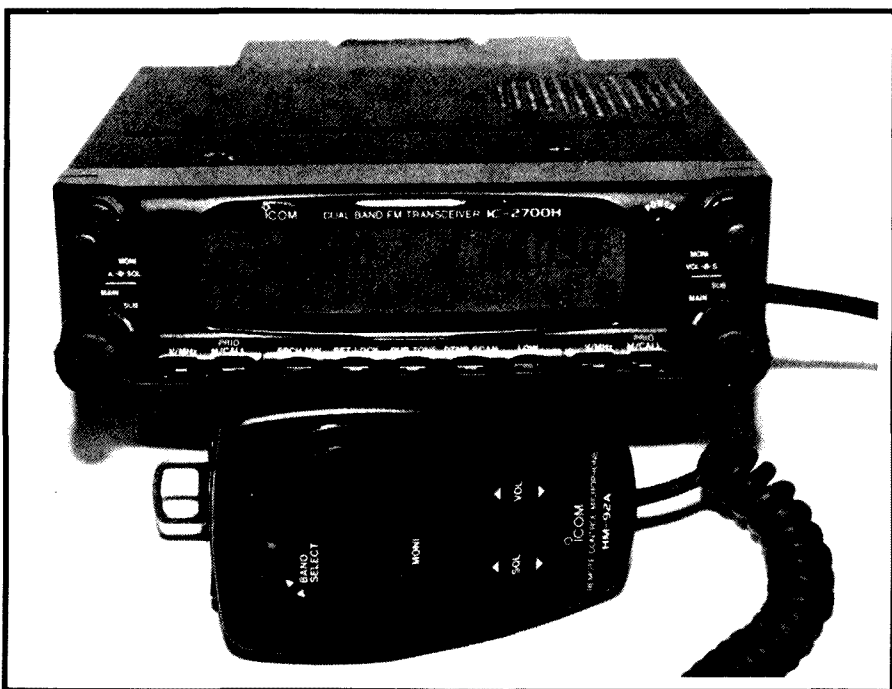
The IC-2700H is a feature packed dual-band 2 metre/70 cm FM transceiver, offering 50 watts out on 2 metres, and 35 watts out on 70 cm. It is intended for mobile operation, but would also be at home on the shack bench.

### First Impressions

The IC-2700H comes packed in the standard type foam box inside a cardboard box. The first thing to be noticed with the IC-2700H is the sparseness of the front panel. Those controls that are on the main unit are symmetrically placed befitting the dual band role. This effect is supported by the display which also has two halves, one for each band. The controls on the panel offer the basic for each band; that is, there are

two each of volume, squelch, and frequency/memory knobs, plus a couple of buttons. There are also a few other buttons such as power, Tx low power, duplex, and scan, which have a common function and are thus not duplicated. It should also be noted that the knobs also function as buttons if pushed.

The microphone is also pretty remarkable. It has the most buttons, etc on a microphone I have ever seen. There are some 30 buttons on the microphone compared to the 10 buttons and 4 knobs on the main box! Basically, anything you can do from the front panel you can do from the microphone. This includes power, volume and squelch settings. However, there are, in fact, quite a few functions which can only be done from the microphone.



IC-2700H VHF/UHF FM transceiver. Note the uncluttered front panel compared to the many facilities offered by this rig.

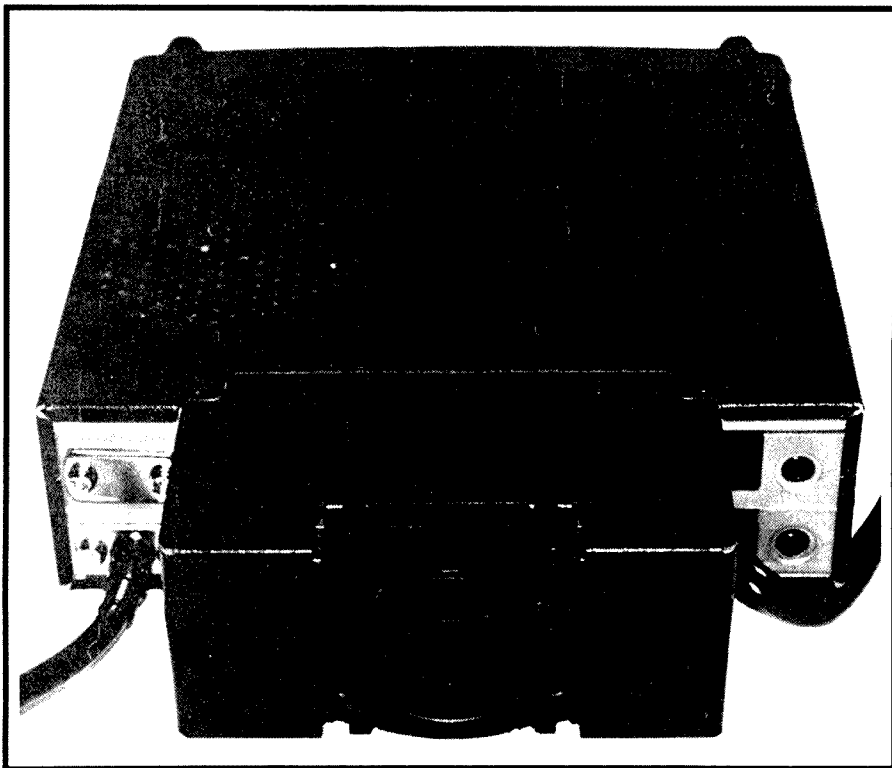
The internal speaker is mounted on the top of the set, and the single antenna connector shared by both bands has a PL259 connector on a short length of coax. The microphone is connected via a flat plastic connector similar to the RJ11 type of click-on connector commonly used on telephones. The microphone socket is hidden behind the removable front panel. This is something I actually had to look up in the manual to find out, as it had me stumped for a while. There is actually a good reason for this as one of the options is an infra-red remote wireless microphone and, if you chose this option, you wouldn't want the front panel left with a gaping hole. The LCD display is large and shows all there is to know about the transceiver in stereo (information for both bands is shown simultaneously). Unusually this includes the current setting of both volume and squelch controls.

The back of the unit has two standard 3.5 mm speaker jacks which can be programmed to provide one or both audio channels. Completing the back is a reasonably small heat sink with attached fan. This fan can be set to be on continuously or only while transmitting. When on the fan is fairly quiet and maintains the heat sink at a tolerable temperature.

The IC-2700H is functionally similar to the older IC-2400. The main differences being a much cleaner layout with the dual controls and symmetry mentioned above, slightly improved receive sensitivity (0.16  $\mu\text{V}$  for 12 dB SINAD vs 0.18  $\mu\text{V}$ ), slightly higher power out on 2 metres (50 vs 45 Watts), more memories (50 per band [100 total] vs 40), and smaller size (140 x 40 x 175 mm vs 150 x 50 x 195 mm).

### Technical Bits

As appears usual these days there is very little technical content in the manual. Details are restricted to the usual sketchy specs hidden up the back, from which you can glean that the receiver is a dual conversion with the first IF at 41.8 MHz (42.25 MHz at 70 cm) and the second IF at 455 kHz. The 88 page manual is, however, a detailed instruction book explaining clearly how to use any of the functions. This doesn't help, however,



**The rear view of the IC-2700H shows the comparatively small heat sink and cooling fan.**

if you are interested in how ICOM has achieved some of the magic functions of this rig.

In the review set the frequency display showed a receive frequency range from 118 MHz to 174 MHz and 320 MHz to 999 MHz in 5 kHz steps. Time and equipment restricted my exploration of the actual receive limits of the set, but transmit was limited to the relevant amateur band segment as noted in the specifications.

One of the bits of magic I would be interested in some details of, is the ability of the set to program both halves as either band. By this I don't mean just swapping which side of the display and knobs are which band; I mean that each half can be independently set to either of the bands or off. This leads to the basically useless ability to turn one half off, and the very useful ability to have both halves on the same band at the same time! ICOM calls this the para-watch mode. I tested this by putting both halves on 2 metres, and lo and behold I was listening to two frequencies on the same band at the same time with the same radio.

This is not the more common priority-watch function (which is also

available on this set) where the receiver switches every so often back and forward between two channels. In the para-watch mode, as far as I could determine, it was exactly as if you had two 2 metre boxes in the same shell. If both frequencies were in use you heard both stations at once, and you could talk to both as well. The only difference I could find between the two halves when on the same band was that one half was a couple of S-meter points down on the other, which was easily seen by setting both to the same frequency. This mode could be very useful. Imagine talking to someone on the band, while scanning the same band.

Another bit of more useless, but never-the-less eye catching, gimmickry is the demo mode. In this mode the display cycles through a series of pretty patterns, and effects. This is stopped as soon as a button is pressed, but is activated again after 2 minutes inactivity. If you are into screen savers on your PC then this mode is just what you want in a radio.

Some of the other more useful features are:

- The programmable time-out for transmit, just like a repeater time-

out except that it beeps at you ten seconds before it is going to cut you off.

- One touch PTT, ie effectively a locking PTT key. If you use it, however, its probably a good idea to also set up the time-out.
- Auto power-off. Good for people who leave the radio on in the car and flatten the car battery.
- Scratch pad memories. The transceiver remembers the last three frequencies you used, similar to a last number redial on a telephone.

The IR (infrared) wireless microphone option sounds like a useful option too. The range quoted is around 2 metres, with greater distances possible with an optional extension receiver. The only problem with this is that if you have a messy shack bench you may end up misplacing the microphone! At least with the normal approach you can find it by following the curly cord. If you are the type who likes to pace about while talking, or has a curly cord that has been stretched to twice normal length by having people in the back seat of the car wanting to talk, then this could be a very useful option to consider. It appears you can set up to 8 different microphone addresses also, so if you have more than one of these sets, say at a field day or similar, you can determine which box goes with which microphone.

## Operation

Operation is pretty straight forward. Basic things, like turning the power on, or setting volume, squelch, and frequency, of each band, at least via the front panel, are fairly obvious. The microphone is another story. This is one complex microphone! Most of the quite large manual deals with the use of the microphone and its buttons. The microphone feels a little strange in the hand with all those buttons (as previously mentioned there are 30 of them, most with two functions and some with three). However, some thought has gone into the placement of the buttons to minimise possible problems. To help with this there are two different lock buttons on the microphone to lock the buttons on either side of the microphone independently.

Another difference to get used to is the need to look at the microphone as well as needing to use some care when selecting features. There are a couple of multi-colour LEDs indicating which buttons have been pressed, etc, although I must say I would probably never remember what the difference was between the mode LED being red, green, or orange. At least if you were in a car you could hold it up in front of you rather than taking your eyes off the road. The IR wireless microphone also has all of these buttons, as well as the nicads, etc to power it. This would make for a solid microphone and I suspect that the standard microphone that is supplied actually has some weights included to match it to the feel of the wireless one.

The scanning features are well explained in the manual, with diagrammatic, as well as written, descriptions. These features are pretty much standard these days and can just about be taken for granted. Various repeater needs that are not really required or useful in Australia are also present, such as tone access, auto offset, and DTMF dialling with memories.

Despite all the bits on the microphone, audio quality was good, and setting up the memories, etc was quite simple, or at least it seemed so when following the manual. Switching between bands, and setting the main

and sub band, was also fairly obvious. As far as main and sub band are concerned the only reasons I could see for designating the bands as such was to facilitate which band the buttons on the microphone were active upon. In all other respects the two halves of the set seemed to be equal.

Power supply requirements should be looked at carefully, especially if you are intending to use this as a base rig. The 12 amps maximum required on transmit is easily in the league usually reserved for HF boxes. Likewise this could make quite a mess of a car battery if the engine was not going for a while. If you were, for instance, to park on a hill for an all day field day, make sure you leave the car facing downhill.

## Conclusion

This is a set with which to really impress your friends. It has virtually everything you could ever ask for, and a bit more for luck. The decision to keep the front panel simple, and to put everything on the microphone is a bit different but it does have some advantages. This is not really a dual-bander. It is much more like two separate transceivers in the same box.

The review transceiver was supplied by Duncan Baxter from ICOM Australia Pty Ltd.

*\*47 Park Avenue, Wattle Glen, VIC 3096*  
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## WIA News

### Radio Direction Finding Championships

Frank Sleep VK4CAU has provided an update on our July *WIA News* item on the upcoming radio direction finding championships in Europe.

This competition is to be the *7th World Championships*, not the Region 1 Championships, as previously stated. Frank VK4CAU will be attending as Australia's only competitor, apparently the first time

Australia has been represented in any world championships.

Radio Sport is coming to Australia, says Frank, probably first to VK4. It seems the Townsville Amateur Radio Club is considering submitting a proposal to conduct the next Region III ARDF games here. Frank suggests we need a Federal ARDF Coordinator, saying it would be a tremendous boost to the WIA if the Year 2000 World Championships could be held in Australia, perhaps as a demonstration sport for the Olympics.

# 1994 Remembrance Day Contest

## Opening Address



Mr Richard Butler, AM.

This year's Remembrance Day Contest opening address was delivered by Mr Richard Butler, AM, a former Secretary-General of the ITU (1983-1989) which is the global body for regulation, standards, co-ordination and a significant contributor to the development of telecommunication worldwide. He was Deputy Secretary-General from 1968-1982 and he has been a member of the Administrative Committee of co-ordination with the Secretary-General of the United Nations (Chairman) with responsibility for administrative management and related policy co-ordination functions within the United Nations system. He was the most senior Australian in the United Nations system and the only one to be elected as Head of a United Nations Specialised Agency.

Since returning to Australia Mr Butler has been active in policy research, advice and the need for telecommunication reforms including being a member of six boards and advisory committees.

### The Opening Address

"I am greatly honoured to be invited again to participate in the opening of your annual Remembrance Day Contest and to remember with you those who served and gave their lives in the national and global interests of others.

"We live, today, in an environment which is becoming increasingly complex, leading to a more integrated society. A communications revolution is under way. It is as significant as the industrial revolution which preceded it.

"Digitalisation is driving convergence. Potential applications and new acronyms and descriptions appear regularly with many like "super highways" driven by the supply side. Nevertheless, thanks to wireless advantages and advances, we can recognise that in less than 30 years Marshall McLuhan's global village concept has now arrived.

"With the results of WARC '92 we can truly say that it will soon be practicable to have quality communications in large or small — even single circuit capacities from person to person — anywhere to anywhere. Digitalisation and low earth orbit satellites are adding to network connections, facilitating access beyond other technology frontiers. This is not new to amateurs.

"Indeed, amateurs have helped to pave the way in using orbiting satellites, providing novel software, store and forward and other uses proceeding from the earlier packet radio and RTTY initiatives.

"Those initiatives have laid the foundations for other groups, like Volunteers in Technical Assistance (VITA) which has received a FCC Pioneers preference status licence for a Low Earth Orbit Satellite (Little Leo) system, serving humanitarian disaster relief. One example is "the world's first use of a low earth orbiting satellite to remotely control a

technical system", monitoring the operations of a renewable energy power plant now serving some isolated schools and residences away from the public telecommunications and electricity grids in Indonesia.

"The last occasion on which I addressed you was virtually on the eve of WARC '79 which was in my capacity in the ITU and patron of 4U1ITU, following the interests of amateurs rather closely.

"With sustained preparations in various WARC's it was satisfying to see the recognition given in the International Radio Regulations to the "Amateur Service" and the "Amateur Satellite Service". This is far removed from the initial experimental licences granted to Walter Jenvey, T Robinson, C P Bartholomew and others who pioneered wireless applications at the turn of the century. Walter Jenvey, with his communications to the Royal Escort Cruiser, was, in fact, a pioneer for the maritime mobile service.

"Your history is full of pioneering training contributions earning the credible recognition which has stood the amateur community well in the national and international negotiations on the competing demands for radio spectrum and shared access.

"We are in an era of competitive uses and consideration of the economic values of the spectrum for particular service applications. They present new challenges in policy formulations and decisions. It will be important for the amateur service values to be fully appreciated in the future spectrum allocation reviews at both national and international levels.

"I wish you every success with the 1994 Remembrance Day Contest and in future amateur activities across all facets of radio spectrum considerations that will be faced for the rest of this decade.

"I now declare the 1994 Remembrance Day Contest Open.

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**Prevent pirates — make  
sure you sell your  
transmitter to a  
licensed Amateur.**



# SEANet Says "Make It Malacca"

Thomas E King VK2ATJ

Malaysia's most historic city, Malacca, will host the 22nd annual convention of the Southeast Asia Network (SEANet) from 11 — 13 November, 1994.

The SEANET '94 organising committee anticipates that 200 amateur radio operators from a dozen countries will register to attend the three day event. As well, a number of communication officers and telecommunications executives, shortwave listeners and others interested in amateur radio and electronics will also likely register for this popular forum for amateurs in South East Asia and Oceania.

The venue for SEANet '94, the Village Resort, Ayer Kroh, is also expected to be the site of a special event amateur station operating on HF and VHF.

The registration fee of \$US60 (\$AUS82) includes meals and activities in the conference program plus souvenirs. The room tariff will be about \$US50 (\$AUS68) inclusive of breakfast.

A number of SEANet '94 events have been organised including a welcome dinner at the Village Resort and a lineup of sightseeing tours in and around the fascinating city.

Malacca (locally known as Melaka), 146 km south of Kuala Lumpur and easily accessible from Singapore, was founded in the 15th century. The flags of Portugal, Holland and England have flown over Malacca which today lures millions of visitors from around the world to sample its multicultural heritage.

Following the conference, delegates able to tour the nation will find a dynamic country in the midst of celebrating "Visit Malaysia Year 1994", a year long celebration of some 160 special events staged across the length and breadth of Malaysia.

Further details about SEANet '94 are available from Organising Secretary, Sangat Singh, 9M2SS, 111, Jalan Terasek Lapan, Bangsar Baru, 59100 Kuala Lumpur, Malaysia, tel (603) 256 1571, fax (603) 253 7373.

Amateurs can also check into the SEANet which meets daily at 1200z on 14.320 MHz to not only learn about the activities of the net and the upcoming conference but to also learn more about VMY '94 and the many attractions of this booming southeast Asian nation.

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## WIA News

### 80 m DX Window — Take Care

With the trough in the Sunspot cycle comes improved propagation on the lower HF bands. Naturally, there is increased interest in the 80 metre band DX window.

The band from 3794 to 3800 kHz was made available to full call VK stations to allow them to work DX. However, the window is very narrow and includes a 1 kHz "guard" band on its lower edge.

WIA Federal Technical Advisory Committee (FeTAC) chairman, John Martin VK3KWA, says some poor operating habits are being observed on this band.

These bad habits include long conversations which deny others access to the window, and a high incidence of out-of-band operation. He notes that operation on 3795 kHz lower sideband is very common and points out that such operation is totally out of band, because the sideband falls below the band edge.

Take care!

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# WICEN Training Conference — From Two Points of View

The role of WICEN is changing with the current organisation of the Emergency Services in NSW. It is necessary for amateurs who wish to assist in emergencies to be better trained and fully able to integrate immediately with the "formal" services.

With the advent of the Government Radio Network, which is currently being instituted, providing complete interconnectivity between the "Combat Agencies", WICEN is re-examining its response capability.

As a step in this direction a Training Conference was held at the NSW Police Academy in May 1994.

Here are two points of view of that conference.

**John Howard VK2AMH**  
**VK2 WICEN State Co-ordinator**

## First — the WIA Federal Councillor

*by Richard Jenkins VK1RJ,  
VK1 Division Federal Councillor*

I attended this conference, held at the Police College, Goulburn, NSW on 14 and 15 May 1994, as a representative of the WIA.

Nevertheless, I was made very welcome and was a full participant for the time I was able to be there. What follows is not an account of my stay, but rather my impressions of the event.

Approximately half of the VK2 WICEN area leaders from around the state were in attendance. This made a group of approximately 26 to 28 people, with a wide cross section of the state represented. I spoke with controllers from Hunter, Central Coast, North Coast, etc, etc. I gather more would have liked to come but, for family or business reasons, they found it difficult to give up an entire weekend and travel to Goulburn.

The theme of the day was PLANNING, and John Alcorn gave an excellent two-part presentation on the importance of planning. At the end we all knew that planning was essential SO THAT NOTHING WAS LEFT OUT!!! Seriously, John's extensive experience in the armed forces and in WICEN gave him the right background to really ram home the importance of planning before rushing off into "combat".

This was important, because Leigh Baker and David Tilson had organised a three part training scenario for us to work on in syndicates. Wouldn't you know it? We rushed in, all thought of John's words being forgotten! Still, we were more thoughtful on the second part. An excellent training exercise! With the help of John Howard, Leigh and David put on a polished performance as, first of all, the instigators of the call out and then the local EEC committee. All participants and the watchers quickly gained the essential points. Wonderful stuff! It's apparent that Leigh and David have done this before! (They have, for VK3!)

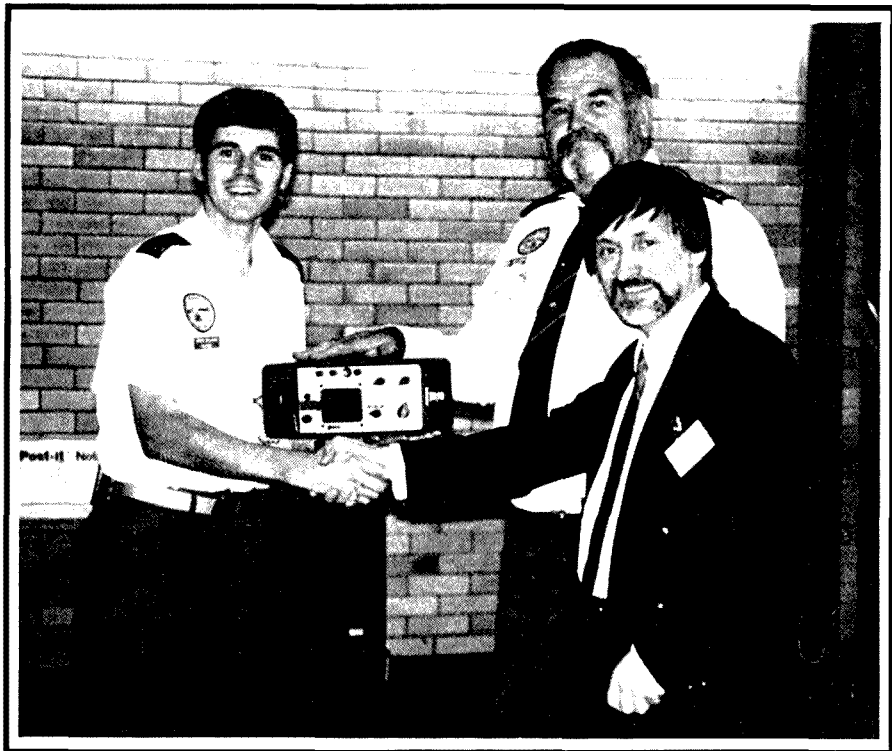
Nicely inter-mingled with this were talks from Joe Barr (Director Planning for Emergency Management Australia) and Dieter Gescue (from NSW SES). Leigh gave a talk on his ideas for the Australia-wide co-ordination of WICEN training and information networks. If we get progress in these areas then there is a clear benefit for the nation (in times of emergency) and protection for individual WICEN members. It is apparent that, in VK3 at least, WICEN has been able to forge strong links with other emergency services and to establish a visible public profile. This expertise needs to be shared with the other states through training exercises like this one.

I came away feeling that there were steps that should be taken in the ACT to raise our WICEN profile, that the Federal WICEN Co-ordinator was co-ordinating groups on most worthwhile tasks, that some agreements between the various state leaderships of WICEN could be hammered out (in regard to training, use of standard forms, co-operation, etc) and that WICEN had an overall strategy and direction for the future.

Towards the end of the day I was asked to give a "Federal Report", whatever that may be. I made some notes, and spoke pretty much to them. I stressed the value of WICEN to the community and linked it to the future of our hobby. I mentioned our bid to get the Year 2000 IARU conference for Australia. I drew a parallel between the WICEN bulletin board information links and proposals



**Syndicate Exercise — (l to r, clockwise around the table) Steve Johnson VK2XNH, David Horsfall VK2KFU, Pauline Jones VK2GTB, Roger Baker VK3BKR, Alan Whitmore VK2YYJ, Annette Wilkinson (Associate) and John Knight VK2JGK.**



WICEN NSW receives a portable Codan radio, donated by the Civil Aviation Authority. (l to r) Greg Wilson VK2DIL, John Howard VK2AMH, State Co-ordinator and Leigh Baker VK3TP, Federal WICEN Co-ordinator.

for something similar for the WIA and its Divisional members.

My impression was that what I said was well received, and that this was the first time most of them had seen or spoken with any Federal Councillor. I spoke as a representative of "Federal", but I fear they have me set down as the VK1 representative for WICEN!! I must straighten that out with my committee ASAP.

A most excellent training weekend. I was sorry I could not stay for both days. I would support the extension of this training to other Divisions and to those WICEN leaders who could not make it for this weekend.

### **Second — the WICEN Participants Viewpoint**

*by Mark Cheeseman VK2XGK, WICEN Sydney South*

You're awakened at 2.30 am by the phone ringing. The town of Putty has been hit by an earthquake and all communications into and out of the area have been disrupted. When a herd of foot-and-mouth infested cattle

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break out of quarantine, swift action is called for in order to save Australia's rural export industry.

No, it's not the outline of a script for *A Country Practice*, but a scenario concocted for the benefit of attendees of the annual NSW WICEN training conference. Once a year, WICEN members from all over NSW gather at the Goulburn Police Academy, for a weekend of simulated mayhem and disaster.

Originally called the WICEN Coordinators' Conference, in recent years it has been opened up to attendance by any interested member of WICEN NSW, and is a valuable event for anybody who is interested in the finer points of emergency communications. This was my first WICEN Training Conference, so I can't compare it to previous years, nor to similar events held by other Divisions.

The emphasis of the weekend is clearly on the administrative side of emergency communications, not playing radios. Operational and technical expertise are taken to be "assumed knowledge". WICEN operators get plenty of opportunities to hone their radio skills and voice procedure throughout the year. The training conference is aimed at honing those management skills which a WICEN coordinator is expected to have, but which rarely get exercised except in a real emergency,

by which time it's too late to deal with any shortcomings.

The earthquake exercise was the feature piece of the weekend, occupying a total of six hours, split into three sessions. At the beginning of each session, a brief role play was acted out to the entire group, after which the attendees separated into four syndicates, each of which worked out their response to the situation.

After each session the groups met back in the lecture room, where a spokesperson (or two) from each syndicate presented their solution to the entire group. The first part of the exercise involved presenting a plan for initial response; the second was to brief the heads of the various services at the Emergency Control Centre on WICEN's capabilities; and the third dealt with the foot-and-mouth outbreak, and the need to communicate while minimising the chance of the outbreak becoming widely known.

In addition to the group exercises, there were presentations from a number of authorities on the subject of emergency management. John Alcorn spoke on "occurrence appreciation and operation planning", how to coordinate a WICEN response to an emergency situation.

Dieter Gescue from the SES and Joe Barr, Director of Planning, Policy and Co-ordination at Emergency

Management Australia, each gave an insight into the operation of their organisations, and related some interesting first-hand experiences in emergency operations. Ray Williams, a well known print and radio journalist (now retired) spoke on WICEN and the media, and gave advice for dealing with the inevitable media interest that accompanies emergency situations.

Finally, David Thorncraft and David Tilson reported on their recent activations during the Central Coast bushfires and Victorian floods, respectively, and the particular problems which those operations presented.

David Tilson also described in detail the ADMIN disaster management network, which links many emergency services together nationwide through computer bulletin boards. He also discussed some of the Internet services that are available for those interested in disaster management. (The Internet is a global computer communications network consisting of some two million (+/-) systems, and is a vast source of information in all manner of subjects, if you know how and where to look). At least one NSW member left the conference convinced that the time had come to invest in a modem for his computer.

Finally, it would be remiss of me not to acknowledge the effort put into the planning of the weekend. Morton Williams, John Howard, and Brett Wilkinson obviously spent many long hours making sure the weekend was as beneficial as possible, and the smoothness of the weekend's events was testament to the detail of their planning. Not to mention the efforts of Leigh Baker and David Tilson in dreaming up the earthquake exercise.

All in all, it was a weekend well spent, and I for one will be there next year. But this time, I'll travel down on Friday night, so I can awake refreshed on Saturday morning ready for a hard day's work. Getting up at 4.30 am and driving down on the Saturday this year left my brain a little the worse for wear come Saturday afternoon, and there was still Sunday to come! There was no time to sit back and relax at this conference.



Group photo of the attendees at "Goulburn 94".

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# Technical Abstracts

Gil Sones VK3AU1

## Overvoltage Protection for Equipment

Mains overvoltage can wreak havoc with equipment. We do not often experience overvoltages normally but, when operating portable using a petrol engine driven alternator, they are a real possibility. Considerable equipment damage can result.

Jerry Paquette WB8IOW presented a neat overvoltage protection circuit in June 1994 *QST*. The circuit senses the overvoltage and then trips an earth leakage circuit breaker to remove supply from the equipment. A minimum of mains potential wiring is involved.

The circuit is shown in Fig 1. This needs to be modified for local use as it is for the USA 120 volt mains. The

Ground Fault Circuit Interrupter is known locally as an earth leakage circuit breaker. These are standard items and can be inserted between the lead to the alternator and the power board feeding power to the radio. You must make sure that the alternator output is not floating and the neutral side is grounded.

The modifications are to use a 240 VAC primary transformer for T1 and to increase the resistance of the 12 k 2 W resistor. A second 12 k 2 W resistor in series should do the trick. You could use a plug pack for the DC supply provided by T1, D1, and the 100 mF capacitor. The supply need only supply less than 100 mA and so can be quite small.

Only the wiring to U2 and the resistors is at mains potential and this should be enclosed in a plastic box.

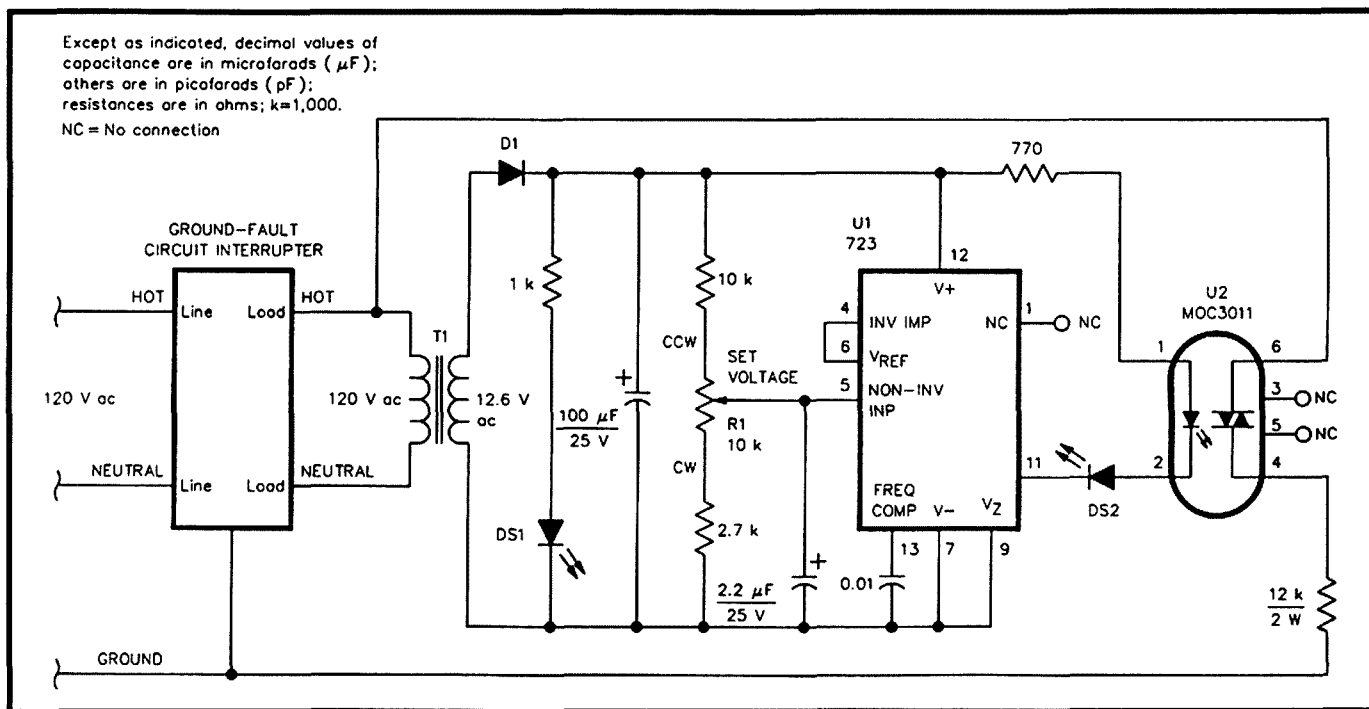
For adjustment you will need a VARIAC or some other means of providing up to 260 VAC. Just select the overvoltage trip voltage at a point sufficient to protect the equipment and allow reliable normal operation of the alternator and adjust R1 to set the trip.

Don't be stingy and expect one device to protect a multi-op field day "octopus" power setup. Use one per rig so that they are close to hand. The earth leakage breaker will also limit the effects of stray leakages in the power setup which is, after all, its normal function.

Finally, be extremely careful with the mains wiring as even a portable alternator has the potential to kill you.

## Component Puller

A handy component puller can be made from a bent paper clip. This is a simple but invaluable tool when removing components from a circuit board. You are saved from burnt fingers and multi handed wrestling and the component will come off the board without fuss.



**Fig 1 Schematic of the Field Day equipment overvoltage-protection circuit. This circuit must be used with a ground-fault circuit interrupter (earth leakage circuit breaker) and a separate one must be installed at each station. Resistors are 1/4 W, 5% tolerance, unless otherwise specified.**

**D1** 200 PIV, 1 A diode; 1N4003 or equivalent.

**DS1, DS2** Small LEDs

**R1** 10 kΩ board-mounted, multi-turn potentiometer

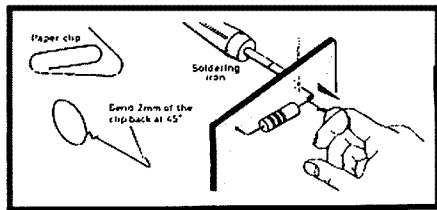
**T1** 12.6 V AC transformer

**U1** 723 adjustable voltage regulator IC

**U2** Optoisolator with triac output; Isocom MOC3011, MOC3021 or MOC3041, or equivalent.

The idea is from "Technical Topics" in the May 1988 issue of *Radio Communication* and the original source was Brian Smith GW0IER. The device is shown in Fig 2. The paper clip is unfolded and at one end a length of 2 mm is folded back to form a hook. The other end is formed into a loop through which you can pass your finger.

Later a modification appeared which was to sharpen the hooked tip so as to make it easier to slip under component leads which were close to the printed circuit board. A very useful and cheap tool.



**Fig 2 Handy Component Puller**

### 50 MHz Coaxial Stub TVI Filter

The 50 MHz band is prey to TVI due to the harmonic relationship with both the FM broadcast band and TV Channels 9 and 10. For FM broadcasting the second harmonic is the problem. TVI is due to the fourth harmonic.

A simple quarter wave coaxial stub can be used to reduce harmonic output. This was explained in "Technical Topics" in the October 1987 issue of *Radio Communication*.

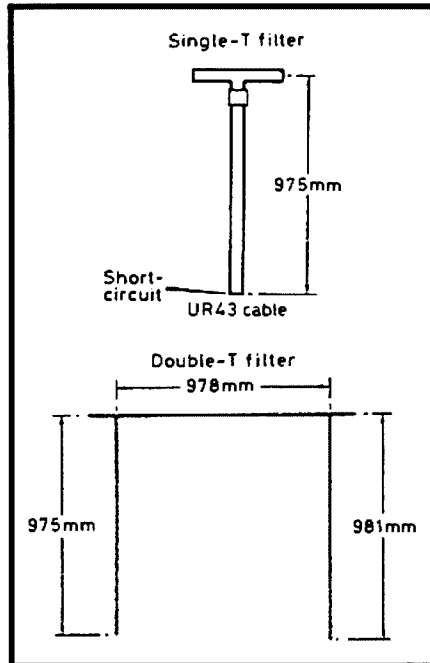
The simplest arrangement is a short circuit quarter wave stub as shown in Fig 3. This will need to be modified for local conditions as our bands are slightly different. See Table 1 for lengths for local use. The RG series cables have a 0.66 velocity factor and the stub should be cut for either SSB DX or for the FM area above 52 MHz. The T connector is connected to the radio coaxial output connector. The antenna is plugged into one side and the quarter wave stub is plugged into the other side of the T connector.

For stagger tuning, or to get greater rejection, a double stub design as shown in Fig 3 can be used. The attenuation characteristic is shown in Fig 4. The notch repeats at the fourth harmonic which falls in the TV channels.

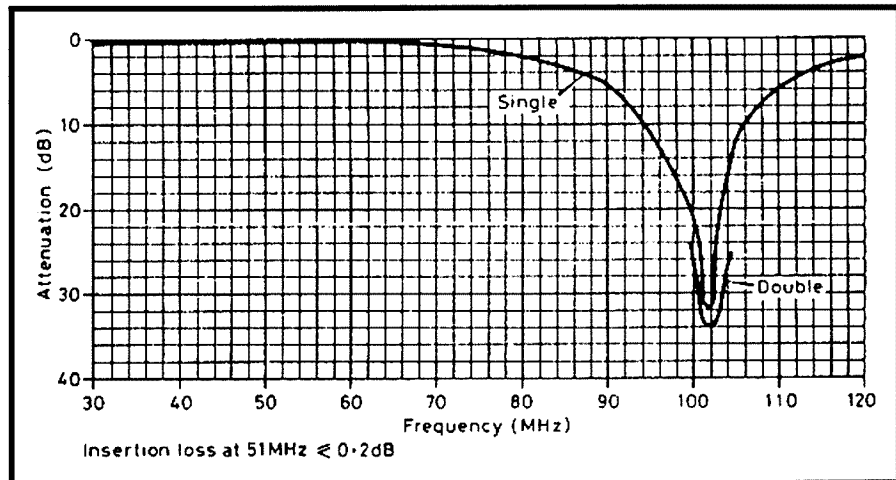
This is a simple device which can give you some worthwhile protection from TVI. All it takes is a scrap of cable, a connector and a T connector.

### Table 1 Quarter Wavelengths of Coaxial Cable

Frequency	0.66 Velocity Factor	0.67 Velocity Factor
50 MHz	990 mm	1005 mm
50.1 MHz	988 mm	1003 mm
52 MHz	952 mm	966 mm
53 MHz	934 mm	948 mm
54 MHz	917 mm	931 mm



**Fig 3 Single and double 100 MHz quarter-wave coaxial stub filters for use with 50 MHz transmitters to suppress harmonic interference.**

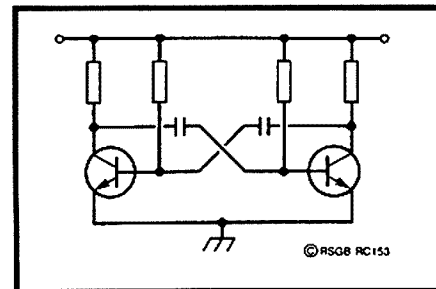


**Fig 4 Measured attenuation characteristics of the 100 MHz stub filters. The double filter is stagger tuned to increase notch bandwidth rather than to increase attenuation.**

### Tone Modulated HF Noise Bridge

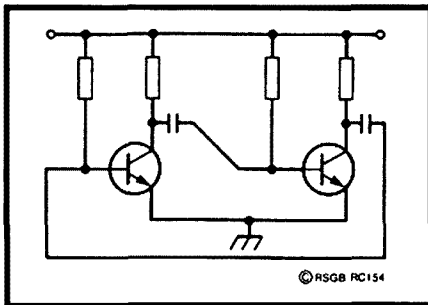
The HF antenna impedance bridge using a broad band noise source is popular as an aid to checking antenna matching. Tone modulation of the noise is often used as an aid to discerning the null. This complicates the bridge circuit as you need to provide a tone source as well as the noise source.

A simple noise bridge circuit which provides tone modulated noise with a minimum component count was published in the June and July 1994 issues of *Radio Communication* by E Chicken G3BIK. This was accomplished by recognising the similarity between a multivibrator and a two stage amplifier with feedback from output to input. The multivibrator circuit is shown in Fig 5 and the two stage amplifier with feedback is shown in Fig 6.



**Fig 5 Classical Multivibrator Circuit.**

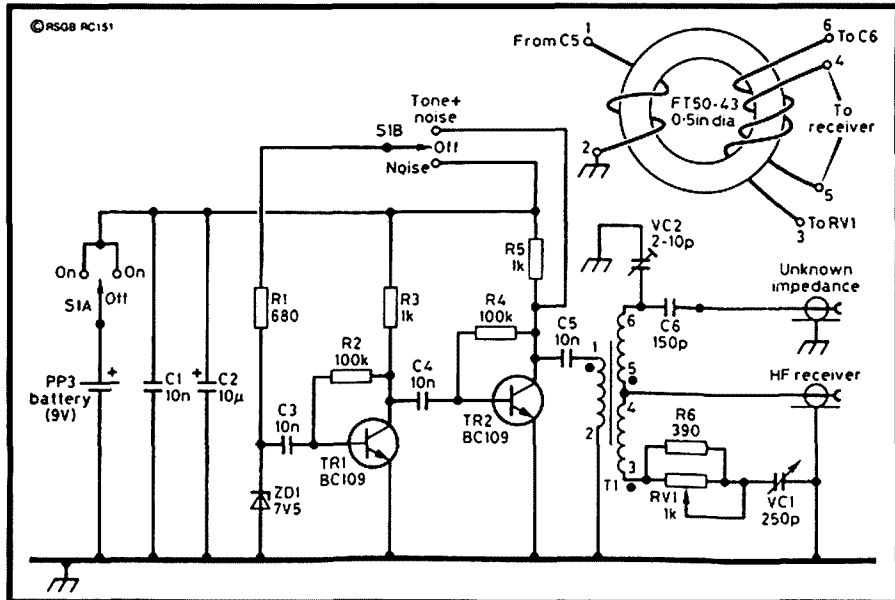
The noise bridge uses a two stage amplifier to amplify the noise source. So, by some careful configuration of



**Fig 6 Two Stage Amplifier Modified as a Multivibrator.**

the circuit, the amplifier can both amplify the noise and act as a multivibrator to produce the tone. The circuit is shown in Fig 7. The bridge circuit is fairly standard and the modification to produce tone modulated noise is simple.

The author used a transistor radio tuning gang as the variable capacitor. This should be stable enough for the purpose. The potentiometer used was one with a plastic spindle. Plastic



**Fig 7 Noise Impedance Bridge Circuit Diagram.**

knobs on both controls should allow adjustment without troublesome hand capacity effects. The zener diode is a standard 400/500 mW type.

All components should be available locally. A PP3 battery is known here as a 216 battery and is a standard type. ar

## WIA News

### New Members

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of July 1994.

L20976	MR J M STACY
L20977	MR B J WARHURST
L20978	MR D G COOPER
L30892	MR J WATSON
L30893	MR R HENSHAW
L40355	MR N H PARKER
L40356	MR J A DEVLIN
VK1PT	MR N J LAWRENCE
VK2IXX	MR J P ASQUITH
VK2JRB	MR J R BUGLER
VK2KBN	MR B A NEWMAN
VK2LYN	MR M T PERRY
VK2MSC	MR S D SALMON
VK2TFP	MR I CHENNELL
VK2TGA	MR J CHARLTON
VK2UPP	MR P J PHILIPPA
VK2ZON	MR R ROBINSON
VK3FAU	MR C WESTWOOD
VK3FBL	MR K WETTER
VK3HK	MR S BUSHELL
VK3MKK	MR G PADVAN
VK3TRP	MR F FINEBERG
VK4AHC	MR P J HELBIG
VK4AJA	MR A J PARR

VK4ARQ	MR R J MULLER
VK4CIB	MR I J BECK
VK4MRT	MR R R TANNOCK
VK4WHS	MR W H S STACEY
VK5GY	MR J C EASTAUGH
VK6KDC	MR D CHURCH
ZL2WOG	MR P F HARRIS

### Electro-magnetic Compatibility Standards

New Australian standards to curb electro-magnetic pollution from electrical and electronic products will be in force by 1 January, 1996.

Communications Minister, Michael Lee, says that radiation limits are to be imposed on a wide range of products. The Minister says, at the same time, that "immunity" levels will be set for other products so that they will resist the effects of electro-magnetic pollution.

The timing of the federal government's announcement on electro-magnetic compatibility (EMC) standards in Australia coincides with an identical move by the European Community, and

a world-wide focus on the problem.

The lack of mandatory immunity standards had, in recent years, left the door open for television receivers to be imported, which are susceptible to interference from other signals, whether these arise from legitimate transmissions or unwanted electro-magnetic pollution.

Some of these television receivers had their immunity components left out at manufacture, as a cost-saving measure.

Standards are likely to be adopted to cover the level of immunity expected in all susceptible equipment.

All standards are drawn up by Standards Australia, which says it has published most of the technical standards needed for electro-magnetic interference.

Work is continuing on drawing up some of the required immunity standards, and the WIA is involved in this process.

*(Thanks to Jim Linton VK3PC for supplying the information used in this item).*

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## Book Review

# Antennas and Techniques for Low-Band DXing

Written by John Devoldere ON4UN

Published by ARRL 1994

Paperback 400 pages 277 mm by 208 mm

Reviewed by Evan Jarman VK3ANI

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This book is a revised version of "Low-Band DXing" by ON4UN published in 1987.

The lower frequency bands of the amateur service are constrained by factors that can be ignored elsewhere. The physical size of antennas and the propagation modes involved are more limiting than on the more popular bands. Refinements of theory have to be made in order to be realised in practice. This is where experience counts and this book is tempered with years of experience.

This is a reference book of ideas. While clearly aimed at the lower bands, it would benefit most amateurs. It is devoted to antenna design from theory through to construction. There are chapters on other subjects, but most (9 of 14) are on the antenna. One chapter is really a bibliography and another is a promotion of software packages.

The chapter on software is sparse. It is an overview of various software modules that the author makes available separately. The five pages of this chapter can be easily missed when reading through the book without loss of content. The software relates to the material in the book but is not mandatory.

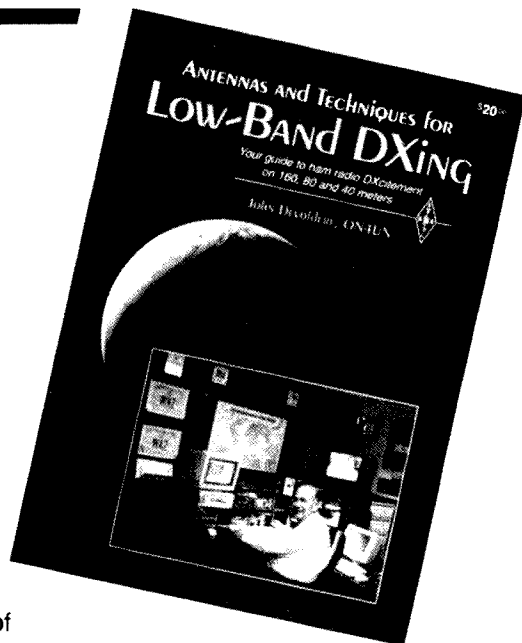
Propagation is handled in the first chapter. It clearly is aimed at the lower frequency bands, being devoted to the propagation modes that affect these frequencies most. The D and E layers predominate. Other subjects such as grey line (along the sunset/sunrise great circle path), seasonal, aurora and non great circle paths are described in some detail and include maps, globes and tables. Subjects like chordal hop and

antipodal focusing make very interesting reading for those who thought that propagation is straight refraction of radio waves.

The chapter on equipment is not a set of construction projects. It is more concerned with the parameters that limit receiver and transmitter performance. While not described in detail, the reader soon becomes aware of the importance of things like noise, selectivity, stability, power and intermodulation distortion, as well as how to measure them.

It is in the chapters on antennas that this book is most valuable. They occupy over 80% of the book. There is an immense amount of material. Most antennas used on these bands are covered in considerable detail. Dipoles, verticals, loops, arrays, Yagis and quads have at least one chapter each. The author starts with radiation diagrams to enable best selection, then proceeds to convert theory into practice. Being devoted to the higher wavelength bands the problems associated with constructing these larger antennas get particular attention. Little things like wind loading become large problems and so are dealt with in detail, again from theory through to practice. The sizes of booms, crossarms and rotating equipment are dealt with to ensure that specifications are adequate. "Note the very limited amount of element sag, which is proof of good element design" shows what the author thinks of good mechanical design. Arrays are dealt with over a couple of chapters.

The chapters on vertical arrays,



Yagis and quads are the largest in the book, clearly indicating the author's current work. The photographs in these chapters show the size of these antenna and the size of their supporting structures; some are truly awe inspiring sights.

The author deals with matching networks in detail. A wide variety of methods of matching feedline to antenna are discussed, proving that there is no such thing as a universal system. Some of these translate well to other bands. These alone make the book valuable.

The mathematics in the book are mainly basic algebra with some complex numbers and the occasional inverse trig function. The bibliography contains about 760 references to other books and magazines. It covers all the material in the book and provides a starting point for anyone who wants to delve further into a subject.

While devoted to the lower frequency bands, as a technical book on antenna design this publication is well worth looking at. I doubt if there is an amateur who wouldn't learn something from it.

This book is available for \$45.00 from some WIA Divisional Bookshops as well as from Daycom Communications Pty Ltd. The review copy was supplied by the ARRL.

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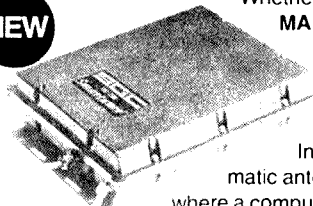
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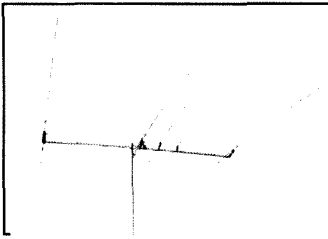
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TE-33 3-element beam	\$575
TE-43 4-element beam	\$750
HB-35C 5-element trapless beam	\$770
<b>BEAMS FOR 7/14/21/28MHz</b>	
TE-14 rotatable dipole	\$275
TE-34 3/1 element beam	\$695
TE-44 4/1 element beam	\$870
<b>BEAMS FOR 10/14/18/21/25/28MHz</b>	
TE-26 dual rotatable dipole	\$380
TE-46 3/1 element beam	\$750
TE-56 3/2 element beam	\$950

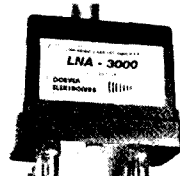
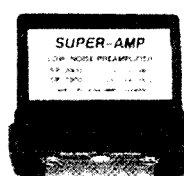
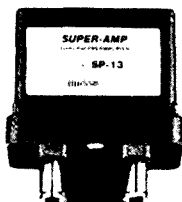


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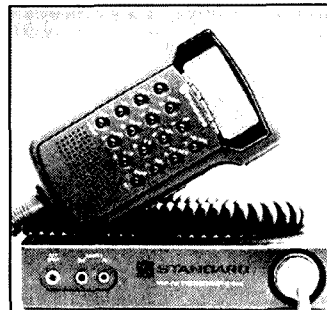
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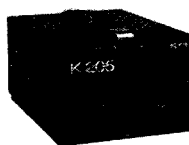
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# Australian Packet Radio BBS Station Listing

## Version 1.5 — July 1994

Grant Willis VK5ZWI\*

This listing has been compiled over approximately six months from the BBS operators all over Australia. The information should be useful as an address reference for the Australian network as well as giving some frequency information for those of us who occasionally operate portable packet around Australia. The information is as accurate as possible at the time of publication, however, no guarantees can be given. If you find an error in the listing or something missing, please send a packet message to VK5ZWI@VK5TTY.#ADL.#SA.AUS.OC with the updated details.

The speed codes used in the list are:

- 3 = 300 Baud FSK
- 12 = 1200 Baud AFSK on VHF or PSK on HF
- 24 = 2400 Baud PSK
- 48 = 4800 Baud FSK
- 96 = 9600 Baud FSK

BBS stations listed here have been active for at least six months. Any new systems will only be added if they meet a similar criteria. I would like to thank all the BBS operators around Australia who helped compile this listing.

Link Call	BBS Address	Location	Frequency (Speed)
<b>VK1 — Canberra/ACT</b>			
VK1BBS	@VK1BBS.ACT.AUS.OC	Canberra	144.800(48) 147.575(12)
VK1KCM	@VK1KCM.ACT.AUS.OC	Canberra	144.800(48) 147.600(12)
VK1BOX	@VK1BOX.ACT.AUS.OC	Canberra	147.575(12) Aplink 7.035
VK1DSN	@VK1DSN.ACT.AUS.OC	Tidbinilla	147.575(12)
<b>VK2 — Sydney</b>			
VK2AAB	@VK2AAB.NSW.AUS.OC	Normanrurst	144.850(12) ROSE(247702)
VK2GJB	@VK2GJB.#SYD.NSW.AUS.OC	Blacktown	145.025(12) 439.075(12)
VK2CZR	@VK2CZR.NSW.AUS.OC	St Clair	144.825(12) 144.900(12) 439.075(12)
VK2DAA	@VK2DAA.NSW.AUS.OC	Castle Hill	144.750(12) 439.075(12) 439.075(96) ROSE(475700)
VK2OP	@VK2OP.NSW.AUS.OC	Bondi	144.900(12) 147.600(12) 144.850(12) 21.109(12)
VK2XSB	@VK2XSB.NSW.AUS.OC	Lansvale	144.800(46) 145.100(12) 439.250(12)
VK2XSO	@VK2XSO.SYD.NSW.AUS.OC	Winston Hills	144.750(12) 439.075(12) 144.975(12) 144.975(24)
VK2XY	@VK2XY.NSW.AUS.OC	Hornsby	144.900(12) 147.575(12) 439.075(12) ROSE(247600)
VK2GDM	@VK2GDM.NSW.AUS.OC	Campbelltown	147.550(12)
VK2TGB	@VK2TGB.NSW.AUS.OC	Warrimoo	144.875(12) 147.575(12)
<b>VK2 — Country</b>			
VK2AGE	@VK2AGE.#NE.NSW.AUS.OC	Lismore	145.050(12)
VK2ATM	@VK2ATM.#NE.NSW.AUS.OC	Port Macquarie	144.875(12)
VK2BBD	@VK2BBD.#NE.NSW.AUS.OC	Bendemeer	144.750(12)

VK2BXQ	@VK2BXQ.#CW.NSW.AUS.OC	Tullamore	144.700(12) 7.033(3)
VK2EV8	@VK2EV8.CH.NSW.AUS.OC	Cofts Harbour	147.575(12)
VK2EO	@VK2EO.NSW.AUS.OC	Newcastle	144.750(12) 147.600(12) 144.750(12) 144.875(12) 439.075(12)
VK2CPR	@VK2CPR.#SW.NSW.AUS.OC	Albury	147.575(12)
VK2CZZ	@VK2CZZ.NSW.AUS.OC	Port Stephens	147.575(12) 439.075(12)
VK2DPG	@VK2DPG.#8H.NSW.AUS.OC	Broken Hill NSW	147.575(12) 7.033(3)
VK2DYX	@VK2DYX.NSW.AUS.OC	Taree NSW	144.725(12) 144.925(12)
VK2EHQ	@VK2EHQ.NSW.AUS.OC	Kulnura Gosford	147.600(12) 10.149(3) 14.107(3)
VK2FEX	@VK2FEX.NSW.AUS.OC	Nowra	144.800(48) 144.875(12)
VK2KLW	@VK2KLW.NSW.AUS.OC	Raymond Terrace	147.575(12) 147.550(12) 439.075(12) 144.725(12)
VK2TLH	@VK2TLH.#CT.NSW.AUS.OC	Newbridge	144.725(12) 147.575(12) ROSE(636500) 440.150(48)
VK2XGJ	@VK2XGJ.NSW.AUS.OC	Dapto	144.700(12) 147.575(12) ROSE(487100) 439.075(96)
VK2XLG	@VK2XLG.#SW.NSW.AUS.OC	Griffith	147.575(12)
VK2CPR	@VK2CPR.#SW.NSW.AUS.OC	Albury	147.575(12) 7.033(3)
VK2YDN	@VK2YDN.#NE.NSW.AUS.OC	Lismore	145.050(12)
VK2XIO	@VK2XIO.#NE.NSW.AUS.OC	Lismore	145.050(12)
VK2ZXQ	@VK2ZXQ.NSW.AUS.OC	Gosford	439.075(12)
<b>VK3 — Melbourne</b>			
VK3BBS	@VK3BBS.#MEL.VIC.AUS.OC	St Albans	via 3RPS 147.600(12) 10.149(3)
VK3BLW	@VK3BLW.#MEL.VIC.AUS.OC	Brighton	434.050(96) 144.900(12)
VK3FRS	@VK3FRS.#MEL.VIC.AUS.OC	Ringwood	147.575(12)
VK3KSD	@VK3KSD.#MEL.VIC.AUS.OC	Somerville	144.700(12) 439.050(12) 147.600(12) 144.825(12) 434.050(96)
VK3KSK	@VK3KSK.#MEL.VIC.AUS.OC	Highett	439.050(12) 144.825(12) 434.050(96)
VK3JMA	@VK3JMA.#MEL.VIC.AUS.OC	Hampton Park	439.050(12) 146.600(RTTY)
VK3COL	@VK3COL.#MEL.VIC.AUS.OC	Rosebud	144.800(12) 439.050(12) 14.107(3)
VK3ECC	@VK3ECC.#MEL.VIC.AUS.OC	80 km S Melb Wantirna	147.575(12)
<b>VK3 — Country</b>			
VK3BVP	@VK3BVP.#SEV.VIC.AUS.OC	Tyers, qf31fu	147.600(12)
VK3EEE	@VK3EEE.#NEV.VIC.AUS.OC	Mt Beauty	147.575(12)
VK3IBM	@VK3IBM.#WEV.VIC.AUS.OC	Ballarat	144.750(12) 147.575(12) 144.925(12)
VK3SSS	@VK3SSS.#WEV.VIC.AUS.OC	Horsham	147.575(12)
VK3SPG	@VK3SPG.#WEV.VIC.AUS.OC	Mildura	147.575(12) 144.900(12)
VK3JRF	@VK3JRF.#WEV.VIC.AUS.OC	Swan Hill	147.575(12)
VK3YNV	@VK3YNV.#NEV.VIC.AUS.OC	Shepparton	147.575(12)
VK3ATL	@VK3ATL.#WEV.VIC.AUS.OC	Geelong	144.925(12)
VK3ARL	@VK3ARL.#WEV.VIC.AUS.OC	Bendigo	147.575(12)
<b>VK4 — Brisbane</b>			
VK4BBS-1	@VK4BBS.BNE.QLD.AUS.OC	8 Mile Plains	145.050(12) UO-22(96)

VK4DGQ-1 @VK4DGQ.QLD.AUS.OC	Brisbane	Multi-Frequency Hopping			
VK4KUG-1 @VK4KUG.QLD.AUS.OC	Rochedale	144.875(12)		VK6 — Perth	
VK4XRB-1 @VK4XRB.BNE.QLD.AUS.OC	Bray Park Bris.	144.900(12)		VK6ANC @VK6ANC.#PER.#WA.AUS.OC	Carine 144.900(12) 147.575(12)
VK4ZGQ-1 @VK4ZGQ.BNE.QLD.AUS.OC	Brisbane Cent.	144.750(12)		VK6BBS @VK6BBS.#PER.#WA.AUS.OC	Roleystone 144.875(12) 147.575(12) 439.050(12)
VK4WIA-1 @VK4WIA.BNE.QLD.AUS.OC	Bray Park Bris.	144.850(12) 434.200(12) 147.575(12)		VK6XPS @VK6XPS.#PER.#WA.AUS.OC	Balga 144.900(12)
VK4CXX-1 @VK4CXX.BNE.QLD.AUS.OC	17 Mile Rocks	44.825(12) 147.600(12)		VK6YBP @VK6YBP.#PER.#WA.AUS.OC	Balga 144.725(12) 147.575(12)
VK4WAN-1 @VK4WAN.QLD.AUS.OC	Kedron Park QUT	145.150(12) 434.250(96)		VK6TTY @VK6TTY.#PER.#WA.AUS.OC	Wireless Hill 147.575(12) 14.109(3)
				VK6ZSE @VK6ZSE.#PER.#WA.AUS.OC	Edgewater 144.825(12) 147.575(12) 439.050(48)
VK4 — Country				VK6ZMH @VK6ZMH.#PER.#WA.AUS.OC	Innaloo 144.775(12)
VK4ABP-1 @VK4ABP.#CWQ.QLD.AUS.OC	Longreach	14.105(12) 144.900(12)		VK6 — Country	
VK4AFS-1 @VK4AFS.#NQ.QLD.AUS.OC	Townsville	144.900(12) 434.200(12) 53.000(12)		VK6RWR @VK6RWR.#KTA.#WA.AUS.OC	Pt Sampson 14.109(3) 21.109(12)
VK4AGF @VK4AGF.NWQ.QLD.AUS.OC	Mount Isa	147.575(12)		VK6AJJ @VK6AJJ.#BUN.#WA.AUS.OC	Bunbury 144.750(12) 144.850(12)
VK4AJL-1 @VK4AJL.#CQ.QLD.AUS.OC	Mackay	144.900(12) 14.105(12)		VK6RAW @VK6RAW.#KNG.#WA.AUS.OC	Katanning 144.850(12) 147.575(12)
VK4AXA-1 @VK4AXA.#CQ.QLD.AUS.OC	Blackwater	144.900(12)		VK6SR @VK6SR.#ALH.#WA.AUS.OC	Albany 14.109(3) 144.850(12) 147.600(12)
VK4CAB-1 @VK4CAB.QLD.AUS.OC	Bundaberg, Old	144.900(12)		VK7	
VK4BRG-1 @VK4BRG.#CQ.QLD.AUS.OC	Sarina	144.800(12) 144.900(12) 14.105(12) 434.200(96)		VK7BBS @VK7BBS.TAS.AUS.OC	Launceston 14.105(12)
VK4DIT-1 @VK4DIT.GOLD.QLD.AUS.OC	Gold Coast	144.725(12) 147.600(12)		VK7EKA @VK7EKA.TAS.AUS.OC	George Town 14.107(12) 147.575(12)
VK4GRC @VK4GRC.#HER.QLD.AUS.OC	Hervey Bay	144.725(12) 144.900(12) 14.096(3)		VK7GL @VK7GL.#HBT.TAS.AUS.OC	Hobart 144.900(12) 147.575(12) 10.149(3)
VK4KGV-1 @VK4KGV.FNQ.QLD.AUS.OC	Atherton	144.900(12)		VK7YAK @VK7YAK.TAS.AUS.OC	Hobart 144.900(12) 147.575(12)
VK4KEL-1 @VK4KEL.QLD.AUS.OC	Shine Coast	144.975(12) 144.900(12)		VK7ZTA @VK7ZTA.TAS.AUS.OC	Hobart 147.575(12)
VK4PY-1 @VK4PY.QLD.AUS.OC	Hervey Bay	144.900(12)		VK7AD @VK7AD.TAS.AUS.OC	Clarence Point 144.900(12) 14.096(3) 10.145(3)
VK4SP-1 @VK4SP.IPS.QLD.AUS.OC	Wanora	144.950(12) 147.600(12) 14.105(12)		VK8	
VK4UN-1 @VK4UN.#CQ.QLD.AUS.OC	Tieri	144.900(12)		VK8BBS @VK8BBS.#NT.AUS.OC	Alice Springs 147.600(12) 14.109(3)
VK4UO-1 @VK4UO.#CQ.QLD.AUS.OC	Mount Morgan	144.900(12) 144.800(12)		VK8DA @VK8DA.DRW.#NT.AUS.OC	Darwin 144.950(12) 14.107(3)
VK4VH-1 @VK4VH.BBS.AMPR.ORG	Gladstone, Old	144.725(12) 144.900(12)			
VK4WIR-1 @VK4WIR.#CO.QLD.AUS.OC	Rockhampton	144.800(12)			
VK4BFQ @VK4BFQ.QLD.AUS.OC	Gold Coast	147.700(12) 145.050(12)			
VK4TAD-1 @VK4TAD.#CQ.QLD.AUS.OC	Innes Park	144.725(12) 144.900(12)			
VK4TEK-1 @VK4TEK.QLD.AUS.OC	Lawnton	144.900(12) 144.775(12)			
VK4XMS-1 @VK4XMS.STPE.QLD.AUS.OC	Stanthorpe	147.600(12) 145.050(12)			
VK5 — Adelaide					
VK5LZ @VK5LZ.#ADL.#SA.AUS.OC	Elizabeth	144.800(12) 434.050(48)			
VK5TTY @VK5TTY.#ADL.#SA.AUS.OC	Adelaide North	1299.90(12) 14.109(3)			
VK5WI @VK5WI.#ADL.#SA.AUS.OC	O'Halloran Hill	144.900(12) 434.050(48)			
VK5BBS @VK5BBS.#ADL.#SA.AUS.OC	Adelaide South	147.525 (45-110 Bd RTTY) 439.075(48)			
VK5XXX @VK5XXX.#ADL.#SA.AUS.OC	Thebarton	144.850(12) 147.575(12)			
VK5ANC @VK5ANC.#ADL.#SA.AUS.OC	Adelaide Central	439.050(12) 434.050(48) ROSE(48)[883520]			
VK5SPG @VK5SPG.#ADL.#SA.AUS.OC	Modbury	144.825(12) 434.050(48)			
VK5SR @VK5SR.#MTG.#SA.AUS.OC	Adelaide NE				
VK5SU @VK5SU.#MDN.#SA.AUS.OC	Adelaide	439.050(12) 144.750(12)			
VK5BRL @VK5BRL.#RIV.#SA.AUS.OC	Adelaide	144.875(12) 434.050(48) 10.149(3)			
VK5PO @VK5PO.#BVL.#SA.AUS.OC	Adelaide SatGate	UO-22 (96) 439.050(12)			
VK5HB @VK5HB.#LMR.#SA.AUS.OC					
VK5RAC-1 @VK5RAC.#EYP.#SA.AUS.OC					
VK5SR @VK5SR.#MTG.#SA.AUS.OC	Mt Gambier	147.575(12)			
VK5SU @VK5SU.#MDN.#SA.AUS.OC	Pt Pirie	147.575(12)			
VK5BRL @VK5BRL.#RIV.#SA.AUS.OC	Riverland Berri	147.575(12) 439.075(12) 7.033(3)			
VK5PO @VK5PO.#BVL.#SA.AUS.OC	Barossa Valley	144.875(12) 7.033(3)			
VK5HB @VK5HB.#LMR.#SA.AUS.OC	Lower Murray	14.096(3) 144.925(12) 10.145(3)			
VK5RAC-1 @VK5RAC.#EYP.#SA.AUS.OC	Pt Lincoln	147.575(12)			

\*C/O GPO Box 1234, Adelaide SA 5001

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# Australian Amateur Call Signs — History and Confusion

Colin MacKinnon VK2DYM\* tells of the interesting background to VK callsigns

The current series of Australian call signs may seem a little baffling but looking back at the way in which our call signs have evolved shows that it has been much more confusing.

We know that there were wireless experimenters in most states of Australia from about 1897, very soon after Marconi's demonstrations in London. Engineers from the Post & Telegraph Dept, University researchers and a few individuals duplicated Marconi's wireless system in the period 1900-1904, with varying degrees of success. There were no call signs at that time, and operators simply used their station location or their names or initials as identifiers. Experimenters were supposed to obtain permission from the Royal Navy on Australian Station, ie before the formation of the Australian Navy, but most didn't bother and the Navy had no wireless to hear them anyway, although occasionally visiting Navy ships were equipped with wireless equipment.

By 1904 the Australian Navy did have several ships equipped with wireless and used the ship's names or initials as identification. For example the RNS "St. George" was just "SG". The Navy was keen to restrict wireless to military purposes only but wireless manufacturers saw Australia as a lucrative commercial market and demanded access. The Australian Government therefore enacted The Wireless Telegraphy Act of 1905 (October 1905) to place control of wireless under the PMG's Department. The WT Act did provide for private experimenters but because of the high fees (£3) and severe penalties (£500 fine or 5 years imprisonment for offences) very few licences were issued.

A Mr H G Robinson obtained what

was probably the first experimental licence issued, in November 1905 for "experiments in halls for lecture purposes", while the Marconi Co (NZ) obtained a licence in 1906 for trials of communication between Victoria and Tasmania. Also in 1906 E F G Jolley of Maryborough, Victoria, had stations in two houses about a mile apart. These licences all expired after 1 year. By 1908 the only experimental licence current in Australia was held by H W Jenvey who built two stations

early in 1908, one at St. Kilda and another 65 miles away at Queenscliff, Victoria. In 1909 there were only two licences on issue, held by H Sutton at 290-292 Bourke St Melbourne, with apparatus capable of a 250 mile range, and C P Bartholomew at Mosman, NSW, with a range of 1/2 mile. In 1910 the Australasian Wireless Company was licensed with the call sign ATY, but this was changed to AAA when a new station was erected on the Hotel Australia in 1911.

The PMG Dept discouraged experimenters but, after representations by the newly formed Wireless Institute of Australia in April 1910, it adopted a more liberal attitude to licensing so that by August 1911 there was a total of 27 authorised "experimental" stations, 22 in Sydney, 3 in Melbourne, 1 in SA and 1 on King Island off Tasmania. (See Table 1).

**TABLE 1**

Experimental Licences current in August 1911.  
(I do not have a complete list of call signs)

No.	Call	Name	Location
1	XBM	C.P. Bartholomew	Mosman, Sydney
2		H. Sutton	Malvern, Melbourne
3	XJQ	W.T. Appleton	Malvern, Melbourne
4a	XJP	J.H.A. Pike	Arncliffe, Sydney
4b		A.V. Robb	Arncliffe, Sydney
5	XEN	F. Leverrier	Waverley, Sydney
6		W.H. Hannam	Darling Point, Sydney
7	XPO	Rev. A. Shaw	Randwick, Sydney
8	G.C.	Hamilton	Woollahra, Sydney
9		Royal Yacht Squadron	Sydney
10	XDM	Maclurcan & Lane	Hotel Wentworth, Sydney
11		E. Reeve	Rozelle, Sydney
12		A. Mcardle	Kilkenny and Enfield, S.A.
13	XAA	J.Y. Nelson	PMG Dept. McMahons Pt., Sydney
14		H. Leverrier	Gordon, Sydney
15	XCP	M.C. Perry	Randwick, Sydney
16	XAB	A.S. Arnold	Ashfield, Sydney
17		A.H. King	Marrickville, Sydney
18		F.H. Day	C. of E. Grammar School, Sydney
19		J.S. Dolan	Waverly, Sydney
20	XCA	R.C. Alsop	Randwick, Sydney
21		H.A. Stowe	Drummoyne, Sydney
22		A. Goodwin	Hamilton, Melbourne
23		C.N. Allen	Chatswood, Sydney
24		H.J.B. Foley	Randwick, Sydney
25	XPO	Rev. A. Shaw (Maritime Wireless Co. of Australia)	King Island, Tasmania
26	AAA	Australasian Wireless Ltd.	Hotel Australia, Sydney — previously ATY. Australasian Wireless Ltd. Underwood St., Sydney.

Beginning mid-1910 the PMG Dept issued the experimental stations with 2 letter call signs prefixed by "X" for experimental, with no distinction between states, or between private and commercial operators. For instance XAA was J Y. Nelson (the Senior Electrical Engineer of the Sydney PMG Dept and also the local radio inspector), F Leverrier, a leading Sydney experimenter, was XEN, N S Gilmour, of St. Kilda, was XNG, Father A Shaw of the Maritime Wireless Co had XPO and so on. By the way, the experimental licence consisted of 6 foolscap pages of regulations and restrictions.

When the government wireless stations at Sydney and Applecross (WA) commenced operations in 1912 they were allocated POS, for Post Office Sydney, and POP for Perth, but following an international wireless convention which allocated prefixes on a world wide basis the PO was changed to a VI, hence VIS and VIP.

In August 1912, as more and more people showed interest in experimental operation and applied for licences, the PMG's Dept decided it should identify each state by changing the call sign sequence as follows:-

NSW XAA — XIZ  
 VIC XJA — XPZ  
 QLD XQA — XUZ  
 SA XVA — XXZ  
 WA XYA — XYZ  
 TAS XZA — XZZ

This meant that several call signs had to be altered to comply with the new series. For example in NSW, J H Pike who had been XJP received a new call of XDY, and C S Crouch XRT, became XCC. This change explains the discrepancy in early lists showing different call signs for the same person.

When the initial series was filled an extra letter was added. In NSW, for instance, the block of 2 letters AA to IZ allowed for 234 licences, and when they were used up the series was continued as XAAA — XIZZ. At the time an experimental licence cost £1/1/-.

This call identification became a little cumbersome so in July/August 1914 the calls were altered to X with a number to identify the state, then 2 letters, eg the PMG Radio Inspector's

call in NSW became X2AA. Not many licensees had the chance to use the new calls before World War 1 was declared and all wireless experiments ceased in August 1914. In November 1915 the Navy again took control of all wireless, including the commercial and government stations.

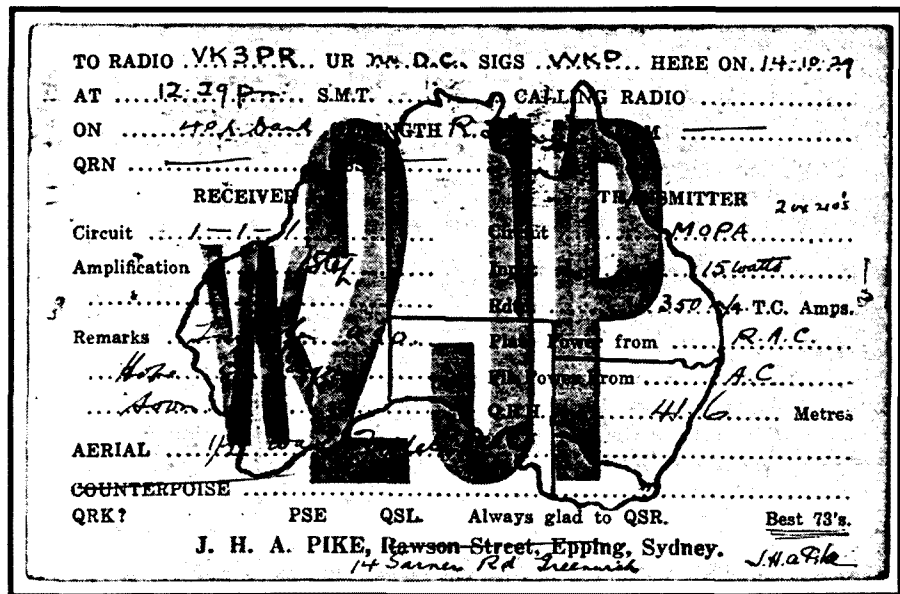
Note that licences and call signs were issued for receiving purposes too, and in fact very few experimenters actually had transmitting equipment.

*The experiemental licence consisted of 6 foolscap pages of regulations and restrictions*

After WW1 the Navy still controlled the airwaves and was reluctant to allow wireless experiments but following extended negotiations between the WIA and the Navy, Radio Commander Creswell agreed in June 1919 to issue Temporary Permits to experiment in Wireless Telegraphy. These were for receiving only but permits to transmit and receive were issued to the WIA, a couple of Universities and one or two prominent

experimenters. At this time the Naval Director of Radio Services instigated a new call sign system consisting simply of the sequential licence number, prefixed by the state initial. For instance R H Davies of Melbourne obtained licence number 237 so his call sign was V.237 whilst the next applicant, A B Cummings in Queensland was call sign Q.238. By February 1920 more than 600 permits had been issued. In April 1920 the Government took charge and re-introduced regulations allowing experimental and instructional licences. An experimental licence cost £2/1/-.

In September 1920, the Government amended the Wireless Telegraphy regulations to remove all wartime restrictions and placed the control of wireless under the "Director of Radio Telegraphy, Prime Minister's Department, Melbourne". When the new Director took over from the Navy in early 1921 he changed back to the pre-war call system of X2AA etc. Some "transmitters", as they were called, requested specific call signs, so for example one leading transmitter, Charles D Maclurcan, obtained X2CM.



**This QSL dated 14 October 1929, originally printed 2JP has been altered to VK2JP. It belonged to J H A Pike mentioned in the text as holder of callsign XJP (later XDY) before WW1. The first QSL cards probably were sent in the early 1920s. They had no prefix at all in the callsign, but usually just the initials of the station operator. Later a system was used internationally by which a prefix was used whose letter served to indicate the country of origin. For example, Australia took the letter A, Canada C, USA II, Japan J, and so on. (Card from the WIA QSL Collection)**

Other less prominent experimenters who wished to transmit were discouraged till 3rd November 1922, when further new regulations were released, allowing experimental wireless in 2 categories:-

- a) transmit and receive and
- b) receive only.

The receive only licence was further split into:

- i) crystal receiver and
- ii) valve receiver.

The cost of a licence became £ 1/- for the full licence and 10/- for the receive only licence.

If a licensee had a valve receiver he had to be able to read Morse code at 12 WPM, the reasoning being that if the valve broke into oscillation (as was likely with the unstable circuits or regeneration used) and was interfering with one of the navy or commercial stations, which were still using Morse, they could come back and tell the offender(s) to close down.

The PMG's Dept took over the control and licensing functions from the Prime Minister's Dept at this time, and the call signs were altered yet again, to XA2AA, XA3AA, etc where "X" was for experimental and the "A" identified Australia on an international prefix system.

Up to this time there were only about 60 genuine amateur transmitters in all Australia. The other approx 650 licensees were in fact "listeners", ie they had receivers only and most had little technical interest

or expertise, BUT they did have valid call signs.

The Experimental Licence that was issued during this period was endorsed with either:

T — to signify approval to Transmit and Receive

R — to indicate Receive only and then

C — crystal or

V — valve

The regulations also provided for a Broadcast licence which allowed an experimenter to transmit news and entertainment, but no advertising or payment was permitted. Other restrictions were the same as for the experimental Transmit licence. As it cost £5, few experimenters took up this licence but some did go on to become prominent broadcasters.

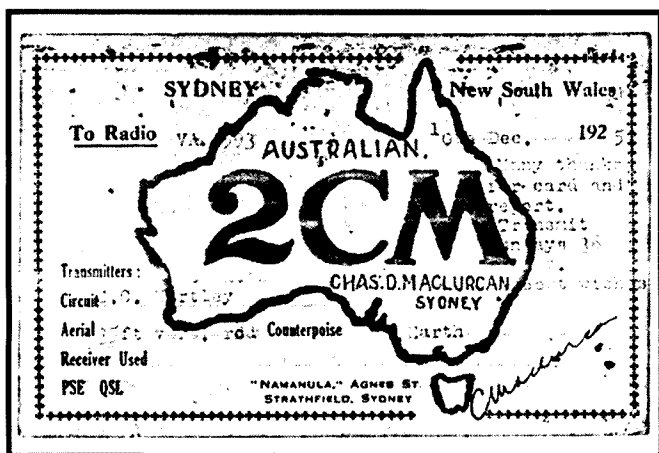
*There were only about 60 genuine amateur transmitters in all Australia.*

Although the regulations did not come into effect officially till 1-12-1922, experimental licences were issued from October 1922 with both transmitters and listeners receiving call signs. By mid-1923 around 700 call signs had been issued and NSW had used up all its 2 letter allocation and was about to issue 3 letter calls. However, in May 1923 the PMG decided to hold all further

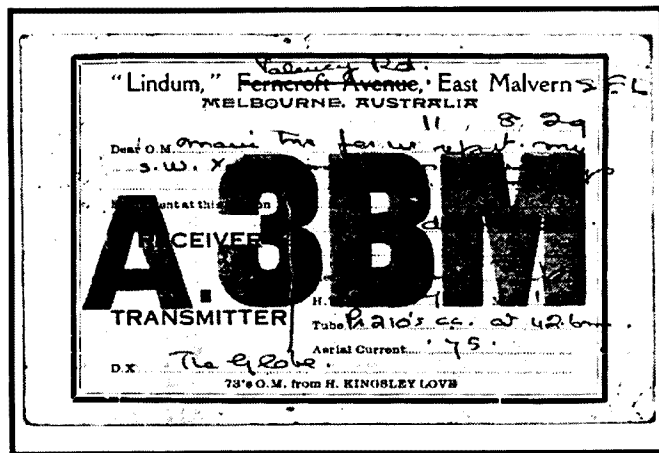
applications pending the release of new regulations which would include commercial broadcasting. There was growing public and industry agitation for broadcasting, so a conference of all interested parties was held in May 1923 to organise and regulate public broadcast operations.

The 1923 Broadcasting Conference included representatives from all groups interested in wireless who framed regulations to introduce and control public broadcasting. The conference was dominated by Mr E T Fisk of AWA, who pushed through his proposal for the infamous "Sealed Set" system, whereby listeners could use a receiver tuned and sealed to receive one station only for a fee of up £4/4- per year, with additional costs if one wanted to listen to another station. Experimenters lost some privileges to commercial interests and were misled by certain delegates. The new regulations were delayed so the PMG started to issue experimental licences once again, but this time only genuine transmitters received a call sign also.

When the new broadcast regulations finally became effective in August 1923 a new class of licence was issued, a "Broadcast Listener's Licence", costing 10/-. However, it was obvious that obtaining a receive only experimental licence for 20/-, with no restrictions on tuning, was cheaper than the broadcast listener's licence plus the station fee of £ 2/2- to



**An Early QSL of Chas Maclurcan, dated 10 December 1925. Chas was one of the first experimenters to be granted a licence after WW1. He broadcast music over the Sydney area in 1921-2 on 1400 m before commercial broadcasting began. (Card from the WIA QSL Collection).**



**A QSL dated 11 August 1929 from Howard Kingsley Love, founder of Kingsley Radio and first Federal President of the WIA. Some operators did not change their call sign to AO after February 1927, but retained the A prefix. (Card from the WIA QSL Collection).**

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Other new features include naming of memory channels, DTMF Auto-dial memories, and DTMF Message Paging with up to 6 alpha-numeric characters. A large range of accessory lines are also available for easier customisation of your transceiver.

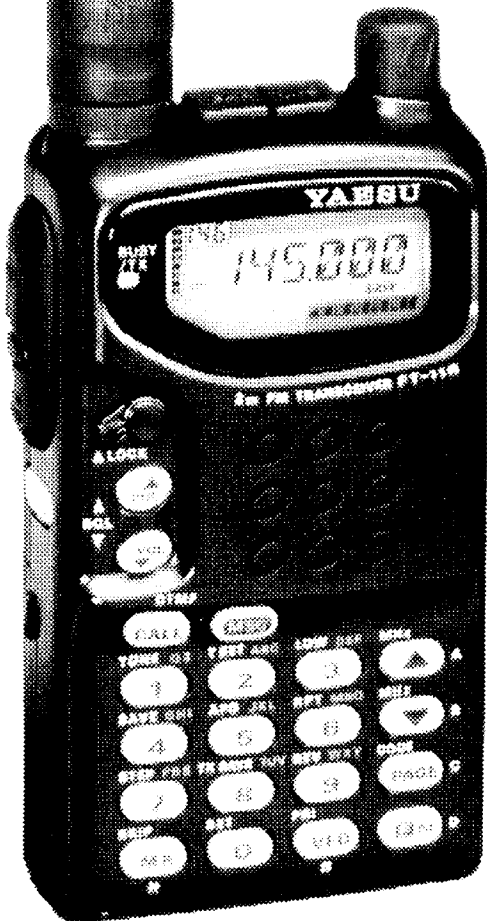
The FT-11R comes with an FNB-31 600mA/H NiCad, belt-clip, approved AC charger, CA-9 charge adaptor and antenna.

Cat D-3640

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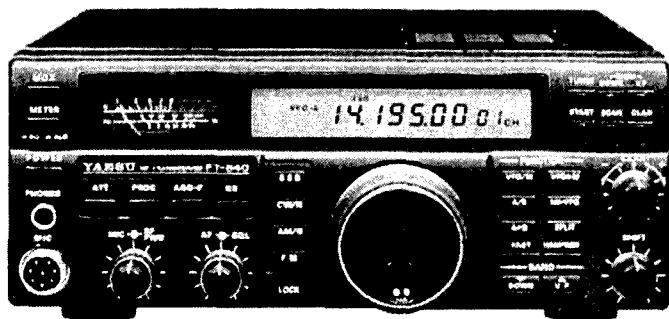
## Yaesu FT-840 HF Transceiver

Blending the high-performance digital frequency-synthesis techniques of the FT-890 with the operating convenience of the FT-747GX which it replaces, the all new FT-840 HF mobile transceiver sets the new standard for high performance in affordable transceivers.

Covering all HF amateur bands from 160m-10m with 100w P.E.P output, and with continuous receiver coverage from 100kHz to 30MHz, the FT-840 provides SSB/CW/AM operation (FM optional), 100 memory channels, a large backlit LCD screen, two independent VFOs per band, an effective noise blanker and an uncluttered front panel, all in a compact case size of just 238 x 93 x 243mm (WHD).

Unlike some competing models, small size doesn't mean small facilities. The FT-840 provides easily-accessible features such as: Variable mic. gain and RF power controls, SSB Speech processor for greater audio punch, and IF Shift plus CW Reverse to fight interference. Dual Direct Digital Synthesizers ensure clean transmitter output and fast Tx/Rx switching, while the low-noise receiver front-end uses an active double-balanced mixer and selectable attenuator for improved strong signal handling. The FT-840 weighs just 4.5kg and uses a thermally-switched cooling fan, surface-mount components and a metal case for cool, reliable operation. An extensive range of accessory lines are available, including the FC-10 external automatic antenna tuner, so you can customise the FT-840 to suit your operating requirements.

Cat D-3275

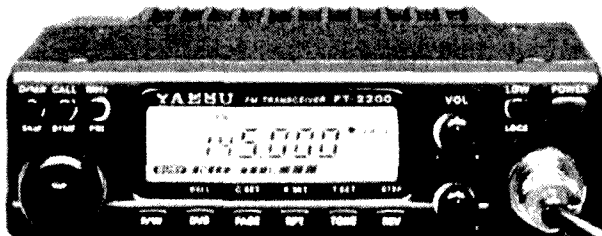


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## FT-2200 2m Mobile Transceiver

The new FT-2200 is a compact, fully featured 2m FM transceiver providing selectable power output of 5, 25 and 50 watts, and includes the latest convenience features for more enjoyable mobile or base station operation. Built around a solid diecast chassis, it provides 49 tunable memories, a large variety of scanning modes, an instant recall CALL channel, 7 user-selectable channel steps from 5kHz to 50kHz and is just 140 x 40 x 160mm (not including knobs). Backlighting of the large LCD screen, knobs and major buttons is even automatically controlled to suit ambient light conditions. Also provided is a 38 tone CTCSS encoder, DTMF based paging and selective calling with Auto-Page/Forwarding features, and 10 DTMF auto-dial memories. The LCD screen provides a highly legible bargraph Signal/P.O. meter plus indicators for the various paging and repeater modes. An optional internal DVS-3 digital recording/playback board can also be controlled from the front panel, giving even greater messaging flexibility. Supplied with an MH-26D8 hand microphone, mobile mounting bracket and DC power lead.

Cat D-3635

## FT-5200 2m/70cm Mobile Transceiver

The FT-5200 uses the latest innovations in compact cross-band full-duplex and detachable front-panel design for brilliant mobile performance. It has 32 tuneable memories, a built-in antenna duplexer, dual full-frequency LCD screen (with signal strength/power output bargraphs for each band), 8-level automatic display/button lighting dimmer and dual external speaker jacks (one for each band.) A thermally-activated fan allows up to 50 watts output on the 2-meter band and 35 on the 70cm band. Plus, scanning features include programmable scan limits, selectable scan resume modes, memory skip, priority monitoring and one-touch recall CALL channels. In addition, 6 user-selectable channel steps are provided and a FRC-4 DTMF paging selcall option lets you program a three-digit ID code so you can be paged by other transceivers, or page up to 5 other stations yourself. An optional YSK-1 remote panel lets you relocate the main rig (under the front seat, for example) and mount the control panel on the dash. The FT-5200 comes with hand-mic, mobile mounting bracket and DC power lead.

Cat D-3310



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**2 Year Warranty**



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Cat D-4920



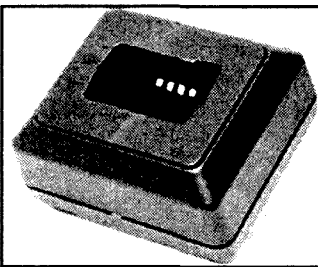
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## MasterCharger 1 Fast Desktop Charger

New for '94! At last, an intelligent, fast desktop charger that not only suits most current Yaesu handhelds but also many previous models. Made in USA, the MasterCharger 1 operates from 13.5V DC and uses switch-mode technology plus a Philips battery charge monitor I.C. (with -ΔV full charge detection) to correctly fast-charge NiCad batteries between 6V and 13.2V, then switch to a trickle charge. Suitable for the FT-23/73, FT-411/411e, FT-470, FT-26, FT-415/815 and FT-530, its charging cradle can easily be replaced, allowing for the insertion of a new cradle to suit earlier Yaesu transceivers (eg FT-209R) or different brands/model handhelds. The MasterCharger 1 requires 12-15V DC at 1.3A, and is supplied with a fused cigarette lighter cable for vehicle use. Cat D-3850

Now available - charging cradles to suit various Kenwood, Icom, and Alinco handhelds.

**\$169<sup>95</sup>**

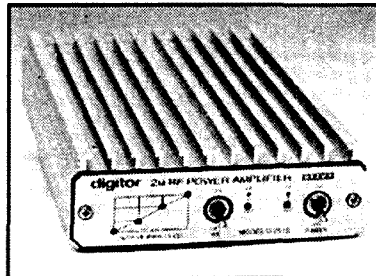


## 2m RF Power Amplifier

Boost your 2m hand-held's performance with this compact amplifier. Works with 0.3 to 5W input and provides up to 30W RF output, plus has an inbuilt GaAsFet receive pre-amp providing 12dB gain. A large heatsink and metal casing allow for extended transmissions at full output, and a mobile mounting bracket is supplied for vehicle use. Requires 13.8V DC at 5A max. Size 100 x 36 x 175mm (W x H x D).

Cat D-2510

**\$169<sup>95</sup>**



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\*MAJOR AMATEUR STOCKIST STORES SHOWN IN RED

£4/4/-, and so somewhere around 1000 "listeners" applied for experimenter's licences. The broadcast stations soon complained that they were not receiving their expected fees so the PMG sent out letters to people who had experimental receive only licences, cancelling those licences and call signs and telling them to apply for a broadcast listener's licence. Many licences were cancelled, but someone objected in early 1924 and the government found that as the licence was validly issued, it could not be cancelled, even though the licensee was not in all fairness a wireless "experimenter".

To solve that problem, as each licence came up for renewal the licensee had to demonstrate that he was in fact competent to experiment and not just a listener. Previously, any exam or Morse test was at the discretion of the radio inspector and it appears very few applicants had to prove they knew anything about wireless. With the new approach, the number of experimental licences in the period 1924-1925 dropped significantly from the 1923 level and many names and call signs vanished. It was estimated in early 1925 that there were about 1200 experimental licensees in Australia, of which less than 90 were transmitters and the rest, even though they held call signs, should have been reclassified as Broadcast Listeners. Deleting all these listeners from the call sign lists left many gaps in the sequence up till the mid-40s when growth in numbers finally made the 3 letter call sequence necessary.

This practice of issuing call signs to listeners with no real technical expertise raises a problem concerning claims by some old timers to precedence in amateur activities. For instance Miss F Violet Wallace (later Mrs. McKenzie), is regarded as the first Australian female amateur, but the records show that there were four ladies, all listeners but with valid call signs, before Miss Wallace obtained her licence.

During the 1922-25 period experimenters were blamed for interference with other stations, and the Wireless Institute was keen to make a distinction between true

"experimenters" who were engaged in research and wireless construction, and those who they called "amateurs", who were only listeners, using store bought or simple kit-built crystal or 1 valve sets. The amateurs were to blame for interference with broadcasts, but of course experimenters were more proficient!

The Fisk "sealed set" scheme mentioned above was a failure and less than 12 months later another Broadcast Conference convened and new regulations closer to the present broadcast rules were issued by the PMG in July 1924. At this second conference the experimenters came under further pressure and lost more band space and privileges. One recommendation of the conference was to revoke all experimental licences and instead issue no more than 980 "Expert Experimental Licences" (Australia wide) to genuine experimenters, to be approved by the WIA. The allocation per state was to be:

NSW	— 300
Vic	— 300
SA	— 100
WA	— 100
Qld	— 150
Tas	— 30

Fortunately the PMG rejected this proposal, and when it issued new Statutory Regulations in July 1924 it clarified the Experimental Licence and Broadcast Listeners Licence and at this time introduced formal examinations for the Amateur Operators Certificate of Proficiency (AOCP). The morse requirement was 12 WPM and the exam cost 5/- whilst issue of a certificate cost another 2/6.

A further change in the call sign identifier occurred in 1927 when another international radio conference decreed that Australia should use the prefix OA effective from 1-2-1927, so we then had calls such as OA3BM, Howard Kingsley Love. "O" was for Oceania and "A" for Australia.

Only a couple of years later yet another international agreement saw the calls changed to the current VK plus a number prefix, for instance VK2JP (J H Pike again). That change came into force at midnight of 31-12-1928, but the PMG Chief Radio Inspector, Mr Jim Malone, decided

that VK call signs would be used from 8-12-1928 so that the change would be fully implemented by 1-1-1929, which explains why some contacts and QSL cards seem to have jumped the gun by quoting "VK" calls prior to January 1929.

There does not seem to be any official declaration of the call sign format so many experimenters used their own interpretation by adding a hyphen or a full stop to their call signs as printed on QSL cards, such as XA-4CD, OA2-BH, VK.2AK and VK-4SU. There was even VK3D.L. and VK3--H--W. Some, perhaps speculating on further changes, abbreviated their QSL cards to show just the number and letters, such as 4WK and 5BJ. Magazines of the era often left the prefix off the calls when reporting experiments' activities anyway.

Finally, the PMG recognised a changing understanding of the terminology and "Experimental Station Licensees" officially became "Amateur Station Licensees" from 19-9-1947.

After all that, I think I'll let some future historian work out the significance of the more recent variations in VK0, VK9, Z, C, K, M and N calls, because now I'm confused!

### References:

*Australian Archives.  
Mitchell Library.  
Amateur Radio magazine,  
Documents in collection of  
C. MacKinnon.*

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Magazine.**

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# ALARA

Judy Atkins VK3AGC

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## VK5 NEWS

A very pleasant morning coffee meeting was enjoyed by a group of VK5 girls when they met up with Jenny VK3MDR, OM Phillip VK3JNI, and the two harmonics Barry and Kate when they were passing through Adelaide. Christine VK5CTY, Denise VK5YL, Paddy VK5ZYB and Joy VK5YJ shared a lovely morning tea break at the outdoor tables on the North Terrace in the pleasant sunshine before they went off to see the sights of the city.

Jenny had managed to catch up with Mary VK5AMD as she passed through Bordertown the previous day. She will try to contact as many YLs as she can on her travels. The family is tenting it out as far as the Strezlecki Track. It will be quite a trip by the time they return home.

We all enjoy the opportunity to meet face to face, so make sure people know **YOU** are there as you go on your travels.

## Across Australia with Amateur Radio

On 5 May OM Ron VK3BYM and myself, Judy VK3AGC, received the good news that Christopher Paul, grandson number two, had arrived at Kalgoorlie Hospital (a little early but quite OK). With daughter Jennifer for company, I left Taradale at 6.30 am on Tuesday, 24 May for the long trip. We went via Mildura where we had lunch and a welcome break with Marilyn VK3DMS before continuing on. We arrived in Port Augusta at 6.45 pm.

Next day we set sail for Border Village. Before long we struck trouble in the form of gale force winds, rain and the worst dust storms I have ever seen. Visibility was down to two white lines ahead. The weather was playing havoc with the "185" Travellers Net but I managed to get a relay via Brunei, courtesy of Barbara V85BJ, to let Net Control know we were OK. Thursday morning, after a quick stopover at the old Telegraph Station at Eucla, we were on our way. The dust was gone and we had an interesting drive seeing kangaroos, emus, feral tabby cats and lots of beautiful golden eagles. Knowing that the price of petrol across The Big Paddock (Nullarbor Plain) was very expensive (23 cents per litre dearer than at home), I carried three jerrycans and soon learnt how to siphon petrol with a piece of hose. We arrived at Kambalda late in the afternoon after travelling 2,965 km in three days. It was great to see Paul, Martine, Steven and little Christopher.

Friday, 3 June we rode camels at Coolgardie then enjoyed a two hour tour of Long Shaft which is the largest Nickel Mine in Kambalda. We went underground to a depth of 822 metres, then hitched a ride in a passing four wheel drive. What a ride! The next day we drove to Fremantle and stayed with Margarete and Mark VK6AR. That evening at the Casino we won \$250 (petrol money!).

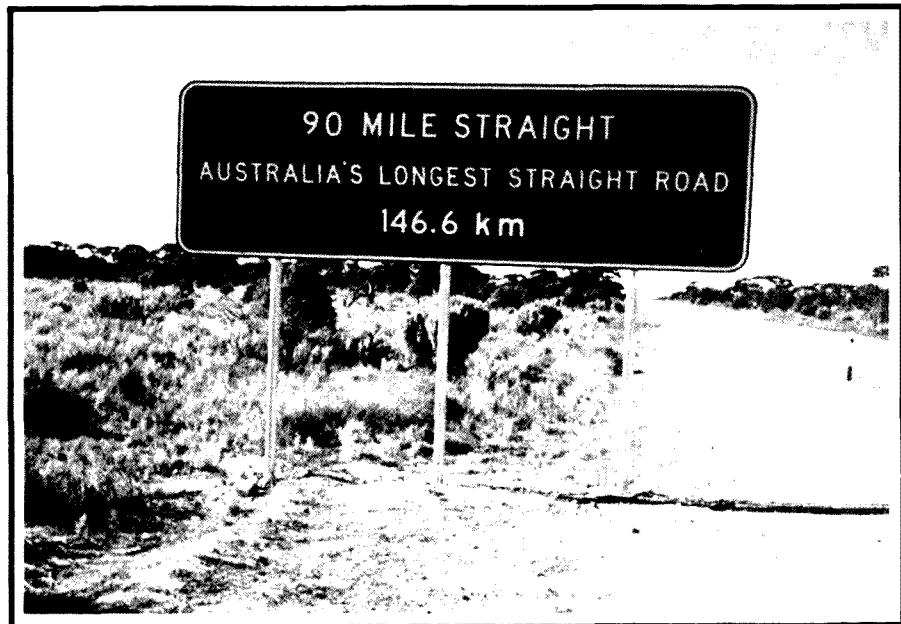
I found it quite embarrassing using 20 m mobile because the windscreen wipers started working each time I transmitted, causing some strange looks as the weather was hot and dry. On the VK6 Sunday morning WIA broadcast it was announced that Poppy VK6YF had organised a luncheon for Monday. Mark, Margarete, Jennifer and I had a lovely day at Underwater World and watched the Dolphins being fed. Jennifer had to be back at work on Monday, so it was off to the airport late that evening as she was booked on the "red-eye" flight back home.

The luncheon was very enjoyable and made it possible for me to meet a lot of friends I would not have been able to catch up with otherwise, including Poppy VK6YF and Les VK6EB, Cliff VK6LZ and Christine VK6ZLZ, Rob VK6RB and Joy, Brian VK6NKB and Suzanne, Mark VK6AR and Margarete and Syd (5/9) VK6SMH.

On Tuesday, 7 June I said goodbye to Mark and Margarete and headed back to Kambalda to spend some more time with the family. Saturday, 11 June I started my lonely trip back home stopping at Mundrabilla that night. I headed off early next morning and came across a beautiful golden eagle perched in a dead tree beside the road. It let me walk within 10 ft of it before it flew away. Again I visited the Telegraph Station at Eucla. This has become a ritual for me on every trip (12 crossings so far) because the shifting sand dunes mean that sometimes I see a lot of the old building and sometimes only the chimney is visible.

On the way to my next stopover I had good contacts on 20 m with Ron, Graham, Larry, John, and Bev, as well as Masa JA1IOZ who came in very useful as a relay when VK conditions dropped out. I left Wudinna the next morning headed for Adelaide and a home cooked meal with Bob VK5MM, where I used Bob's rig to join in on the ALARA net. After spending the night with Christine VK5CTY and Geoffrey I had lunch with Christine, Jenny VK5ANW and Denise VK5YL. I left Adelaide mid afternoon for Murray Bridge and the company of Meg VK5AOV and David at their lovely house overlooking the Murray River. Wednesday, 15 June I left Meg's QTH for the last leg of my trip. At Bordertown I had coffee with Mary VK5AMD, then headed off again, arriving home at 5.30 pm, tired but still in one piece after 7,695 km.

Many thanks to all who kept me company on my trip, especially to the operators of the "185" net. ar



**Amateur radio, particularly the Travellers Net, is fantastic company and security when you travel alone in country like this, the Eyre Highway across the Nullarbor Plain.**

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# AMSAT Australia

Bill Magnusson VK3JT\*

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## National co-ordinator

Graham Ratcliff VK5AGR  
Packet: VK5AGR@VK5WI

## AMSAT Australia net:

Control station VK5AGR

Bulletin normally commences at 1000 UTC, or 0900 UTC on Sunday evening depending on daylight saving and propagation. Check-ins commence 15 minutes prior to the bulletin.

Frequencies (again depending on propagation conditions):

Primary 7.064 MHz. (usually during summer).

Secondary 3.685 MHz. (usually during winter).

Frequencies +/- 5 kHz for QRM.

## AMSAT Australia newsletter and software service

The newsletter is published monthly by Graham VK5AGR. Subscription is \$30 for Australia, \$35 for New Zealand and \$40 for other countries by AIR MAIL. It is payable to AMSAT Australia addressed as follows:

AMSAT Australia  
GPO Box 2141  
Adelaide SA 5001

## New Satellite Tracking Software

The June '94 edition of the AMSAT Journal from AMSAT-NA contained a review of a new MicroSoft Windows based satellite tracking program called WinSat Ver 1.0. I have not had an opportunity to actually look at it so the following is merely my reaction to the review.

The software offers the usual Windows main screen with pull down menus and various screens which can be "tiled". The sizes of the screen images can be increased to full screen or reduced to icons. A typical operating situation would see a multi-coloured map reminiscent of InstantTrack as the main screen element, a smaller "3D" map similar to IT's polar projection map, and a very detailed tracking data block, all on screen together. Windows devotees will be familiar with the ability to increase or decrease or overlap images at will.

Maximising the main map results in an image remarkably like IT. One of IT's attributes is that it will work satisfactorily, albeit slowly, on an XT. WinSat, however, will require at least a 386 based machine with a math co-processor. It appears that the current version 1.0 has a few shortcomings and several new features are already being advertised as being "in

the pipe line". The next version will offer support for the Kansas City Tracker and the AEA ST-1 tracker. It will also include features like mutual visibility predictions and ephemeris for any ground station and satellite combination.

WinSat is available from AMSAT-NA. Price is \$US30 for members and \$US50 for non-members. Upgrades will be made available to registered users of version 1.0 at substantial discounts.

## Home Brewers, Ahoy!

This point came to light during correspondence with Bob VK3BNC. Bob, an avid home brewer, had contacted me to see if I could put him in touch with any other satellite operators who were similarly involved in constructing their own satellite ground station equipment. One or two came to mind but it was by no means a wide field so I thought I'd mention it in this column. Maybe we could drum up some mutual support for people finding themselves in Bob's situation.

He wanted to bounce a few ideas around, discuss circuit options, parts availability, etc. Maybe you, too, have wanted to contact home builders in the satellite field. Perhaps we could use this column to publish a list of those who are keenly interested in home building satellite related gear.

Have you built much of your own gear? What are your special areas of interest? How do you feel about such a list? Drop me a line or maybe a packet to VK3JT@VK3BBS.#MEL.VIC.AUS.OC. Bob is quite happy to have other home-brewers contact him direct.

## Moon Bounce Tests from VE3ONT

It's on again. The weekends of 29/30 October 1994 and 26/27 November 1994 will give satellite operators an excellent chance to test the effectiveness of their receiving equipment. Once again it's time for the ARRL moon bounce (EME) contest weekends. As happened last year, the Toronto VHF Society VE3ONT have negotiated use of the 150 foot diameter radio astronomy dish at the Institute for Space and Terrestrial Sciences, Algonquin. They will not be active as testers, of course (that'd be a bit unfair, hill), but the massive gain of this dish will allow moon bounce contacts with VHF/UHF operators who would not normally consider their station to be in the EME class.

Many VHF/UHF DXers will find it possible to hear and maybe even work VE3ONT. Satellite operators with az/el pointing antennas, of sufficient gain to do well on the OSCARs, will have the opportunity to assess the performance of their station, in particular their receiving equipment.

You can use a tracking program like InstantTrack to predict the moon's position and plan your listening watch. Standard amateur tracking programs like IT are not accurate enough for serious EME work but it's unlikely your antenna will have a main lobe of less than 3 degrees, so these programs are quite adequate for this purpose. It's quite a challenge and well worth the effort.

Last year Ray VK3YPY and I sat up until the wee small hours with mixed results. But the excitement of hearing those signals from the moon will see us doing the same this year. The mutual window between eastern Australia and Algonquin is only a few degrees and last year the time was very limited.

Next month I'll run some figures for eastern OZ and give a list of bands, frequencies, times and operating protocols (rules). Resolve now to take part in this test. I think you'll find it quite exciting and a great chance to critically assess your satellite station. "If ya can't hear 'em, ya can't work 'em".

## P3D Transponder Matrix

A couple of months ago I covered the various transponder modes that are operating on the current generation of amateur radio satellites. At that time I said I would look next at the arrangements planned for the Phase 3D satellite at present being built for a projected launch in 1996.

There has been much discussion regarding choice of bands and frequencies with many users pushing for the retention of what is currently known as "mode B". As planning proceeds it becomes more apparent that the only way to go is UP. The 2 metre band down link of mode B and, for that matter, the 2 metre band up link of mode J, are experiencing more and more difficulty with QRM and, in some countries, are already unusable. The designers are being forced to consider microwaves as a necessary feature rather than an alternative for the experimentally minded amateurs.

A builder stepped forward virtually at the last minute for the 2 metre transmitter so it looks like mode B will fly on P3D. The traditional approach of switching between hard wired transponders will be replaced with a much more flexible arrangement called a matrix. This will enable the mating of any receiver with virtually any

transmitter to give a wide variety of "transponders" with the possibility of some combinations running concurrently.

The matrix will be fed by receivers on 2 metres, 70 cm, 23 cm, 13 cm and 6 cm (5.6 GHz). The matrix will send its output to transmitters on 2 metres, 70 cm, 13 cm, 3 cm (10.45 GHz) and 1.3 cm (24 GHz). Antenna switching will also be part of the matrix.

One of the main reasons for the move into the microwave region is space for antennas and achievable antenna gain. At an apogee of about 50,000 km the earth subtends about 13 degrees and this corresponds to a maximum useable gain of about 20 dBi. More gain than this will

result in the signal not covering the entire earth surface at apogee and less gain will result in wasted power as much of the signal is sprayed into space. It is not possible to achieve the optimum gain on the lower frequencies, even on what will be a very large amateur radio satellite. So all that adds up to this... If we want all the goodies associated with a satellite like P3D, we had better get used to the idea that the most efficient modes will probably employ 1.2, 2.4 and possibly 5.6 GHz up links and 2.4, 10.4 and 24 GHz down links.

The large variety of modes that the matrix makes available will necessitate a new method of mode designation. The "transponders" will exist only in the mind

of the matrix. The various combinations will be known by their up link and down link band designations. The first letter will name the receiver on the satellite while the second letter will name the transmitter.

Thus mode SX will uplink on S band (2.4 GHz) and downlink on X band (10.4 GHz). Having said all that, the old modes B and J will no doubt have their place on P3D. Perhaps newcomers will be getting their feet wet on those modes rather than mode A as many of us did. Ah well, that's progress.

\*359 Williamstown Rd, Yarraville VIC 3013  
Packet: VK3JT@VK3BBS

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## AWARDS

John Kelleher VK3DP — Federal Awards Manager\*

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Comment on the use of the Hamlog program in its present form, ie alphabetical listing by countries, and the ever present difficulty in transcribing your DXCC entries to master files, has borne fruit. During the past month or so I have been contacted by VK7TS and VK2NO, who both have assured me that they now have the capability of producing DXCC listings in alphabetical listings of callsigns which, I suggest, is the way to go.

This latter method falls into line with the ARRL method, which is the method that has been adopted by all WIA Awards Managers. I sincerely thank these gentlemen and feel that a few words with either gentleman may help others immensely. Here, I must also enter a plea to the Award managers of radio clubs and amateur organisations who sponsor awards. I am offering free publicity through this column to any organisation which supplies me with any information that will help amateur activity in general. I would like to publish a few Australian Awards, in preference to some that have already been mentioned in this column.

The RSGB HF Awards Manager, Fred Hanscombe G4BWP, has asked me to publish details of the RSGB HF Awards program, which was received at this office within the last month.

### RSGB HF Awards

#### General Rules

The following general rules and conditions apply to HF certificates and awards issued by the *Radio Society of Great Britain* and should be read in conjunction with the conditions which govern the particular award program. Claimants may be either licensed radio amateurs or short wave listeners. All

certificates, but not plaques, are available on a "heard" basis to listeners.

#### Claim eligibility

All claims must be submitted in a form acceptable to the Awards Manager. Where application forms are provided for particular award programs, these should be used, although a computer generated form including the same headings will generally be accepted. Each claim must include the following signed declaration: *"I DECLARE THAT all the contacts were made by me personally from the same DXCC country and in accordance with the terms of my radio transmitting licence, and that none of the QSLs have been amended in any way since receipt. I accept that a breach of these rules may result in disqualification from the award program. I further accept that the decision of the HF committee shall be final in all cases of dispute."*

DX claims must be accompanied by QSL cards, but only in the case of those categories which attract a plaque. Generally, a statement from the applicant's national society that the necessary cards have been checked will be accepted, except that the HF Awards manager reserves the right to ask to see some, or all, of the cards. Each claim must be accompanied by a fee of \$US6.00 or 9 IRCs per certificate, or class of certificate.

#### Contact Eligibility

All contacts must be made by the holder of the callsign. Contacts may be made from any location in the SAME DXCC COUNTRY. Except where otherwise indicated, credit will be given for contacts made on or after 15 November 1945 on any of the nine

amateur bands below 30 MHz. Contacts with land mobile stations will be accepted, provided the location at the time of contact is clearly stated on the QSL card. Credit will be given for two-way contacts on the same mode and band (ie not cross-mode or cross-band). Certificate endorsements for single mode transmission and/or single band may be made on the submission of cards clearly confirming the mode or frequency of transmission, but the request must be made at the time of application.

The submission for credit of any altered or forged confirmations, or equally, bad behaviour on or off the air which is judged by the HF Committee to bring a particular program into disrepute, may result in disqualification of the applicant from ALL RSGB award programs. The decision of the HF Committee on this and other matters of dispute will be final.

Applications for all Awards should be sent to F C Handscombe G4BWP, "Sandholm" Heath Farm Road, Red Lodge, Bury St Edmunds, Suffolk IP28 8LG, England.

#### Islands on the Air (IOTA)

The IOTA program was created by the late Geoff Watts, a leading British short-wave listener, in the mid-1960s. When it was taken over by the RSGB in 1985 it had already become, for some, a favourite award. It's popularity grows each year, and it is highly regarded among amateurs world-wide.

The IOTA program consists of 18 separate awards which may be claimed by any licensed amateur (also available to SWLs on a heard basis) who has had contact with stations located on islands. Many of the islands are DXCC countries in their own right: others are not but, by

meeting particular eligibility criteria, also count for credit. Currently there are some 800 islands listed with IOTA reference numbers.

The basic award is for working stations located on 100 islands/groups. There are higher achievement awards for working 200, 300, 400, 500, 600, and 700 islands/groups. In addition, there are seven continental awards (including Antarctica), and three regional awards (Arctic Islands, British Islands and West Indies) for contacting a specified number of islands/groups listed in each area.

The IOTA Worldwide Diploma is for working a set number of islands in each of the seven continents. A Plaque of Excellence is available for confirmed contacts with at least 750 island/groups. The rules require that, in order for credit to be given, QSL cards need to be submitted to nominated IOTA checkpoints for checking. A feature of the IOTA program is the Annual Honour Roll, appearing in *Radio Communication* magazine (May or June issue) and in the *RSGB's DX News Sheet*, which encourages continual updating of scores.

If "island chasing" appeals to you (and it can become compulsive) then write for the IOTA directory which gives full information on the awards. It is available for \$US12.00 or 18 IRCs from RSGB IOTA Director Roger Ballister G3KMA, La Quinta, Mimbridge, Chobham, Woking Surrey GU24 8AR, England.

### **Worked ITU Zones (WITUZ)**

This award may be claimed by any licensed radio amateur who is eligible under the general rules and who can produce evidence of having contacted, since 15 November 1945, land based amateur radio stations in at least 70 of the 75 broadcasting zones, as defined by the International Telecommunications Union (ITU).

The certificate holder may claim, on payment of a contributory charge, a handsome plaque with a plate detailing name, callsign, date, and number of the award. Additionally, an amateur providing evidence of having contacted all 75 ITU zones may claim the Supreme Plaque in recognition of the magnitude of the achievement, again on payment of a small contributory charge. **NB:** There is also a 5 Band Worked ITU Zones (5BWITUZ) for which award special rules apply.

### **Commonwealth Century Club (CCC)**

This award may be claimed by any licensed amateur who can produce evidence of having contacted, since 15 November 1945, amateur radio stations in at least 100 Commonwealth call areas on the list current at the time of application.

The certificate holder may claim, on payment of a contributory charge, a handsome plaque with a plate detailing name, callsign, date, and number of the award. Additionally, an amateur providing evidence of having contacted all the Commonwealth call areas on the list current at the time of the application may claim the Supreme Plaque in recognition of the magnitude of the achievement, again on payment of a contributory charge. **Note:** Credit for South Georgia and the South Sandwich Islands will only be given for contacts with stations using a VP8 callsign. Credit for Antarctica and the South Orkney and South Shetlands Islands will only be given for contacts with stations using a callsign issued by a Commonwealth government. There is also a 5 Band CCC, to which special rules apply.

### **28 MHz Counties Award**

This award may be claimed by any licensed amateur who can produce evidence of having contacted, since 1 April 1983, amateur stations in 40 counties/regions in the United Kingdom Channel Islands and Isle of Man on the

28 MHz band. Stickers are available for 60, and all 77 counties/regions.

To qualify, submit a list of counties/regions in strictly alphabetical order with the callsign, and date of the contact.

### **DX Listeners' Century Award (DXLCA)**

This award may be claimed by any short wave listener who can produce evidence of having heard amateur radio stations in at least 100 DXCC countries. Stickers are available for every 25 additional countries confirmed.

Submit a list in radio prefix order with the callsign and country name. Endorsements are also available for hearing 100 countries on 5, 6, 7, 8, and 9 bands (they need not be the same countries on each band).

Copies of the full RSGB HF Awards Program and relevant application forms and countries lists are available from this office on receipt of a long SAE and two IRCs.

\*PO Box 2175 Caulfield Junction 3161  
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## **Club Corner**

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### **GARC Wins VHF Field Day Contest (Again)**

The Geelong Amateur Radio Club station VK3ATL participated again this year in the VHF field weekend contest winning the portable multi-operator section for the 5th time since the inception of the contest in 1989. Operators were VK3s TU, PK, BCL, DQW, AJF and BRZ.

The club operated from Blue Mountain (850 m ASL) near Trentham in Victoria, grid square QF22. Bands in use were 6 m, 2 m, 70 cm and 23 cm, all SSB. Contacts were made into VK1, 2, 3, 5 and 7 on both 2 m and 70 cm, with 6 m adding some VK4 and ZL grids as well. Additional valuable points were gained from a surprising number of contacts on 23 cm, including those to VK3XRS at Bairnsdale and VK7XR at Devonport, both well over 300 km away.

Other significant contacts were VK2ZAB on both 2 m and 70 cm, and VK2FLR on 2 m via aircraft reflection. Both stations are in Sydney. VK1s DO, TRT and CO on hilltops around Canberra were workable at will on 6 m, 2 m and 70 cm. An attempt with VK1DO on 23 cm nearly resulted in a contact, the two stations hearing each other but failing to exchange reports.

As reported in April *Amateur Radio* the total score exceeded 33,000 points, which was the club's best ever result, in part attributable to the inclusion of 23 cm in its artillery. Needless to say, the club will be defending its position as Australia's top VHF multi-op contest station next year.

Chas Gnaccarini VK3BRZ  
66 Smeaton Close, Lara, VIC 3212

### **Radio Amateurs Old Timers Club of SA**

The Annual Luncheon will be held on Tuesday, 25 October 1994 at 12 noon at the Marion Hotel, Marion Road, Mitchell Park.

We invite amateurs, 60 years of age and over, who have held or are eligible to hold an amateur radio licence for 10 years or over, to join us again.

Committee members are:  
President John Allan VK5UL Tel 344 7465  
Secretary Ray Deane VK5RK Tel 271 5401  
Jack Townsend VK5HT Tel 295 2209  
Lew Schaumloffal VK5AKQ Tel 263 0882  
RSVP by 21 October 1994 to any of the above. Ladies are welcome.

Public Transport — TransAdelaide Bus 243 to Stop 24.

Ray K Deane VK5RK  
Secretary

35 Truro Ave, Kingswood SA 5062

## Shepparton 1994 Communications Day

The Shepparton and District Amateur Radio Club will hold its popular Communications Day on Sunday, 18 September this year. The venue first used for the 1993 event will be used again. It allows the commercial traders, specialist groups and those wishing to dispose of preloved equipment plenty of room to spread out.

The display of vintage radio equipment proved popular in 1993 and this group will be back again with more wireless sets from the past to be admired. Major traders have again indicated that they will be attending with a number of new models about to be released on to the Australian market. Several short lectures will allow those present to gain an insight into aspects of the ever changing world of amateur radio.

Trade/swap tables will be available from \$5 (depending on the size required) plus the normal admission charge. Space limitations, and the fact that the club is hiring the tables, make pre-booking necessary. Requests for disposals tables and payment must be made to the Shepparton and District Amateur Radio Club, PO Box 692, Shepparton Vic 3630.

Ted VK3MBK will provide a Melbourne contact for general information on 03 38 6842, but table bookings must be made to the club post box.

Admission remains at \$5 per head (accompanying children free) and includes the usual free tea and coffee. A two course meal consisting of a barbecue lunch with salad plus sweets for \$5 will be available. Morning and afternoon teas will also be served.

The venue will be the Shepparton Youth Club Hall located in Rowe St, Shepparton. Doors will open at 10 am. Talk-in will be provided by VK3SOL on VK3RGV, 146.650 MHz. As the repeater is located 40 km from Shepparton, call on the output if you have trouble raising it on your handheld once in the city itself!

Members of the Shepparton and District Amateur Radio Club look forward to seeing you on Sunday, 18 September and the 1994 Communications Day.

**Peter O'Keefe VK3YF**  
Communications Day Publicity Officer

## Moorabbin and District Radio Club Inc

The following persons were elected as office bearers of the club at our Annual General Meeting held on Friday 15 July 1994.

President: Jerry Viscaal VK3MQ  
Vice President: David Armstrong VK3XJ/VK3PNL  
Treasurer: Morrie Lyons VK3BCC  
Secretary: Paul Girling VK3JKV

## Committee Members

Alastair Duff VK3KAD

Ken Millis VK3TKR

## Other appointed

## Non Committee Members

Station Officer: Warren Inglis VK3DWI  
Components: Chris Arthur VK3JEG  
Newsletter: David Armstrong VK3XJ/VK3PNL  
QSL Manager: Fred Kolb VK3CFK  
Publicity: Trevor Armstrong VK3JJR  
Librarian: Alistair Duff VK3KAD  
Valve Bank: Ken Bridger VK3JII  
Combined Clubs: Robert Zolkos VK3HC  
Denis Babore VK3BGS  
Public Officer: Ken Millis VK3TKR  
Systems Manager: Simon Kay VK3KSK

## WIA Exam Service Accredited Examiners

Brian Fairless VK3ES

Warren Inglis VK3DWI

**Paul Girling VK3JKV**

Hon Secretary

## Radio Amateurs Old Timers Club

At a committee meeting in Melbourne on Tuesday, 9 August it was decided to offer honorary life membership to existing members reaching the age of 90, or who have already reached that age.

Please contact Secretary Arthur Evans VK3VQ if you qualify.

## Change of 80 m Frequency

Because our evening transmissions have clashed with established operation we will be moving to 3.650 MHz +/- QRM.

## QSO Parties

It has been decided to move the March party to the second Monday, 6 March and the August parties to the second and third Mondays, 14 and 21 August.

**Allan Ooble VK3AMD**  
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## Contests

*Peter Nesbit VK3APN — Federal Contest Coordinator\**

### Contest Calendar Sep-Nov 94

Sep 3	Panama Anniversary Contest	(Aug 94)
Sep 3/4	All Asia DX Phone Contest	(May 94)
Sep 4	Bulgarian DX Contest	(Aug 94)
Sep 10/11	Worked All Europe Phone	(Jul 94)
Sep 17/18	Scandinavian Activity CW	(Aug 94)
Sep 24/25	Scandinavian Activity Phone	(Aug 94)
Sep 24/25	CQ WW RTTY DX Contest	(Aug 94)
Oct 1/2	VKZLJ/Oceania DX Phone Contest	(Aug 94)
Oct 2	RSGB 21/28 MHz Phone Contest	
Oct 8/9	VKZLJ/Oceania DX CW Contest	(Aug 94)
Oct 8/9	Iberoamericano Phone Contest	
Oct 16	RSGB 21/28 MHz CW Contest	
Oct 29/30	CQ World-Wide DX Phone Contest	
Nov 12	ALARA Contest	
Nov 12/13	WAE RTTY DX Contest	(Jul 94)
Nov 12/13	OK-DX CW Contest	
Nov 12/13	ARRL International EME Competition	
Nov 19/21	All Austria CW Contest	
Nov 26/27	CQ World-Wide DX CW Contest	

Whilst looking back through the log recently, memories of my early days as an amateur came flooding back. I was 16 years old, licensed for only a few months, and the proud owner of a home brew rig with an 807 and an exposed plate cap. To achieve full break-in this rig had a keyed VFO, which was the bane of everybody else on the band due to its clicks and chirps. The more I tried to filter out the clicks, the worse the chirp became. However, the note was distinctive, to say the least!

One afternoon in late November I decided to investigate a commotion on the low end of 40 m. By the following evening

I had worked an incredible 55 stations in the CQ-WW, including several new countries, and was thrilled to bits! Little did I know the contest bug had bitten.

Over the following months I found myself seeking out all the contests I could find, but there never seemed to be enough of them. The gaps between the significant ones averaged 2-3 months and, as the weeks passed, I found myself getting more and more fidgety, until the next contest "fix" arrived. But what a fix! Nothing could (or would want to) compare with the all night affairs, drifting in and out of sleep at 2.30 am whilst working stations, often wondering if the callsign you were sending belonged to someone you had just worked, or were trying to work! Many were the times I bedded down in the shack for a couple of hours, cramped and frozen, until the alarm clock went off after what seemed like only 10 minutes. How I hated that clock! But the pre-dawn opening to Europe made it all worthwhile, with stations literally pouring out of the headphones on 40 and 80 m, until the signals faded and noise levels rose around 7 am. I then stumbled into bed, woke around midday with a spinning head, and did it all again!

Didn't signals sound different in those days? Who can forget the characteristic sounds of those eastern European signals, where one could virtually identify the country by the amount of chirp? The daddy of them all would have had to be USARTEK in Crimea who, on 40 m, was chirping over more than a kHz, at

stupendous strength. In fact he was chirping so much, one could even hear selective fading on the chirp! I was awestruck by that signal, and inspired forever.

Knobs had also been rotated clockwise on the other side of the Atlantic, of course, with the Ws mysteriously being one or two S points stronger, but only on contest weekends! On some signals one could literally hear the linears groaning!

As the years go by one collects domestic responsibilities, and jobs where the boss doesn't share your enthusiasm for stumbling into work at 11 am Monday morning and promptly falling asleep. Sleeping on shack floors gives way to having an alarm clock under the pillow and, as middle age approaches, the bed feels just a bit too comfortable at 4 am when, by rights, one should be enthusiastically leaping out to rejoin the fray. But, we still do it, despite our suspicion that contesting at 4 am is sheer madness and that sleeping in might be more enjoyable. Luckily such feelings quickly subside, and by breakfast time enough new stations and multipliers have been worked to have made it all worthwhile.

Yes, the contest bug has well and truly bitten! I wish you all this much fun, and more. Nothing can compare to this wonderful hobby of ours!

Thanks this month to VK1PJ, VK6APK, CQ, QST, and *Radio Communications*. Until next month, good contesting!

*Peter, VK3APN*

## Contest Details

The following contest details are supplemented by the "General Rules & Definitions" published in April 1993 issue of *Amateur Radio*.

### R8GB 21/28 MHz DX Contest

Phone: October 2, Sun 0700 — 1900z  
CW: October 16, Sun 0700 — 1900z

The object is to work as many UK stations as possible on 21 and 28 MHz (UK includes G1, but *not* E1). Categories are: single operator, multioperator, and SWL. The CW section includes a QRP category for stations not exceeding 10 W output. Entrants using packet or DX spotting nets must enter the multioperator category. The recommended frequencies for phone are 21150-21350 and 28450-29000 kHz.

Send RS(T) plus serial starting at 001; UK stations will add their county code. Score 3 points per QSO. The final score equals the total points times the total multiplier (both bands). (The same multiplier may be claimed on both bands). Use a separate log for each band. Send logs and summary sheets, to arrive by 1 December (phone) or 13 December (CW),

to: R8GB HF Contests Committee c/o G3UFY, 77 Bensham Manor Road, Thornton Heath, Surrey CR7 7AF, England. A comprehensive range of awards is offered.

*SWLs may only log UK stations making contest QSOs with overseas stations. SWL logs should be headed time UTC; callsign heard; number sent by that station; callsign of station being worked; new multipliers; points. In the column headed "station being worked" the same callsign may only appear once in every 3 QSOs except when the logged station counts as a new multiplier. HF Tx licence holders are ineligible to enter the SWL section.*

### Iberoamericano Phone Contest

October 8/9, 2000z Sat — 2000z Sun

This phone only contest is held each year on the weekend before 12 October to commemorate the anniversary of the discovery of America, and provides a good opportunity to work the rarer Latin-American areas. Classes are single and multioperator (single Tx); QRP max 5 W output; SWL. Exchange RS plus serial number. Bands 1.8-30 MHz. Score 3 points per QSO with a Latin-American station, 1 point with others. Multipliers are Latin-American countries: CE CO CP CR CT CX C3 C9 DU EA HC HI HK HP HR HT KP4 LU OA PY TG TI XE YS YV ZP 3C.

Additional multipliers may be claimed for contacting "multiplier stations", which can be identified by a commemorative prefix from a Latin-American prefix block followed by the year (94). Last year they were EG93G and EH93G. Final score is total QSO points times total multipliers, all bands. SWLs: the same station cannot be logged for more than 15% of the total; also the same station can only be logged again after five other entries. Send logs by 30 November to: X-Concurso Iberoamericano, Gran Via de les Corts Catalanes, 594, 08007 Barcelona, Spain.

### CQ WW DX Contest

Phone: October 29/30, 0000z Sat — 2400z Sun  
CW: November 26/27, 0000z Sat — 2400z Sun

Sponsored by CQ Magazine, these contests are undoubtedly the premier HF events of the year and present the opportunity to work many rare countries and zones even with modest equipment. They are open to all stations world-wide on 1.8-30 MHz (no WARC bands). Categories are: single operator; single operator low power (max 100 W output); single operator QRPp (max 5 W output); single operator assisted (for those using DX spotting nets); multioperator single

transmitter; and multioperator multi-transmitter.

Single operator stations can enter as single or all band, and can change bands at will. Multioperator stations must enter as all band. Multioperator single TX stations must stay on a band for at least 10 minutes, EXCEPT that one — and only one — other band may be used during the 10 minute period, if — and only if — the station worked is a new multiplier. Multi Tx stations are exempt from this rule, but can only radiate one signal per band at any one time.

Exchange RS(T) plus CQ zone. Score 3 points for QSOs with stations in a different continent, and 1 point for QSOs with stations in the same continent (for VKs this means Oceania as defined for WAC). Stations in the same country or call area can be worked for additional multiplier credit, but have zero points value. The total multiplier is the number of DXCC countries plus zones worked. Final score equals total points times total multiplier.

Use a separate log for each band. Show new multipliers in the log the first time they are worked, and duplicates with zero points. Entrants are encouraged to include a "dupe sheet" for each band, which becomes mandatory for 200 QSOs or more. Computer logs are welcome, and must be in ASCII on DOS disk, using separate files for each band, eg VK7AAA.20 for a 20 m log; alternatively in K1EA "CT" .BIN format, eg VK7AAA.BIN. Label the outside of the disk with the callsign, the files included, mode, and category. Disks MUST be accompanied by a paper printout satisfying logging instructions. The committee may request a disk from high scoring stations to enable the log to be checked by computer, if the log originally submitted was a computer printout.

Include a signed summary sheet, showing power output for low power and QRPp entries, and send the log postmarked by 1 December (phone) or 15 January (CW) to: CQ Magazine, 76 North Broadway, Hicksville, NY 11801, USA. Indicate Phone or CW on the envelope. Numerous awards, trophies and plaques will be awarded to the leading entrants in the various categories and countries.

### Results of 1993 CQ WPX DX Contest

In the CW section, the continental leaders for Oceania included VK2BQQ on 28 MHz, and VK4TT on 14 MHz. VK2BQQ was also 6th worldwide on 28 MHz.

The following results show callsign, band, final score, QSOs, and prefixes \* indicates certificate winner, and # indicates low power.



### Phone, Single Operator:

VK5GN*	A	4,130,580	2201	645
VK3TZ*	A	2,251,392	1346	572
VK2GAH*	A	1,350,123	1185	391
VK8AV*	A	119,598	226	186
VK3ALZ*	28	279,279	428	231
VK4UA*	14	921,717	723	423
VK2ARJ*	A#	439,880	552	280
VK3SM*	14#	57,477	173	119

### Phone, Multioperator Single Tx:

VK4DMP*	485,674	567	307
VK4NEF	343,728	480	252

### CW, Single Operator:

VK1FF*	A#	171,655	272	172
VK5AGS*	A#	73,788	182	143
VK2BQQ*	28#	33,449	111	83
VK4XA*	21#	178,724	286	182
VK8BE*	21#	6,732	51	44
VK4TT*	14#	134,136	247	184
P29DK*	A	175,570	308	194
P29JA*	14	147	7	7
P20PL*	A#	548,080	666	248

### RESULTS OF 1993 IARU DX CONTEST

Callsign/Score/QSOs/Mult/Class				
VK2VM	103,380	365	60	Mixed
VK5GN	74,965	285	55	Phone
VK2ARJ	44,400	368	25	"
VK2DID	10,740	87	30	"
VK2APK	442,720	910	102	CW
VK2AYD	238,293	603	83	"

### RESULTS OF 17TH ARRL EME CONTEST

A record number of entries were received, with 215 stations submitting logs. The following results show: Call/Score/QSOs/Mult/Band (A = 50 MHz, D = 432 MHz, E = 1296 MHz):

VK5MC	13200	7	6	D
		5	5	E
VK3OT	300	3	1	A

### RESULTS OF 1994 JOHN MOYLE FIELD DAY

Presented by Phil, VK1PJ

Well, I finally got the results together. Not what I would call a large number of logs but, from the few comments I received, it appears that everyone is happy with the rules. I wish that I could have made it out into the field, though!

Again, as with last year, the higher scoring entries took advantage of DX contacts. The majority of overseas stations contacted (apart from ZL) were in the USA and Japan.

Still, what is it with the majority? A lot of entrants were under the impression that they could only log VK, ZL and P2 stations. THE "JOHN MOYLE" IS NOT A VK-ONLY CONTEST! Or are we only using the weekend to get away with the boys, or girls? The "John Moyle" was

introduced as a *field day* contest to improve our operating capabilities under *field* conditions. To make 100+ contacts per hour would certainly stretch our skills if we continue as we are. I still heard entrants saying "sorry, only VK stations" when a pile of JA stations responded to their contest call! I operated for about 2 hours, and got around 150 contacts. Most of them were DX, with about 50 being VK/ZL. It's easy if you put your mind to it. This does not mean you have to avoid having fun. Listen to some of the USA field day events and you will hear the smile in their voices!

Congratulations to the certificate winners, and I noticed that most improved their scores from last year. I am pleased to announce that the President's Trophy was won by Laurie Pritchard VK4BLE, whose effort on CW is the best I have seen in this contest for years. Laurie will receive a plaque as a permanent record of his efforts.

The two highest scores attained by single operators were: 6 hours — VK2ANK Neil Kefford, and 24 hours — VK5BW Alan Raftery.

I always appreciate comments regarding the rules and other aspects of the "John Moyle" and the few responses I have received to date have been most helpful. Hopefully, this might prompt more comments (preferably constructive!)

Well, see you all in 1995, most likely on 18/19 March. I will confirm the date in due course.

In the following results, certificate winners are indicated by \*, and the trophy winner by \*\*:

### 6 Hour Section Single Operator, Portable

All Band, Phone:	
VK5UE*	Colwyn Low 60
HF, Phone:	
VK6MM*	Malcolm McDonald 22
HF, CW:	
VK4BLE**	Laurie Pritchard 100
VHF/UHF, Phone:	
VK2ANK*	Neil Kefford 520
VK2LRR	Lee Rainbird 284
VK4IS	Ken Hanby 176
VK3EXV	John Wright 82

### Single Operator, Home

All Band, Phone:	
VK4PT	Patricia Raven 39
VK4KRR	Edward Raven 29

### Multioperator, Portable

All Band, All Mode:	
VK4WIN*	Brisbane North Radio Club 330
All Band, Phone:	
VK2FRE*	Taree & District Amateur Radio Club 544
VK8DA	Darwin Amateur Radio Club 62

### HF, All Mode:

VK2HZ*	Blue Mountains Amateur Radio Club 350
VK4HL	Granite Belt Radio Group 150
VHF/UHF, Phone:	
VK2AMW*	Illawarra Amateur Radio Society 80

### Multioperator, Home

HF, Phone:	
VK2MA*	Hornsby & District Amateur Radio Club 82

### 24 Hour Section Single Operator, Portable

HF, Phone:	
VK5ANB*	David Giles 332
VK3BJN	C Welch 198
VK4EV	Ron Everingham 190
VK1MOJ	Olaf Moon 90
VHF/UHF, Phone:	
VK5BW*	Alan Raftery 2762

### Single Operator, Home

All Band, Phone:	
VK2CW	Greg Smith 99
VK4IS	Ken Hanby 44

### HF, All Mode:

VK1FF	Jim Muller (WB2FFY) 96
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### HF, Phone:

VK4DO	Wally Watkins 49
VK3ALD	D L Robinson 8

### HF, CW:

VK3XB	Ivor Stafford 12
VK3KS	Mavis Stafford 9

### Multi Operator, Portable

All Band, All Mode:	
VK5ARC*	South Coast Amateur Radio Club 2752
VK4WIS	Sunshine Coast Amateur Radio Club 2606
VK6ANC	Northern Corridor Radio Group 2312
VK4CHB	Hervey Bay Amateur Radio Club 1736
All Band, Phone:	
VK5DL*	Andrew Millar 3832
VK3APC	Moorabbin & District Radio Club 2938
VK2FBK	Jeff Brill 2182
VK3GH	Healesville Amateur Radio Group 1594
VK3ER	EMDRC 592
VK2WDX	Wagga DX Group 554
VK2WG	Wagga Amateur Radio Club 402
VK2BOR	Oxley Region Amateur Radio Club 276

### HF, All Mode:

VK4WIT*	Townsville Amateur Radio Club 338
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### HF, Phone:

VK4IZ*	Redcliffe Radio Club 2860
VK2FFG	Fishers Ghost Amateur Radio Club 426
VK2EJC	John Cameron 314

### VHF/UHF, Phone:

K4WIE*	City of Brisbane Radio Society 3320
*PO Box 2175, Caulfield Junction VIC 3161	
	ar

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**Divisional Notes**

**VK3 Notes**

*Jim Linton VK3PC*

**Students Study BBS**

Year 11 Info Tech classes at Colac's Trinity College are the first in Victoria to use communications software as part of their required studies. Their teacher, Maggie Iaquinto VK3CFI, says for the past three years on an ad hoc basis she has shown her students how to access amateur BBS. After writing a course description and having it approved, the study of communication software types is now officially part of the students folio work requirement.

Maggie says the Year 11 students are connecting to various BBS using PaKet 5.0, and learning how to upload and download messages and bulletins. The college club station is VK3FXQ. The other part of the folio work deals with Terminal via Windows, and Telix with the use of a null modem. The students will also tap into the WICEN Victoria BBS.

Any teacher who would like more information about this Info Tech course initiative can write to Maggie VK3CFI, QTHR.

**RD Contest**

Did you take part in the Remembrance Day Contest? Tuning around the bands during the contest resulted in listening havoc, particularly on 2 metre simplex.

But it was really music to the ears to hear so many VK3s hard at it exchanging numbers and enjoying themselves.

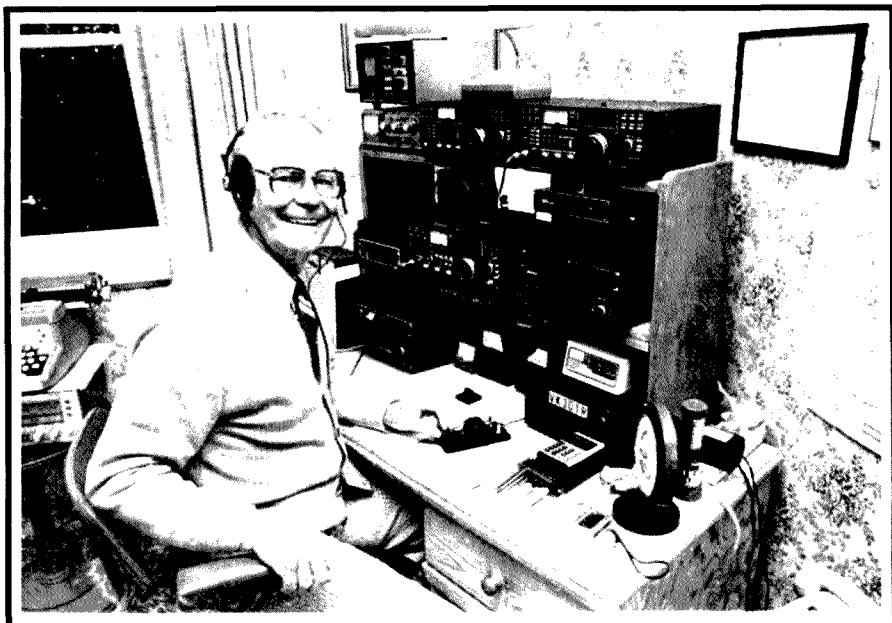
Now for another question. Will your participation count? It is most important that the maximum number of VK3s submit valid entries. If you haven't sent in your cover sheet and declaration, act quickly. Entries must be in the hands of the contest coordinator, A Petkovic VK6APK QTHR, by the deadline, September 9. Don't forget to endorse the envelope "Remembrance Day Contest". The rules were on pages 33 and 34 of July's *Amateur Radio* magazine.

We must all now patiently wait about a month or so to get the contest results.

**Instructor Reaches Century**

Helping newcomers get into our hobby has been one of the activities of Rob Carmichael VK3DTR for a number of years. Rob is now relaxing for a few months after another hectic session of being the WIA Victoria theory instructor in the Novice class. He has also taught the amateur radio licence requirements to retired people at the University of the Third Age, U3A.

Rob says he gets personal satisfaction by imparting knowledge about the theory and regulations, and the teaching of telegraphy skills. With the latest batch of successful candidates from the WIA Victoria class, he has helped 100 join the ranks of radio amateurs.



**Ragchewing with some of his former WIA Victoria and U3A Class students is Rob Carmichael VK3DTR.**

*(Photo courtesy of Leader Associated Newspapers).*

## Sunday Broadcast Fillip

Regular listeners will have noticed an improvement in the content of the Sunday VK3BWI broadcast. At one stage contributions fell off, leaving broadcast officer George Hunt VK3ZNE with submitted material for only about 12 minutes of air time.

A frustrated and naturally disappointed George, only a few months at the helm, scrambled to keep the weekly broadcast on air. Requests for contributions seemed to fall on deaf ears. Not even the team of announcers could collectively produce enough copy.

After a slump of six months, and considerable effort by George and other councillors, the broadcast is returning to its previous high standard. Thank you to those now supplying material, and to the regular segment anchors, John Kelleher VK3DP (DX Report) and Marilyn Syme VK3DMS (Club Net News).

Have you heard the broadcast recently? It starts at 10.30 am local time Sundays — frequencies are listed on page 3 of this magazine.

## VK7 Notes

### "QRM" — Tasmanian Divisional News

Robin L Harwood VK7RH

Activities during the winter months were, understandably, at a low key. But now, with the longer days and warmer weather, we look forward to increased participation. The next big activity will be Jamboree of the Air, planned for the third weekend of October. Already plans are in train for activities and stations at various locales in the State. The Northwestern Branch is mounting one station at the Parklands High School in Burnie and another could be portable within Cradle Mountain National Park. This depends on the support of willing amateurs who are able to set up at the Hut. For more details, contact Kirby Cunningham VK7KC, 17 Abbott Street, Burnie 7321, who is co-ordinating NW JOTA.

The Northern Branch will be activating their club station VK7NB as part of JOTA, from the Launceston Institute of TAFE, Alanvale campus, from 12 noon on the Saturday until 3 pm on the Sunday. As you are probably aware, VK7NB has the use of a Log Periodic beam and an FT-990, which belongs to TAFE. It helps to have VK7KJC co-ordinating this as he is deputy-principal of the Alanvale campus, besides being Northern commissioner of the Boy Scouts!

If you are interested in assisting, come and register your involvement at this

month's meeting and keep listening to the weekly Branch net on Wednesdays on the 2 metre VK7RAA repeater, or on the 80 metre relay on 3.590 MHz.

The Southern Branch activities will revolve around the Domain Activity Centre under the callsign of VK7OTC. The centre is on the site of the former VIH HF coastal radio station, hence the callsign suffix of OTC. I am sure that there will be operation also from the Lea Scout Camp, near Blackmans Bay.

I noticed that JVFAX was a popular topic at both the Northern and Southern Branch meetings in July. I believe that Bill VK7WR had an active display and demonstration at VK7OTC, while VK7NRR had a static display of JVFAX images in the North. It is certainly interesting to note the vast improvement from those first flickering monochrome pictures in the late sixties and early seventies to full colour images on your 486 PC.

Another activity was a short talk by Geoff VK7ZOO who has launched his own vineyard near Loira. Of course, we didn't neglect to taste the samples. Tasmanian wines are gathering quite a world-class reputation, particularly for *Pinot Noir* and *Riesling*.

There have been some changes to Packet BBS in Tasmania. VK7EKA, whose SYSOP was Mervyn, has permanently

gone off-line. Another BBS within the same area has come on-line. It is John VK7AD, located near Kelso. VK7YAK, with Shane being the SYSOP, located 20 miles south from Hobart, has also gone off-line for the time being. As well, the WICEN BBS at VK7AX, SYSOP being Tony, located at Ulverstone, has upgraded to a full BBS.

The September meetings in Tasmania are as follows:

Wednesday, 7 September 1994 — Southern Branch General Meeting — 20:00 hours — Domain Activity Centre.  
Tuesday, 13 September 1994 — Northwest Branch Meeting — 19:30 hours.

Wednesday, 14 September 1994 — Northwest Branch General Meeting — 19:30 hours — Launceston Institute of TAFE, Alanvale Campus Block "C", Level 3, Room 17.

Well, that's all for this month. Don't forget, if you have any news for the October column, have it to me by 5 September. Deadlines for the November and December issues are pretty tight, so I suggest you contact me direct on this as follows: Robin L Harwood VK7RH, 52 Connaught Crescent, West Launceston TAS 7250; Packet: VK7RH @ VK7BBS; E-MAIL: FIDONET 3:670/312.

ar

## How's DX

Stephen Pall VK2PS\*

I have before me a handbook issued by the Ionospheric Prediction Service in 1984 and, in the preface, is the following: *"The level of solar activity (sun spot cycle) is now declining and, as a result, the useable range of the high frequency radio spectrum will be reduced over the next few years. There will be a reduction in the occurrence of sudden commencement disturbances and daylight fadeouts and an increase in the recurrent type of disturbances."*

Sounds familiar? Yes, it is just like the present propagation pattern. I hope you have not overlooked the fact that the above observation is 10 years old and corresponds with the ten-yearly sun cycle variations.

The IPS has a number of monitoring stations in and around Australia. These stations provide the basic data on which the daily, weekly and monthly propagation predictions are based. Information is gathered in Canberra, Hobart, Townsville, Darwin and Mudaring (WA) on the mainland, and on Norfolk Island, Macquarie Island, Vanimo (PNG), as well as at Casey, Mawson and Davis Bases in

Antarctica. In addition, there are solar observatories in Cullgora, NSW and in Learmonth, WA.

### Antarctica — VIOANT

Eddie De Young VK4EET will be at the Australian Davis Base in Antarctica as a communication officer for the Australian National Antarctic Research Expedition (ANARE) for the 1994-1995 summer season which is expected to last until March 1995. He will train at the ANARE Centre in Kingston, Tasmania from mid September and expects to be en route to Davis Base early in October 1994. Not much has been heard from Eddie in the last few years, but one recalls that he was part of the team with the early Rotuma DXpeditions as 3D2XX, he was active from Nauru as C21XX, as well as from Wallis and Futuna Islands as FW8DY and from the Fanning Islands as VR3DY. Eddie originally hails from Honolulu and has 14 different former callsigns in his DXing portfolio. Eddie is taking with him his own amateur equipment, an ICOM IC-751 and a Hustler 4BTV vertical antenna.

He hopes that a permanent amateur radio station can be established at Davis Base for the use of future hams and he is looking for donations from DX Foundations/Clubs/Associations of a linear amplifier, a Yagi antenna and a rotator for the permanent station. He could take these items on his first trip which is expected to depart Hobart, Tasmania about mid-October 1994.

The special prefix given by the SMA for this activity is VIOANT, believed to be the first VI prefix to be aired from Antarctica and which commemorates the 48th anniversary of the establishment of the Australian Antarctic Research Expeditions. Eddie will concentrate mostly on CW but, from time to time, he will visit the SSB section of the bands also. He will try to be active mainly on the 40 and 80 metre bands depending on propagation.

QSLs are to be sent to Eddie's new home address (not in the callbook yet), 131 Plantain Rd, Shailer Park, QLD 4128. Eddie, or his XYL Mina VK4BMD, can be contacted after 0800 UTC on (07) 209 9119.

### St Paul Island — CY9

It was 19 years ago when St Paul Island was recognised as a separate DXCC Country. The island is located off

Canada's east coast, between the north western tip of Nova Scotia and Newfoundland in Cabot Strait (47°12' N, 60°09' W, CQ Zone 5, ITU Zone 09, IOTA NA-10). Called "Giogtao Menigog" by the MicMac Indians, Saint Paul had many names as it changed hands between the French and English before becoming part of Canada.

Its unfortunate location on one of the more heavily travelled shipping lanes at the east end of the Gulf of St Lawrence resulted in hundreds of shipwrecks on its inhospitable rocky shores and it became known as the "Graveyard of the Gulf". Modern communications and navigation equipment have, over the years, made the island less of a hazard and today fishing boats anchor off the leeward side in bad weather, but few venture close and even fewer attempt to land on the island.

Andy Rowe N0TG, Murray WA4DAN, Bob KW2P and Ron AA4VK will operate with the /CY9 suffix from 19 to 25 September on 160 to 10 metres CW and SSB. They hope for better propagation at this time of the year. The sun rises on St Paul at 1009 UTC and sets at 2225 UTC. QSL to N0TG at 640 Rolling Hills Drive, Waxahachie, TX 75165, USA.

### Principality of Seborga

During July two unusual callsigns were heard on the air. The callsigns 0S1A and 0S1B were activated by the well known father and son DX team, I1RB and Paul I1RBJ. The contacts were made from the, until now, unknown Principality of Seborga which is located 20 km north from Monaco and is 517 metres above sea level.

The principality was established on 20 August 954 AD (how did they know the day and the month?). It is about five square kilometres in area and currently has 300 inhabitants. The QSL card for 0S1A states, "1st Licence of Principality of Seborga issued by OSAS the Prince Giorgio I".

Amateurs around the world went searching their maps and atlases to find this "Principality". Others studied the ITU callsign allocations to find the prefix 0S1, with negative results. A different source of information says that the Principality is located 25 km northeast from Monaco between France AND Italy and has been in existence since 1207 AD. I have no way yet to vouch for the correctness of the above information.

Paulo I2UIY was quoted in one of the packet cluster bulletins, the news originating in Europe, that the credentials of the operation are "suspect". According to him, it is alleged that, each year, the town of Seborga has a parade and names a "prince" for the celebrations. There is

also an alleged irregularity in issuing the licence and he further alleges that the Italian licensing authorities are investigating the unusual callsign.

An ARRL Bulletin issued on 21 July said that Paul I1RBJ called the DXCC Desk and reported that he returned from ITU and, under the agreement between the ITU and the Italian Government, he would now be using the callsign IS1A/0S1A. Also, there will be a one day operation by 3A2LF as 3A2LF/0S0C on 25 July in the CW mode only. Incidentally, according to a third source of information, "Seborga" is located 10 km north from Bordighera in Italy.

Please note, there is no DXCC status for this activity and the QSL card would have only a "curiosity" value.

### ARRL DXCC and VK Listings

The DXCC program was established by the ARRL in 1937 when working 100 countries was a hard task. The very first list had a total of 112 countries and only five stations appeared on that list. The program halted during the war and recommenced in 1947 with a country list of 250.

As at April 1994 there are 326 countries on the list and the number of deleted countries has climbed to 57. Since the restart of the award program, more than 33,000 awards have been presented for the Mixed mode, over 21,000 awards for SSB and over 6,000 awards for CW activity. The July 1994 issue of QST shows 23 VK station callsigns on the "Honour Roll" as at 31 March 1994.

#### Mixed

VK5WO 328/361 — VK6HD 328/351 —  
VK9NS 328/331 — VK3DYL 327/330 —  
VK1DH 325/328 — VK5QW 325/328 —  
VK9NL 324/327 — VK3AKK 320/320.

#### Phone

VK5MS 328/377 — VK5WO 328/358 —  
VK6HD 328/350 — VK6LK 328/348 —  
VK9NS 328/331 — VK4LC 327/364 —  
VK3DYL 327/330 — VK3SX 325/328 —  
VK5QW 325/328 — VK1ZL 324/327 —  
VK9NL 322/325 — VK6RU 321/372 —  
VK1DH 320/322

#### CW

VK9NS 328/331 — VK6HD 323/330.

The outstanding performance for low band DXCC listing was by Mike VK6HD with 332 contacts on 40 metres, 289 contacts on 80 metres and 162 contacts on 160 metres. It is also interesting to note that at 30 Sept 1993 there were two stations who received a DXCC award for 2 metre activity, SM7BAE with 102 countries and KB8RQ with 100 countries.

### Future DX Activity

- DK3LQ/6W1 will stay in Dakar for several years. QSL via the Bureau.

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6 ele 6 M	\$188
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3 ele 15 M	\$179
3 ele 20 M	\$292
20 m log-yag array 11.5 dbd	\$670
M B Vert NO TRAPS 10-80 M	\$249
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40 M linear loaded 2 ele	\$469
13-30 M logperiodic 12 ele	
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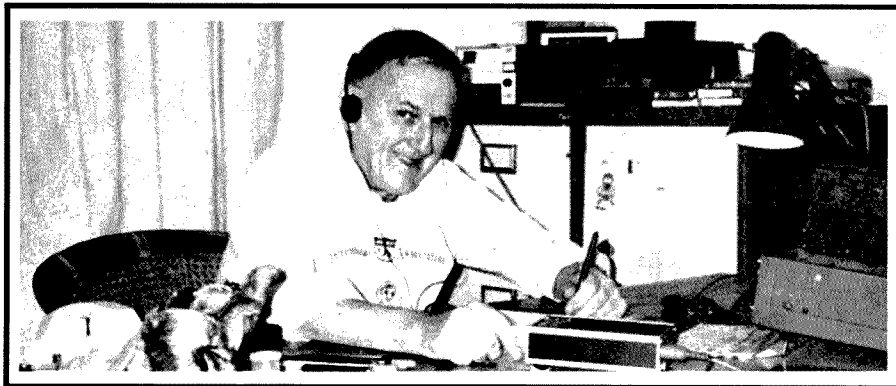
- Ayman SU1AY is reported to be active. QSL to OE6EEG.
- Pierre FT5XJ on Kerguelen Island was very active in the past few months on 20, 40 and 80 metres, giving VKs and ZLs the choice of working him on multiple bands. He has returned to France for a well earned rest but will return to Kerguelen in October, possibly with an amplifier. QSL to his callbook address, which is difficult to find unless you know where to look. His address is listed under the callsign of F1NLL or F5NLL and is Pierre Clauzel, Le Capitaine, Plaigne, F-11420, Belpech, France.
- Charlie S92SS from Sao Tome was heard on the WARC bands early mornings Sydney time. S92YL was also active around the same time.
- Burton KH2/VP9BP will be active from Guam for the next two years. QSL direct to Burton S Paynter, 321 Johnson Rd, Naval Hospital, Agana Heights, Guam 96919, or via the VP9 QSL Bureau.
- Jean Louis 6W6JX from Senegal is very active on 15, 20, 30 and 40 metres around 0630 and 0930 UTC. QSL to his callbook address.
- 4J3M Yuri from Azerbaidjan was active on 14180 kHz around 0430 UTC. QSL direct to UD6DJ.
- Frank AH0W will operate in September as PJ8X and as PJ7/OH2LVG.
- F6GQK is active from French Polynesia as FO5OU. QSL to his correct address, Christian Ramade, 75 Boulevard Marechal Jun, F — 33510 Andernos-Les-Bains, France (CBA address is incorrect!).
- F5CQ (ex-FT5XA Rafique) will be active from Mayotte Island for about two years as from August 1994.
- Elio FH5CB is very active on 14256 kHz from Mayotte Island.
- Andy RW3AH is active in Tanzania as the chief coordinator of a Russian humanitarian UN aid team to the Rwandan refugees in Tanzania. He operates under the callsign R3ARES/5H on the 14292 net around 0700 or 1700 UTC. QSL to RW3AH.
- 4X4MS is in Ghana and will stay there for one year. He operates under the call 9G1MX. QSL via the home call or to Box 1645 Accra, Ghana.
- ET3AA is now active, operated by Lothar DJ4ZB. QSL to PO Box 60258, Addis Abeba, Ethiopia.
- VY1JA — Jay — 14227 — SSB — 0620 — QSL to Jay Allen, Site 15, Camp 117, RR2, Whitehorse, YT Y1A 5W9, Canada.
- HC8JG — Jose — 14227 — SSB — 0310 — June. QSL to WA6ZEF, Kenneth D Walston Sr, 1248N Cypress Ave, Ontario, CA 91762, USA.
- KH3AF — Richard — 14227 — SSB — 0529 — July. QSL to Richard Giles, Box 976, APO AP, 96558, USA.
- T77GM — Michele — 14195 — SSB — 0447 — July. QSL to I0MWI, Stefano Cipriani, Via Taranto 60, I-00055 Ladispoli, Italia.
- P40WH — Duke — 7205 — SSB — 0651 — July. QSL to W0EWH, William A Humprey, 9606 Grand Ave, Omaha, NE 68134, USA.
- C49C — 14162 — SSB — 0611 — July. QSL to 5B4NC, Nicosia Radio Club, OFA Building, Nicosia, Cyprus.
- YW0RCV — John — 7096 — SSB — 0611 — July. QSL to YV5AJ, Radio Club Venezoleano, PO Box 2285, Caracas 1010-A, DF, Venezuela (include two IRCs).
- FH5CB — Elio — 14248 — SSB — 0415 — July. QSL to Elio Fontaine, PO Box 50, Dzaoudzi, F — 97610, Mayotte via France.
- TU2JL — Jean — 7087 — SSB — 0655 — July. QSL to Jean Levy, PO Box 1309, Abidjan 01, Ivory Coast, Africa.
- T31BB — Bob — 14195 — SSB — 0524 — July. QSL to DF6FK, Norbert Willand, Leipziger Ring 389, D-63110, Rodgau, Germany.
- C6ANI — Rick — 7087 — SSB — 0735 — July. QSL to C Ricardo E Strachan, Box N-4106, Nassau, NP, Bahama Island, Caribbean.

### From Here There and Everywhere

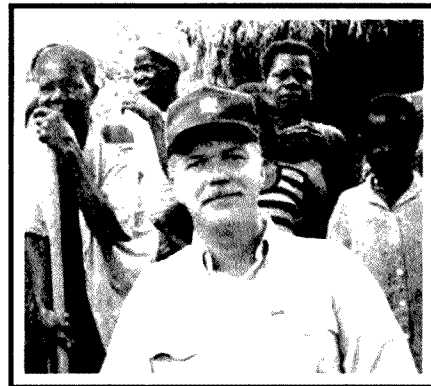
- Mori A35MW ends his tour of duty in the Kingdom of Tonga at the end of October. Before returning to Japan he will proceed to an "exotic" (his words) South Pacific destination for a "mini expedition".
- The Peter I Island DXpedition, 3Y0PI, is available on video in PAL VHS format from Bill VK4CRR, 26 Iron St, Gympie QLD 4570.
- Mike ZA1MH is very active on all bands. He is an American missionary on the Balkan Peninsula. His wife is also active as ZA1EH.
- The proposed Truant Island activity organised by Mal VK8LC, was cancelled due to bad weather.
- The Yemen operation by Robert N4GCK has not taken place for two reasons, the civil war and political uncertainty in that region, and Robert's

legal impediment which prevents him travelling to that country.

- The QSL address for the Canadian activity in August from St Paul Island with the callsign CY9CWI is WIARC, Box 884, Point-Claire/Dorval, Quebec, H9R 4Z6, Canada.
- Jacky F2CW is well and alive in Croatia. He still works for the International Red Cross and has licences as 9A/F2CW and T9/F2CW. He expects to receive a 9A5CW call shortly. He is active mainly on CW with very little SSB operation. The QSL manager for Jacky's Croatian activity is KC7V.
- The elusive "South Pacific" DXer who operated as VR8B, ZK2DX, ZL9A and ZL9RV (all non-existent calls) popped up as usual in the CW mode on 7002 during July. This time he used the call sign ZL8BX. He gave his name as Bob and caused havoc working the unsuspected US stations. He even made "phantom" replies to non-existent USA counterparts to "create" DX activity. I observed his method for ten minutes. He is a good CW operator, but he is a fake. There is no activity from Kermadec Island. Incidentally, he had a 599 signal in Sydney, so he is not far away.
- Rudi DK7PE is back home in Germany after a short visit to Brazzaville in the Congo. He operated as TN0CW and logged about 6000 contacts. Incidentally, it took him two years negotiation with the Telecommunication authorities to receive a permit to operate.
- Erik S21ZG, a well known DXpeditioner and holder of several exotic former DX calls (home call WZ6C), has finished his tour of duty connected with a United Nations sponsored project in Bangladesh and departed for California at the end of July (see photo 1).
- Percy VK4CPA advises that the ANZA net is still operating as usual on 21205 kHz at 0500 UTC. However, due to lack of propagation on that band the net moves often to the secondary frequency of 14164 kHz for continuation of the activity.
- The widow of Marconi, the Marquise Maria Cristina Marconi died recently. She was 94 years old and married Marconi in 1927.
- If you worked CG7G, it was a special event station for the 15th Commonwealth Games that were held in Victoria, BC, Canada. The station was active for two months from 1 July to 31 August. QSL to VE7RCN.
- Peter V85PB has completed his tour of duty and returned to the UK. QSL for



**Photo 1 — Erik S21ZG has returned to the US after many years of overseas activity.**



**Photo 2 — Gene TL8NG finishes his tour of duty in October this year.**

V85PB contacts via the RSGB QSL Bureau to G3ZSS.

- The Taiwanese Ministry of Post and Telecommunication announced that BV amateurs are now permitted to work on the following frequencies: 3500-3512.5, 3550-3562, 18068-18080.5, 18110-18122.5, 24890-24902.5, 24930-24942.5, 50000-50012.5 and 50110-50122.5 kHz.
- QSL cards to EZ Turkmenistan (formerly UH8/RH8) should be sent via the new QSL Bureau for that country. The address is PO Box 555, Ashgabat 20, Turkmenistan 744020. Do not send cards via Box 88 Moscow.
- The DXAC has received a new petition from W9ARV to add the Balleny Islands to the DXCC countries list. The islands are located in the Antarctic, 66°55' South and 163°20' East.
- According to a news bulletin from RAC (Radio Amateurs Canada), the Canadian regulatory authority, Industry Canada, has issued a new ruling on the use of special prefixes by Canadian Amateurs. The table before me shows that the nine call areas of Canada, plus Newfoundland (VO1), Labrador (VO2), Yukon (VY1) and Prince Edward Islands (VY2) areas have 194 (yes, you read it correctly) combinations of special prefixes for possible future use. And we, here in VK, are struggling with only two special prefixes, AX and VI. Stations with CY9 (St Paul Island), CY0 (Sable Island), VE (ship board stations) or VY9 (Industry of Canada) callsigns are not eligible to use any special prefixes.
- Due to recent increases in postal charges in Venezuela, one IRC will not cover return postage.
- For the past four years one of the strongest signals out of Africa to VK and ZL has been that of Gene TL8NG. He is a regular visitor to various nets, and is very obliging to ensure that the rest of the world has a valid contact with the Central African Republic.

Gene is there working on a United Nations sponsored agricultural project. He is "in the Bush" about 300 km from the capital of Bangui and from the nearest telephone and modern conveniences. The project Gene is working on will end in October 1994. He will then return to the USA. If you have not worked Gene yet, hurry up. There are only a few weeks left before TL8NG will be silent. Gene's QSL manager is WA1ECA who provides an attractive QSL card (see photo 2).

#### QSLs Received

W8RYW/YV5 (3M VK4MZ), OM3CCC (4W op), S21ZG (5M W4FRU), TL8NG

(6W WA1ECA), FK8FA (2M op), CY0DXX (1M VE1AL), HJ7TMK (7M op), PA3CXC/STO (9M op), N9JCL/CY9 (3W K0SN), VR6MW (3M op).

#### Thankyou

Many thanks to the contributors of this column. All of you were helpful, especially VK2KCP, VK2KFU, VK3TI, VK4AAR, VK4EET, VK4CRR, VK5WO, CY9CF, WA1ECA, W4FRU and the publications *QRZ DX*, *The DX Bulletin*, *The DX News Sheet*, *The W6GO/K6HHD list* and *IPS Radio and Space Services*.

*PO Box 93, Dural NSW 2158*  
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## Over to You — Members' Opinions

*All letters from members will be considered for publication, but should be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.*

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#### SEANet '93 and '94

Thanks for the good exposure in the July edition of *Amateur Radio* on SEANet '93.

Since that piece was written in February, Sangat Singh 9M2SS has changed his preferred address for correspondence relating to SEANet '94.

His full, revised contact details are as follows:-

Mr Sangat Singh 9M2SS  
Secretary — Organising Committee  
SEANet '94  
111 Jalan Terasik Lapan  
Bangsar Baru  
59100 Kuala Lumpur  
MALAYSIA.  
Tel: +60 (3) 256 1571  
Fax: +60 (3) 253 7373

David Rankin 9V1RH/VK3QV  
PO Box 14  
Pasir Panjang  
Singapore 9111

#### School Radio Clubs History Sought

We are looking for information on amateur radio stations which operated as either school club stations or simply from schools before 1940. The earliest record we have is of 3GZ, G S C Semmens, which was operated from the woodshed at the Buln Buln State School from 1920 to 1923. 3GZ thought that this was the first station operated from any state school, perhaps from any school.

According to 3GZ "the pupils listened to a half hour broadcast from a station in Melbourne once per week plus the odd transmissions. The transmitter was a Myers valve heated from a lead battery. The capacitors were made from kerosene case wood boiled in wax paraffin, coated with silver paper and hinged as in a book".

Can anyone do better than the Buln Buln State School woodshed? Or even nearly as well. We would be pleased to have any information from before 1940.

We are also collecting information about the many local clubs which functioned all round the nation before the dramatic improvement in transport, and the impact of talking pictures caused them to amalgamate or simply fade away. Some of their successors still exist; the Geelong Amateur Radio Club following the Geelong Radio Club of the 1920s is a good example. Information on the small suburban and village clubs is being collected so that it isn't lost as it soon will be if we don't at least gather it up.

**John Edmonds VK3AFU/ATG**  
Federal Historian  
"Woorak" 515 Willowite Road  
Moriac VIC 3240

### Limited Licensees and 10 Metres

I was amused by Mr G J McDonald VK2ZAB's article consisting of nearly a half page of complaints directed to the WIA for failing to do more for access to the 10 metre band for limited amateur radio operators.

Congratulations to you for having been a limited licensed operator for 37 years. Just imagine, 36 years and 9 months ago you could have had access to most of the 10 metre band, by passing a CW test at a lousy 5 wpm; 36 years and 6 months ago you could have had access to the whole amateur band spectrum by improving your CW and passing 10 wpm.

**Jack Van Schaik VK3AAC**  
26 Thorpdale Street  
Newborough VIC 3285

### Adjusting and Cleaning Speed Keys

Doc's article in July 1994 issue of *Amateur Radio* was very good, and I would like to suggest a refinement by using a multi-meter. In the Ohms position, set it to full scale, connect the "Bug" and fine-tune the dots for a half scale reading to obtain an equal mark space ratio. On my "Automorse" key I then set the dashes to read 75% of full-scale to obtain the correct mark/space ratio.

**Vic Kitney VK7VK**  
Gordon Street  
Swansea Tas 7190  
ar

### Silent Keys

*Due to space demands obituaries should be no longer than 200 words.*

The WIA regrets to announce the passing of:  
W H Thurman VK3VGY  
ar

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## Packet World

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Grant Willis VK5ZWI\*

### Mail Forwarding Part 2

Last month I wrote about how a packet message is forwarded through the BBS network. The next stage is to look at the White-Pages system.

White-Pages is a database system, maintained by a fair number of the BBS stations around the world, that contains a list of known packet stations and the home BBS where you can send packet mail to them. This database is automatically updated by the BBS programs and gains much of its information by scanning the BBS headers of every bulletin and personal message that passes through the BBS station. Information is also supplied by each user when they are asked to register their details with the BBS program. The information entered in the "N" commands, or via the "REGISTER" command on some systems, eventually finds its way into the White-Pages databases and can then be accessed by anyone.

When you are entering information, there are a series of commands to use. On the FBB BBS program the commands to enter this information are:

N — Enter your name  
NH — Enter the callsign of your home BBS station  
NZ — Enter your postcode (sometimes called Zip code)  
NQ — Enter your Location

The NL command is also available which is for you to enter your Maidenhead Grid Square locator number (eg PF95GA).

This information is then used by the BBS to assist others in sending messages to you. This information is also shared between BBS stations, which once a day generate an update message which they forward on to other BBSs allowing the most up to date information to be propagated.

Entering all this information is fine, but you will also want to be able to retrieve information about people. This is done using the "I" command on many BBSs. Some of these commands include:

I [callsign]  
I@ [BBS-Callsign]  
IH [H-Address Designator]  
ID — Gives the size of the local WP Database

If you wanted to query the database and ask it to list the home BBS for a friend, eg you wanted to find the BBS address of VK2XYZ, you would send the command "I VK2XYZ" and the BBS

would answer either with the record it has for that station or an error message if the person is not known on the database.

Sometimes you will find that your local BBS may not run White-Pages, or may have a relatively small White-Pages database (due to disk capacity, memory capacity or perhaps they haven't been running WP very long). There are, however, some BBSs with very large databases that you can enquire at. To do so, you send a message to the "WP" server with some commands in the message. For example, to query VK5WI's White-Pages for the address of someone in the USA, eg AA4ER, you would send a message like:

```
BBS Prompt>  
SP WP@VK5WI <— You Type  
Enter the Subject of your message  
WP Request <— You Type  
Enter the body of your message  
? AA4ER <— You Type  
JEX <— You Type  
BBS Prompt>
```

When the message you have sent arrives at VK5WI, it will be processed and a reply generated with the information you seek.

There are also ways of extracting groups of callsigns from the database. In both forms of query it is possible to replace part of the callsign with a \*, which is known as a wildcard. Everything after the \* is considered as a match in the search and a query like "I VK5\*" would result in the database sending you a list of every VK5 callsign known to the system.

If you have problems using any of the I or N commands on the BBS you should contact your local BBS system operators and ask them to give you a hand.

One other feature of White-Pages that is really nice is in the case of sending packet mail. If you don't know the full address of a station and only enter, for example, the callsign of the destination BBS and not the full Hierarchical address, the BBS software will look up the database automatically for you and add the information required.

### Conclusion

That's all for this month. Next month I will look at what's required to set up a basic packet station and also mention some of the good beginners' programs available for a variety of personal computers.

If you have anything you would like to see covered in the *Packet World* column, please send your suggestions or contributions to me. I can be reached on packet at VK5ZWI@VK5TTY.#ADL.#SA.AUS.OC or by post to GPO Box 1234 Adelaide 5001.

\*C/o GPO Box 1234, Adelaide SA 5001 ar

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# Pounding Brass

Stephen P Smith VK2SPS\*

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Well, it's that time again to put pen to paper and write another issue of "Pounding Brass" (boy where does the time go?). Just a couple of points I would like to make before I conclude this series on Morse practice tapes. I was thinking it's approaching the end of June and what a hectic month it's been. We just had the house re-carpeted and everything had to be moved, radio equipment disconnected and packed. It was a nightmare. I was surprised at how much stuff one accumulates over the years. However, things are starting to get back to normal.

The "CW Operators QRP Club" recently had their QRP weekend contest on the 11 and 12 June. Participation was good and many contacts were made on just 5 watts. On the subject of QRP the above club runs "Scrambles" at least once a month. Basically, a scramble is to work as many stations as possible within a given time frame of anywhere between one and a half to two hours, very similar to "Sprint Contests" which are of shorter duration. All scrambles are held on 80 metres. I hope to include the rules and dates for future scrambles in a later issue.

Remember, if you hear someone calling "CQ Test de VK2XX/QRP", give them a report. They will really appreciate the contact and, of course, the points. The Novice contest on the 17 & 18 June attracted quite a few new stations and was well represented in section "B" with the old hands again giving great support. I would like to have seen more participation from Novice stations in the CW category. My log for the contest shows about twenty five Full Call stations and only three Novices. All I can say is "Come on guys, it's your contest, support it" (results should appear around the October issue of *Amateur Radio*).

Moving along we will now look at the WIA Morse practice tapes which also cover the beginner's course. However, before we look at how the course is structured, a little history is called for. "The Learning Morse Kit", which includes a training manual and three cassette tapes, was designed by Rex C Black VK2YA back in 1977. Rex was the founder of the WIA Youth Radio Service. He was also ex Royal Australian Corp of Signals, former chairman of the WIA Novice Investigation Committee, and ex subject master and Education Officer of the Education Service, WIA NSW Division).

Rex also writes and produces cassettes, all with a standard "hand key", for the Education Service. It is only in

recent years that the cassettes have been recorded by computer. Rex was a foundation member of the WIA NSW Division Education Service and is still involved with the slow Morse program run by the NSW Division.

With Rex's credentials, and his love for Morse, you are certainly getting a very professionally presented course, and one of the best on the market today. "The Learning Morse Code Pack" (as it is now named) contains copies of the original tapes made by "hand key" and it is hoped that, in the not to distant future, they will also be computer generated.

The Course is available through the Education Service, WIA NSW Division, PO Box 262, Rydalmere NSW 2116. The cost is \$11.50 including postage (discount to members). The course includes three 60 minute cassettes, a 48 page manual which includes 120 programmed steps keyed to a comprehensive text and spoken prompts, an eight page introduction, and a wealth of other very useful information such as Receiving the Code, Sending the Code (including photographs on how to hold the key, how to sit, etc), Q-Code, Audio Oscillator Circuits and a circuit of a 12 watt 3 valve Tx. I have only scratched the surface as there is too much information to include here.

I should also bring to your attention that the Education Service can supply you with Morse cassettes ranging in speed from 4 wpm to 30 wpm with three texts A, B & C. Included in their stock are special examination cassettes for the Novice and full call candidates. They can also supply all kinds of recorded cassettes which include random generated alphanumeric with a range of different spacing ratios. All tapes are 60 minute and sell for \$4.00 inc postage.

Further enquires can be made to the

above mentioned address or you can contact the Education Service on (02) 622 2040. There is so much information contained within these cassettes that it is impossible for me to include it here for your review. The method of teaching is very similar to the "Marconi Radio School" which, if you remember, was situated in York St, Sydney many years ago. It's just too hard to resist a sneak preview:

Cassette 1 side 1.

Step (1) Group (1) Consists of letters E, I, S, H and the number 5.

Practices:

1. 10 symbols W S I H S E, etc.
2. 10 symbols " " " " " "
3. 5 triples E S H, E 5 S, etc.
4. 5 triples " " " " " "
5. 5 triples " " " " " "

Get the idea?

Steps 1 through 15 cover cassette 1 and 2 which cover the alphabet numbers and operating signals. Cassette 3 consists of more practice exercises (short sentences with numbers) at a speed slightly faster than the examination.

Talking about manuals for a moment, a number of courses currently on the market today only include a brief introduction along with the required exercises, and no further information is included. I suppose this is to cut down on production costs.

Good luck with your training. Remember, short and consistent lessons are the key.

I'm unable to report on the RSGB course at this time. If anyone has a current copy of the RSGB course, and doesn't mind lending it to me for a few days, I would like to hear from you.

Remember, "Europe for QRP weekend 94" from 1600 UTC on 7 Oct to 2359 UTC 9 Oct. Call CQ-EU-QRP on all recognised QRP frequencies. If you would like a copy of the event drop me a line, or see "Sprat No 78" from the "G-QRP Club" for further information.

\*PO Box 361, Mona Vale NSW 2103

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## An Old Timer Reflects....

*Des Greenham VK3CO\* continues to look back over 50 years of amateur radio operation.*

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In the old days, we had no coaxial cable or any other form of transmission line. We had copper wire and we had "hook-up" wire and from these two products we made our antennas. We had no plastic; this came long after World War 2. We did have "porcelain" egg insulators, these being used by normal radio listeners who used high, long wire antennas for their crystal and simple valve receivers.

The "Yagi" beam antenna was unknown, as was any directional beam. The most common antenna was the faithful "Zepp" antenna, so named after the German prewar airship, Zeppelin. The Germans had devised a simple half wave radiator fed with a tuned, spaced line. This antenna was hung under the airship and apparently worked well.

This Zepp antenna was very popular



with the amateurs of the day. The antenna was a half wave wire strung up between two trees or poles and fed with a tuned balanced line. The feed point for the true Zepp was at one end. When fed in the centre the antenna was incorrectly known as a "Centre fed Zepp". The Germans never fed their antenna in the centre.

The feed line was usually made from hook up wire which was flexible and the spacers were made from wood (remember, plastic was not with us at this time). The wooden spacers, usually about 12 mm diam. and 100 mm long, were boiled in beeswax to make them waterproof and also to make them non absorbent. The feed line length was quite critical, and had to be either an even or odd number of quarter wave lengths. This then presented a high impedance or low impedance feed point in the shack.

It was common to bring the spaced feedline into the shack through holes drilled in a window. Not an easy task. Many operators fed the two wires in above the door, under a window, etc, keeping in

mind that the line was "hot" and had to be kept clear of just about everything.

Then came the problem of matching the line to the transmitter. This was done by an antenna tuning unit consisting of a resonant tuned circuit wired up either in a series circuit, if you needed a low impedance feed, or in parallel if you needed a high impedance feed. Either way, you had VERY high RF voltages around the shack.

It was common to wire in two car 12 volt headlight globes in series with each leg of the feedline to see what current was flowing. This was only when the antenna was series or low impedance fed.

Then, just after the war, came this new coaxial cable. Certainly it had higher losses than our open wire lines but it really was very convenient. We could bring it into the shack over or under the roof with no insulation worries and no high voltages around the shack.

Life was made so much easier.

*\*16 Clydesdale Court, Mooroopna VIC 3629*  
**ar**

## Spotlight on SWLing

*Robin L Harwood VK7RH\**

September has come, and with it Spring! New life is sprouting up after winter's chills, the wattles stand out, gently swaying in the breeze. Yet, as I'm writing this month's column, I just have to gaze out of the window to Mount Barrow, to the east of the city, and see a thick mantle of snow.

Radio propagation has been patchy of late, particularly on the higher frequencies. I notice that there often is a complete absence of signals, especially on the east-west path. Radio HCJB in Quito, Ecuador usually is loud and clear on either 9745 or 11925 kHz from 0700 UTC, but has been weak to unreadable at times. Also, the Bonaire relay of Radio Netherlands on 9630 and 9720 kHz sometimes is absent. European and American signals also are noted for their lack of penetration on 14 MHz and it is to be hoped that propagation picks up for the VK/ZL contests and JOTA, next month.

While monitoring the 40 metre amateur allocation for Intruder Watch, I came across a very unstable signal around 7085 kHz from approximately 1200 UTC. A bad hum completely overrides the modulation at times and the carrier drifts rapidly up or down. Listening carefully, I was able to identify an English language announcement, "This is Radio Pakistan and here is the News!". I was hearing a relay of the domestic network and an old *WRTH* showed the location as being at Karachi.

The Korean Peoples' Democratic Republic has been in the news of late, following the death of Kim-II-Sung, better known as "the Great Leader". The many clandestine outlets on the lower frequencies were silent for a few days, but not the jammers, who continued interfering with open carriers or, when there was audio, solemn music. The jammers are believed to be in South Korea. Pyongyang, the North Korean capital, continues to jam all shortwave broadcasts in Korean, particularly from the South, but of late has been targeting religious programming in that language from KWHR in Hawaii at 1300 UTC. Radio Pyongyang is heard in English on 9977.2 or 6576 kHz at 1100 to 1145 UTC.

The 9th edition of *Ferrell's Confidential Frequency List* has recently been published. This listing of utility stations from 1.6 to 30.0 MHz has taken note of the changes and alterations in the Maritime and aeronautical areas following

## WIA News

### Reciprocal Licensing Update

Agreements for reciprocal licensing, permitting amateurs from Australia to operate in overseas countries without having to sit an examination there, and vice-versa, have been in place between Australia and various countries for many years. A separate bilateral arrangement exists with each country in the scheme.

Presently, 16 countries have reciprocal licensing arrangements with Australia and negotiations are under way with at least seven more.

These 16 countries are:

Canada  
Denmark  
France (inc. New Caledonia)  
Germany  
India  
Israel  
Japan  
Malaysia  
New Zealand  
Papua New Guinea  
Poland  
Solomon Islands

Spain  
Switzerland  
United Kingdom  
USA

Countries with which reciprocal agreements are currently under negotiation are:

Austria  
Greece  
Italy  
Kiribati  
Peru  
South Korea  
Vanuatu

With the likelihood that Australia will enter an agreement with CEPT (European Conference of Postal and Telecommunications) countries for short term visitors, then perhaps the protracted time and effort currently needed by the Spectrum Management Agency and the Department of Foreign Affairs and Trade to effect reciprocal licensing agreements will disappear.

However, bilateral agreements between Australia and other countries for permanent residents in Australia from overseas will still be necessary.

deregulation. It includes details of the various modes employed, a few of them so new that there aren't any decoders commercially available to resolve them. I purchased my first Tono 9000E about 11 years ago and I was able to decode quite a number of RTTY press services on HF. Then I managed to acquire a Tono Theta 777 decoder about 6 years ago and upgraded to AMTOR/SITOR. But, in the past four years, there has been such a proliferation in new modes that the Theta has been left behind. Such a large proportion of the press services have gone to data links on cable and satellite that HF RTTY has only North Korea,

Morocco and Taiwan left on a regular basis.

I find that CFL9 is still extremely useful in identifying signals and locations despite a few shortcomings, namely the listing of Australian coastal radio stations that have since ceased part or all of their schedules. For example, VIH Hobart Radio is listed as still being on 5355 kHz when, in fact, it ceased about three years ago. Also, a string of VIS Sydney Radio a1a frequencies are listed despite being phased out about 12 months ago. As well, the Sydney-Antarctica links are still listed, as are the Norfolk and Lord Howe circuits. Both of these are now on either

INMARSAT or Optus-B. I don't think that the author can be blamed for this as the onrush of technology is so rapid. CFL9 costs \$50.00 and I obtained my copy from Arthur Cushen, 212 Earn Street, Invercargill, NZ, but you may miss out as it was a limited order.

Don't forget that I now have an e-mail address. It is FIDONET 3:670/312. INTERNET: Robin.Harwood @ p0.f312.n670.z3.fidonet.org or, alternatively, to VK7RH @ VK7BBS #LTN.TAS.AU.OC.

\*54 Connaught Crescent, West Launceston, TAS 7250  
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## Repeater Link

Will McGhie VK6UU\*

### FM 828-8

There are two circuits remaining of the Philips FM 828. This month's circuit is the microphone amplifier. This circuitry separates the good transmitters from the bad. The right pre-emphasis, overall frequency tailoring, and audio clipping are all important to produce good audio. The mic amplifier in the FM 828 does all these things well.

Note the mic gain pot R115, an all important adjustment for correct audio clipping. Too much mic gain and your audio is distorted and picks up excessive

road noise if you are mobile. Too little mic gain and your fellow amateurs have to ride the volume control and strain to hear you if they are mobile. I believe the best audio reports come from mobile operators. Amateurs sitting at home in a quiet environment can easily compensate for poor audio.

The FM 828 mic amplifier is a particularly good one and is more than just an amplifier. Its operation is described in the manual and is worth reproducing.

"Transistor TR21 is a pre-amp followed by C84 and R107 that provide pre-emphasis. Clipping for deviation limiting comprises two stages, an active clipper TR20 and passive clipper D10, D11. The combination results in symmetrical time amplitude clipping, giving low distortion and good limiting characteristics over a large input range. Network R98, C78 provides de-emphasis after the clipper, and is followed by buffer TR19. The low pass active filter TR18, TR17 limits the audio frequency bandwidth to 3 kHz and provides a cut-off rate of 20 dB per octave from 6 kHz to 12 kHz. Transistors TR15 and TR16 are the deviation amplifiers which drive the phase modulator. R81 is the deviation control."

All that to achieve good audio! Not as simple as you thought? Correct adjustment of the mic gain and deviation controls are important. Yes, I know I have said it before.

Finally, next month, the last of the FM 828 CAD circuit drawings. I have the layouts of the circuit boards almost finished but, at this stage, do not plan to reproduce them in "Repeater Link". If there is a demand, however, they can be included. All these circuits and layouts are available on computer using Draft Choice and via Packet radio.

### 29 MHz FM

The 29 MHz gateway system is such a clever idea that it had to run into a problem somewhere, and it has. It's not legal! The SMA in Perth have pointed out that one 29 MHz gateway on a given frequency may be legal, but two on the same frequency are not. The reason being the potential for two gateway systems to link together and, as there is no agreement on link frequencies on 29 MHz between the WIA and the SMA, it is not permitted.

Further investigation has indicated that only the band between 29.5 MHz and 29.7 MHz can be used for connecting an existing VHF/UHF repeater. Also, I assume the 10 metre system must be a repeater in its own right. Such a system is used in Melbourne where the 10 metre repeater VK3RHF is connected to a UHF port.

For a hobby there sure are a lot of detailed regulations! How can amateurs be progressive when the framework is so rigid? Any new ideas often face an up hill battle. The new regulations are supposed to solve much of this problem, one day.

Now starts the long process of making 29 MHz gateway linking legal. Proceedings started in VK6 on 10 July 1994 by writing a submission and passing it onto our local WIA. If it receives local support it then heads East in the hope that it will become Federal policy.

I will keep you informed as to the progress of this submission and the complex means by which it moves from original idea to finished regulation.

Regulation. I sure hate that word!

\*21 Waterloo Cr. Lesmurdie 6076 VK6UU @ VK6BBS  
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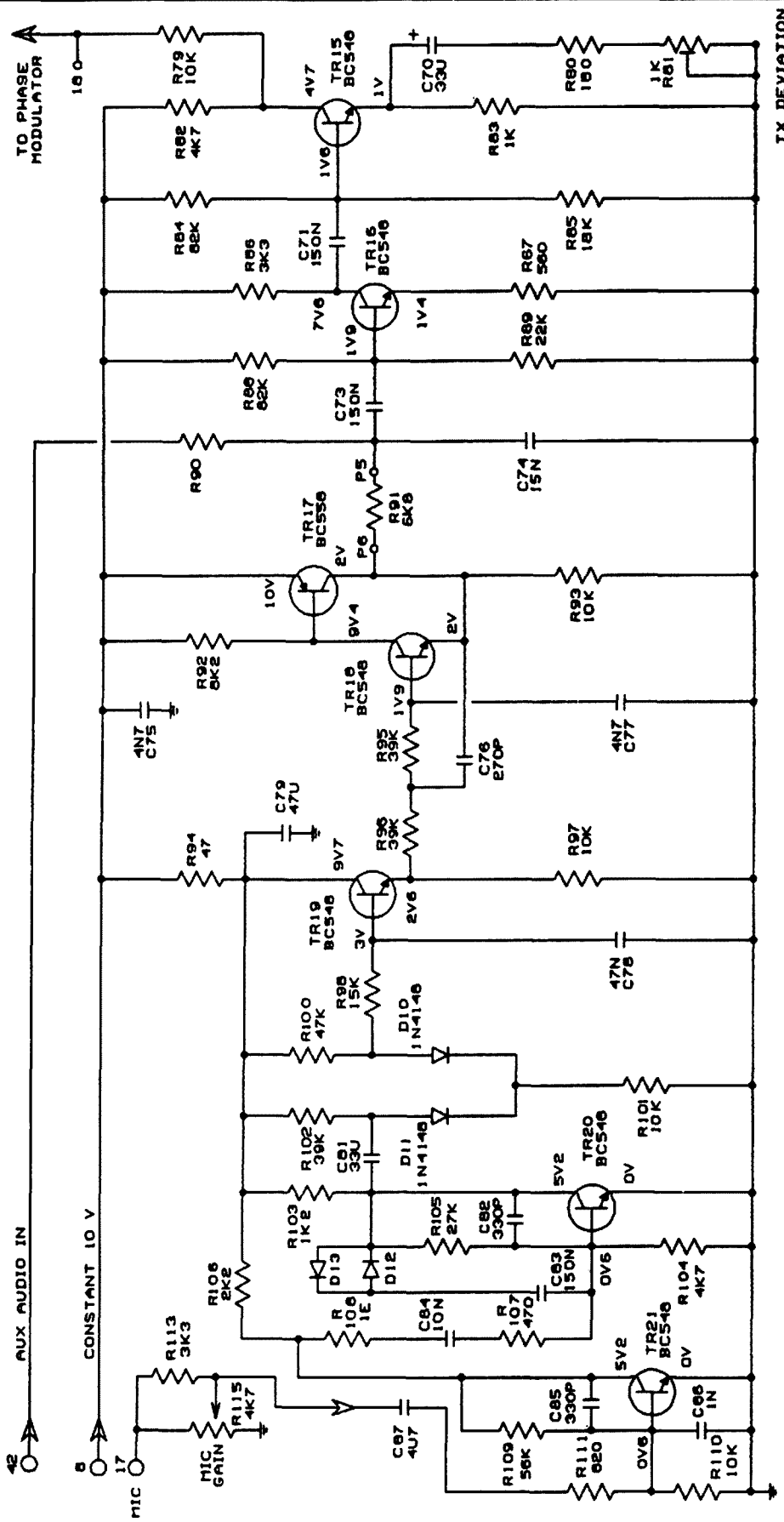
## QSP News

### Christina Goods Appointed as Spectrum Manager

In a Media Release dated 22 July 1994 from the Department of Communications and the Arts, Minister Lee announced the Federal Government had today appointed Ms Christine Goode as the head of the Spectrum Management Agency (SMA), the organisation charged with the management of Australia's radiofrequency spectrum.

The WIA is pleased at Ms Goode's appointment and has sent her a congratulatory letter.

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TX DEVIATION

DEVIATION AMP

LOW PASS FILTER

MIC AMP CLIPPERS

DESIGNED BY PHILIPS	DRAWN BY VILL
FM 828	
MICROPHONE AMPLIFIER	

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# VHF/UHF — An Expanding World

Eric Jamieson VK5LP\*

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All times are UTC

## Australian Amateur Bands Beacons

Frequency	Call sign	Location	Grid square
50.046	VK8AS	Alice Springs	PG66
50.0535	VK3SIX	Hamilton	QF02
50.0567	VK7RNW	Lonah	QE38
50.057	VK8VF	Darwin	PH57
50.058	VK4RGG	Nerang	QG62
50.066	VK6RPH	Perth	OF78 off air at present
50.0775	VK4BRG	Sarina	QG48
50.087	VK4RTL	Townsville	QH30 proposed
52.326	VK2RHV	Newcastle	QF57
52.345	VK4ABP	Longreach	QG26
52.410	VK1RCC	Canberra	QF44 ?
52.420	VK2RSY	Sydney	QF56
52.425	VK2RGB	Gunnedah	QF59
52.440	VK4RTL	Townsville	QH30
52.445	VK4RIK	Cairns	QH23
52.445	VK4RBM	MacKay	QG48
52.450	VK5VF	Mount Lofty	PF95
144.022	VK6RBS	Busselton	QF76
144.400	VK4RBB	Mount Mowbullian	QG62
144.410	VK1RCC	Canberra	QF44
144.420	VK2RSY	Sydney	QF56
144.430	VK3RTG	Melbourne	QF20
144.435	VK3SIX	Hamilton	QF02
144.445	VK4RIK	Cairns	QH23
144.445	VK4RTL	Townsville	QH30
144.445	VK4RBM	MacKay	QG48
144.451	VK5VF	Mount Lofty	PF95
144.460	VK6RPH	Perth	QF78
144.465	VK6RTW	Albany	QF84
144.470	VK7RMC	Launceston	QE38
144.4746	VK7RNW	Lonah	QE38
144.480	VK8VF	Darwin	PH57
144.485	VK8RAS	Alice Springs	PG66
144.530	VK3RGL	Mount Anakie	GF22
432.066	VK6RBS	Busselton	QF76
432.160	VK6RPH	Perth	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
432.445	VK4RBM	MacKay	QG48
432.450	VK5VF	Mount Lofty	PF95
432.450	VK3RAI	MacLeod	QF22
432.474	VK7RNW	Lonah	QE38
432.5339	VK3RMB	Mount Buninyong	QF12
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
1296.450	VK5VF	Mount Lofty	PF95
1296.470	VK7RAE	Devonport	QE38
1296.480	VK6RPH	Perth	OF78
2304.445	VK4RIK	Cairns	QH23
2306.440	VK4RSD	Brisbane	QG62
10445.000	VK4RIK	Cairns	QH23

Would beacon custodians inform me of additions and/or corrections please. It is some time since the list was upgraded. I will run the list again in three months time so your advice is required urgently.

## Local News

The lack of communications is obviously a reflection on the degree of activity on the various bands. 10 GHz continues to absorb the interests of a number of operators as they find how rewarding operation is using narrow band techniques. In fact, it is quite staggering the ease with which some contacts have been made. More on this later.

There was quite a good two metre opening between VK5 and VK3 on 23/7 between 0100 and 0140. Roger VK5NY had some good contacts and I managed to work Norm VK3DUT on 50.150, 144.150 and 432.100 with signals peaking to S9 on 144.150. I also worked Gil VK3AUI on 144.150.

I don't think the band faded out immediately because the VK3RGL beacon was there until well after 0200 so, obviously, no operators were available. VK7RNW at Lonah was also audible but there were no VK7 operators. The following day, 24/7 at 0120, VK3RGL was 529 and VK3SIX 539.

Ron Cook VK3AFW sent a fax to say that on the weekend of 9/10 July, Roger VK3XRS worked Mike VK2FLR Sydney 5x1 and VK2ZZXT Port Kembla 5x7 via two metres aircraft enhancement. The two paths of approximately 540 and 460 km were over mountainous terrain and speaks well for the efficiency of the two operators/stations involved.

Ron also said that in the absence of Ian VK1BG and Gordon VK2ZAB the aircraft enhancement frequencies have been quiet. Norm VK3DUT is a regular but other VK3s in the Melbourne region are notable by their absence.

John VK3ATQ from Berwick returned last year to 6 m SSB and has been heard on 2 m SSB. He reports disappointment with the lack of activity on the tuneable end, particularly compared to the 1960s. I can certainly relate to that; it was much easier to obtain contacts during the AM days than at present.

Ron said he continues to work Andrew VK7XR each weekday morning on 144.080 CW. Occasionally, signals are of sufficient strength to allow good SSB contacts which indicates that tropo enhancement does exist in winter! Following the contact with Andrew, Ron turns the beam north and speaks to Des VK3CY at Wedderburn. SSB signals are usually 5x8/9 with QSB down to S6 on poor mornings.

# GUIDE TO UTILITY STATIONS 1994

12<sup>th</sup> edition • 534 pages • \$ 80 or DM 80

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Our bestseller covers the complete frequency range between 0 and 30 MHz. We control the radio spectrum continuously by means of sophisticated operating methods and regular overseas monitoring missions (1993 and 1994 for several months in Alaska, Brunei, Canada, Djibuti, Malaysia, Mauritius, Réunion and Singapore). The conflicts on the Balkan and in Africa and Asia are perfectly covered. We are the only non-governmental radio monitoring service applying latest technology such as the revolutionary new WAVECOM W4100 teleprinter systems decoder.

The frequency list now includes more than 15,000 entries. A new index covers 2,000 stations in country order with all frequencies for rapid access. Up-to-date schedules of weatherfax stations (including Auckland, Casey, Darwin, Guam, Honolulu, Melbourne and Tokyo) and teletype press agencies are listed both alphabetically and chronologically. Abbreviations, addresses, call signs, codes, definitions, explanations, frequency band plans, international regulations, modulation types, NAVTEX schedules, Q and Z codes, station classes, telex codes, etc. - this reference book lists everything. Thus, it is the ideal addition to the World Radio TV Handbook for the "special" stations on shortwave!

Further publications available are *Guide to Fax Radio Stations* and *Air and Meteo Code Manual* (new 14<sup>th</sup> editions) and *Radioteletype Code Manual* (12<sup>th</sup> ed.). We have published our international radio books for 25 years. They are in daily use with equipment manufacturers, monitoring services, radio amateurs, shortwave listeners and telecom administrations worldwide. Please ask for our free catalogue, including recommendations from all over the world. All manuals are published in the handy 17 × 24 cm format, and of course written in English.

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## From the UK

I have a two months coverage of news from Ted Collins G4UPS. In the June issue he reports an unusual beacon, SZ2DF on Crete. It operates on 50.521 MHz running one kilowatt of continuous carrier to 4x16 element Yagis beaming 330 degrees. There is no ident but pressure is being applied to the University of Iraklion to install identification. With that degree of continuous key-down power one would hope that the cooling system does not fail!

Contacts across the Atlantic commenced on 15/6 between 2230 and 2300 to VE9AA, VE1YX, VE1PZ and K0SN/CY9. On 19/6, 1930 to 2015, VE3FIT, W2CNS, VE1RAA, NW3C. The first wide spread opening occurred on 25/6 from 1630 to 2310 with the greatest distances being worked to W5EU and N5JHV.

The European Es season has brought many stations, including beacons, from the woodwork. The following countries were included in the June and July listings, with many being worked several times. 4NSIX, 4X1IF, 9A2BZ, 9H1BT, 9K2ZR, CS8CBI, CT4KQ, CU3URA, DK5RQ, EH1EH, EH8ACW, ER5OK, F5BUU, FP5EK, FY7SIX, HB9FAR, HV4NAC, IK2UIX, IS0AGY, JX7DFA, JY7SIX, K1JRW, K2OU, K4SC, K8MFO, LA9ZV, OD5SIX, OE1ETA, OH2AZR, OK1TS, OX3LX, OZ7IGY, PE1LAU, R3VHF, RA3YO, S55ZRS, SM7AED, SP8MMZ, SV1SIX, SV9ANK, TK/F5HRY, VE1RAA, VE3FIT, VO1ZA, W2CNS, W3EP, W4WHK, W5EU, WA1AYS, WB2ELB, WB4NFS/VP9, YO7VJ, YU7AS, ZB2EO.

It is of note that many contacts were made with Italy, Poland and Yugoslavia which tends to indicate they are situated at distances best suited to Es. During June, 26 beacons were logged.

Ted also advises that from 18 July 1994, Class A and B operators in the UK on six metres have been granted a power increase from 100 watts to 400 watts and with antenna restrictions lifted. The increase is permitted from 50 to 51 MHz but remains at 100 watts from 51 to 52 MHz. UK amateurs are now permitted to operate maritime mobile on six metres. Ted comments it seems rather odd that this increase should be made when most keen six metre buffs have worked more than 100 countries with the 100 watts ERP restriction.

Geoff GJ4ICD from Jersey Island confirms the excellent openings detailed by Ted, stating that, during a massive opening on 50 MHz, he worked country number 149 on 25 June with a contact to WB4NFS/VP9 in Bermuda, square FM72. During the same period W5HUQ in EM70 was 599+ for more than an hour. The next day the band was dead.

Geoff said June 1994 should go down in the record books for Es openings on 50, 70 and 144 MHz. On 17/6 9K2USA and 9K2ZR were worked and monitored for over five hours at a distance of around 4,600 km from Jersey. An interesting contact on 19/6 was FP5EK (St Pierre and Miquelon off the coast of Canada) to Jersey, the UK, PA0 and DL. At the same time the band was open to USA and Canada.

The Jordanian DXpedition in which Geoff was involved during May/June had around 2,000 50 MHz QSOs in nearly 50 countries, but only a few contacts were made on 144 MHz. I am told there is more news to come plus some photos, so I await these with interest.

Emil Pocock W3EP reports on the beacon situation in the USA. Bill Tynan W3XO was instrumental in arranging for the first 144 MHz beacon to go to air during June 1978 for a six month's experimental period only. It was not until January 1983 that unattended beacon operation was permitted in specific sub-bands from 50 to 432 MHz and anywhere in the higher bands. Currently there are more than 100 VHF, UHF and microwave beacons in the US and Canada. Any US amateur with a Technician license or higher can put a beacon on the air without any formalities, official registration or notification. As Emil mentions, keeping track of these beacons has been challenging.

Emil is planning to provide a beacon list as part of his *The World Above 50 MHz*, firstly from those owners or trustees who responded to his recent questionnaire. I can only hope that he has more sustained luck than I have had whilst attempting to keep a reliable list of Australian beacons over the past 30 years. Some trustees have been most helpful in advising the status of their beacons whilst other beacons fall into a state of disrepair without advice from their owners. But that's human nature and I have learned to live with such a situation.

## Planet Jupiter

In a brief message, Doug VK3UM advised that during the recent comet collisions with Jupiter he was able to receive strong pulses from the planet on 70 cm. Some pulses were up to 30 dB above the 65 K antenna temperature.

No doubt we will be hearing more of these happenings but it is to Doug's credit that his EME station is in such a state of sensitivity that he can make significant observations other than bouncing signals off the moon.

## Closure

When you read this we will be in the equinoctial period, so be aware of the

possibility of extended range contacts on six metres. It is also not unknown for the higher bands to indicate enhanced propagation.

Closing with two thoughts for the month:

1. A commentary on the times is that the word "honesty" is now preceded by "old-fashioned," and
2. Isn't it a shame that future generations can't be here to see all the wonderful things we're doing with their money.

73 from The Voice by the Lake

\*PO Box 169 Meningie SA 5264

Fax: 085 751 043 Packet: VK5LP@VK5ZK

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## What's New

Bob Tait VK3UI\*

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### Second Edition of The World Wide Aeronautical Communications Frequency Directory

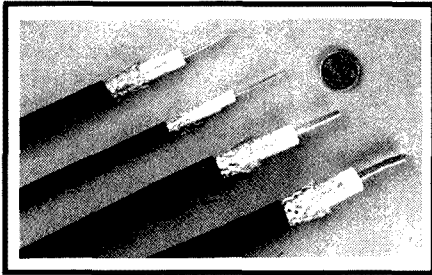
This publication by Robert E Evans is claimed to be the most complete and up-to-date aeronautical frequency listing ever produced, featuring over 2,350 discrete frequencies with full Commercial and Military coverage, encompassing both voice and digital modes in the HF, VHF and UHF bands.

This 260 page book features major, regional and domestic air route information for 137 countries, company operations of 116 airlines, VOLMET broadcasts for 30 world cities and full military coverage of 30 world air forces. Several pages are devoted to informing the reader about message content, code ciphers, digital modes, protocol, etc. There are many pages of photographs along with 12 detailed MWARA sector maps. An extensive glossary, source list and appendices include AFTN, ICAO, IATA, code designators and waypoint data not readily available to the hobbyist or SWL. Order Code BR026. Price \$40:00. Available from Daycom Communications Pty Ltd, 37A Fenton St, Huntingdale VIC 3166. Phone (03) 543 6444; Fax (03) 543 7238.

### New Range of Low Loss, Low Cost Foam Double Shielded Coaxial D-FB Cables

The range of D-FB cables is available in 4 types, 5D-FB, 8D-FB, 10D-FB, and 12D-FB, with all cables having a 50 ohm characteristic impedance.

The D-FB series double shielding consists of an aluminium milar foil which encases the dielectric, which is overlaid

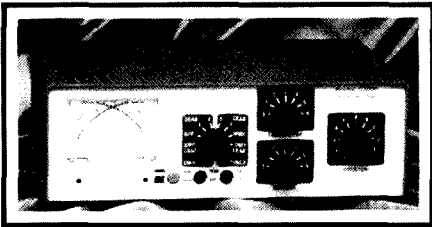


by a high density tinned copper braid to give very good EMI/RFI protection. The inner conductor is solid, soft annealed copper to provide great flexibility. A full range of easy to terminate connectors to suit this cable, including BNC and PL259, is available. The 5D-FB is 7.6 mm diam cable with a loss of 3.9 dB/30 metres at 400 MHz; 8D-FB is 11.1 mm diam with a loss of 2.58 dB/30 metres; 10D-FB is 13.1 mm diam cable with a loss of 2.1 dB/30 metres; and 12D-FB is 15.6 mm diam cable with a loss of 1.8 dB/30 metres.

The Australian distributors for these new cables are GFS Electronics, 17 McKeon Rd, Mitcham 3132. Phone (03) 873 3777; Fax (03) 872 4550.

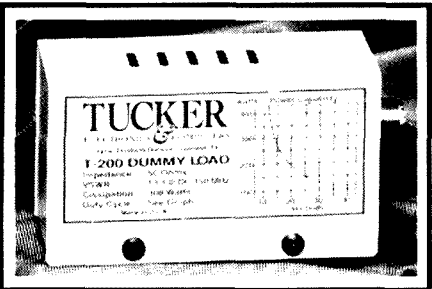
## New Tucker Range

### T-1000 Antenna Tuner & Dummy Load.



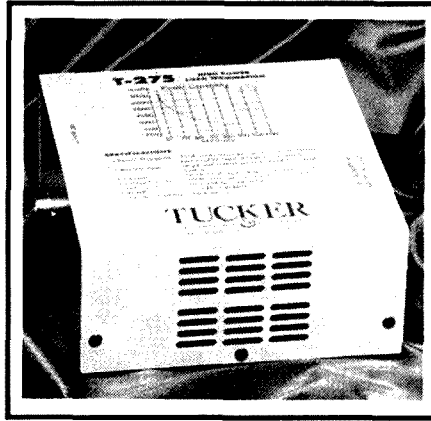
The T-1000 operates on all HF frequencies from 1.8 MHz to 30 MHz with no arc over problems and uses the correct L/C ratios to ensure reliable operation on all bands. It loads up long wires, dipoles, verticals, beams and mobile whips using balanced or unbalanced feed. The unit incorporates a 4:1 balun, 8 outputs selectable from the front panel and a large cross needle meter for easy tune up. An inbuilt dummy load can handle 300 watts.

### Tucker T-200, 300 Watt Dry Dummy Load, DC to 150 MHz



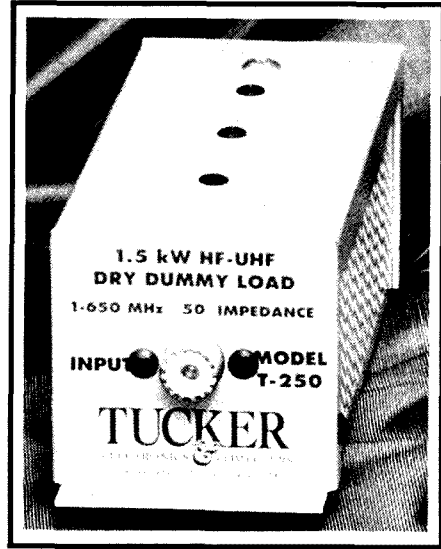
The T-200 is the smallest of the three units. It will handle the requirements of most rigs which have a 100 watt output with ease. It also uses a ceramic load resistor. The ordering number is T-200 and is \$US27.95.

### Tucker T-275 2500 Watt Fan Cooled Dry Dummy Load, DC to 150 MHz.



This is the Big Daddy of the Tucker range. It will handle 2500 watts for one minute. The load resistor is wound on a special ceramic former to provide better performance than Carborundum resistors. The SWR is better than 1.3:1 up to 150 MHz. The ordering number is T-275 and is \$US169.00.

### Tucker T-250, 1500 Watt Dry Dummy Load, DC to 650 MHz.



The T-250 is similar to the T-275 but does not have a fan for cooling. It is rated at 1500 watts for 10 seconds at a time, is housed in a grey metal housing and has SO239 connectors. The ordering number is T-250 and is \$US54.95.

Tucker Electronics can be contacted at 1717 Reserve St, Garland, TX 75042, USA. Tel 214 348 8800; Fax 214 348 0367.

\*PO Box 2175, Caulfield Junction VIC 3161  
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## Stolen Equipment

The following equipment has been reported stolen. If you have any information that may lead to the recovery of the equipment, please get in touch with the advised contact as soon as practicable.

**Make:** Palomar  
**Model:** Elite TX 5500  
**Serial Number:** —  
**Type:** HF linear amplifier  
**Modifications:** Fuse removed; co-ax "banana plug" socket installed; input SO239 replaced with circular flange type; grey heat sink fins bent at front left; sealing plate of aluminium  
**Stolen from:** Motor vehicle at Picton  
**Date:** 19 July 1994  
**Reported to:** Picton police  
**Owner:** Graham Dalglish  
**Callsign:** VK2DIG  
**Contact details:** (046) 772 477 or 018 679 785

**Make:** Yaesu  
**Model:** FT 890  
**Serial Number:** 2K130424  
**Type:** HF all mode transceiver  
**Stolen from:** Coburg store of Dick Smith Electronics  
**Date:** Week beginning 18 July 1994  
**Owner:** Dick Smith Electronics  
**Contact details:** George Alexandrakis (03) 428 0933

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# HF PREDICTIONS

Evan Jarman VK3ANI

## The Tables Explained

The tables provide estimates of signal strength for each hour of the UTC day for five of the bands between 7 and 28 MHz. The UTC hour is the first column; the second column lists the predicted MUF (maximum useable frequency); the third column the signal strength in dB relative to 1 μV (dBu) at the MUF; the fourth column lists the "frequency of optimum travail" (FOT), or the optimum working frequency as it is more generally known.

The signal strengths are all shown in dB relative to a reference of 1 μV in 50 Ohms at the receiver antenna input. The table below relates these figures to the amateur S-point "standard" where S9 is 50 μV at the receiver's input and the S-meter scale is 6 dB per S-point.

V in 50 ohms	S-points	dB(μV)
50.00	S9	34
25.00	S8	28
12.50	S7	22
6.25	S6	16
3.12	S5	10
1.56	S4	4

0.78	S3	2
0.39	S2	-8
0.20	S1	-14

The tables are generated by the GRAPH-DX program from FT Promotions, assuming 100 W transmitter power output, modest beam antennas (eg three element Yagi or cubical quad) and a short-term forecast of the sunspot number. Actual solar and geomagnetic activity will affect results observed.

The three regions cover stations within the following areas:

**VK EAST** The major part of NSW and Queensland.

**VK SOUTH** Southern-NSW, VK3, VK5 and VK7.

**VK WEST** The south-west of Western Australia.

Likewise, the overseas terminals cover substantial regions (eg "Europe" covers most of Western Europe and the UK).

The sunspot number used in these calculations is 21.8. The predicted value for October is 21.2.

## VK EAST — SOUTH PACIFIC

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	24.2	24	20.4	8	36	34	30	23
2	24.2	25	20.2	10	36	34	30	23
3	24.1	25	19.9	13	37	34	30	23
4	23.8	25	19.5	19	38	35	30	23
5	22.8	27	18.5	27	40	36	30	22
6	21.2	29	17.0	42	43	36	29	18
7	19.2	31	15.3	50	43	34	25	13
8	17.4	33	13.8	53	42	31	20	6
9	15.5	35	12.2	54	39	26	13	-3
10	14.1	37	11.1	55	36	21	6	-12
11	13.2	38	10.4	55	34	17	1	-18
12	12.2	39	9.7	54	31	12	-4	-27
13	11.4	40	9.0	53	28	7	-10	-35
14	11.1	40	8.7	53	26	5	-13	-39
15	10.8	41	8.4	53	25	3	-16	-43
16	9.9	42	7.6	51	20	-4	-25	-51
17	8.7	43	6.7	49	12	-15	-40	-59
18	9.2	43	7.0	50	15	-10	-34	-54
19	12.3	37	9.3	47	29	11	-4	-26
20	17.0	30	13.1	34	36	27	17	3
21	20.5	27	16.1	23	37	32	25	15
22	22.3	26	17.8	16	36	33	28	19
23	23.0	25	18.7	11	36	33	28	21
24	23.5	25	19.5	9	35	33	29	22

## VK WEST — SOUTH PACIFIC

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	20.2	11	16.4	-32	16	14	9	0
2	20.5	11	17.0	-33	16	15	10	1
3	21.0	11	15.7	-32	16	16	11	2
4	20.9	12	17.5	-26	18	16	11	2
5	21.0	13	17.4	-17	20	18	12	3
6	20.6	15	16.5	1	25	20	13	3
7	18.7	18	14.8	18	28	19	10	-3
8	16.8	21	13.3	33	28	17	5	-12
9	14.8	24	11.7	41	26	11	-3	-24
10	12.9	27	10.2	43	21	2	-16	-31
11	11.5	29	9.1	44	16	-6	-28	-35
12	10.9	30	8.6	44	13	-11	-35	-39
13	10.3	31	8.1	43	10	-17	-41	-43
14	9.8	32	7.7	42	7	-22	-46	-46
15	9.6	32	7.6	42	5	-24	-48	-48
16	9.6	32	7.4	42	6	-23	-47	-47
17	8.5	34	6.5	40	-2	-36	-54	-54
18	8.6	33	6.6	40	-2	-36	-54	-54
19	8.5	30	6.5	34	-4	-37	-56	-56
20	9.1	22	6.9	22	0	-27	-51	-51
21	11.2	17	8.9	11	9	-8	-27	-31
22	14.7	15	11.2	-3	16	6	-5	-23
23	17.5	13	13.7	-19	16	11	4	-9
24	19.2	12	15.3	-27	16	14	7	-3

## VK EAST — AFRICA

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	9.6	8	7.3	-4	2	-15	-34	-42
2	8.2	-3	6.3	-13	-3	-21	-41	-49
3	8.6	-7	6.6	-23	-2	-16	-33	-41
4	11.9	0	9.1	...	3	3	-13	-30
5	16.8	5	13.0	...	3	5	0	-8
6	18.4	5	13.5	...	3	5	2	-6
7	18.5	5	13.8	...	3	6	2	-5
8	17.0	5	13.6	...	4	5	0	-9
9	15.2	6	12.0	...	5	3	-4	-16
10	13.4	6	10.5	-32	6	0	-10	-26
11	11.6	7	9.2	-18	5	-6	-19	-31
12	10.3	8	8.1	-6	3	-12	-30	-36
13	9.6	13	7.6	6	2	-18	-39	-43
14	9.1	19	7.2	18	0	-24	-44	-48
15	8.9	25	7.0	28	0	-29	-48	-51
16	8.9	27	6.8	32	0	-29	-48	-51
17	8.8	29	6.2	35	0	-31	-50	-53
18	8.3	31	5.9	35	-4	-38	-54	-57
19	7.9	31	5.7	34	-9	-45	-60	-63
20	8.4	30	5.7	35	-5	-38	-54	-57
21	8.3	30	5.7	35	-5	-39	-55	-58
22	7.9	24	5.6	26	-8	-44	-60	-63
23	7.7	15	5.4	15	-10	-51	-66	-69
24	8.3	10	6.0	6	-5	-29	-48	-51

## VK SOUTH — AFRICA

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	8.7	13	6.7	8	-1	-23	-42	-49
2	9.2	8	7.0	-2	0	-18	-38	-45
3	12.5	10	9.8	-15	8	-1	-13	-31
4	17.4	10	13.1	-34	12	9	3	-7
5	19.0	8	14.1	...	9	9	5	3
6	19.6	8	14.5	...	7	9	6	-2
7	19.7	8	14.2	...	7	9	6	-2
8	19.0	8	13.6	...	7	8	4	-3
9	17.7	8	12.5	...	9	8	2	-7
10	16.0	9	11.2	-31	10	6	-1	-14
11	14.0	10	9.7	-18	10	2	-9	-25
12	12.1	11	8.4	-7	8	-4	-18	-25
13	10.6	14	7.3	5	5	-13	-32	-39
14	9.6	18	6.6	18	2	-21	-41	-48
15	9.1	24	6.3	28	0	-28	-48	-54
16	8.7	27	6.0	32	-3	-34	-54	-59
17	8.6	29	5.9	34	-4	-37	-57	-61
18	8.4	30	5.9	35	-5	-39	-60	-64
19	8.2	30	5.9	35	-7	-43	-64	-68
20	8.1	30	5.9	35	-8	-45	-67	-71
21	8.8	30	6.1	36	-2	-34	-54	-60
22	8.4	30	6.0	35	-5	-38	-58	-64
23	8.2	24	5.9	25	-7	-38	-58	-64
24	8.9	18	6.5	17	-1	-27	-46	-52

## VK WEST — AFRICA

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	8.3	20	6.4	20	-3	-31	-50	-57
2	8.7	13	6.7	8	-1	-24	-43	-50
3	12.2	12	9.6	-6	10	-2	-16	-37
4	17.3	11	13.3	-25	14	10	2	-9
5	18.9	9	14.7	...	11	10	5	-4
6	19.6	8	16.1	...	9	10	5	-3
7	19.6	8	16.3	...	8	9	5	-3
8	19.3	8	15.8	...	8	9	5	-3
9	18.7	8	15.1	...	8	8	4	-5
10	17.2	8	13.7	...	9	7	1	-10
11	15.3	10	13.0	-25	11	5	-4	-19
12	13.4	12	10.6	-8	11	0	-12	-31
13	11.7	15	9.2	6	9	-7	-24	-31
14	10.3	20	8.2	21	6	-16	-38	-44
15	9.6	25	7.2	31	3	-23	-45	-51
16	9.1	28	7.2	34	0	-30	-49	-55
17	8.9	30	7.0	37	-1	-33	-53	-59
18	9.0	31	7.0	38	-1	-33	-53	-59
19	8.9	31	6.9	38	-1	-33	-53	-59
20	8.4	31	6.5	37	-5	-40	-59	-65
21	8.0	32	6.1	36	-10	-47	-65	-71
22	8.6	31	6.5	37	-4	-38	-57	-63
23	8.8	31	6.8	38	-1	-33	-53	-59
24	8.2	27	6.2	30	-7	-40	-59	-65

## VK EAST — ASIA

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	23.7	13	19.6	...	17	19	17	10
2	24.3	12	18.7	...	16	19	17	11
3	24.5	12	19.5	...	16	19	17	12
4	24.7	13	20.4	...	17	20	18	12
5	24.5	13	20.1	...	18	21	18	12
6	23.6	14	19.2	-30	20	21	18	11
7	22.2	15	17.9	-15	23	21	17	8
8	20.6	17	17.4	10	28	23	15	4
9	19.1	20	15.3	34	33	23	13	-1
10	17.4	21	13.9	40	31	18	6	-10
11	16.1	22	12.8	44	29	14	0	-19
12	15.2	23	12.1	47	27	10	-5	-27
13	14.1	24	11.2	48	24	4	-14	-39
14	12.9	25	10.3	47	18	-4	-25	-49
15	12.1	25	9.5	45	14	-10	-34	-49
16	11.6	26	9.1	45	11	-15	-41	-51
17	10.4	27	8.1	42	2	-29	-48	-54
18	8.8	28	6.8	37	-15	-45	-60	-66
19	9.2	28	7.1	39	-10	-41	-56	-62
20	9.6	28	7.4	40	-4	-36	-51	-57
21	14.7	21	11.3	33	8	-7	-29	-35
22	21.6	16	16.9	-1	26	23	17	7
23	23.0	14	18.4	-21	22	22	18	10
24	23.3	13	19.0	-34	19	20	17	10

## VK SOUTH — ASIA

UTC	MUF	dBu	FOT	7.1	14.2	18.
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VK EAST — EUROPE										
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9		
1	8.9	-7	6.4	-26	0	-14	-30	...		
2	8.5	-13	6.3	-32	-1	-12	-27	...		
3	9.5	-12	7.1	...	0	-7	-19	-38		
4	11.7	-7	8.2	...	-1	-3	-10	-24		
5	14.4	-2	10.8	...	-2	0	-3	-13		
6	16.4	1	12.3	...	3	2	0	-7		
7	17.5	3	13.2	...	-3	3	2	-4		
8	18.3	6	13.8	...	0	5	4	-2		
9	18.7	8	14.2	...	5	9	6	-1		
10	17.1	10	13.6	...	10	9	4	-5		
11	15.3	12	12.2	-24	13	8	0	-13		
12	14.1	15	11.2	-5	15	6	-5	-22		
13	13.3	18	10.5	8	16	3	-10	-29		
14	12.3	21	9.7	20	15	0	-17	...		
15	11.4	25	9.0	32	14	-6	-26	...		
16	11.0	27	8.6	36	12	-10	-31	...		
17	10.6	28	8.3	39	11	-13	-36	...		
18	9.6	29	7.5	38	5	-23	...			
19	8.3	30	6.4	35	-6	...	...			
20	8.8	30	6.7	36	-2	-34	...			
21	9.4	31	7.2	38	5	-22	...			
22	9.7	21	7.3	20	6	-15	-37	...		
23	9.7	10	6.9	0	2	-16	-35	...		
24	9.2	0	6.6	-16	0	-15	-33	...		

VK SOUTH — EUROPE										
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9		
1	9.6	2	6.8	-17	1	-12	-29	...		
2	9.2	-7	6.6	-29	0	-12	-27	...		
3	10.2	-8	7.4	...	0	-6	-18	-36		
4	12.7	-4	8.7	...	0	-1	-7	-19		
5	15.7	0	11.6	...	-3	2	-1	-8		
6	17.9	2	13.2	...	-5	2	3	-3		
7	18.9	4	14.0	...	-5	3	3	-1		
8	19.4	5	14.6	...	-4	4	4	0		
9	17.8	5	14.3	...	0	5	3	-3		
10	15.9	5	12.6	...	3	5	0	-9		
11	13.9	6	11.0	...	7	3	-5	-19		
12	12.1	8	9.6	-20	7	-2	-14	-33		
13	10.8	12	8.5	-1	6	-9	-26	...		
14	10.1	17	8.0	13	5	-15	-36	...		
15	9.6	24	7.6	28	3	-23	...			
16	9.4	27	7.4	33	2	-26	...			
17	9.5	28	7.5	37	3	-25	...			
18	9.5	29	7.4	37	3	-26	...			
19	8.9	29	6.9	36	-2	-34	...			
20	8.3	30	6.4	34	-8	...	...			
21	8.9	29	6.8	36	-2	-34	...			
22	11.0	27	7.7	37	13	-10	-32	...		
23	9.5	21	7.3	20	4	-19	...			
24	10.0	12	7.0	0	4	-13	-32	...		

VK WEST — EUROPE										
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9		
1	10.2	13	7.2	5	4	-15	-35	...		
2	9.6	3	6.9	-13	0	-16	-34	...		
3	10.6	-1	7.7	-32	1	-9	-22	...		
4	13.4	1	9.0	...	2	-1	-8	-22		
5	16.7	3	12.3	...	0	3	0	-8		
6	19.1	4	14.0	...	-2	4	3	-2		
7	20.1	5	14.8	...	-3	4	4	0		
8	20.9	6	15.4	...	-3	5	5	2		
9	21.4	6	15.9	...	-2	6	6	2		
10	19.8	6	15.9	...	1	7	5	0		
11	18.0	7	15.2	...	6	7	3	-4		
12	16.3	10	12.9	-35	10	7	0	-11		
13	14.5	13	11.5	-9	13	5	-5	-21		
14	13.2	17	10.4	9	14	1	-13	-33		
15	12.4	21	9.8	24	15	-2	-19	...		
16	11.6	24	9.2	32	13	-7	-27	...		
17	11.0	26	8.8	36	11	-12	-35	...		
18	10.8	27	8.5	39	10	-15	-38	...		
19	10.5	27	8.2	39	8	-17	...			
20	9.6	28	7.5	37	2	-27	...			
21	8.6	29	6.6	35	-7	...	...			
22	9.0	28	6.9	36	-2	-35	...			
23	9.6	29	7.5	38	4	-24	...			
24	9.7	22	7.4	25	4	-21	...			

VK EAST — EUROPE (Long Path)										
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9		
1	10.5	4	7.0	-19	4	-6	-19	-39		
2	10.1	6	6.8	-10	4	-9	-24	...		
3	9.5	9	6.5	-1	3	-13	-31	...		
4	9.2	14	6.4	8	2	-17	-37	...		
5	8.8	17	6.2	15	1	-21	...			
6	9.8	23	7.0	24	7	-14	-35	...		
7	12.1	24	8.8	30	17	0	-15	-38		
8	12.7	23	9.8	22	19	6	-6	-25		
9	9.9	14	7.6	5	8	-7	-23	...		
10	9.6	5	7.4	-12	5	-7	-22	...		
11	10.1	-1	7.9	-27	2	-7	-20	...		
12	9.5	-9	7.5	-37	0	-7	-19	-37		
13	9.3	-15	7.3	...	0	-6	-17	-33		
14	9.3	-18	7.3	...	0	-5	-14	-29		
15	9.2	-27	7.2	...	-5	-9	-19	-34		
16	8.7	...	6.7	...	-14	-19	-29	...		
17	8.2	...	6.2	...	-21	-27	-39	...		
18	8.8	...	6.6	...	-13	-17	-28	...		
19	10.8	-14	8.5	...	-2	-3	-10	-22		
20	14.1	-3	10.7	...	-3	0	-4	-12		
21	14.9	0	10.1	...	-1	1	-2	-10		
22	13.2	0	8.9	...	2	0	-6	-17		
23	12.0	1	8.1	...	3	-1	-10	-25		
24	11.2	2	7.5	-29	4	-3	-15	-32		

VK SOUTH — EUROPE (Long Path)										
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9		
1	9.6	-1	6.6	-21	1	-11	-26	...		
2	9.1	3	6.3	-10	0	-16	-34	...		
3	8.6	7	6.0	0	-2	-22	...			
4	8.4	12	6.0	8	-4	-28	...			
5	8.2	22	5.9	23	-6	-37	...			
6	9.1	21	6.7	22	0	-24	...			
7	11.1	23	8.2	28	12	-8	-27	...		
8	13.5	22	9.5	28	20	6	-8	-28		
9	11.9	18	8.2	14	12	-3	-19	...		
10	9.4	11	7.2	1	3	-14	-32	...		
11	9.5	3	6.6	-12	1	-13	-30	...		
12	9.1	-4	6.2	-22	0	-13	-28	...		
13	8.7	-11	6.1	-31	0	-11	-24	...		
14	8.7	-19	6.0	...	-2	-11	-23	...		
15	8.6	-37	6.0	...	-11	-19	-32	...		
16	8.2	...	5.8	...	-22	-30	...			
17	8.0	...	5.7	...	-29	-38	...			
18	8.7	...	6.3	...	-22	-27	-39	...		
19	10.3	-21	7.1	...	-5	-7	-14	-27		
20	13.1	-7	9.7	...	-4	-1	-6	-15		
21	13.8	-5	9.6	...	-3	-1	-4	-13		
22	12.2	-6	8.5	...	-1	-2	-8	-20		
23	11.1	-5	7.7	...	0	-4	-13	-28		
24	10.2	-4	7.0	-34	1	-7	-19	-37		

VK WEST — EUROPE (Long Path)										
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9		
1	9.2	-11	6.4	-35	-2	-12	-24	...		
2	8.7	-9	6.1	-25	-3	-15	-31	...		
3	8.2	-6	5.8	-16	-4	-21	-39	...		
4	8.0	-3	5.8	-9	-6	-25	...			
5	7.9	1	5.7	-2	-7	-29	...			
6	8.8	7	6.5	1	-3	-23	...			
7	10.7	12	8.0	5	5	-11	-28	...		
8	12.9	14	9.7	8	12	0	-13	-32		
9	14.7	14	11.0	6	15	6	-4	-20		
10	13.5	13	9.1	0	12	1	-10	-27		
11	10.9	7	7.9	-12	5	-6	-19	-38		
12	9.6	-3	6.9	-25	0	-10	-23	...		
13	9.4	-9	6.4	-33	-2	-11	-24	...		
14	8.9	-16	6.0	...	-2	-10	-22	...		
15	8.6	-33	5.9	...	-10	-17	-29	...		
16	8.6	...	5.8	...	-17	-23	-35	...		
17	8.5	...	5.8	...	-23	-29	...			
18	8.1	...	5.7	...	-30	-36	...			
19	7.8	...	5.6	...	-33	...	...			
20	8.5	...	6.1	...	-23	-28	...			
21	10.2	-21	6.8	...	-5	-7	-15	-28		
22	11.8	-12	8.3	...	-5	-5	-10	-22		
23	10.7	-14	7.5	...	-3	-6	-14	-27		
24	9.8	-13	6.8	...	-2	-8	-19	-35		

VK EAST — MEDITERRANEAN										
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9		
1	9.7	-1	7.4	-26	1	-7	-18	-37		
2	10.4	-5	7.9	...	1	-7	-18	-37		
3	14.5	1	10.9	...	1	1	3	0		
4	19.6	5	15.0	...	-2	5	5	0		
5	22.8	7	17.8	...	-4	6	7	5		
6	22.8	6	18.7	...	-5	5	7	4		
7	22.0	6	17.9	...	-4	5	6	3		
8	20.4	6	16.4	...	-1	6	6	1		
9	18.6	7	15.7	...	3	7	4	2		
10	16.9	9	13.4	...	8	8	2	-7		
11	15.0	11	11.9	-29	11	6	-2	-15		
12	13.7	14	10.9	-9	13	4	-7	-24		
13	12.9	19	10.2	12	16					

# HAMADS

## TRADE ADS

- **AMIDON FERROMAGNETIC CORES:** For all RF applications. Send business size SASE for data/price to RJ & US Imports, PO Box 431, Kiama NSW 2533 (no enquiries at office please ... 14 Boanyo Ave Kiama). Agencies at: Geoff Wood Electronics, Sydney; Webb Electronics, Albury; Assoc TV Service, Hobart; Truscotts Electronic World, Melbourne; Alpha Tango Products, Perth.
- **WEATHER FAX programs for IBM XT/ATs** \*\*\* "RADFAX2" \$35-00, is a high resolution shortwave weatherfax, Morse and RTTY receiving program. Suitable for CGA, EGA, VGA and Hercules cards (state which). Needs SSB HF radio and RADFAX decoder. \*\*\* "SATFAX" \$45-00, is a NOAA, Meteor and GMS weather satellite picture receiving program. Needs EGA or VGA & WEATHER FAX PC card, + 137 MHz Receiver. \*\*\* "MAXISAT" \$75-00 is similar to SATFAX but needs 2 MB of expanded memory (EMS 3.6 or 4.0) and 1024 x 768 SVGA card. All programs are on 5.25" or 3.5" disks (state which) plus documentation, add \$3-00 postage. ONLY from M Delahunty, 42 Villiers St, New Farm QLD 4005. Ph (07) 358 2785.

## FOR SALE ACT

- **YAESU FT-207R** handheld, PA2 power adapter, YM24A speaker microphone \$150; FT-207R, YH-1 headset, box, manual, charger, \$150. Andrew VK1AS (062) 86 2793 AH (062) 39 0774 BH.

## FOR SALE NSW

- **SATELLITE Dish** 1.2 metres diameter, white in colour, good condition, spun aluminium, commercially built. Why pay a brand new price of \$300? Just the thing to get started into satellite viewing, skychannel, pay TV. Sell, \$150 ono. Colin VK2JCC (02) 476 2651 after 6pm.
- **COMPUTER**, old, CP/M, 280, plus software, serial terminal, printer, all working. TV camera, B&W, Ikegami 6000, viewfinder, working. Offers. Ray VK2ZON (02) 489 8561.
- **CUSHCRAFT** 11 element Yagi \$70; **BRUEL & KJAER** audio spectrometer type 2212 \$300. A Brooks VK2BKS QTHR (063) 82 3069.
- **BEAM ANTENNA** Chirnside 10/15 m 4 element c/w balun, vg condition, \$100. Ted VK2BTB (02) 644 4071.
- **KENWOOD TS430S** s/n 3052227 A1 condition, handbook and money back guarantee letter \$950; **TET EMTRON TE23M** twin element 10/15/20 m boom 2 m element 5 m Ideal for small area, near new, \$200. Peter VK2FFA (043) 24 4160.
- **ICOM STATION** consisting of top of range IC781 transceiver, IC2KL solid state linear plus IC-AT500 automatic antenna tuner, all in top condition, \$7000. Eric VK2JN (02) 449 4324.
- **4CX250** with socket, chimney, power supply, blower. What offers? David VK2BDT (048) 21 5036.

- **ICOM P2CT** 2 m handhelds (2) including BP114 (12v 400 mA) battery packs and charging leads and carry cases. Horst VK2HL (02) 982 7685 AH or (02) 971 9795 BH.

## FOR SALE VIC

- **YAESU FT690R** Mark 2, 6 m all mode Tx Rx with integral 10 W amp and mobile cradle, \$650. Damien VK3CDI (054) 27 3121.
- **ICOM IC-02A** 2 metre handheld xcvr with accessories, \$350. Lindsay VK3ANJ QTHR (051) 55 1380.
- **YAESU FL200B** SSB/CW transmitter and matching Yaesu FR100B/CW transceiver for HF amateur bands, including manuals, \$350; **YAESU FLDX2000** HF linear amplifier, \$350. All equipment in excellent working condition. Peter VK3FDX (059) 62 2563 AH.
- **COLLINS KWM2** xcvr, ex cond, with PM2 p/s, instr book, and Collins CC2 carry case. Working but has relay problem, \$450 ono; **KENWOOD TS-120S**, vgc, \$500; **YAESU FT-747GX**, ec, \$850. Ron VK3OM QTHR (059) 44 3019.
- **ESTATE OF VK3TV. GEMTRONICS** GTX2325 23 ch AM/SSB CB, \$20; **REALISTIC** AX190 amateur band HF Rx with speaker and info, \$150; **COLLINS 51J3** 30 band MF/HF Rx, \$300; **HP 211A** square wave generator to 10 MHz, \$100; **HP 608D** AM sig generator 10 MHz to 420 MHz, \$200; **HP 430C** Bolometer (trying to find all parts and h/book), offer; **PRINTED** circuit board holder, \$30; **AVO MK11** valve tester, with operational h/book but still to find valve data book, \$200; **BOOKS** — Hawkins Electrical guides 5, 7, 8, 9 of 1917, \$20 ea; **GRUNDIG GDO 240** volt, 1.7 to 250 MHz, \$40; **MICRONTA** AC clamp amp meter (new), \$50; **WHITES** coinmaster 6000/D metal detector, \$300; **REALISTIC PRO 2023** 16 ch VHF/UHF scanner with warranty, \$150; **BWD 821A** 50 MHz dual beam CRO, \$700; **HEATHKIT GDO 500** kHz to 250 MHz, \$30; **PHILIPS GM6014** AF/RF millivolt meter, \$50; **PHILIPS GM6001** electronic volt/ohm meter, \$40; **PHILIPS PM2440** millivolt meter, 1 mV to 1000 V, \$30; **HP 9704** probe multimeter, \$30. Many bits and pieces too numerous to list. Alan was a keen experimenter and had a lot of equipment and components, and it was of high quality — many items complete with handbooks, and most will be in good working order. As things are sorted lists will be made of what is available. Rodney VK3UG QTHR (057) 62 1454.
- **ANTENNA 5 ELEMENT** tri-bander 14/21/28 MHz. Original Werner Wulf item, \$550. VK3NF (03) 529 3265.
- **PHILIPS 2 m** amateur radio, repeaters, packet and simplex frequencies, 2 scanners, remote control, 25 W transmitter, facility sockets, mounting kit, \$275. Don VK3GMK 015 529 475.

## FOR SALE QLD

- **HEATHKIT SB-201** HF linear amplifier 1200 w 80-10 m mint condition, never used, complete with manual, \$800. LAO David Wescombe-Down VK4CMY (076) 85 2167 AH.
  - **YAESU FRG8800** general coverage receiver, vgc, \$800 ono; **KENWOOD R820** receiver (matches TS820) vgc, \$500 ono; **STANDARD C150** 2 m handheld, receives 130-170 MHz, \$400 ono; **SONY ICF2001** Rx vgc, \$250 ono. Steve VK4KHQ (018) 74 3231.
  - **SHACK** Clearance sales Fell, 97 Jubilee Terrace, Bardon. Sundays, September 11 and 25. Queries Peter VK4APD QTHR (07) 397 3751 AH.
  - **AMATEURS Paradise** four bedroom brick home 2000 ft asl Goldcoast and mountain views, master bedroom ensuite fourth bedroom shack. Large lounge and sitting room open fireplace, Nally tower rotor beams. Mrs Clarke, PO Box 87, Nerang Qld 4211.
  - **AMATEURS Delight!** 10.3 Ha, 3 Br brick 18 mths old, good fencing, 6x6 m garage, 4 dams, 915 m altitude, great take-off and views, 1/4 wavelength 80/40 m GPs, 4.5 km radial system, 2.5 hrs Goldcoast, 15 mins Stanthorpe, 25 mins Warwick, \$136,000 negotiable. "Doc" VK4CMY (076) 85 2167.
  - **VINTAGE RECEIVER & HORN SPEAKER**, ERLA Monodine S-50 made by "Electrical Research Laboratories", Chicago, Illinois, circa 1920s. Complete with all original knobs, dials, components, 5 "X1A" valves and wooden case. Original instruction sheet still intact inside lid. Requires restoration & polishing. Also Philips bakelite horn speaker. Best offer considered. Gary VK4AR QTHR (07) 353 1695.
  - **DIPLEXERS** for 70 CM repeaters, isolation better than 60 dB, insertion loss better than 1 dB, N type connectors, small rack chassis type, \$250. Another unit, same as above except isolation is about 90 dB, insertion loss better than 2 dB, \$300. Gary VK4AR QTHR (07) 353 1695.
- ## FOR SALE SA
- **EDDYSTONE** communications receiver model S640, serial LA2078, with emphasis on amateur bands from 1.7 MHz to 32 MHz, collectors item, mint condition with book, \$220. Bob VK5QJ, 7 Hewitt Ave, St Georges SA 5064, (08) 379 1845.
  - **YAESU FT200** good condition with power supply, \$320 ono. Neil VK5ANF (085) 821 270.
- ## FOR SALE WA
- **KENWOOD TS940S** HF xcvr as new cond, orig carton, complete with manual and mike, \$2600. John VK6AJW (09) 397 6944.
- ## WANTED NSW
- **WANTED** for Kenwood T/R TS520S, digital display DG-5, aerial tuner AT200. Bill VK2SUB (065) 54 7404.

- KENWOOD TR-851A 70 cm all-mode transceiver. John VK2ATU (02) 792 2275.
- VIDEO Camera national WV-2600E/ WV300E WV3200E or similar. Also wanted for parts VCRs Toshiba V-33A and Sony SLC6AS. Neville VK2QF QTHR (063) 73 8624.
- GUY rope, heavy duty, approx 125 metres, suitable for holding 14 metre tower. Malcolm VK2BMS QTHR (02) 257 4583 BH or (02) 958 1114 AH.
- MANUAL or circuits for wireless set C42 and supply unit vibratory No 12 MK2. Peter VK2CPK QTHR (02) 605 4790.
- WANTED for restoration project, AR7 coil boxes, any condition. Would consider complete receiver. Also wanted National HRO, any condition. Stan VK2EL QTHR (044) 55 5825.

**WANTED QLD**

- MOTOROLA "Pulsar" manual model T1777ASP2 or good photocopy of circuit or circuits. Will pay costs. Cliff VK4QJ QTHR (076) 98 1223.
- TYPE SN76S14 mixer ICs. Len VK4JZ QTHR (076) 966 455.

**WANTED WA**

- WANTED Ten Tec Argonaut 509 or similar. Allan VK6LL, QTHR. Please write or phone (09) 446 1568.

**MISCELLANEOUS**

- THE WIA QSL Collection (now Federal) requires QSLs. All types welcome especially rare DX pictorial cards special issue. Please contact Hon Curator Ken Matchett VK3TL, 4 Sunrise Hill Road, Montrose Vic 3765, Tel (03) 728 5350.

ar

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earning you  
money!**

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rates available  
from  
PO Box 2175  
Caulfield  
Junction Vic,  
3161**

**Editor's Comment**

Continued from page 3

less than 200,000 and 100,000 respectively. And Canberra is a very special case, where the Canberra Radio Society became the ACT Division of the WIA.

In every case, the lack of central city meetings has been compensated by the rise of radio clubs, some now larger than the WIA was 40 years ago! No club member need travel more than a few kilometres to his local meeting place. But, although mostly affiliated with it, the clubs are not the WIA.

I could go on further! I could talk about larrikins on FM repeaters (seldom a problem in cities of under a million). But space does not permit. Maybe next month?

**Bill Rice VK3ABP**  
Editor  
ar

**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 per issue 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.
- \*Copy typed or in block letters to PO Box 2175, Caulfield Junction, Vic 3161, 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.

- \*WIA policy recommends that Hamads include the serial number of all equipment offered for sale.
- \*Please enclose a self addressed stamped envelope if an acknowledgement is required that the Hamad 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: \$25.00 for four lines, plus \$2.25 per line (or part thereof) Minimum charge — \$25.00 pre-payable.

State: .....


**Not for publication:**       Miscellaneous       For Sale       Wanted

Name:..... Call Sign:..... Address:.....

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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.

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Industrial Printing and Publicity Co Ltd, 122 Dover Street, Richmond, 3121.

Telephone: 428 2958

## MAIL DISTRIBUTION:

R L Polk & Co Pty Ltd, 96 Herbert St, Northcote, Vic. 3070. Tel: (03) 482 2255

## CONTRIBUTIONS TO AMATEUR RADIO

Amateur Radio is a forum for WIA members' amateur radio technical experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for possible publication. Articles on computer disk are especially welcome. The WIA cannot assume responsibility for loss or damage to any material. "How to Write for Amateur Radio" was published in the August 1992 issue of AR. A photocopy is available on receipt of a stamped, self addressed envelope.

## BACK ISSUES

Available only until stocks are exhausted. \$4.00 to members, which includes postage within Australia.

## PHOTOSTAT COPIES

When back issues are no longer available, photocopies of articles are available to members at \$2.50 each (plus \$2.00 for each additional issue in which the article appears).

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.

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## HOW TO JOIN THE WIA

Fill out the following form and send to:

The Membership Secretary  
Wireless Institute of Australia  
PO Box 2175  
Caulfield Junction, Vic 3161

I wish to obtain further information about the WIA.

Mr, Mrs, Miss, Ms:.....

Call Sign (if applicable):.....

Address:.....

State and Postcode:.....

## VK QSL Bureaux

The official list of VK QSL Bureaux. All are Inwards and Outwards unless otherwise stated.

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OCTOBER 1994  
Volume 62 No 10

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*Journal of the Wireless Institute of Australia*

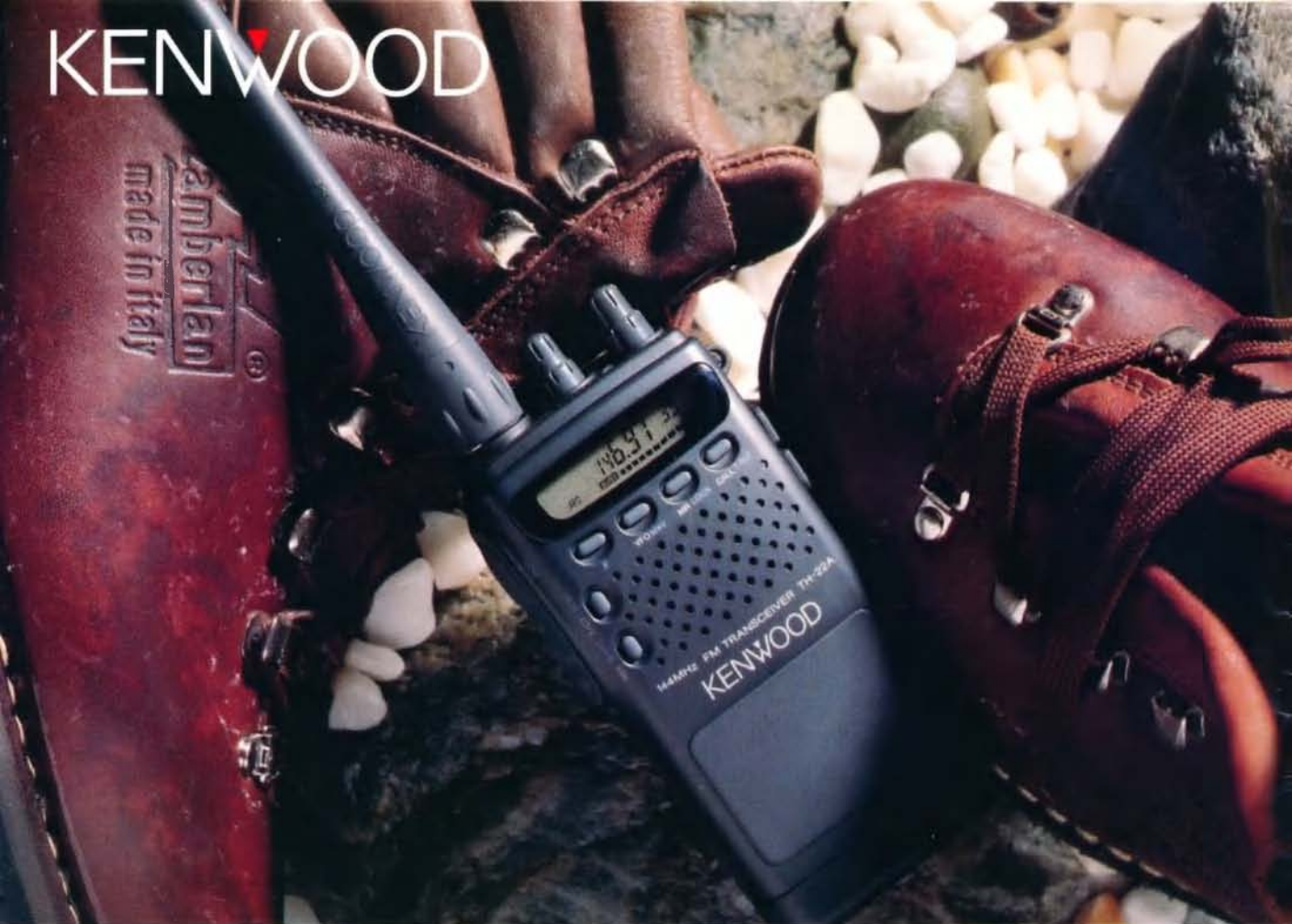


Full of the latest amateur radio news, information and technical articles including:

- \* An Empirical Approach to Building an HF Receiver
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*Amateur Radio* is published by the Wireless Institute of Australia, ACN 004 920 745 as its Official Journal, on the last Friday of each month.

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Business Hours: 9.30 am to 3 pm weekdays

**Deadlines**      **Editorial**      **Hamads**

November      10/10/94      12/10/94

December      07/11/94      09/11/94

January      09/01/95      11/01/95

Delivery of AR: If this magazine is not received by the 15th of the month of issue, and you are a financial member of the WIA, please check with the Post Office before contacting the registered office of the WIA. ©

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#### Cover

Thirty percent of the world population of King Penguins lives on Marion Island. Sitting between breeding King Penguins is Chris ZS1COK who recently returned to South Africa after a 12 month stint on Marion Island as a radio technician. See How's DX, page 36, for more details.

# Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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# Editor's Comment

Last month I hinted that, relating to the amateur population of a city, we might discuss those strange people who delight in disturbing other people using FM repeaters. I called them "larrikins", being in a charitable mood, but the Assistant Editor was much amused by my choice of a name. "Larrikin" hasn't been used for 50 years' he said, "You're living in the past!"

Perhaps rather than the obsolescent word "larrikin" we might talk about "anti-social lame-brained destructive misfits" but it needs too many words. They are certainly all of that, but the interesting thing is that such people are seldom, if ever, heard on repeaters in cities with less than a million population. Why should this be so?

Recently VK3s OM and ABP travelled through Adelaide, Alice Springs, Darwin, Port Hedland, Perth and back to Adelaide. About 16,000 km, and not a trace of repeater users misbehaving anywhere except in Melbourne before we left and after we returned. Adelaide's population is just over a million, Perth rather more. We know from past visits and letters received that Sydney (nearing four million) has a worse problem than Melbourne (with over three million people). Brisbane (more than a million) may still be OK. I haven't been there for about six years so my personal knowledge is outdated.

There are two possible reasons at least for this population effect. Firstly, radio amateurs and would be amateurs are only about one in 1000 of the population Australia wide. People psychotically impelled to create disturbances are also about one in 1000. Consequently radio vandals are a vanishingly small minority of perhaps one person, in a city of a million. And people of this kind depend on the mob-psychology of like-minded companions. With one there is no great problem; with two they back each other up!

Furthermore, most of the amateurs in a smaller city are personally known to each other, so anti-social people are more likely to be restrained by peer-pressure. In a larger city they are more anonymous, better hidden from the law-abiding majority.

Now, and more recently, those with anti-social tendencies and others who may be well-meaning but reckless have been given the blank pages of packet on which to display their opinions. The result has been a welter of twaddle, often defamatory! Unfortunately it covers the whole country, and unlike verbal vandalism it stays on bulletin boards or in hard copy for days or weeks, with the further complication of anonymous authors purporting to be someone else. These problems are being addressed but their complexity (involving technical, legal and regulatory aspects) means that progress must be slow.

To conclude on a happier note. Our VHF/UHF columnist Eric Jamieson VK5LP will complete 25 years of writing his column next month. This must be an all-time record and Eric deserves our hearty congratulations. Do you plan to aim for 50 years now, Eric?

Bill Rice, VK3ABP  
Editor  
ar

## Receivers

# An Empirical Approach to Building an HF Receiver

Drew Diamond VK3XU\*

Have you built a number of radio and electronics projects? Maybe a linear amplifier, or a transmitter perhaps. If you are contemplating having another go at some "home brew", a receiver project comes highly recommended. Not only will a useful item be the product of your

efforts, you also gain membership of that special club of experimenters who enjoy the magical delight of exploring the HF bands with a receiver that you have made yourself. And to make the project even more interesting, cost can be held to low limits, in true amateur fashion,

depending upon scavenging prowess.

A well-made direct conversion (DC) receiver can give surprisingly good performance, and will be adequate for uncrowded band conditions. However, for a band packed with strong and weak signals, "single-signal" reception (ie some sort of IF filtering) is necessary to sort them out. Single-signal DC sets have been built and described, but are, I feel, more complex and difficult to construct than an "equivalent" superhet design.

What follows are a few notes and a suggested circuit using locally available components, drawing upon my own practical work, and that of many other experimenters. An extensive bibliography of topical further reading is appended for those with a wish to burrow more deeply

## WIA Divisions

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually in their residential State or Territory, and each Division looks after amateur radio affairs within its area.

Division	Address	Officers	Weekly News Broadcasts	1994 Fees
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VK2	NSW Division 109 Wigram Street Parramatta NSW (PO Box 1066 Parramatta 2124) Phone (02) 689 2417 Freecall 1800 817 644 Fax (02) 633 1525	President Michael Corbin Secretary Treasurer Terry Ryeland (Office hours Mon-Fri 11.00-14.00 Wed 1900-2100)	VK2PFQ From VK2WI 1.845, 3.595, 7.146*, 10.125, 24.950, 28.320, VK2ZRH 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 VK2UX (*morning only) with relays to some of 14.160, 18.120, 21.170, 584.750 ATV sound. Many country regions relay on 2 m or 70 cm repeaters. Sunday 1030 and 1930. Highlights included in VK2AWX Newcastle news, Monday 1930 on 3.593 plus 10 m, 70 cm, 23 cm. Voicemail highlights on (02) 724 8739. Some broadcast text is occasionally available on packet.	(F) \$66.75 (G) (S) \$53.40 (X) \$38.75
VK3	Victorian Division 40G Victory Boulevard Ashburton Vic 3147 Phone (03) 885 9261	President Jim Linton Secretary Barry Wilton Treasurer Rob Hailey (Office hours Tue & Thur 0830-1530)	VK3PC 1.840MHz AM, 3.615 LSB, 7.085 LSB, 53.900 FM(R) Mt Dandenong, VK3XV 146.700 FM(R) Mt Dandenong, 146.800 FM(R) Mildura, 146.900 VK3XLZ FM(R) Swan Hill, 147.225 FM(R) Mt Baw Baw, 147.250 FM(R) Mt Macedon, 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday.	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK4	Queensland Division GPO Box 638 Brisbane QLD 4001 Phone (07) 284 9075	President Murray Kelly Secretary Lance Bickford Treasurer Roger Bingham	VK4AOK 1.825, 3.605, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, VK4ZAZ 28.400 MHz. 52.525 regional 2m repeaters and 1296.100 0900 VK4HD hrs Sunday. Repeated on 3.605 & 147.150 MHz, 1930 Monday	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK5	South Australian Division 34 West Thebarton Road Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Garry Herden Secretary Maurie Hooper Treasurer Bill Wardrop	VK5ZK 1820 kHz 3.550 MHz, 7.095, 14.175, 28.470, 53.100, VK5EA 147.000 FM(R) Adelaide, 146.700 FM(R) Mid North, VK5AWM 146.900 FM(R) South East, ATV Ch 34 579.000 Adelaide, ATV 444.250 Mid North Barossa Valley 146.825, 438.425 (NT) 3.555, 7065, 10125, 146.700, 0900 hrs Sunday 146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 1.825 3.560, (F) 7.075, 14.115, 14.175, 21.185, 28.345, 50.150, 438.525 MHz. (G) (S) Country relays 3.582, 147.350(R) Busselton 146.900(R) Mt (X) \$48.60 William (Bunbury) 147.225(R), 147.250(R) Mt Saddleback 146.725(R) Albany 146.825(R) Mt Barker broadcast repeated on 146.700 at 1900 hrs.	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
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VK7	Tasmanian Division 148 Derwent Avenue Lindisfarne TAS 7015 Phone (002) 43 8435	President Andrew Dixon Secretary Ted Beard Treasurer Peter King	VK7GL VK7EB VK7ZPK	(F) \$69.00 (G) (S) \$55.65 (X) \$40.00
VK8	(Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).		Membership Grades Full (F) Pension (G) Needy (G) Student (S) Non receipt of AR (X)	Three-year membership available to (F) (G) (X) grades at fee x 3 times.

Note: All times are local. All frequencies MHz.

into the material touched on here, and have access to a State, Engineering, or Technical Library.

In the late 60s and early 70s, valve circuit technology had evolved to a point where receivers with impressive signal handling characteristics were the norm. Many amateur-built and commercial sets featured at least one 7360 balanced modulator valve, arguably the best HF receiver mixer ever to be mass-produced. Consequently, at about that time, when solid-state receiver designs began to be published, "transistorised" sets quickly gained a reputation for poor strong-signal performance, and were not a patch on their older valve rivals. Various solid-state devices gradually became available that gave acceptable performance, including the CA3028 (singly balanced), the 1496 balanced mixer IC, 40673 dual-gate FET, and the diode ring. Many "serious" experimenters still favour the diode ring. However, in my opinion, they have several disadvantages; a rather large oscillator signal level is required (typically 5 mW), a conversion loss of about 8 dB is incurred, impedance levels are low (typically 50 ohms nominal), and therefore close attention must be paid to impedance matching for all products if the

desired high level performance is to be realised. Nevertheless, moderately priced diode modules (eg the SBL-1) are available, and many published designs make use of the diode mixer. There are "strong" active balanced mixers, including the SL6440 and SD8901/Si8901. Unfortunately, these devices are costly and not (at present, as far as I know) easily available in small quantities in this country, although supply should improve.

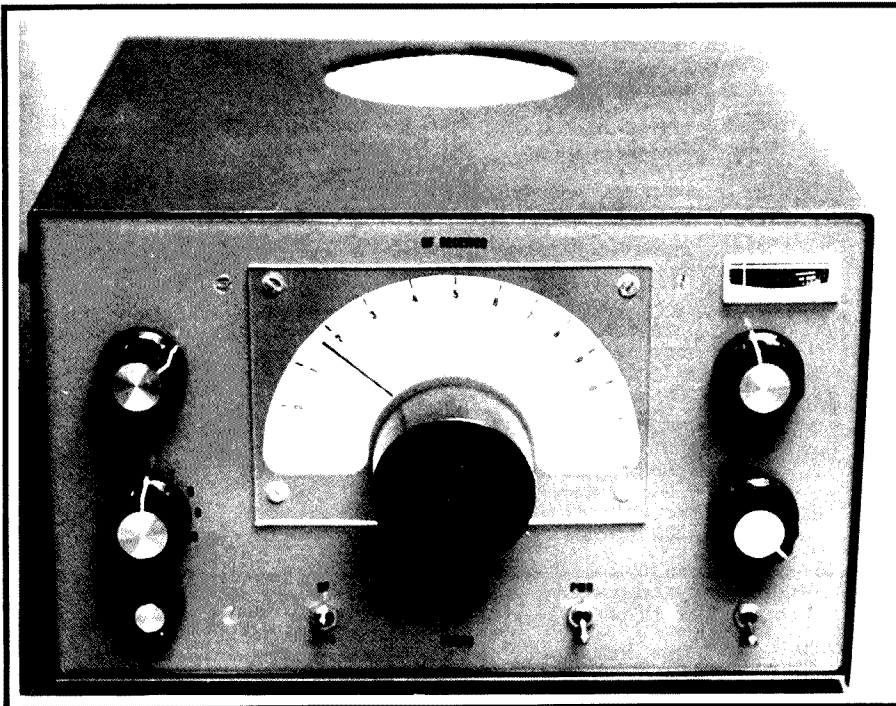
Most of the circuits we see here are European and American designs, which must cope with the thousands of powerful HF transmitters in those areas. Every amateur in the USA for instance, if you read QST, seems to have three neighbours just around the corner, each with a kW amplifier. Not a good environment for a weak receiver. In this region, however, things are a little more relaxed, and in most instances we can generally get by with a less bomb proof, but far more buildable, design.

Enter, stage left, the diminutive NE602 balanced mixer IC. This little chip and I have had a 4 year friendship, and in that time I have grown to like him very much, although he has two undesirable characteristics. Firstly, he's not very strong. He may quake a bit when powerful signals are around. I've

learned to live with that. By having a reserve of receiver gain (he contributes 15 dB himself), some RF attenuation "up front" generally takes care of this problem. Numerous experimenters frown on RF attenuation used like this, and regard it as a sort of "cop-out". Nevertheless, it has gained acceptance, and even some manufacturers use an attenuator. On HF, natural and man-made noise will usually be greater than the receiver front-end noise, so the point is perhaps fairly academic. Secondly, the 500 MHz bandwidth of the device makes it rather prone to TV and FM radio pick-up where the transmitters are close by. Building the receiver in a metal box, and including a 30 MHz low pass filter (if found necessary) takes care of this problem.

The first mixer must deal with all signals which pass through the input filter from the antenna. A doubly balanced mixer will considerably improve strong signal handling, and offer improved attenuation of any signals at IF. The NE602 is acceptable in this regard if the input signal is applied, and output product extracted "in balanced mode". I believe this is one aspect which is perhaps overlooked by some NE602 detractors. The product detector has only to deal with those signals which arrive through the IF crystal filter, so a dual gate FET will do a fair job if high input impedances are required, or a second NE602 would be fine if the 1.5 kohm input and output impedances suit the circuit arrangement.

For most amateur applications, an IF bandwidth of about 2 kHz is required, which is readily obtainable with a home-made crystal ladder filter. Using cheap computer crystals, a four-crystal filter, plus one for the BFO, will cost about \$16 at present. The quartz units are manufactured in huge batches, and match each other very closely in frequency. Out of band attenuation can be improved by building the filter in its own little compartmented box. The bandwidth is largely determined by the value of coupling capacitors, and is best found by experiment. For 6 MHz crystals, 33 pF will give a 1.8 kHz BW, whereas at 8 MHz, about 220 pF will be required. Reducing capacitance



"Computerrock" II receiver.

increases BW. Obtain your crystals from one source, and check that they are all of the same make.

We must be very careful in our choice of intermediate frequency (IF) and conversion crystal frequencies, always keeping in mind which bands need to be birdie free. Remember, a receiver is a sub-microvolt sensitive device. Harmonics of the VFO, the BFO crystal, and mixing products of these and any converter crystal (if in use) can produce bothersome spurs at spots in the tuning range. Let's try an example; say we choose a crystal filter IF of 6 MHz, and our basic tuning range is to be 3 to 4 MHz. The VFO runs on the "high side", so it must generate  $3 + 6 = 9$  MHz, to  $4 + 6 = 10$  MHz. The BFO crystal is on about 6 MHz. Now the second harmonic of the VFO (when tuned to receive 3 MHz) is 18 MHz, and the third harmonic of the BFO is 18 MHz, so we (may) get a growl type birdie right on the 3 MHz band edge.

Do not choose an IF which is included in a wanted band, or forces adoption of a VFO or BFO frequency

where these signals, or a harmonic, put internally generated carriers smack into a wanted band. So spend some time and do the arithmetic, considering harmonics of both oscillators to at least the fifth, then choose IF, VFO frequency range and BFO for minimum in-band spurs. Nevertheless, some sort of compromise is generally necessary. Problems can be greatly avoided by using compartmented construction for the various oscillators. Naturally, the VFO should be housed in an RF tight box, preferably die-cast, in accordance with current practice. If the BFO is also boxed up, then the likelihood of these sources "getting together" and producing unwanted products is greatly reduced. Even with a balanced mixer, and a good input filter, it is possible for very powerful signals to break through into the IF. Therefore, for instance, in some parts of this country, it would be prudent to avoid choosing 5 MHz as our IF.

Varactor diodes offer a way of obtaining the variable capacitance

required for VFO and input filter circuits. However, their use significantly increases complexity, and great care is needed for a VFO application. A high quality potentiometer, preferably a multi-turn type, and a well regulated and filtered voltage supply are mandatory. Provided their larger physical size is not a big consideration, ordinary variable capacitors allow us to keep things fairly simple, and understand more fully what's going on. The resourceful builder should not have great difficulty in obtaining suitable parts. There generally seems to be a number to choose from at the hamfests I have seen (see Parts). The main problem now is that of finding a really good dial and/or reduction drive. If you choose a round numbered IF, then a well shielded electronic counter can do duty by simply measuring the VFO frequency (those kHz digits to the right of decimal point), and perhaps applying the appropriate plus or minus correction factor, depending on BFO setting. Then a planetary or worm

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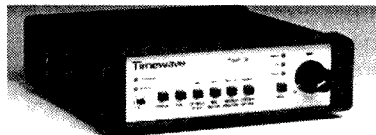
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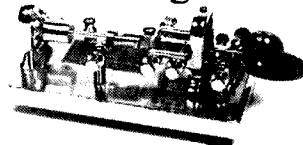
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drive can do the gearing down. Quite reasonable resolution and reduction can be had with a conventional 6:1 planetary dial if you only need to tune say, 200 kHz. However, for a 1 MHz coverage (as a "tunable IF" for example), a decent dial will be called for. One from an old BC-221 frequency meter is a fine example. As far as I know, there are no really adequate dials available "off-the-shelf" although, once again, they do appear for sale at hamfests and white elephant sales.

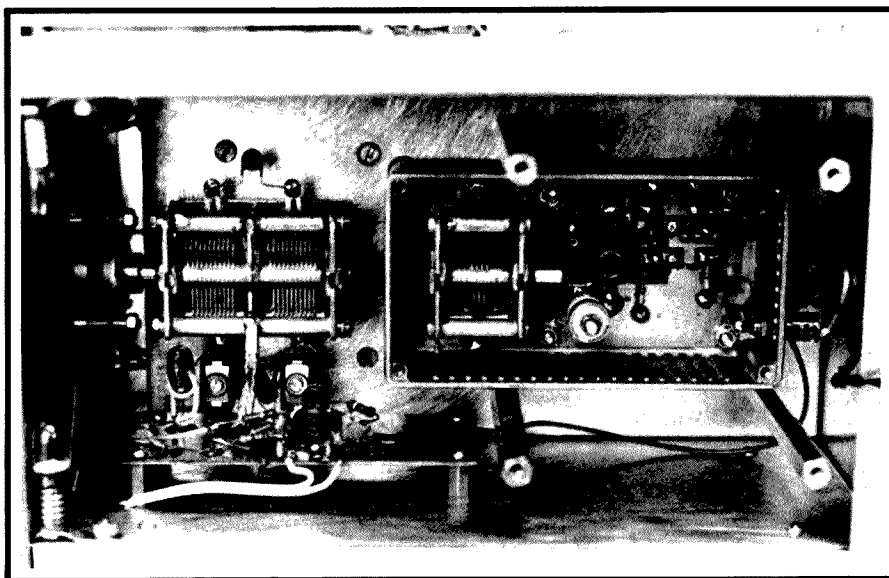
It was probably Wes Hayward W7ZOI who made popular the term "ugly construction". Also called "point to point", "rat's nest", "bunch of grapes"... not very flattering names for a construction method that, with a little care and practice, can yield quite satisfactory results. More than a few would-be builders have a sort of "no circuit board, no build" attitude, which is a pity, because more stable operation can usually be obtained in HF circuitry by adopting the ugly method, and construction time is considerably reduced. Furthermore, if something is wrong, or some improvement is to be added, then it is a simple matter of soldering in the necessary components. So, true experimenting is encouraged. With a circuit board, "the die is cast" and any changes are difficult and messy.

ICs may be inserted into wire wrap sockets. The NE602 for instance, has pin 3 at ground, so leave that pin pointing straight down, and gently flare out the remaining 7 pins. Now pin 3 can be soldered direct to ground foil. Components which have one leg to ground are sufficient in number to provide anchor points for the remaining components. Try to keep it all on a low profile. FETs and transistors are sometimes better positioned up-side-down. The emitter resistor for instance, may well provide the first anchor, so clip one lead, and solder that end to foil using the unclipped lead as a "handle". High value resistors, say 4.7 megohm with one lead soldered to foil, may be used where no actual circuit component is available. If there is a possibility of components shorting to foil, stick a little square of tape onto the board. The circuit can be quickly built up this

way. Mechanical support for heavier components, such as toroidal coils, may be obtained if necessary, with double-sided tape, or a small blob of acid free silicone.

A toroidal coil hint: where the plan calls for, say, 47 turns of # 26 B&S on an Amidon T50-2 core, estimate the length of wire required by adding up height and thickness of the core dimensions. For a T50-2 it is  $5 + 3 + 5 + 3 = 16$  mm, then multiply by the number of turns;  $47 \times 16 = 752$  mm. Let's make it 800 mm allowing for leads and errors. Uncoil about 400 mm from the spool and start looping them through. You may get 25 turns on. A quick mental estimation will now tell you where to cut the wire, and wind on the remaining turns.

no place in such circuits, and it is false economy to press them into service; think of the time you may waste trying to de-bug a wobbly (or won't start) oscillator. Buy new ones. Variable capacitors and trimmers should be air-dielectric, the ones with a plastic dielectric can be very drifty. Monolithic capacitors, typically  $0.1 \mu\text{F}$ , do an excellent by-pass and coupling job, and are real space-savers. Take care when soldering, the leads may come adrift with too much heat. If you are working from a published design, try to use the components specified. If substitutions of so-called "equivalents" are made by you, be aware that the circuit may function differently from the original. The greatest problem areas in my



**RF amplifier and VFO assemblies.**

For the VFO tank coil, avoid using toroidal cores, or any magnetic core for that matter. In addition to their unpredictable temperature characteristics, they have a nasty tendency to pick up stray 50 Hz flux from power transformers, and so "FM" the VFO frequency. A plain solenoid coil on a bakelite, ceramic or PTFE former is ideal. The coil should be placed at or near the centre of the VFO box, thus minimising coil losses and microphony effects.

For applications such as oscillators and filters where stability and low loss is desired, use polystyrene, NPO or silver mica fixed capacitors. Unmarked, unknown capacitors have

experience are unsuitable core materials (slugs and toroids), capacitor substitutions, improper circuit layout, and instability caused by component crowding and attempts at trying to make the thing too small.

### **A 3 to 4 MHz HF Receiver**

The circuit is based on the Computarock (Ref 15), with some improvements. For receivers of more than one band, general practice is to cover a basic tuning range which includes a low frequency amateur band. To tune 1 to 2 MHz (1.8 MHz), however, would have at least three drawbacks; broadcast signals may "break through" into this first IF,

image rejection would not be especially good (particularly at higher frequencies), and rather large variable capacitors may be required to obtain satisfactory tracking. A first IF (or basic range) of say, 3 to 4 MHz is much more manageable; since there are fewer powerful signals to break through, the image is at least 2 x 3 MHz (6 MHz) away, and smaller variable capacitors are required.

This is not a "high-performance" design, and no claims are made in that regard. However, it is buildable by the amateur with the usual skills and tools, and provides, perhaps surprisingly, quite acceptable performance under all but the most hostile receiving conditions. On 3 to 4 MHz, and using the suggested converter, sensitivity is in the order of 0.2  $\mu$ V for 10 dB S+N:N, IF (8 MHz) rejection is over 80 dB, and worst-case image rejection (28 MHz) is 50 dB. In accord with previous notes, a crystal filter IF of 8 MHz offers spur-free operation throughout the 3 to 4 MHz basic tuning range, and also

greatly avoids spur production with round numbered computer crystals if a converter is used. A sure-fire Hartley VFO runs on the "high side", 11 to 12 MHz. All bands are forward tuning, providing reception of USB/LSB SSB, DSB, CW and AM (as SSB).

Simpler superhets generally make use of the internal oscillator transistor within the '602. However, for the reasons stated above, VFO and BFO are separate boxed units with their own sets of components. This modest increase in complexity is justifiable in our pursuit of minimum spur production and satisfactory signal handling. Note that there is no IF amplifier. After the crystal filter, the signal is applied directly to the product detector.

A dual gate FET RF amplifier provides a useful degree of gain or attenuation of input signals. The source is raised to about 1.6 V by inserting an LED between source and ground. This amplifier is the only point where AGC may be easily applied, and it works pretty well.

Detected audio is sampled at the output of the first '741 AF amplifier, and applied to the AGC amp, a favourite circuit which has been around for years. Although not "full" AGC, quite a useful range is obtained, and ears are certainly saved with this set-up.

## Construction

Sufficient details are provided here for the experienced builder to make their own version, or to adapt circuitry as desired. My set is housed in a home-made aluminium box measuring HWD 155 x 250 x 255 mm. Good compactness, rigidity and screening between stages is obtained with one horizontal and two vertical internal panels as shown. Yet all the circuitry is accessible during and after completion. Mixer, crystal filter, AF amplifier and AGC amplifier are accommodated upon one board in the right-hand compartment together with boxed BFO, converter in the left compartment, 3-4 MHz RF amplifier and VFO in the centre, and power supply below centre.

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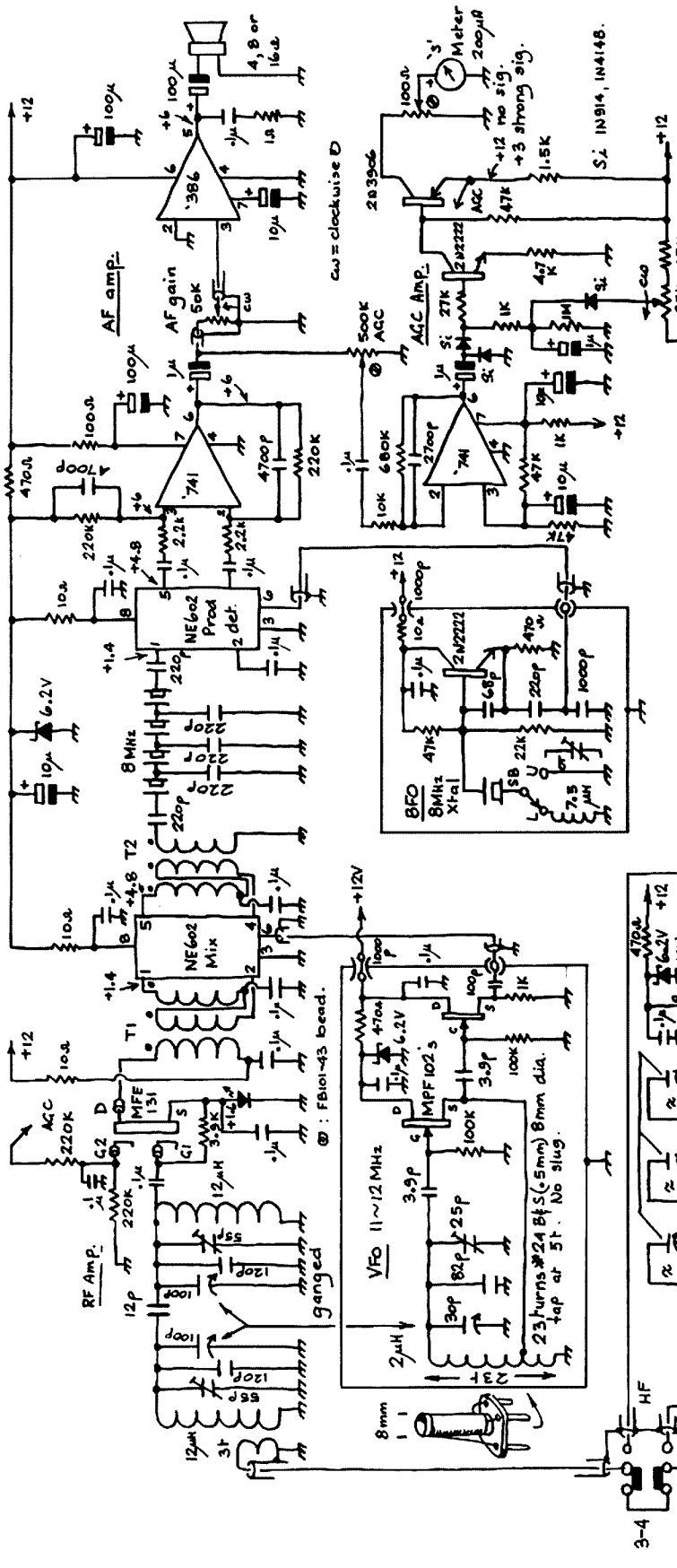
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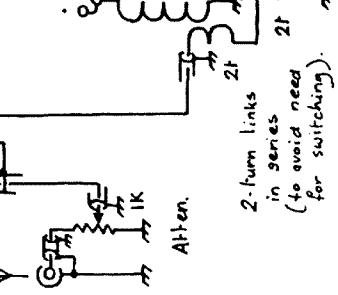
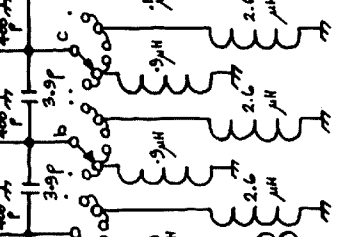
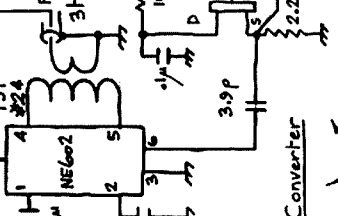
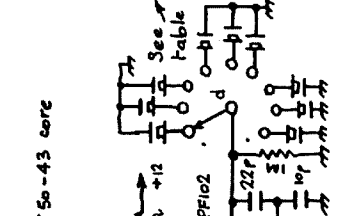
Xtal MHz	Band MHz
4	7-8
5	8-9
6	9-10
(7)	10-11
8	11-12
10	13-14
11	14-15
12	15-16
15	18-19
16	19-20
18	21-22
20	23-24
24	27-28
25	28-29

- 12µH : 47 turns #26 B&S (.4mm) T50-2.
- 7.5µH : 33 turns #24 B&S T50-2 core.
- 2.6µH : 21 turns #22 B&S (.63mm) T50-2.
- 0.9µH : 11 turns #22 B&S T50-6 core.
- T1, T2 : 211 loops #24 trifilar FT50-43 core.



"Computerock" Receiver Mk II

—VK3XU—



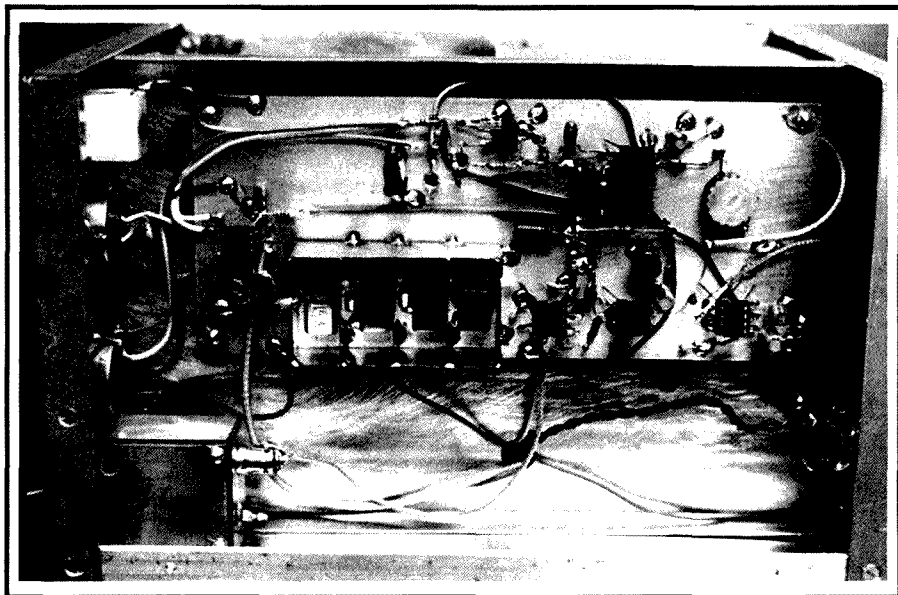
<7MHz to 15MHz : 2.6µH.  
15 to 28 MHz : 0.9µH.

Bandswitch simplified for clarity.

2-turn links in series (to avoid need for switching).

Atten.





**Mixer, crystal filter, product detector and AF amplifier.**

Here is where I cheat a bit, and say something along the lines of "in my junk-box I had..." Well, in this instance I did indeed have the necessary variable capacitors; a dual 100/100 pF unit, one of those superb English types with dual ball bearings and the shaft going right through, so that the VFO capacitor may be directly coupled at the end opposite the drive, and a 30 pF of the same make for the VFO. These types appear at hamfests from time to time. Look out for them, as they are very adaptable to individual requirements. Also, unlike most locally made BC type capacitors, you can arrange for clockwise shaft rotation to give a reasonably linear increase in frequency. If space permits, interpose an effective flexible coupler between the VFO capacitor shaft, and whatever is driving it. This will reduce drive wear due to any small shaft misalignment, and unwanted frequency changes being relayed to the VFO capacitor from hand pressure on the tuning knob.

A worthwhile improvement in stop-band attenuation may be had by building the crystal filter into a box with compartments, made from tinplate, brass or similar. Start with one vertical partition which has a small hole near the middle, and solder it to the circuit board foil. Then crystal and capacitor, another vertical partition, and so on, thus avoiding any fiddliness in building the filter. When

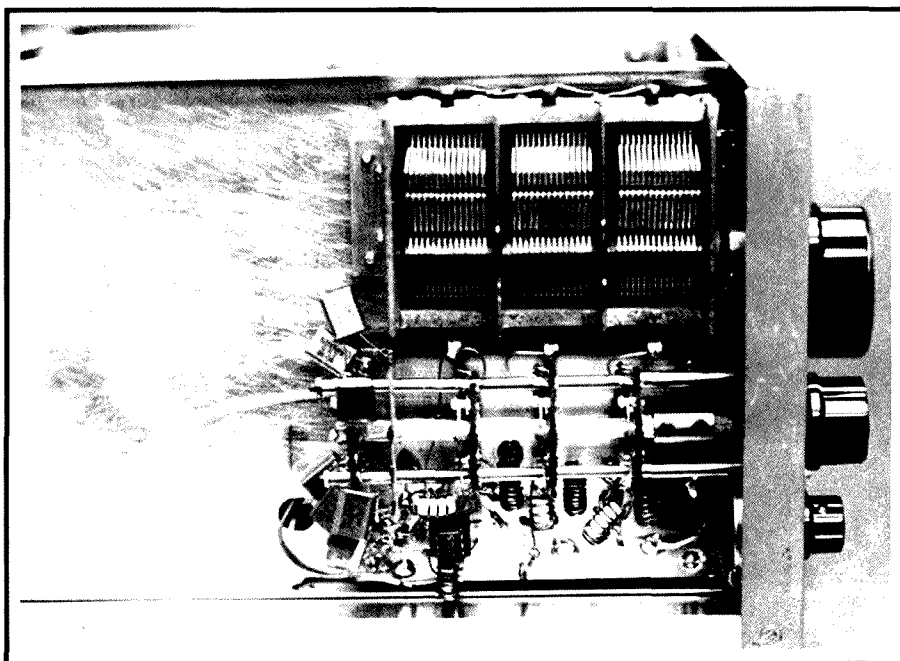
the five partitions and four crystals have been mounted, the longer side walls may then be attached. No need to use a lot of solder, small "tacks" will allow you to take it apart again if necessary.

The suggested converter circuit for coverage of the HF range is very similar to that originally used for the Computarock, and the reader is strongly advised to look up Ref 15 for fuller details. The table shows those bands available using cheap computer crystals. Note that when a

conversion crystal of 4 MHz is used to gain access to the 7 to 8 MHz band, we have the possibility of a spur that tracks 7 to 8 MHz; when the VFO is on 11 MHz (3 and 7 MHz) we have  $11 - 4 = 7$  MHz, and when the VFO is at 12 MHz (4 and 8 MHz) we get  $12 - 4 = 8$  MHz. My rough breadboard model did indeed have a faint constant tone right across this range, which had me worried at first. However, apart from the crystals at 4 MHz and 8 MHz, there is no other audible spur when the VFO and BFO are boxed as described, nor is there a serious problem with tuning 11 to 12 MHz, a busy SW broadcast band.

### **Alignment**

For the basic receiver, verify VFO operation, and adjust so that a range of just less than 11, to just over 12 MHz is generated. Connect an antenna to the input (a few metres of hook-up wire will do for now). If there is a TV set, or video recorder operating nearby, you should hear a burble about every 15 kHz across the band. Adjust the 55 pF trim capacitors at the input filter for as flat a response as possible. Depending on circuit vagaries, some compromise in response may be necessary. Counterclockwise (CCW) rotation of the RF gain pot should cause the S meter to deflect up to full-scale. Adjust the 100 ohm meter



**Converter assembly.**

sensitivity trim pot for full scale deflection at the CCW position of the RF gain pot, then return the RF gain pot CW to max. Set the 500 k AGC pot to maximum. Tune in a strong signal, which should cause the meter to deflect upwards. Adjust the 500 k AGC pot for what you regard as satisfactory AGC action (probably some point near maximum). The receiver should be responsive to strong and weak signals, which should sound clean, without hum, fuzziness or distortion.

Check that USB and LSB reception is possible. Crystals vary somewhat. The 7.5  $\mu$ H coil for LSB is an average value found after trying several different makes of BFO crystal. However, if you find that LSB SSB signals sound too "woolly", more series inductance is required to move the BFO frequency further away from the filter band-pass. Experimentally add some five or eight turns to the coil, and check again. If LSB SSB sounds "tinny", then less inductance is required. No adjustment is available for USB, using the crystal "straight" puts it on about the right spot at the other end of the filter. However, the crystal can be pulled

quite a lot higher in frequency by inserting the appropriate amount of series trim C, so keep that idea up your sleeve if required. As a final check, tune across a Morse or RTTY signal; you should get a strong note one side of the signal, then as you tune through to the other side, the note should be much weaker. Changing to the opposite sideband should reverse the strength of the notes. Also, the character of the background hiss (no signal present) should sound about the same when switched to either sideband.

### Parts

I don't know about other cities, but here near Melbourne, in addition to the usual components retailers, we have three or four vendors of radio type items. Variable capacitors, trim caps, Amidon cores, NE602's and many other parts are available from Electronic Disposals (03) 723 2699, Daycom Communications (03) 543 6444, and Stewart Electronics, (03) 543 3733. Resurrection Radio (03) 529 5639 sometimes have good used variable capacitors. The Moorabbin Radio Club, Ballarat and Bendigo hamfests, and EMDRC white elephants are always good sources of parts. Two USA mail-order suppliers; Ocean State Electronics, and Antique Electronic Supply (see ads in QST) are, in my experience, reliable sources of radio components, including variable capacitors. Finally, Rod Irving Electronics sell a good cheap range of computer crystals. So there's no excuse, you can get the parts if you're keen. Remember, demand creates the supply. Warm-up the soldering iron and get cracking.

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"Nar Meian" Gatters Road, Wonga Park, 3115

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## WIA News

### New UHF World Record

A new world distance record for the 2304 MHz band was established on 11 July last between Hawaii and California, reports the 27 July issue of the *ARRL Letter*.

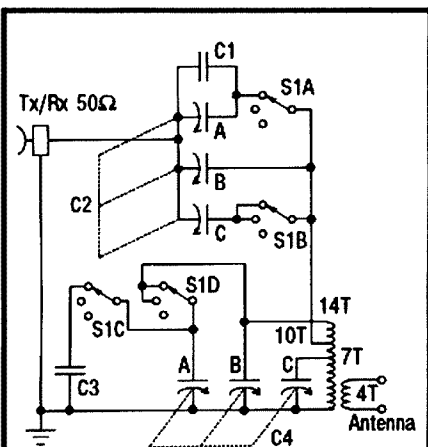
At 2321 UTC, Chip Angle N6CA at Palos Verdes in California contacted Paul Lieb KH6HME on the Mauna Loa volcano, Hawaii. The distance — 3950 km (2468.8 miles). The two operators made contact on CW, then attempted an SSB contact, but abandoned that to try making contact on 10 GHz. However, this was unsuccessful.

On 2304 MHz, both N6CA and KH6HME used homebrew transverters running 12 watts output to 1.5 metre dishes and 1.5 dB noise figure receivers. More details were to be reported in the September issue of *QST*.

## Antennas

# Feedback on the Design of the AR Single Coil Z Match Tuner

Lloyd Butler VK5BR\* with more information on the ubiquitous Z match.



### Components

- C1 - 400 pF, 2000 V mica
- C2 & C4 - 3 Gang 15 to 200 pF variable with 0.5 mm plate spacing
- C3 - 950 pF, 2000 V mica
- S1 - Oak switch with ceramic wafers 4 pole 3 position

Primary coil - diam 57 mm, length 84 mm  
Secondary coil - diam 67 mm, length 24 mm  
(Also refer to AR April 1993)

### Resistive load range

- 1.8 Mhz - 10 to 100 Ω
- 3.5 to 28 Mhz - 10 to 2000 Ω

### Switch legend

- 1.8 - S1
- 3.5 - S1
- 7 - 28 - S1

Fig 1 — The VK5BR single coil Z match tuner.

## Introduction

During the 1993 year, through the columns of *Random Radiators* and my own technical reports, we introduced a lot of information on the design of single coil Z match tuners. Experimentation led to one simple design which, without switching, could match a wide range of load impedances for the whole of the HF band. This article discusses some of the feedback which has been received concerning that unit and

reviews some of the other forms of Z match which have been popular or have been described in *Amateur Radio*. I have also included some material showing how I arranged the single coil circuitry to make use of components I had available.

## Feedback

The simple design of the Single Coil Z Match tuner seems to have captured the attention of many radio amateurs both in Australia and overseas and our AR circuit has been reprinted in several amateur radio journals in UK and USA. We have had letters and verbal feedback from numerous amateurs who have assembled the single coil Z match to the design published and who have been delighted to find how well it works on their own particular antenna system. This is encouraging feedback which adds confirmation to the performance figures I obtained at the test bench using simulated impedance loads (*Amateur Radio* — April & May 1993).

Of course one can always expect the occasional application difficulty. I know of one radio amateur who could not get his single coil unit to match the feed point of his particular G5RV antenna on 7 MHz. The G5RV is renowned for high SWR on some bands and perhaps the feedline was of such a length as to produce terminal impedance components outside the achievable range of the Z match unit. Anyway he found he could fix his particular problem by moving the input tap back up to the top of the coil.

There is also the odd critic. One night I listened, as part of an

audience, to a well known radio amateur soundly condemning the single coil Z match. As far as he was concerned, the only arrangement was the two coil unit as described in the RSGB handbook. The discussion was not supported by any quoted experience using the single coil unit nor any technical data which compared the performance of single and two coil units. As presented, his argument was not really substantiated.

Operationally the two coil Z match and the single coil Z match do much the same job. Based on my bench tests, their electrical performance is similar and I am quite happy to recommend either. The single coil arrangement can be attractive to the home constructor as it is simpler, only one coil and possibly no switching if limited to the HF band (3.5 to 28 MHz). It is also interesting because it is something different for the constructor to experiment with. Goodness knows in this day and age of modern "off the shelf" amateur radio we need a few things we can still fiddle around with ourselves.

## VK5BR Version

All the tests previously described in *Amateur Radio* concerning the single coil Z match were carried out on experimental assemblies prepared by a Melbourne radio amateur, unnamed in *Amateur Radio* because he requested it to be that way. I am grateful to that gentleman and Ron Fisher VK3OM of *Random Radiators* for inviting me to experiment with these units and evaluate their performance. I might not otherwise have been urged to examine the single coil idea.

Initially I was somewhat sceptical that a wide load range for the whole HF band could be achieved. I did not question the idea of the dual frequency range in the coil primary circuit as described by ZL3QQ. However, the ZL3QQ design came with secondary taps adjustable for different load conditions whereas our units had fixed secondaries. I did have doubts that the fixed secondary arrangement would satisfy a wide range of load conditions over the whole HF band. As it turned out, a coil arrangement was found which did just that and the rest is history.

I recently decided that it was high time I built a single coil Z match for my own use. As with many of my own projects, the precise design was somewhat influenced by what components I could find in my own spare parts store. The design was also influenced by exactly what I wanted it to do. I thought it might be interesting to describe how my own version of the unit evolved.

The coil was made to the precise detail as given in April/May 1993 issues of *Amateur Radio* using the perspex support sheet. I selected a pair of three gang tuning capacitors which had 0.5 mm plate spacing. At this spacing, breakdown voltage is around 2000 allowing operation at a power in the order of 400 W PEP. Each gang section measured a minimum capacity of 15 pF and a maximum capacity of 200 pF.

Referring to my curves in *Amateur Radio*, it can be seen that a maximum capacity of 200 pF is too low for 3.5 MHz and two sections of each gang must be paralleled for this band. On the other hand, the minimum capacity of two sections in parallel is 30 pF and this value is too large for the series input capacitor at 28 MHz and too large for the shunt capacitor at 7 MHz. Hence, the paralleled sections are switched in at 3.5 MHz and switched out at higher frequencies — a price I was prepared to pay for using wider spaced capacitors to achieve the higher power rating of the unit.

The unit also includes provision for operation at 1.8 MHz with load resistances between 10 and 100 ohms. I did not think I would ever have an antenna at 1.8 MHz with any higher radiation resistance than 100 ohms and provision for higher load resistance was not included. The circuit of the complete Z match unit is shown in Figure 1.

A three position Oak switch with ceramic wafers (S1) provides selection of 1.8, 3.5, or 7-28 MHz. At the higher frequencies, only single sections of the ganged capacitors are connected. At 3.5 MHz, a second section of gang is switched across the input capacitor and a second section is switched across the full winding of the coil. At 1.8 MHz, a 400 pF fixed capacitor and a third gang section are

added across the input capacitor and a 950 pF fixed capacitor is added across the full winding of the coil. Fixed capacitors of at least 750 volt rating are required for the 1.8 MHz circuit and finding a source of supply of these can be a problem. I found sufficient high voltage mica capacitors in the junk box to parallel up for the required values. Rated at 2000 volts, they were more than adequate for the job.

---

*At 1.8 MHz . . . there  
were no arcing problems  
at high power.*

---

Bench tests on my own unit carried out on the units assembled in Melbourne and it worked fine with my own antennas on all bands. I did find that at 14 MHz it was sometimes necessary to operate the unit in the 3.5 MHz switch position so that two sections of the tuning gangs were in circuit. At 1.8 MHz, antenna current for a given transmitter power was only marginally less than with the L match network I normally use on this band. There were no arcing problems at high power.

My only critical comment on the assembled single coil unit concerns its physical size. Mounted in a metal box I had available, it is considerably larger than the compact coil version of the two coil Z match I had constructed a few years ago. I could have reduced the size a little by making a tailored box but, even then, the minimum size would have been limited by the fairly large single coil, space for the field around the coil and the larger wide spaced three gang variable capacitors.

The compact coil version of the two coil Z match was first introduced as the Rononymous Z match in the *Random Radiators* column of March 1990 issue of *Amateur Radio*. As you might have guessed, it was the work of our same anonymous amateur I referred to earlier. I assembled a unit using the compact coils as specified and subsequently reported on the good performance achieved in the December 1990 issue of *Amateur Radio*. Fitted in quite a small aluminium box, it takes up minimal

space in the car and has been very useful to pack in with other portable gear for the field day. Perhaps there is scope for even another version of the single coil Z match, also using a compact coil arrangement.

## Summary of Z Match Designs

With all the Z match designs that have been submitted, choice for one's own use can get confusing. Let's briefly comment on each design in turn:

- (1) The two coil design in the *RSGB Handbook* and based on a design by Allen King W1CIL has been used with great success by radio amateurs all around the world. The tuner essentially covers bands over the range of 3.5 to 28 MHz.
- (2) The compact coil version of the two coil Z match introduced in *Amateur Radio* and as discussed in a previous paragraph, covers a similar band range and has performed equally well. The smaller coil assembly enables the whole tuner to be fitted in a smaller container than needed for the RSGB type assembly.
- (3) The AR Single Coil Z match was developed from a circuit design by ZL3QQ but was improved to cover a wide range of operating conditions without switching. (Refer *Random Radiators*, *Amateur Radio* May 1993 and *VK5BR Amateur Radio* April 1993). There is not a lot to differentiate between the electrical performance of the single coil unit and the two coil units but with coil switching removed, tuning of the single coil unit is a little simplified. Construction of the single coil unit is also simpler as the coil winding effort is halved. The basic tuners cover the range of 3.5 to 28 MHz but in my article I showed how operation of the single coil unit could be extended down to the 1.8 MHz band by the addition of a switch and a few fixed capacitors.
- (4) A Single Coil Z match for 1.8 to 14 MHz was introduced in *Random Radiators*, *Amateur Radio* August 1993. This was made with a higher inductance coil to get down to 1.8 MHz without switching in

fixed capacitors. However, in doing this, there is a penalty of losing bands above 14 MHz. Personally I wasn't greatly impressed with this arrangement. At 1.8 and 3.5 MHz, the tuning network generally operates with a higher loaded Q than the tuner described in the previous paragraph. Higher voltages are developed imposing greater restrictions on power and load impedance range for a given tuning capacitor plate spacing. For 1.8 MHz, I prefer to use the 3.5 to 28 MHz design with added capacitor switching for 1.8 MHz if required.

(5) Z Match — Two Coil Windings but no Switching. (VK5BR *Amateur Radio* September 1993). This was a slightly different arrangement which was examined during our experimentation. The article in *Amateur Radio* was submitted as a report on experimental work carried out rather than a suggested prototype for duplication. As I was able to make it match over quite a wide load resistance range, I felt it should be documented as another workable option even if not one which we might promote.

### What are the Conclusions?

Firstly, if you already have a two coil Z Match tuner and it does what you want it to do, don't throw it away. Both

the RSGB type coil design and the Rononymous compact coil design have been well proven. Both units operate over the frequency range of 3.5 to 28 MHz.

However, the AR single coil Z match design is now available as a simpler option achieving much the same load impedance range at the same range of frequencies. We have also shown that its operation can be extended to the 1.8 MHz band by adding a few components.

Apart from their simplicity and their wide matching range, the Z match tuners have several other attractive features. Firstly, their matching is all achieved without the need of roller or tapped and switched inductors. Secondly, their load can be balanced or unbalanced and no additional balun transformer is required. The output circuit is ideal to interface balanced transmission lines, tuned or untuned and to match the odd random length of wire. The single coil version also has the additional feature that, provided large enough tuning capacitors are used, coil or band switching is not needed for the basic HF range.

So many times have I been asked, *Which Z match shall I build? Which is the best?* The answers are not all black and white but hopefully the preceding paragraphs will be of some help to those who ask.

\*18 Ottawa Avenue, Panorama SA 5041  
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## WIA News

### Changes at Federal

The Federal Secretary, Bruce Thorne, tendered his resignation in August. It was accepted, with regret, at a meeting of the Federal Executive on Sunday 28 August. At that meeting, Donna Reilly, Manager of the Federal Office, was appointed Federal Secretary for the time being until a new candidate can be found.

The Federal Secretary's position is being advertised with a view to a new Federal Secretary being appointed, hopefully at the quarterly Extraordinary Federal Convention to be held over the weekend of 29-30th October.

Pieter Kloppenburg VK2CPK is now NSW Division Federal Councillor, in place of Roger Harrison VK2ZRH, who remains on Federal Executive as Vice President. New Alternate Federal Councillors for the NSW Division are Pixie Chapple VK2KPC and Peter Naish VK2BPN, replacing Terry Ryeland VK2UX and John Robinson VK2XY.

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## ■ Equipment Review

# ICOM IC-2340H Dual Band FM Transceiver

*Reviewed by Gil Sones VK3AUI*

The ICOM IC-2340H is a compact, dual band, mobile FM transceiver offering high power output with full features in a package which is capable of being shoe-horned into a modern car. These days, in addition to the constraints of space in the dashboard area, you must look out for the possible action of airbags. This radio is small and you should be able to find a spot for it.

The microphone socket is on a lead coming out from the back panel so that you have some freedom where you attach it. The socket is one of the modular ones like an overgrown US phone socket.

A consequence of small size and high power output is the need to adequately ventilate the radio. A small

fan is provided which operates for a period after the PTT is pressed. Alternatively, you can program the fan to operate continuously. Another need is to provide a power lead direct to the battery. The lead supplied is well fused and thick enough to minimise voltage drop.

Most of the front panel is taken up by a large display which shows both bands. The display also has signal strength and power output graphs plus displays of mute, memory, VFO, repeater, etc status. Around the display are 10 pushbuttons and four rotary controls.

The rotary controls for each band are mute/volume and tuning/memory selection controls. The mute and volume are concentric and could be

a trifle fiddly whilst mobile. Still, there must be some compromise in the small space available.

When switched on, the display goes into a self test routine which is arranged to be innovative and visually attractive, rather like some screen saver routines. This display also appears if you haven't used the controls for a period. After some time, if the display gyrations pall, you can dispense with it as this is one of the software options.

There are many software options which lead to an instruction book of 56 pages. This book is truly an operation manual with only a one page specification and no block or circuit diagram.

One feature you may be tempted to deactivate are the beeps which are emitted when various things happen. However, this may be unwise as they also are used to confirm various operations.

Some interesting timeouts are available. The length of transmission can be limited which is handy in the situation where you manage to drive down the road sitting on the microphone. It will also tend to limit your monologues if you are operating simplex. The timeout has several times available from 3 minutes to 30 minutes. The radio can also be set to switch off, if not used for a time between 30 minutes and 2 hours, so as not to leave you with a flat car battery if you leave it running.

Repeaters with odd offsets can be easily accommodated as the offset can be varied from the standard one. Both bands have the standard offsets programmed as the default values.

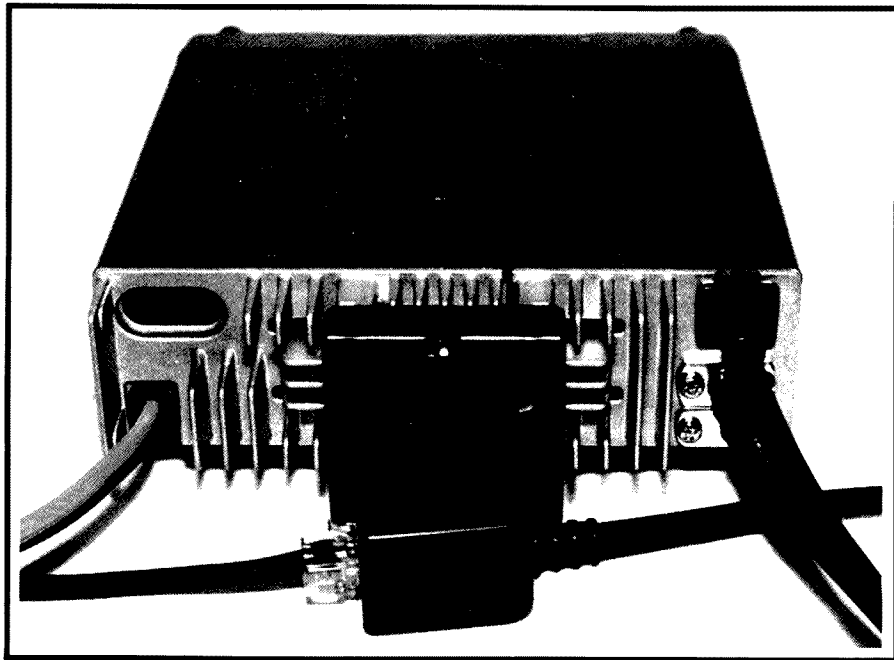
Memory capacity is 50 memories per band plus the scan edge memories. The memories can store offsets and, if required, CTCSS info. The memory medium is an EEPROM which is non volatile and does not depend on a lithium battery. Even so, when operating from a mains supply, a glitch was able to so scramble things that a major reset was needed. The glitch apparently came from builders' equipment a few doors away.

Mains power supplies need to be quite hefty if you use the radio in the shack. The transmit current drain can be around 10 amps and this is a



**The IC-2340H. Note the small size in relation to the handheld microphone, and the modular mic socket which is on a lead coming from the back of the transceiver.**

**(Photo by Ron Fisher VK3OM)**



**A rear view of the IC-2340H, again showing the modular mic socket and plug, and the programmable fan, very necessary as a consequence of the small size and high power output of the transceiver.  
(Photo by Ron Fisher VK3OM)**

steady drain unlike an HF sideband rig. The result is that the power supply for mains operation needs to be of the same size as that used for many HF transceivers. The recommended ICOM supply is the IC-PS30 which is rated up to 25 amps peak.

To fully utilise the radio at least some of the optional modules would be needed. These are a CTCSS encoder/decoder, a DTMF encoder/decoder and matching microphone, and the voice synthesiser unit.

Locally, the DTMF option is probably less usable although it does enable some interesting code operations.

The CTCSS, or sub audible tone, will be needed if you use one of the many repeaters using this system.

The voice synthesiser will be of interest for mobile operation or if you have trouble reading the display.

All the modules are small items which many users should have installed by the agent. The size and delicacy of the connectors is such that, unless you have the skill, you should leave it to an expert.

The transmit frequency coverage is limited to the amateur bands but the actual receive range is quite wide.

The receiver performance is only guaranteed within the amateur bands. Very many other services can be heard. Indeed, at some times and in some locations, they can make their presence felt even within the amateur band. Disturbance from pagers is no worse than with other similar radios.

Disturbance from other services such as pagers is an area all manufacturers should address. It is a problem common to all makers. It is possible to do better. HF radios have had a lot of work done on them in this area and the same techniques can be extended to VHF and UHF.

The output connector is a UHF socket on a wander lead. Such a connector is totally inappropriate for such a fine transceiver. The connector should be a type N, or similar, constant impedance connector. ICOM are not alone in this but a UHF connector is really unsuitable for a VHF/UHF radio.

The ICOM IC-2340H is a well built radio which should give excellent service. It is well built and operates very smoothly.

Thanks to ICOM (Australia) Pty Ltd for the loan of the review transceiver.

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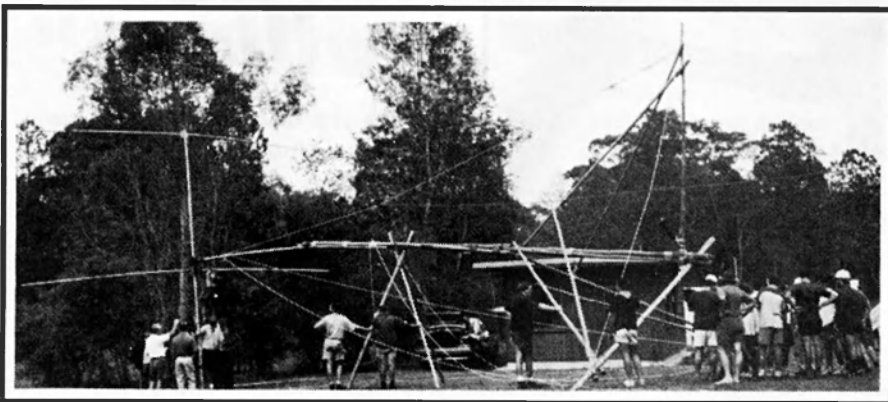
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# ■ Operating Scouting Ingenuity at the 1993 Jamboree On The Air

*National Organiser of JOTA for 21 years until 1984, Noel Lynch VK4BNL\* has another story about last year's event.*



**The bush pole mast under construction.**

At a Scouter Leaders Training Course, held at the Queensland Branch Scouter Training Course at "Kulgun" near Samford in South East Queensland during last year's JOTA weekend, the Training Commissioner Col Martin decided to combine the trainees' pioneering skills with their interest in participation in JOTA to their mutual advantage.

The project he chose was a supporting tower for a rotatable tri-band Yagi, to be built with bush poles and involving the skills of the trainees in rope lashings. The accompanying photographs give some idea of their success on that enterprise.

The bush poles used were approximately three metres long and approximately 75 mm in diameter, lashed together with strong lashings. Three "outrigger" arms at the base provided the armstrong method of rotation. The base of the tower rotated on a heavy tractor bearing in a drum buried approximately one metre in the

ground. The tower rotated remarkably easily during its use.

The equipment used during the evening participation by the trainees was a TS440S, loaned and operated by its owner Col Hinxman VK4ACH with me as the "second op". In all, approximately 30 good DX contacts were logged in the Pacific and European areas.

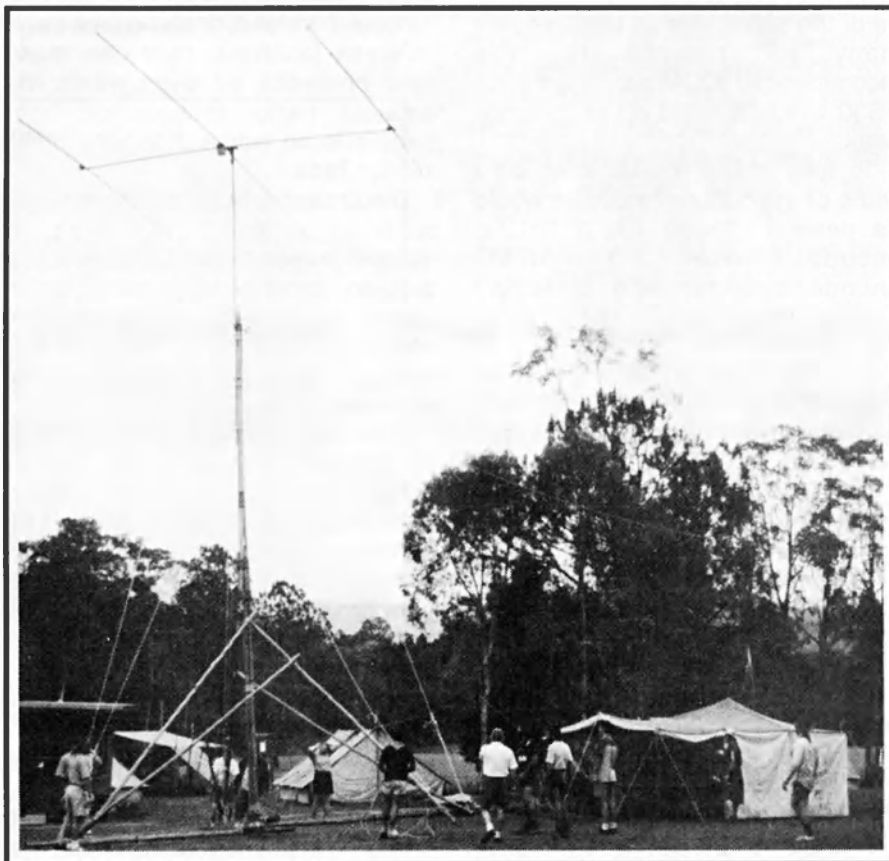
One contact, in particular, was definitely enjoyed by one of the trainees seeing it was with the operator in the small English town from which she had migrated.

In addition, little or no QRM was experienced from the small nearby neighbouring town of Samford where the training centre is located.

I recall a few years ago when the same Training Commissioner chose, as a similar pioneering activity during that particular JOTA weekend, the erection of a cubical quad antenna using somewhat lighter bush poles for the support of the elements. I also recall that it, too, worked very well!

*\*15 Noeline Street, Dorrington QLD 4060*

ar



**The bush pole mast in the air ready to go.**



## Technical

# Technical Abstracts

Gil Sones VK3AU1

### Audio Filter

An audio filter can often be used to limit the noise bandwidth of a signal. It can shave off high frequency noise before the loudspeaker or sharpen up the CW bandwidth. An IF filter is the best way and DSP can give a good result, but a cheap and often satisfactory result can be achieved with an audio filter.

A neat design combining a simple LC filter with a single Integrated Circuit filter was described in *Radio Communications* for August 1994 by Paul Lovell G3YMP. This design uses a Maxim MA294 low pass filter IC which is actually a switched capacitor low pass filter. The filter cut off is determined by a Varicap allowing control by a potentiometer.

The IC should be obtainable and suitable varicaps are locally available. At the worst the IC could be obtained from suppliers in the USA or England. The use of Visa and the cost of airmail postage for small items is not prohibitive.

The filter uses a 150 mH inductor and two capacitors as either a 410 Hz or a 600 Hz filter. This is bypassed for SSB. The LC filter is then followed by the tunable low pass filter to further reduce the high frequency

components. The low pass filter tuning range is from 240 Hz to 3.5 kHz.

The circuit is given in Fig 1 and a further circuit to provide for balanced inputs is given in Fig 2. The components are not critical and one of the more common audio output ICs could be substituted for IC2.

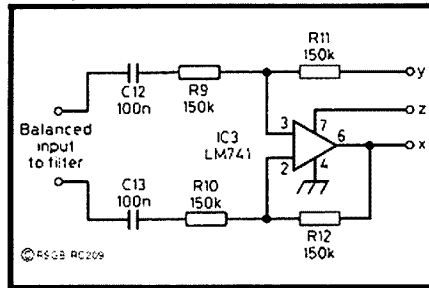


Fig 2 Balanced Input Circuit (Optional).

### Coaxial Cable Wall Mounting

Coaxial cable can be a problem to fix along a wall and around 90 degree corners. The minimum bending radius allowed makes the corners very difficult to do without damaging the cable. However, a neat solution is described in *Technical Topics* in *Radio Communications* for August 1994 by Bruce Carter GW8AAG.

The solution to the problem is to use a couple of larger radius loops at the corner with the line of the corner being a tangent to both loops. Fig 3 shows how this is done. There are two solutions depending on whether the cable must be run at the same level or not.

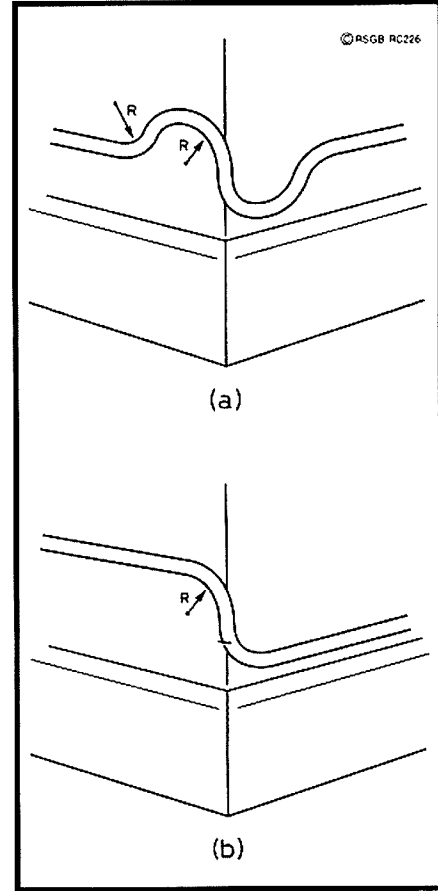


Fig 3 GW8AAG's method of overcoming the problem of taking a coaxial cable around a 90 degree corner when the cable needs to be clipped tight to the walls. (a) Where it is necessary to retain the cable run at the same level; (b) where the cable run can be at different levels. R is the permitted minimum radius for the cable in use.

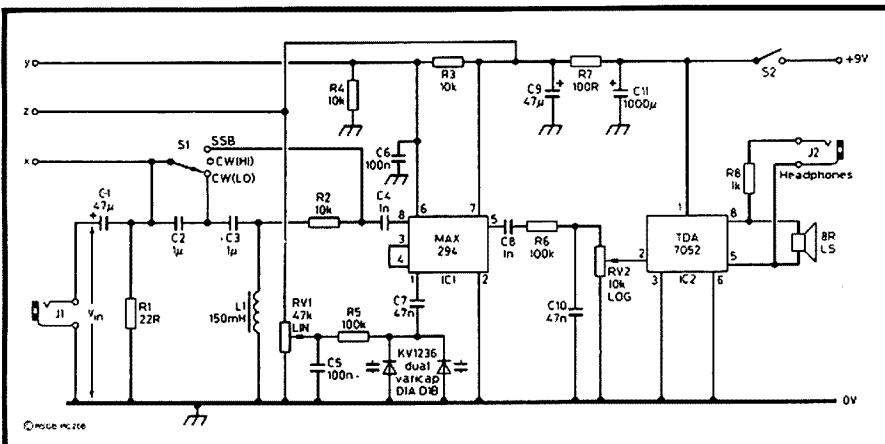


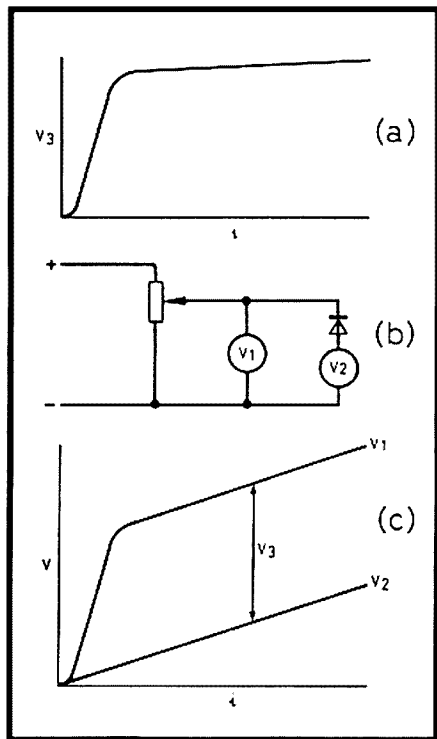
Fig 1 Audio Filter Circuit.

### Simple Semiconductor Tests

Simple tests of semiconductors can be made with analogue multimeters. You can find junctions by testing for diodes but more useful tests are possible with analogue multimeters. Two such tests were featured in Pat Hawker's *Technical Topics* column in *Radio Communications* for June 1994. The item was provided originally by John Osborne G3HMO.

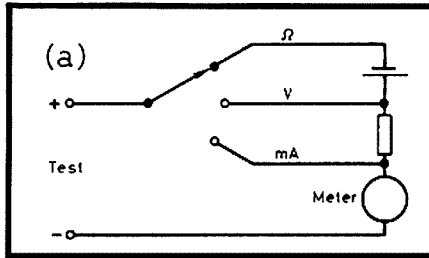
The first test is a breakdown voltage test of a diode. This could be either an ordinary diode or a zener diode. The only requirement for a non destructive test is that the diode can carry the deflection current of the meter in the reverse direction. For a 20 kohm per volt multimeter this is 50 microamps. A more sensitive meter will have a smaller current.

The test setup is shown in Fig 4(b). Fig 4(a) shows the reverse breakdown curve of a diode. An analogue meter of 20 kohm per volt or better on a suitable voltage range is placed in series with the diode. A variable voltage is applied measured by a second meter. This will allow the curve shown in Fig 4(c) to be plotted. As the voltage is increased the difference between the two meter readings,  $V_3$ , will increase and then remain constant when the breakdown voltage of the diode is reached.

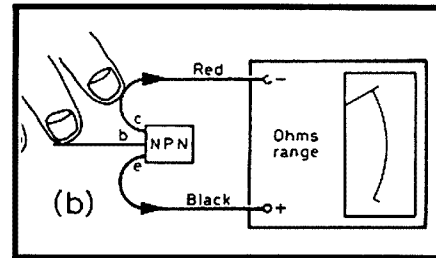


**Fig 4 Use of analogue meters for non-destructive testing of the breakdown voltage of a semiconductor junction.**

Transistors may be checked for action by what is known as the wet finger test. The circuit of a typical analogue multimeter is shown in Fig 5(a). The circuit shows the ohms range of the meter in series with a resistor and a battery.



**Fig 5(a) Analogue meter used to test diode breakdown voltage.**



**Fig 5(b) Wet finger test.**

By checking for resistance between collector and emitter, with the multimeter battery acting as the transistor collector supply, a rudimentary amplifier is set up. By applying moistened fingers between base and collector some small base current will flow through your skin

resistance. The collector current will increase from the small leakage current to some value which will deflect the meter.

This test is shown in Fig 4(b). With a little experimentation you can gain an idea as to whether the transistor is good or bad. A high resistance

**Table 1. Annual Showers/35° South**

Dates	Peak*	Shower Name	Times/Paths†	Point Ant
May 01-06	?	<i>Eta Aquarids</i>	0400-0640 NW-SE	SW
			0640-0820 E-W	S
			0820-1100 NE-SW	SE
June 17-26	June 20	<i>Ophiuehids</i>	1900-2150 N-S	W
			2150-2300 NW-SE	SW
			2300-2350 E-W	S
			2350-0100 NE-SW	SE
			0100-0350 N-S	E
July 10-August 05	July 25	<i>Capricornids</i>	2030-2240 N-S	W
			2240-0015 NW-SE	SW
			0015-0115 E-W	S
			0115-0300 NE-SW	SE
			0300-0510 N-S	E
July 15-August 20	July 30	<i>Pisces Australid</i>	2120-0115 N-S	W
			0255-0650 N-S	E
July 26-31	July 28, 30	<i>Delta Aquarids</i>	2150-0000 N-S	W
			0000-0140 NW-SE	SW
			0140-0230 E-W	S
			0230-0410 NE-SW	SE
			0410-0620 N-S	E
October 18-23	?	<i>Orionids</i>	0200-1315 NW-SE	SW
			0315-0530 E-W	S
			0530-0645 NE-SW	SE
December 05	December 05	<i>Phoenicids</i>	1420-1900 NE-SW	NW
			1900-2100 E-W	N
			2100-0140 NW-SE	NE

\*Peak date may vary (see text).

†Peak hours may vary, sequence of path rotation will follow pattern shown here.

range on the meter is preferred as the current is smaller and more in keeping with the sort of base current your finger will provide. Take note that the multimeter lead polarity for this test is the reverse to what is marked on the instrument.

### Meteor Scatter

An interesting series of articles on Meteor Scatter has been running in the NZART journal, *Break In*. Of particular interest is the table of meteor showers for the southern hemisphere. The articles are in the July, August and September issues of *Break In* and the author is Robert B Cooper ZL4AAA. Showers peak over a shorter period which may also vary due to a number of variables. They are annual and the year is not an even number of days in length which our calendar adjusts with leap years. Hence, there is some variability in the best times. Table 1 is of use as it gives the principal showers for the southern hemisphere.

ar

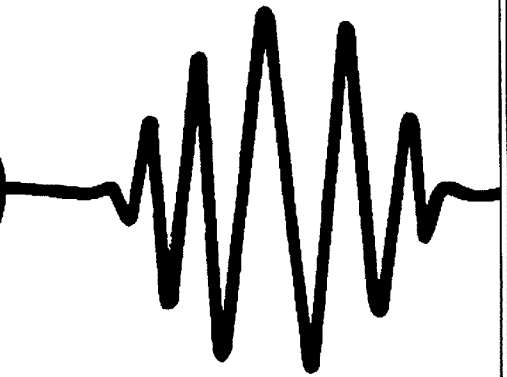
## WIA News

### New WIA Members

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of August 1994

L30895	MR A BURNS	VK2MCD	MR J GREEN
L31526	MR D HARIS EFFENDI	VK2PJM	MR P J MOUTTOU
L31527	MR J HENDERSON	VK3JEU	MR A D TREMELLEN
L31528	MS C L TREMELLEN	VK3JWH	MR W HUNT
L31529	MS J MCDONELL	VK3PDL	MR P D LOCHTENBERG
L31530	MR C FERGUSON	VK3TLW	MR M DETERING
L40357	MR R CAULFIELD	VK3TTC	MR A HENDY
L50324	MR T A S FRAZER	VK3UCM	MR C MCDONELL
L70120	MR J J BRADY	VK3WRE	MR W EDGAR
L70121	MR D TERAZZI	VK4ANH	MR E J HARRIS
VK1JMJ	MR P M JENKINS	VK4AZJ	MS C E HAYCOCK
VK2AVE	MR J J BUSSING	VK4CMP	MR M PYE
VK2IAZ	MR K ARAKAWA	VK4ES	MR H E SPRENGER
		VK4KBQ	MR D R WATERSON
		VK4KZE	MR W P ROWLAND
		VK4TQX	MR H B RUSHTON
		VK4VJY	MR B G WITJES
		VK4ZV	MR K J GRICE
		VK6AQO	MR P L HAY
		VK6BWI	MR P A PARKER
		VK6THB	MR R G PHILLIPS
		VK7ZSJ	MR S P JONES

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Member CE Design

# THE 21st CENTURY COMM. RECEIVER IS HERE TODAY

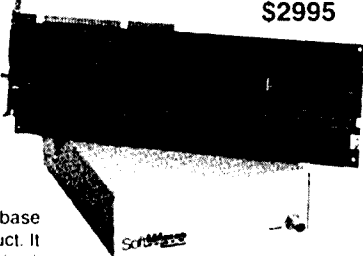
## THE FABULOUS SoftWave

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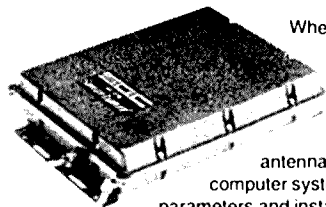
SoftWave is the first fully integrated digital communications receiver for Microsoft Windows. SoftWave combines a high performance receiver, digital signal processor, spectrum analyzer, database and Windows program in one product. It opens the door to wireless communications on the PC.

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## The SG-230 Smartuner HERE AT LAST



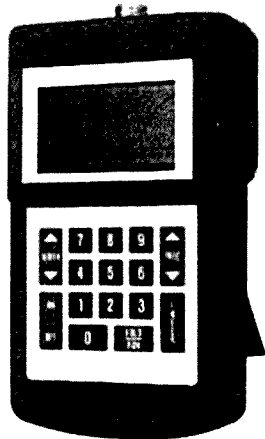
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### AEA SWR-121

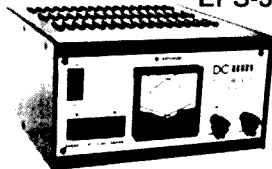
No matter, whether you are a professional antenna designer, antenna experimenter, or just analysing different antenna systems for max. performance, this microprocessor controlled freq synthesizer with an accurate low-power SWR bridge is the answer. It shows a precise display of SWR curve, independent of the feedline. With optional software you can save plots on disk and control from your computers keyboard. Available for HF & VHF/UHF bands. **Call for brochure!**



SWR-121(VHF/UHF) \$859  
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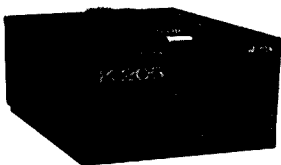
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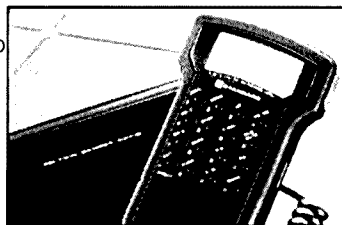
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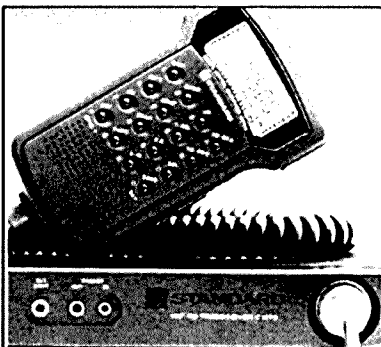


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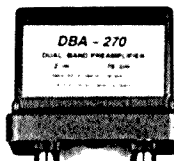


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The column headed "PACKET RACKET" is aptly named! The writer presents the material in such a biased manner as to suggest, that he and his colleagues are the first and only suppliers of packet equipment. We wish to inform you that there are TNC's made by AEA which provide multiple mode, multiple speed and multiple radio port TNC facilities to interface most transceivers, see below!

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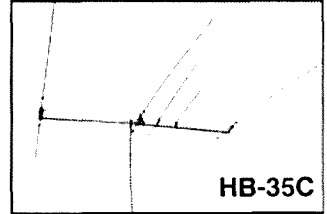
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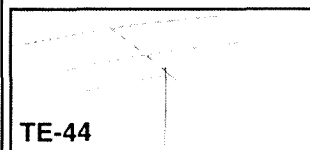
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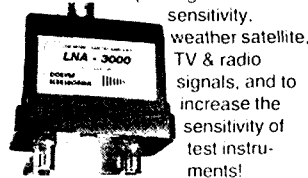


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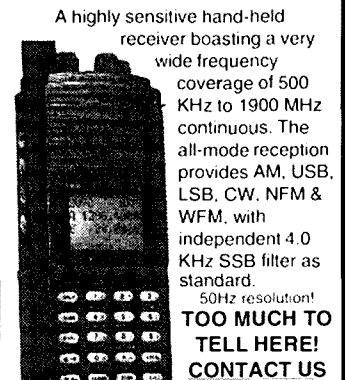
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### Singapore Conference

The 9th International Amateur Radio Union Region 3 Conference in Singapore will be over by the time members read this. Held over 5-9 September at the Apollo Hotel in Singapore's Chinatown region, five members from around the country represented Australia at the Conference.

Last February, the WIA's Federal Council voted to fund a delegation of four people to the Singapore Conference. In May, the Federal Council appointed Kevin Olds VK1OK (IARU Liaison Officer), Neil Penfold VK6NE, Gavan Berger VK1EB and John Aarsse VK4QA as the official delegation. Wally Watkins VK4DO was also accredited as an observer to the Conference as he planned to attend on his way to the 7th World ARDF Championships in Europe. At the July Federal Council meeting, Neil Penfold indicated that he would no longer be able to attend, so the Council voted unanimously to send Roger Harrison VK2ZRH, being the Vice President, in Neil's place.

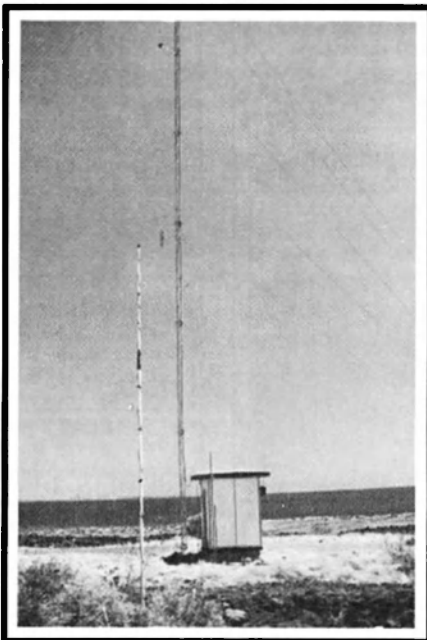
The topics of discussion at the Singapore Conference included promotion of amateur radio in developing countries, a program devised and launched at the 8th Region 3 Conference in Indonesia in 1991, matters relating to the concept of a commonly accepted amateur licence between countries, amateur satellites, amateur band intruders and misuse of amateur bands, the international HF band beacon project, amateur radio direction finding, matters relating to education of prospective amateurs and amateur examinations, and consideration of the requirement for Morse code ability for amateurs.

The outcomes of the Conference sessions will, no doubt, be reported at length in *Amateur Radio* magazine in due course.

## ■ Digital Communications

# Setting Up VK6RWR

*Bob Robinson VK6BA\* tells the story of a packet installation at remote Cape Lambert.*



**VK6RWR, looking north, with one of the 20 metre verticals in the foreground and the VHF antennas on the mast.**

It's hot in the north of WA. Summer temperatures can exceed 45 degrees Celsius but VK6RWR, the Packet Radio Station constructed, operated and maintained by the "Amateur Radio Society North West Aust Inc", continues to perform reliably at its remote site overlooking Cape Lambert, 1600 km north of Perth.

It all began as the brain child of Dave VK6YA who had for some years operated a BBS under his callsign from his home QTH in Pt Samson. All SYSOPS will be aware of the limitations imposed on their enjoyment of the hobby when equipment is committed to packet operations.

Early in June 1993, at the QTH of Steve VK6PA, interested members of the ARSNWA Inc met to decide on a plan to assemble a system capable of operating reliably at a remote site

and of withstanding the high temperatures and cyclonic conditions experienced in the NW of WA.

Those present at that meeting volunteered to take on the different aspects of the project ranging from fund raising to the manufacture and assembly of the phased vertical antennas. A completion date of 30 June 1993 was set as the day for RWR to go to air from its new home. Members voted to levy the local Packet fraternity a nominal amount to establish a working bank balance with which to get the project under way. Access to a powered site had previously been obtained and now the hard work began.

The completed station, consisting of 2 HF radios and 2 VHF radios is controlled by a home built 386SX PC using DRSI cards and HF modems. One HF port operates on 20 m using FSK, connecting to VK6SR and VK6CW from a "CODAN 7727" commercial radio modified for Packet frequencies and derated in power output. The 15 m port operates on PSK connecting to stations in Indonesia and New Zealand using a Yaesu FT 107.

The HF antennas were constructed locally. On 20 m we have a pair of phased quarter wave verticals giving a cardioid pattern directed south east to Perth, Albany and Adelaide. On 15 m we opted for more gain and constructed a pair of 5/8 wave phased verticals giving a classic figure 8 bidirectional pattern giving good coverage between Indonesia, Alice Springs, Tasmania and New Zealand.

On the VHF link the reliable Philips 828s, modified to suit packet and with pin diode switching, are used to service the local TPK users on 144.850 and VK6BA on 147.600. VK6BA runs an open BBS to VK6ATS Esperance on 20 m and VK6AZL Tom Price on 40 m. All users are welcome on either VHF channel.

The culmination of all the work and the combined efforts of all concerned came to fruition on 22 Aug 1993 when VK6RWR first went to air from its new home. Although about three weeks behind schedule, it has, with very little attention, proven to be a very reliable installation. Using the popular F6FBB V5.15 software package the remote SYSOP duties are undertaken by VK6YA, PA and BA ensuring the integrity and reliability of the database at all times.

On Sunday, 10 October VK6YA, PA and AMD made the trip from Karratha and Wickham to Whim Creek repeater site to install the modified digipeater VK6RCA. As this site is solar powered the digi is CTCSS controlled to conserve battery power.

The site for VK6RCA is on a hilltop 8 km east of Whim Creek, 250 m above the surrounding countryside. It

takes considerable stamina to make the trip to the top carrying radios, batteries and antennas, etc, and an early start was the order of the day. I am happy to say all OMs made it in fine style.

The antenna for RCA, designed and constructed by Richard VK6AMD, is a two element quad directed at Pt Hedland with the rear minor lobe optimised for a signal back to RWR at Cape Lambert.

Trials conducted during the day have proven this arrangement to be quite satisfactory.

Meanwhile, back at RWR, installation of the airconditioner unit proceeded along happily and all equipment is now maintained at a constant 28 degrees C.

From inception in June it has taken approximately three months to complete the project and make all systems operational.

The ARSNWA Inc would like to express its appreciation to all involved

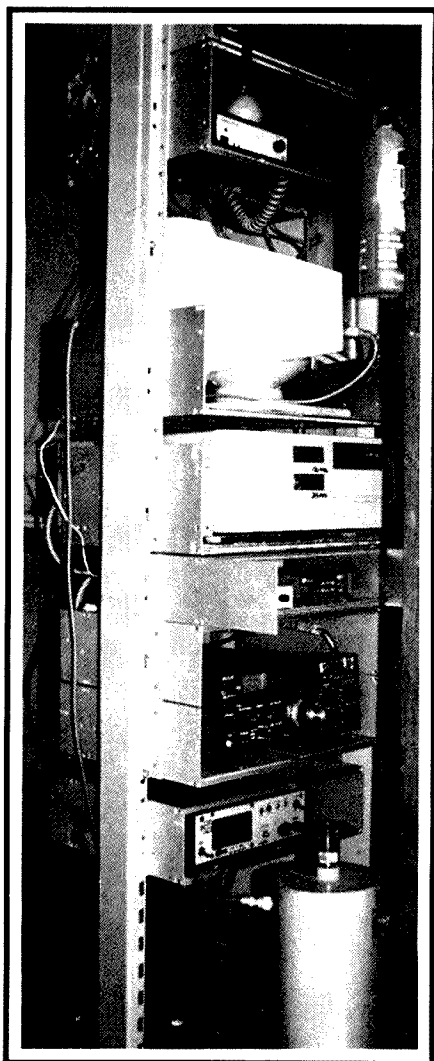
with the project, especially those who have contributed so much of their time and equipment. Special thanks go to the WIA WA Division for their financial assistance, and to the Wickham Community Association, for their donation to the project.

Special thanks must also go to the following:- Richard VK6AMD, Karratha; Michael VK6BHY, Dampier; Ian VK6IH, Karratha; Dave VK6DLB, Dampier; Dave VK6YA, Pt Samson; Jim VK6CA, Perth; Malcolm VK6YDX, Wickham; Steve VK6PA, Karratha; Brian VK6AIH, Pt Hedland (digi through VK6RCA Whim Creek); and Bob VK6BA, Wickham.

ARSNWA would also like to thank those non-amateurs who have contributed their expertise in the various disciplines required to bring this undertaking to a satisfactory conclusion. We may be a small group but we get the job done.

*\*PO Box 20 Wickham WA 6720*

ar



The equipment rack at VK6RWR.

## ■ Antennas

# Tuning the TH3-JR Antenna

Alex Stuart VK2ALX\*

I first sought advice concerning the tuning of my TH3-JR antenna from Hy Gain USA in about 1987. I was promptly sent a 16 page Beam Antenna Trouble Shooting Guide. I have had very recent correspondence, August/September 1993, and discussion with Telex which appears to have incorporated Hy Gain.

### Trap Resonant Frequencies TH3-JR

Resonant frequencies of traps from my own GDO tests are :-

10 m Director	27.6 MHz
10 m Driven Element	26.6 MHz
10 m Reflector	27.2 MHz
15 m Driven Element	20.6 MHz
15 m Director/Reflector	20.3 MHz

These frequencies are higher by some megahertz, compared with the

frequencies listed in the Hy Gain Guide. A number of amateurs have also found the trap frequencies considerably higher than the Guide figures. Telex has now advised that "the readings you took with your GDO are normal and the traps do not require adjustment" and further "we will change the guidelines to reflect accurate readings."

### Physical Dimensions of the TH3-JR

Telex has advised that in regard to the beam's dimensions "the distance should be 72 inches from the outside of the boom for the reflector and director. The driven element will be more like 72 5/8 inches due to the insulator."

"The 'C' dimension should be 34 1/2 inches for phone and CW. I know

it looks odd but the overall dimensions for the driven element (excluding traps) work out to be 129.75 inches for phone and 134 inches for CW."

### Comments

The long standing problem of the TH3-JR antenna trap frequencies

now seems to be sorted out along with the inside or outside of the boom dimension matter previously discussed in *Amateur Radio*. Telex's proposed revision of the Guide will hopefully detail the recommended trap frequencies.

\*10 Wanganella Street Balgowlah Heights NSW 2093  
ar

railway electrical branch until 1951 when it was taken over by the electricity commission. He was in power stations all his working life being Supt of Ultimo, Lithgow, and White Bay stations from where he retired.

Honorary positions held over the years include:-

Vice President WIA in the early 1950s, Committee member WIA, Chairman NSW branch Institute of Engineers, and Amateur Advisory Committee PMG.

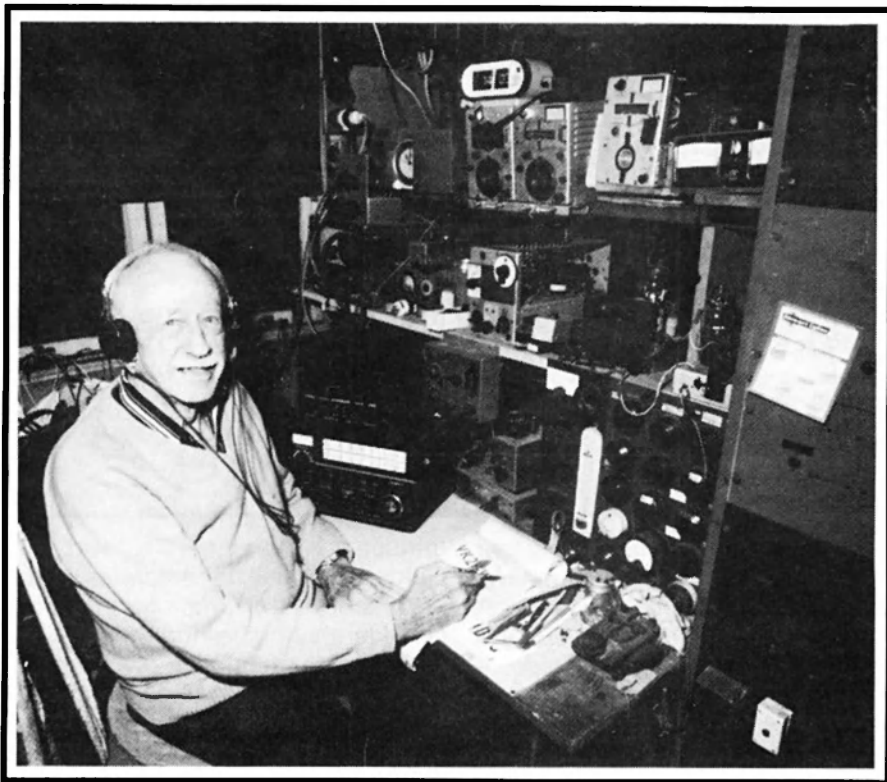
All of his early equipment was home brew, but after WW2 he purchased and modified various types of military disposal sets. He won several CW awards, and at the entrance of his hallway proudly hangs a traditional Japanese painting, won in such a contest. Over the years he has kept up his technical interest, and at 87 grows a few orchids, enjoys golf when able and monitors the bands on occasions.

At the time of writing, Lyell is in RNS Hospital being treated for a recent illness. We wish him a speedy recovery.

\*9 Arterial Road Killara NSW 2971  
ar

## ■ People in Amateur Radio Profile of VK2GW

*D Reynolds VK2ANW\* tells about a well known "old timer"*



Lyell Woolnough VK2GW, the son of a Professor of Geology was born at Lewisham on 10 March 1906 and, from an early age, took an active interest in radio communication.

During 1922 he accompanied his father on an expedition into Central Australia. In order to keep in touch with VIA Adelaide on 500 kHz, the army deployed a 1/2 kW spark transmitter under the control of a Lt Vic Bowen. The equipment, including

generators, required two heavy vehicles for transportation.

The experience and enthusiasm gained on this trip, plus the expert tuition from Lt Bowen, enabled Lyell to obtain his licence in 1923 at the age of 17.

After schooling at Killara, Perth and Shore, he graduated in Mechanical and Electrical Engineering at Sydney University.

His first position was with the

**Help stamp  
out stolen  
equipment  
— always  
include the  
serial  
number of  
your  
equipment  
in your  
Hamad.**



# ALARA

Sally Grattidge VK4SHE\*

Bron VK3DYF is happy to report a successful luncheon at the QTH of Raedie, YL of Ray VK3BHL, on 31 July to celebrate the 19th birthday of ALARA in VK3. Guests included Pat VK3OZ, Robyn VK3ENX, Mavis VK3KS, Phyl VK3KYL, Jenny VK5ANW, Raedie, Gwen VK3DYL and Bron VK3DYF.

A welcome visitor from VK5 was Jenny who was in VK3 for the weekend. Robyn VK3ENX kindly offered to bring Jenny to the luncheon in her glamorous white Jaguar.

Raedie's OM was without other OM support on this occasion but he coped magnificently and kept the tea and coffee coming. The conversation ranged far and wide, from the mature age (oldies) to young ones who want to start their working life at the top of the tree. "The only job where you start at the top is digging holes" was an apt comment.

Presents were swapped, and Phyl was delighted with an African Violet. Someone (who shall be nameless) thought the VK3 Rep would not know what to do with a pair of gardening gloves. All went home quite relaxed after a very enjoyable lunch and chat, leaving Ray to do the dishes AGAIN.

## First VK4 YL Meet

ALARA's first Queensland YL Meet, held in Bundaberg from 2 to 4 September 1994 was voted a success by the twenty-eight people who enjoyed each other's

company over the weekend. Eleven YLs attended, ten of whom are ALARA members. The DRLs (District Radio Ladies) Robyn VK4RL (Rockhampton), Mary VK4PZ (The Caves, near Rockhampton) and Julie VK4JJB (Bundaberg) overcame the problems of distance to organize the event, ably assisted by OMs Rob VK4SEA, Gordon VK4GM and Ron VK4FC.

ALARA officials were well represented by Treasurer Margaret VK4AOE (Dalby), VK4 Rep Sally VK4SHE (Townsville) and Jnr Vice President Bev VK4NBC (Brisbane). Also present were Joycelyn VK4JJ (Bundaberg), Anne VK4ANN (Maleny), Val VK4VR (Maleny), Pat VK4PT (Brisbane) and Lorna, XYL of Ted VK4QI (Rockhampton), with OMs Guy VK4ZXZ, Rusty VK4JM, Brian VK4RX, Ervon Schwerin, David VK4DJC (Mount Morgan), Alan VK8AV (Alice Springs), Ted VK4KRR, Graham VK4BGC and Bill VK4XZ.

The Town 2 m repeater was busy on the Friday as participants arrived with cars to be directed and trains to be met. Much tea was consumed at Julie's place and bus driver for the day, Ron, saw that those without transport got where they wanted to go. A table was booked at the Bundy Tavern for the Friday night get together and an excellent meal was enjoyed by all.

Saturday was spent at the well-appointed SES Headquarters where the

proceedings were officially opened by BARC president, Mike VK4ACM. Craig VK4SSB gave an informative talk on satellite operation, followed by a demonstration of computer software making it all look easy.

Lunch was an informal affair, after which most of the OMs visited the nearby workshop manufacturing Jabiru aircraft. They were able to inspect the assembly of these small planes, and watch the end product in flight.

Later, while the barbecue was being prepared, a video was shown of Wally VK4DO and Frank VK4CAU Fox Hunting in China. It proved too chilly to linger after the evening meal under the stars and soon everyone was inside again for the drawing of numerous raffles and lucky tickets. Some discussion took place regarding the next Queensland YL meet as all agreed this should be the first of many.

The YLs produced an impressive display of craft and art, Robyn's power supply and Pat's relay being the only serious home brew. This, with the ALARA mini kit and Ron and Julie's computer set-up, made the entrance to the building a popular place to meet and talk.

Sunday dawned with more perfect Queensland weather. Craig expertly handled 31 callsigns on the repeater after the news. Is this a record for Bundaberg? The group then proceeded in convoy to the Botanical Gardens for a stroll round the lake, a look inside the Bert Hinkler House Museum and morning tea. Those reluctant to grow up rode on the park railway pulled by a restored steam cane loco.

Lunch was a barbecue (yes — last night's leftovers) in Alexandra Park, with a mini zoo, cactus garden and plenty of playground equipment for the kids and VK4ANN. Bev and Graham even managed to fit in a visit to the Bundaberg Rum distillery and make it back before all the sausages were eaten. Then it was time for farewells all round.

Special mention must be made of Daniel and Skye, harmonics of VK4JJB, who enjoyed the weekend with us and were so well behaved we hardly knew they were there; also Sam, sausage dog of VK4NBC, who stole not a single hamburger nor uttered a single bark.

Congratulations to Robyn, Mary, Julie and the DRLs for making this QLD meet so successful that all present voted to make it a regular event.

## Austine Henry VK3YL

I regret to report the passing of VK3YL on 9 September. See "Silent Keys" for an obituary.

## WIA News

### Radio Sport to Take Off

Plans are afoot in the United States to sponsor a World Radiosport Team Championship in July next year, according to the 12 August issue of the *ARRL Letter*.

To be known as "WRTC-95", the event is timed to coincide with the IARU HF Championship contest held annually in July.

The Potomac Valley Radio Club (PVRC) will lead the organisation of the event. Competitors will comprise two-person teams, both members of which must live in the same ITU zone.

Applications from potential competitors, either individuals or teams, should reach the

organisers by 31 December 1994. Contact Eric L. Scace K3NA, or Howard Leake W6AXX, c/- Hayman Systems, 14700 Sweitzer Lane, LAUREL, MD 20707-5905 USA.

### New President for British Society

In July, the Radio Society of Great Britain (RSGB) elected Clive Trotman GW4YKL as the new President. He will take up his appointment from 1 January 1995.

Mr Trotman is the Zone E representative for Wales on the RSGB Council. The WIA has sent a letter of congratulations to Mr Trotman on his appointment.

# AMSAT Australia

Bill Magnusson VK3JT\*

## National co-ordinator

Graham Ratcliff VK5AGR  
Packet: VK5AGR@VK5WI

## AMSAT Australia net:

Control station VK5AGR

Bulletin normally commences at 1000 UTC, or 0900 UTC on Sunday evening depending on daylight saving and propagation. Check-ins commence 15 minutes prior to the bulletin.

Frequencies (again depending on propagation conditions):

Primary 7.064 MHz. (usually during summer).

Secondary 3.685 MHz. (usually during winter).

Frequencies +/- 5 kHz for QRM.

## AMSAT Australia newsletter and software service

The newsletter is published monthly by Graham VK5AGR. Subscription is \$30 for Australia, \$35 for New Zealand and \$40 for other countries by AIR MAIL. It is payable to AMSAT Australia addressed as follows:

AMSAT Australia  
GPO Box 2141  
Adelaide SA 5001

## Moonbounce (EME) Tests from VE3ONT

Last month I made mention of the forthcoming EME tests taking place over the weekends of the ARRL's (American Radio Relay League) annual EME (earth-moon-earth) contest. Refer to my September AMSAT column for details of why this is an important event for satellite users. For those worthy souls who are determined to have a go, here are the details.

The Toronto VHF Society, VE3ONT, will participate in this year's ARRL EME

Contest using the Institute for Space and Terrestrial Science's 46 m (150') Algonquin Park dish (located at grid square FN05xw). If you want to enter Algonquin as a second location in your tracking program you can use FN05xw locator or, if the program only accepts latitude/longitude, you can enter latitude +45.95 degrees, longitude -78.00 degrees. Here are the times and frequencies to listen.

UTC Date	VE3ONT Tx Freq	Listening Range	Approx Times
29-Oct-94	432.050 MHz	432.050 — 432.060 MHz	0645 — 1815 UTC
30-Oct-94	1296.050 MHz	1296.050 — 1296.060 MHz	0754 — 1844 UTC
26-Nov-94	144.100 MHz	144.100 — 144.110 MHz	0538 — 1645 UTC
27-Nov-94	144.100 MHz	144.100 — 144.110 MHz	0646 — 1713 UTC

If you intend to call as well as listen, please note that VE3ONT will work "split" frequency. Do not call on VE3ONT's frequency. VE3ONT will use circular polarisation on all bands. You may use linear or circular polarisation to make a contact with VE3ONT. If you use circular, you would be best to use RHCP on Tx and Rx for the 144 and 432 MHz bands. On 1296 MHz they will have switchable sense so you may use either.

Low power and OSCAR class stations are encouraged to try for an EME contact with VE3ONT. 100 watts to a single long Yagi should be sufficient on the 144 and 432 MHz bands. On 1296 MHz stations were worked with as little as 10 watts and a 2 m (6') dish in 1993.

Please note that use of the dish at the Algonquin Space Complex is always subject to last minute re-scheduling for non-amateur purposes. QSLs with an SAE should be directed to Dennis Mungham VE3ASO, RR 3, Mountain, Ontario, Canada, K0E1S0.

Although the ARRL EME contest is an all weekend affair, as was the case last year, the mutual window times are small, only amounting to a couple of hours in the wee small hours of the Sunday and Monday in the eastern Australian states. On the west coast the situation is worse. They will be just about pulling the switch as the moon rises in Perth. Even in the eastern states the window only opens in the last few hours of operation on both days each weekend. The best elevation any VK station can expect will be about 22 degrees. So, it won't be easy! You will need to do your homework. Last year a number of VK stations were successful in hearing and working VE3ONT with satellite downlink gear so it can be done. As I said last month, however, the real benefit and point of this exercise is to test your receiving equipment and establish a benchmark for future improvements. Good luck, let's know of your success.

## Approximate (UTC) moon rise times:

	Sydney	Adelaide	Perth
29 Oct '94	1550	1650	1815
30 Oct '94	1630	1730	1845
26 Nov '94	1430	1530	1645
27 Nov '94	1500	1600	1730

## AO-21 Remembers

While we're on the subject of the moon, OSCAR-21 is at present carrying a goodwill commemorative message in honour of the first manned landing on the moon. Yes, it's 25 years ago that Neil Armstrong uttered those timeless words "...one small step for man, etc.". AO-21 operations managers have a voice recording of this historic event playing as part of the downlink cycle. The telemetry also contains a "wefax" type picture. I believe this to be in the same format as the NOAAs and METs. Has anyone managed to decode a picture? Signals are strong and can be copied on a ground plane or turnstile antenna.

## Phase 3D News

I have spoken before in this column about "alligators". Inconsiderate operators who overload the satellites with far too much up link power, usually to try to compensate for inadequate receiving equipment. Various methods have been suggested to help overcome this destructive practice. It seems that education doesn't work. Nor does appealing to a sense of fair play.

"LEILA" is a device presently being tested prior to inclusion on the phase 3D

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6 ele 6 M	\$196
Duo 10-15 M	\$265
3 ele 15 M	\$190
3 ele 20 M	\$298
20 m log-yag array 11.5 dbd	\$685
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Tri band beam HB 35 C 5 ele	\$675
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2 m 144.190 2.2 wavelength boom	\$145

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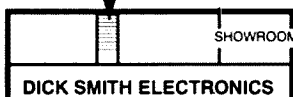
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# Mobile Or Base, See Us For Tran

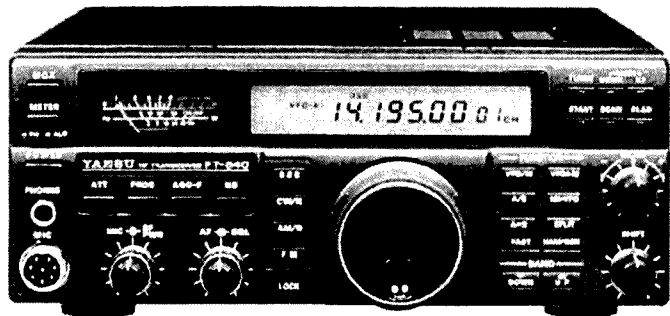
## Yaesu FT-840 HF Transceiver

Blending the high-performance digital frequency-synthesis techniques of the FT-890 with the operating convenience of the FT-747GX which it replaces, the all new FT-840 HF mobile transceiver sets the new standard for high performance in affordable transceivers.

Covering all HF amateur bands from 160m-10m with 100w P.E.P output, and with continuous receiver coverage from 100kHz to 30MHz, the FT-840 provides SSB/CW/AM operation (FM optional), 100 memory channels, a large backlit LCD screen, two independant VFOs per band, an effective noise blanker and an uncluttered front panel, all in a compact case size of just 238 x 93 x 243mm (WHD).

Unlike some competing models, small size doesn't mean small facilities. The FT-840 provides easily-accessible features such as: Variable mic. gain and RF power controls, SSB Speech processor for greater audio punch, and IF Shift plus CW Reverse to fight interference. Dual Direct Digital Synthesizers ensure clean transmitter output and fast Tx/Rx switching, while the low-noise receiver front-end uses an active double-balanced mixer and selectable attenuator for improved strong signal handling. The FT-840 weighs just 4.5kg and uses a thermally-switched cooling fan, surface-mount components and a metal case for cool, reliable operation. An extensive range of accessory lines are available, including the FC-10 external automatic antenna tuner, so you can customise the FT-840 to suit your operating requirements.

Cat D-3275

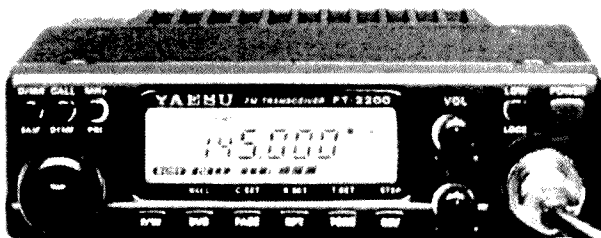


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## FT-2200 2m Mobile Transceiver

The new FT-2200 is a compact, fully featured 2m FM transceiver providing selectable power output of 5, 25 and 50 watts, and includes the latest convenience features for more enjoyable mobile or base station operation. Built around a solid diecast chassis, it provides 49 tunable memories, a large variety of scanning modes, an instant recall CALL channel, 7 user-selectable channel steps from 5kHz to 50kHz and is just 140 x 40 x 160mm (not including knobs). Backlighting of the large LCD screen, knobs and major buttons is even automatically controlled to suit ambient light conditions. Also provided is a 38 tone CTCSS encoder, DTMF based paging and selective calling with Auto-Page/Forwarding features, and 10 DTMF auto-dial memories. The LCD screen provides a highly legible bargraph Signal/P.O. meter plus indicators for the various paging and repeater modes. An optional internal DVS-3 digital recording/playback board can also be controlled from the front panel, giving even greater messaging flexibility. Supplied with an MH-26D8 hand microphone, mobile mounting bracket and DC power lead.

Cat D-3635

## FT-5200 2m/70cm Mobile Transceiver

The FT-5200 uses the latest innovations in compact cross-band full-duplex and detachable front-panel design for brilliant mobile performance. It has 32 tuneable memories, a built-in antenna duplexer, dual full-frequency LCD screen (with signal strength/power output bargraphs for each band), 8-level automatic display/button lighting dimmer and dual external speaker jacks (one for each band.) A thermally-activated fan allows up to 50 watts output on the 2-meter band and 35 on the 70cm band. Plus, scanning features include programmable scan limits, selectable scan resume modes, memory skip, priority monitoring and one-touch recall CALL channels. In addition, 6 user-selectable channel steps are provided and a FRC-4 DTMF paging selcall option lets you program a three-digit ID code so you can be paged by other transceivers, or page up to 5 other stations yourself. An optional YSK-1 remote panel lets you relocate the main rig (under the front seat, for example) and mount the control panel on the dash. The FT-5200 comes with hand-mic, mobile mounting bracket and DC power lead.

Cat D-3310



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Cat D-3610

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## Rugged HF 5-Band Trap Vertical Antenna

The rugged 5BTV is a 5-band HF trap vertical which continues the Hustler tradition of quality and performance. It incorporates Hustler's exclusive trap design (25mm solid fibreglass formers, high tolerance trap covers and low loss windings) for accurate trap resonance with 1 kW (PEP) power handling. Wideband coverage is provided on the 10, 15, 20 and 40m bands (SWR typically 1.15:1 at resonance, < 2:1 SWR at band edges) with 80kHz bandwidth typical on 80m at less than 2:1 SWR. An optional 30m resonator kit can also be installed without affecting operation of the other bands. High strength aluminium and a 4mm (wall thickness) extra heavy-duty base section guarantee optimum mechanical stability. At just 7.65m, the 5BTV can be ground mounted (with or without radials, although radials are recommended), or it can be mounted in an elevated position with a radial system. Unlike other antenna designs, the 5BTV can be fed with any length of 50-ohm coax cable.

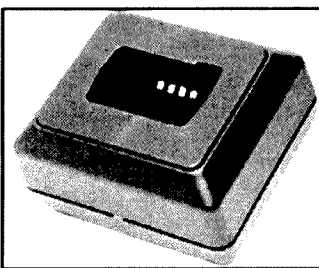
Cat D-4920



**\$299**

## MasterCharger 1 Fast Desktop Charger

New for '94! At last, an intelligent, fast desktop charger that not only suits most current Yeasu handhelds but also many previous models. Made in USA, the MasterCharger 1 operates from 13.5V DC and uses switch-mode technology plus a Philips battery charge monitor I.C. (with -ΔV full charge detection) to correctly fast-charge NiCad batteries between 6V and 13.2V, then switch to a trickle charge. Suitable for the FT-23/73, FT-411/411e, FT-470, FT-26, FT-415/815 and FT-530, its charging cradle can easily be replaced, allowing for the insertion of a new cradle to suit earlier Yaesu transceivers (eg FT-209R) or different brands/model handhelds. The MasterCharger 1 requires 12-15V DC at 1.3A, and is supplied with a fused cigarette lighter cable for vehicle use. Cat D-3850

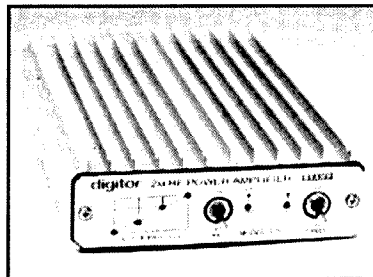


Now available - charging cradles to suit various Kenwood, Icom, and Alinco handhelds.

**\$169<sup>95</sup>**

## 2m RF Power Amplifier

Boost your 2m hand-held's performance with this compact amplifier. Works with 0.3 to 5W input and provides up to 30W RF output, plus has an inbuilt GaAsFet receive pre-amp providing 12dB gain. A large heatsink and metal casing allow for extended transmissions at full output, and a mobile mounting bracket is supplied for vehicle use. Requires 13.8V DC at 5A max. Size 100 x 36 x 175mm (W x H x D).



Cat D-2510

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**ELECTRONICS**

B 1797

NSW • Albury 21 8399 • Bankstown Square 707 4888 • Blacktown 671 7722 • Bondi 387 1444 • Brookvale 905 0441 • Burwood 744 7299 • Campbelltown 27 2199 • Chatswood Chase 411 1955 • Chullora 642 8922 • Gore Hill 439 5311 • Gosford 25 0235 • Hornsby 477 6633 • Hurstville 580 8622 • Kotara 56 2092 • Liverpool 600 9888 • Maitland 33 7866 • Mid City Centre 221 0000 • Miranda 525 2722 • Newcastle 61 1896 • North Ryde 878 3855 • North Sydney (Greenwood Plaza) 964 9467 • Orange 618 400 • Parramatta 689 2188 • Penrith 32 3400 • Railway Square 211 3777 • Sydney City 267 9111 • Tamworth 66 1711 • Wollongong 28 3800 ACT • Belconnen (06) 253 1785 • Fyshwick 280 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 • Frankston 783 9144 • Geelong 232 711 • Highpoint 318 6300 • Melbourne City 399 Elizabeth St 326 6088 & 246 Bourke St 639 0396 • Richmond 428 1614 • Ringwood 879 5338 • Springvale 547 0522 QLD • Booval 282 6200 • Brisbane City 229 9377 • Buranda 391 6233 • Cairns 311 515 • Capalaba 245 2870 • Chermside 359 6255 • Maroochydore 791 800 • Mermaid Beach 785 600 • Rockhampton 27 9644 • Southport 32 9033 • Toowoomba 38 4300 • Townsville 72 5722 • Underwood 341 0844 SA • Adelaide City 232 1200 • Elizabeth 255 6099 • Enfield 260 6088 • St Marys 277 8977 • Westlakes 235 1244 WA • Balcatta 240 1911 • Cannington 451 8666 • Fremantle 335 9733 • Perth City 481 3261 • Midland 250 1460 • Northbridge 328 6944 TAS • Glenorchy 732 176 • Hobart 31 0800 • Launceston 344 555 NT • Darwin 811 977

STORES ACROSS AUSTRALIA AND NEW ZEALAND

\*MAJOR AMATEUR STOCKIST STORES SHOWN IN RED

satellite. LEILA is an anti-alligator device. It will be programmed to seek out unnecessarily strong signals. It will transmit a Morse code warning to the offender and, if the warning is unheeded (and it probably will be), LEILA will insert 18 dB of attenuation on that frequency. Other nearby signals will be unaffected. Pity it has to come to that but it seems it is the only way to get the message through to the offenders. Let's hope it works but be prepared for the flak.

You can bet the most vocal opponents of LEILA will be the very ones who are most to blame for its inclusion on the satellite. In the words of the song "They're not listening still. Perhaps they never will". LEILA can handle up to 5 offenders simultaneously.

Although phase 3D will be pushing the frontiers of amateur radio satellites into the micro-wave region, the humble HF shortwave listener has not been forgotten. An experimental 10 metre beacon transmitter called "CAM" is being designed and built in South Africa. It will transmit up to 15 minutes of digitally generated audio, mainly for educational purposes. The "Compatible Amplitude Modulation" (CAM) will allow it to be detected on simple AM shortwave receivers. Integration of the phase 3D spacecraft is proceeding at the Orlando, Florida Integration Facility.

### Debris in Orbit

An interesting item appeared recently doing the rounds of the packet BBSs. It concerned a NASA study of the extent of "debris contamination" of the area of space used by low earth orbiting satellites. This is an area of concern to all satellite users including amateur radio satellite operators.

The study indicated that the area between 250 and 400 miles above the earth's surface was not as heavily contaminated by space debris as had previously been thought. The radar technique used is capable of detecting bits of debris down to the size of a pea, ie about a quarter of an inch in diameter and orbiting 400 miles out in space. Such debris has largely resulted from explosions, accidental or otherwise, aboard orbiting objects.

Several years ago much work was done on "anti-satellite" devices. Recent events have resulted in a dramatic slow down of such activities by the major players in the game. The unexpectedly low contamination of the lower earth orbit region can be directly attributed to this slowing down. The study was done as part of the lead up to the planned international space station. The 250-400



**A packet of "satellite" packeteers. Having a meal before a recent packet meeting in Adelaide was, left to right, Garry VK5ZK, Graham VK5AGR, Cris ZL2TPO, Glenn VK3ZGL, Grant VK5ZWI and Tony VK5ZAI.**

mile orbits are used by large commercial satellites and manned activities like MIR, STS and the proposed space station.

The news is not so good for the orbits 500-1000 miles as used by most low earth orbiting amateur radio satellites. The study indicated that this part of "inner space" was more heavily contaminated than previously thought. A probable reason for this is the rather longer life of debris in this region. Whilst lower orbit debris could be expected to re-enter in a few years, the higher orbit debris could have a lifetime of more than 1000 years. Debris can consist of spent final stage rockets and dead satellites as well as junk

from deliberately or accidentally destroyed objects.

In the case of geo-stationary orbit, any junk, along with dead satellites, will, over time, collect at one of two nodal points around the equator. In this sense it will not be a problem as it is predictable and can be dealt with accordingly, even though it will stay there forever. The lower orbit junk, however, will remain a problem until it eventually re-enters the atmosphere. As such it will need to be taken into account for a long time to come, particularly in the case of manned space ventures.

*\*359 Williamstown Road, Yarraville VIC 3013  
Packet: VK3JT@VK3BBS*

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## AWARDS

*John Kelleher VK3DP — Federal Awards Manager\**

Requests for awards keep rolling in following my suggestion that, during this quiet period of propagation, this would be an apt time to go through your QSL cards and see what you can earn.

I have had two or three letters suggesting "that my staff and I could....". That's where I stopped reading. For the information of all and sundry, I am a one man band, and cannot perform miracles, although I try!

One more request to Radio Clubs who run active awards programs. I repeat my offer to give free publicity through this column. So, Club Secretaries and/or Club Awards Managers, please let me know, at your leisure, information on the awards you sponsor.

### SMIRK

From the USA, the Six Metre International Radio Klub or SMIRK,

General requirements. SMIRK is a worldwide association whose purpose is to study and to promote 6 metre RF propagation. Membership information is available from the award sponsor. The fee schedule is \$US1.00 for each SMIRK seal, \$US3.00 for 1000 SMIRK and DXDC, and \$US5.00 for a 50/100 country certificate. Overseas awards are sent by surface mail unless requested and additional postage supplied. Alaska and Hawaii are separate countries for DXDC and 50/100 Country Awards. Contacts since 1 January 1976. No crossband QSOs. GCR list and stated fee to SMIRK AWARDS, DE Abe II, 6821 West Avenue, San Antonio, Texas 78213. Century Club Certificate. Contact 100 DX countries on 6 metres. Attach photocopies of the cards.

DX Decade Club (DXDC). Contact SMIRK members from 10 DX countries. Send photocopies of cards or GCR list. Seals

are awarded for each additional five countries.

**SMIRK Seals.** Awarded for contacting 100, 250 or 500 SMIRK members. List must show SMIRK member's number.

**50 Country Club.** Contact 50 DX countries on 6 metres. Attach photocopies of QSL cards.

**1000 SMIRK Certificate.** For contacting 1000 SMIRK members.

### The United States of America County Award (USCA)

There are 3076 counties in the United States, and this award can provide a lifetime of enjoyment. The award is sponsored by CQ magazine. Contacts after 1 April 1983. Look for the County Hunters Net on 14336 kHz daily. The USCA is issued in seven different classes.

Class	Counties Required	States Required
USA-500	500	Any
USA-1000	1000	25
USA-1500	1500	45
USA-2000	2000	50
USA-2500	2500	50
USA-3000	3000	50

USA-3076 for ALL counties and special Honours Plaque \$40.00.

The USA-CA is available to all licensed amateurs anywhere in the world and is issued to them as individuals for all county contacts made, regardless of calls held, operating QTHs, or dates.

Special USA-CAs are also available to SWLs on a heard basis. All contacts must be confirmed by QSL, and such QSLs must be in one's possession for identification by certification officials.

Any QSL card found to be altered in any way automatically disqualifies the applicant.

The scope of the USA-CA makes it mandatory that special Record Books be used for applications. These Record Books can be obtained directly from CQ Magazine, 76 N Broadway, Hicksville, NY, 11801 USA for \$US1.25 each. DX operators need to add extra for postage. It is recommended that two Record Books be obtained, one for application use, and the other as a personal file copy.

The fee for non-subscribers to CQ is \$US10.00 or 40 IRC. Send your application to Dorothy Johnson WB9RCY, 333 South Lincoln Avenue, Mundelein, IL 60060, USA. Any further information can be obtained directly from me.

### Guantanamo Bay

The Worked All Gitmo Certificate is awarded for making six contacts with KG4 operators. The application to be accompanied by copies of the QSLs. An SASE measuring 8.5 by 11 inches must be attached to the application with sufficient return postage or IRCs and sent

to GARC, PSC 1005, Box 73, FPO AE 09593-0011.

### British Postcodes Award

The Civil Service Amateur Radio Society in Westminster, London, England decided to mark 1990, the 150th anniversary of the issue by the British Post Office of the penny black, the world's first adhesive postage stamp, with the introduction of a new award based on working (or hearing) the various Postcode areas of the UK.

The award is for working the various UK Postcode areas on or after 6 May 1990, and is issued in 3 classes, GOLD for working all 120 postcode areas, SILVER for 100 areas, and BRONZE for 75 areas. A QSO with a CSARS HQ Callsign (G1CSR, G3CSR, GB0CSR, GX1CSR or GX3CSR) may be substituted for ONE unworked postcode area.

General awards in any class can be claimed for any combination of licensed

modes and bands, whether HF or VHF and including WARC bands, and can be endorsed for single mode or single band.

QSLs are not required and should not be sent with applications. Applications should show callsign, name, full postal address, and a list of claimed QSOs showing postcode area, callsign, date, band and mode, and bearing a certification signed by the applicant and countersigned by two other licensed amateurs, that the claimed QSOs conform with the relevant entries in the applicant's log.

The award is also available to SWLs on a heard basis.

Applications, together with a fee of three pounds, or \$US4.00, or 12 IRCs, should be sent to Civil Service Amateur Radio Society, Civil Service Recreation Centre, Monck Street, London SW1P 2BL, England.

\*PO Box 2175 Caulfield Junction 3161 ar

## Book Review

# Technical Topics Scrapbook

**Author: Pat Hawker G3VA**

**Published by The Radio Society of Great Britain.**

**Reviewed by Gil Sones VK3AU**

No matter where you start it is hard to put this book down. It is full of a most interesting collection of items covering the whole range of amateur radio. The book is a collection of the "Technical Topics" column which is presented monthly in the RSGB publication *Radio Communication*.

The period covered is from 1985 to 1989. This was a very busy period in the evolution of radio and the equipment we use. There are items from the simplest to the more advanced techniques, all presented briefly in a manner which is easy to understand. Enough information is provided for you to go further if you wish.

Early radio is there together with first hand experiences of wartime clandestine equipment and operating. Much of this makes fascinating reading. It is amazing what was accomplished with what, today, is very basic equipment operated under very trying and dangerous conditions.

All manner of antenna ideas are presented and you may well find the answer to your particular problem. At the very least you should gain inspiration from other people's solutions.

The continuing evolution and development of advanced receiving and transmitting techniques unfolds with descriptions of many new developments. Some of these ideas are in today's



transceivers and others will be in the rig you buy in a few years time.

Pat Hawker G3VA has a long and distinguished career and his contributions in *Radio Communication* and other publications always make interesting reading. A collection such as this is very stimulating reading. It covers a very wide range and everyone should find something of interest.

This is one of the "must have" books. It is available for \$35.00 from some of the WIA Divisional Bookshops as well as from Daycom Communications Pty Ltd, who submitted the book for review. ar

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# Club Corner

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## Ballarat Amateur Radio Group

The following people have been elected to office to conduct the affairs of the Ballarat Amateur Radio Group for the 1994/5 year.

PRESIDENT	Bob Terrill	VK3BNC	053-361249
VICE PRESIDENT	Gordon Cornell	VK3FGC	053-392427
SECRETARY	Geoff A. Smith	VK3ADB	053-332112
TREASURER	Harry Hekkema	VK3KGL	053-357563

## BARG Hamvention

Tom VK3DMK our Hamvention Coordinator has activities well in hand for the 1994 Hamvention, which will be held on the weekend of 29-30 October and promises to be the best ever held by the club. The venue will once again be the Bray Raceway. Fox hunting will commence on the Saturday afternoon, with the usual Dinner in the evening. At 9 am on Sunday the program will start in earnest with a host of attractions and ample trading tables for both new and old equipment.

For bookings or information contact Tom George VK3DMK on 053-327234. The usual great lunch, prepared by our ladies group, will be available and there will be plenty of opportunity to "nibble and natter" with your new and old mates over a cup of coffee. We look forward to seeing you there.

Jeff Muller VK3LU  
Publicity Officer BARG  
Tel 053 328 314

## Adelaide Hills Amateur Radio Society (AHARS)

### Annual Electronics Sale 1994

With various electronic components for home construction becoming harder to obtain, this is a yearly event popular with many radio amateurs. The AHARS annual electronic sale will be held on Saturday, 19 November between the hours of 9.30 am and 2.00 pm. The venue is the same as for previous years, Westbourne Park Memorial Hall, 390 Goodwood Road, Westbourne Park. The hall is about 300 metres south of the Cross Road intersection. All radio amateurs and other interested people are invited for a day of trading fun. This is the day to get rid of that surplus gear or to find the odd special component you need. It is also an excellent opportunity to have a friendly chat with other amateur radio colleagues. Pies, pasties and tea or coffee with biscuits will be available in the hall.

Those interested in selling gear must book table space and this can be arranged by ringing Geoff Taylor VK5TY on (08) 293 5616. The doors will open for trading at 9.30 am but selling vendors

should present themselves at 8.30 am to prepare their tables. The club will charge a commission of 10% of gross sales with a maximum of \$10 on any one item. This assists to offset the cost of hiring the hall and other expenses. All sales are by negotiation between the buyer and seller.

Test equipment and an operator will be available to carry out simple checks on components. We look forward to seeing you there.

Lloyd Butler VK5BR  
Vice President AHARS

## Hervey Bay Amateur Radio Club

Back in 1985 several amateurs residing in the Hervey Bay area had a vision of starting a local radio club. The inaugural meeting took place in October 1987 when the HBARC became a reality. In 1990 the club started to grow with some help from the local newspaper, which published monthly articles about the club's activities and social events with headlines such as "Amateur Radio puts Guides on Air" and "Radio Club plans Global Broadcast". It was this last headline that did the deed. The club decided to launch its "Festival of Whales Award" and everybody joined in the spirit of this great event.

The call sign VI4HBW was on the air for all those who wished to work the HBARC. QSL cards were printed, and a most impressive photograph of a Humpback Whale was used to adorn an award. Each year around August to the end of September the whales stop in Hervey Bay to nurture their young prior to the journey south to Antarctica. The whole of the area develops whale fever including the members of the HBARC who operate the station on most HF bands for a period of about a month.

The membership of the club is about 40. During a visit to Hervey Bay last year, Bernie VK4IB (I'm Bernie), Mike VK4MRB and Ritzie VK4FRZ made me feel most welcome. The club holds a Saturday meeting (informal) at the club rooms that is in the local park. It's a bit of a natter session, a "get away from the XYL, talk radio" kind of morning.

If you are travelling around our coastline in a northerly direction, call in and say Hi! to the members of the HBARC. In the past you may have heard VI4HBW or VI4FOW on air during the whale season. This year the call is VI4WWA for "White Whale Award. Give them a call and ask about the "Festival of Whales Award". Send your QSL and \$5.00 to PO Box 829 Hervey Bay 4655 Qld. As propagation is generally poor this year the club will run this award until the end of October. Call VK4CHB the club station on the local repeater 146.575 MHz and arrange to meet this enthusiastic group of people.

Bob VK3UI



Lis VK4IL receiving the HBARC President's Cup, which is awarded each year to the best operator in the HBARC, from the past president Reg VK4PL.

## HADARC (Hornsby and Districts Amateur Radio Club Inc)

We are inviting people who are interested in amateur radio and related fields to join our Club.

Meetings are held on the fourth Tuesday of each month at the Mt Colah Community Centre, Pierre Close, Mt Colah commencing at 8.00 pm. In addition to the monthly meeting, a workshop is held on the second Tuesday of each month (currently at the Asquith Church of Christ Hall, Wattle Street, Asquith at 8.00 pm). Visitors are most welcome.

The Club holds a "Net" each Monday evening (8.00 — 9.00 pm) on the Club's repeater, VK2RNS, on 147.250 MHz. All amateurs are welcome to join this net.

The Club conducts training classes and holds examinations for the AOCIP. These classes enjoy a very good success rate for training operators for their certificate.

For further information, contact the Club Publicity Officer, Raymond Tooby (02) 489 3357 or write to the Club at, PO Box 362, Hornsby NSW 2077.



## Alice Springs Amateur Radio Group

### Club Project — Museum Display

The Alice Springs Amateur Radio Club would like to welcome visitors to Alice Springs, and invite them to visit our "working" display at the Museum of Technology, Transport and Communications, on Memorial Drive. The museum has a wide variety of equipment on display, and welcomes visiting hams to be a part of it. It is open Mondays to Saturdays from 10 am till about 5 pm. Admission is FREE! The two metre repeater is on the communications tower on top of the McDonald Ranges, near Mt Gillen; the club station VK8AR is at the Museum; and the club's packet station is housed at the Velodrome, where we have our club rooms.

The club has joined the museum to set up a working display, and to work on the "ton" of equipment which the museum has acquired over the past decade or so. Saturday afternoons are usually spent cleaning and maintaining equipment which dates back to the turn of the century. Domestic and commercial receivers and transmitters, racks of power amps, pedal wireless and ex-army equipment is basically piled high, and we are slowly working our way through the shelves of what we classify as priceless gems. I think, to any club, this is an operator's dream, to be neck deep in antique radio gear! If anyone wishes to come and help, while they are holidaying, they are most welcome. Contact Jeff (VK8GF), who is the station manager, and he can give you a time and contacts. Jeff

has been instrumental in liaising with the Museum, and establishing the excellent relationship that we have gained.

The station is one of the newest attractions at the museum, operating since June, 1993. Visitors from all over the world can observe an operator in action or, with an appropriate licence, use the station to make contacts. Mike VK8MR has had operators from the USA, England and Germany use the station during their stay.

People are often very surprised to see the station working, and have little knowledge of the hobby, and how diverse it can be. We have a Packet display, HF, and VHF. Future ideas for displays include satellite and slow scan imagery, and local two way communications between the Telegraph station, north of town, Adelaide house (Flynn's Hospital) in the town centre, and the Old Ghan railway exhibit, 5 km south on the old rail line. This will give the visitors a chance to "pedal-wireless" their way around town without moving anywhere, and get a feel of the thrill of communications!

Contact with local operators can be made on our repeater on 146.95, but we are sometimes hard to find. Like an endangered species we have lost thirteen members to work related transfers and interstate moves, just in the past six months. Also a couple of members live hundreds of kilometres out bush. Monday nights, at eight o'clock, is the time we gather on 2 metres, to have a club net. Meetings are held at the Velodrome, on the first Monday of each month. Visitors are very welcome!

## Gold Coast Amateur Radio Society Inc

### Hamfest 1994

It's that time of the year for the Annual Gold Coast Hamfest. The venue for the 17th Hamfest is again the Albert Waterways Community Centre on the corner of Hooker Boulevard and Sunshine Boulevard, Mermaid Waters.

Doors will open to the public at 0900 hours on Saturday, 5 November 1994.

**F W Norris VK4FN**  
President

## Northern Corridor Radio Group Hamfest '94

The Northern Corridor Radio Group (NCRG) will hold the 6th annual Hamfest at the Les Hansman Centre in Walter Road, Morley on 6 November at 10.00 AM.

The NCRG is hoping for an attendance of over 1,000 for Western Australia's premier hobby electronics and communications event.

The majority of Perth's hobby radio retailers will have displays along with special interest groups such as the QRP, VHF, Microwave/UHF, Digital, Repeater and ATV groups as well as the WIA Bookshop.

ICOM, Kenwood, Barrett, Codan, Tait, Terlin, Venross and Antenna West will be represented and most will have Hamfest "specials". Car boot sales will be in the car park outside the hall — they were very popular last year.

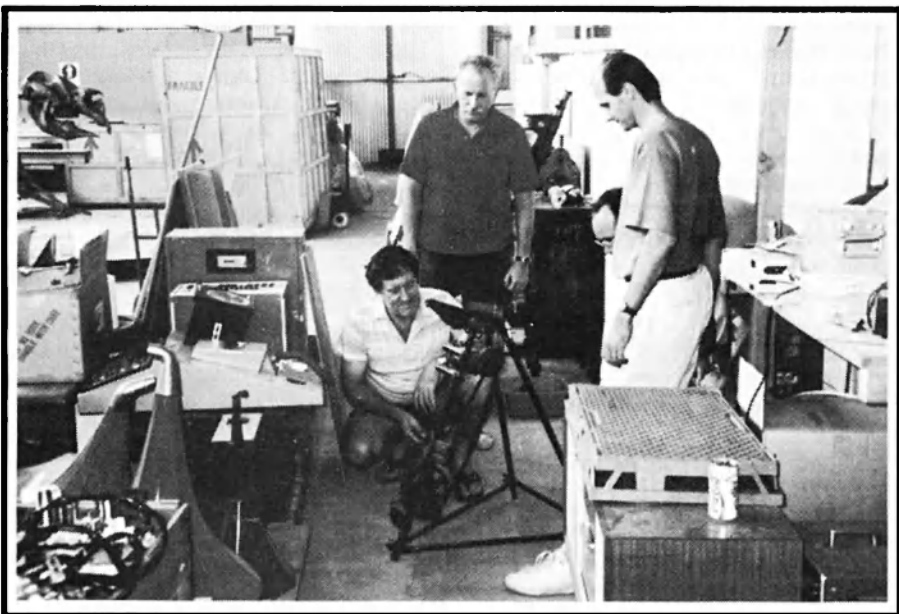
Entrance fee will be \$2.00 per person including a door prize ticket. Food and drink will be on sale all day.

Contact Duncan Page on 09 240 1933 if you want a stall. Trade stalls are \$20.00 each, tables can be rented at \$5.00 each, and car boot stalls will cost \$10.00 per car.

We look forward to seeing you all at the Les Hansman Centre, just 7 km from the centre of Perth, on 6 November for the largest gathering of friendly hobby radio enthusiasts. Talk in will be available on Channel 4 repeater (146.8 Rx/146.2 Tx) from VK6ANC for the benefit of visitors.

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**When you buy something from one of our advertisers, tell them you read about it in the WIA Amateur Radio magazine.**



**VK8GF, VK8AF, VK8KMD and VK8ZIC admiring a pedal wireless generator at the museum.**

# Divisional Notes

## VK6 Notes

Peter Parker VK6BW1

"There seems very little in Amateur Radio about events in VK6", I've heard some members mutter. Well, not anymore. Due to popular demand, this column has re-appeared. It's important because not everyone hears the broadcasts or attends our general meetings.

The column will be a mixture of news and information, gleaned from a number of sources. Contributions are welcome. I'm QTHR in any recent callbook.

## NCRG Hamfest

Once again it's Hamfest time. The Northern Corridor Radio Group's annual Hamfest is WA's premier amateur radio event, and its attendance is compulsory for any active ham.

It will be held on Sunday, 6 November starting at 10 am. The venue will be the same as last year's, the Les Hansman Community Centre, 246 Walter Road, Morley.

It's still not too late to build something for the Homebrew Equipment Competition. Do your family a favour and clean out your shack — there are ample opportunities to dispose of unwanted components and equipment. You could rent a space in the car park for \$10 per vehicle, or have your gear sold for you at the NCRG stall.

Stalls from various clubs will show you various aspects of our fascinating hobby. Take a prospective amateur along to show them what ham radio is really all about.

Commercial vendors, selling the latest in radio equipment, will also be there. Because food and drinks are available, you can stay all day.

Being at Hamfest is one way that your club or group can get the higher profile and extra members it needs. Anyone can set up a stall, and it's not too late. Contact Bill Billington VK6UE (fax/phone 409 9751) or Des Kinnersley VK6ZJ (phone 405 4215) for more information.

## VK6 Divisional Broadcast

Thanks to Tony VK6TS we now have a new Divisional Broadcast Officer. Tony has a solid background in broadcasting, and has contributed to WIA broadcasts in the past. He is thus well-qualified for the job and is always seeking contributions of news from clubs and individuals to maintain the standards that we have come to expect.

Our previous broadcast officer, Glen VK6ZGT, now takes a well-earned rest. We are all grateful for the service Glen has provided, often under difficult circumstances. At the August Divisional meeting a motion of thanks was passed with applause.

## JOTA

In two or three weeks Scouts and Guides worldwide will be talking to each other via amateur radio in the annual Jamboree of the Air. Both operators and equipment will be required to make this event a success. Listen to the Sunday morning Divisional Broadcast for details of how you can help.

## Morse Practice Beacon VK6RCW

Those seeking to improve their Morse proficiency can now tune to 147.375 MHz for a continuous program of Morse practice texts at various speeds. A scanner or two metre FM transceiver will

receive the beacon in the Perth area. It is anticipated that the beacon will eventually be shifted to a higher location to assure better coverage. Thanks are due to Joe VK6ZTN, Phil VK6SO and John VK6NT for the provision of this very useful service. Subsidised by the WA Division, this beacon is an example of what the Institute is doing for you. The beacon complements existing Morse Practice sessions on 3.555 and 146.700 MHz.

## "QRM" — Tasmanian Divisional News

Robin L Harwood VK7RH

It is with deep regret that we recently heard of the death of Lou Smith VK2LS, of Port Macquarie (NSW). Lou was a keen supporter of the weekly "Tasmanian Devil Net". Only during the past year Lou was personally presented with a special award, confirming contacts with 500 separate VK7 stations, an achievement that very few native Tasmanians could rival. It will be a long time before anyone will reach that milestone. We will sadly miss Lou's check-in on the Tuesday "Devil Nets".

This month is JOTA month and, as I stated in last month's column, there will be numerous activities from various localities within the State. I did mention that the Northern Branch was hoping to operate from the Alanvale Campus of the Launceston TAFE. However, we didn't bank on the 13 element Log Periodic Beam deciding to come down in one of the infrequent winter gales we have here. It is, sadly, a complete write-off. So we will have to rely on the remaining wire antennas or even operate from existing radio amateur stations.

There is a growing interest on the Tasmanian east coast in amateur radio, judging by the increasing number of new calls springing up. I have also heard whispers of a possible WIA branch perhaps being established in the future.

In the past two months the Northern Branch have had lectures and a demonstration on the GMDSS network by Gary VK7XYZ. Last month our meeting was at the Australian Maritime College and we had a practical demonstration on what we learnt at the August meeting. Thanks Gary for the very informative lectures and demonstration.

The numbers gathering at the weekly Wednesday afternoon sessions at VK7OTC, the Domain Amateur Radio Centre, have been slowly increasing. Also, the club station is activated at 3 pm on 3.585 MHz to pick up any news for the VK7WI Sunday morning broadcast. I am also informed that a suitable QSL card for VK7OTC is being made up.

## ATN ANTENNAS

Ask for a free catalogue

We manufacture a comprehensive range of HF, VHF and UHF antennas, baluns, power dividers etc. Log periodicals provide continuous coverage from 13-30MHz (incl. WARC) and replace outdated tri-banders.

Now in use in 38+ overseas countries and six continents. 10-30 MHz & 7-30 MHz extra heavy duty available late 1993.

- Rotators by Create, coax cables & non-conducting guy/halyard materials.
- B&W all frequencies 1.8-30MHz end fed vee. All frequencies 3.5-30MHz folded dipole. 10W, 100W, 1kW. No radials required.
- Hard-drawn copper antenna wire and insulators.
- Aust/NZ distributor for Create antennas/rotators & Phillystran (Kevlar) guying materials, Diamond 80-40 & 80-10 dipoles.
- High gain VHF & UHF amateur, scanning & TV antennas.
- Butt section triangular aluminium towers for fixed or tilt-over applications refer (March/April 1987 AR).
- Selections of power chips and TX tubes at friendly prices.
- VSWR/PWR meters by Diamond to 1300MHz 10 models. All in stock.



56 Campbell St, Birchip Vic 3483  
Phone: (054) 92 2224  
Fax: (054) 92 2666.

This month also means that we will be going on to Daylight Saving Time as from 2 October. Again we are going to put the clocks forward four weeks ahead of NSW and Victoria. This will mean that Divisional broadcast on Sundays will be at 2230 UTC (Saturday) and the Tuesday repeat at 0830. The Tassie Devil Net which always follows this will be at 0900z. The Wednesday VK7NB Net will also be at 0830.

In conclusion, a reminder of the October Meetings:

Southern Branch — Wednesday, 5 October at the Domain Centre, 2000 EDT.

Northwestern Branch — Tuesday, 11 October at 1945 EDT.

Northern Branch — Wednesday, 12 October at 1930 EDT at Alanvale campus of Launceston TAFE, Block C, Level Three.

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## WIA News

### Communications Company Aids Rwanda Relief

Adelaide communications equipment manufacturer, Codan, provided a shipment of HF transceivers to help the World Food Programme's effort in the Rwandan crisis, which has been in the news these past few months.

The *Financial Review* reported early in August that staff at the South Australian factory worked overtime without charge to complete the transceivers after Codan took an urgent order from the Australian International Development Assistance Bureau (AIDAB) for 18 transceivers.

The proprietors of Codan donated 10 systems, worth about \$50,000, and staff gave up their free time so that the radios could get to Africa. The Codan transceivers were developed to cope with the rigours of the Australian outback and are amongst the most advanced of their type in the world, said managing director Michael Heard.

## How's DX

Stephen Pall VK2PS\*

A few days after the September issue of *Amateur Radio* arrived in the letter boxes of the readers, I received a phone call from a country amateur who asked me why I don't comment on the decline of propagation on the 20 metre amateur band? It appears that my reader is interested only in 20 metre band activity and, according to him, conditions are much worse now on that band than ten years ago at the decline phase of Cycle 21.

Trying to do the right thing, I contacted Richard Thompson, a scientist at the IPS Radio and Space Services and asked his opinion. According to Richard, the last Solar Cycle, 21, in its declining phase had a lot of flare activity. The sunspot numbers were changing up and down and, for this reason, there were more frequent openings on the bands.

The present Cycle, 22, rose very quickly to its maximum but is declining rapidly and the decline is rather uniform, without big bursts of activity, especially this year. This could be one of the reasons Richard stressed that every solar cycle is different in its behaviour and that there are many other contributing factors which affect the propagation pattern.

I asked Richard when, in his opinion, we are going to reach the bottom of this present solar cycle. He replied with caution, "We will reach the bottom of the cycle perhaps in 12 months but, most likely in 18 months. Early to mid 1996 is the likely time."

The 20 metre band, however, is not dead. Alan VK4AAR is quite active on 20 metres and, according to a list supplied by him, he had the following interesting DX contacts in the months of July and August: HP6, PJ7, 5W1, HT, YV5, A35, YN1, FT5, 5NO, T30, FK8, FW, 5Z4, FS5, KH8, EA8, and ZS2. At the other end of our continent, Dave VK6DX is also busy on 20 metres. During August he worked the following DX countries: DJ, 8J3, RA0, HL5, 7L2, VU2, 4F2, BV7, VE1, 9J2, 3D2, I2, and DL5.

I think the above short lists show that the 20 metre band is not quite dead, but one has to be on at the right time of the day to catch the "elusive" DX.

### Tokyo Hamfest

If you worked 8J1HAM/1K on 20 August, you were in contact with the official radio amateur station of the Tokyo Hamfest (19 Aug-21 Aug), which attracted more than 80,000 radio amateurs from Japan and from the following countries: Korea, China, Taiwan, Philippines, Malaysia, Singapore, USA, Sweden, Finland, Germany, Switzerland, Mongolia, Grenada, New Zealand and Australia.

A modern, large, two storey building in one of the Tokyo suburbs served as the gathering point, where one could look at the most modern amateur equipment of the Japanese communication industry, or one could bargain at the upstairs flea market for various "goodies". The JARL was represented by several officials



Japan DX meeting, 1994. Left to right, standing — Ron ZL1AMO, Bill VK4CRR, Jakko OH1TZ, "Zorro" JH1AJT, Gaby XE2GV and Eric SMOAGD; sitting — Atsu VK2BEX, Ralph K0IR and Jan SM0DJZ.

including JARL president, Shozo Hara JA1AN. The ARRL DXCC desk was represented by Bill Kenamer F5FUV.

During the "Hamfest", the "Japan DX Meeting 1994", organised by "Zorro" JH1AJT, took place. This small assembly had the purpose of gathering together the participants in various DX activities of recent years. In attendance were DJ9ZB Franz, ZL1AMO Ron, Vince K5VT, Ralph K0IR, Jan SM0DJZ, Erik SM0AGD, Gaby XE2GV, Atsu VK2BEX, and Bill VK4CRR. During the meeting, slides were presented with appropriate comments on the DXpeditions to Mellish Reef VK9MM, Peter I Island 3Y0PI, Revilla Gigedo Group XF4CI, and Annabon Island 3C0GD.

### Marion Island — ZS8MI

During the 12 months from April 1993 to May 1994 many VK and ZL amateurs worked Chris ZS1CDK while he was stationed as a Radio Technician on Marion Island. Chris has returned now to his home base and started the immense task of replying to the many thousands of QSL cards waiting on him.

Austin VK5WO provided some interesting information about this young operator who, without any previous HF DX experience, found himself in the middle of huge "pile-ups". Marion Island, part of the Prince Edward group of islands, was ceded by Britain to the Republic of South Africa on 29 December 1947. It is a sub-arctic, volcanic rock with an estimated age of 250,000 years. The size of the island is 490 sq km, the highest peak is 1230 m, and has an average rainfall of 2398 mm per year. Average temperature is -9 °C with a wind velocity of average 190 km/h and it snows 82 days per year. Vegetation is similar to the tundra. Therefore, Marion Island is not your ideal holiday resort.

There is no permanent population on the island but, for the past 50 years, 10 to 15 scientists go to the island annually to collect weather information and to do scientific research on flora and fauna. The only contact with the outside world is HF radio. Chris used a Grinel TR178A 100 watt transceiver and rhombic antennas. In the photo Chris is almost lost among the multitude of King Penguins at Good Hope Bay. Chris writes, "*Myself sitting between breeding King Penguins (Aptenodytes Patagonicus). Thirty per cent of the world population of King Penguins live on Marion Island. The breeding season is from mid November until March. The bird produces one white egg and the incubation period is 53 to 55 days. Both sexes brood alternatively with a fortnight period. The chick is fed for 10 to 13 months on krill, fish and squid.*" If you do not want to miss out on your card from Marion

Island, send your card with the appropriate return envelope and postage to Christian G De Kock, PO Box 244, Stellenbosch 7599, Republic of South Africa.

### Island Hopping — VK8ISL and VK6ISL

By the time you read this, IOTA expeditioners Malcolm VK6LC and friends will have returned to their homes after a successful activity on two Australian island groups.

A detailed schedule of their planned activity arrived well after the closing time for the August issue of *Amateur Radio*, the month in which their exciting activities took place. Al, being an engineer by profession, drew up an activity schedule which resembles a precise plan for a military action. Here is a one week sample of their plan: "Mon 15 Aug — John and Mai depart Gove — travel through Arnhem Land — camp the night at Mataranka — 18 hrs — 800 km. Tue 16 Aug — arrive Borrooloola on the McArthur River — prepare equipment/fuel for sea voyage to North Island—shop at supermarket. Wed 17 Aug — meet traditional landowner and sea voyage to North Island — set up DXpedition — test generator. Thu 18 Aug — set up and test radio equipment and antennas — establish accommodation and crocodile watch. Fri 19 Aug — North Island DXpedition (New OC reference 5/50) — fuel consumption test and phased verticals. Sat 20 Aug — North Island DXpedition — VK4JWG John and VK8LC Mai. Sun 21 Aug — North Island DXpedition — Callsign VK8ISL. Sir Edward Pellew Group, Gulf of Carpentaria, OC-198.

You will have noted in Mai's schedule the expression "crocodile watch". There is a story behind this sentence. North Island is a tropical, mostly sandstone covered island with lush tropical vegetation. The island is about 40 nautical miles from the mainland, a four hour trip on the open sea with a powerful motorboat. The island, part of a group of ten islands, is in the possession of the traditional owner whose prior permission to land on the island had to be obtained. The aboriginal couple, Kathie and Alan Jupiter, their married daughter and son-in-law and two small boys, live on the island, the aboriginal name of which is "Barranyi". The island's animal world consists of small wallabies, turtles, snakes and lizards. There are saltwater crocodiles on the foreshores and tiger sharks in the sea. Hence the island is a dangerous place for outsiders.

Mai and John survived partly on a mixture of western and aboriginal food.

Their freshwater supply was restricted as it originated from mainland sources and was carried over to the island. Participants of the North Island expedition (17 to 22 Aug) were Mai VK8LC, aka VK6LC, stationed on the Gove Peninsula at Nhulunbuy and John VK4JWG, who travelled from Mackay, North Queensland across the top of Australia in six days over many thousands of km. An incredibly long, dusty, dry, exhausting 4-wheel drive trip on dirt roads, alone! Mai described their stay on North Island as an "interesting educational experience." Despite the breakdown of their generator they made about 2,500 contacts and the activity resulted in a new IOTA reference number, OC-198.

Leaving North Island, our expeditioners Mai and John travelled 2,815 km in 34 hours over a 72 hour time period, from Borrooloola in the Northern Territory to Karratha in Western Australia across the Tanami desert which has an interesting animal life including wild horses, camels, and donkeys, with kangaroos and black cockatoos everywhere. On their way to Broome they met Jack VK6RJ and had a relaxing evening with him.

The operators on Malus Island (26 Aug-30 Aug) were Dave VK6DLB and Mai VK6LC. John VK4JWG was there but did not operate. He was the person in charge of everything else. According to Mai, without John's attention to big items like transport and antennas, or to small details like food and fuel in the generator, the expedition would not have been such a great success.

Michael VK6BHY flew out from Dampier in a helicopter to take aerial colour photographs of Malus island which is a beautiful group of three small islands interconnected by sandbars. The island is about 14 miles long and about a third of a mile wide and is 20 nautical miles from the mainland. Life on Malus island was relaxed for the expeditioners. Besides operating their transceiver there was time for some fishing and swimming in the sea without any danger around.

Transport to the island was in a boat named "Waveguide", owned and skippered by Dave VK6DLB. His assistance and participation in the activity greatly reduced the expedition marine transport costs. The Malus Island expedition lasted longer than the planned two days, to compensate for the cancellation of the third leg of the expedition to Whitmore and/or Rivoli islands. The third leg was cancelled by Mai for a simple reason — they ran out of funds.

All in all, Mai and Dave made around 2,500 QSOs from this island, which resulted in a new IOTA reference number

OC-199, known also as the Dampier Archipelago.

The equipment used was a TS-50 transceiver and an FL2100Z amplifier, a 3 kVa generator, a multiband Butternut vertical antenna, a two-phased vertical on 20 metres and a two-phased vertical on 40 metres. Propagation was fair to average. Activity was mostly during local daytime as short path propagation during the local night was non-existent to Europe. Operation on 40 metres was virtually impossible due to noise and interference. Reasonable activity was conducted with Asia, North America, Central Pacific and Europe.

Special colour QSL cards are being prepared for both expeditions. European IOTA chasers should QSL via I1HYW; all other contacts, outside Europe, direct to VK6LC, Mai Johnson, 9 Abinger Road, Lynwood, WA 6317, Australia with return envelope and return postage.

### Future DX Activity

- Ken ZL2HU plans to be active from one of the North Cook Islands, Pukapuka Island, OC-098, between December 12 and January 28 as ZK1KH.
- The much heralded St Paul CY9 DXpedition, which was to take place during September by Andy N0TG and others was cancelled.
- Fred K3ZO is in Bangkok until 10 October and operates as HS0ZAR
- There will be two DXpeditions active from Ghana in the near future. The first group K5VT (9G5VT), AA7NO (9G5MB), KF7AY (9G5WH), NZ7E (9G5RM), WA7LNW (9G5TL) and WY7K (9G5MT) will be active from 26 October to 4 November, including the CQ WW SSB Contest (29-30 Oct). The contest station callsign will be 9G5TL.
- Another group of operators from the UK and US will be active from Ghana from 20 to 30 November, including the CQ WW CW Contest. The contest callsign will be 9G5NN and the QSL Manager for the contest station is Roger G3SXW. The group will be active on all CW band segments. The individual callsigns are KC7V (9G5MF), N7BG (9G5TR), K7GE (9G5JR), G3SXW (9G5RW), GM3YTS (9G5RF) and G4FAM (9G5CH). If you want to catch Ghana on CW be warned. Practise your skills — all operators are members of the FOC group.
- Kyoko 9N1KY was heard working on 14184 kHz at 1648 UTC and on 14270 kHz around 1700 UTC.
- Paul F6EXV is active from Zaire using the call 9Q5EXV for three months as from August.
- VE3MJQ is in Kigali, Rwanda from

August for a period of six months and hopes to receive permission to operate with a 9X call soon. QSL to VE2PR.

- Alex PA3DZN is also in Rwanda on an order from the UN and hopes to be active soon.
- Jim WV5S and Coy N5OK will operate as V63SH and V63OH from Yap Island, OC-012 from 2 to 7 Nov.
- Yoichi JP1NWZ will be active from Antigua in the CQ WW SSB contest from 26 Oct to 3 Nov.
- 9K2ZZ will be in Kuwait until April 1995. He is active on 20, 30 and 40 metres.
- Marten LA9GY will be on Niue Island as ZK2XN from 24 Oct to 27 Nov. He will be active on all bands, favouring CW.

### Interesting QSOs and QSL Information

The QSOs detailed in this section have taken place from Australia at the times indicated. To assist you further to find your DX, after indicating the month of the contact, I will indicate also the area in VK from where the contact was made. E = East Coast, W = West Coast, and M = the rest of the Continent.

- HP6AYV — Victor — 14210 — SSB — 0544 — July (E). QSL to Dr V J Warner, POB 153, Santiago, Veraguas, Panama.
- PJ7VP — David — 14222 — SSB — 0548 — July (E). QSL to D A Van Patten, Cole Bay 108, Saint Marten, Netherland Antilles.
- 9G1SB — Sewell — 14240 — SSB — 0647 — Aug (E). QSL to Sewell T Brewer, Box M 144, Accra, Ghana.
- 5Z4DU — Len — 14226 — SSB — 1335 — Aug (E). QSL to KG4X, Hugh D Corbett, PO Box 356, Winfield, AL 35594 USA.
- YN1JCC — Xavier — 14170 — SSB — 0240 — July (E). QSL to Xavier Chamorro Cardehal, PO Box 4591, Managua, Nicaragua.
- 9J2SZ — Stefan — 7005 — CW — 2138 — July (M). QSL to SP8DIP, Tadeusz Pawlasek, UI Aleksandra Symanskiiego 36 m 10, 23-200 Krasnik Lubelski, Poland.
- ZA1B — Geni — 14197 — SSB — 0446 — Aug (E). QSL to HB9BGN Albert Mueller, Im Hubacker, CH-8311, Bruetten, Switzerland.
- TR8VP — Pat — 7055 — SSB — 2100 — Aug (M). QSL to The Manager, PO Box 264, Moanda, Gabon Africa.
- FWAA6LF — Steve — 3798 — 0726 — Aug (E). QSL to AA6BB, Gerald D Branston, 93787 Dorsey Lane, Junction City, OR 97448, USA.
- 6W6JX — Jean Louis — 7083 — SSB — 0704 — Aug (E). QSL to Jean Louis

Pipien, PO Box 10, Kaolack, Senegal, Africa.

- HR2RDJ — Reg — 7085 — SSB — 0724 — Aug (E). QSL to Reginald, PO Box 273, San Pedro Sula, Republic of Honduras.
- 4T0SL — 7066 — SSB — 0732 — Aug (E). QSL to OA4ED, Augusto Morales Zevallos, A Fernandez Concha 590, El Rosedal, Miraflores, Lima, Peru.

### From Here There and Everywhere

- Jeff VK3LW advises that Rene F5RRH is holding cards for QSOs with VK stations from his J28BG activity. C'mon fellows, don't you want a Djibouti card?
- A little note from Tom K0SN, QSL manager for the June 1994 St Paul Island expedition. The five Americans made 8,577 contacts in five days, including about 260 on 6 metres. Best band was 40 m followed by 20 and 30 metres. Propagation was relatively good considering the state of the solar cycle.
- Gremlins and "typos" are a constant threat to columnists. In the August issue of *Amateur Radio* we carried the news that ZB2X is a pirate. The correct news is that the callsign is held by OH2KI, but he uses it only for contest purposes. Any other time, outside contests, it is a pirate. Thanks Jim VK1FF.
- Being the writer of this column information comes to me from many sources. Back in March I received an interesting letter from AI DL1SV who sent me an SWL card dated 19 Feb 1963 from WIA-L6021. This is what AI has written. *"Enclosed you will find a QSL from an SWL in Western Australia. Although it is now more than thirty years ago when I received that card, I still remember the circumstances. At that time I lived in a flat in Braunschweig and had a 20 metre end fed antenna hanging between two houses. The Tx was 80 W out. I had never heard a VK on forty so far, to say nothing of working one, so this report did mean a lot to me. I think the person who wrote it must have been deeply interested in our hobby, for he took the trouble to dig for the really interesting stations. I have received hundreds and hundreds of SWL reports. Hardly a dozen were useful to me, but this one beat them all. So I really thought it might be worthwhile to find out whether that SWL operator stuck to ham radio, if he eventually got his licence, and maybe is still active."* This letter was a challenge to me to perform a bit of detective work for amateur radio history. It took me some time to check

every VK6 entry in the latest national callbook to find a similar name to one shown on the SWL card. I found one. It was VK6RZ. Off went a note to him. There was no immediate reply. Finally late in August a letter arrived from Peter, who acknowledged his SWL past. Writes Peter, "Yes, I used to be WIA-L6021, from 1959 to 1979. As a listener I had nearly 300 countries confirmed plus about 160 countries on SW broadcast plus about 75 countries on medium wave. I've always been interested in LF and CW". Who said that amateur radio is "uninteresting"? The original SWL card is now with the WIA QSL collection and DL1SV has the reply to his interesting question.

- Proposed Yemen activity of Bob N4GCK. Despite previous negative news, Bob has reached the Saudi/North Yemen border, but was detained for eight hours and all his amateur and camera equipment was confiscated. Three days later he received the equipment back but was not allowed to operate due to strict security precautions. The equipment is still in Aden.
- As from 6 July the CEPT recommendation has been accepted in Turkey.
- The latest 1A0KM operation has been approved for DXCC credit.
- An interesting surprise came in the mail the other day from Meralda VR6MW. It was the quarterly newsletter of the Pitcairn Amateur Radio Club VR6PAC. Mark VR6ME, who is the editor writes, "*Small is possibly a word that quickly comes to mind when one thinks of Pitcairn Island but, if you put the word "radio" after Pitcairn, then small becomes big". Communications are a big thing to the people of this small island*". The Pitcairn Amateur Radio Club at present has 13 members with VR6 call signs and one member with a ZL callsign. Any licensed amateur, from anywhere, can apply for membership. The club promises to keep in touch with you about communication happenings on Pitcairn Island and to keep you generally informed. Yearly membership for international members is \$US10. If you are interested, write to The Pitcairn Amateur Radio Club, PO Box 73, Pitcairn Island, South Pacific Ocean via New Zealand.
- 8J3KYO is the special station for celebrating the 1200th anniversary of Kyoto City. It will be on the air until the end of the year and will QSL every contact automatically via the Bureau. They do not need your card.

## QSLs Received

T19JJP (23 M op after third try) — TY1JJ (6 W op) — N9JCL/CY9 (4 W op) — VR6ME (6 M op) — OM3TNU (2 M op) — TU2ZR (1 M op) — 3D2ER (3 W op) — FS5PL (7 W op) — VU3VOA (17 W VU2TEC) — 9K2MU (22 W op) — H44NC (4 W op).

## Thank You

Many thanks to all of you who assisted me with your contributions to this column.

## Silent Keys

Due to space demands obituaries should be no longer than 200 words.

### The WIA regrets to announce the recent passing of:-

L R (Lindsay)	STEPHENS	VK2ACO
A (Al)	DAVIS-RICE	VK2AXR
H (Harry)	VAUSE	VK2HV
R G	GRAF	VK3CT
C J (Jim)	POPE	VK3DPO
R E (Ron)	RAWORTH	VK3IW
I (Ike)	TARBIT	VK3OW
J M (John)	MCCONNELL	VK3SW
M A (Austine)	HENRY	VK3YL
H W (Henry)	PERSON	VK4AAP
C L (Cecil)	RYAN	VK4CLR
R P A (Richard)	RAWSON	VK4CVT
R L	BURNS	VK5BB

### Al Davis-Rice VK2AXR

Our good friend Al Davis-Rice VK2AXR passed away suddenly at a North Sydney Bus Stop on 15 June 1994, aged nearly ninety one years. Al commenced his working life in England, where he was born, upon the Canal Barges at twelve years of age. During World War 1 he worked on the docks in England, but later left to work on fishing trawlers sailing out of Hull. At the conclusion of WW1 Al studied to become a Marine Radio Officer and eventually was at sea in 1924 using spark gear.

Al upgraded his qualifications by further study and obtained his first class COCR During WW2 he was employed installing radar gear around England and, later in the war, became a radio officer in the Merchant Navy. In 1947 he came to Australia and, after managing a number of guest houses, he joined AWA Ltd as a Marine Radio Officer. About this time he obtained his "Ham Ticket" and became a very active Ham until the end, mostly using CW.

When Al's fist became a little shaky at 87 years of age he purchased a keyer and mastered that in no time. He was to QSO a friend he had visited several times in America, Viz W3FM, the day he died. A very good Australian by adoption he was a very active man and ham, and a good

Special thanks to: VK1FF, VK2BEX, VK2KCP, VK2YFU, VK3LW, VK4AAR, VK4CRR, VK5WO, VK6DX, VK6RX, VK8LC, DL1SV, K0SN, and VR6MW; and the following sources of information, *QRZ DX, The DX Bulletin, The DX News Sheet, The W6GO/K6HHD QSL Managers List and IPS Radio and Space Services.*

73 and Good DX.

\*PO Box 93, Dural, NSW 2158  
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cobber. We are saddened by his demise, a loss to us all in the ham fraternity.

**Jim Ramage VK2HK**  
Harry Vause VK2HV  
(himself SK soon after. Ed.)

### R E (Ron) Raworth VK3IW

Ron became interested in CB some 17 years ago when, due to ill health, he was unable to continue working at the Shire of Hastings.

Having restricted mobility and failing eyesight Ron studied for his Novice Call and succeeded shortly afterwards.

During this period Ron became a Member of the SPARC and Radio Enthusiasts Club and attended both regularly while living on the Mornington Peninsula.

Ron's interest in Amateur Radio continued and resulted in a Full Call by August '84 despite poor health and loss of eyesight.

A number of local amateurs assisted Ron in various ways, in particular Frank VK3BC who made and fitted several audio read-out devices to assist Ron operate his radio equipment.

Ron and wife Viv moved to Echuca for several years and later to Talbot where Ron's tower beamed high above the old Gold Mining Town. This proved to be an excellent DX location from where many local and DX contacts were made, especially with friends in the USA.

Ron passed away at the Maryborough Hospital on 14 July 1994. He will be remembered as a quiet, friendly and concerning person.

Sympathy to Viv and family from all Ron's amateur radio friends.

**Geoff Agar VK3BGT**

### Ike Tarbit VK3OW

Our father was born at Dewley Mill, near Newcastle on Tyne, Northumberland, UK on 2 October 1903.

He was intensely interested in wireless and photography all his life and was a

member of a wireless club in Brisbane that pre-dated the WIA. After raising a family and retiring from the PMG, he was at last able to gain his full call. His interests in photography and "wireless" were fulfilled by becoming active in ATV. He maintained a Monday to Saturday sched on 40 m for many years with VK2ZC, VK3s SW, SY, HL and, once a week, with VK4AL on 20 m. He was a member of the Old Timers Club and a regular listener to the 160 m morning "coffee break".

In the last few years, with his wife permanently in a nursing home and difficulty in caring for himself, he reluctantly entered a Special Accommodation Home at Ringwood. We were able to erect a multiband vertical on the roof of the Home. At first he used an FT-990 and, when that became too complicated for his shaky hands, an IC-730 on which his son-in-law made covers to "hide" the unnecessary push buttons. His family is sure that keeping contact with other amateurs considerably extended his life and extend their gratitude for the companionship and help the above mentioned and other amateurs gave him when operating became more difficult.

No one realised that his usual 40 m contact on Saturday, 6 August would be

his last before entering hospital the next day. He died peacefully on 11 August 1994. He was almost 91 years of age.

**Alan Tarbit VK4AL, Hilary Darmody and Lois Saleeba**

### **Austine Henry VK3YL**

Austine came on air on 13 May 1930 and enjoyed 64 years as an amateur radio operator. Austine's radio interest began when she was a child. When studying to obtain her licence she was coached by Will, who became her husband.

Austine was keen on the CW mode; by 1993 Austine's proficiency in CW was such that she was admitted to the Royal Australian Air Force Wireless Reserve, a group of amateurs who regularly visited Point Cook for training. Imagine the surprise of RAAF officers when a woman appeared in the group.

During the war Austine took WIA classes in Morse code training of service personnel. In 1957 she had a contact with FO8AP/MM operating on the ill-fated Tahiti Nui raft, attempting to float to Chile.

Austine was the oldest living lady amateur operator in Australia and her list of achievements included the ARRL DXCC Honour List in CW; her current position on the CW DXCC General List is third.

Austine had earned many awards and was a member of RSGB, a foundation member of YASME, an assistant director of the Old Old Timers Club, and a member of YLRL, YLISSB and RAOTC.

Austine was known worldwide and will be missed by many in the field of amateur radio, especially the ALARA members.

**Bron Brown VK3DYF**

### **Jim Pope VK3DPO**

Jim passed away in his 78th year on 30 July 1994 at Heidelberg Hospital after a long illness with cancer. He enlisted in the RAAF, serving as a pilot with 30 Squadron at Morotai, flying Beauforts and Beaufighters and later as a flying instructor. Jim gained his novice licence in 1979 then followed with his full call in 1981. He served for a good number of years as a volunteer at the WIA Vic Division office until unable to do so. An active church member and elder he was responsible for setting up the Disciples Amateur Radio Fellowship in Australia, resulting in approximately 25 members in four Australian states, maintaining contact with their US and New Zealand counterparts through weekly nets.

We remember a good friend, and express our deepest sympathy to his widow, Dulcie, and members of his family.

**Ted Wraight VK3ALT**

*Continued next page*

## **WIA News**

### **EMI/EMC standards**

The August issue of *The Australian Standard*, the publication of Standards Australia, carried a feature article on "Cleaning up the spectrum", covering aspects of electromagnetic interference (EMI) and electromagnetic compatibility (EMC).

The article notes that in 1989, the European Community (EC) put in place an electromagnetic compatibility (EMC) regime. This has resulted in a common standard there that requires all electrical and electronic equipment sold in the European Community from 1 January 1996 onwards to meet minimum EMC requirements. Equipment meeting the requirements must bear a "ce" logo from that date. Australian companies expecting to export to

Europe will be required to comply and show the logo, also.

In 1992, Standards Australia and the Spectrum Management Agency signed an agreement under which Standards Australia will develop standards to support management of the spectrum in Australia in relation to EMI and EMC matters. That year, the prevailing international EMC standards were adopted here.

Immunity standards for some specific products are under development in Australia, hearing aids in particular. This Australian initiative is a world first for, while other standards exist for hearing aids, they have not been developed specifically for immunity.

Old standards, and some only introduced two or three years ago, are being revised and updated to keep pace with the rapid

developments in electrical and electronics technology, says Standards Australia.

The 1992 agreement between the SMA and Standards Australia was reconfirmed recently with the signing of a Memorandum of Understanding (MoU) between the two organisations.

Stewart Horwood, Standards Australia chief executive, and Christine Goode, spectrum manager of the SMA, signed the MoU. Under the agreement, Standards Australia will advise the SMA on which standards documents should become mandatory and the level of compliance to be required, reports the August issue of *The Australian Standard*. Christine Goode was appointed spectrum manager of the SMA in July this year after serving the past 12 months as acting spectrum manager.

## W H (Bill) Thurman VK3VGY

Bill Thurman passed away suddenly and peacefully on 5 June 1994. He was 68 years of age.

Bill commenced his career as a clerk with the Department of Trade and Customs in Melbourne in 1942. During World War 2 he served as an aircraft radar mechanic in New Guinea and the Solomon Islands. In 1948 he was appointed a Cadet Engineer in the PMG's Department. At the 1956 Olympic Games in Melbourne he was responsible for Technical Liaison and planning of Communications equipment. He retired from PMG/Telecom as a Senior Engineer in 1987.

Bill, who was an active member of the Ashburton Baptist Church, enjoyed life and had a real sense of fun. He spent much of his spare time tinkering with radio and electronics and in recent years became an amateur operator. His main interest was in HF radio and he operated on 21 and 28 MHz.

John Thurman VK3JWT

## Cecil Leonard Ryan VK4CLR

Cecil Leonard Ryan was almost 82 years of age when he passed away at home from a stroke. He had not enjoyed good health for some time but no one expected his passing so soon. Indeed, he had attended a meeting of his radio club only hours beforehand.

Cec served in New Guinea during the last war as a radio technician and followed in the electronic industry after his discharge.

In his retirement he turned to amateur radio and held a full call licence for some years.

His other interests included caravanning and he and his wife Val travelled extensively, including a round Australia trip.

Cec will be missed by his many radio and other friends.

George Nelson VK4WZ

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and "multipliers are the sum of DXCC countries" etc, etc. However, instead of the hurly burly one finds in the well known world-wide contests (CQ-WW, WPX, etc), all I could hear were the usual JAs working Ws, JAs calling CQ, and FK8s not working anybody.

Well, I did this for three contests, growing increasingly frustrated each time. Eventually, in the third contest, I did actually hear a station in the country I was trying to work. Even better, he was the official station of the relevant radio society, and was sporting a special prefix to boot! He was working stations ten to the dozen, but the odd thing was that he wasn't exchanging contest numbers, only RST and, what's more, was running 5 kHz split. This is one strange contest, I thought, but I kept calling him anyway, although without success. Twenty minutes later he QSYed to 80 m, and increased his split to 20 kHz. 20 kHz mind you!!! It's not as if he was inundated with stations, in fact he couldn't seem to hear anyone, despite being called by two or three VKs and a W.

The point is that I'm baffled why societies would go to the considerable effort of organising a DX contest, if stations from their own country don't enter, and their own official station prefers playing DX gun to supporting his or her own contest. Have you ever noticed a lack of interest in some of the smaller events, which could really be very interesting, if only there was a bit more activity? Is the problem simply that stations in the less common countries are often already DXed out, and perhaps dread the thought of receiving a mountain of QSLs after each contest from countries they've worked hundreds or maybe thousands of times?

As the editor periodically reminds me, space in these pages is not cheap. Whilst I aim to present the widest contest coverage possible, perhaps it is time to focus more on the better known contests, and somewhat less on the others. In the end, you, the readers, are the best judges of what should go in this column. If you have particular requirements for contest coverage, please let me know. All letters are appreciated, digested, and replied to (eventually).

Thanks this month to VK2SRM, VK3KWA, VK6APK, CQ and *Radio Communications*. Until next month, good contesting!

73,  
Peter VK3APN

## Contest Details

The following contest details are supplemented by the "General Rules & Definitions" published in April 1993 *Amateur Radio*.

## Contests

P Nesbit VK3APN — Federal Contest Coordinator\*

### Contest Calendar Oct-Dec 94

Oct 1/2	VK/ZL/Oceania DX Phone Contest	(Aug 94)
Oct 2	RSGB 21/28 MHz Phone Contest	(Sep 94)
Oct 8/9	VK/ZL/Oceania DX CW Contest	(Aug 94)
Oct 8/9	Iberoamericano Phone Contest	(Sep 94)
Oct 15/16	JARTS RTTY Contest	
Oct 16	RSGB 21/28 MHz CW Contest	(Sep 94)
Oct 29/30	CQ World-Wide DX Phone Contest	(Sep 94)
Nov 12/13	WAE RTTY DX Contest	(Jul 94)
Nov 12/13	OK-DX CW Contest	
Nov 12/13	ARRL International EME Competition	
Nov 19/21	All Austria CW Contest	
Nov 26/27	CQ World-Wide DX CW Contest	(Sep 94)
Dec 3/4	ARRL 160 m Contest	
Dec 10/11	ARRL 10 m Contest	
Dec 26-Jan 28	Ross Hull VHF/UHF Contest	
Dec 31	ARRL Straight Key Night	

Over the last few months, I've been making a point of searching out some of the less well known contests, run by the smaller societies. The idea of working stations in less active countries, and being able to put in a competitive log with only a handful of QSOs, seemed rather appealing. Well, I came on at the appropriate time, listened around, and called CQ TEST. And what did I hear? Nothing! I tried again... and again... and again... still nothing! So, I changed bands, and went through the process again.

After several hours of trying different bands, listening around, and calling CQ

TEST, it became apparent that if anyone else was making contest QSOs, by some miraculous coincidence they kept going QRT just before I tuned my receiver onto them, or else a black hole was orbiting the earth and upsetting propagation between our respective countries. Mind you, it would have to be a *small* black hole because I could hear plenty of signals from countries *either side* of the area I was trying to work, but none from the actual area itself. Something must be wrong, I told myself, because these contests were being promoted as "world wide" ones, where "anyone can work anyone else"



### 3rd JARTS RTTY Contest

October 15/16, 0000z Sat to 2400z Sun  
This contest is sponsored by the Japanese Amateur Radio Teleprinter Society, and is open to amateurs worldwide on 80-10 m. Categories are single operator all band, multioperator single Tx, and SWL. Use 3520-25, 7025-40, 14070-112, 21070-125, 28070-150. Exchange RST and operator age (00 for YLs; 99 for multiops). Score 2 points for each QSO in own continent (as per WAC boundary), and 3 points outside own continent. Multipliers are the total DXCC countries, plus JA/VK/W/VE call areas worked, per band. You can work your own country or call area for a multiplier. Final score equals total QSO points x multiplier. Send logs postmarked by 31 Dec to: "JARTS Contest Manager, Hiroshi Aihara JH1BIH, 1-29 Honcho, 4 Shiki, Saitama, 353 Japan".

### OK-DX CW Contest

November 12/13, 1200z Sat to 1200z Sun  
This CW contest occurs in the second full weekend in November each year. Bands 160-10 m. Categories are: Single operator, single and multiband; multioperator, single and multi Tx; QRP, single and multiband (max 5 W out); and SWL. Single operator stations operate max 20 hours, with min 1 hour rest periods. Multiband stations apply "10 minute band change rule" (multi Tx stations are exempt from this rule).

Send RST plus serial; OK stations will send RST plus 3 letter district code. DX (VK) stations score 10 points per OK/OL/OM QSO, and 1 point per QSO with another country. Multipliers are the sum of DXCC countries and OK districts on each band; final score is QSO points (all bands) times multiplier from all bands.

Note rest periods in the log, and use a separate log for each band. Cross-check sheets are required for 200+ QSOs. Logs can also be submitted in ASCII on DOS disk. Entries should be postmarked by 14 December, and sent to: "CSRK, Box 69, 113 27 Praha 1, Czech Republic".

### 1993 RD CONTEST: STATE WINNERS

Further to the results published last December, please note the state winners listed below, each of whom has been awarded a certificate.

For the sake of completeness, the list also includes the national and novice winners (indicated by \* and # respectively), as shown in the December

results. There are no additional overseas winners.

Congratulations are extended to all!

#### HF Phone:

VK1HK	207
VK2ARJ	598
VK3YH	417
VK4DDJ	343
VK5AYD	512
VK5NYD#	176
VI6CKB*	632
VK7PC	486
VK8AN	270

#### HF CW:

VK1FF	82
VK2ZC	105
VK3DVV	92
VK3NAH#	30
VK4XA*	134
VK5AGX	97
VK6AFW	94
VK7RY	50
VK8HA	70

#### VHF Phone:

VK1DO	272
VK2ANK	62
VK3ACR*	864
VK5TTY#	494
VK6YS	563
VK7GL	26

#### VHF CW:

VK1DO*	13
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#### VHF Digital:

VK1ZX	6
VK3KKS	13
VK6KS*	50
VK6XPS#	42

### Results of 1994 WIA Novice Contest

*Presented by Ray, VK2SRM*

There were 50 entries in this year's contest, comprising 38 in Section A (Phone), and 12 in Section B (CW). No entries were received for Section C (SWL).

The Keith Howard VK2AKX Trophy went to VK2LEE, the novice with the highest score in Section A (Phone), and the Clive Burns Memorial Trophy to VK2VZB, the novice with the highest score in Section B (CW). These perpetual trophies are held on permanent display at the Federal Office, and in each case the winner receives an inscribed wall plaque.

Participation was much better than last year, and the comments I received on some of the logs were very pleasing. Thanks to all who entered logs, and I hope to hear from you again next year.

### National Winners:

Section A Novice:	VK2LEE
Section A AOC:	VK4BB
Section B Novice:	VK2VZB
Section B AOC:	VK1FF

### Individual Results, Section A (Phone):

# = National winners  
\*\* = Highest novice score for each state (excluding national winners)  
\* = Special awards

Bold = Trophy winners

<b>VK2LEE#</b>	932
VK4BB#	919
VK5KDX**	808
VK2NPH**	803
VK3JWZ**	732
VK3NCP*	678
VK5PSG*	671
VK7SHV*	659
VK1MOJ**	650
VK2JBW*	544
VK5MAP*	515
VK7MGS**	445
VK2ZL	436
VK7MSM	310
VK3JJM	305
VK1KLB	264
VK2MNA	236
VK4LW	226
VK4MIM**	219
VK3MGK	218
VK4OD	201
VK2BPC	160
VK2EZB	157
VK6MIN**	154
VK2WO	149
VK2FUN	142
VK2SPT	135
VK3LBA	117
VK2EII	113
VK3CAM	112
VK2PAO	110
VK2CW	90
VK2OS	90
VK3DYF	75
VK2LIB	59
VK2FJW	32
VK2VZB	32
VK1FF	10

### Individual Results, Section B (CW):

VK1FF#	132
VK3EFO*	109
<b>VK2VZB#</b>	77
VK2SPS*	74
VK3XB*	66
VK2FJW	36
VK2AZR	35
VK4OD	26
VK2CW	13
VK7MSM	6
VK3KS	4
VK3MGK	4

\*PO Box 2175, Caulfield Junction, VIC 3161

**Have you advised the WIA Federal Office of your new callsign? Use the form on the reverse of the Amateur Radio Address Flysheet.**

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# Education Notes

Brenda M Edmonds VK3KT\* Federal Education Coordinator

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Thank you to all those who have shown interest in, or made contributions to, the revision of the examination syllabuses. A number of useful comments were received on the draft AOCPIAOLCP syllabus. These have been considered by the committee. The draft Novice syllabus has now also been distributed to Divisions and some individuals, and some feedback has been received.

The next stage now is the circulation of drafts of the question banks. They will be going out to Divisions a section at a time. I am leaving it to the Divisions to pass each section to either the Divisional Education Officer or to some other suitable person. I am sure that each Division can find someone who has experience both in running classes and in producing multi-choice questions. The draft question bank will not be distributed as widely as the draft syllabuses and I am asking that the original document be returned with the comments, as the committee prefers not to have a variety of unofficial copies of the questions released. When the banks are finalised, it is intended that they will be made available to both class lecturers and students.

The draft syllabuses have been submitted to the SMA to indicate progress. When our work on them is considered complete, we will negotiate with the SMA until an agreement is reached. I do not expect that there will be very much change required.

The SMA is anxious to have the syllabuses completed as soon as possible, as work has already begun on arrangements for the Australian licence to be accepted by the European Conference of Postal and Telecommunication Administrations (CEPT) as equivalent to the recently finalised European Common licence. Once this agreement is completed, possession of an Australian licence will enable a licensee to operate portable/mobile in any participating country without having to apply for a permit. New Zealand completed such an agreement last year.

A further proposal, which will affect amateurs wishing to operate in other countries for longer periods, is for a Harmonised Amateur Radio Examination Certificate. The CEPT has established a list of criteria as a standard for comparison for the various national amateur radio examinations of CEPT member countries or non-CEPT member countries wishing to participate in the scheme. A sample syllabus has been published. The WIA has no intention of re-organising our syllabuses for complete agreement, but this proposal has been kept in mind during our revisions. In this way, the review of the syllabuses has served two purposes.

I will keep readers informed of the Committee's progress.

\*PO Box 445, Blackburn, VIC 3130  
ar

Rule 9: "For a contact to be valid, numbers must be exchanged between the stations making the contact. The number will comprise RS (for phone) or RST (for CW), followed by 3 figures commencing at 001 for the first contact, and incrementing by 1 for each successive contact."

Did any stations omit the RS part? Their logs are technically invalid. Whether you agree with the token "59" or not is irrelevant. The rules exist so that all participants are on a level playing field. How is rule 18 enforced in all Divisions? No one will complain about Joe Blow down the road, thereby robbing their own state of valuable points. Are the rules of token value and essentially unenforceable? The integrity of operators is questionable, particularly when they sign a declaration contrary to their on-air behaviour.

- (d) Staying up past 3 am wasn't really worth the effort. The average QSO rate deteriorated to seven QSOs per hour per band.
- (e) Many stations continually talk over the top of each other. If a particular channel is very congested try moving + - 25 kHz to one of the in between channels, ie spread it out a bit. This was a quiet haven for making many QSOs.

Having said that, I'll see you in the contest next year!

Adam Maurer VK3ALM  
1 Jeffrey Street  
Dandenong North VIC 3175

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## From Brazil to VK3TL

Last Sunday I saw in the home of PS7KM, the *Amateur Radio* magazine for May 1994 and, on page 41, Fire Fighting and Amateur Radio.

I enclose for the WIA Collection, QSL cards for the Annual Fire Prevention Week in Brazil. (The first week of July — the Brazilian Fireman Day is 2 July). Since 1980 I have activated Special Calls to commemorate the event (ZV2ADV, ZW8ADV and now ZW7AB).

I am a Captain (retired) of Brasilia (DF) Fire Department.

73 and congratulations for the WIA Collection.

Ronaldo Bastos Reis (PS7AB)  
Caixa Postal 2021  
59094-970 Natal, RN, Brazil

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## Request for Amateur Radio Help

Several VK amateurs have suggested that I ask your assistance to trace a ham friend who has changed address. I've been looking for him for a couple of years,

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# Over to You — Members' Opinions

All letters from members will be considered for publication, but should be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.

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## RD Operating Practices

Although I'm not that keen on contesting I do have a go in the Remembrance Day contest. My participation this year (in the VHF section) was primarily to beta test my RD logging program that I started writing a few nights beforehand. Now that the contest is over and my summary sheet has been mailed off, I have come to the following conclusions;

(a) A logging program is a great help (despite having to edit the program during the contest to fix a few bugs!) Gone was the mad panic of looking through several sheets of paper to avoid working a dupe. Pen and paper

was only needed to take down the details when contestants running multiple call signs gave out all their details in one over. How about finishing one contact before starting the next?

- (b) For re-working after two hours, it's amazing how many people key up and ask "are we eligible to work again?"; or, worse still, key up and then decide to rustle through their logs whilst grunting into the mic. Use your brain, minimise QRM, checking your log before calling.
- (c) Many stations, some high scoring, clearly ignore the rules. Referring to *Amateur Radio*, July 1994, page 34;

but have drawn a blank. He holds two call signs, and both show the same address in the callbook but all mail is returned to sender marked "PO BOX CLOSED".

The man I'm trying to write to is CRAIG HUNTER VK2FCH (ex VK0CH). Craig worked for the Antarctic Division in 1990, and operated from Mawson Base, and Macquarie Island.

I've been attempting to contact him because I need to clear up a QSL query. I know that may sound utterly stupid, but the outcome of Craig's reply to me could decide whether I've achieved DXCC honour roll or not. I've worked very hard for 13 years towards this goal, and it all now hinges on one QSL card!

After writing to every friend I can think of in Oz, and months of packet broadcasts, faxes and letters, I've had no success. It appears that only the national circulation of the WIA magazine *Amateur Radio* is left open. Maybe he'll read it himself, he's a pretty active ham!

**Paul Godolphin G4XTA**  
**3 Knipe View,**  
**Bampton, Penrith**  
**Cumbria CA10 2 RF**  
**UK**

### **Liaison With Schools**

Richard Jenkin VK1RJ called, in August *Amateur Radio* magazine, for greater liaison between schools and amateur radio. The city of Hervey Bay ARC, VK4CHB arranged with the headmaster of Urangan Point school to conduct a class on the subject of electronics in an entertaining way. For example, using lemons as a power source, etc and setting up amateur radio in the class room.

Mike Barrow VK4MRB and I were rather dubious as to how this invasion of the class room would be received. There was nothing to be concerned about. To any club contemplating a similar lesson, I say "go for it". The expressions on the faces were an absolute pleasure to behold.

Keep the surprises coming and the kids are with you 100%. One feels like a magician pulling rabbits out of the hat.

The school followed up by bringing two classes to our club rooms for further tuition and that went extremely well also. I am sure the children will remember their visit, and ours to their school, for quite a while and we have sown a seed. They and their parents now know that there is a hobby called amateur radio.

We also took advantage of newspaper and TV publicity for our unusual education activities.

**Jim Beattie VK4WJB**  
**ar**

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## **International Amateur Radio Union Monitoring Service (IARUMS) — Intruder Watch**

*Gordon Loveday VK4KAL\**

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Owing to the fact that the bands are somewhat quiet, there has been a lull in the number of intrusions into bands. This, however, does not mean we can relax our surveillance. By the letters I receive from all over Australia, there is plenty to do. You should keep your collective ears in tune.

Here are a few stations to look for. One on 7.000 MHz spreads to 7.005 MHz, appears to be C3F or maybe F3E(SSTV), and to be coming into VK6 from the north at 1400/1500 UTC. Another station causing concern in the west is on 7.098 MHz exactly, running A3E with very distorted audio, and is non amateur.

There is growing concern at the increase of "pirate" stations originating from our northern neighbours, who are defiantly ignoring our right to operate within our bands. This activity is affecting all bands. One instance was brought to my notice by Karl VK6XW, and I quote "Two Indonesian stations deliberately

interfered with the Australian Travellers' Net. They were repeatedly asked by net controllers VK6HH and VK6BO to QSY, but ignored the net. In the end the net had to QSY to 14.1175 MHz."

We should not have to "bow down" to this activity. I hate to think of the trouble in store for us when the bands come good again in a few years' time. I await with much interest the outcome of Singapore '94.

The new setup at my QTH is making it somewhat easier to get the info out of the logs. To all those who send those logs in, please accept my thanks, I wish there were more of you. To those who think it is a waste of time, are you in favour of the pirates invading our band space? It looks that way to me!

*\*Federal Intruder Watch Co-Ordinator, Freepost  
No 4 Rubyvale QLD 4702 or VK4KAL@VK4UN-1  
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## **An Old Timer Reflects....**

*Des Greenham VK3CO\* continues to look back over 50 years of amateur radio operation.*

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It is 3 September 1939 and we have just heard the announcement from the Prime Minister that "We are now at war with Germany". To a young fellow of my age who had just got his ticket, this didn't mean too much, until we received a letter in the mail telling us to cease all radio transmissions immediately.

This was indeed a shock! After that, one could tune over the previously congested bands and hear nothing. There was now total silence. A short time later it was possible to hear an odd signal pop up on the ham bands with no call sign, and hear an answer, again with no call sign! These were illegal transmissions.

Can I confess, now, after 55 years that I was one of these illegal operators? Confession is good for the soul!

After some time, and a marked increase in illegal transmissions, the Government decided that this had to stop. So they came around to every radio amateur's shack and packed away our crystals, microphones, and final valves, etc. These were then placed in a big box and sealed with wire and a lead seal. This was the end of our "pirate" operating. After that

we couldn't go "on air" and things quietened down on the bands.

Of course, we could still listen and this we did. We could hear DX stations not involved in the war still on air and we could listen to the war propaganda from all over the world, including "Lord Haw Haw" from Berlin and, later on, "Tokyo Rose" from Tokyo.

When a Japanese invasion of Australia seemed possible, the government took another step. They came around and picked up our sealed boxes and impounded them in some secret location to prevent this equipment falling into enemy hands.

Finally, in 1945, the war ended and we were handed back our boxes of "goodies". We were allowed to operate on 10 metres only, using a maximum power of 50 watts input to the final.

That was a great day. The sun spot cycle was at its best and we were able to work the world on 10 metres, and we did!

*\*16 Clydesdale Court, Mooropna VIC 3629  
ar*

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# Pounding Brass

Stephen P. Smith VK2SPS\*

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Over the last couple of months I have acquired quite a bit of information relating to telegraphy from technical publications from around the world. In this issue I have included what I think are the most interesting aspects of our hobby for your information.

In trying to keep abreast with technology, writing letters and studies, my on air activities have suffered somewhat. However, I don't think I am missing much as band conditions seem to be at rock bottom.

I recently received a letter from Ron VK4CRO, secretary of the "City of Brisbane Radio Society". Ron and fellow members are in the process of establishing a Morse tutor station which should be on air by the time you read this. I will report my findings when I receive further information from Ron.

Most amateurs these days have at least one computer situated in the shack, whether it's for packet or just for their favourite log program. If you don't have a CD-ROM drive fitted to your computer I would seriously think about getting one as the information on CD disk relating to our hobby is incredible.

I recently purchased from "Amsoft" a disk called "The World of Ham Radio May 94" and spent many a long night decompressing and downloading files for evaluation. The disk contains about 200 mb, covering every aspect of our hobby. I'm in the process of going through all the CW programs and will report my findings in a later issue.

A new product has hit the American market (and I believe will soon be available here). Introduced by Ken K6HPX, from "Cal-Av Labs", it is a new "Contact Cleaner", an electronic circuit that, when installed between the key and transmitter, virtually eliminates the noise from dirty and/or bouncing contacts in straight keys or bugs. The loaded and tested printed wiring board is available either alone, for building into other equipment, or installed in an enclosure with connectors and an internal battery holder. The contact cleaner operates either on an internal battery or from a 6-15 V source. The price for the printed wiring board is \$US39.00, and for the enclosed version is \$US55.00. Further enquires to Ken K6HPX, 515-B Westchester Dr, Campbell, CA, 95008, USA (tel 408-3691000).

Turning our attention to "Morse Keys" there have been some interesting developments from overseas. Derek

Stillwell, an instrument maker from Shropshire, is now producing limited quantities of straight keys. The keys are individually made, hand finished and assembled, and destined to become collectors' items.

Looking at the key, its design is very similar to the straight keys produced by Kent which are sold here in kit form.

The key has a solid brass arm and bearing block fully adjustable, and the base is made of polished marble. Each key is serial numbered. You also have the option of having your call sign engraved upon the key. For further enquires, contact Derek Stillwell, 27 Lesley Owen Way, Shrewsbury, England SY1 4 RP.

Also from the UK, G4ZPY Paddle Keys International has come up with the first commercially available "Single Lever Combo". If you get tired using the single lever and would like to change over to a twin lever, there is a jack socket fitted to enable another key to use the same iambic keyer. Send a SAE or 2 IRCs to G4ZPY Paddle Keys International, 41 Mill Dam Lane, Burscough, Ormskirt Lancs, England L40 7TG. You will receive a beautifully presented colour catalogue of his many products.

"Bencher" in the USA, with whom we should all be familiar as it produces the "BY" series iambic paddles and the "ST" series single lever paddles, has now introduced two straight keys to their range. The RJ-1 model (170-61), has a black base and chrome components and the RJ-2 model (170-62) is an all chrome construction. Each key has oil-impregnated centred bronze bearing pivot points which impart friction-free pivoting,

wobble free vertical tracking, stainless steel locking screws, steel base with non skid feet and a large black navy knob (very similar to the HI-Mound range). The RJ-1 is priced at \$US69.95 and the RJ-2 at \$US79.95. Further enquires to Bencher Inc, 831 N Central Ave, Woodale, IL, 60191 USA. They will send a four page colour brochure relating to all Bencher products.

## QRP Scene

From the UK, Peter PE1MHO, a member of the "G-QRP Club", has made the "Master Roll of Honour". Peter is one of the very few (less than 100) to gain this prestigious award. Quite an achievement, considering there are some 8,000 members world wide. Congratulations, Peter, on a job well done.

A QRP version of the "Ten Tec Scout 555" is soon to be released. At this stage I have no further information from the company. I will report when it becomes available.

The number of QRP Clubs around the world is slowly increasing, with 17 listed at present.

Now, a request. I recently received a letter from a 17 year old Kenyan youth named Mark who has just undertaken his RAE exam and is anxiously waiting for the result. He is also undertaking Morse at his local radio club. Mark would like to correspond with someone in Australia. How about it? Mark's address is Mark Kiptoo Yego, PO Box 25, MDI University, Kenya, Africa.

Next month we will have a look at the 8044 series IC Chip.

\*PO Box 361, Mona Vale NSW 2103

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# QSLs from the WIA Collection

Ken Matchett VK3TL\* Honorary Curator WIA QSL Collection

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## The Azores

This Portuguese territory is a very isolated archipelago of nine small islands lying approximately half way between Portugal and the American mainland. Some people believe that the islands may be the legendary "Lost Atlantis", Plato's description of a paradise on earth west of the "Pillars of Hercules" (the Straits of Gibraltar). In any case, they were known to some ancient races of people including the sea-faring Carthaginians, but were colonised by the Portuguese in the 1430s. The great Christopher Columbus was forced to land here due to severe storms on the way home from his discovery of the New World and was taken prisoner by the Azoreans. Not surprising really since, at the time, the famous navigator was in the pay of Spain.

The earliest amateur radio call sign allocated by the ITU to the Azores was the "Intermediate" EP (E = Europe, P = Portugal) at the same time Australia received OA (O = Oceania, A = Australia). These became effective from 1 February 1927. They were called intermediates since the letters joined the two call signs of the communicating stations. For example, if Australian station 3AD was calling Portugal (or the Azores) 2AA, he would transmit 2AA epoa 3AD (the intermediate was normally written in lower case). Later, in 1929, the intermediate became incorporated in the callsign itself, eg EP2AA de OA3AD, the word "de" (from) taking the form of the intermediate itself. At the famous Washington Conference all callsigns were changed that year, Portuguese colonies

**W.U. RADIO CLUB,**  
C/o W.U. Cable Station,  
**HORTA. FAYAL, AZORES.**

**T & R. R. S. O. B.**

To RADIO CT2FA  
TRANSMITTER.

Cct. HARTLEY P.P.

HT MA 30

VOLTS 1000 DC

FROM Gen. T. Mame

Aerial Current.....

2 Zapp Cur. Fed. AERIAL

CW ORD RECD

Your FONE SIGS WKD here. 2040

REMARKS The by much for QSL in fine w/good & mod clear  
QSL + QSL also for an in WPE CU AGN OB 73 es DX  
was only from 73 to WIL & Jeff.

**EP-2AA**

Wkg. CT2AA

RECEIVER.

Cct Hartley

o v 3

EARTH CPSE net

GMT 10 3 29 QAS RSP

QSSS nil QSS nil

ARRL

PAUL & MATHEW, Printers, Buffer Market, Bury St, Dundee's England.

1970s and 1980s, much of it by airport staff (eg CT2AH, CT2DU and later CU1AF and CU1EZ). This card was received by Barry VK3XV for a QSL during the celebratory year. Regarding the CU prefix, WPX hunters will be pleased to know that upon one QSL, from CU2AK, there is provision for the use of another ten CU prefixes from CU20 through to CU29.

The prefix CS has also been used for Azores. The special prefix CS2 was, for example, issued during 1993 to commemorate the World Communications Year, although it had been used quite frequently by Sam CS3AC in the 1950s, an excellent QSLer who operated from the island of Terceira.

Like the Spanish, the Azoreans carry on century-old traditions which also become tourist attractions. Of particular note are the Espirito Santo (Holy Ghost) festivals and the "Tourada a Corda", a bull fight of a different type in which the bull is run through the streets held by a cord, an event which, one is pleased to say, does not conclude with the death of the animal. Certainly the Azores has great tourist potential. Many of the islands show evidence of volcanic origin with their geysers and hot springs. There is also lush vegetation, mountains and lakes, but the big drawback is its isolation. The Azores has been described as the 'Aerial Crossroads of the Atlantic' but transportation remains an expensive item. The national Portuguese airline conducts frequent services and there is modern ferry and aerial transportation between the various islands. Often regarded as "backward" (due to lack of capital investment by Portugal) there have been promising changes of late, particularly since the entry by Portugal in 1986 into the European Economic Community. Hopefully, we can look forward to more amateur radio activity from this island location.

\*4 Sunrise Hill, Montrose VIC 3765  
Tel (03) 728 5350  
ar

being allocated the prefix CR (eg CR9 Macao, CR10 Timor) and Portugal, Azores and Madeira Island being allocated prefixes from the batch CSA — CUZ. The actual selection for Azores was CT2 (CT1 = Portugal mainland, CT3 = Madeira Island).

### EP2AA

This is the earliest pre-World War II QSL from the Azores in the WIA National QSL collection and is dated 10 March 1929. The operator, M S Killen, has altered the intermediate EP to the newly-allocated prefix CT. Several early QSLs emanated from Horta, the only town on the westerly island of Faial (Fayal) where the Western Union cable station was sited. It was, incidentally, the scene of the last naval battle (in 1814) between the British and American forces during the War of Independence.

### CT2FA

This QSL clearly shows the geography of the Azores, a name derived from the

Portuguese word for goshawk. The QTH was on the island of Terceira just to the north of the largest island, Sao Miguel. The latter island (the largest of the islands) has the largest city in the Azores, Ponta Delgrada, and the colony's main port. More than half the Azorean population live on the island of Sao Miguel. The QSL card was received by an Old Timer, Jeff Whyte VK2AHM, now a "Silent Key".

### CU0SM

In 1986 the CT2 prefix for Azores was replaced by a CU prefix. In fact, the numbering was such that the particular island was identifiable. For example, CU1 was allocated to Santa Maria, CU2 to Sao Miguel, CU3 to Terceira, CU7 to Faial, and CU8 to Flores. Prefixes for the remaining four islands are quite rare.

The CU0SM QSL shown was a special prefix allocation which celebrated over 500 years of Portuguese colonisation. There has been considerable amateur radio activity from this island during the

QSO WITH	CONFIRMING QSO						
	DAY	MONTH	YEAR	UTC	MHz	RST	2-WAY
UK2AHM	1	FEB	83	2034	14.1	5X9	5513

Carvo

**THE AZORES**

MORRIS STEVENS  
PSC 185  
APO NEW YORK 09406  
(Home Call: KB4APK)

K2QFL Print

**CT2FA**

# CU0SM

Sp. Pref. SANTA MARIA — AZORES Isl.

CUTAC

CU1AF

CU1EZ

To Radio VK3XV

Date	UTC	MHz	RST	Mode
5-10-88	7:39	14	578	SSB

PLS QSL       TNX QSL

AUGUST 15<sup>th</sup>  
1428 - 1988

SANTA MARIA located at 37N 25W is the southern island of Azores with 97 km<sup>2</sup> and a population of 7000. The average temperatures are between 12 °C (54 °F) and 25 °C (77 °F). Surrounded by beautiful beaches and slopes when vineyards are planted. The island is divided by a chain of mountains where Pico Alto at 980 meters is in the middle. Santa Maria was discovered by Portuguese Navigators in XV Century. Santa Maria played a major role for the Allies due to its strategic position and its splendid conditions arrived in WW II.

# Technical Correspondence

Thanks to Doc VK4CMY for his interesting articles in *Amateur Radio* on vertical antenna design.

I wish, however, to point out that the placement of his matching network is inappropriate if optimum radiation efficiency from a multiband vertical system is a design requirement. If open wire transmission line is used to feed power to an "untrapped" vertical antenna over more than one frequency range, the matching network must be placed between the base of the vertical and its ground system. Only then will feeder currents be balanced (currents equal in amplitude and close to 180 degrees out of phase) and the feed line not radiate.

With Doc's system the feed line will radiate, because the feed line currents will be unbalanced (with respect to amplitude and phase) and, therefore, this "feed line" will be part of the radiating system. A substantial part of the source return current is likely to pass through the local ground G1 and not the remote radial system G2. The efficiency of Doc's system will therefore depend on a number of factors such as the feed line length, the vertical length, and relative conductivities of the local and remote radial grounds, all at the operating frequency (see Fig 1).

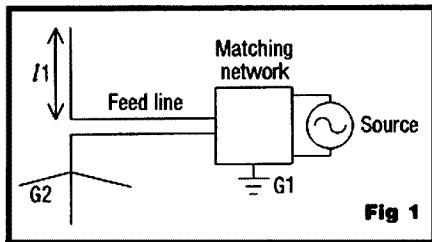


Fig 1

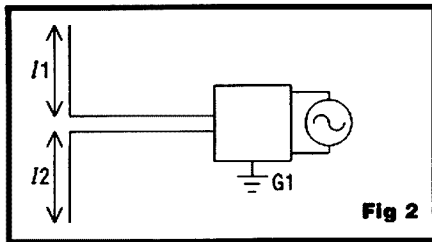


Fig 2

Felix VK4FUQ was, I believe, alluding to this fact even though he did not quite hit on it. Had Felix said that it was a bit like feeding an unbalanced dipole with open wire line he would have been close to the mark (see Fig 2).

If  $I_1$  does not equal  $I_2$ , the feed line currents will differ in phase from 180 degrees because of the unequal path lengths along  $I_1$  and  $I_2$  (boundary conditions require zero currents at the end

of  $I_1$  and  $I_2$ ) and the amplitudes of these currents will decrease, along the feedline, due to the radiation that will take place from the feed line. The source return current will now be split into two parts. One part will flow through the local ground G1 and the remainder through the lower feed wire to  $I_2$  (unless  $I_1 = I_2 + n \times \lambda/2$  at the lowest wavelength for which the system is to be used and  $n$  is an integer 0, 1, 2...).

If the angle between  $I_1$  and  $I_2$  is now decreased from 180 degrees to 90 degrees, only the radiation pattern changes. The unbalanced feed line will still radiate and the antenna return current will still be split between G1 and G2 (see Fig 3).

This unbalance remains if  $N$  wires, each of length  $I_2$  or differing from  $I_2$ , is

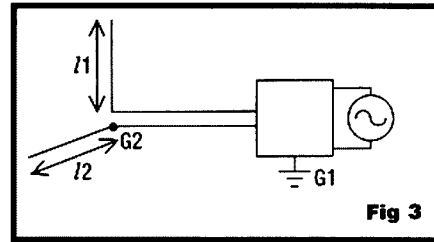


Fig 3

connected to G2. A large part of the source return current is still likely to pass through the local ground G1 and not the remote radial system G2. The efficiency of the system is therefore likely to be far from the optimum over more than one frequency range (see Fig 4).

In order to improve the efficiency of Doc's system as it stands, it will be necessary to replace the open wire with a single wire close to a large ground mat "half plane" and replace the local ground system with the radial system (see Fig 5).

*Continued on page 48*

## Repeater Link

\*Will McGhie VK6UU

### FM 828-9

At long last the final circuit diagram of the FM 828. I split up the original circuits, that I had drawn some time ago for our repeater project in VK6, into a size that could be reproduced in *Amateur Radio*. Originally I thought there would be six circuits, but there are nine in the series. There are also drawings of the component layout of the receiver board and the exciter board. However, it is not intended to reproduce them unless there are a number of requests. If you would like these layout drawings then I can send them to you.

The VHF power amplifier in the FM 828 is very stable and simple to tune up. Simply connect a VHF power meter or SWR meter and 50 ohm dummy load and adjust the trimmer capacitors for maximum output. With a 13.8 volt supply 25 watts should be achieved. Should the VCO become unlocked the voltage supply to the first transistor TR1 in the PA is removed.

The circuits of the Philips FM 828 you have been seeing in *Amateur Radio* were all drawn using the CAD drawing program Draft Choice. Once drawn the circuits were then printed onto A4 paper using my nine pin dot matrix printer. The printer output from Draft Choice to my printer is poor. Printer outputs to dot matrix printers from computer programs can be a hit or miss affair. You can be lucky and, with the right printer driver, print out a sharp copy. If not the results can be sub standard.

To produce a sharper printed image I use a printer utility program called PrintGL. This program takes a HPGL print file that Draft Choice can produce and prints out the results you see in *Amateur Radio*. Seems a long way round to have to "print" the drawing to a HPGL file and then load this into another program to print the final result, but the results direct from Draft Choice to my printer were not good enough.

The laser printer drivers in Draft Choice provide excellent results to both laser printers and inkjet printers. Even though I now have access to a better printer I decided to stay with the same quality output so all the FM 828 drawings would look the same.

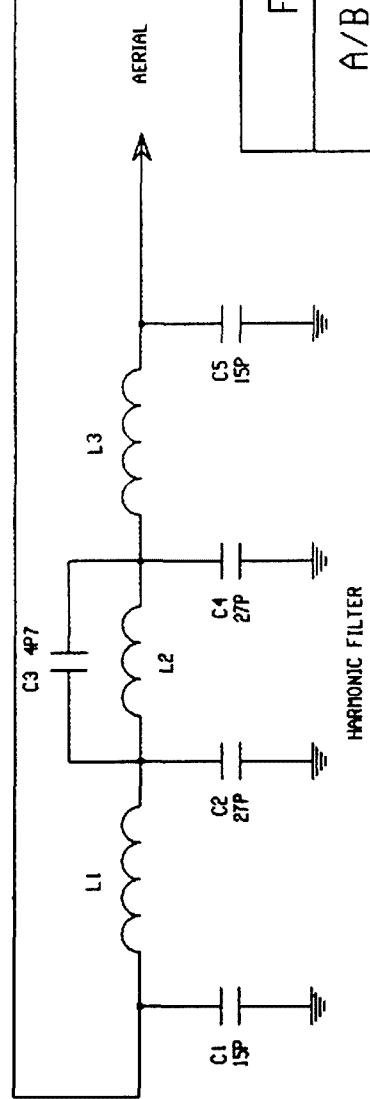
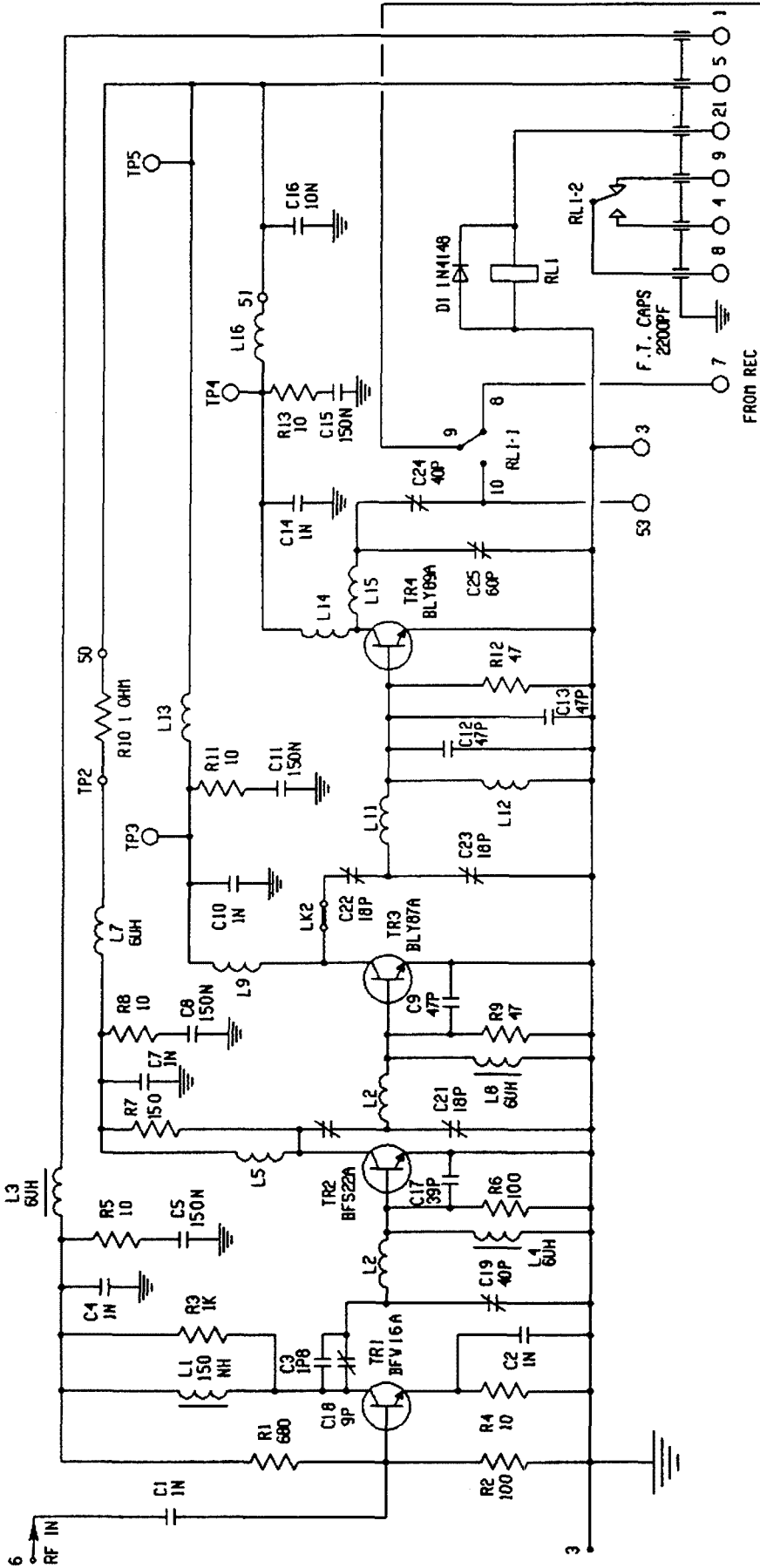
Thanks to all those that contacted me about the FM 828 drawings over the past several months. Several copies of the CAD drawings have been sent to amateurs via Packet Radio or Australia Post on disk. Even a request from Papua New Guinea was received. If I did not answer your request via the mail or Packet Radio, please contact me again as your request may have gone astray.

In closing with the last Philips FM 828 drawing, a special thanks to Philips for allowing these drawings to be reproduced, and to *Amateur Radio* for reproducing them on a full page.

Next month some simple tune up instructions on the FM 828.

\*21 Waterloo Cr, Lesmurdie WA 6076  
VK6UU@VK6BBS

ar



DESIGNED BY PHILIPS	DRAWN BY VILL
FM 828	A/B BAND PA

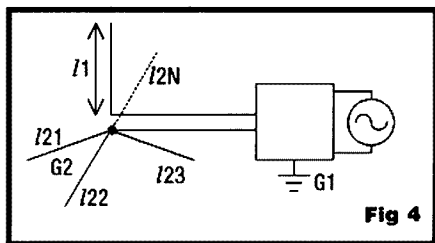


Fig 4

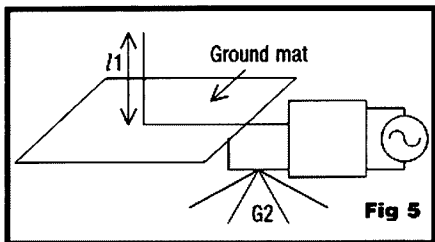


Fig 5

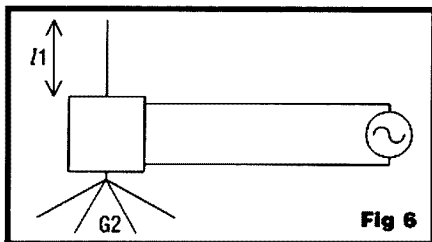


Fig 6

But, of course, the proper and best solution is to place the matching network at the base of the antenna. This is an optimum design axiom. The network must then, unfortunately, be remotely controlled from the shack (see Fig 6). But, who was it who said, "life was not meant to be easy"?

Tim Hunt VK3IM  
20 Ravenscourt Crescent  
Mt Eliza VIC 3930  
ar

## Stolen Equipment

The following equipment has been reported stolen. If you have any information that may lead to the recovery of the equipment, please get in touch with the advised contact as soon as practicable.

**Make:** Kenwood  
**Model:** TH-28A & TH-28A  
**Serial Numbers:** 41003177 & 41003180  
**Type:** VHF Handhelds  
**Stolen from:** 14 Church St, Bayswater 3153  
**Date:** 14 July 1994  
**Owner:** Strictly Ham Pty Ltd  
**Contact details:** (03) 729 7656

ar

## Spotlight on SWLing

Robin L. Harwood VK7RH\*

Radio Australia in Melbourne, which has been based in Glen Waverley since 1984, moved their studios and administration to a brand new radio complex at Southbank Boulevard in South Melbourne, where the domestic networks have been relocated. The postal address of GPO Box 428G, Melbourne 3001 is unchanged. However, the telephone and fax numbers are now 03 626 1800 (Switchboard), 03 626 1914 (Transmission Management), 03 626 1899 (Fax), and 03 626 1916 (Fax).

The 24 hour Openline facility no longer is available. The changeover happened smoothly on 12 August.

Long time American religious broadcaster, KGEI, in San Francisco, California, ceased its shortwave operations recently. KGEI is one of the historic pre-war callsigns being originally allocated to the American General

Electric Company. The station broadcast General Douglas McArthur's famous wartime speeches to the Philippines. After the war the station was acquired by the Far East Broadcasting Company and mainly broadcast religious programming to Latin America, as well as to the Soviet Union. The organisation continues with its transmitters in the Philippines, Saipan and in South Korea.

Another historic VOA site, at Bethany, Ohio, will shortly also cease operations. This has been brought about by budgetary cutbacks within the organisation. Many technicians will be out of a job there and also at the huge Greenville, North Carolina site, where a satellite facility will also cease.

The VOA is pinning their faith in co-operative ventures with domestic networks, particularly in Latin America. It has been noted that there has been a

significant reduction in the Latin shortwave audience, so the "Voice" thinks placing programming over domestic stations will reach a wider audience, despite the obvious failings of not having control over program content.

I have noted an increase in Creole programming to Haiti from the VOA, also in the output of the surrogate "Radio Marti" to Cuba. Both areas are currently dominating American thinking.

I have been informed by a British SWL that there will be a challenge to SWLs to coincide with the "CQ" Worldwide Phone Contest. The operational hours are identical, that is from midnight UTC on 29 October to 2359 UTC on 30 October. The rules of the Contest are as follows:

1. There are no time restrictions. You may log at any time during the specified period.
2. Only one station from each DXCC country can be logged on each of the main operational bands. Note that WARC bands are excluded.
3. Points will be allocated as follows: From your own continental area, 1 point on each band. All contacts outside your continental area, 5 points on each band. Your final score is the total points on all bands multiplied by the total DXCC countries on all bands.

Your entries must contain the Date and Time in UTC format, callsign of the station heard only, the RST at your location (minimum report 4X4), together with the band. A multiplier check sheet must be included with your entry. Computer-generated logs are quite acceptable. Send your logs, postmarked no later than 28 November to Bob Treacher BRS32525, 93 Elibank Road, Eltham, London SE9 1QJ ENGLAND. For a copy of the results, please include either two IRCs or a green stamp.

In conclusion, please note that my snail mail address for the next column will be c/- 5 Helen Street, Newstead, TAS 7250. The e-mail address is either FIDONET 3:670/312 or INTERNET: robroy@clarie.apana.org.au.

Until next time, the very best of 73 and good monitoring.

\*54 Connaught Crescent, West Launceston TAS 7250  
VK7RH@VK7BBS.LTN.TAS.AUS.OZ

ar

**Don't buy stolen equipment — check the serial number against the WIA Stolen Equipment Register first.**



## Introduction of Class Licensing for CB and Handphone Services

The SMA will introduce separate class licenses for CB (other than repeaters) and 27 MHz Handphone services from 3 October 1994. This decision was made following public consultation during the inquiry into the apparatus licensing system earlier this year.

Class licensing received strong support in submissions to the inquiry.

Class licensing authorises the operation of equipment without the need for individual user licensing. The good news for CB and Handphone users is that licence fees will no longer be payable after 3 October 1994.

According to the SMA, the introduction of class licences does not mean that CB and Handphone services will be deregulated. Licence conditions, similar to those applicable under the current licensing arrangements, will still apply and equipment will still need to comply with the existing technical requirements.

Users of CB and Handphone equipment who are in breach of the licence conditions will still face penalties under the Radio-communications Act. For example, operating out of band or using a linear amplifier is still an offence under the class licence.

Further consultation will be undertaken over the next year on the possible introduction of class licensing for Amateur and 27 MHz Marine services.

SMA offices in capital cities and regional centres have more information about the new CB and Handphone class licences.

## VHF/UHF — An Expanding World

Eric Jamieson VK5LP\*

All times are UTC

### 10 GHz

Well, occasions do arise when one has only to make a statement that something has occurred, for the first time only, to find someone has done it before!

I recently referred to the "tongue-in-cheek" contact between David VK5KK/3 and Roger VK5NY/5 as being possibly the first VK5 to VK3 contact on 10 GHz at a distance of 16.5 km.

Trevor VK5NC quickly advised me that he, in fact, was part of the first such contact as follows. On 25/4/93 at 0625 he contacted VK3ZQB/p with signals 5x9 each way. VK3ZQB operated from Delcartes Bay near Bridgewater and VK5NC was at Cape Northumberland, using FM on 10.250 GHz, power 20 mW to a 30 cm dish, receiver an MR301, distance 68.75 km. This contact was referred to in an earlier edition of *Amateur Radio*.

However, all is not lost. The VK5KK to VK5NY contact was probably the first narrow-band contact across the border on that band! The facts should now be in order and I am pleased Trevor advised me.

Wally VK6KZ writes to say that 10 GHz is moving slowly in Perth. Keith VK6XH

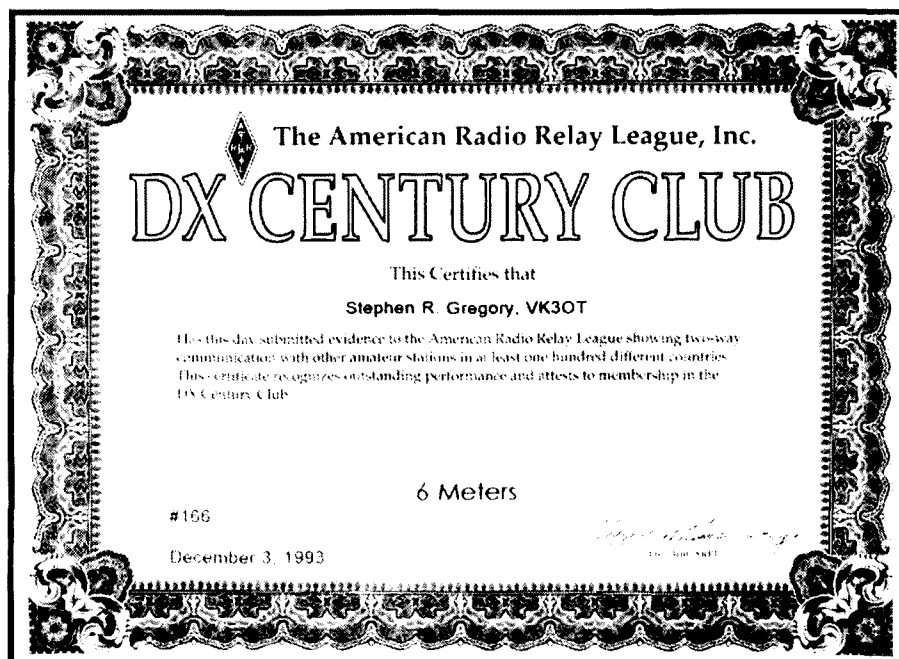
sold his kit to Neil VK6BHT in Geraldton who now has two units, so Wally is the only narrow-band enthusiast in Perth, although Alan VK6ZWZ and Al VK6ZAY have adapted some 12 GHz LNPs for reasonably narrow-band low power transmitters and receivers. Wally VK6WG in Albany has been silent on 10 GHz activities while enjoying the warmer weather of Queensland.

### Ross Hull Memorial Contest

This contest commences in December and Wally VK6KZ sent me a copy of a letter he forwarded to the Contest Manager. There are a few valuable points to which I would like to refer. I ask that you read them and be prepared to lend support if you see value in them.

Wally says, *Could the Ross Hull rules and dates be released in the July issue of Amateur Radio each year? This would allow analysis and discussion of the results of the previous Contest (usually available at the beginning of April) by those who think the rules should be changed.*

*In your reflections of the 1993/94 contest you suggested that a longer period might be chosen with the idea of then using the best 100 contacts on each band. I have a mixed reaction to that proposal and I appreciate the difficulty of finding rules that*



Australia's outstanding 6 metre operator, Steve Gregory VK3OT, achieved world fame on 19 November 1993 when he became the first amateur in the world to work Antarctica on 6 metres (VK0AQ at Casey Base). This contact enabled Steve to become the first Australian amateur to qualify for DXCC on 6 metres.

*will maximise the interest in participation. I am certainly not troubled by a low number of logs submitted to the Contest Manager — I feel most people use self assessment as to whether it is worth the effort of preparing (or re-writing) a contest log. It is the number of call signs appearing in contest logs that is a better gauge of the success of the contest (and the rules!).*

Wally also mentions he may operate from Cocos Island during the time of the contest. The distance to Perth is 2900 km which is about 600 km above the maximum calculated single Es hop and not far enough for true double hop. However, over many years there have been thousands of single-hop contacts made in Australia at distances around 1600 km, so anything is possible. If there is a return of the excellent Es conditions which prevailed last year then Wally may well be heard in places other than Perth. More later.

### More from Perth

Peter VK6BWI would like to advise interstate operators that, for some years, there has been an operational six metre repeater in Perth. The repeater transmits on 53.800 MHz, receives on 52.800 MHz and is linked to a 70 cm repeater. The six metre repeater has been worked in the Eastern States during previous years.

Peter says we all know that being there at the right time is crucial and the repeater may be a means to achieve more contacts across the continent. Presently in Perth there is some interest in converting FM 828s to six metres which may lead to increased local usage of the repeater.

Peter's equipment is home-brew with a car radio plus converter for receiving and using slope detection for FM. The transmitter is a conventional FM unit to which are being added facilities for DSB/CW operation. Good SSB reception can be achieved by adding a BFO to the receiver combination. Good work Peter, it is interesting to note there are still operators who do not use black boxes!

### From the United States

Emil Pocock W3EP in his QST column *The World Above 50 MHz* for September 1994 reports that June 1994 will be long remembered as one of the most incredible months in radio's history for sporadic-E propagation on the VHF bands.

Emil reports Larry N0LL observed E-skip on 50 MHz every day of the month except 1 June. Long-time FM-band DXer, Pat Dyer WA5IYX, recorded over 3500 minutes of sporadic-E signals on 88 MHz or higher during June, the third-highest month he has observed in over 20 years of continuous monitoring. That works out

to an average of nearly two hours per day. In view of these indicators, it should come as no surprise that there were nine separate 144 MHz sporadic-E openings on eight days in June. But this is not all! At least two 222 MHz E-skip contacts were completed during the widespread 2-metre openings of 21 and 22 June.

The spectacular sporadic-E conditions were not limited to North America. Canadians and Americans — and not only those on the East Coast — worked Europe on seven days in June, and the band opened on four other days to the Azores or North Africa only, for an astonishing total of 11 days of transatlantic 50 MHz propagation.

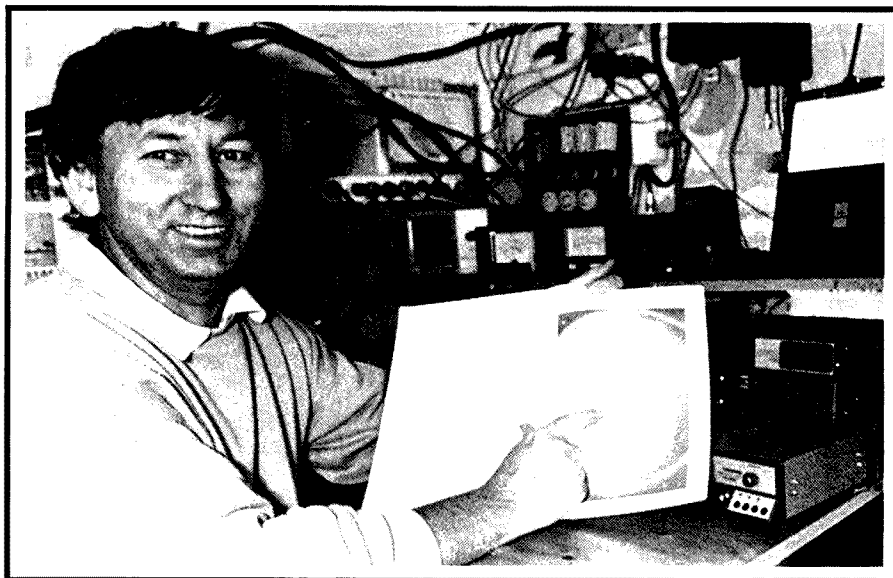
Emil's columns are full of interesting Es events, tending to indicate that the two world hemispheres do appear to follow one another, especially during the low part of the sun-spot cycle. On this basis we should be blessed with another excellent Es period during our summer months.

Because the Algonquin dish has a 9 degrees lower elevation limit, stations with horizon fixed antennas have a limited chance to work VE3ONT. As in 1993, VE3ONT will operate "split". The following operating hints will improve your chances of making a QSO.

*Do not call on VE3ONTs Tx frequency, pick a random frequency in the listening range. Use the full range, we will be looking for stations in the clear.*

*VE3ONT will use circular polarisation on all bands. You may use linear or circular polarisation to work us and, if circular, use RHCP on Tx and Rx for 144 and 432. On 1296 we will have switchable sense. Use either the satellite or EME polarisation convention.*

*Conditions permitting, VE3ONT may start each operating period on SSB to work strong stations as quickly as possible. Please do not call again for a second contact on CW. Conversely, if you work us on CW please do not call again for an SSB QSO.*



**Steve VK3OT, pictured in his shack, proudly pointing out the location of VK0AQ on a map of Antarctica.**

### 1994 EME Contest

Chris VK5MC sent information to say that the Toronto VHF Society VE3ONT will participate in the ARRL EME Contest using the Institute for Space and Terrestrial Science's 46 m (150 foot) Algonquin Park dish in grid square FN05xw. This year's operation will provide an increased opportunity to work 144 MHz stations.

*All contacts will be "random" with no schedules or sequencing. Please be patient, the QRM on our end was intense in 1993.*

*Low power and OSCAR class stations are encouraged to make an EME contact. 100 watts delivered to a single long Yagi should be sufficient on 144 and 432. On 1296 stations were worked with as little as 10 watts and a 2 m (6 feet) dish in 1993.*

UTC Date	VE3ONT Tx Freq	Listening Range	Approx Times
Oct 29	432.050 MHz	432.050 — 432.060	0645 — 1815 UTC
Oct 30	1296.050	1296.050 — 1296.060	0754 — 1844
Nov 26	144.100	144.100 — 144.110	0538 — 1645
Nov 27	144.100	144.100 — 144.110	0646 — 1713

Use of the dish is always subject to last minute pre-emption for non-amateur purposes.

QSLs with an SAE to Dennis Mungham VA3SO, RR 3, Mountain Ontario, Canada KOE 1SO. Reception reports will also receive a QSL. Be sure and send an EME contest entry to the ARRL as the above dates are for the ARRL EME Contest in addition to VE3ONT.

### From Jersey

Geoff GJ4ICD said conditions were good for the National Field Day on 2/7 with new stations being RU1A, DL9GKA and EW7IM. On 3/7 he worked 5T5JC using his 50 MHz mobile station. Also, in late June he worked VP9 and W1, 2, 3, 4 and 5 via Es. One would have to be impressed with those contacts.

The Jordan expedition yielded 2000 contacts in 49 countries. The trip cost Geoff 3419 pounds plus loss of earnings as his TV shop was closed. Despite this he is looking at making an expedition to D44 (Cape Verde) which is about the same distance as Jordan.

### Statistics

Steve Stephens VK4KHQ writes to say he has not been very active since returning to Brisbane and, on six metres, is presently limited to a quarter-wave whip on the roof.

Steve has spent some time analysing my list of First Worked Countries which covers the period 1947 to 1993 on a monthly basis. In condensed form the following should convey the results of his research.

New countries for 1993 3, 1992 10, 1991 22, 1990 19, 1989 43, 1988 1, 1987 1, 1986 0, 1985 1, 1984 3, 1982 5, 1981 12, 1980 4, 1979 8, 1978 5, 1977 1, 1976 1, 1975 2, 1974 1, 1973 0, 1972 1, 1971 0, 1970 1, 1969 2, 1968, 67, 66, 65, 64, 63, 62, 61 all 0, 1960 1, 1959 4, 1958 5, 1957 0, 1956 1, 1955, 54, 53, 52 0, 1951 1, 1950 0, 1949 1, 1948 0 and 1947 3, total 173.

Over the above spread of years the monthly totals were Jan 8, Feb 9, Mar 43, Apr 33, May 9, Jun 2, Jul 0, Aug 3, Sep 7, Oct 26, Nov 14, and Dec 9, total 173.

From the above one can see the influence of the solar peaks with special emphasis on the equinoctial periods; the greatest number of new countries appeared in March/April or September/October.

There are also a few lessons to be learned. First, I am sure we could have done much better during the 1969 and 1979 solar peaks if we had been more vigilant in our pursuit of countries. We simply didn't know how to exploit what

was available, especially during 1979 when everyone had converted to CW/SSB transceivers. I am sure we had a form of complex that only those people in remote regions such as Darwin stood a chance of working long distances via F2. We in southern climes believed that we were too far away from overseas countries.

When we finally educated ourselves and began to analyse the habits of six metres we found that the years 1989 to 1992 inclusive had much to offer, especially as European countries were opened to six metres. With permission granted for us to operate on the low end of 50 MHz we were then able to join so many countries already with that facility.

Cycle 19 of 1958 would have provided more countries if we had had access to the logs of many amateurs who are now Silent Keys. Considering the various circumstances, we are fortunate to have achieved a most creditable tally of countries worked from Australia and can hold our heads high when the head count commences!

### Closure

By the time you read this it will be the equinox but whether there will be extended propagation we will see in due course. The sporadic-E season is not far away and normal expectations would be for an excellent season with many extended distance contacts, so make the most of the low part of the solar cycle. If you are able to make contacts of extended distance or of special interest I am always pleased to hear from you.

Closing with two thoughts for the month:

1. When you come in late for work, everybody notices; when you work late nobody notices, and,
2. Politicians and crabs are creatures who move in such a way that it is impossible to tell whether they are coming or going.

73 from The Voice by the Lake.

\*PO Box 169, Meningie, SA 5264  
Fax: 085 751 043 Packet: VK5LP@VK5ZK  
ar

## QSP News

### Italian DXer Activates Region 3 ... Again



Carlo I4ALU on the left with Tom VK2ATJ.

During an August stopover in Sydney between his home in Bologna and several destinations in the Pacific, noted Italian CW DXer and IOTA (Islands on the Air) advocate, Carlo I4ALU enjoyed an eyeball contact with Tom VK2ATJ.

Carrying a complete station from Italy, Carlo operated 3D2CA in Fiji for two weeks and spent time in Hawaii as KH6/I4ALU.

During mid 1992 Carlo activated Fiji's Yasawa Islands as 3D2CA, North Cook and South Cook as ZK1AL and Western Samoa as 5W1KH.

Region 3 won't be on I4ALU's itinerary next year, however, as Carlo will be in England for the centennial celebrations of Guglielmo Marconi's first wireless telegraph.

Thomas E King VK2ATJ

**Sign up a new WIA member today —  
We need the numbers to protect  
our frequencies and privileges.**

# HF PREDICTIONS

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## The Tables Explained

The tables provide estimates of signal strength for each hour of the UTC day for five of the bands between 7 and 28 MHz. The UTC hour is the first column; the second column lists the predicted MUF (maximum useable frequency); the third column the signal strength in dB relative to 1 μV (dBU) at the MUF; the fourth column lists the "frequency of optimum travail" (FOT), or the optimum working frequency as it is more generally known.

The signal strengths are all shown in dB relative to a reference of 1 μV in 50 Ohms at the receiver antenna input. The table below relates these figures to the amateur S-point "standard" where S9 is 50 μV at the receiver's input and the S-meter scale is 6 dB per S-point.

V in 50 ohms	S-points	dB(μV)
50.00	S9	34
25.00	S8	28
12.50	S7	22
6.25	S6	16
3.12	S5	10
1.56	S4	4

0.78	S3	2
0.39	S2	-8
0.20	S1	-14

The tables are generated by the GRAPH-DX program from FT Promotions, assuming 100 W transmitter power output, modest beam antennas (eg three element Yagi or cubical quad) and a short-term forecast of the sunspot number. Actual solar and geomagnetic activity will affect results observed.

The three regions cover stations within the following areas:

**VK EAST** The major part of NSW and Queensland.

**VK SOUTH** Southern-NSW, VK3, VK5 and VK7.

**VK WEST** The south-west of Western Australia.

Likewise, the overseas terminals cover substantial regions (eg "Europe" covers most of Western Europe and the UK).

The sunspot number used in these calculations is 22.3. The predicted value for November 22.2.

## VK SOUTH — SOUTH PACIFIC

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	18.3	16	15.2	-6	22	17	8	-4
2	18.6	16	15.8	-5	23	18	10	-2
3	18.6	17	15.6	-2	24	18	10	-2
4	18.7	17	15.5	2	25	19	10	-2
5	18.4	19	15.1	11	27	19	10	-3
6	18.0	20	14.6	24	30	20	10	-4
7	17.1	23	13.6	41	33	20	8	-9
8	15.8	26	12.5	47	31	16	2	-17
9	14.5	27	11.5	49	28	11	-6	-28
10	13.3	28	10.5	49	24	4	-15	...
11	12.3	30	9.7	49	20	-2	-24	...
12	11.6	30	9.2	48	17	-8	-31	...
13	11.1	31	8.8	47	14	-12	-37	...
14	10.8	31	8.5	47	12	-16	...	...
15	10.5	32	8.2	46	10	-18	...	...
16	9.7	33	7.5	45	5	-26	...	...
17	9.6	33	7.3	44	3	-29	...	...
18	9.3	33	7.1	44	0	-34	...	...
19	9.9	26	7.5	31	4	-24	...	...
20	11.6	20	8.7	19	12	-8	-28	...
21	14.2	18	10.9	9	18	5	-8	-29
22	16.3	17	12.7	2	21	12	2	-14
23	17.4	17	13.9	-2	22	15	6	-8
24	18.1	16	14.7	-5	22	16	8	-5

## VK WEST — SOUTH PACIFIC

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	22.1	13	18.0	-38	17	18	14	7
2	22.3	13	18.5	-39	16	18	15	8
3	22.8	13	17.1	-38	17	19	16	9
4	22.8	13	19.1	-33	19	19	16	9
5	22.8	14	18.9	-24	21	21	17	10
6	22.5	16	18.4	-9	25	23	18	10
7	21.8	18	17.4	10	30	25	19	10
8	20.2	20	16.0	28	33	26	18	6
9	18.6	23	14.7	42	35	25	15	1
10	17.0	25	13.4	46	34	21	10	-5
11	15.7	27	12.4	48	32	18	5	-12
12	14.9	28	11.8	49	30	15	1	-18
13	14.1	29	11.1	48	28	12	-3	-24
14	13.5	29	10.6	48	27	9	-7	-29
15	13.0	30	10.3	48	25	7	-10	-33
16	12.8	30	9.9	47	24	6	-11	-35
17	11.6	32	8.9	46	21	0	-18	...
18	11.5	32	8.8	46	20	-1	-21	...
19	11.3	28	8.6	36	17	-3	-23	...
20	12.0	22	9.1	20	16	0	-16	...
21	14.2	18	11.2	3	18	8	-3	-21
22	17.4	15	13.3	-13	19	14	7	-5
23	20.0	14	15.6	-26	18	17	12	3
24	21.3	13	17.0	-34	17	18	14	6

## VK EAST — AFRICA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	12.6	10	9.2	-16	9	0	-11	-28
2	11.3	4	8.7	-2	5	-2	-13	-31
3	11.8	1	9.0	...	4	-1	-11	-26
4	15.1	4	11.4	...	3	4	-1	-11
5	19.4	7	14.3	...	2	7	5	0
6	19.8	6	14.5	...	1	7	5	0
7	20.1	7	14.8	...	1	7	6	0
8	19.3	7	14.6	...	3	7	5	-1
9	17.9	8	14.2	...	5	7	4	-4
10	16.4	8	13.0	...	8	7	2	-8
11	15.0	10	11.8	-33	10	6	-1	-14
12	13.8	12	10.9	-17	11	4	-5	-20
13	13.0	15	10.2	-2	13	3	-9	-27
14	12.4	20	9.8	14	16	2	-12	-33
15	12.0	25	9.5	31	18	1	-16	-39
16	11.7	27	8.9	37	18	0	-18	...
17	11.4	29	8.3	40	17	-2	-21	...
18	10.9	30	8.0	41	16	-6	-26	...
19	10.5	30	7.6	41	14	-8	-30	...
20	11.0	30	7.5	41	16	-5	-25	...
21	10.7	28	7.4	36	14	-7	-28	...
22	10.4	22	7.3	22	10	-9	-29	...
23	10.2	17	7.3	10	7	-10	-29	...
24	10.9	12	7.9	-3	8	-6	-21	...

## VK SOUTH — AFRICA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	12.0	16	9.1	0	13	1	-12	-31
2	12.6	12	9.6	-13	11	2	-9	-26
3	15.9	12	12.5	-29	12	9	2	-8
4	19.7	11	14.6	...	10	12	9	1
5	20.7	9	15.2	...	7	11	9	3
6	20.9	9	15.2	...	6	10	8	3
7	20.6	8	14.9	...	5	10	8	2
8	20.1	9	14.4	...	6	10	7	1
9	19.4	9	13.7	...	7	10	7	0
10	18.1	10	12.7	...	10	10	5	-3
11	16.5	11	11.5	-32	12	9	3	-8
12	15.0	13	10.4	-16	13	7	-1	-15
13	13.6	15	9.4	-3	14	4	-7	-24
14	12.6	19	8.7	13	15	2	-12	-32
15	12.1	25	8.3	31	18	0	-16	...
16	11.6	27	7.9	36	17	-2	-21	...
17	11.3	28	7.8	39	16	-4	-24	...
18	11.0	30	7.7	41	15	-6	-27	...
19	10.8	30	7.7	41	14	-8	-29	...
20	10.9	30	7.8	41	15	-7	-28	...
21	11.4	29	7.9	42	17	-3	-22	...
22	11.1	26	7.8	33	14	-5	-25	...
23	11.0	21	7.8	21	12	-6	-24	...
24	11.7	19	8.5	13	13	-2	-17	...

## VK WEST — AFRICA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	11.4	20	8.7	16	13	-3	-20	...
2	11.9	16	9.1	0	12	0	-13	-34
3	15.3	14	12.1	-15	15	10	1	-12
4	19.7	12	15.4	-37	14	14	10	1
5	21.0	11	15.9	...	11	13	10	4
6	21.2	10	17.7	...	9	12	10	3
7	21.2	9	17.6	...	8	12	9	3
8	20.9	9	17.1	...	8	11	9	3
9	20.4	9	16.5	...	8	11	8	2
10	19.5	10	15.6	...	10	11	8	0
11	18.1	12	15.3	-35	13	12	6	-3
12	16.6	14	13.1	-17	16	11	3	-9
13	15.1	16	11.9	0	18	9	-1	-16
14	13.9	20	10.9	17	19	7	-6	-25
15	13.1	25	10.3	34	21	5	-10	-32
16	12.5	27	9.9	39	21	3	-14	-38
17	12.1	28	9.5	42	20	0	-18	...
18	11.8	29	9.2	44	19	-1	-20	...
19	11.5	30	8.9	44	18	-3	-23	...
20	11.0	30	8.4	43	15	-7	-28	...
21	10.6	31	8.1	42	14	-10	-32	...
22	11.3	30	8.5	43	17	-4	-25	...
23	11.5	30	8.9	43	18	-2	-22	...
24	10.9	25	8.3	29	13	-7	-26	...

## VK EAST — ASIA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	27.1	14	22.4	...	19	23	22	18
2	28.4	14	21.7	...	18	23	23	19
3	29.0	14	22.6	...	18	23	23	20
4	29.4	14	24.3	...	19	24	24	21
5	29.1	15	23.8	...	21	25	24	21
6	28.1	15	22.8	-31	23	26	24	20
7	26.6	16	21.5	-16	26	27	24	19
8	25.0	17	21.1	7	32	29	25	18
9	23.6	19	18.8	32	37	32	25	16
10	21.9	21	17.4	40	38	30	22	12
11	20.7	21	16.4	45	38	29	20	8
12	19.9	22	15.8	49	38	28	18	5
13	18.8	23	14.9	52	37	25	14	0
14	17.5	24	14.0	51	35	21	9	-7
15	16.4	24	12.9	50	32	17	4	-15
16	15.4	25	12.1	50	29	13	-1	-22
17	13.9	26	10.8	48	24	5	-12	-37
18	12.1	27	9.4	46	16	-7	-30	...
19	10.9	27	8.4	44	8	-21	...	...
20	11.0	27	8.5	44	8	-20	...	...
21	16.9	20	13.3	32	28	16	4	-13
22	24.6	17	19.1	0	30	28	23	16
23	25.9	15	20.8	-21	25	26	23	17
24	26.3	15	21.4	-34	21	24	22	17

## VK SOUTH — ASIA

UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9
1	20.3	12						

**VK EAST — EUROPE**

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	9.9	-1	7.2	-28	2	0	-9	-23
2	9.3	-9	6.9	-35	0	-10	-23	...
3	9.9	-9	7.4	...	0	-7	-18	-37
4	11.9	-5	8.3	...	0	-2	-10	-24
5	14.8	0	11.1	...	-1	1	-2	-11
6	17.6	4	13.2	...	-2	4	2	-3
7	19.4	6	14.6	...	-1	6	5	0
8	20.9	8	15.7	...	1	9	8	4
9	21.8	11	16.5	...	8	13	12	7
10	21.2	15	16.8	-39	16	18	15	8
11	19.6	17	15.6	-12	22	20	14	6
12	18.4	20	14.6	6	25	20	13	2
13	17.6	22	14.0	22	29	21	12	0
14	16.7	25	13.2	36	31	20	10	-4
15	15.7	26	12.4	41	30	18	6	-10
16	14.8	27	11.7	44	29	15	2	-15
17	14.1	28	11.0	44	27	12	-1	-21
18	12.8	29	9.8	43	24	6	-10	-32
19	11.5	30	8.8	42	18	-2	-21	...
20	11.6	28	8.2	41	17	-4	-24	...
21	10.3	29	7.7	35	13	-9	-30	...
22	10.6	20	7.6	19	9	-10	-30	...
23	10.5	12	7.4	-1	6	-9	-26	...
24	10.3	5	7.4	-16	4	-9	-24	...

**VK SOUTH — EUROPE**

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	10.7	5	7.6	-21	5	-6	-20	...
2	10.0	-3	7.2	-32	2	-8	-21	...
3	10.6	-6	7.7	...	1	-5	-16	-33
4	12.9	-2	8.8	...	0	0	-7	-19
5	16.2	2	12.0	...	-2	3	0	-7
6	19.2	5	14.2	...	-4	4	4	0
7	21.1	6	15.6	...	-5	5	6	3
8	21.5	7	16.6	...	-4	6	7	5
9	20.4	8	16.3	...	0	8	8	4
10	18.9	9	15.0	...	5	10	8	2
11	17.4	12	13.8	...	11	11	7	-2
12	15.9	15	12.5	-17	16	12	4	-8
13	14.6	19	11.6	7	20	11	0	-15
14	13.9	23	10.9	25	22	10	-3	-22
15	13.3	26	10.5	34	23	7	-7	-28
16	12.8	27	10.1	39	22	6	-10	-33
17	12.2	29	9.9	42	22	4	-12	-36
18	12.2	29	9.5	42	21	2	-15	...
19	11.6	29	8.9	42	18	-2	-21	...
20	11.0	30	8.4	41	16	-6	-27	...
21	11.7	29	8.1	42	19	-1	-20	...
22	11.1	26	7.9	32	14	-6	-26	...
23	10.1	19	7.8	14	7	-12	-33	...
24	11.1	12	7.8	-3	8	-5	-21	...

**VK WEST — EUROPE**

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	11.3	15	7.9	5	9	-6	-23	...
2	10.5	6	7.5	-14	3	-10	-26	...
3	11.1	1	8.0	-31	2	-7	-19	-39
4	13.6	3	9.2	...	3	0	-7	-20
5	17.3	5	12.7	...	2	5	2	-6
6	20.6	6	15.1	...	0	6	5	2
7	22.5	7	16.5	...	-2	7	8	5
8	23.9	8	17.6	...	-2	8	9	7
9	24.6	9	18.3	...	0	9	11	9
10	23.4	10	18.6	...	3	10	11	8
11	21.8	11	18.4	...	9	13	12	7
12	20.3	14	16.1	-32	16	16	12	5
13	18.7	17	14.8	-2	23	18	12	1
14	17.5	21	13.8	22	28	19	10	-3
15	16.7	23	13.2	35	30	19	8	-6
16	15.9	24	12.6	40	29	17	5	-11
17	15.1	26	12.0	43	29	15	1	-16
18	14.5	26	10.8	44	27	12	-1	-21
19	13.9	27	9.6	44	25	9	-5	-26
20	12.8	27	8.9	43	22	4	-13	-36
21	11.7	28	8.5	41	17	-3	-23	...
22	12.1	27	8.3	42	18	-1	-20	...
23	11.0	29	8.2	40	14	-8	-30	...
24	11.1	22	8.2	22	11	-7	-26	...

**VK EAST — EUROPE (Long Path)**

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	11.0	2	7.3	-29	4	-3	-14	-31
2	10.9	5	7.4	-20	5	-4	-16	-34
3	10.6	8	7.3	-12	6	-5	-18	-38
4	10.3	11	7.2	-1	7	-7	-23	...
5	9.6	16	6.8	10	6	-12	-30	...
6	10.2	24	7.3	25	10	-9	-28	...
7	12.3	24	9.0	29	18	3	-12	-33
8	15.1	24	11.2	33	26	15	3	-12
9	12.3	21	9.5	14	18	6	-5	-23
10	12.2	13	9.3	-9	12	4	-5	-21
11	13.7	8	10.8	-35	8	4	-3	-15
12	13.1	1	10.3	...	3	1	-5	-16
13	12.6	-4	9.9	...	0	0	-5	-16
14	12.3	-8	9.6	...	-2	-1	-6	-16
15	11.9	-12	9.2	...	-4	-2	-6	-16
16	11.4	-15	8.7	...	-4	-2	-7	-17
17	10.9	-17	8.3	...	-3	-2	-7	-18
18	11.6	-14	8.7	...	-4	-2	-6	-16
19	13.7	-6	10.8	...	-5	0	-3	-11
20	16.2	0	11.0	...	-5	1	0	-6
21	14.2	-2	9.6	...	-2	0	-3	-11
22	12.8	-2	8.7	...	0	0	-6	-16
23	11.9	-2	8.0	...	2	-1	-8	-22
24	11.4	0	7.6	-39	3	-2	-11	-26

**VK SOUTH — EUROPE (Long Path)**

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	10.7	5	7.6	-21	5	-6	-20	...
2	10.0	-3	7.2	-32	2	-8	-21	...
3	10.6	-6	7.7	...	1	-5	-16	-33
4	12.9	-2	8.8	...	0	0	-7	-19
5	16.2	2	12.0	...	-2	3	0	-7
6	19.2	5	14.2	...	-4	4	4	0
7	21.1	6	15.6	...	-5	5	6	3
8	21.5	7	16.6	...	-4	6	7	5
9	20.4	8	16.3	...	0	8	8	4
10	18.9	9	15.0	...	5	10	8	2
11	17.4	12	13.8	...	11	11	7	-2
12	15.9	15	12.5	-17	16	12	4	-8
13	14.6	19	11.6	7	20	11	0	-15
14	13.9	23	10.9	25	22	10	-3	-22
15	13.3	26	10.5	34	23	7	-7	-28
16	12.8	27	10.1	39	22	6	-10	-33
17	12.2	29	9.9	42	22	4	-12	-36
18	12.2	29	9.5	42	21	2	-15	...
19	11.6	29	8.9	42	18	-2	-21	...
20	11.0	30	8.4	41	16	-6	-27	...
21	11.7	29	8.1	42	19	-1	-20	...
22	11.1	26	7.9	32	14	-6	-26	...
23	10.1	19	7.8	14	7	-12	-33	...
24	11.1	12	7.8	-3	8	-5	-21	...

**VK WEST — EUROPE (Long Path)**

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	9.7	-13	6.7	...	-2	-9	-19	-36
2	9.5	-10	6.6	-35	-2	-10	-23	...
3	9.2	-7	6.5	-27	-2	-13	-26	...
4	8.9	-4	6.4	-19	-2	-15	-31	...
5	8.5	-1	6.2	-11	-3	-20	-38	...
6	9.0	5	6.7	-3	-1	-19	-38	...
7	10.6	12	7.9	3	5	-10	-26	...
8	13.0	15	9.7	8	13	1	-12	-30
9	15.4	16	11.5	11	18	9	-1	-15
10	15.0	17	11.1	8	18	10	0	-13
11	11.4	11	8.9	-4	8	-3	-15	-34
12	10.7	3	8.2	-19	4	-6	-18	-36
13	12.6	1	8.5	...	2	-1	-9	-22
14	12.1	-5	8.1	...	-1	-3	-10	-22
15	11.6	-11	7.9	...	-4	-4	-10	-22
16	11.3	-15	7.7	...	-5	-5	-10	-21
17	11.0	-18	7.6	...	-5	-5	-10	-20
18	10.6	-20	7.4	...	-5	-5	-10	-21
19	10.5	-21	7.4	...	-5	-5	-11	-22
20	11.2	-18	8.0	...	-6	-5	-9	-20
21	12.5	-12	8.6	...	-7	-4	-8	-17
22	11.3	-15	7.9	...	-5	-5	-10	-21
23	10.5	-16	7.4	...	-4	-6	-13	-26
24	9.9	-16	6.9	...	-3	-7	-16	-31

**VK EAST — MEDITERRANEAN**

UTC	MUF	dBu	FOT	7.1	14.2	18.1	21.2	24.9
1	10.3	1	7.9	-26	3	-7	-20	...
2	10.7	-3	8.1	...	2	-5	-16	-34
3	14.9	3	11.2	...	2	3	-1	-11
4	21.1	8	16.2	...	0	8	8	3
5	25.9	8	20.2	...	-3	8	10	9
6	26.3	9	21.5	...	-4	8	11	10
7	25.5	9	20.7	...	-3	8	10	9
8	24.2	9	19.4	...	0	9	11	9
9	22.6	10	19.1	...	5	12	11	8
10	21.0	12	16.7	...	11	14	12	6
11	19.4	15	15.4	-27	17	16	12	3
12	18.1	18	14.4	-3	22	18	11	0
13	17.3	21	13.7	19	27	19	11	-2
14	16.4	24	13.0	35	30	19	9	-6
15	15.6	26	12.4	40	30	17	6	-10
16	14.9	27	11.7	44	29	16	3	-15
17	14.2	28	11.1	45	28	13	0	-19
18	13.1	29	10.2	44	25	8	-7	-29
19	11.9	30	9.2	42	20	1	-16	...
20	12.5	29	9.6	43	23	5	-12	-35
21	14.7	27	11.6	43	29	15	2	-16
22	12.4	23	9.6	23	18	3	-11	-33
23	11.7	17	9.0	5	13	0	-15	-36
24	12.4	12	9.5	-13	11	1	-10	-28

# HAMADS

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## FOR SALE NSW

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● **NATIONAL PANASONIC Transceiver** RJX-1011D HF SSB/CW amateur transceiver. CW filter, T-Notch filter, RJX-V1011 external VFO, RJX-S1011 speaker. Top class transceiver with all manuals and instruction books, \$1200. Niels VK2BKQ OTHR 02 481 8781.

● **ICOM IC271A SN 02110 and ICOM IC471A SN 01180** with UX14 converters and CT16 satellite interface, the pair \$1500. Azden PCS 5000 SN 262968 2 m transceiver, \$380. Tiny 2 TNC, \$180. All above in good condition with manuals. Nigel VK2KJU 02 621 8939.

● **SONY ICF-2001** general coverage receiver, \$200. **TELEREADER CWR-685A**, \$400. Kenwood Multi-PS20 SWR and power sensor, \$30. **LDF5-50A** handline cable, 18 m, \$150. Tom VK2OE (046) 21 2228 (evenings).

● **6 METRES CHEAP AND EASILY**, Philips 828, complete instructions circuits and kit of necessary parts (No Xtal) to convert to 6 m. Posted in VK, \$60. David VK2BDT QTHR (048) 21 5036.

● **YAESU FT 1000** (not a demo model) purchased brand new still under warranty with manual. **YAESU Mic MDI** \$5300. MFJ Differential T Tuner, 3KW, 6 months old, \$600. Yaesu FL2000, \$750. Kenwood TS930S, \$1750. Deceased Estate of VK2CX. Doreen Evans, 25 Tomaree St, Nelson Bay, NSW 2315. (049) 81 1582.

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● **SATELLITE DISH** 1.6 m pressed steel, complete with all mounting hardware and ground mount. New, never used. Neil VK3BCU (03) 390 2609.

● **EXTERNAL SPEAKER ICOM IC SP3**, very good, SN 06490, \$18.00. Valda VK3DVT QTHR (03) 592 6236.

● **KENWOOD TH-215A** 2 m handheld with spare battery pack, charger and telescopic antenna, \$290. ICOM 22S 2 m transceiver with power supply, external speaker, \$160. Alinco 2 m linear amp, 30 W output, model ELH-230E \$90. Ian VK3MZ Ringwood (03) 876 3643.

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● **CUSHCRAFT AV-5** 5 band HF vertical antenna covers 80 m through 10 m ideal for limited space installation. Brand new, never assembled, still in original carton, \$250 ONO. Adam VK3JKI (03) 579 3369.

● **YAESU FT 757GX tcvr SN 4C 050417** VGC with mic and manual, \$875. Ken VK3JII QTHR (03) 580 5347.

● **KENWOOD TS820S**, HF xcvr, remote VFO, CW filter, mic, handbook, ex cond, \$595. Alan VK3AMT (03) 789 9106.

● **"AMATEUR RADIO"** magazines mid 1974 through current issue, bound in 4 ring binders, \$80. Fluke 8060A digital multimeter c/w manual, 2 leads, 4 1/2 digit, true RMS signals 0-100 kHz, frequency 0-200 kHz, VdBm, res 0-300 MΩ, conductance 0-2000, continuity, diode test, volts & amps, relative measurement functions \$350. Topward TFC 1207 1 GHz digital frequency meter, 10, 80 MHz & 1 GHz ranges, 8 digit display, c/w lead \$250. Leader LSG11 signal generator 120 kHz-130 MHz, 120-390 MHz, \$30. Goodwill GOS522 20 MHz dual trace oscilloscope c/w x10 probes & leads, \$250. KYOKUTO FM144-10SXR II 2 m transceiver. True FM 10 W, 144-148.995 MHz, +/- 600 kHz offsets, 5 kHz steps, ideal for packet radio or general use, c/w mobile bracket, mic, & manual, \$100. All of the above come c/w manuals and some spares and are in VGC. Bruce Kendall VK3WL. (03) 480 0111 BH, (052) 82 2664 AH, (03) 480 5320 fax.

## FOR SALE SA

● **YAESU FT-411** 2 m handheld with accessories, as new, original carton, SN 9D080112, \$450 ONO. BP270 70 W solar panel, new, never used, \$550 ONO. PBC 1216 16 amp regulator to suit, \$70 ONO. John VK5KBE (08) 250 7259.

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- 1155 RECEIVER, good condition, Nick L20106 QTHR. Please write.
- VHF RECEIVER Hallicrafters S27 or similar that is 10 to 2 m and WW2 vintage. Also valve tester wanted as well. Ray VK2ZON (02) 489 8561.
- MORSE KEYS bugs and paddles, also any material relating to telegraphy. For future book. Ring after 6 pm. Steve VK2SPS (02) 9999 2933.
- YAESU SP101PB land liner speaker unit. Valves 1T4 1R5 etc. Microbee software. Singer Gertsch FIM-3 module. Ray VK2FW QTHR (063) 65 3410.
- EDDYSTONE S730/6 circuit all cost paid. Also looking for any copies of "The Australian Official Radio Service Manual". Kevin VK2GSU (043) 284 854.

**WANTED VIC**

- SOLID STATE ATV Tx for ATV Group, Geelong Radio and Electronics Society, preferably the one from VK3ATY and VK3ZJY's book "Building an ATV Tx". Bill VK3BWS (052) 29 3337 or Joe VK3DKR (052) 21 3125.
- ICOM EX 106 FM module to suit IC551D six

metre 80 W tcvr or information on a possible source for above. Circuit diags, manual, etc would be appreciated. Cost covered. Adam VK3JKI (03) 579 3369.

- CIRCUIT for AWA Cadet carphone M5 4501A UHF and Pye circuit R460 and T460. David VK3YNB QTHR (053) 31 3829.
- CIRCUIT diagram, and manual if possible, for external VFO for Kenwood TR7200G 2 m transceiver. Will pay all costs. Steve VK3ZY QTHR (03) 807 4748.

**WANTED QLD**

- CAVITY FILTERS, 2 m band, suitable town repeater, two required but preferably four. Contact Secretary, VK4BX (071) 25 1332 Hervey Bay Amateur Radio Club Inc., PO Box 829 Hervey Bay Qld 4655.
- INFO, MODIFICATIONS, circuits, manuals for following: Trio 9R — 59DS, Lafayette HA-600, Signal Corps BC-348 other than J, N or Q, multimeter Q-1200, Q-1024 plus any help on RTV&H. Geloso Rx and Tx combination believed to be mid 50s to 60s. John VK4DJS QTHR.

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- THE WIA QSL Collection (now Federal) requires QSLs. All types welcome especially rare DX pictorial cards special issue. Please contact Hon. Curator Ken Matchett VK3TL, 4 Sunrise Hill Road, Montrose Vic 3165, Tel (03) 728 5350. ar

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NOVEMBER 1994  
Volume 62 No 11

# **RADIO** **AMATEUR**



*Journal of the Wireless Institute of Australia*



Full of the latest amateur radio news, information and technical articles including:

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Deadlines	Editorial	Hamads
December	07/11/94	09/11/94
January	04/12/94	06/12/94
February	09/01/95	11/01/95

Delivery of AR: If this magazine is not received by the 15th of the month of issue, and you are a financial member of the WIA, please check with the Post Office before contacting the registered office of the WIA. ©

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#### Cover

Two Christines — Presidents across the world. Christine Haycock WB2YBA, President of the Young Ladies Radio League (YLRL) for the second time (on the left) and Christine Taylor VK5CTY, President of the Australian Ladies Amateur Radio Association (ALARA).

Christine WB2YBA has received many awards for her work as a surgeon, and her leisure activities, apart from amateur radio, include the breeding and judging of miniature schnauzers and photography. Christine is sponsored into ALARA by Mavis VK3KS and is also a member of the WIA.

Christine VK5CTY, after rearing four children, gained her B Ed and taught for a number of years before retiring. Her leisure activities, apart from amateur radio, include many craft activities and enjoying all aspects of her home-away-from-home in the bush. She is an official WIA examiner for the amateur exams.

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# Federal QSP

It is now about fourteen years since I first attended a Federal Convention. At that time I was the "Alternate Federal Councillor" from VK5 and Federal Conventions were three day events held at the Brighton Savoy Motel in April each year.

At that time there was much pressure to get through the agenda items as there wouldn't be another opportunity to make WIA policy for another twelve months. Between conventions the Councillors sometimes did little and the implementation of policies was carried out by the "Executive". Often the extant policies were unclear, or even non-existent, and so the Executive, in order to function effectively, had to make decisions which some Divisions thought were outside its role. This inevitably led to some ill feeling.

After a break, I returned to the Federal scene some years ago as the VK5 Federal Councillor, and became the first Councillor to be elected to the Executive. This was a move to try to break down some of the hostility felt in some Divisions. This was the first of a number of recent changes to the operation of the Federal Council and Executive. Federal Conventions became quarterly in order to speed up the decision making process. Then the Federal Councillors effectively became the Executive and had to wear both hats.

Since that time the Federal Council, acting either in "Convention", or in "Executive" as the WIA Board, has endeavoured to take much more responsibility for the quality of WIA policies and for the execution of them. As a company board of directors we were impressed by the legal responsibility we carried as board members.

You may have noticed on the mast head of *Amateur Radio* that my name appears as the "Publisher's Nominee". In the past, the publisher was nominally the Company Secretary acting on behalf of the Council. This change is another example of the Council taking more responsibility for the implementation of its policies. The publisher of a magazine is responsible for ensuring that its content is not libellous, offensive or in breach of a number of regulations. Since the Council is ultimately responsible we felt that it was more appropriate that a Federal Councillor should carry the can, rather than an employee.

In this role I will be perusing the final proofs of the magazine with a view to ensuring that the magazine does not contain material which may be libellous or offensive to any individual, or to any of the WIA's member Divisions, and is unlikely to embroil the organisation in legal proceedings. *Amateur Radio* is the WIA's "in house" journal and as such should carry technical articles and news relevant to our hobby. Material likely to cause dissension between amateurs or commenting upon the internal affairs of a Division should not be published.

Bill Wardrop VK5AWM  
Federal Councillor for VK5  
ar

# Editor's Comment

## More About Repeaters

Nearly every month I find, to my surprise, that I begin by referring to the previous month's Comment. I'm not going to break the habit this time, either! But this time, also, I must refer to an article published last month on the setting up of a packet repeater (page 22 of October *Amateur Radio*).

VK6RWR has been a most commendable effort by a small group of enthusiasts in the North West. As mentioned last month, VK3s OM and ABP were up that way last July on a caravan trip around the WA coast. We

had no packet equipment with us, so we had no direct involvement, but we did have 2 metre FM voice transceivers, and the presence of an enthusiastic local group was very much apparent.

*“. . . some new 'blood' is needed.”*

Essentially the same people as those behind 6RWR are also responsible for linking a number of voice repeaters from Port Hedland to Karratha. The result is that mobile

stations can work freely with locals and each other from well north of Port Hedland to somewhere near the Fortescue River, a distance of several hundred kilometres. The system operates very well indeed, and we were pleased to talk on the net to several of its originators, notably VK6YA and VK6DLB. A job very well done, gentlemen!

At a recent Publications Committee meeting the topic of members' length of involvement with the committee was discussed. Several have been members for a number of decades and, while still participating actively, cannot be expected to remain active indefinitely.

We feel that some new "blood" (preferably younger blood!) is needed. So, if any of you, living in the

Continued on page 55

## WIA Divisions

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually in their residential State or Territory, and each Division looks after amateur radio affairs within its area.

Division	Address	Officers	Call Sign	Weekly News Broadcasts	1994 Fees
VK1	ACT Division GPO Box 600 Canberra ACT 2601 Phone (06) 247 7006	President Rob Apathy Secretary Len Jones Treasurer Don Hume	VK1KRA VK1NLJ VK1DH	3.570 MHz LSB, 146.950 MHz FM, 438.525 MHz FM each Monday evening (except the fourth Monday) commencing at 8.00 pm. Repeated on Wednesday evening at 8.00 pm on 146.950 MHz FM.	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK2	NSW Division 109 Wigram Street Parramatta NSW (PO Box 1066 Parramatta 2124) Phone (02) 689 2417 Freecall 1800 817 644 Fax (02) 633 1525	President Michael Corbin Secretary Pixie Chapple Treasurer Terry Ryeland (Office hours Mon-Fri 11.00-14.00 Mon 1900-2100)	VK2PFO VK2KPC VK2UX	From VK2WI 1.845, 3.595, 7.146*, 10.125, 24.950, 28.320, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 (*morning only) with relays to some of 14.160, 18.120, 21.170, 584.750 ATV sound. Many country regions relay on 2 m or 70 cm repeaters. Sunday 1000 and 1930. Highlights included in VK2AWX Newcastle news, Monday 1930 on 3.593 plus 10 m, 70 cm, 23 cm. Voicemail highlights on (02) 724 8793. The broadcast text is available on packet.	(F) \$66.75 (G) (S) \$53.40 (X) \$38.75
VK3	Victorian Division 40G Victory Boulevard Ashburton Vic 3147 Phone (03) 885 9281	President Jim Linton Secretary Barry Wilton Treasurer Rob Hailey (Office hours Tue & Thur 0830-1530)	VK3PC VK3XV VK3XLZ	1.840MHz AM, 3.615 LSB, 7.085 LSB, 53.900 FM(R) Mt Dandenong, 146.700 FM(R) Mt Dandenong, 146.600 FM(R) Mildura, 146.900 FM(R) Swan Hill, 147.225 FM(R) Mt Baw Baw, 147.250 FM(R) Mt Macedon, 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday.	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK4	Queensland Division GPO Box 638 Brisbane QLD 4001 Phone (07) 284 9075	President Murray Kelly Secretary Lance Bickford Treasurer Roger Bingham	VK4AOK VK4ZAZ VK4HD	1.825, 3.605, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, 28.400 MHz. 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday. Repeated on 3.605 & 147.150 MHz, 1930 Monday	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK5	South Australian Division 34 West Thebarton Road Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Garry Herden Secretary Maurie Hooper Treasurer Bill Wardrop	VK5ZK VK5EA VK5AWM	1820 kHz 3.550 MHz, 7.095, 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 34 579.000 Adelaide, ATV 444.250 Mid North Barossa Valley 146.825, 438.425 (NT) 3.555, 7065, 10125, 146.700, 0900 hrs Sunday	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK6	West Australian Division PO Box 10 West Perth WA 6872 Phone (09) 434 3283	President Cliff Bastin Secretary Ray Spargo Treasurer Bruce Hedland-Thomas	VK6LZ VK6RR VK6OO	146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 1.625 3.560, 7.075, 14.115, 14.175, 21.185, 28.345, 50.150, 438.525 MHz. Country relays 3.582, 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 146.700 at 1900 hrs.	(F) \$60.75 (G) (S) \$48.60 (X) \$32.75
VK7	Tasmanian Division 148 Derwent Avenue Lindisfarne TAS 7015 Phone (002) 43 8435	President Andrew Dixon Secretary Ted Beard Treasurer Phil Harbeck	VK7GL VK7EB VK7PU	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, 144.150 (Hobart) Repeated Tues 3.590 at 1930 hrs	(F) \$69.00 (G) (S) \$55.65 (X) \$40.00
VK8	(Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).			Membership Grades Full (F) Pension (G) Needy (G) Student (S) Non receipt of AR (X)	Three-year membership available to (F) (G) (X) grades at fee x 3 times.

Note: All times are local. All frequencies MHz.

## ■ Administration

# IARU Region 3 Ninth Regional Conference

*Kevin Olds VK1OK\* details how the WIA represented Australian radio amateurs at a recent international conference*

## Introduction

The Ninth Regional Conference of the International Amateur Radio Union (IARU), Region 3, was held at the Apollo Hotel in Singapore from 5 to 9 September 1994. The conference was attended in person by 18 member societies while a further three societies were represented by proxies. This was a record attendance from the 25 societies which comprise IARU Region 3. The attending societies were:

American Radio Relay League  
Amateur Radio Society of India  
Bangladesh Amateur Radio League  
Chinese Radio Sports Association  
Chinese Taipei Amateur Radio League  
Japan Amateur Radio League  
Hong Kong Amateur Radio Transmitter Society  
Korean Amateur Radio League  
Malaysian Amateur Radio Transmitter Society  
New Zealand Amateur Radio Transmitters  
Organisasi Amateur Radio Indonesia  
Philippines Amateur Radio Association  
Pakistan Amateur Radio Society  
Radio Amateur Society of Thailand  
Radio Society of Great Britain  
Radio Society of Sri Lanka  
Singapore Amateur Radio Transmitting Society  
Wireless Institute of Australia  
Represented by proxy were:  
Fiji Amateur Radio Society  
ARCOT (Tonga)  
Solomon Islands Radio Society

Also present were representatives from the IARU, IARU Regions 1 and 2, the ITU, Asia Pacific Telecommunity (APT) and an observer from Vietnam.

The WIA delegation comprised:

Delegate: Kevin Olds VK1OK  
Observers: Roger Harrison VK2ZRH  
John Aarsse VK4QA  
Gavan Berger VK1EB  
Wally Watkins VK4DO  
Brenda Edmonds VK3KT

Both Wally Watkins and Brenda Edmonds had financed their own attendance. The remainder were funded by the WIA.

## Conference Workings

Although the conference proper did not commence until Monday, 5 September, a delegates' meeting was held on the evening of Sunday, 4 September. This meeting was instituted at the previous conference. The primary aim of the meeting was to determine the composition of the conference committees, namely the Credentials and Elections Committee, the Finance Committee and the Editorial Committee. There is also

provision for a Steering Committee to assist the Conference Chairman but the delegates did not feel the need for the Steering Committee and left the decision to the Conference Chairman when elected. The WIA was represented on the Finance Committee by Kevin Olds and Gavan Berger and on the Editorial Committee by Roger Harrison.

The Conference was opened on Monday, 5 September by the Minister of State, Trade & Industry and Communications, Mr Goh Chee Wee. The Conference was also addressed at the opening ceremony by Mr K C Selvadurai the President of the Conference, Mr Hyun Wook Shi from APT Bangkok, Mr Graham Davey the ITU Regional Representative and Mr Dick Baldwin the President of IARU. Following the opening ceremony, the conference elected Mr K C Selvadurai, the President of the Singapore Amateur Radio Transmitters Society, as Conference Chairman.

With the formalities out of the way, the conference got down to serious business. The conference met in plenary session for the remainder of the Monday and then again on Tuesday morning. The next plenary session was not held until Thursday afternoon with the final plenary session and the closure of the conference being held on the Friday morning.

The bulk of the work of the conference was undertaken by two



**On the dais for the opening ceremony at the IARU Region 3 conference were, left to right:- Masayoshi Fujoka, Secretary IARU Region 3; David Rankin, Chairman of Directors; Mr K C Selvadurai, President of the Conference; Mr Goh Chee Wee, Minister of State, Trade and Communications; Mr Graham Davey, ITU Regional Representative; Mr Hyun Wook Shi, APT Bangkok; and Dick Baldwin, President of the IARU.**

*Photo by Barbara Olds VK1MTB*



working groups and the Finance Committee. At the Tuesday plenary session, the conference established two working groups:

- Working Group A, convenor Terry Carrell ZL3QL, which addressed the administrative and operational agenda items. The WIA was represented on this group by VK2ZRH, VK4QA, VK4DO and VK3KT;
- Working Group B, convenor Kevin Olds VK1OK, which addressed the technical agenda items. The WIA was further represented on this group by VK1EB and VK2ZRH.

There was some overlap of attendees at the two working groups as some delegations could not provide an attendee at each and some individual delegates or observers had interests in matters to be considered by each group.

Working Group A was the larger group, comprising over 50 delegates and observers. John Aarsse VK4QA, was appointed by the group to assist the Convenor. The working group had

many items to consider, most of which were considered by the group as a whole. However, a sub working group was established to consider the Promotion of Amateur Radio issues and authorised by the working group to report separately to the conference. Roger Harrison VK2ZRH was the convenor of this sub working group and the WIA was further represented by VK3KT.

Working Group B was the smaller group with about 25 delegates and observers. This group met as a whole for all its deliberations as no item required detailed consideration which could not be provided by the group as a whole.

In addition to the various plenary and working group sessions, there were also three receptions held at which the attendees could relax and discuss things in a less formal atmosphere. The first was held on the Monday night, hosted by Host Society, SARTS. The Wednesday evening reception was hosted by JARL. The IARU International

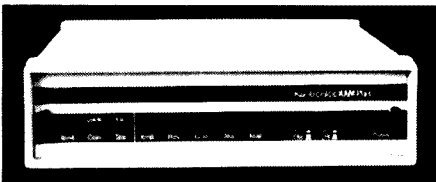
Secretariat in conjunction with the ARRL hosted the final reception on the Friday night.

Free time for the attendees was very limited, but we were able to see some of Singapore and appreciate the beauty of the country and its energy and vitality.

### Major Conference Results

The conference provided an opportunity not only to consider those items which were on the agenda but also talk with delegates from other societies and discuss matters of mutual interest. Despite differences in culture, many of the problems which beset us in amateur radio are common to other societies. One can also continue to appreciate how fortunate we are in terms of the administration of amateur radio in this country, the degree of freedom we experience and the good relationship we have with the SMA. Many other societies are not so fortunate and it is through these conferences that we are able to assist them in their

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negotiations with their administrations to obtain a freer environment for amateur radio in their countries. The major outcomes of the conference are best considered under the headings of the major working groups.

## Finance

The major factor affecting the finances of Region 3 is the decision of the IARU to levy each of the Regions 10% of their membership income to fund the increasing representation of amateur radio by the IARU. This activity had grown significantly in recent years and the IARU has been forced to raise this levy to provide a source of funding for this activity. This levy has been payable from this current financial year and represents a major unbudgeted expenditure item which will be covered by the reserves for this year.

For the next triennium, an increase in membership fees is required.

In considering the budget, this was the major variation from previous years. Other expenses are expected to increase only slightly. It must be noted, however, that the JARL is funding some of the operations of the Secretariat. This is estimated to be about \$US30,000 per annum, a significant amount given that the normal income for the Region is only now just exceeding \$US40,000.

The subscription for the next three years has been set as follows:

0-5,000 members	\$US 0.71 per member
5,001-10,000 members	\$US 0.44 per member
All over 10,000	\$US 0.12 per member

In addition, in recognition of the high cost of foreign exchange transactions, both to member societies as well as to Region 3, it has been necessary to introduce a minimum subscription of \$US25 per year for all societies. This affects those societies with less than 35 members. To ease the burden of this increase for some societies and further minimise the costs of foreign exchange, those societies which pay the minimum subscription can, if they wish, pay the full triennial fee in a single amount in the second year of the triennium.

The conference also decided to take to itself the task of appointing the



**A group photo of the delegates to the IARU Region 3 conference.**

*Photo by Barbara Olds VK1MTB*

auditors for Region 3. The Region has only had an auditor since 1991 and this was appointed by the Directors. Having Conference appoint the auditors is consistent with company practice in Australia, New Zealand and many other countries of the region.

## Administrative and Operational

Some 20 recommendations from the working group, in addition to several from the sub-working group on promotion of amateur radio, were adopted by the conference. The more important recommendations were:

### Policy

There are numerous organisations whose deliberations are relevant to the development of amateur radio in this region, such as the Asian Broadcasting Union, the Asia-Pacific Telecommunity and the Asia Pacific Economic Cooperation Forum. It was decided to authorise the Directors to seek admission to, and representation at, meetings of external organisations such as these when it is considered necessary.

The IARU Administrative Council has undertaken a number of initiatives with respect to representation of the amateur radio

service at the international level. These include:

- the development of a strategic plan, with budget, for the representation of the amateur radio service at the international level;
- the establishment of a Group of Experts from which the President of the IARU shall select people required to represent IARU at specific meetings.

IARU Administrative Council resolutions concerning the irrelevancy of type approval of amateur radio equipment and the regular inspection of amateur radio stations were adopted. Where relevant, societies are encouraged to pursue this with their administrations.

### Satellites

The Phase 3D satellite program was endorsed with member societies being urged to raise funds within their own borders for this project and report those fund raisings to the Region 3 Secretariat.

It was recommended that the IARU create two positions covering satellite activities internationally, an IARU Satellite Liaison Office and an IARU Satellite Coordinator. The IARU Satellite Coordinator would report to the Satellite Liaison Officer and would

concentrate on working closely with AMSAT Groups.

### Wind Profiler Radar

As Wind Profiler Radar moves from the experimental to a fully operational phase, ITU-R established in 1992 TG8/2 of Study Group 8 to discuss the related issues. This group was chaired by Paul Rinaldo W4RI, the Technical Manager of ARRL. Both Paul and JARL have done excellent work within TG8/2 in support of amateur radio. All societies will need to monitor wind profiler radar development in their areas.

### Commonly Accepted Amateur Licenses

Considerable discussion arose in this area, especially in regard to the CEPT and CITEL proposals. The CEPT proposal has arisen within the European Community in Region 1 while CITEL is an organisation of American states which is similar to CEPT. The concept of a common amateur licence is generally endorsed but there is, as yet, no plan of action. However, the conference recommended that societies obtain

simplified reciprocal operating and licensing procedures by an international amateur radio permit or by the CEPT recommendations TR61-02. Member societies were also urged to have their administrations recognise and extend existing informal arrangements.

### Effective Representation of Radio Amateurs

An IARU Administrative Council resolution addressing the means of ensuring that a common voice speaks for amateur radio was adopted. The emergency communications aspects of amateur radio addressed in the WIA's paper on representation of radio amateurs generated considerable interest. There would seem to be room here for more international co-operation in this area.

### Region 3 News

Although he is retiring as Secretary, Masayoshi Fujioka JM1UXU has stated that he would continue as editor of Region 3 News. As Editor, he was empowered to establish a roster system for member societies to

supply copy for publication. For the next edition ARRL, CRSA and NZART are on the roster.

### Requirement for Morse Code Ability

The conference confirmed support for the continuation of the Morse Code requirement for operation on the HF Bands.

### Information Program for Handicapped Radio Amateurs (IPHA)

IPHA is run enthusiastically by the IARU Region 1 IPHA co-ordinator, Agnes Tobbe-Klasse Bos PA3ADR. IPHA is concerned about gathering information for dissemination to others on organisations, nets, equipment, etc for disabled radio amateurs as well as special courses and methods for the disabled to become radio amateurs. The conference commended this work to member societies and encouraged member societies to develop their own programs in this area and provide details to the Region 1 co-ordinator and the Region 3 Secretariat.

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## **Mongolian Radio Sports Federation**

Although technically in Region 1, the MRSF has more ties to Region 3. JARL had proposed that the MRSF be treated as a member of Region 3. This was accepted by the conference for the purposes of ARDF activities and Promotion of Amateur Radio. Actual membership of Region 3 by MRSF would be dependent on a boundary change through the ITU.

## **Promotion of Amateur Radio in Developing Countries**

The conference adopted the name "Service in Region 3", or STARS \* \* \* for short, to describe all the promotional and support activities necessary in all the countries and societies in the Region, regardless of their state of development.

The vital importance of the acceptance of amateur radio by a country's administration was acknowledged. In this respect the Amateur Radio Administrative Forums promoted by the IARU, JARL and APT were of great significance.

The members of the previous PAR Task Force reconfirmed their membership of the STARS \* \* \* Task Force. A detailed set of recommendations covering many aspects of STARS \* \* \* activities within the Region was presented by the subworking group and adopted.

## **Amateur Radio Direction Finding (ARDF)**

ARDF is an area of increasing activity, both within Region 3 and elsewhere. It is a pedestrian fox hunt for multiple transmitters in sequence where the activity is anything but "pedestrian". A combination of orienteering and foxhunting would be another way of looking at it. The conference endorsed the rules for the Region 3 ARDF championships and appointment of Region 3 International Class Referees. In addition, the International Referees qualified by the ARDF Committee were approved.

Australian amateurs will have an opportunity to see this activity first hand and participate if they wish as the next Region 3 ARDF Championships will be held in Townsville. The exact timing will be determined after the Region 1 Championships this year. The likely timing is 1996.

## **Technical**

A total of 25 recommendations from the working group were adopted by the conference. The following provides a summary of the more important recommendations:

### **Beacons**

A position of IARU Region 3 Beacon Co-ordinator was established and funding provided in the budget. One of the tasks for the Co-ordinator will be to foster the establishment of beacons on 10 m, 6 m and 2 m. Roger Harrison VK2ZRH, has offered his services for this position. The Directors will be making an appointment in the near future.

Region 3 is embracing the International Beacon Project. As part of that project, the conference has decided to approve the establishment of IBP time share beacons in Japan (already operational), New Zealand, Eastern Australia, Taiwan, Sri Lanka and Western Australia. With the exception of the Sri Lanka beacon, which will be funded by JARL, all beacons are to be funded by the society concerned. Operation and maintenance of the beacon is the responsibility of the individual society.

The conference recommended that the IARU address the question of beacons below 14 MHz and also the establishment of an international effort to monitor propagation through the beacons and provide a clearing house for reports.

### **Band Plans**

The Region 3 Band Plan for 144 MHz was amended to raise the EME segment from 144.025 MHz to 144.035 MHz in recognition of increasing activity and the extension by Region 1. Other motions related to the de-regulation of Band Plans by administrations and the need to monitor administrations in their frequency allocations above 1000 MHz to preserve common amateur bands and the need to remind administrations of Footnote 664 and 808 to the ITU International Frequency Table concerning the Amateur Satellite Service.

### **IARU Monitoring Service**

As a result of the conference, several member societies have undertaken to become involved in the IARU Monitoring Service.

Recommendations adopted include: encouraging SWLs to become involved in monitoring activities; establishing a system whereby administrations can be approached in relation to intrusions into Amateur Bands by the IARU Region 3 Monitoring Service Co-ordinator working with local societies; encouraging societies to provide equipment to their co-ordinator to undertake monitoring; and publicising both those countries which breach the Radio Regulations as well as those which take positive steps to cease such breaches.

An IARU Administrative Council Resolution on the procedures for handling intrusion reports was also adopted.

### **EMC and Standards**

EMC and Standards are emerging areas of importance in the amateur world. The IARU Region 3 Secretariat will now undertake a co-ordination role in this area within Region 3.

### **Satellites**

Terrestrial operation in satellite bands is again becoming a problem. The conference recommended that member societies, if they have not already done so, initiate and maintain a program of publicity and education to acquaint amateurs of the satellite portions of the bands and the need to avoid terrestrial operations in those bands.

### **Digimode Operations**

In response to the changing nature of packet radio operations, Conference adopted the term "digimode" to refer to modes such as RTTY, Packet, AMTOR, PACTOR, GTOR, etc. The guidelines for packet radio operators and bulletin board operators adopted at the eighth conference were updated to reflect the new terminology and a few minor changes were made. All societies are urged to promulgate these guidelines to all operators. The Region also endorsed the establishment of a Sysops forum to promote efficient use of networks through the co-ordination of bulletin board activity, the implementation of the guidelines throughout the region and through liaison with similar forums in other regions.

## Office Bearers

The election for the positions of Director was held during the last morning of the conference. Unfortunately, our previous Director, David Wardlaw VK3ADW, was not re-elected to the position. The new Board is:

Fred Johnson ZL2AMJ  
Park Young-Soon HL1IFM  
David Rankin 9V1RH  
Yoshiji Sekido JJ1OEY  
Sangat Singh 9M2SS

Retiring Directors David Wardlaw and Keigo Komuro JA1KAB, who did not stand for re-election, were thanked for their contributions to the work of IARU Region 3.

members with many societies making presentations to him.

## Future Conference Locations

The tenth Region 3 Conference will be held in Beijing, hosted by the CRSA. The date is tentatively set for 9 September. Proposals to host the tenth conference had been received from CRSA, CTARL and BARL.

The offer by the WIA to host the 11th conference in the year 2000 was considered at length. The efforts of the delegation to sell the concept to other delegations bore fruit and the proposal was passed 11 to 0 with 7 abstentions. It is now up to the WIA

was first class and contributed to the smooth running and positive results achieved. We should not underestimate the effort that is required to successfully stage such a conference.

As the WIA delegate to the conference I was ably assisted by the rest of the delegation to whom I express my thanks.

*\*C/o PO Box 2175, Caulfield Junction, VIC 3161*

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## WIA News

### Restrictions Lifted for UK Hams

Amateurs in the United Kingdom are now able to run more power on segments of the 160 m and 6 m bands. In addition, restrictions on antennas and effective radiated power (ERP) on 6 m have been lifted.

On 160 m, UK holders of the Class A license may now use 400 watts output between 1810 kHz and 1850 kHz as the power restriction on the 1810-1830 kHz segment has been lifted. However, the power limit for the 1850-2000 kHz segment is still 30 watts.

On 6 m, UK holders of the Class A and B licenses are now able to run 400 watts between 50 MHz and 51 MHz. Between 51 MHz and 52 MHz, they are still restricted to a power of 100 watts. Restrictions on ERP and antenna height which applied to the 50-52 MHz band have been removed. Maritime mobile operation on 6 m is now permitted in the UK, also.

Meanwhile, UK amateurs are now required to notify their local regulatory authority, the Radio Investigation Service (RIS), if they operate an unattended digital station. Operators have to notify their local RIS office on how to close down their station in an emergency. (Thanks to the *ARRL Letter*).



**Dick Baldwin W1RU, President of the IARU, addresses the conference.**

*Photo by Barbara Olds VK1MTB.*

David Rankin, the previous Chairman, had already indicated that this would be his last term as a Director and, therefore, it would be better if there were a new Chairman of Directors at this time. The new Directors proposed, and Conference accepted, the appointment of Fred Johnson as Chairman of Directors.

JARL indicated its willingness to continue to support the Secretariat and provide the Secretary. Masayoshi Fujioka JM1UXU, the previous Secretary, had already advised that he would not be available for the position. JARL proposed Keigo Komuro JA1KAB, as the new Secretary which was accepted by Conference.

The work of Masa in his 12 years as Secretary was formally acknowledged by the Conference

to live up to the promises made in its proposals to host the 11th Regional Conference.

## General

In documenting the results of the conference, what has not been recorded is the response and interest generated by many of the papers submitted which were largely for the information of member societies. These papers fulfil a valuable role in the operation of the conference as they provide a catalyst for discussion, sharing of views and experiences, and establishing contacts which delegates and observers are able to take back to their own societies and use to help further amateur radio in their area.

The conference organisation by SARTS and the Region 3 Secretariat

## ■ Antennas

# Low Radiators and High Ground Planes

*William A McLeod VK3MI\* has investigated antenna behaviour at what seem to be astonishingly small heights above ground.*

The accepted amateur criteria for horizontal HF radiators has traditionally been "as high as possible". This has been based on obtaining a low radiation angle to facilitate long distance communication. Examination of the ground reflection diagrams in ARRL Antenna Book 3 — 8 confirms this view particularly for each half-wavelength ( $\lambda/2$ ) above a perfectly conducting groundplane. At the odd quarter-wavelength ( $\lambda/4$ ) of height, however, a substantial part of the applied power is radiated vertically, and the low angle lobes are reduced so that for radiators below  $\lambda/4$  of height most of the power is directed between 60 degrees and vertical.

Another requirement for these theoretical ground reflection diagrams is that the near field area, up to five or ten wavelengths from the radiator, shall be clear of obstructions

particularly metal conductors and sizeable buildings.

For most suburban and portable sites used for the longer wavelength HF transmissions these conditions of height and space are impossible. In the real world the ground reflector is anything but perfectly conducting. In fact it should be rightly regarded as a lossy dielectric.

This has been depicted in the "Radiation Resistance" diagrams 12.86 of *Radio Communication Handbook* (RSGB) as at diagram B where the actual resistance increases as the radiator approaches zero height. This increase indicates absorption of power as losses in that very imperfect dielectric reflector. Of course, a part of these losses also occurs for higher radiators so that the power reflected from ground never doubles the directly radiated power

as with a perfectly conducting reflector.

Examination of Table 1 of the "Effects of Earth" at Para 3 — 3 of the *ARRL Antenna Book* shows the dielectric constant for common types of earth varying from 3 to 20 with the average of 13, exceeding that of commonly used insulating materials and highly resistive compared to a metallic conductor. The high dielectric constant does improve the low angle reflections, however, in much the same manner as light reflected from thick glass.

For VHF and the higher HF transmission the installation height can usually be selected to suit requirements but for the lower HF bands and especially for portable stations amateurs are commonly restricted to a height of 10 metres or less. This is a bare  $\lambda/4$  for the 40 metre band and only  $\lambda/8$  for the 80 metre one. Then there are those restricted to even lower height limits or who wish to use concealed radiators.

### Low Horizontal Radiators

- For low practical heights the radiation resistance at the centre of a resonant dipole remains within the 2/1 VSWR range for the usual coaxial cable feeder to the transmitter so matching procedures are minimal, more so when an electrical  $\lambda/2$  of coaxial cable is used to transfer that resistance directly to the transmitter.
- Whereas the resonant length of a dipole remote from ground is mainly determined by the length to diameter ratio of the conductor, when the ground becomes an increasing part of the dielectric the length is determined by the height to diameter ratio. Due to the wide spread of dielectric constant no simple formula can determine this ratio.
- The loss increases as height decreases toward ground level but does not become prohibitive until very low levels are reached, eg for a 40 metre dipole above common clay this can be as low as  $\lambda/40$  (1 metre).
- The "cone" of radiation directed vertically then reflected back from



**Bill McLeod VK3MI conducting low radiator tests on an antenna only 40 cm above ground.**

the ionosphere can produce non-directional communication with no "skip distance" to some 400 to 500 kilometres from the transmitter. This is Near Vertical Incidence Skywave (NVIS) transmission and is the mode supporting those local nets on the eighty and forty metre bands. There is usually some fading but for single sideband reception the long AGC time constant of the receiver will alleviate this.

- (e) Two or three hop transmission can occur where the intermediate reflection points fall at sea so some long distance is possible in these favoured directions without low angle transmission lobes. Land reflection points include greater losses which soon become excessive.

**Test Results**

A series of full scale tests on resonant dipoles for the 40 metre band resulted in some seasonal variability due to changes in earth conditions with the lowest radiation resistance varying from 32 to 45 ohms at resonance. This minimum

occurs over a quite broad range of heights down to  $\lambda/20$  (2 metres) before increasing sharply toward 100 ohms and more at a very low to surface level.

A representative curve is presented at diagram A for 1 mm diameter wire. The optimum wire size appears to be from 0.7 mm up to 2 mm. For thinner wire of 0.25 mm diameter the series resistance, including skin effect becomes an appreciable part (some 20%) of the radiation resistance and, for larger wire of 4 mm diameter, the greater capacity couples to the earth losses about one and a half times higher than for the thinner wire.

For a 50 ohm coaxial cable of an electrical  $\lambda/2$  using solid polythene dielectric only 14.1 metres is required to transfer the combined radiation and loss resistance directly to the transmitter. Excess length over the physical distance should be coiled at a convenient place and NOT cut off!

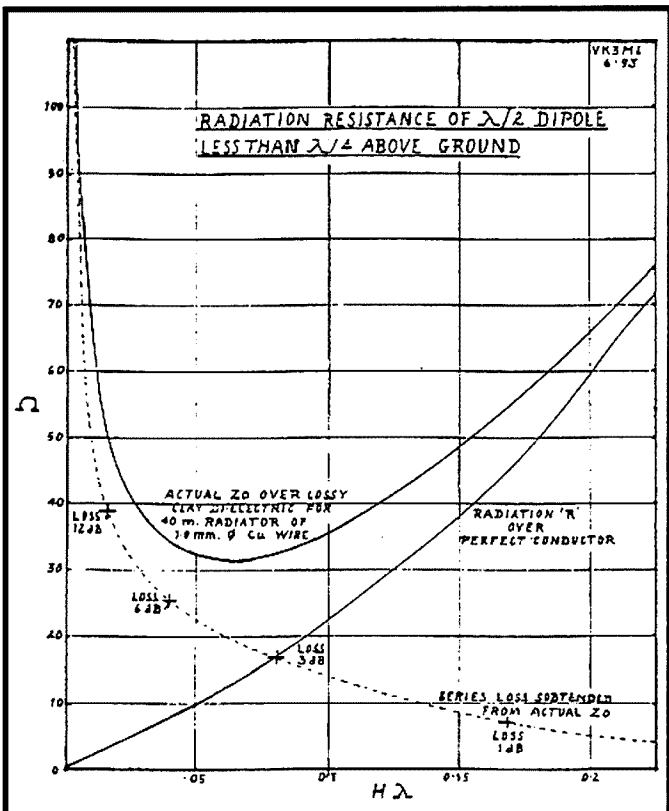
The length formula for a resonant dipole, viz  $492 (n - 0.05)/F$  MHz, is an approximation with the speed of propagation expressed in feet per second and a 5% deduction for length/diameter ratio of the wire,

insulators and other end effects. This is for a 2 mm wire fairly remote from earth and considerable adjustment is required as parameters are changed, particularly the proximity to earth.

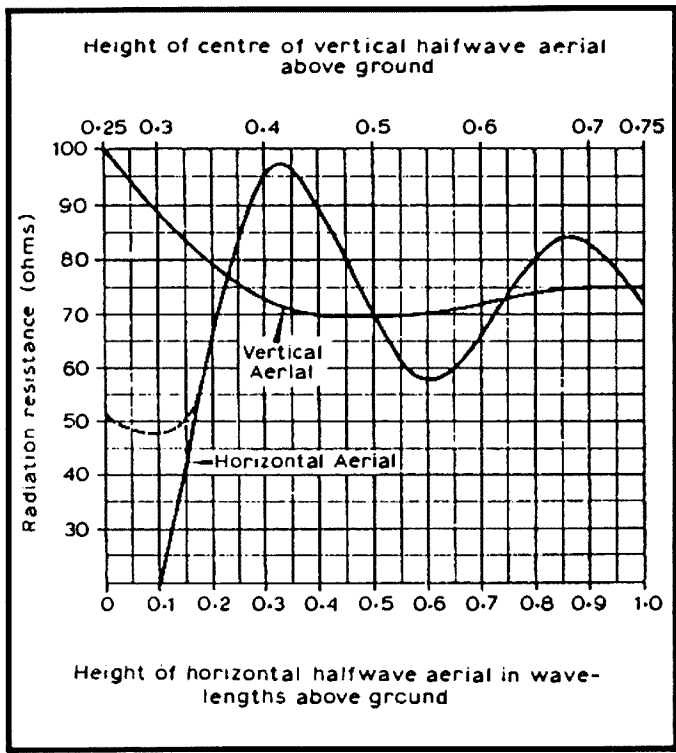
With metric measuring tapes, etc it has been found more convenient to express the length for each height as a percentage of the free space wavelength calculated as  $300/F$  MHz for a result in metres.

The two  $\lambda/4$  elements of the dipole are measured with a little excess and placed in position before the resonant frequency is determined. The error from the required frequency is calculated as a percentage and the required number of centimetres is removed from each end. That is, a 2% error in each 10 m leg of the dipole is corrected by removing 10 m by 2% = 20 cm from each end for a final length of 9.8 m + 9.8 m.

Accuracy of the order of 0.5% should be the target as after all 2% either way is close to the band edges from 7.15 MHz. A battery operated digital frequency meter is easily capable of the required accuracy rather than the dial reading of a



**Diagram A — Radiation resistance of  $\lambda/2$  dipole less than  $\lambda/4$  above ground.**



**Diagram B — Radiation resistance of  $\lambda/2$  horizontal and vertical dipoles as a function of height above a perfect earth. Dotted curve suggests likely behaviour of horizontal aerials over actual earth.**  
(Reprinted from Fig 12.86 in the RSGB Radio Communication Handbook.)

favourite dip oscillator to determine resonant frequency.

From Table 1 comparing radiation resistance and length (in terms of "Ef" for Earth Factor or Wind Effects) as a proportion of free space wavelength the reduction in length proceeds steadily until the capacity via the earth dielectric becomes the dominant factor along with the associated resistive loss at about  $\lambda/20$  above the surface, then the length reduces rapidly.

That this effect is mainly capacitive affecting the voltage sensitive end 37% of the dipole is demonstrated at Table 2 where the same dipole with the centre height fixed at 1 m is compared as a saggy dipole with the ends raised to 2 m, and as a droopy dipole with the ends lowered to 5 cm off the surface. Included as comparisons are the level dipole at 2 m and also at 5 cm. These are commonly used shapes compared at a critical height above ground and are NOT to be confused with Vee or inverted V dipoles which imply an included angle less than 135 degrees. The characteristics approach those of a level dipole at the height of the ends and the saggy dipole is a very effective radiator for portable installation as it requires only two light poles or bamboo rods to support the ends at 2 to 4 m and a short post to take the weight of the centre connection and feeder cable.

The increased capacity end effect lowers the Q of the radiator resulting in a wider bandwidth, useful for transmitters sensitive to high VSWR. This should remain within the 2/1 range from 7.0 to 7.3 MHz for a low dipole resonated to mid-band and fed from the transmitter by  $\lambda/2$  of 50 ohm coaxial cable.

With the radiator closer than 5 cm from the surface the dry to wet variations in the earth and inaccuracies in spacing preclude any consistent, meaningful results but the higher altitude tendencies are accentuated. Perhaps a perfectly flat bowling green, out of season, could be used for further tests!

Both Table 1 and Table 2 include the capacity measured between the two legs of the dipole which, of course, when distributed along the length has no direct relevance to the

HORIZONTAL DIPOLE - 8m94 + 8m94 - Nominal 33 uH.						
Shape	Height	Freq.	Impedance	'E' factor	Measured	
	End-Centre-End	KHz.	Ohms	%	C <sub>cap</sub> F.	
Level	2 - 2 - 2m	7765	31.5	92.5	38	
Saggy	2 - 1 - 2m	7810	32	93	37	
Level	1 - 1 - 1m	7705	35.5	91.75	39	
Droopy	.05- 1 -.05m	6977	47	83	43	
Level	.05-.05-.05m (50mm)	4710	116	56	110	

**Table 1 — Effects of shape, close to clay ground for dipole of 1 mm diameter PVC covered wire — hot, dry weather — green grass.**

LEVEL HORIZONTAL DIPOLE - 8m94 + 8m94 - Nominal 33 uH.						
Height	Freq.	Impedance	'E' factor	Measured C	Resonant C	
	KHz.	Ohms	%	pF.	pF.	
2m0	7767	31R5	92.5	38	12.5	
1m5	7745	32R	92.3	37	=	
1m	7727	35R5	92	38	=	
0m5	7550	45	90	40	=	
0m2	7135	61	83	46	15	
0m1	6400	70	76	87	=	
0m05 (50mm)	4710	116	56	110	35	

**Table 2 — Effects of height above clay ground for dipole of 1 mm diameter PVC insulated copper wire — hot, dry weather — green grass.**

capacity actually tuning the dipole but does indicate a proportional increase along with the impedance and length effects. This also applies to the calculated Resonant Capacity shown in Table 2 which would resonate an inductance of 33  $\mu$ H to the frequencies specified. Within the margin for error of practical measurement the proportion of these capacity changes is directly related to the frequency changes.

The impedance increase at very low heights related to ground losses is indicated in diagram A which is an extension of similar diagrams in the reference handbooks and an estimate of these losses compared to the theoretical radiation resistance above a metallic reflector has been included in that diagram also.

**Low Dipole Conclusions**

In general the resonant horizontal dipole is an effective radiator at very low height from ground particularly for NVIS transmission. Losses increase seriously below  $\lambda/30$  and the high impedance ends of the elements should have at least this amount of separation from ground or metallic earthed objects, towers and poles (only 1.5 m for the 40 metre band).

Kevlar, Black Dacron, Polypropylene Baler Twine, and Nylon Rope are all suitable insulating supports with far less end effects than the single egg shaped strain insulator wired back to a steel tower which has been commonly used. Supports of

this nature have been measured with 6 to 15 pF coupling to the earthed object and Table 2 can be used to estimate the end effects of this type of support.

With the elements double insulated inside the popular 12 mm polypropylene garden irrigation piping erected at 1.5 m on the post side of a suburban wooden fence a very effective concealed radiator should result.

For portable use a couple of 4 m bamboo poles for end supports and a saggy dipole radiator require no apology as to effectiveness for NVIS transmission but directivity, if any, depends on local obstructions and reflectors.

**Safety Considerations for Low Radiators**

Safety is an important consideration for both low radiators and for elevated ground planes. One part is physical in that any wires below 3 m can be regarded as a trap for man and beast including horses and wandering cattle. Even in daylight a thin wire can disappear against some backgrounds and at night is a very serious hazard. Therefore a protective, non-metallic hard rail or fence is necessary, not just a coloured streamer tied in the middle of the hazard.

The other aspect of safety is electrical as even at low power a nasty sting and RF burn can occur which, for non-technical people or for



climbing children, can produce an emotional reaction far in excess of the initial injury. At medium power, around 100 watts, these effects can become severe and for greater power the effects of corona and irradiation must also be considered. Therefore, the use of unprotected low installations is not recommended for higher power transmissions and even for low power use the radiator, or ground plane end sections, should be double insulated by enclosure in plastic pipe or conduit.

Increasingly important at longer wavelengths, thus longer radiators, there is static charge and induced voltage from lightning discharges in the neighbourhood. A 4.7 k resistor of 2 W rating across the centre connection of the dipole can alleviate some of the effect where the screen of the coax is directly earthed. Incidentally, this allows an ohmmeter check on the cable. RF transient protection devices may also be connected across the cable at the equipment end.

### The Woolshed Reflector — A low dipole for DX

While the emphasis for low dipoles is on NVIS transmission for local use a suitable reflector for low angle propagation would allow long distance operation.

This reflector can be the double pitched metal roof of a building about 20 m long and some 6 to 8 m wide. With a low dipole 2 m above the ridge of a roof with the common one-in-two slope either side (25 to 30 degrees) radiation below 20 degrees above horizon is possible in the broadside directions.

A dipole for 40 metres arranged in this fashion using 1 mm PVC insulated wire has a resonant length some 95% of the free space wavelength and a radiation impedance of 12 ohms. This is considerably lower than over lossy earth and consistent with the theoretical value for a conductive earth plane.

However, matching arrangements to suit the usual 50 ohm cable at the junction with the dipole are required. Yagi type beams of similar impedance use the gamma match system but it is more suited to tubing construction rather than wire

elements. In this case ferrite cored transformer type matching appears more appropriate. However, to achieve the necessary low impedance balanced output is difficult compared with the more common high impedance output for these transformers. This is especially so when the windings on their ferrite rod must fit inside the round 50 mm PVC conduit junction box used for weather protection.

The simpler but less popular matching arrangement is the L type network consisting of one capacitor and one inductor. This can be calculated honestly (RSGB Radio Communications Handbook 12-41) or by selecting the standard value of capacitor with reactance closest to the geometrical mean of the two impedances requiring to be matched. The square root of 12 x 50 in this case indicates 24.5  $\Omega$ , about one ohm below the calculated value. The nearest standard capacitor value of 820 pF runs to 27.3  $\Omega$ . This may be resonated to mid-band with a self supporting coil of 1 mm EC wire 10 mm in diameter by some 10 mm long. Include a 12  $\Omega$  load resistor in series while testing as this can cause a shift of 2% or so. Trim to a half-turn (say 9.5) then finally adjust by stretching slightly before binding with polypropylene adhesive tape (Bear 666P) to stabilise the coil mechanically. Those old fashioned mica capacitors with a voltage rating of several hundred are quite suitable for low power portable transmission up to 20 watts but at 100 watts the capacitor would require an RF current capability over 4 amps as well as high voltage peak rating. Connect the 12  $\Omega$  load to "see" the series LC circuit with the 50  $\Omega$  coaxial cable connected across the capacitor shunted by the coil and load.

No tune up adjustment is required after initial installation as the bandwidth of this network is much wider than the 40 metre dipole and the VSWR should be less than 2/1 across the band.

### The Earth Plane

As noted earlier the earth should be regarded as an imperfect insulator and is only connected as a convenient common point for various

types of circuitry. From the ARRL Antenna Book 3-3 the conductivity, over any single path, for average heavy clay can be 0.005 Siemens per metre (200 ohms) and this does not include the contact resistance of a practical connector to a large number of parallel points in this clay. Commercial earth mats and large buried objects can achieve very low contact resistance but many amateur stations rely on the reticulated water supply for about 3 ohms of contact resistance with metal pipes of galvanised steel or copper. One only is preferred to avoid galvanic action.

For portable radio operation an earth rod or pipe driven 50 cm or so will result in contact resistance from 20 to 100 ohms to ground. (Earth Rod Tests — *Amateur Radio* July 1986). This may not be much for the many thousand volts of a lightning strike to overcome but it can absorb much of the power available from a portable transceiver with a radiator in series with that earth rod.

The counterpoise or artificial earth was devised many years back to overcome difficult earthing situations

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and usually consists of various patterns of metallic conductors arranged on the surface. The simplest of these consists of two  $\lambda/4$  sections of insulated wire arranged in a straight line similar to a dipole but connected in parallel to cancel any horizontal radiation from them.

However, from the data on low radiators, it is apparent that the length of these sections must be adjusted to almost half of the free space wavelength to resonate with the capacity induced by the adjacent earth with the high dielectric constant. They can best be tuned to a particular frequency by connecting in series with a coupling loop to use a Dip Oscillator.

The loss due to the adjacent earth will, of course, be similar to the dipole (100 ohms and more) when driven in series as a dipole but when connected in parallel against a vertical radiator the loss for the counterpoise can be expected to fall to a quarter of the dipole figure. This loss may be reduced by adding more pairs in parallel and some 32 or more of these radials have been recommended but this solution approaches the large earth mat associated with a base station rather than a portable situation.

### **The High Earth Plane**

Another solution to the earth loss problem is to separate the artificial earth from the surface. This results in longer  $\lambda/4$  sections but the losses can be considerably reduced. Once again deriving from the low dipole data of around 50  $\Omega$  impedance at a height of  $\lambda/40$  then two paralleled  $\lambda/4$  sections should add only 12.5 ohms to the 20 ohms or so of radiation resistance attributed to the associated vertical radiator. This combination presented to the feedline is a fairly acceptable figure for this Marconi style radiator system and implies a loss of less than 2 dB.

This height is about 1 m for the 7 MHz band and is therefore a man trap unless protected physically and electrically. Yes, electrically, as after all it is the other half of a radiating system even if known as an artificial earth. Protection as for a low dipole is recommended, eg a non metallic

fence and the outer ends double insulated in polypropylene tubing of the garden irrigation variety.

### **The Practical High Ground Plane**

Several inverted L type radiators have been tried on the 7 MHz band with the twin  $\lambda/4$  counterpoise at various heights. They were compared with the same radiator element against a deep driven (2 m) earth rod in a damp location.

With the counterpoise above 50 cm from the surface the effectiveness was judged better than the direct earth connection. Further evaluation is required at a number of locations free of power line interference and scattering due to local buildings.

Only small changes occurred with changed configurations with the two halves still diametrically opposed and the end height equivalent to the level counterpoise. A middle dip shape with the centre connection taken down at 45 degrees to the surface or a saggy shape with a gradual slope down to the centre from the elevated ends are both satisfactory when tuned in position and are convenient for use with a ground mounted, self supporting radiator.

However, a drooping shape sloping down from the elevated centre to the surface at both ends is little better than the whole length on the surface, ie earth losses are effectively coupled into the ends.

If a proportion of horizontally polarised radiation is required then only one half of the twin quarter wavelength ( $\lambda/4$ ) can be allowed to radiate along with the vertical radiator. The separation from earth will need to be increased to keep losses low, however. This combination is a vertical quadrant when remote from the surface but, with a low horizontal section, becomes the popular vehicle radiator with a helical whip mounted on the front or rear.

### **The Vehicle Radiator**

The tuning of the HF vertical whip differs from vehicle to vehicle, not because of variations in the whip itself but because of changes in the counterpoise, in this case the body of the vehicle.

Two small to medium size passenger cars of the same type and some 4.25 m long over the metalwork can be expected to resonate as a dipole in the region of 8 MHz when nose to nose. The resonant dip is rather indeterminate at 1.5 to 2 MHz wide indicating a very low Q due to the large capacitance and the ground losses involved in this very low dipole. To achieve balance for either vehicle against a vertical whip for 7.1 MHz requires additional inductance on the earthy side of the whip mounting, NOT a longer whip. The alternative is a longer car!

Larger cross section and length probably accounts for the effectiveness of long distance buses and trucks as mobiles in the 4-5 MHz band and longer semi trailers at even lower frequencies except when the prime mover is separated from its trailer. The vehicle body provides the horizontal radiation for NVIS communication in the local area notwithstanding the high losses while the vertical whip provides the low angle capability beyond the first 300 kilometres.

### **Conclusions**

The low radiator and the elevated ground plane are very practical parts of radiating systems for the lower HF bands when used within their limitations, particularly for portable use. The characteristic data given in diagram A and Tables 1 & 2 for the 40 metre band are intended to provide the initial information for further development. Extrapolation to the 80 metre, or even 160 metre, bands should be a straight forward scaling up operation.

Emergency operation after storm damage to fixed site installations can also be expedited using these characteristics and estimates.

The general concept may be extended from the basic dipole to other types of resonant radiating systems in close proximity to earth, including mobile vehicle radiators.

*\*42 Capon Street, Chadstone, VIC 3148*

ar

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## ■ Regulations

# SMA's New Policy on Handling Interference From Transmitters

The Spectrum Management Agency (SMA) has changed the way in which it handles interference to radio and television reception arising from the operation of amateur transmitters.

The new policy, which has been developed in consultation with the Wireless Institute of Australia, encourages amateurs to become more involved in resolving interference arising from the operation of their station.

Interference involving amateur transmitters mainly occurs because of two factors; a lack of radiofrequency immunity in the affected broadcasting receiver and the close proximity of the amateur transmitter. Under earlier radio-communications legislation, the SMA's approach to the handling of these interference problems resulted in the responsibility for remedying such problems generally falling to the owner of the affected device.

Under the Radiocommunications Act 1992, interference is defined to include interference to broadcast reception, whether resulting from an immunity problem in the affected receiver or from any emission of the transmitter. The new approach stems from this definition and the basic legislative requirement for all transmitters not to cause substantial interference.

As part of the SMA's wider approach to the management of interference, television and radio receiving equipment standards are planned to be upgraded to improve their resistance to interference.

In addition, in recognition of the roles that broadcasting reception and amateur radio play in the community, the SMA has introduced a policy that

provides a more balanced approach to the resolution of interference problems involving the operation of amateur transmitters.

The policy places a joint onus on both the affected party and the transmitter operator to work together to resolve such problems. The SMA has detailed measures that can be employed at the television or radio receiver and the transmitter installation to minimise interference. For example, televisions should be fitted with an external antenna and it will often also be necessary for an appropriate filter to be fitted at the affected receiver. Amateurs should use good engineering practices when installing their station and should always communicate using minimum transmitter power.

Almost all interference problems can be resolved without the intervention of the SMA, provided that both parties co-operate with each other and follow the suggested measures.

Information on resolving transmitter interference has been produced in a brochure entitled *Better television and radio reception: Interference from CB and Amateur Transmitters*. The brochure is in two parts. The first part, which provides helpful information about resolving interference for both the person affected by interference and the transmitter operator, should be read in conjunction with the booklet *Better television and radio reception: Your self help guide*. The second part of the brochure is the policy statement which outlines how the SMA handles unresolved interference. This latter section will usually only apply to the very few cases where interference cannot be resolved by the parties concerned.

Both of these publications are available from any SMA office free of charge.

Members of the public may obtain further advice on interference matters, free of charge, by contacting any of the SMA's offices. Where the SMA is called upon to provide a diagnosis of actual interference problems, a fee for service will apply.

Where it is necessary for the SMA to investigate instances of unresolved interference, the SMA will consider, on a case by case basis, a range of factors including what measures have been adopted by both parties to resolve the interference. Additionally, the SMA will consider whether further steps could be taken by the parties concerned to resolve the problem.

In practice it may not be possible to resolve interference problems where appropriate measures, such as the use of an outside antenna for television receivers, have not been taken by the affected party.

Where reasonable measures have not been taken by an operator to overcome interference involving his or her transmitter or where substantial interference remains after all practicable measures have been taken, it may be necessary to restrict the operation of the transmitter.

The SMA's new interference policy also applies to television and radio interference involving the operation of CB transmitters.

The SMA's *Better television and radio reception: Interference from CB and Amateur Transmitters* brochure is reproduced here for the information of readers.

## **Resolving Interference to Television and Radio Reception from the operation of Citizens Band or Amateur Transmitters**

### **Section 1 Resolving interference**

- 1.0 Why does interference occur?
- 2.0 Identifying the interference
- 3.0 What can be done to resolve interference?
  - 3.1 Things that can be done at the television receiver
  - 3.2 Things that can be done at the radio receiver
  - 3.3 Things that can be done at the transmitter installation

- 4.0 SMA assistance in resolving interference
- 5.0 Further information on interference resolution

## Section 2 SMA Policy Statement

- 6.0 Purpose
- 7.0 Background
- 8.0 Legislative considerations
- 9.0 Substantial interference
- 10.0 Policy objectives
- 11.0 Strategies adopted by SMA to achieve policy objectives
- 12.0 Possible outcomes of unresolved interference

### Section 1 — Resolving Interference

This information brochure aims to assist both the person affected by the operation of a nearby CB or amateur transmitter and the transmitter operator to resolve television and radio interference problems.

This brochure should be read in conjunction with the *Better television and radio reception: Your self help guide* booklet available free of charge from the Spectrum Management Agency (SMA). This booklet is referred to as the "Better television and radio reception" booklet elsewhere in this brochure.

#### 1.0 Why does interference occur?

Interference to television and radio reception can arise from the operation of many electrical and electronic devices. Interference can be caused by electric motors, thermostats and light dimmers; high voltage electricity powerlines; and transmitters such as those used by CB and amateur operators.

Interference from devices such as electric motors, light dimmers and electricity power lines result from the generation of radio frequency signals by these devices. These interfering signals are essentially radiated on a wide range of frequencies including the frequency of the wanted station.

Interference from CB and amateur transmitters however generally occurs because the radio and television receiving equipment, including video cassette recorders (VCR), is unable to reject the unwanted CB or amateur transmissions which are on different frequency bands from those used by radio and television stations. This is a problem known as a lack of radio frequency immunity. Some

interference can also occur because of faults in the affected receiving equipment or antenna installation.

The close proximity of the affected receiver and the CB or amateur transmitter also contributes to these problems.

#### 2.0 Identifying the interference

After it has been determined that television or radio reception is unsatisfactory, it is necessary to identify whether the poor reception results from interference or other factors such as the use of an inappropriate receiving antenna.

Where interference is reasonably suspected, it then becomes important to correctly identify the source of the problem. Fortunately, the characteristics of interference from the various sources are sufficiently different to make identification relatively easy.

The "Better television and radio reception" booklet describes with illustrations the various interference problems and the remedies that may be employed to resolve them. The techniques used for resolving interference depend on what is causing the interference. Interference problems involving CB and amateur transmitters are covered by the booklet in the section dealing with "radiocommunication transmitter interference". The illustrations shown in the booklet in the "Radiocommunications transmitter interference", "AM broadcast transmitter interference" and "FM broadcast transmitter interference" sections indicate the differences between good quality television reception and reception marred by substantial interference.

If it is considered that a CB or amateur transmitter is involved in the interference, the operator concerned should be contacted to assist in conducting tests to confirm the nature of the source.

#### 3.0 What can be done to resolve the interference?

The level of interference observed or heard on a broadcasting receiver is dependent, amongst other things, on the difference between the level of wanted signal and the level of interference. The wanted signal can be improved by having an appropriate

external receiving antenna while the interfering signal can be reduced by filters. The connection of an external receiving antenna is the first step towards resolving any interference problem.

Once an antenna has been installed, any interference that remains from the operation of electrical appliances requires the use of suppression devices at the appliance itself. Suppression of appliances is normally best left to professional electricians. Interference from overhead electricity powerlines results from leakage currents across dirty or broken insulators arcing to earth and should be reported to the Electricity Supply Authorities for resolution.

Interference involving CB and amateur transmitters, in most cases, can be eliminated by the use of an appropriate receiving antenna installation and the fitting of suitable filtering devices to the affected equipment. Transmitter operators additionally need to ensure that the transmitter and its antenna have been properly installed.

Providing maximum separation of the television/radio antenna and the transmitter antenna also minimises the level of CB or amateur signals and, consequently, the level of interference.

While many instances of this type of interference can be resolved by the affected person alone by reference to the "Better television and radio reception" booklet, it is often necessary to involve the CB or amateur operator as some remedial measures may be required at the transmitter.

The location of CB or amateur stations can usually be ascertained by their large antennas. CB or amateur operators can often assist in the correct identification of the particular interference and, where required, the choice of an appropriate filter.

#### 3.1 Things that can be done at the television receiver

Interference may be eliminated or minimised by:

- ensuring that the standard of the receiving installation provides adequate reception in the area. This includes the use of a correctly

installed and maintained external antenna and appropriate antenna cabling;

- ensuring that masthead and distribution amplifiers, where used, are fitted with filters designed to minimise interference;

The "Better television and radio reception" booklet provides information on the checks you can make on your equipment and also shows the effects of an inadequate signal. A weak television signal is prone to interference even from low level sources;

- locating the external television antenna as far away as possible from the antenna of the CB or amateur transmitter; and
- the fitting of appropriate interference filtering devices to the affected equipment. While most interference is resolved by fitting filters in the cable run between the antenna and the television receiver, it is sometimes necessary to fit filters in the electricity mains lead. Use only filters approved by Electricity Authorities. The booklet provides advice on particular measures that can be employed to resolve the various types of interference.

The operator of the CB or amateur station involved can provide advice about their frequencies of operation and this will assist in the choice of an appropriate filter.

### 3.2 Things that can be done at the radio receiver

Interference may be eliminated or minimised by:

- ensuring that the standard of the external antenna is sufficient to provide adequate reception for the area;

Some television antennas are able to be used for the reception of FM radio by fitting a "two way splitter". More information on this matter may be found in the booklet.

- locating the external antenna as far away as possible from the antenna of the CB or amateur transmitter.

The use of radio receivers with internal ferrite rod antennas will not always provide a sufficient wanted signal level for interference free reception. These receivers should, in any case, be positioned to receive maximum signals.

### 3.3 Things that can be done at the transmitter installation

Operators whose transmitters are involved in an interference problem should participate with persons affected by the interference in the resolution of the problem.

Operators of CB or amateur transmitters can minimise the potential for interference by:

- ensuring that good engineering practices are followed in the establishment of their transmitter and antenna;
- selecting and locating transmitting

antennas for interference minimisation;

- properly matching the transmitter to the antenna;
- employing additional radio frequency filters appropriate for the frequencies of operation;
- utilising a separate radio frequency earth connection.

Operators of amateur transmitters can further minimise the possibility of interference by:

- reducing the transmitter's output power; and
- selecting a frequency of operation compatible with broadcasting stations in the area.

Where interference is known to be caused, the operator may consider:

- using their transmitters at locations not in the near vicinity of television or radio receivers; or
- using their transmitters other than during prime viewing or listening times.

### 4.0 SMA assistance in resolving interference

The SMA provides a range of services to assist with the resolution of interference problems.

- The "Better television and radio reception" booklet is available from all SMA offices free of charge. Technical information concerning the installation of television aerials is also available free of charge.
- Additional assistance with individual problems may be

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obtained by telephoning the nearest SMA office.

- An interference diagnostic service is available to persons affected by the interference or the transmitter operator concerned. This service involves a visit by the SMA. Affected viewers and listeners may apply for this service by completing the questionnaire that accompanies the "Better television and radio reception" booklet and send it to the SMA office closest to them. The SMA will contact the applicant to discuss the problem before arranging a visit. If the SMA visits to investigate an interference, it will provide advice on measures that will eliminate or minimise the interference. SMA visits are conducted in normal business hours, ie Monday to Friday except for public holidays.

Where a visit is made to investigate the cause of interference a prescribed charge is applicable. The SMA will invoice the applicant after completion of the investigation.

A television and radio technician should also be able to diagnose these problems and install appropriate filter devices to remedy the interference.

#### **5.0 Further Information on Interference Resolution**

It is important to recognise that radio and television interference involving CB and amateur transmitters is a shared problem for

both the person affected by the interference and the transmitter operator.

In most cases, interference can be resolved by appropriate use of radiofrequency filters at the affected receiver and the use of appropriate and technically sound transmitter installations by the CB or amateur operator.

Where the interference is not resolved by the parties concerned, the following policy statement indicates the factors that are taken into account by the SMA when handling interference matters arising from the operation of CB and amateur transmitters.

### **Spectrum Management Agency Policy Statement**

Resolution of Interference to Television and Radio Reception involving the operation of Citizens Band and Amateur Transmitters

#### **Section 2 — Policy Statement**

##### **6.0 Purpose**

This statement sets out the policy of the Spectrum Management Agency (SMA) in regard to the resolution of interference to television and radio reception from the operation of Citizens Band Radio Service (CB) and amateur transmitters.

#### **7.0 Background**

A feature of domestic environments is the widespread use of radiocommunications equipment such as television and radio and, under regulation, non-broadcasting transmitters including those used for the CB and the Amateur Service.

Regional broadcasting transmitters and translators have reduced many of the reception difficulties experienced in the past but the use and enjoyment derived from television and radio equipment is still sometimes marred by interference, of one form or another from other electronic equipment.

Interference to television and radio receivers often arises from the operation of nearby CB and amateur transmitters. Some interference can occur due to the inability of the affected equipment to adequately reject the CB or amateur transmissions. This inability is usually referred to as a lack of radio frequency immunity. Interference can also arise from the close proximity between the transmitter and the affected equipment as well as from faults in the transmitter.

Equipment standards, specifications and licensing conditions are intended to ensure that CB and amateur transmitters meet stringent quality requirements. By contrast, radio and television receivers vary in quality and many do not have a high level of immunity.

The policy covered in this paper, which is based on the above considerations, has been developed in consultation with representatives of consumer organisations and the CB and amateur communities.

##### **8.0 Legislative considerations**

This policy supports provisions of the *Radiocommunications Act 1992* (as amended) where:

Interference in relation to radiocommunications is defined as: "interference to, or with, radiocommunications that is attributable, whether wholly or partly and whether directly or indirectly, to an emission of electromagnetic energy by a device" and "device" is defined as:

- “(a) a radiocommunications transmitter; or
- (b) any other transmitter; or

## **WIA News**

### **Intruder Watchers Needed**

This is a reminder that we need vigilance to protect our bands from the encroachment of stations who have no right to put signals in our exclusively allocated frequencies.

Would you like to help watch for, or monitor, intruders on our bands? Intruder watch reports *have* been successful in getting intruders removed. For example, reports from volunteer observers of the *Radio Society of Great Britain's* Intruder Watch were instrumental in having an interfering harmonic from Radio Rusii, a shortwave broadcaster located near Moscow, removed from the 20 m band last

year. (See *WIA News* in *Amateur Radio*, March 1994 issue).

The Federal Intruder Watch Coordinator, Gordon Loveday VK4KAL, is seeking more volunteers to help monitor the HF bands. In particular, Divisional Intruder Watch Coordinators are needed in VK2 and VK3.

But how do you recognise an intruder? Well, Gordon has a very instructive tape on the subject, packed with real-life examples. If you're interested in helping out, write to Gordon and enclose a blank C60 audio cassette. Write to A G Loveday, Freepost No 4, Rubyvale QLD 4702.

- (c) a radiocommunications receiver; or
- (d) any other thing any use or function of which is capable of being interfered with by radio emission."

The Radiocommunications Act (s197) also makes provision that:

- "A person must not knowingly or recklessly do any act or thing likely to:
- (a) interfere substantially with radiocommunications; or (b) otherwise substantially disrupt or disturb radiocommunications."

### 9.0 Substantial interference

The SMA interprets substantial interference as that level of interference that degrades television and radio reception, under normal conditions, by a considerable degree.

### 10.0 Policy objectives

The objectives of this policy are to:

- (a) promote an understanding of the causes, resolution and avoidance of interference involving the operation of CB and amateur transmitters;
- (b) promote the principles of self-help in the joint resolution or minimisation of the effects of interference; and
- (c) describe further processes for dealing with unresolved interference.

### 11.0 Strategies adopted by the SMA to achieve policy objectives

The strategies employed by the SMA to achieve the above objectives are:

- to distribute on request, free of charge, the SMA booklet *Better television and radio reception: Your self-help guide* to persons affected by interference or to those causing interference. Technical literature related to television receiver installation is also available free of charge;
- to encourage operators of CB or amateur equipment and persons suffering interference to their television and radio services to resolve the problem by mutual agreement and assistance;
- to provide a telephone advisory service for persons who require additional information or who want to discuss their interference problems with an SMA officer;

- to provide a diagnostic service to the affected party or transmitter operator during normal business hours based on a standard fee;
- to promote greater awareness in the service industry of the mechanisms, resolution and avoidance of interference involving the operation of these transmitters by encouraging the inclusion of related subjects in study courses; and
- the development of an Electromagnetic Compatibility (EMC) framework including standards for domestic equipment, particularly in relation to immunity to interference.

In dealing with unresolved interference, the SMA takes account of factors including:

#### For the television viewer, radio listener and transmitter operator

- whether self help principles have been used to attempt to resolve interference;
- the degree of participation by both affected party and transmitter operator involved in investigating and negotiations aimed at permanently resolving or minimising the affects of the interference;

#### For the television viewer

- whether the standard of the receiving installation is sufficient to provide adequate reception in the area;
- whether, where employed, additional amplifying devices are adequately filtered;
- whether the location of the external antenna is consistent with minimisation of interference;
- whether the location of the transmitter involved in the interference can be determined;

#### For the radio listener

- whether the standard of the receiving installation is sufficient to provide adequate reception in the area;
- whether, where appropriate, the location of the external antenna is consistent with minimisation of interference;
- whether the location of the transmitter involved in the interference can be determined;

#### For the transmitter operator

- whether good installation practices have been followed;
- whether the location of the transmitting antenna is, within practical constraints, consistent with minimisation of interference;
- whether the use of filters would reduce the interference;
- whether, in the case of an amateur transmitter, the output power of the transmitter could be reduced to resolve the interference;
- whether, in the case of an amateur transmitter, the frequency of operation could be changed to resolve the interference;

#### Other factors

- whether additional measures, such as the use of filters at the affected receiver, could be employed to resolve the interference;
- the level of affected television and radio signals; the level of unresolved interference;
- whether mediation by the SMA will effect a resolution of the interference;
- whether a referral to a Conciliator is appropriate; and
- whether regulatory action is necessary to prevent substantial interference.

### 12.0 Possible outcome of unresolved interference

For the affected party:

If the person affected by the interference has not applied relevant measures in an attempt to resolve the interference, the SMA may decide to take no further action to resolve the interference.

For the transmitter operator:

If the transmitter operator has not applied relevant measures in an attempt to resolve the interference, the SMA may decide to restrict the operation of the transmitter or take regulatory action pursuant to the Radiocommunications Act. ar

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you saw it in the  
WIA Amateur Radio  
Magazine.**

# Technical Abstracts

Gil Sones VK3AUJ

## Overvoltage Protection

In *Technical Abstracts* in September 1994 an overvoltage protection circuit from QST June 1994 was featured. This used an Earth Leakage Circuit Breaker as the tripping device.

I have received a letter from Paul Howarth VK2ZPS who makes some suggestions for use locally. Paul also suggests a modification which allows use with a field day alternator which has a floating output.

Here is Paul's letter:

I read with interest the article about the overvoltage protection circuit by WB8IOW, and would like to point out a problem with this circuit for use in Australia for 240 VAC installations.

You are right in that the Ground Fault Interrupter is known locally as an earth leakage circuit breaker or isolator. The most common type available is for use in domestic installations with an earth leakage sensitivity of 30 mA. It is commonly known as a safety switch.

The standard requires the earth leakage circuit breaker must trip with an earth leakage current between 50% and 100% of the nominated sensitivity. Mostly this is approximately 75% which is 22.5 mA for a 30 mA device.

*The earth leakage circuit breaker uses a toroidal transformer to detect earth leakage current.*

In the circuit described by WB8IOW, a 12 kΩ resistor is used from a 120 VAC supply. This gives an earth leakage current of only 10 mA. While 10 mA earth leakage circuit breakers are available in Australia they are generally only used in cardiac areas of hospitals and are more expensive than the domestic version.

For a 240 VAC installation with a 30 mA sensitivity the resistance value should be 6.8 kΩ.

The earth leakage circuit breaker is a residual current device (RCD) which

uses a toroidal transformer to detect earth leakage current.

The primary windings of the transformer are the current carrying conductors. These are the Active (Hot) and Neutral conductors. A secondary winding detects any residual current from the vector sum of the two currents. Normally this is zero unless current flow bypasses the toroid transformer. Usually this is via the earth. To trip the circuit breaker it is not necessary to use the earth or to ensure the alternator output is earthed.

The 6.8 kΩ resistor should be connected to the active conductor on the line side and to the neutral conductor on the load side of the earth leakage circuit breaker via the triac U2. See Fig 1.

Neutral to earth connection is not necessary in the circuit of Fig 1 to trip the circuit breaker on an overvoltage. However, the circuit breaker will not trip on an earth fault. This should not be a problem as any fault to earth would not result in any current flow and therefore present no danger to the operator. The only problem occurs if a second fault happens before the first fault is repaired. Then a fatal situation may result.

Merlin Gerin has a range of earth leakage circuit breakers called DPN Vigi in 10 amp, 16 amp and 20 amp

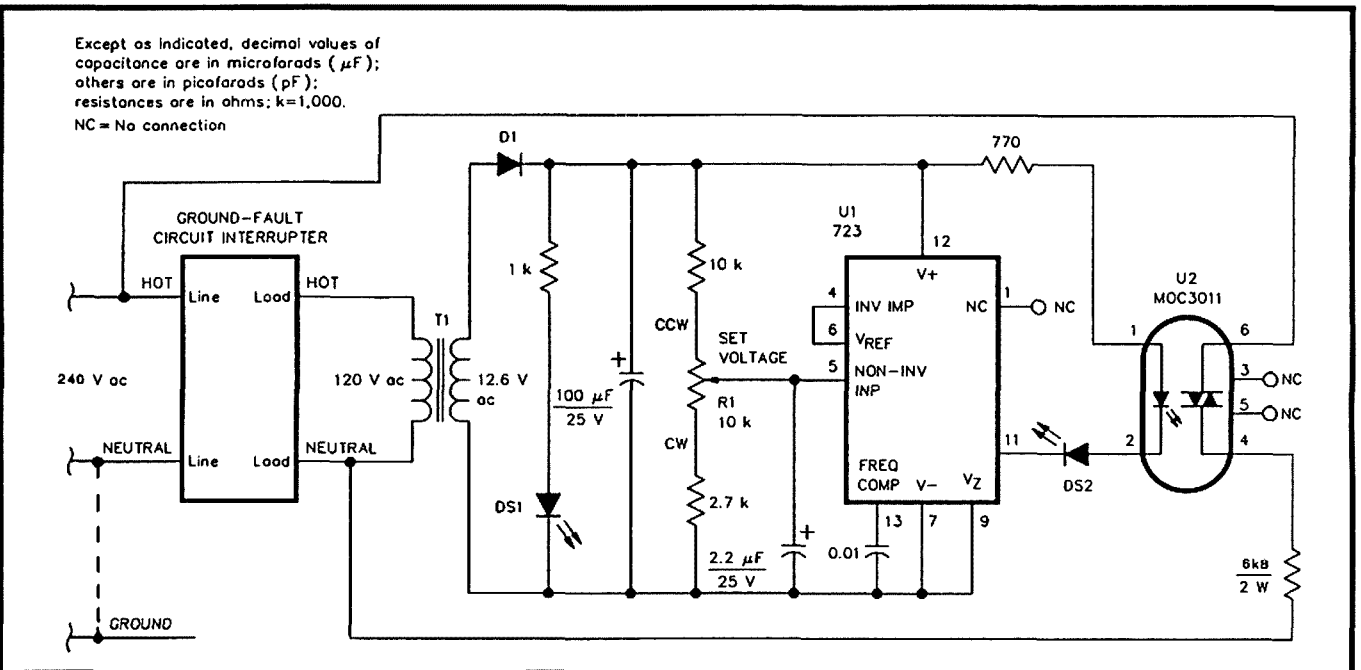


Fig 1 — Modified Overvoltage Protection Circuit.

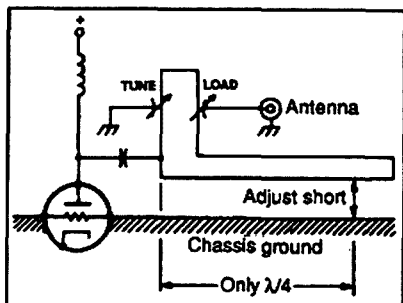


current ratings with 30 mA earth leakage sensitivities for personnel protection. These are available from electrical wholesalers Lawrence and Hansen or Auslec.

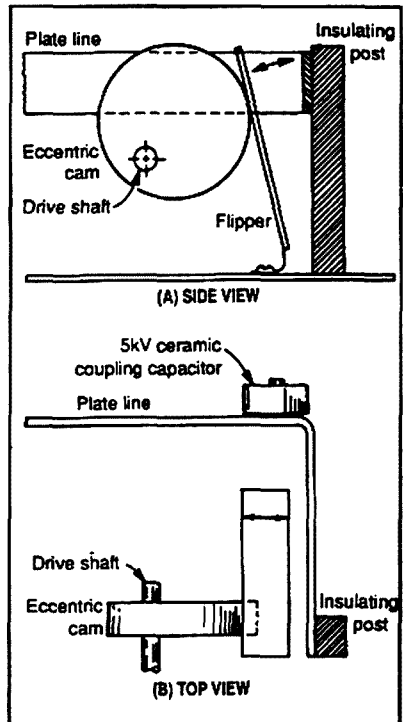
### Novel VHF Power Amplifier

At the CW and FM power limit one of the solid state brick amplifiers is simple to use. However, to run the legal limit on SSB a valve may well be attractive.

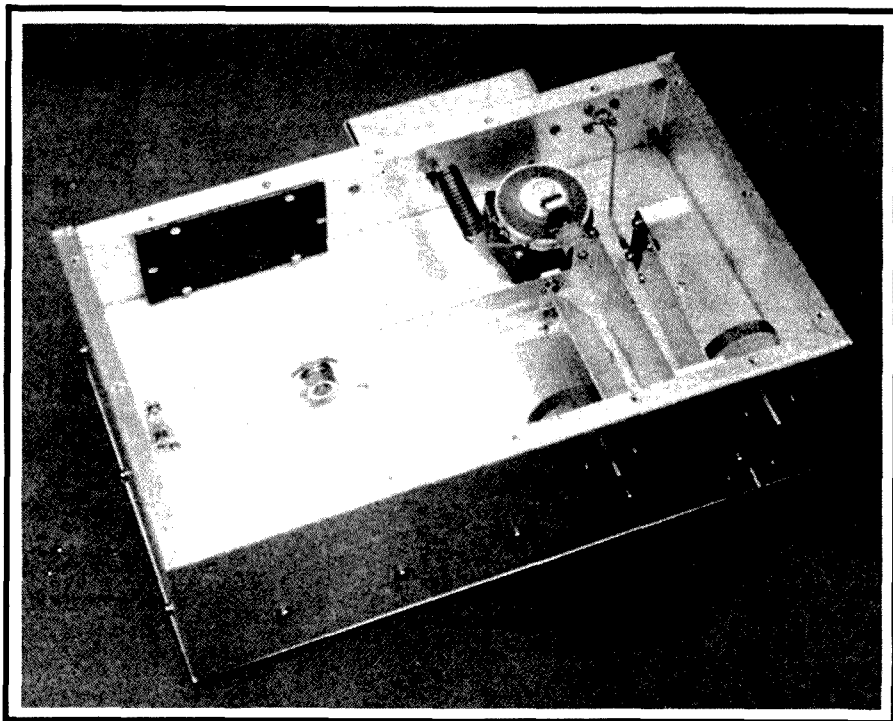
In CQ, July 1994 Bill Orr W6SAI describes a "Sheet Metal Special" which uses a 3CX800A7 grounded



**Fig 2 — Amplifier Plate Circuit.** The plate end of the line is bent at right angles to the line to provide sufficient space for the tuning and loading flipper capacitors.



**Fig 3 — (a) Side view of plate tuning flipper showing eccentric cam which presses against the hinged flipper plate. Assembly is panel driven through a vernier drive. (b) Top view of plate assembly showing placement of main components.**



**Photo 1 — Oblique view of amplifier plate assembly.** The 3CX800A7 and socket are mounted directly in front of the small box covering the high voltage feedthrough capacitor. Adjacent to the valve is the air wound RF choke. The air intake is on the rear wall directly behind the stripline. At the plate end of the line are the tuning and loading flippers which move back and forth to a section of the plate line. This section is bent at right angles to the main line. The two eccentric drive cams are visible behind the front panel. A heavy shorting strap is positioned along the plate line to establish resonance.

grid high mu ceramic triode. The original design was aimed at the FM broadcast transmitter market. The valve is expensive but may prove more economical than the second set of solid state fuses.

The circuit uses an inexpensive plate circuit arrangement. Basically this is a shunt fed quarter wave strip line. Capacitive coupling is used to the antenna and both anode tuning and the coupling capacitors are flipper capacitors driven by eccentric cams of insulating material. See Fig 2 and Fig 3 and Photo 1.

Coarse anode tuning is by a movable short. The main anode strip line is mounted on edge 20 mm above a matching angle attached to the chassis. A movable short, which is virtually a nut and bolt, is used to vary the length of the line for coarse tuning.

The plate line is shunt fed with an RF choke and a high voltage ceramic capacitor. The end of the line at the valve end is bent at right angles and forms the fixed plate of the tuning and

output coupling capacitors. See Fig 3(b).

The output coupling and the anode tuning capacitors are hinged flipper panels driven by eccentric cams of insulating material. These are, in turn, operated by reduction dial drives. The hinges are pieces of phosphor bronze. See Fig 3(a).

A 3CX800A7 needs 2 kV at 500 mA. For 25 watts drive, around 750 watts is possible. This should provide 400 watts with an adequate margin for SSB on 144 MHz.

The amplifier will need an air supply entering the anode compartment via a honeycomb RF filter and being exhausted through the valve anode cooler and the air system socket into the input compartment.

The proper sockets are essential for these valves together with an air source capable of providing the required air flow against the back pressure. The valves are listed in the Daycom catalogue.

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# ALARA

Christine Taylor VK5CTY\*



(l to r) Austine VK3YL, Christine WB2YBA, Valda VK3DVT. The photograph was taken in Valda's home by Marlene VK3EQO.

ALARA was saddened recently when Austine VK3YL became a Silent Key. Austine was recognised by ALARA, last year, for having held her licence for over 50 years. Austine was fortunately able to spend one afternoon earlier this year at the home of Valda VK3DVT, during the time that Christine WB2YBA was in Melbourne, as the photograph shows. Austine will be missed by all those who knew her over the years. Our sympathy is extended to her family.

On a happier note, ALARA was able to come to the assistance of a visitor from ZL recently. Dave ZL1AMN, who so capably runs the 222 YL Nets on Mondays, mentioned that June ZL2WE, a white stick operator from New Zealand, was in Melbourne to collect her Guide Dog, and was feeling lonely. Gwen VK3DYL got in touch with June and was able to lend her a two metre handheld for the duration of her stay.

In Perth, Poppy VK6YF has been providing support and accommodation for Bev VK6DE while Bev's OM Brian VK6AI had a bypass operation (he is doing well). Poppy also had the pleasure of spending some time with Marlene VK3WQ and her OM Jim VK3DL when they were in Perth on their caravanning way around Australia. Don't forget to put out some calls on 2 metres when YOU are visiting.

People like to be able to extend a welcome, but they can't unless they know you are there.

## Remember the ALARA Contest on 12 and 13 November

November is the month of the ALARA Contest when we hope everyone will try to participate, even for just a short time. The complete rules are elsewhere in this month's *Amateur Radio*. These have all the details of frequencies and the way to call and how each type of contact is scored. Don't forget to send in your log!!

It is a friendly contest. We have time to chat a bit and, although it is a YL contest, we are very pleased to have OM contacts. There are several OMs who regularly participate, and that's great. If you are an OM and have never joined us before, maybe this is the year! Please do!

ALARA is just another way of encouraging an interest in amateur radio. The youngest-at-joining member was 12 and the oldest-at-joining was 80, so there is a wide range of ages. We have members who do not hold a licence and we have nearly as many overseas members as we have Australian members so, inevitably, our interests are very varied, too. See you all in the Contest.

\*16 Fairmont Avenue, Black Forest SA 5035

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## Book Review

# The Radio Amateur's Guide to EMC

Author: Robin Page-Jones G3JWI

Published by The Radio Society of Great Britain

Reviewed by Gii Sones VK3AUI

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The cover of this book reminded me of "The Hitchhikers Guide to the Galaxy" with "Don't Panic" on the cover. Confronting EMC problems is a bit like an encounter with a Vogon. This book is not an addition to Douglas Adams' trilogy. It is, however, a very comprehensive guide to the EMC jungle and "Don't Panic" is good advice.

EMC is a growth area with an ever growing list of devices to be interfered with or, alternatively, to spew out interference. This book takes you through a very wide range of problems together with the reasons and suggested cures.

There are some differences between our situation and that in the UK. The TV in the UK is on UHF and the AC power mains use a slightly different setup to that used here. These differences are not enough to cause a problem, however, but must be recognised. Mention is made of VHF TV and the possible problems. Some

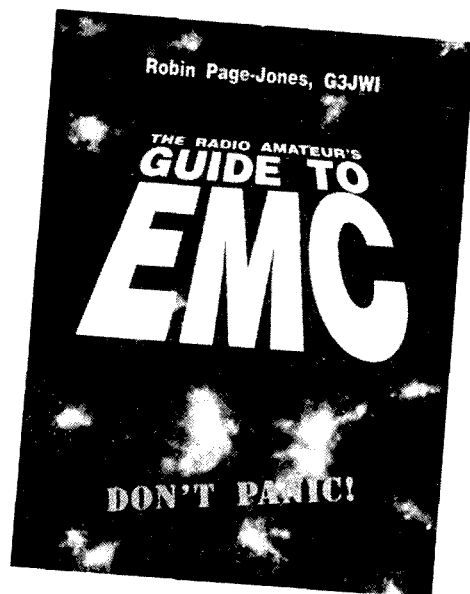
filters are for UHF. The differences are no more than exist between Australia and the USA or any other country.

Tracing EMC problems is covered in some detail and a variety of cures is offered. Not only is the other equipment dealt with but also the people problems of interference which are often far greater than the technical problems.

Setting up amateur stations to minimise EMC problems is covered and many of the ideas are easy to implement and may save a lot of trouble. The Z match, which we all know, gets the nod as an EMC friendly ATU.

This is a book which you should read. It will help you avoid the pitfalls and prepare you for the day EMC comes to your door. It is packed with commonsense ideas on dealing with EMC and is a valuable backstop when you have to deal with EMC.

Allowing for the small differences



between the UK and Australia this is a most valuable book to have on hand. You should read it so that you are prepared to deal with the problem and "Don't Panic".

This book is available for \$25.00 from some WIA Divisional Bookshops as well as from Daycom Communications Pty Ltd, who submitted the book for review. ar

# SOME THINGS HAVE NO COMPARISON

amateur  
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The magazine for the serious radio operator  
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# THE 21st CENTURY COMM. RECEIVER IS HERE TODAY

## THE FABULOUS SoftWave

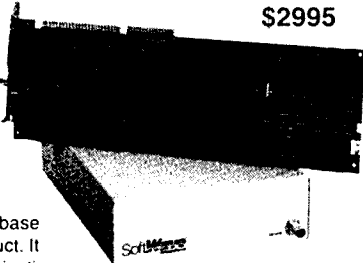
SoftWave is the first fully integrated digital communications receiver for Microsoft Windows.

SoftWave combines a high performance receiver, digital signal processor, spectrum analyzer, database and Windows program in one product. It opens the door to wireless communications on the PC.

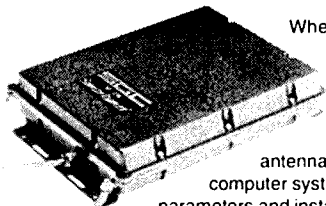
### GENERAL FEATURES:

Includes HF receiver, VHF Scanner, AM DX Radio, World Map Radio, Digital Signal Processor, Spectrum Analyzer, Oscilloscope, Signal Constellation, Multi-Mode Demodulator, Decoder, Database and Windows program in one product. **TOO MUCH TO TELL YOU - GET YOUR BROCHURE!**

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## The SG-230 Smartuner HERE AT LAST

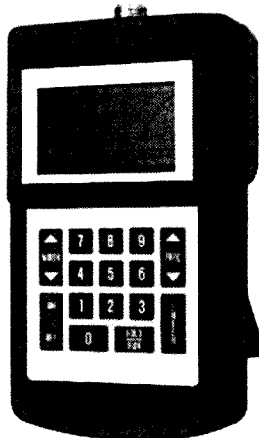


Whether you are a HAM, LAND MOBILE, MARINE or AIR BAND operator, you need a efficient antenna coupler. The best on the market today is definitely the SG-230 made in USA by SGC, Inc. The SG-230 is a fully automatic antenna tuner, with locking feature, where a computer system continuously monitors all antenna parameters and instantly selects the right values from more

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### AEA SWR-121

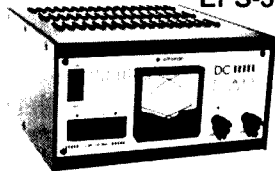
No matter, whether you are a professional antenna designer, antenna experimenter, or just analysing different antenna systems for max. performance, this microprocessor controlled freq. synthesizer with an accurate low-power SWR bridge is the answer. It shows a precise display of SWR curve, independent of the feedline. With optional software you can save plots on disk and control from your computers keyboard. Available for HF & VHF/UHF bands. **Call for brochure!**



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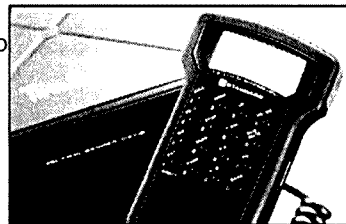
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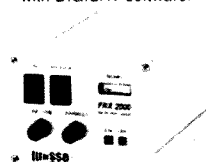
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**SP-13/SP-23** Low noise preamplifier for SHF (2.3 to 2.4 GHz & 1.25 to 1.3 GHz). Send for info!

## PACKET RACKET OR RACKET IN PACKET!!

The column headed "PACKET RACKET" is aptly named! The writer presents the material in such a biased manner as to suggest, that he and his colleagues are the first and only suppliers of packet equipment. We wish to inform you that there are TNC's made by AEA which provide multiple mode, multiple speed and multiple radio port TNC facilities to interface most transceivers, see below!

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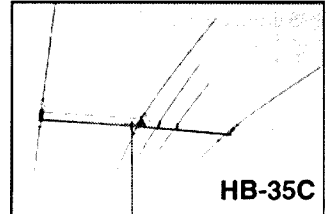
NEW-NEW-NEW-NEW-NEW ST-1 SATELLITE TRACKER to control your KENPRO 5400/5600!

# TET-EMTRON ANIENNAS

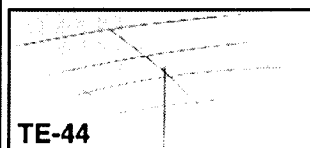
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### FOUR BAND BEAMS FOR 7-14-21-28 MHz BANDS

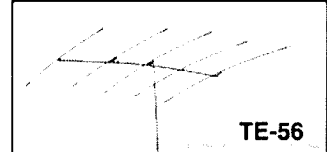


- TE-14 rotatable dipole.....\$275
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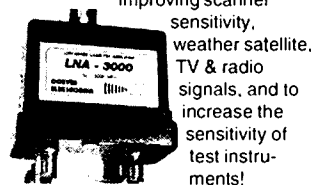


### JRC: NRD-535G

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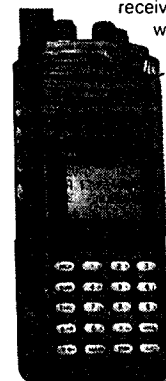


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# AMSAT Australia

Bill Magnusson VK3JT\*

## National co-ordinator

Graham Ratcliff VK5AGR

Packet: VK5AGR@VK5WI

## AMSAT Australia net:

Control station VK5AGR

Bulletin normally commences at 1000 UTC, or 0900 UTC on Sunday evening depending on daylight saving and propagation. Check-ins commence 15 minutes prior to the bulletin.

Frequencies (again depending on propagation conditions):

Primary 7.064 MHz. (usually during summer).

Secondary 3.685 MHz. (usually during winter).

Frequencies +/- 5 kHz for QRM.

## AMSAT Australia newsletter and software service

The newsletter is published monthly by Graham VK5AGR. Subscription is \$30 for Australia, \$35 for New Zealand and \$40 for other countries by AIR MAIL. It is payable to AMSAT Australia addressed as follows:

AMSAT Australia

GPO Box 2141

Adelaide SA 5001

## Phase 3D takes shape.

A recent copy of *The Amsat Journal* carried the usual update on the progress of the phase 3D satellite. It featured a photograph of the space frame being unpacked at the "Integration Facility" at Orlando, Florida International Airport. The story behind this is worth telling.

The spacecraft integration facility is located in the Foreign Trade Zone at the airport. The assembly of the spacecraft will involve collecting, testing and putting together components from various parts of the world. Many of these will be imported from outside the US and, as a result, would be subject to customs charges based on market value. Customs regulations insist on this even though the finished spacecraft will be shipped out of the country when completed. The Foreign Trade Zone at the airport allows this kind of exercise to proceed as long as all work takes place on the premises. To this end an area has been hired and adapted to Amsat's purpose. It includes a clean room with airlock, a storage area, a break (unpacking) area and a workshop area. The photograph shows the unpacking process under way with the clean room in the background.

It's obvious from this and other articles appearing that we are in the "big time"

now. This phase 3D will surely be the most ambitious and sophisticated OSCAR yet. The clean room was donated by Hitachi Data Systems and will ensure that there are no more than 10,000 five micron or larger particles per cubic foot of air. This is much cleaner than the requirements for a hospital operating theatre. The clean room was assembled and all was in place just in time when the space frame arrived from Weber State University where it was built. Over 1000 man-hours went into the setting up of the integration facility.

Think of this when you press the button on your transceiver to access phase 3D! The next two years will see the various payload modules mounted and tested, the wiring harnesses put in place and a myriad of other jobs done to complete the spacecraft. It will then be shipped out for thermal, vacuum and vibration testing before its journey to the launch site. The saga continues.....

## WISP

It's interesting to note that Chris ZL2TPO's magnificent program WiSP was written up in that same issue of *The Amsat Journal*. The reviewer wrote a glowing report. Evidently it is sweeping the digital satellite scene in the US, as it is here. As with any complex new software it is being updated constantly by Chris and others as extra features are added. Updates are appearing sometimes daily on the digital birds. Chris's photograph appeared on page 30 of *Amateur Radio* last month when he was in VK for a conference.

## MIR News

During October the cosmonauts on board the Russian space station MIR played host to a German astronaut. Dr Ulf Merbold used the call sign DF5DPI. He operated a digital voice memory device connected to the MIR ham rig to give reports on the progress of the European Space Agency's EUROMIR 94 mission of which he was part. Listeners to MIR on the night of 4 Oct were privy to a welcome aboard party with singing, guitar playing and other frivolities. It must have been quite an event for those on board to receive a number of visitors at once. Signals were loud and clear in Melbourne. At the time of writing I have not heard the digitised voice device, but it's early days yet.

## AO-21 Problems — Can You Help?

AO-21 has been experiencing some RAMDISK errors, mostly in the area used for storage of the WEFAX test image. The FAX picture has been replaced by AFSK packet telemetry. To help in identifying the cause of the problem, controllers are looking for packet telemetry of RUDAK-2 transmitted from 15 to 18 September 94. If you can help with copy of any part of this period it would be greatly appreciated if you would send the copy via packet to Robert, DD4YR@DB0AAB.#BAY.DEU.EU or via the internet to Peter: db2os@amsat.org. At the time of the errors operations on the host spacecraft caused an increase in temperature of some six degrees C. AO-21 is a small amateur package on board a large Russian satellite. It borrows power from the large craft but it is very much a secondary payload.

## AO-13 Eclipses

As you read this, AO-13 will have come through one of its most serious eclipse periods. Thanks are due to the control team of Graham, James and Peter for their excellent job in manipulating the attitude and transponder schedule over the past few months to allow a smooth passage through the eclipse period for the satellite whilst still somehow managing to give almost uninterrupted user access. Thanks also to the users for their patience during this difficult period.

\*359 Williamstown Road, Yarraville VIC 3013

Packet: VK3JT@VK3BBS

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## WIA News

### New WIA Members

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of September 1994.

L30897 MR I MCFARLANE  
L30899 MR K HAMER  
L30900 MR R PARSONS  
L30901 MR J DRITSAS  
VK3BMU MR N A JEFFERY  
VK3MKT MR P MCCALLUM  
VK5MB MR J MACKISON  
VK5ZBT MR L GARRON  
VK6AAF MR L W HAYWARD  
VK6KRD MR R J DE TRAFFORD  
VK6YY MR D ROBSON  
VK7AAA MR A KWIATKOWSKI



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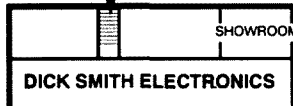
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# SAVE \$300!

A deluxe 2m/70cm dual-band hand-held transceiver offering easier operation and more features than ever before, and now at an unbelievably low price! The FT-530 provides a flexible dual receiver facility with separate volume and squelch controls, allowing you to listen on two frequencies in the same band, or one frequency on both bands! Plus, the exclusive Australian version features full 70cm band coverage (420-450MHz), selectable Auto Repeater Shift on both 2m and 70cm (suits Australian band plan), and extended receiver coverage as standard. Two VFOs and 41 tunable memories per band are provided, together with keypad or dial frequency entry, seven tuning steps and a one-touch CALL channel. The dual 5.5-digit LCD screen includes many functional indicators plus separate signal/P.O. bargraphs for both receivers. An LCD voltmeter function is provided so you can even monitor your battery's performance under load and estimate remaining battery life.

Other top features include: Inbuilt dual CTCSS encode/decode, CTCSS scanning, an auto battery saver (ABS) for extended battery charge life, a cross-band repeater facility and inbuilt clock with alarm and snooze functions. Also provided is VOX circuitry for use with the optional YH-2 headset, a user replaceable lithium back-up battery, and DTMF selective calling and paging. A DC supply jack allows transceiver powering and NiCad charging, with RF output in four steps up to 5W at 12V. The FT-530 comes complete with a high-capacity 1000mAH NiCad battery, antenna, belt-clip, carry case and approved AC charger.

Cat D-3620

#### Specifications

##### Frequency range:

Transmit	144-148MHz, 420-450MHz
Receive	130-174MHz, 420-500MHz, 800-950MHz

##### Current Consumption:

Auto power off	150uA
Standby (saver on)	16.8mA (both bands)

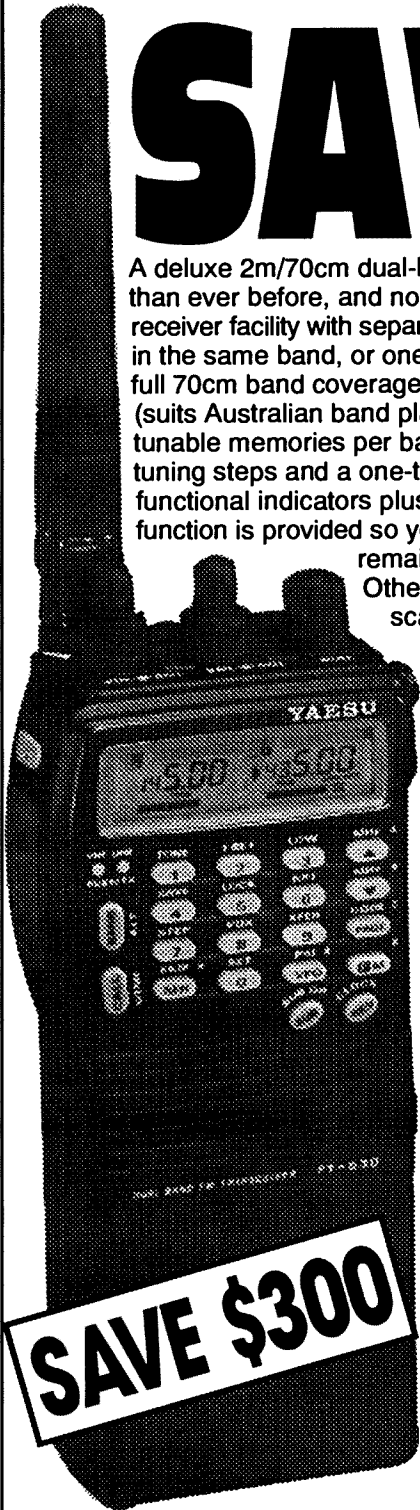
Dimensions: 55(W) x 163 (H) x 35mm(D)

##### Transmitter:

Power Output:	5, 3, 1.5, 0.5 (at 12V)
RF Power Output	2.0W (2m), 1.5W (70cm) (Supplied 7.2V 1000mAH NiCad)

##### Receiver:

Sensitivity:	2m: <0.158uV, 70cm: <0.18uV (Ham bands only, 12dB SINAD)
Audio Output	300mW at 8 ohms (at 12V)



**SAVE \$300**

### Hurry,

**This incredibly low price is only valid until  
31st December 1994, or while stocks last.**

Customers who purchased an FT-530 between 15/8/94 and 30/9/94 as part of our previous promotion should have received bonus gift vouchers to cover their purchase. Please contact the store where you purchased your FT-530 if you have not received your Gift Vouchers.

**2 year warranty**

# \$699



# End of Year Specials!



**Grab a Christmas bargain while stocks last. Prices are valid until 31st December 1994, and some items have only limited stock available. Some units may be shop soiled, but full warranties apply.**

1. Revox HF/6m W502 SWR/PWR meter, made in Japan, with accurate P.E.P. metering  
Cat. D-1360 **\$179 SAVE \$20**
2. Yaesu FT-26 2m handheld, with 700mA/H NiCad, carry case, extended receive, *2 year warranty*.  
Cat. D-3600 **\$399 SAVE \$70**
3. Yaesu FT-415 deluxe 2m handheld, with 1000mA/H NiCad, carry case, extended receive and many more features.  
**CLEARANCE** Cat. D-3610 **\$499 SAVE \$30**
4. Yaesu FT-815 deluxe 70cm handheld, with 1000mA/H NiCad, carry case, 430-450MHz coverage, *2 year warranty*  
**CLEARANCE** Cat. D-3615 **\$499 SAVE \$200**
5. Yaesu MH-12A2B standard speaker/mic.  
Cat. D-2115 **\$59.95 SAVE \$10**
6. Yaesu MH-18A2B mini speaker/mic.  
Cat. D-2117 **\$49.95 SAVE \$10**
7. Digitor 2m RF amplifier, 0.5 to 5w input, up to 30w output, GaAs Fet receive pre-amp, large heatsink  
Cat. D-2510 **\$139.95 SAVE \$30**
8. Mastercharger intelligent fast charger suit handhelds, complete with cigarette lighter lead. Suits most Yaesu handhelds, optional adaptors for other models/brands.  
Cat. D-3850 **\$159.95 SAVE \$10**
9. Yaesu FT-712R 70cm mobile transceiver, 35w FM output, 430-450MHz coverage, hand microphone, *2 year warranty*. Cat. D-3330 **\$599 SAVE \$150**
10. Yaesu FT-5200 deluxe 2m/70cm mobile transceiver, 50w output on 2m, 35w output on 70cm, 32 memories, *2 year warranty*  
Cat. D-3310 **\$1399 SAVE \$100**
11. Revox W540 VHF/UHF SWR/PWR meter, made in Japan, covers 140-525MHz.  
Cat. D-1370 **\$179 SAVE \$20**
12. Yaesu FT-840 H.F. mobile transceiver, *2 year warranty*, with hand microphone.  
Cat. D-3275 **\$1695 SAVE \$200**
13. Yaesu FT-890 deluxe HF mobile transceiver, 160m-10m, extended receive, all mode (SSB,CW,AM,FM), RF speech processor.  
Cat. D-3270 **\$1995 SAVE \$300**
14. Yaesu FT-990 HF base station transceiver, in-built auto antenna tuner and AC power supply, RF speech processor, DDS, digital audio filtering, IF shift and IF Notch, 500Hz CW filter standard. Ex-demo units only at this price!  
Cat. D-3260 **\$3295 SAVE \$700**
15. Yaesu SP-6 medium size desk speaker with audio filters.  
Cat. D-3265 **\$199 SAVE \$50**
16. Yaesu SP-5 large desk speaker with audio filters  
Cat. D-3230 **\$199 SAVE \$50**
17. Yaesu NC-15 desktop charger, for parts use only.  
Cat. D-3511 **\$2.95**

PHONE, FAX & MAILORDER SERVICE & YAESU BROCHURE HOTLINE  
**Outside Sydney (FREE Call) 008 22 6610**  
**Sydney and Enquiries - (02) 888 2105**  
 Fax: (02) 805 1986 or write to  
 Dick Smith Electronics, Mail Orders, Reply Paid 160  
 PO Box 321 NORTH RYDE NSW 2113  
 All major Credit Cards accepted. O/Nite Courier Available.  
 Yaesu stocks and some antennas not held at all stores, please  
 contact your local store for availability, or phone 008 22 6610

B 1823



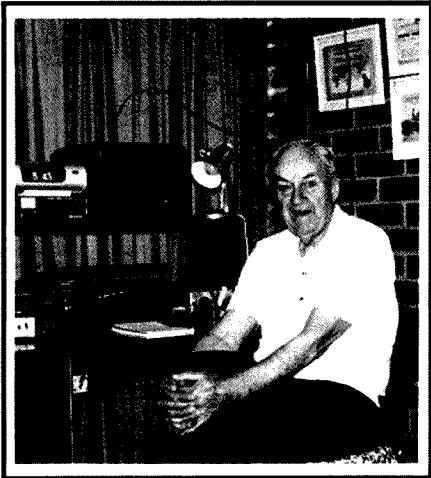
## DICK SMITH ELECTRONICS

NSW • Albury 21 8399 • Bankstown Square 707 4888 • Blacktown 671 7722 • Brookvale 905 0441 • Bondi 387 1444 • Campbelltown 27 2199 • Chatswood Chase 411 1955 • Chullora 842 8922 • Gore Hill 439 5311 • Gosford 25 0235 • Hornsby 477 6633 • Hurstville 580 8622 • Kotara 56 2092 • Liverpool 600 9888 • Maitland 33 7866 • Miranda 525 2722 • Newcastle 61 1896 • North Ryde 878 3855 • North Sydney (Greenwood Plaza) 964 9467 • Orange 618 400 • Parramatta 689 2188 • Penrith 32 3400 • Railway Square 211 3777 • Sydney City 267 9111 • Tamworth 66 1711 • Wollongong 28 3800 ACT • Belconnen (06) 253 1785 • Fyshwick 280 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 • Frankston 783 9144 • Geelong 232 711 • Highpoint 318 6300 • Melbourne City 399 Elizabeth St 326 6088 & 246 Bourke St 639 0396 • Richmond 428 1614 • Ringwood 879 5338 • Springvale 547 0522 QLD • Alderley 356 3733 • Booval 282 6200 • Brisbane City 229 9377 • Buranda 391 6233 • Cairns 311 515 • Capalaba 245 2870 • Chermshire 359 6255 • Maroochydore 791 800 • Rockhampton 27 9644 • Southport 32 9033 • Toowoomba 38 4300 • Townsville 72 5722 • Underwood 341 0844 SA • Adelaide City 232 1200 • Elizabeth 255 6099 • Enfield 260 6088 • St Marys 277 8977 • Westlakes 235 1244 WA • Cannington 451 8666 • Fremantle 335 9733 • Perth City 481 3261 • Midland 250 1460 • Northbridge 328 6944 TAS • Hobart 31 0800 • Launceston 344 555 NT • Darwin 81 1977  
**STORES ACROSS AUSTRALIA AND NEW ZEALAND**  
 \*MAJOR AMATEUR STOCKIST STORES SHOWN IN RED

# AWARDS

John Kelleher VK3DP — Federal Awards Manager\*

## DX Profiles



Ivor Stafford VK3XB

Ivor became acquainted with the "wonder of wireless" through reading the articles by Arthur Russell in "PALS", a boys' paper of the mid-1920s. By catching rabbits and selling the skins, he gained enough money to build a "one valver" in 1928.

He discovered that amateurs broadcast music on Sunday mornings, and late at night. He heard Morse code instruction broadcast by OA3CR, the Coburg Radio Club. He learned the code and practised, using a bread knife and a brass bolt. He then read Max Howden's "With the Amateurs" in the "Listener-in", converted the broadcast receiver to "short wave", and found the 80 and 40 metre bands. In 1933 Ivor gained his AOCF at the Working Men's College. In 1934 he took out the callsign VK3XB and from a Mallee school came on air with 0.6 of a watt input. By 1936 he had a V beam, 500 feet a side, and worked W9BQM with 0.36 of a watt. All this time Ivor was coaching Mavis (now VK3KS) for her AOCF. From 1951 to 1991 his QTH was at Box Hill South, where he availed himself of a TH6DX, and many dipoles. His present QTH is a retirement village, where no masts, poles, or other conspicuous contraptions are permitted. However, 137 countries have been worked using 100 watts and an end-fed 35 foot piece of wire, which is just above the roof tiles. He operates on seven bands with simple couplers, an efficient earth, and indoor radials. While at the Box Hill QTH, Ivor, with Mavis, concentrated on Contests and DX. His accomplishments include: 5 times winner for Australia in ARRL contests; continental leader 7 MHz in 1962 CQ WW Contest; world 4th place on

10 metres in 1971 CQ WW Contest; winner for Australia in RSGB 7 MHz, OZ, YO, HK, and WAEDC Contests; WAS on 7 MHz (novices only); and 5 Band DXCC. Ivor was also QSL Manager for VK3 from 1954 until 1968, as well as being the Intruder Watch Co-ordinator for seven years. He is also a member of the First Class CW Operator's Club, and a Life Member of the WIA. His current CW DXCC tally is 311.

His hints for new DXers include "listen, listen, listen, then call — the band may not be dead; your antenna is the most important item of your equipment; be patient with slower operators, there is always someone listening; be courteous, and observe the abbreviations used by experienced operators; make your contacts in minimum time (while contesting), then QSY off the frequency; investigate your contacts later".



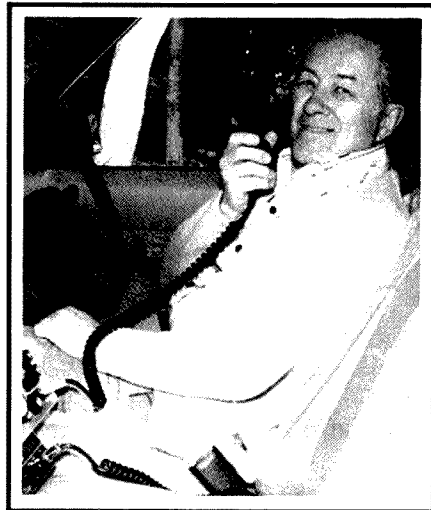
Mavis Stafford VK3KS

This report is condensed from Mavis's own words.

"Ivor VK3XB was coaching my brother. Unbeknown to him, I learned the Morse Code. When my brother went to Gippsland, I became Ivor's pupil. By June 1939, I had the callsign VK3KS, at Buchan, using a CL4 crystal oscillator and two CL4s as bi-push doublers, with 3 watts input. After making 110 contacts, WW2 forced suspension of activities. In 1943 the pupil married the teacher. Operating re-started in 1946 at Mount Best, a very windy QTH, where we had 2.5 watts input from batteries. By 1951 we were at Box Hill, and by 1967, had a TH6 Yagi, and high dipoles. In 1950 I joined YLRL and participated in many contests, using both CW and Phone. I won eight

gold cups, one silver cup, six plaques, and over 100 YLRL Contest certificates, and was second in the SAC CW Contest (1960), first in the Asia CW DX Contest (1971) and first in the YLRC Italiano. I then joined YLISSB and teamed with Ivor for first place in several contests. I am the holder of DXCC, WAZ, WAS, YLDXCC, WPX, DXCC/QRP, WAS/YL, WAP and WXBR, and am a member of ALARA, CLARA, WARO, JLRL and the Radio Amateur's Old Timers' Club. In 1966 I was honoured by being invited to join the First Class CW Operator's Club. There are very few women members. I was Historian and Awards Custodian for ALARA from 1980 to 1991 and was made an Honorary Life Member of ALARA in 1983. My advice for DX aspirants is: Listen, listen, learn and practice. My present CW DXCC tally is 297"

*Columnist's Note: I am honoured to be able to say that Mavis and Ivor are included amongst my best friends, as my mentors, and were always ready to use their broad experience to help and assist wherever possible. Ivor was also Headmaster to my children.*



Jim Rumble VK6RU

At the age of 11, in 1928, Jim and a school friend became interested in amateur radio. Through Scouting, and in his teen years, he met others with the same interests, and later learned that there were licensed amateurs in existence. Jim was licensed in late 1937 as VK6RU. A condition of the licence in that era was that CW operation was permitted for a probationary period of only six months. To quote Jim, "I quickly got to like the mode, and still do through FOC membership for over 20 years.

With war in 1939, my licence was suspended, and what equipment I had was taken by the licensing authority for security keeping until 1945. Licences were returned in January 1946, after my return

from active service as a commissioned officer, mainly in the south west Pacific. During this time I had gained some US navy "surplus" equipment. Pre-war, I had amassed some 80 DX countries on 10, 20 and 40 metres. Post war saw only 10 metres available, and naturally much activity was around in this peak sunspot cycle. Other bands were made available later.

Chasing DX was the prime interest and it was not long before I had DXCC, WAC, WBE and BERTA awards amongst many others which were available in the 1950s. I had built three rigs for AM phone and CW, and two separate receivers in the first post-war decade. However, it was not long before I learned of the Collins "stable", and soon had a 75A4 on the table. Then SSB was found to exist through my old friend ZS6KD, and the Collins S-Line gear was added by the mid-1950s. In 1965, I moved to my present QTH at City Beach, some eight miles south from Perth, a half-mile inland, and 200 feet above the Indian Ocean. By 1970, and 60,000 contacts in my log, the first 300 DXCC countries had been achieved and passed. The urge to get away and "eyeball" some of contacts led to four overseas trips, where I was greeted handsomely and treated with overwhelming hospitality. My late wife Joan and I were always together on these ventures.

Now that I live on my own, my three sons, their wives and five granddaughters take good care of me. My interest in the WIA has been keen since joining the body in 1937, and I have managed the VK6 QSL bureau since 1939. I spent two years as President and many years as a councillor in the early post-war decades. I was awarded life membership of the WIA in 1974, for services rendered to VK6. Amateur radio has been a rewarding hobby over these past 56 years. My advice to the young DXers today is to work hard, and use what information you have to the best of your ability. These days I do a fair amount of mobile communication, and have 106 countries confirmed from the vehicle".

Jim's DXCC Open Total is 326/380.

### Local Awards

The North East Radio Club will run a special event station for the 10th Adelaide Grand Prix, and provide an award for amateur radio operators. The callsign will be V15AGP.

V15AGP will be active from 30 October to 19 November 1994 on HF and VHF. To obtain an award amateurs must contact the above station, and receive a sequence number. By sending \$AUS5.00 or 5 IRCs, along with the sequence number, QSO information, and your return address, a

**The Coffs Harbour And District Amateur Radio Club Inc.**  
Presents  
**The Solitary Islands Award**  
- Commemorating the declaration of the Solitary Islands Marine Reserve 1991 -

**Certificate**

The Solitary Islands group provides a harbour for an abundance of tropical and temperate marine life, including corals and whales, all within 30 minutes of Coffs Harbour.

South Solitary Island Lighthouse - 1880

Awarded to Samuel Callsign VK2XYZ dated \_\_\_\_\_  
after confirmation of contact with CHADARC Inc. members  
qualling 25 points.

Signed \_\_\_\_\_ President. Signed \_\_\_\_\_ Awards Manager.

certificate featuring the late Ayrtton Senna will be forwarded to you. The address is: North East Radio Club, PO Box 36, Modbury North, SA 5092 Australia.

This is an advance notice of the intentions of the members of the Hervey Bay Amateur Radio Club Inc to sponsor a very special event. The callsign will be V150PEACE. Operation of this Commemorative callsign will commence at 0001 UTC on 1 August 1995, on as many bands as possible, and for as many hours as possible, until 2400 UTC on 31 October 1995. The operation is in commemoration of the men, women and children who lost their lives or received other devastating forms of anguish due to the war torn years.

### The Solitary Islands Award

This award has been introduced by the Coffs Harbour and District Amateur Radio Club to publicise the creation of the Solitary Islands Marine Award in 1991.

To obtain this award, a points score of 25 is required, as follows: for VK and ZL stations, 5 points for the CHADARC net controller VK2EP, or his deputy, and 2 points for each member of CHADARC worked; for DX stations 10 points for the CHADARC net controller, and 5 points for each CHADARC member worked.

#### General Conditions

1. Contacts made with the same station on the same band must be 24 hours apart, but a single contact with the same station, on several or all bands, on the same day is permitted.
2. Contact may be made on any recognised VK amateur band, in any legal mode.
3. SWLs may apply for the award after logging CHADARC Inc

members and the same points scores apply.

4. Applicants must send an extract from their log, detailing the dates and times UTC, frequency, mode, callsign, and name of contacts for verification.
5. The Awards Manager's decisions will be subject to CHADARC Inc committee approval. Applications should be sent to: The Awards Manager, C/o CHADARC Inc, PO Box 655, Coffs Harbour, NSW 2450 Australia.

\*PO Box 2175 Caulfield Junction 3161  
ar

## QSP News

### Thirtieth Anniversary

The WIA offers its congratulations to the Radio Amateur Society of Thailand on the occasion of its Thirtieth Anniversary. This will be recognised by a week of celebrations in Bangkok, culminating in a gala dinner on 18 November 1994.

**Remember to leave  
a three second  
break between  
overs when using  
a repeater.**

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## Club Corner

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### Shepparton & District Amateur Radio Club Inc Communications Day Draws Hundreds to Shepparton

The Shepparton & Districts Amateur Radio Club Communications Day held on 18 September proved popular.

The event was opened by the President of the Wireless Institute of Australia, Victorian Division, Jim Linton VK3PC. During his address Jim said that changes in licensing requirements will soon make it easier for people from computer backgrounds to enter the hobby of amateur radio.

Over two hundred amateurs and friends attended. The majority came from regional Victoria and southern New South Wales, but a number travelled from the Melbourne metropolitan area and one group came from South Australia.

The latest communications equipment was on display and the Club wishes to thank A J & J Coman Antennas, Daycom, Dick Smith Electronics, Icom Australia, Melbourne Satellites, Nally Towers, Strictly Ham and ZRV Electronics for making the day a commercial success. Thanks also to John VK3LM and Alf VK3CQE for the slow scan TV demo and Wayne VK3XQA for the ATV display. All remaining space was taken up by the amateur traders who seemed to purchase as much equipment as they sold. The local Vintage Radio Club displayed a number of beautifully restored wireless sets from days long gone. Jan VK3ALF and his catering team deserve a special thanks for the five star meal.

Peter VK3YF, event Publicity Officer for the Shepparton & District Radio Club, said that the Communications Day was one of the most successful organised by the club. This was due to the great support of wholesalers, retailers and traders involved. He said the event will be held again in September 1995 and planning was already under way.

The club hoped all who attended had an enjoyable day. Any positive or negative feedback will be welcomed at PO Box 692, Shepparton Vic 3630.

Peter O'Keefe  
Publicity Officer

### Summerland Amateur Radio Club Computer Expo

A Grand Summerland Computer Expo is being organised by the Summerland Amateur Radio Club. The Lismore City Hall, on 26 November from 9 am, is the place to be to have an enjoyable day.

Many commercial displays and demonstrations of the latest in computers and electronic equipment will be on show.

Bring and buy tables will be available for your pre-loved gear. Refreshments will be on sale. Amateur radio and packet radio stations will be set up and operating. And there will be lucky door prizes throughout the day.

Admission \$2 each, or \$4 per family (same as last time). For more information contact Steve VK2JSM (066) 62 6693; Ric VK2EJV (066) 89 5137; Graeme VK2GJ (066) 85 1336 or try our Packet BBS, VK2YDN-1 via VK2RPL-2 66 8900. The Club's postal address is, PO Box 524, Lismore NSW 2480.

Graeme Virtue VK2GJ  
Publicity Officer

### Old Timers Club

Would club members please note two corrections to previously published information:

1. *Amateur Radio* September 1994 page 35 re QSO Parties. The second Monday of March 1995 will be the 13th not the 6th.
2. Club Magazine "OTN" September 1994 issue page 27, ie inside back cover regarding 80 metre transmissions. The frequency for both the morning and evening transmissions will be 3.650 MHz +/- QRM. My fault both times. Sorry about that.

### Call Back Procedure all Frequencies

We are sure that many more members listen to the various transmissions than wait around to take part in the following call back. But, as you will readily understand, your broadcast team would be greatly encouraged to get a clearer picture of how many members they are really working for.

So, in future call back sessions, the operator will ask for those who have listened, but who want to get away, to just give their call sign and name for the record. The operator will then ask for members who wish to give reports or to make comments to call in.

We have been surprised at the relatively few members who have checked in on 80 metres, considering the deteriorating sun spot conditions, and so would appreciate more feedback from members on both the 80 metre transmissions.

### RAOTC Qualification

The VK5 WIA broadcast on 9 October 1994 quoted Old Timer membership qualifications which only apply in South Australia for luncheon meetings and the like. They do not apply to membership of the Radio Amateurs Old Timers Club, for which the qualification is to hold, or to have been qualified to hold, an amateur radio licence for 25 years or more; there is no qualification as to age except for honorary life membership for existing members reaching the age of 90.

Allan Doble VK3AMD  
ar

## WIA News

### VK Ham Visits Russian Space City

Steve Curtis VK3CAW, from Hamilton in Western Victoria, spent eight days in late September visiting Star City (Zvezdny Gorodok) in Russia where the MIR space station and launch vehicles are made and where MIR astronauts are trained.

"Only a handful of Westerners have ever seen the facilities and factories there," said Steve, who is a school teacher at Hamilton College, "It's still a closed area, one of the few remaining in Russia these days." It was an undreamt-of experience for Steve, and it

arose from a chance encounter last June when he was one of ten Australian educators selected to attend the Australian International Space School, held in Sydney that month. The Space School is concerned with introducing space technology to students, and looking at ways it can be incorporated into maths and physics lessons.

In 1992 Steve had used amateur radio with his Year 11 maths students to make contact with the MIR orbiting space station as a classroom activity to demonstrate

# Contests

P Nesbit VK3APN\* — Federal Contest Coordinator

## Contest Calendar Nov 94-Jan 95

Nov 12	ALARA Contest	
Nov 12/13	WAE RTTY DX Contest	(Jul 94)
Nov 12/13	OK-DX CW Contest	(Oct 94)
Nov 12/13	ARRL International EME Competition	(QST Sep 94)
Nov 19/20	IARU Region 1 160 m Contest	
Nov 19/20	All Austria CW Contest	
Nov 26/27	CQ World-Wide DX CW Contest	(Sep 94)
Dec 2/4	ARRL 160 m Contest	
Dec 10/11	ARRL 10 m Contest	
Dec 26-Jan 28	Ross Hull VHF/UHF Contest	
Dec 31	ARRL Straight Key Night	
Jan 1	ARRL Straight Key Night	
Jan 14/15	VHF/UHF Field Day	
Jan 14/15	HA DX CW Contest	
Jan 27/29	CQ WW 160 m DX Contest	

The usual spiel is held over this month due to pressure on space, so I will simply thank VK3DMS, VK3KWA, VK5OV, G6LX (*IARU Region 1 CSG Newsletter*), CQ, QST, and *Radio Communications*. Until next month, good contesting!

73,  
Peter VK3APN

## Contest Details

The following contest details are supplemented by the "General Rules & Definitions" published in April 1993 *Amateur Radio*.

### ALARA Contest (Phone/CW)

November 12, 0001-2359z Saturday  
Amateurs and SWLs worldwide are invited to enter this phone/CW contest,

which is sponsored by the Australian Ladies Amateur Radio Association, and which takes place on the second Saturday of November each year.

YLs work everyone, and OMs and Clubs work YLs only. Use 80-10 m only, and to make stations easier to locate, suggested frequencies are 28380-28410, 21380-21410, 21170-21200, 14250-14280, 7070-7100, & 3560-3590. Each station can be contacted twice per band, once on phone, and once on CW. No lists, nets or crossmode contacts please.

YLs should call "CQ ALARA CONTEST" or "CQ TEST ALARA", and OMs "CQ YL". ALARA members should send RS(T) + serial No starting at 001 + whether ALARA member + name. OMs

should send RS(T) + serial No + name. Club stations *must* identify as a club station each contact, and can not use personal call signs whilst operating as a Club member.

Score 5 points for each QSO with each ALARA member, 4 points for each QSO with a YL non-member, and 3 points for each OM or Club station QSO. On CW, if either or both operators is a Novice, score double points. SWLs score 5 points per ALARA member logged, and 4 points per YL non-member logged.

Logs should show date/time UTC, band, mode, Callsign worked, RS(T) & serial No sent and received, name of operator worked, status of the station worked (YL ALARA, YL non-member, OM, or Club), and QSO points. Attach a cover sheet showing full name, callsign, address, and final score, and send to Mrs Marilyn Syme VK3DMS, PO Box 91, Irymple, VIC 3498 Australia, to be received by 31 December.

The Florence McKenzie CW Trophy will be awarded to the highest scoring VK YL novice scoring at least 50 points. Because of its size and weight, the actual trophy will not be forwarded, and instead a certificate bearing a photo of the trophy will be sent to the winner. Trophies will also be awarded to the top scoring Australian and DX YLs. A comprehensive range of certificates will also be awarded.

### IARU Region 1 160 m CW Contest

November 19/20, 1600z Saturday to 0800z Sunday

This is actually a collection of 160 m contests sponsored by several amateur societies in Region 1 (Europe), arranged

in a practical way the mathematics of satellites. In 1993 he again used amateur radio contact with MIR to introduce concepts of gravity and satellite orbital physics to his Year 12 physics students. Steve's students were able to speak to MIR astronaut and amateur, Anatoly Solov'yev U6MIR.

Subsequently, Steve's curriculum material and innovative teaching strategy was published for other teachers to use.

Attending the International Space School course was the Vice Rector of the Siberian Aerospace Academy, Victor Filatov, who was so enthusiastic about Steve's work he arranged for his trip to Star City, 45 km North East of Moscow.

As it turned out, Steve was the

only ham among the seven other people from various countries who toured the MIR facilities. All had had deep involvement with the Russian space program, said Steve. Despite it being military-run and closed to the general population, Steve was permitted to take any photographs he wished.

He spent an evening with Anatoly U6MIR, with whom he'd had his first MIR-school linkup back in 1992. During a tour of the MIR training facilities, where there's a full-size working mock-up of the space station, Steve asked where the 2 m and 70 cm amateur antennas were located on the real spacecraft. The technicians there admitted they didn't know, but Anatoly U6MIR ventured that they

had used magnetic-base antennas. True ham ingenuity — in space!

As a result of his Star City trip, Steve has been asked to inaugurate a summer space school which would take 20 high school students to Star City each year, where they would work with Russian scientists and get hands-on experience with space science and technology. "It's a unique idea; nothing like this is offered by the US space program," he said.

The plan is to organise the first trip to Russia next August and Steve is seeking funding sources to support it. Meanwhile, he's still promoting the use of MIR and amateur radio in high school science and maths courses.

to coincide on the one weekend. Although mainly intended for QSOs between European stations, contacts with non-European stations are also allowed. As European activity is likely to be considerable, if conditions are right and with a degree of luck, it might even be possible to break through the QRM and work some Europeans from Australia on top band.

According to the draft rules, the exchange is RST + serial + location code (as the codes to be used by non-European stations are not specified, to keep it simple I suggest "VK" be used, as required for the US 160 m contests). Score 1 point per QSO, and multiply by the number of different location codes worked. Although the contest is jointly sponsored by several societies, OVSV seems to be the main driving force, therefore it is suggested that non-European logs be sent to "OE4BKU, HF Manager OVSV, Theresiengasse 11, A-1180 Vienna, Austria" (postmarked by 31 December).

Since the final rules have yet to be received, the precise details cannot be guaranteed, however at least it's a starting point. Hopefully things will have firmed up by next year's event.

### ARRL 160 m DX CW Contest

December 2/4, 2200z Friday to 1600z Sunday

The object in this contest is to work as many W/VE stations as possible. Categories are: Single Operator (QRP to 5 W, Low Power to 150 W, and High Power above 150 W O/P), and Multioperator single TX. Exchange RST (/MM and /AM stations should add ITU region 1, 2 or 3). W/VE will add ARRL/CRRL Section. Note that 1830-1850 is recommended for intercontinental QSOs.

Score 5 points per QSO. The multiplier is the total number of ARRL/CRRL sections plus VE8/VY1 worked (max 77), and the final score equals QSO points x multiplier. Include a dupe sheet for 200+QSOs. Logs on MS-DOS disk are welcome. Send logs postmarked no later than 30 days after the end of the contest to ARRL Contest Branch, 225 Main Street, Newington, Connecticut, CT 06111. Certificates will be awarded to the top scoring station in each category, in each DXCC country. Note that the use of non-amateur radio means of communication during the contest (eg telephone) is not allowed for the purpose of soliciting QSOs.

### ARRL 10 m Contest (CW & Phone)

December 10/11, 0000z Saturday to 2400z Sunday

This is another popular ARRL contest, which usually attracts a good field from

this part of the world. It runs on the second full weekend of December each year, and the object is to work as many stations as possible on 10 m phone, CW, or mixed. Maximum operating period is 36 hours, and listening time counts as operating time. Categories are as for the 160 m contest (see above). Send RS(T) plus serial number. W/VE will send RS(T) plus state or province. CW entrants should stay below 28.3 MHz, avoiding beacon frequencies. Note that 28.09-28.13 MHz has been set aside for slow speed code 10-13 wpm. Stations entering the mixed mode section may work stations once on CW and once on phone.

Score 2 points per phone QSO, 4 points per two-way CW QSO, and 8 points for CW QSOs with US novice or technician stations signing /N or /T (28.1-28.3 MHz only). Multipliers are the 50 US states plus District of Columbia, plus Canada NB NS (VE1), PEI (VE1/VY2), PQ (VE2), ON (VE3), MB (VE4), SK (VE5), AB (VE6), BC (VE7), NWT (VE8), YUK (VY1), NF (VO1), LAB (VO2), plus DXCC countries except US and Canada, plus ITU Regions (/MM & /AM QSOs only). Multipliers are counted separately on each mode. Final score is total QSO points x total multiplier. Include a dupe sheet for 500+ QSOs. Logs should be sent as for the 160m Contest (see above).

### Results of 1993 ARRL RTTY Roundup

(Call/Score/QSOs/Mult/Hrs)  
VK2RT (+op) 8,364 164 51 24  
(no other VK/P2 entries)

### Results of 1993 CQ WW RTTY DX Contest

(Call/Band/Score/QSOs/Pts/Zones/Countries/States & Provinces)  
VK6HD\* A 201,760 333 970 55 101 52  
VK2RT A 102,459 286 833 39 64 20  
VK3EBP\* 14 10,899 62 173 21 36 6  
VK8BE 14 720 15 45 8 8 0

### Results of 1994 Australasian Sprints

Presented by David, VK5OV.

Entries for the 9th Australasian Sprints totalled 13 CW and 29 phone. Unfortunately, no CW logs were received from Novice class entrants this year, even though three novice calls appeared in other entrant's logs. Two SWL phone entries were received.

Conditions were fairly good and there were few comments about the contest, although it appears that not everyone agreed with the rule change which removed the requirement to include RS(T) with the serial number. Perhaps this needs a rethink, and further correspondence would be most welcome.

The Adelaide Hills Amateur Radio Society and the VK5/8 Division of the WIA congratulate the overall winners, Russ Coleston VK4XA (CW) and John McRae VK5PO (phone, second year running), as well as the winners in the individual call areas.

The results are shown below, with certificate winners indicated by (\*) and the overall winners by (\*\*).

### CW

VK1JE*	9
VK2RJ*	24
VK2FUH	15
VK3EFO*	15
VK3FG	13
VK3OZ	9
VK4XA**	26
VK5PO*	25
VK5AFO	21
VK5AGX	13
VK5UE	7
VK6BN*	18
VK7HX*	6

### Phone:

VK1JE*	34
VK2LEE*	55
VK2FUH	31
VK3TI*	43
VK3CYL	40
VK3NFJ	25
VK4CRO*	52
VK4IL	39
VK5PO**	61
VK5KCX	52
VK5YX	52
VK5NOS	47
VK5BKM	41
VK5PSG	36
VK5UE	35
VK5ZQ	32
VK5RV	27
VK5TD	23
VK5AZS	12
VK6BN*	44
VK7HX*	16
VK7MSM*	16
ZL1BVK*	48
ZL1AGO	31
ZL1QT	17
ZL1CTC	12
ZL1VSE	8
ZL2AJB*	37
P29VH*	50
L40018*	27
ZL2329*	12

### Ross Hull Memorial VHF-UHF Contest 1994-1995

Presented by John, VK3KWA

Earlier this year I suggested two rule changes for the Ross Hull Contest, which were to extend the contest period, and to base scoring on the 100 best contacts made on each band. The idea behind

these changes was to shift the emphasis back to DX operation, and to remove the need to fill the log with large numbers of local to medium-range contacts. I am pleased to say that these proposals have been very well received, and am very hopeful that they will put more life back into the contest.

The "100 best" scoring will remove the need to risk laryngitis or divorce during the contest, and also enable a much larger number of active VHF operators to participate. In particular, it will make it much easier to build up a competitive log of DX contacts even if you do not live in an area with a large local VHF population.

The extended contest period will provide more DX opportunities by straddling more of the DX season, whilst also reducing the pressure and allowing contest activity to fit in with other personal commitments. It also provides enough time to head off on a portable expedition, to increase the opportunities for good QSOs.

I will reiterate my usual request to keep DX calling frequencies as clear as possible, and please send your log in even if you don't think it's a winning score. It certainly makes cross-checking easier, and the more logs listed in the results for this year's contest, the more activity next year. Besides, even modest entries can often win, depending on the section!

The 1995 VHF-UHF Field Day will occur on 14 to 15 January 1995, during the Ross Hull Contest period. This will provide an extra opportunity for DX contacts. Rules for the Field Day are similar to previous years, and will appear next month.

## Introduction

The WIA maintains a perpetual trophy in honour of the late Ross Hull and his pioneering achievements in the VHF-UHF field, especially the discovery and investigation of VHF tropospheric propagation. The name of each year's contest winner is engraved on the trophy, and he/she will receive an attractive wall plaque and certificate. Other certificates may also be awarded to top scorers in the various divisions of the contest. The contest is not confined to WIA members.

Duration: 0000z Monday 26 December 1994 to 2400z Saturday 28 January 1995 (ie 1100 EST on Monday 26 Dec to 1100 EST on Sunday 29 Jan).

Sections: (A) Single operator multiband; and (B) single operator single band. All entrants will be scored for both sections (A) and (B).

General: All amateur bands above 30 MHz may be used. One contact per station per band per UTC day.

Crossband, repeater and satellite contacts are not permitted. Contest exchanges should not be made on recognised DX calling frequencies. Entrants may operate from any location.

Exchange: RS or RST plus a three-digit serial number.

Scoring: Scores will be based on up to 100 contacts on each band, as nominated by the entrant. Each contact will be scored at one point per 100 km or part thereof (ie up to 99 km, 1 point; 100-199 km, 2 points; etc). On 6 metres only, the maximum number of points per contact is 10. The band multipliers are:

6m	2m	70cm	23cm	13cm	Higher
x1	x4	x7	x10	x13	x16

### Sample Scoring Table:

Band	6 m	2 m	70 cm	etc
	---	---	---	---
"100 best" score	xxxx	xxxx	xxxx	xxxx
Band Multiplier	x1	x4	x7	xX
	---	---	---	---
Total	xxxx + xxxx + xxxx + xxxx = xxxxx (GRAND TOTAL)			

Logs: To enable cross-checking, logs must show *all* contacts made during the full contest period. The contacts nominated for scoring purposes must be marked clearly in the log, or else listed in separate log extract sheets.

Separate logs for each band are welcome but not essential, but common logs *must* show QSO points in a separate column for each band.

Logs must show the following for each contact:

- Date and UTC time;
- Station location (if operating portable);
- Callsign of station worked, band and mode;
- Reports and serial numbers sent and received;
- Location or Maidenhead locator of station worked (if not QTHR);
- Estimated distance worked and points claimed.

The contest manager reserves the right to verify and correct distance estimates.

### Cover Sheet:

Logs must be supplied with a cover sheet showing:

- Operator's callsign, name and address;
- Station location (if different from the postal address);
- A scoring table set out as the example below;
- A signed declaration that the station has been operated in accordance with the rules and spirit of the contest.

### Deadline:

Post logs, to be received by Monday 20 February 1995, to WIA Ross Hull Contest

Manager, PO Box 3162, Caulfield Junction, VIC 3161. Early logs would be appreciated.

### Disqualification:

The normal rules apply. Entrants may be disqualified for violation of the contest rules (eg evidence that claimed contacts were not made), or if logs are incomplete or illegible. *Note that persistent use of DX calling frequencies for contest exchanges may lead to disqualification.* Entries are accepted on the understanding that rulings of the contest manager are final.

### Awards:

The overall winner will be the top scorer in Section A. Awards will also be made

to the top scorers on each of the following bands: 6 m, 2 m, 70 cm, 23 cm, 13 cm, microwave (all bands above 3 GHz).

### Notes on Calculating Distances:

Absolute accuracy is not needed. All you need to know is whether the distance is above or below the nearest multiple of 100 km. An easy method is to use a compass to draw 100 km circles around your location on a map. Better estimates can be made from 6 digit Maidenhead locators, using simple computer programs such as those published in December 1990 and January 1991 *Amateur Radio*. An accurate and fully error-trapped program is available, which also calculates bearings and converts between lat/long and Maidenhead locators, from John Martin VK3KWA (QTHR), upon receipt of a DOS disk (any format) in a mailing box, together with return postage.

\*PO Box 2175, Caulfield Junction, VIC 3161  
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# Divisional Notes

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## VK6 Notes

Peter Parker VK6BWI

### NCRG HamFest 1994

WA's biggest amateur radio event is on Sunday (November 6). It will be held at the Les Hansman Community Centre, 246 Walter Road, Morley, starting at 10.00 am. Bring your unwanted junk to the NCRG stall, to be sold on your behalf. Also, remember to take your homebrew projects along to be entered in the Homebrew Equipment Competition. In addition to a swapmeet-style car boot sale, you can visit stalls run by commercial vendors and radio clubs. There is no need to bring your lunch; food and drinks will be available on-site.

### Free Intruder Watch Information Package Available

Help rid our exclusive amateur bands of illegal transmissions — become an Intruder Watcher. It's easy to write out an Intruder Watch report, and standard forms are available. If you're unsure as to what constitutes an intruder, contact the VK6 Intruder Watch Co-ordinator, Graham Rogers VK6RO at 22 Grace Street, Ferndale WA 6148, or phone (09) 451 3561 after hours for a free information package. Examples of intruders are found almost daily on 7.098 and 14.058 MHz, and that's just the tip of the iceberg. Of special concern at the moment is the CB-type activity from Indonesia on the low end of 40 metres, occupying spectrum which we amateurs should be using. Intruder Watch has had some successes recently, but your support is required for this to continue.

### Repeater News

If you own a VHF handheld transceiver, have you ever thought how useless it would be without the fine network of repeaters we VK6s enjoy? Without a repeater, you could normally only communicate over a few kilometres, and even then signals would usually be poor. For a small fraction of what you paid for your 2 m transceiver, membership of the WA Repeater Group funds the maintenance of the repeaters you use. Your support will help the repeater network grow and enable you to get the most out of your VHF/UHF equipment.

WARG membership is just \$15.00 annually. Join at this month's meeting on Sunday 20th November at the Hillview Scout Hall, on the corner of Welshpool

Road and Gibbs Street, East Cannington. The meeting starts at 1.30 pm. Those unable to get to the meeting can post their cheque to Christine Bastin VK6ZLZ, WARG Membership Secretary, PO Box 425, Cannington WA 6107.

New members receive a handy state-wide repeater list, calendar and newsletter immediately on joining.

### Divisional Broadcast Officer Wants News From You

If your radio club has done something new recently, or you've worked some rare DX, or set a new record on 10 GHz, or have any technical hints you wish to pass on to fellow amateurs, Broadcast Officer Tony VK6TS would like to hear from you. Phone (09) 244 2453 or post your news item to 23 Sabina Street, Woodlands WA 6018. If you have packet facilities, send your message to VK6TS @ VK6BBS.

### "QRM" — News from the Tasmanian Division

Robin Harwood VK7RH

There have been two proposals for additional 2 metre repeaters within the State to service poor coverage areas. One has been submitted by the Central Highlands Amateur Radio Club (CHARC) for a repeater to be based at Arthur Lakes to serve the treacherous Lake and Highland regions. CHARC is a club that meets weekly on-air on Thursday nights at 1930 hours local time on 3.585 MHz.

Their Annual General Meeting was held on that frequency on 29 September. It sponsors the "Tassie Trout Award", which is only available on that net. One of the activities on the weekly net is a trivia quiz. But, to return to their proposal for a two metre repeater. There have been a number of instances where emergencies have arisen and communications have been difficult to non-existent on currently available repeaters, hence their proposal for a repeater which would be available for WICEN work.

The latest proposal has been announced by the "North Eastern Repeater Group", which has just been formed. Their plans are for a 2 metre repeater to be based at Tower Hill, near Fingal, to service the north east and have tone access to the 70 cm repeater VK7RAD at Mt Arthur. The Tower Hill site is not that far away from the existing Snow Hill site of VK7REC on 146.9 MHz and there seems to be an overlap in service areas. Whether the region needs two

operational repeaters on the same band I'm sure will be discussed when the proposals are duly forwarded to the FTAC co-ordinator and then to Divisional Council.

September saw the death of two prominent VK7 operators. Max Ives VK7MX passed away in late August in Launceston. Max was a well-known 80 metre operator in the sixties and seventies and was often heard on AM working many ZLs. He was one of the first amateurs I heard, and eventually met, when I started out as an SWL. He worked in a grain merchant store in Devonport. In the 80s he moved to Cressy and then to Launceston, when his wife's health began to fail. In his later years, Max operated on the Launceston two metre repeater but wasn't able to successfully operate on HF from his restricted location.

Owen Langham VK7OL was also based at Devonport and was a regular on the daily "Sewing Circle Net" at 1700 hours local on 3.590 MHz. He was rushed to hospital and died after a heart attack. Many north western amateurs attended his funeral.

Incidentally, the annual "Sewing Circle Net" barbecue will be on again at "Rosybanyon", the QTH of Bill Donald VK7AAW. It is scheduled for 20 November. For further details check in on the "Sewing Circle".

Congratulations to Kevin Riley VK7NKR on passing his AOC. In fact, he somewhat stole the show when he announced he was now VK7AKR at the September Northern Branch meeting. The meeting, which was held at the Australian Maritime College at Newnham, was a follow-up to the August lecture by Gary Hammond VK7KYZ on GMDSS, which included a practical demonstration. Thanks Gary for arranging the tour of the AMC. It certainly was an eye-opener to me to notice the changes there since we used to meet there in the 80s.

Meetings for the month of November are as follows:

Southern Branch: 2 November at 2000 hours at the Domain Activity Centre — VK7OTC.

Northwestern Branch: 8 November at 1945 hours Penguin High School.

Northern Branch: 9 November at 1930 hours Launceston Institute of TAFE Block "C" Level C Room 17.

Divisional Council: 19 November at 1100 hours at the Domain Centre.

That is all for this month. Don't forget if you have any news for inclusion in "QRM", you can forward it to me at VK7RH@VK7BBS or to my QTHR.

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# How's DX

Stephen Pall VK2PS\*

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As we are approaching summer and the sun is now on the southern side of the Equator, there is a slight improvement on the bands.

Late September and early in October, fortunately during the VK ZL Oceania SSB Contest, there were some good long distance openings to the rest of the world. Around 1200 UTC, Europe could be reached across the North Pole (DL, OH, G, ON, SP, YL, HL, and JA) and around 0400 — 0600 UTC, stations in 9K2, UA, UT, US, CP, LZ, 4L4, I, KH3, OK, and HA were worked.

The 15 metre band was open to Japan, Eastern Siberia and the West Coast of the USA around 2400 UTC and even 10 metres produced a few Japanese and USA contacts. Despite all this, the 10 cm solar flux moved between 71 and 74 during the whole of the previous week. Observation of the sun is a vital component in forecasting disturbances to the magnetic field and the ionosphere which, of course, affects the propagation in the HF spectrum.

In eastern Australia such observations are made at the IPS Culgoora solar observatory. This is located 25 km west of Narrabri in the north-west of NSW. Opened in 1978, the observatory operates from sunrise to sunset every day of the year. Continuous optical and radio observations of the sun are conducted. Regular reports of solar activity are issued to IPS in Sydney and to similar agencies world-wide.

The solar observatory's antenna farm would make a VHF enthusiast green with envy. The solar radio bursts are received by three antennas and fed into four spectrum analysers. A frequency range from 18 MHz to 1.8 GHz is swept through every three seconds, displayed on a computer and archived. A single antenna provides information about solar radio bursts at three discrete frequencies, 1.5 GHz, 2.7 GHz and 5.0 GHz. A simple whip antenna is used to monitor the quality of signals from distant shortwave transmitters to aid in the identification of disturbances in the ionosphere.

## South Georgia DXpedition — VP8

South Georgia Island group, 53° 56' S, 34° 45' W, is located 1350 km east-south-east of the Falkland Islands and is administered by the Governor of the Falkland Islands. South Georgia was the centre of whaling operations dating back

to the 1800s and by 1910 the whaling station Grytviken, located on the north coast, was producing 55,000 barrels of oil and had the distinction of having caught, in 1912, the largest whale ever, a 112 foot long blue whale which weighed over 100 tons. Some 500 men were employed in the catching season but, during the southern winter, the number of whalers was reduced to 30 to 100 men.

During the two World Wars the whaling company provided essential supplies to the British Government, particularly whale oil for edible fats and glycerin for explosives. Whaling ended at Grytviken in 1965 because the whale stocks had become fished out.

Al Hernandez WA3YVN (of VP8SSI fame) and WA4VQD have founded the SGI Expeditions Group. Al will lead a DXpedition to this much needed island in early January 1995 for a three weeks operation. The DX activity will be conducted from the now derelict Grytvinken whaling station. All the equipment, weighing 2500 lbs (four complete HF stations), was put aboard the research vessel Abel-J in Fairhaven, Massachusetts, USA during June. This is the same ship that transported the VP8SSI team to the South Sandwich Islands in 1992.

Al has permission to land at Grytvinken and obtained a special call for the expedition. The team will operate on all open bands with emphasis given to CW and low band operation. Frequencies to be used are as follows: CW — 1826, 3522, 7022, 10104, 14024, 18074, 21024, 24894 and 28024 kHz. SSB — 1845, (3785), 7065, 14195, 18145, 21295, 24945, and 28475 kHz. RTTY — 3580, 7040, 14080,

21080 and 28080 kHz. QSL via W4FRU, INDEXA, PO Box 5127, Suffolk, VA 23435, USA.

The group needs still one or two high calibre CW operators. The group is receiving good financial support from the DX community but the budget is \$50,000 plus, and much more support is needed with the cost of the charter vessel, generators, food, travel, tents, etc. If you can help, please do so. Contributions may be sent to SGI DXpeditions, PO Box 2235, Melbourne, FL 32902, USA.

## Oceanic Wanderings

In the absence of a major DXpedition, there is plenty of activity by smaller amateur groups and individuals travelling to various islands in the Indian and Pacific Oceans and the favourite area of individual DXers the Caribbean.

A Japanese group, sponsored by the Japanese "Five Nine" magazine, is on an island-hopping trip in the western part of the Indian Ocean to celebrate ten years of publication of the Magazine. The group consists of Mako JA10EM, Setsu JL1UXH, Ted JA1IDY, Chao JA1ETQ, and Toshi JA1ELY. Their tentative schedule is as follows:

- Mauritius Island 3B8, 14-22 Oct by JA10EM.
- Brandon Island 3B6, 23-24 Oct by JA1ELY, JA1ETQ, JA1IDY and JL1UXH.
- Comoros D68, 24-31 Oct by JA1ELY, JA1ETQ, JA1IDY and JL1UXH.
- Reunion FR, 25-30 Oct by JA10EM,
- Mayotte FH, 27-28 Oct by JA1ELY, JA1ETQ, JA1IDY and JL1UXH.
- Madagascar 5R8, 1-20 Nov by JA10EM.

Licences are in hand but callsigns are not yet known except 5R8HHP. Activity will be mainly on the low bands, WARC bands, CW, SSB and RTTY. No QSL manager has been announced yet.

Members of the Southwest Ohio DX Association will be active from St Lucia



**The Malus Island DXpedition VK6ISL shack. Mike VK6BHY pays a surprise helicopter visit.**

*(Photographs by VK6LC and VK6BHY).*

J6, for two weeks from 22 Oct to 5 November. A special contest station will operate during the CQ WWDX SSB Contest from 29-30 Oct. QSL manager for the Contest station is N9AG. Outside the contest individual callsigns and separate QSL routes will be used.

Another group of US amateurs will operate from St Marten from 25 Oct to 1 November. During the contest they will activate the callsign PJ8Z. Operators will sign PJ7I before and after the contest. QSL to KA9FOX.

Turks and Caicos Islands VP5 will also be activated around that time by Tom K2TD, Jack N2VW and Mike WB2YOF using a re-issued callsign, VP5R. QSL VP5/call via home calls, and VP5R via N2VW.

Dieter DL3KDV will be on St Lucia J6 from 9-17 Nov, on St Vincent J8 from 18 Nov to 1 Dec, and on Dominica J7 from 2-12 December.

### DXAC News

The ARRL, in its DX Bulletin No 52 issued on 24 August, has announced the DXAC (DX Advisory Committee) vote results.

- The Committee rejected the proposed revision or alteration to Section 1.10 of the DXCC Rules which states that all contacts must be made by the same station licensee. However, contacts made under different callsigns are allowed provided the licensee was the same person and the contacts were made from the same DXCC country.
- The DXAC rejected a petition for a new DXCC country status for the Turkish Republic of Northern Cyprus.
- The advisory committee has ruled also about a minimum size for new DXCC countries. The DXCC recommendation says a DXCC country shall be a natural landmass of a size adequate to support a reasonable amateur radio operation. In the case of islands, the surface shall be dry at all times during high tide, and the physical characteristics may not be changed or modified. This includes the use of man-made operating structures. Each case will be judged on its own merits. Implicit in the recommendation is that operation from an island must take place from the surface of that island. The minimum size recommendation now goes to the Awards Committee for action.

\* North Korea — DXCC decision. A DXCC news release dated 29 August says the following:

*In response to the continued questions concerning the P5RS7 operation of December 1992-January 1993 the*



**The Malus Island DXpeditioners (l to r) John VK4JWG, Dave VK6DLB and Mal VK6LC.**  
(Photographs by VK6LC and VK6BHY).

*following is provided. While reviewing the original documentation and photographs, DXCC staff noted some apparent discrepancies. DXCC staff then requested some additional information. After more than one year, additional information was received. During that year the ongoing investigation into the paperwork and photographs suggested that the operation may have taken place from another location. Documentation in support of P5RS7 accreditation did not establish that operating permission had been granted by appropriate authorities, nor did it establish that the operation took place from the territory of North Korea. After reviewing all available information; there will be no DXCC credit for the P5RS7 operation and the file has been closed. This determination is based upon Section 1.7 and 12 of the DXCC rules.*

Incidentally, Romeo 3W3RR visited the Huntsville, Alabama Hamfest during the weekend of 21 August but was silent about the P5RS7 and 5A0RR activity. He was at the DX dinner and spent a lot of time chatting with DXers all weekend. According to Tim KJ4VH, he did tell at least one DXer that he plans to take a couple of years off from DXpeditioning.

### Principality of Seborga

It looks like the tale of this "independent country" will never end. As time goes by, it appears more and more to be an effective tourist publicity stunt for this north-western Italian township near the French border between the frontier railway station of Ventimiglia and the next station to the east, Bordighera. Two and a half years ago, when I was travelling on the train between the two localities, I had not the faintest idea that I was passing near a "future DX" country, otherwise I would have interrupted my journey to visit the place. Incidentally, the countryside there was not very appealing.

Here now is the latest news (gossip?) about this "principality". You will have to be the judge of the validity of all these claims, but please suppress your QSLing desires for the time being. To find Seborga on the map you look at the coordinates 43° 49' N and 07° 38' E. My Macquarie Illustrated World Atlas failed to produce a locality with that name. It is possible that Paul 11RBJ will present more details, information, and slides about Seborga at the RSGB 1994 International HF and IOTA Convention to be held from 7 to 9 October. The "principality" celebrated its foundation day on 28 August and a number of foreign amateurs were given permission to operate with their home call followed by an additional suffix of /IP. It is now also known that Paul 11RBJ is the only person who can issue an operating licence in Seborga on behalf of the "Prince of Seborga", Georgio 1, who told his people that the principality is going to be recognised world-wide "soon".

The new rules of the principality are ready and the population of about 300 will be able to vote on it soon. The Knights of the Crown (10) were appointed and Paul 11RBJ was among them. A decision from the International court at The Hague on the matter of full independence from Italy is expected soon. Seborga claims that this independence was never lost despite the Treaty of 1748 when the Principality remained free of the influence of Genoa and later of that of Savoia, the Kings of Italy and from the Italian Republic. Paul says that he will take the necessary documentation direct to the ARRL in September for the DXCC status of Seborga.

Contrast all the above "good news" with the "bad news" as published in issue 755 of "The DX Bulletin" in a short article penned by Mario Ambrosi 12MQP. Mario

writes "The Kingdom of Seborga exists only in the mind of someone that suffers the high temperature, and this year in Italy it was very hot during August. Seborga people pay taxes to Italy, they have a Mayor that is part of the Italian state, they have their Italian police, they use Italian stamps and Italian money, they have a normal post office like every small village in Italy. There is nothing like a Kingdom of Seborga". Mario further says that "Paul 11RBJ, some years ago, declared that he went to 701 on a DXpedition. Later the 701 Telecommunication administration said that they did not authorise the proposed activity and that he (Paul) did not go to 701 at all. This was published in the ARI (Associazione Radiotecnica Italiana) magazine. 11RBJ is not a member of that association anymore", concludes Mario in his unfavourable comment on Paul, who apparently plays an important part in the affairs of Seborga. Just stay tuned, I will keep you posted.

### Future DX Activity

- Gus 9Q5TE has returned to Zaire and is active again. QSL to SM0BJF.
- JT1CS is active on 20 metre CW. QSL to Bat Erdene, Box 125, Ulan Bator 20, Mongolia.
- Kab 8J1RL was reported to be active on 20 metre CW from Antarctica.
- John GM0FQV will be in Ghana for the next couple of years. He is now using the call 9G1JB. QSL to G4XTA.
- Phillippe F5PHW will be back in Djibouti from the end of October to 15 December. He will try to regain his former call J28BS, under which he operated two years ago. Most of his activity will be on CW on 10 to 80 metres, including 30 metres. QSL to F5PHW via the Bureau or direct to Phillippe Berger, 24 Lot Labracat, 30800 St Gilles, France.
- Ernesto HR1ERL will be signing HQ1T until the end of November and he will be active on several nets. QSL via HR1FC.
- Paul WF5T will be active from Uganda as 5X1XT during November on 80 to 10 metres. QSL to his callbook address.
- There is a possibility that John PA3CXC will be active during October and November from Angola.
- Laurent F5IXR will be active from Chad until Christmas. He hopes to use the call TT8XR.
- CT1CZT begins a two year tour of duty in Sao Tome S9 and hopes to be active soon with an S92 callsign. QSL to CT1ADP, Horacio Goncalves Torres, PO Box 2676, Lisbon 1117, Codex, Portugal.
- John G8XFT is going to the Falkland Islands to Mt Kent and will be active



**The North Island (IOTA OC-198) DXpeditioners (l to r) Mai VK6LC and John VK4JWG with a HF6V-X Butternut vertical antenna.**  
(Photograph by VK6LC.)

- with the callsign VP8CQJ from 18 October to 20 February 1995. He will operate on all HF bands on SSB, AMTOR and packet.
- Pierre F5NLL, who operated from Kergulen Island as FT5XJ, advised me that he returned to Kergulen around the middle of October and will be active until 15 December. After a Christmas holiday break in France he will be active again from January to March 1995. He had a computer problem with his log which has been solved and the first batch of 500 QSL cards has already been posted.
- Dick K2UFT will operate as ZF2SY on the low bands (40 and 80 metres), primarily on CW, from 19 to 23 November from 0300 to 0600 UTC and 1000 to 1400 UTC. QSL to his home call.
- Raph DL2FDK will be active as HS/DL2FDK from 9 December to 9 January 1995, on SSB, PACTOR and RTTY.

### Interesting QSOs and QSL Information

(Note: Contact made from Australia, E = East Coast, W = West Coast, M = the rest of the Continent.)

- ZC4JB — John — 14205 — SSB — 0627 — Aug (E). QSL to the ZC4 Bureau.
- TT8/F5IXR — Larry — 14200 — SSB — 2050 — Aug (E). QSL via F5MXH, Thierry Gauthier, 58 Rue de la Poste, F-42240, Marcilly en Vilette, France.
- D44AB — Daniel — 14215 — SSB — 2150 — Sep (E). QSL to Daniel Lima Tavares, POB 166, Praia, Cape Verde, Africa.
- 9G1MX — Shalom — 14227 — SSB — Sep (E). QSL via 4X4MS Shalom

Melzer, POB 445, Givatayim 53408, Israel.

- FM5DP — Victor — 14224 — SSB — 0652 — Sep (E). QSL to Victor D Louisy, Fonds La Haye Voie NX8, F-97233 Schoeicher France.
- 4L7C — Mero — 14307 — SSB — 0633 — Sep (E). QSL to The Manager, PO Box 97, Tbilisi, Georgia.
- H23W — 14176 — SSB — 0517 — Sep (E). QSL to 5B4WN, Marios Nicolau, POB 4834 Nicosia, Cyprus.
- 9A9OOPAX — Sam — 14199 — SSB — 0622 — Sep (E). QSL to HRS QSL Bureau, PO Box 564, Dalmatinska 12, HR-41000, Zagreb, Croatia.
- T30XP — Peter — 7083 — SSB — 0702 — Sep (E). QSL to Peter Dalton, PO Box 72, Bairiki, Tarawa, Republic of Kiribati.
- P39P — 14223 — SSB — 0506 — Sep (E). QSL to 5B4ES, English School Radio Club, Nicosia, Cyprus.
- LU4FM — Tony — 7067 — SSB — 0707 — Sep (E). QSL to Radio Club Rosario, Box 263, 2000 Rosario, SFE, Argentina.
- GU3EJL — Stan — 14227 — SSB — 2150 — Sep (E). QSL to Stan Green, PO Box 9, Chartridge, Valongis, Alderney, Guernsey, Channel Islands.

### From Here There and Everywhere

- The callsign 8N3ITU was used in connection with the ITU Conference in Kyoto, Japan. Contacts will be automatically acknowledged via the JARL QSL Bureau.
- From 1 September to 31 December stations in Belgium will be authorised to use the special prefix "OS" to celebrate the 50th anniversary of the liberation of Belgium.

- BV5Y is the first club station in Taiwan at the Headquarters of the Chinese Taipei Amateur Radio League (CTARL). QSL to their Bureau, PO Box 73, Taipei 100, Taiwan ROC.
- Colombian novices (HJ) are now allowed SSB privileges on 10 and 15 metres as well as 40, 80 and 160 metres.
- Pete VQ9TP is on seven bands doing a lot of CW, usually between the hours of 1230 and 1630 UTC. QSL to his home call N5TP.
- Apollo SV2ASPIA is now active on digital modes, RTTY, Amtor and PACKET. Equipment was donated by DK0EE, DF5SR and many others.
- Tom VR6TC has returned to Pitcairn Island after receiving medical treatment in New Zealand.
- If you worked David T30DW (formerly VK2GQL), send your card to David Olley, PO Box 66, Bairiki, Tarawa, Republic of Kiribati.
- Selim OE6EEG has decided that, as from 1 October, he will cease to be the QSL manager for the following stations: A71AL, HZ1MM, SU1AY, SU1ER, SU1RR, Y11DZ and 7Z1IS.
- When Mark Loveridge VK0ML was on Macquarie Island three years ago, he was the only scientific officer in his group. This left him little time for amateur radio. His callsign was constantly pirated. When he realised this, he QSLed every contact in his log via the Bureau. So, if you have not received your card via the Bureau by now, you obviously worked a pirate.
- The special event station VK2WAH, activated by the members of the Wahroonga Amateur Historical Radio

Association, was on the air for 24 hours on 22 September, celebrating the 76th anniversary of the first direct wireless message from Wales, United Kingdom to Wahroonga, Australia. A special QSL card will be posted in reply to all cards received. Send your SASE to The Manager, WAHRA, PO Box 600, Wahroonga, NSW, 2076.

- Graham VK6RO kindly sent me a photocopy of the cover of the August issue of CQ Ham Radio Magazine (Japanese edition). The photo shows a piece of rock big enough to accommodate four amateurs standing in water, holding on to a metal scaffolding about three metres high, on which there is a small metal platform accommodating one generator, a fold-up picnic table, and with Martii OH2BH/VR2BH sitting at the table in the operating position with a transceiver, and another DXpeditioner standing. There is a vertical antenna attached to one of the platform legs, whilst a PRC flag flutters in the wind. Yes, you have guessed right. It is the picture of BS7H, Scarborough Reef, which is just a pile of rocks.
- In reply to those who inquired about joining INDEXA (International DX Association Inc), send \$US15.00 for a yearly membership fee, together with your name, callsign and address to INDEXA, PO Box 607, Rock Hill, SC 29731, USA.
- If you worked XQ8ABF, he was Alex CE8ABF working from Tierra Del Fuego (IOTA SA-08). QSL to PO Box 28, Punta Arenas, Chile.
- Have you heard of the Young Operators' International Radio Club?

This Club intends to bring young hams and SWLs together through radio communications and a newsletter. For future information contact the club's secretary Lee Volante, G0MTN, 200 Longmore Road, Shirley, Solihull, West Midlands, B90 3EX, England.

- Since 1 September 1994, Brazilian amateurs are permitted to operate on the 30 metre band between 10138 and 10150 kHz.
- If you QSL direct to Nepal or to Iraq, do not include "green stamps" in your QSL requests, only IRCs.
- Are we in for a prefix callsign change? The Western Carolines of Palau (or Belau to others) gained full independence on 1 October. It will be interesting to see what will replace the KC6 prefix.
- There was some reconstructing of callsigns also in Slovakia. The OM3 and OM4 callsigns have now been derestricted. Do not be surprised to hear prefixes from OM1 to OM0 in the future.
- Is this a breakthrough? JA1UT, JROCGJ and G3NOM demonstrated amateur television in Yagon (formerly Rangoon), the capital city, to the Myanmar government authorities. The activity took place over two days in the early part of September. The callsign XY1HT was used, and contacts were made with seven countries on SSB and SSTV modes. The Government officials are studying the possibility of using amateur radio as part of a future government project.
- Hartmut 9X5HG (see *Amateur Radio* Aug 94 issue) was reported to be active. He was heard at 2000 UTC on 21 September working CW on 10103 kHz.

### QSLs Received

NH2K(3W op) — FW/AA6LF (3W AA6BB) — BV2BI (4W op) — EA6NB (4W op) — C53HG (3W W3HCW) — TU4EI (3W W3HCW) — TR8JH (3W W3HCW) — P29VH (2M VK4CRR) — 6W6JX (4W op) — EA8/WA1ECA (3W op) — C31HK (4W op).

### Thankyou

Many thanks to the contributors to this column. Your help is greatly appreciated. Special thanks to VK2KCP — VK2KFU — VK4AAR — VK4CRR — VK4MZ — VK4OD — VK5AHI — VK6RO — F5PHW — FT5XJ — WA3YVN and the following sources of information, *QRZ DX*, *The DX Bulletin*, *The DX News Sheet*, *The W6GO/K6HHD QSL Managers List* and *IPS Radio and Space Services*.

73 and Good DX.

\*PO Box 93, Dural, NSW 2158

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**Sea voyage to North Island. Mai VK8LC and members of the Jupiter family, Martin, Craigle, traditional landowner and skipper Alan and, in the background, daughter Stephanie.**

(Photograph by VK8LC).

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# FTAC Notes

John Martin VK3KWA, Chairman, Federal Technical Advisory Committee\*

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## 2.4 GHz Band Plan

Thanks to those individuals and groups who have taken the time to help with comments and information. Some very helpful suggestions have been received and further changes will be made. I have written to all those who responded to my original request for comments. The final version should not take much longer.

## 1.2 GHz Band Plan

Very few responses have been received so far, and any would be appreciated. We aim to please, as they say, but it is difficult when people do not make their views known.

Mr Ed Williams, Chief Engineer (Surveillance) of the Civil Aviation Authority, has advised that the remaining 1275 MHz radars should all be phased out by the end of this year. The Authority has no objection to amateurs operating in the 1270-1280 MHz band in areas where the radars have already closed (at the time of writing, Melbourne and Canberra only).

The letter from the CAA also stated: "The Authority notes the spirit of co-operation which has ensured that interference to these Air Traffic Control radars has been minimal and would like to commend the Wireless Institute of Australia for its self regulation and restraint. We would also like to wish your experimentation in this field of electronics continued success in the future."

## 80 Metre DX Window Again

In direct contrast to the above, earlier warnings about the band limits of the 80 metre DX window have been ignored and most stations are continuing to operate out of band.

RIB71 states that all emissions must be contained within the band limits, in this case 3795 to 3800 kHz. An LSB signal extends almost 3 kHz below the suppressed carrier, therefore the carrier frequency should be no lower than about 3798 kHz.

It is amazing that so many amateurs have either not read the rules or do not seem able to understand basic concepts such as the occupied bandwidth of an SSB signal and its relationship to the carrier frequency.

The WIA will make a submission for an extension of the window in the near future. It would be in everyone's best interests to prove that Australian amateurs are capable of abiding by the regulations.

## New ACT 70 cm Record

A contact between Chris Davis VK1DO, and Roger Bowman VK5NY, has broken the previous ACT record held by VK1DO and VK2DVZ. The contact between Chris and Roger was on 5/10/1993 and the new record distance is 951 km. Congratulations.

\*PO Box 2175, Caulfield Junction, VIC 3161  
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they had similar equipment but permanently mounted on a specially prepared telegraph operating table which was used throughout the year in the National Science and Technology Centre. Telecom Australia provided the telegraph lines and loaned us, from their historical collection at Collingwood, early Western Union piano style transmitters, original tape readers and transmitters of the day, plus keys and relays.

"These were on show at the venues, and were supplemented by quite a number of hand-type, as well as semi and fully automatic Morse keyers (bugs) owned by Morsecodian members. Three sets of eight posters, nicely produced by the Government Printing Office in Canberra, were at each venue. Five of the posters gave a brief, simple explanation of how a telegraph system worked. The sixth poster featured photographs and explanations of some of the equipment in use; the seventh featured a reproduction from the Victorian Colonial Gazette of 2 August, 1853 inviting tenders for the construction of the line between Melbourne and Williamstown; and the last poster was an enlarged copy of a South Australian Colonial Gazette Notice of April 1897 in which the Post Master General of South Australia (Sir Charles Todd of Overland Telegraph Line fame) issued instructions that the Morse alphabet and allied signals depicted on the poster, were to be learned by all Morse operators by the end of June 1897 and used on all circuits.

"This was the introduction to all Australian Colonies of the continental or International Morse which is used to this day. (Prior to this there were several codes operating in Australia, the principal one being the American Morse code that was used from the commencement of the first circuit between Washington DC and Baltimore on 24 May, 1844.)

"At 9 am on the first day the signals went out .. .. Melbourne calling Williamstown. The identical signals from the original American Morse Alphabet of 1844 which are, coincidentally, the very same as in the International Code used today. During the two days of operations over 700 telegraph messages were handled between the three venues for members of the public, without charge. The messages, once transmitted, were received by ear and transcribed on to old typewriters using specially printed telegraph forms and envelopes for the occasion. We endeavoured to make the forms look as authentic as those used back in the mid 1850s with reasonable success.

"Crowd participation was good in Victoria, and very well attended in

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# Pounding Brass

Stephen P Smith VK2SPS\*

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As a result of a letter received from Mr Allan Moore of the Sydney based Morsecodians Fraternity, the two part series on the history of the 8043-44 IC Chip will now appear in the December and January issues of *Pounding Brass*.

Allan Moore's letter was about the highly successful events which took place in early April of this year, the 140th Anniversary of the official opening of the first Telegraph Circuit in Australia. The following is an extract from that letter: "On 7 and 8 April, 1994 former telegraphists and Postal Clerks converged on the venues — Melbourne and

Williamstown in Victoria, and Canberra in the Australian Capital Territory — before 9 am on the first morning, ready to participate in the re-enactment. (The following evening, at the get-together reunion, the old operators and some family members numbered about 185.)

"The Melbourne GPO (owned by Australia Post) and the Williamstown Historical Museum were set up identically. Two beautifully restored sets of sounders, with keys, relays, and Cathedral galvanometers secured on special rosewood bases for the occasion, were at both circuits. In Canberra, 400 miles away,

Canberra. Canberra was manned by three former telegraphists, the balance of available Morsecodians living in the area having come to Melbourne. Participation by former Melbourne telegraphists, postmasters, postal clerks and other persons interested in Morse, was extremely good and dozens of former operators tried their hand at sending and receiving again. Amateur radio operators were well represented among the throng, as well as a dozen or so former Antarctic radio operators now holding ham tickets.

"At the conclusion of our two operating days, and after all the equipment was packed up, we attended the API/Telecom Building at 441 Lonsdale Street, Melbourne for our re-union function. The gathering attracted old operators from a number of Australian States, some of whom had not seen each other for nearly sixty years.

"We achieved the aims we had set. We enlisted and received generous support and help from our sponsors. We set up operational Morse links between the three venues with authentic, working telegraph equipment and exchanged traffic for two days. We used our old sending and receiving skills. We re-established the great enjoyment that Morse operators had for their former vocation, and our younger telegraph colleagues and friends who had not learned Morse, joined in with great gusto and enjoyed the camaraderie we all held for each other. And this was further cemented at the get-together on the evening of Friday, 8 April. Nearly fifty Melbourne operators joined the Morsecodians Fraternity on the night, and further members are very welcome.

"But, most importantly, we honoured Samuel Morse and like-minded inventors of the day, our own colleagues of yesteryear, and the difficulties they faced in the years to follow. In spite of these difficulties, Morse communications proliferated in the old Colonies and endured for 140 years. They spanned a continent not much smaller than the contiguous United States of America, and created a breed that will never exist in those numbers again. And finally, in 1872 with the opening of the Australian Overland Telegraph, one of the greatest construction efforts that Australia has known, we were able to speak to the world."

I would like to thank the President of the Sydney Morsecodian Fraternity, Gordon Hill, Allan Moore and committee members on a very successful event and one to be extremely proud of.

Who said telegraphy is dead?

*\*PO Box 361, Mona Vale NSW 2103  
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## An Old Timer Reflects....

*Des Greenham VK3CO continues to look back over 50 years of amateur radio operation.*

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The station I was in contact with suggested we shift frequency and "go to 14.147". This I did and there he was waiting for me, all so easy and so precise.

Upon reflection, I recalled the old days before the war (WW2) when we all used crystal locked transmitters. VFOs as we know them today were unheard of. We all had our favourite spot on the band set by our crystal. Perhaps if we were more affluent we might have had more than one crystal in our possession!! To change our spot on the band we would physically remove the crystal from its holder and replace it with another.

Of course, in those days, we always used two frequencies for a contact. We would call CQ on our spot and then announce that we would "tune the band". It was customary to always check on your own frequency first and then tune the rest of the band looking for an answer. It must also be realised that the transmitter was entirely separate from the receiver and usually was a very large and impressive unit. It was located on the floor of the shack and stood 6-8 feet tall and was adorned with meters and switches. Of course, it was home built. There was no alternative.

The transmitter was controlled by a

switch on the operating table which was arranged to place the receiver on standby, relay switch the antenna, and then switch on the high tension. It must be appreciated that the transmitter used valves and high voltage in the range of 1000-2000 volts DC. In those days the maximum power allowed was 50 watts DC input to the final valve. The output was up to you and depended on the efficiency of your equipment.

We had no SWR meters. These came a long time after the war. We obtained our impedance match by adjusting for maximum power output into the antenna and results proved how good a match we had achieved. This was all on AM (amplitude modulation) and we all took a great deal of pride in transmitting a good quality signal.

Today it is all so easy and efficient. We can go to the exact frequency, we have little or no control of our audio quality and it is all in a small black box on the operating table and costs a fortune!!!

*(Sadly, Des joined the Silent Keys early in October at the age of 72. He had supplied us with ten instalments for this column, which we will continue to publish until all are used. We are sure Des would have wanted it that way. Ed)* ar

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## Repeater Link

*Will McGhie VK6UU\**

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### FM 828 VHF Simple Tune Up

What follows is a simple tune up of an FM 828 VHF transceiver. It only relates to those parts of the radio that are required to re-tune the 828 from its commercial frequency to the 2 metre amateur band. It is not usually required to touch the IF line up as this does not change from its commercial use to amateur use. In a later article in Repeater Link I will discuss the complexities of lining up a FM receiver in detail.

### Receiver — TP1

TP1 is located on the receive board near TR2 and the large 10.7 MHz IF crystal filter. Place a Micro-amp meter between it and pin 9 (10 volts regulated). Tune C75 and C76 for maximum reading of about 65  $\mu$ A. These two capacitors tune the receive local oscillator multiplier. Failure to peak these tuned circuits indicates there is no local oscillator injection into the mixer. If so, there is no

point in going on as, with no local oscillator, the receiver will not work.

Next tune the four front end RF tuned circuits L1, L2, L3, and L4 for best quietening on a weak signal. If you do not have a signal generator then an off air signal, or the fifth harmonic from a 10 metre transmitter, may be used. Terminate the 10 metre transmitter into a dummy load and place an antenna wire from the FM 828 close to the dummy load. Adjust the 10 metre signal for a noisy signal and tune L1 to L4.

There is no "S" meter output on an FM 828 so sensitivity adjustment has to be done by ear for best quietening.

Finally, adjust the receive crystal netting to put the FM 828 on frequency. L7, L8 and L9 each adjust one of the crystal oscillators on frequency. If you have only one channel, and the crystal is in CH1, then adjust L7 for best audio.

Adjustment of the IF is usually not required. If you delve into the tweaking of the IF be warned that it is best left alone unless you know what you are doing.

One final point on the receiver. Be sure of the IF frequency before ordering crystals. The FM 828 has two versions of

IF, 10.7 and 10.8. Open the transceiver and look at the IF crystal filter to find out which version you have.

The receive crystal frequency = F-10.7 or 10.8, divided by 3. Most crystal suppliers only require the make, model, receive frequency and IF frequency, so there is no need to work out the actual crystal frequency. If you do not specify the IF then 10.7 may be assumed and, if you have a 10.8 IF, then your receiver will be 100 kHz low.

### Exciter — TP1

Place an SWR meter and 50 ohm dummy load on the antenna socket to monitor the transmitter power.

In transmit mode adjust L4 and L5 for maximum voltage at TP1 (about 2 volts). These two coils are the phase mod coils and pass the transmit crystal signal to the PPL IC, IC1. This is also where the transmit audio is applied to L4 and L5.

### Exciter — TP2

Adjust L8, the VCO frequency adjust, so that TP2 reads 5 volts. It is best to wind the slug to the top and then wind it in, watching TP2. This adjustment can be misleading at times as there may be two 5 volt points. The first, on winding the slug in, is not the correct one. Keep winding the slug in until another 5 volt point is reached. Usually, before the correct 5 volt point is reached, the VCO will lock and there will be RF power output. Once the VCO is locked to the crystal reference the Tx Red LED should come on when the PTT is operated.

There should now be some 2 metre signal on the required channel and there may be enough to register on the power meter. If not, wind L6, near L8, in and out looking for some power output on the power meter. L8 is broad and placing the slug in the middle should be near enough.

If there is still no output on the power meter, listen to the 2 metre signal on another transceiver to see if you can hear it. Adjustment of the PA is next. Without some power indication on the power meter this can be tricky. Slight adjustment of the tunable capacitors in the PA can be tried, probably increasing the C slightly on each one while watching the power meter. As soon as any indication is seen on the power meter then peak each tuning capacitor in the PA module.

As power modules are usually broad band and there should be some power output as soon as the VCO is locked, much of the above should not be needed. Peak L6 on the exciter board (broad).

"Net" the crystal reference coil for the correct transmit frequency, for each channel you have installed, L1, L2 and L3.

Transmit crystal frequency = F divided by 8.

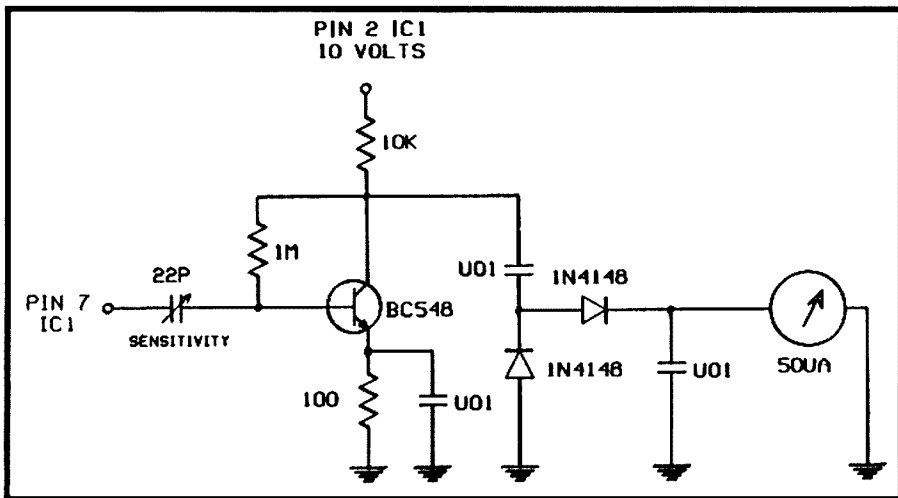


Fig 1 — FM 828 A Band S-Meter.

### FM 828 S-Meter

The only shortcoming of the FM 828 is the lack of an S-meter as a test point. When building and servicing repeaters, an S-meter is a valuable tool. Frustrated by this omission I set about looking at providing an S-meter output. This is not easy on the FM 828 due to the difficulty in finding the right point. The IF strip has two ICs, neither of which has a DC output proportional to RF input level. The input to IC1 is too low in level to operate an S-meter. The output of IC1 (pin 7) was the only point I found of any use. There is some limiting on stronger signals in IC1 above 5  $\mu$ V so the S-meter circuit shown is full scale at about 5  $\mu$ V.

IC2 limits almost any signal level so no RF variation could be found with changes in input level on any pin.

The resulting circuit (see Fig 1) is simple and provides a range of about half a  $\mu$ V to 5  $\mu$ V. If any one has a better circuit, or can improve on this one, please let me know.

### 29 MHz FM

As at the middle of September there is no word on allowing 29 MHz simplex gateways. Our local WIA president has made inquiries but, due to people being on holidays or not available at the time of the phone calls, no news. The situation is in the hands of the Federal WIA and, as time permits, is on the agenda for discussion.

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VK6UU @VK6BBS

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## Amateur Packet World

Grant Willis VK5ZWI\*

### Packet Basics

This month, following some correspondence to the Packet Doctor, I thought I would take a look at some very basic aspects of packet operation. Things like how to connect a TNC to a computer and radio, what software is available, and some of the aspects of optimising your packet station.

### TNC to Computer Connections

When operating packet radio, most people use either a TNC (Terminal Node Controller) or a modem and a software TNC emulation to generate the packets. The connections required are fairly simple and, while I don't attempt to present the

exact pin outs for every different type of radio/TNC/Computer combination, the following basics will give you a guide. Further information can normally be found in most TNC manuals and some of the packet publications.

Connecting a TNC to a computer and radio is relatively simple. In the case of the IBM-PC or PC-Clone computers the TNC talks to the computer using a serial cable which you can either purchase or make yourself. The main control lines in this cable are as shown in Table 1.

Each of these signals is either an input or an output, depending on whether it is on a computer terminal or the TNC/Modem.

These lines appear on different pins depending on the type of plug in use. The

**Table 1 — Serial cable connections**

		9-Pin	25-Pin
TX Data	Transmitted Data Signal Line	3	2
RX Data	Received Data Signal Line	2	3
Ground	Signal Ground	5	7
RTS	Ready To Send (Flow Control)	7	4
CTS	Clear to Send (Flow Control)	8	5
DSR	Data Set Ready	6	6
CD	Carrier Detect	1	8
DTR	Data Terminal Ready	4	20

serial ports on a TNC and computer can be either both 9 pin, both 25 pin or a mixture of both sizes. Table 1 shows the pin outs on the RS-232 connector. On this cable the TXD, RXD and Gound pins are fairly self explanatory. The RTS and CTS lines are used by the TNC and computer to control how much data is sent at any one time between the computer and TNC. This prevents any overflows and lost data which could occur if there was no control and a block of data larger than the TNC or computers buffer was sent. Using all of the pins results in a circuit diagram as shown in Fig 1 and Fig 2.

Connecting the TNC to the computer in this way gives you the capability of operating the serial connection in "hardware flow control" mode, which means that it is through hardware and signals on separate control wires that the flow control is achieved. To activate hardware flow control on your TNC you may need to enter a command similar to

"XFLOW OFF". Consult your TNC manual for more information.

Connections between TNCs and other types of computers may be similar if they use RS-232 type connections and serial ports. If your computer does not have an RS-232 port then you should read your TNC manual carefully as well as your computer's manual. The principles will possibly be similar. If you are still puzzled, try contacting your local radio club. There may be another local amateur who can help you.

If you are using a modem with a software TNC then the connections will be different and you should look at the documentation for the particular program you are using.

**TNC/Modem to Radio Connections**

Connecting your TNC or modem to a radio can take several forms also,

depending on what type of radio you are using. The four basic connections required are:

- Transmit Audio (Microphone Input);
- Receive Audio (Speaker Output);
- PTT (Push to Talk — keys the transmitter);
- and Ground.

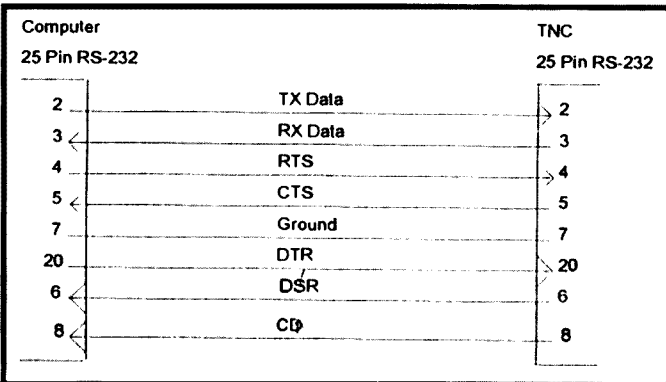
On most radios all four of these can be found on the microphone socket. In cases where this is not the case, the speaker audio can most likely be found on a jack at the rear of your set. You should connect your TNC/modem and radio as shown in Fig 3.

If you are intending to use a hand-held instead of a normal radio, the connections are a little different. Hand-helds often combine the PTT and Transmit Audio onto one input. In this case you need to wire your modem to your hand-held as shown in Fig 4.

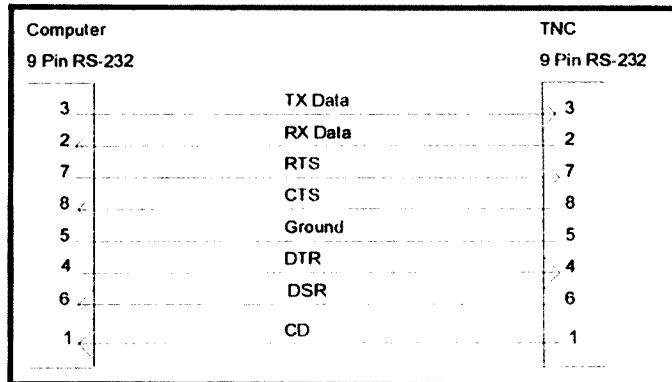
The values of the resistor and capacitor will depend on the impedance of your hand-held's input as well as the TNC or modem's output. A starting point is around 10 kΩ and 0.1 μF. The value of the resistor, in particular, may require some experimentation, depending on the particular hand-held you are using.

These are all just examples. Each radio and TNC is slightly different and you will need to consult the relevant handbooks for your particular equipment to find out what is required, but the basics will always be the same.

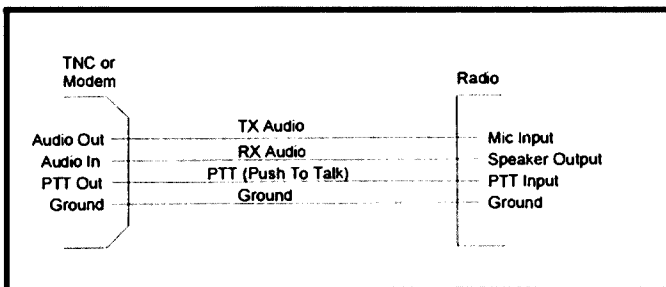
\*GPO Box 1234 Adelaide 5001 ar



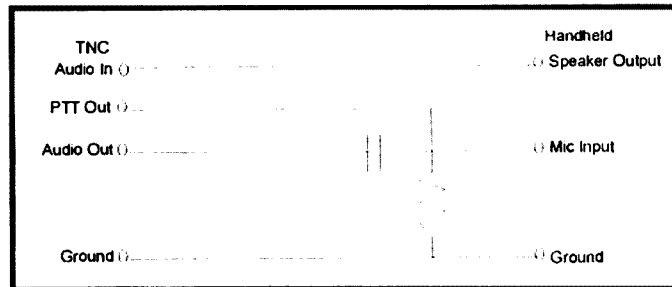
**Figure 1 — Computer to TNC — 25 pin connections.**



**Figure 2 — Computer to TNC — 9 pin connections.**



**Figure 3 — TNC/Modem to radio connections.**



**Figure 4 — TNC/Modem connections for a handheld.**



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# International Amateur Radio Union Monitoring Service (IARUMS) — Intruder Watch

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Gordon Loveday VK4KAL\*

My notes have been taken this month from the Region 3 Monitoring Service News.

The Ninth IARU Region 3 Conference in Singapore was an interesting exercise. One of the important resolutions to come out of it was the unanimous vote supporting "This Conference authorises the IARU MS Region 3 Co-ordinator to publicise both those countries which breach the Radio Regulations as well as those countries which take positive steps to cease such breaches".

The Indonesian problem seems to arise simply because of people not being aware of the regulations and sometimes because of different interpretations of same. Administration appears to be a major problem. There are many thousands of islands to cover. We have, however, "a man on the spot". This means we want specific reports to pass on. Our man in India has sent his first report in, so our problems there should be able to be minimised!

I invite any Short Wave Listener (SWL) to join our ranks. It is a good step to becoming a licensed operator. The Co-ordinator in India came from SWL ranks, and has only recently been licensed. I congratulate him on both counts.

I also need as much input as possible from VRQ and company, as we also have a person with "an ear and, possibly, voice" to the Government people in that country. I also am on the lookout for any reports on amateur beacons.

Now something to gladden your days. Owing to the poor conditions experienced above 20 metres, more pressure from commercial interests to encroach into our band space is becoming evident. Many amateur operators in our region have begun to act aggressively toward these unwanted intruders by directly challenging them or by using CW tones to interfere with their transmissions. In many instances these actions have resulted in the intruders leaving to find other frequencies. Indonesian based

intrusions are most frequently reported, followed by commercial fisherman speaking Japanese and Taiwanese. **IF YOU DISCOVER ANY OF THESE INTRUDERS OPERATING IN YOUR NORMAL AREA OF THE BAND, MAKE YOURSELF KNOWN AND CHALLENGE THEM. IF THEY CANNOT COMMUNICATE, THEY WILL PROBABLY LEAVE FOR ANOTHER FREQUENCY.**

Now the not so good news. The ITU International frequency list for Regions 1, 2 and 3 has 38,867 registrations for 3.500-3.700 MHz; 7,455 for 10.100-10.150 MHz; and 821 for 14.000...14.350 MHz. So, if this is not a good reason to become an active observer, I don't know what is? You will note these frequencies cover our amateur bands. They are open to commercial interests if we do not use them, make no mistake about that. Expect some more activity on 80 metres; the Japanese fisherfolk have been given permission to use it. It is a shared band, remember.

Primary frequencies on which observers should concentrate are 7-7.05 MHz, 7.090-7.095 MHz, 21.270 MHz, and intruders on 14.140 and 14.170 MHz using Taiwanese Chinese or Hokkien.

\*Federal Intruder Watch Co-Ordinator, Freepost No 4  
Rubyvale QLD 4702 or VK4KAL@VK4UN-1  
ar

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## Over to You — Members' Opinions

All letters from members will be considered for publication, but should be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.

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### Stolen Equipment

I wish to add my sympathy to those already received by Alan de Quincy, and the hope that somehow, some of his equipment will be recovered. His "lessons learned" (August *Amateur Radio*, page 41) provide valuable information for the rest of us.

In addition I would like to make a couple of suggestions:

1. Include equipment identification data in any letter reporting such loss, and provide these data to all members in the WIA by increasing the stolen equipment column to cover, say, all losses reported in the past two or three months.
2. Advise all members to add a personal identification to each item of their present equipment. This could be the driving licence number, prefixed by State letter, engraved as recommended by Neighbourhood Watch. This could make an item more difficult to sell, and could alert a buyer to the possibility of its being

recognised as stolen. If there were no market for stolen goods, then there would be little point in stealing them. Such an identification would also be recognised by police if discovered during investigations.

Thank you, Alan, for a most informative letter.

**Reg Davies VK5AAG**  
19 Tennyson Drive  
Beaumont SA 5066

### Long Distance Propagation on 160 Metres

A group of seven G Stations is currently engaged in investigating long distance propagation on 160 metres (see article published in *Radio Communication*, the RSGB journal, September 1994). During last season we had many SSB contacts with the leading ZL DXer, ZL2JR. He had a total of 102 QSOs with us, and various other European stations, by means of carefully arranged scheds at Grey Line times.

We believe that it may be similarly

possible to work into Australia on a semi regular basis when Grey Line times coincide. Therefore, I would be very greatly obliged if you could identify the leading VK 160 m DX specialists (if any) who regularly, or even occasionally, work into Europe on SSB, so that we may discuss experimental winter time scheds.

160 m DXing is, as you know, very much a specialist activity and it is unlikely that many persons are actively engaged in it. There are many inherent difficulties in getting reliable DX propagation.

I realise that it may take a week or two to make enquiries, but I will be greatly in your debt if you can come up with a list of leading 160 m DXers on SSB. Here's hoping you can help our DX net.

**Stuart E Green G3ISG**  
Oakwood Lodge  
Corston Fields  
Bath UK BA29EZ

*(Could anyone interested let us know, please, or even write direct to Stuart? Ed)*

ar

# Technical Correspondence

All technical correspondence from members will be considered for publication, but should be less than 300 words.

## L Matching Network Design

I wish to thank Lindsay Lawless for his thought provoking "technical point", in the February 1994 issue of *Amateur Radio*, relating to the design of an L matching network for matching the source (usually 50 ohm resistive coaxial cable) to a reactive load (usually a reactive wire or whip).

However, Lindsay's explanation about the significance of "power factor" and the requirement for this type of network to operate non reactive sources and loads is, I believe, "off the track"!

Power factor, as I understand it, is only a significant design consideration where power losses ( $I^2R$ ) in a network are significant and this usually occurs at low frequencies only (ie 50 Hz). Power losses in reactive elements of a network (at low frequencies) cause the phase angle, between the voltage across the reactive element to the current flowing through it, to differ from 90 degrees. Where these power losses are negligible (as for HF operation) this phase shift is extremely close to 90 degrees and almost all the energy stored in the reactive element during one half cycle is released to the load during the next. The average power dissipated in the reactive element(s) over any number of complete cycles of the applied voltage is very close to zero and the power factor is very close to 1. This should be the case for any practical network on the HF bands.

Therefore, whatever Lindsay's "supplementary network" is required to do, it certainly doesn't have to correct the power factor of the network to 1. It is already 1! Nor is it often required to deal with the transformation of a complex (reactive) impedance at the antenna feed point to the 50 ohm feed line. The L network is very "forgiving" and compensates for reactance (most of the time).

For instance, if  $R_2=50$  ohms, and  $R_1=1-jX$ , then the load is highly capacitive as is the case when the L match is used to match a short (length  $l < \lambda/4$ ) mobile vertical.

Here, the inductance required to cancel the capacitive reactance  $X$  is part of the  $L$  in the L network.

If  $L=L_a+L_m$ , where  $L_a$  is the inductance of the short vertical's loading coil required to resonate the antenna (cancel out its capacitive reactance) and  $L_m$  is the inductance of the L match necessary to give the correct step down

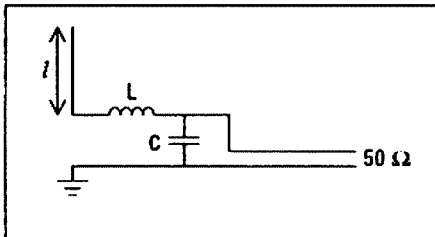


Fig 1

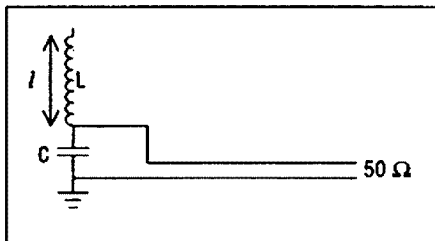


Fig 2

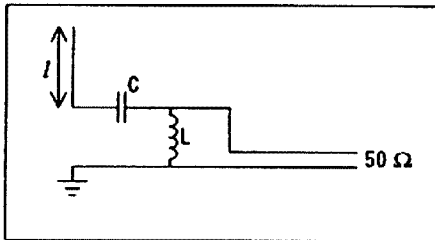


Fig 3

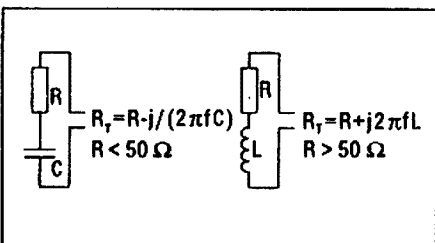


Fig 4

Where  $R=R_a+R_l$ ,  $R_a$  is the radiation resistance of the antenna,  $R_l$  its loss resistance and  $R_t$  is its terminal impedance.

ratio, then part or all of  $L_a$  may be absorbed into  $L_m$ . The L match can certainly handle capacitive reactive loads when in the "step down" mode (see Fig 1).

If  $L_m$  is absorbed into  $L_a$ , we now have the familiar mobile helical with the added advantage that the radiation that takes place from  $L_m$  of the L network now contributes to the antenna's radiation resistance, resulting in a possible increase in radiation efficiency (see Fig 2).

If, however,  $R_1=100+jX$ , then the load

is inductive ( $l > \lambda/4$  and  $l < \lambda/2$ ) and the positions of the inductor and capacitor in the L network must be interchanged.

The inductive reactance  $X$  is cancelled out by part of  $C$ , and the remaining part of  $C$  is used with  $L_m$  to provide the required impedance step up ratio (see Fig 3).

The L match can therefore deal with the frequently occurring situations (see Fig 4) without the use of an auxiliary inductor or capacitor.

Tim Hunt VK3IM  
20 Ravenscourt Crescent  
Mt Eliza VIC 3930

## Helical Aerials

The normal mode helical aerial is a useful aerial for mobile use and for limited space fixed stations. However, there is some damaging misinformation circulating about these aerials which might deter prospective purchasers and DIY constructors; that misinformation stems from an inadequate understanding of the subject and perhaps from failed DIY attempts at design and construction.

A resonant quarter wave or half wave helical is much shorter than a straight conductor version because the axial wave velocity along a helical is much less than along a straight conductor. The wave velocity is determined by the frequency, the helix diameter and the turns per unit length. Design does not, as many believe, require the length of wire to be a definite fraction of the wavelength.

The main design procedures are:

- Given the wavelength, the helix diameter and turns per unit length, calculate the helix length.
- Given the wavelength, the helix diameter and length, calculate the turns per unit length.

Design information and formula are contained in the following references:-

- ITT Reference Data for Radio Engineers, sixth edition 1977, pages 27.11 & 27.12.
- The VK3ANJ articles in *Amateur Radio*, May and July 1984.
- A Basic language programme by John Drew VK5DJ in *Amateur Radio*, Sept 1984.
- Pages 14.24 & 14.25 of the RSGB Communications Handbook, Vol 2, Fifth edition 1978.

I can supply photocopies of (2) and (3) on receipt of a request accompanied by a document size SAE.

The design is simple, but construction requires lots of patience and faith in the design procedures. Try a 10 metre prototype.

Lindsay Lawless VK3ANJ  
PO Box 760  
Lakes Entrance VIC 3909  
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# VHF/UHF — An Expanding World

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Eric Jamieson VK5LP\*

All times are UTC

I have been writing these columns for a long time. In fact, with this issue, I conclude 25 years of a very happy association with *Amateur Radio* magazine, its editors and staff. Also, the thousands of amateurs known and unknown to me throughout Australia and many parts of the world. The many faithful correspondents who have regularly informed me of happenings and contacts occurring to them or known to them. I always tried to stay with VHF/UHF communications and left the more specialised modes to those best suited to their writing. I refer here to satellite and digital communications, packet, repeaters, etc all of which have evolved with the passage of time. No one column can hope to cover everything so perhaps my choice was wise.

However, for this issue I did not plan to write in such a way that backpatting may follow. You, as faithful readers, deserve something more appropriate. I therefore plan to tell you in a few columns how writers like me seem to evolve! Space limitations will mean reduced coverage of events and many happenings will not be mentioned. The use of imperial measurements is deliberate as much occurred before the introduction of decimals in 1970. If you don't like it then use your calculator to make conversions!



Eric working on a large crossword.

My interest in radio (or wireless as it was then known) commenced at the age of six (1930) when my parents presented me with a small gramophone. It took little time to wear the records beyond recognition, but I was hooked on music and I soon displayed an interest in the family wireless safely sitting beyond my reach on the top of the food safe. I was

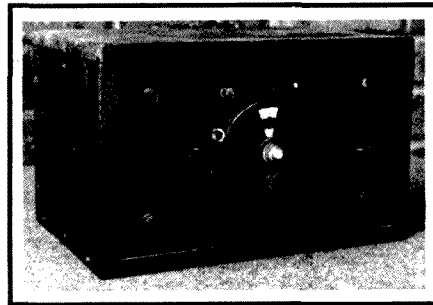
promptly told to leave it alone but remained fascinated that it, too, could produce music and speech with minimal effort on our part.

During one absence of my parents, I stood on a chair and reached the two dials on the 1923 model regenerative battery receiver — such fine details came to me later! Of course, I was caught in the act and, although admonished, my parents could see an emerging interest and bought me a book covering the basics of wireless. The sheer size of this book (which I called "the tome") and the trepidation it produced almost caused me to put it aside and join the other kids playing such exciting games as "touch" and "hide-and-seek."

However, I persevered and by age nine had built my first crystal set, using a jam jar as a coil former with the wire and its tapings held in place with sealing-wax. The case was made from a disused "kerosene tin" box. After much scraping of the catswhisker to the galena crystal the set received 5CL, the Adelaide National Station about 25 miles distant. My father insisted school homework rated a higher priority than the crystal set although I thought otherwise. Not hearing him approach, several times I suddenly found the headphones whisked from my ears when I was listening rather than writing. They were placed in a locked cupboard until released at the weekend.

Because my school marks were good and I continued to display an interest in wireless, for my tenth birthday Dad bought me a two-valve regenerative receiver. After consulting the tome I found it relatively easy to add another audio valve for speaker operation. Once this was done I wanted to convert the wireless to a short-wave set and over a period of time accomplished this using plug-in coils. Reasonable regeneration was possible to about 15 metres, careful pruning of the coils produced the commercial 13 metre band but the set refused to tune 10 metres. At that stage I knew little about the need for short leads as the frequencies were increased. An older relative, with greater knowledge than I, was very helpful when it came to the necessary fine-tuning to achieve useful results.

At thirteen I found myself tuning stations from all over the world. We had no power so all operation was via batteries. The absence of power also meant that the noise-floor of the receiver was extremely low and with an inverted-



Eric's first short-wave set. Many of the holes in the front panel were there when he acquired the set!

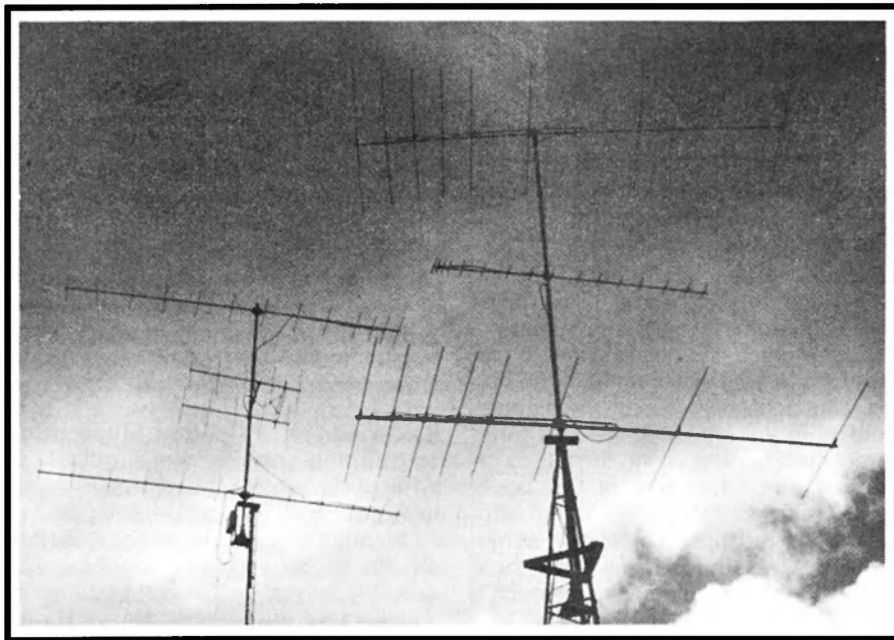
L antenna 100 feet long and 40 feet high astonishing results were achieved. Without realising it I found myself writing into an exercise book snippets of information retrieved from the air. Before the age of fourteen I was supplying *The Adelaide Advertiser* with half a column of short-wave listeners notes. These appeared in each Saturday's edition, on the front page in the top right-hand corner! Yes, real front page stuff.

There were times when my notes were edited beyond what I thought necessary and this annoyed me and I said so. However, it took me little time to realise that you didn't argue with the editor as he always had the last say. That still applies today! But it was a good learning experience and these were my first forays into wireless/radio journalism.

I continued these notes until I joined the RAAF in 1942. In the meantime I found the amateur bands down to 20 metres were fascinating and many QSL cards testify to that interest. At seventeen I took a great plunge and submitted an entry to a competition sponsored by *The Australasian Radio World*. My three page article covered many aspects of the operation of battery sets and it won a prize — here for the first time my name appeared in print in a magazine! A year later I won another prize for a description of a long-range AC receiver, prepared while studying wireless in the RAAF. On completion of my studies I had little opportunity to further my personal interests in wireless due to the demands of the War.

My first posting was to Nowra where I worked on Avro Anson aircraft. Here I was in my element as these rather elderly aircraft used R1083/T1084 battery operated radio equipment. However, it was not long before I was servicing modern aircraft utilising the AWA AT5/AR8 installations plus the excellent Marconi equipment of the R1155 type. Later I was posted to Bougainville where eventually I was transferred to transmitter station duties, a task I enjoyed.

On discharge in 1946 I quickly



**Eric's home antenna system at Forreston about 1980. Stacked 13 elements on two metres, 6 by 6 skeleton slot for FM, 8 over 8 for six metres with a 70 cm 16 element KLM between.**

constructed an elaborate battery-operated communications receiver (we had no power until 1950) in order to continue my short-wave listening. This receiver sported an RF stage, mixer and separate oscillator, two IF stages, detector and AGC with associated BFO for CW reception (and, later, to receive SSB), plus audio stages driving a pushpull type 19 valve giving two watts of audio to a twin-cone 12 inch Goodmans speaker resulting in plenty of "grunt." I made my own band-switching mechanism, the coils being wound on the newly available Trolitol low-loss formers. Frequency coverage was from the broadcast band to about 30 MHz. There were no circuits available for such a receiver so I drew my own.

During construction, for some time I considered the merits of adding a noise limiter, but there was no noise to limit. We were sufficiently removed from the road for ignition noise to be minimal, there was no power line noise, so it required only the addition of a simple top-cut tone control to reduce static crashes when necessary. To operate a really sensitive receiver in a noise free environment was a pleasure shared by few and the dream of most operators today. Little wonder that, in addition to short-wave stations, I received scores of broadcast band stations from the USA and Europe. In those days most Australian stations closed by 1430 and did not resume broadcasting until around 2100.

In 1947 I planned to sit for my AOC examination in an effort to become a radio

amateur. However, I was heavily involved in servicing radios for the district's residents and when in 1948 I began the manufacture of mantel radios, the AOC was placed on hold.

With the arrival of the power I bought an AR7 receiver and eventually sold the battery set to another enthusiast. I now regret not having kept it or at least photographing it. The AR7 was unusual in that it had seven coil boxes as against the normal six. The seventh box was called the FF box and covered from 25 to 45 MHz. Needless to say the original 6K8G converter was struggling to maintain oscillation above 35 MHz but an improvement resulted when it was replaced with an ECH35. This receiver responded well to modernising. Again, I wish I had kept it.

During the early 1950s a friend living about ten miles distant said we should construct one metre (288 MHz) equipment. When I said we had no licence he replied, "So what, nobody will hear us out here!" We constructed identical super-regenerative equipment and coupled this to a horizontal dipole antenna. The receiver used a 955 detector with a 6J5GT and 6V6GT for audio. The transmitter was a modulated oscillator and used a pair of 7193s and a 6V6GT modulator. All tuned circuits were lecher lines and had an efficiency which could not be bettered at the time.

Originally we had no idea of our operating frequency but believed we were close to 288 MHz. My friend eventually

constructed an absorption wavemeter which he had professionally calibrated. We were operating on 291 MHz so were within the limits of the amateur band. We had many contacts over the next few years and only ceased when my friend moved to another area. We knew of other pirates in the Adelaide area but decided against working them in order to keep our clandestine operations to ourselves.

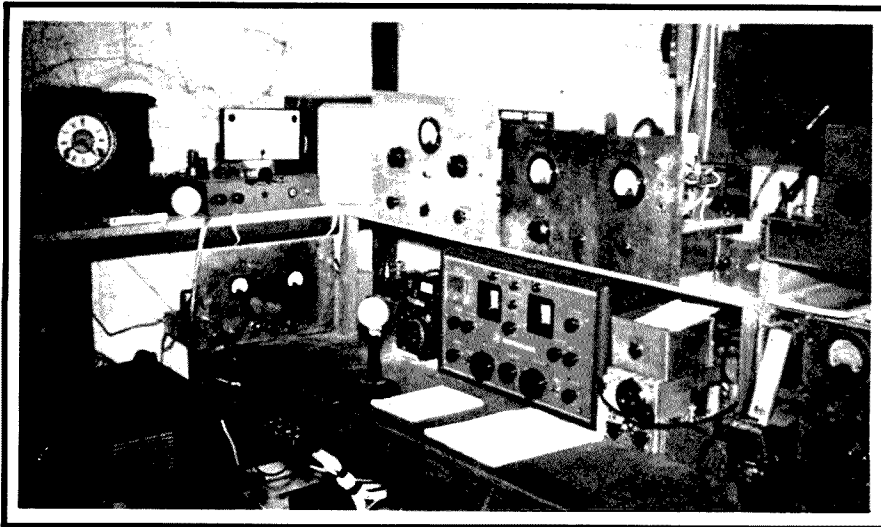
By now I was becoming increasingly interested in VHF operation. Solar Cycle 19 was approaching its peak so the trusty AR7 was coupled to a Kingsley KC6 50-54 MHz converter which I had bought about 1950. The tuning was accomplished by varying the inductance of the coils and the antenna input was 300 ohms. A 6AK5 RF stage and an ECH35 converter with an IF of 10.7 MHz made up the valve complement. The whole thing drifted like crazy! Considerable improvement was effected by voltage regulation and careful selection of ECH35s as some drifted more than others. A modified Channel 2 TV antenna with 300 ohm output was mounted on a 20 foot length of water pipe to receive the signals, the structure being turned by the "armstrong method."

This relatively inefficient set-up provided me with 50 MHz signals from JA, W, KH6, ZL, VK9 (New Guinea) and countless VKs. As is the case today, I found many signals were best received from 2200, especially during the 1958 peak of the cycle. I was learning quickly and was obviously hooked on VHF operation.

With some prodding from my friend Wally, now VK5TW, I obtained my LAOC in 1961 and Wally (VK5ZEH) and I (VK5ZEJ) proceeded to make 50 MHz contacts over our three mile path. Needless to say signals were strong but as we could operate almost four MHz apart it was possible to use duplex on the same band! Later, when we constructed two metre equipment, we found crossband operation was a breeze.

Under directions from his wife Colleen, Wally was restricted to a four element beam at about thirteen feet. Her comment was, "Keep that ghastly thing as low as possible, whatever will the neighbours think?" I faced no such restrictions and my six metre antenna was a William J Orr six element at 30 feet.

It was the era of home-brewing AM equipment, so my transmitter ran 100 watts from two 807s modulated by a pair of 807s. Later, two 809s allowed 100 watts of audio to be used. As the modulator featured carefully tailored high level filtering and clipping it was possible to use large amounts of audio without significant broadening of the transmitted signal — at least no one complained but they did



**The radio shack altar five years. From left — top shelf, six metre transmitter, two metre transmitter. Lower shelf — Command transmitter as VFO, Hammarlund HQ-150 receiver, 3-6 MHz Command receiver, two metre converter and, extreme right, part of AR7 receiver. To the left of the operating position is the 100 watt 809 modulator next to a Grundig tape recorder.**

comment on the ease with which the signal could be copied!

By the mid-1960s I was taking an interest in portable operation but it was rather a daunting task taking the base station equipment. On two occasions I joined with John VK5QZ and Des VK5ZCU (now VK5ZO) and operated from a good site near Palmer on the eastern perimeter of the Adelaide hills. We had a mass of equipment which filled a caravan. I provided six metres, John two metres and Des 70 cm, the latter using DET24 valves brought from England, his equipment fully occupying one end of the caravan. We did not do things by half measures as you can see from the print of the antenna systems.

With the passage of time portable equipment became smaller and was more easily transported to appropriate sites. In all I used more than 25 sites scattered throughout the State plus a couple of excursions across the border into VK3. I was either very keen or simply mad!

For some time I had supplied the VK5WI Sunday morning broadcast with VHF notes prepared on tape. This eventually was to become my "un-doing" as in 1969 Geoff Taylor VK5TY, the VK5 Federal Councillor, proffered (dobbled?) my name as a possible candidate to write the VHF notes for *Amateur Radio*. The rest is history. I accepted and remain here, so far not having had to withstand a coup or overthrow by a dictator but I suppose there is still time for that to occur. Nor have I so far been castigated by the Editor, probably remembering my earlier teenage thoughts that you are on losing ground when you start arguing with an editor!

Apart from writing for magazines, my career in journalism has enabled me to write books; ten have been written and published to date, most orientated towards local history. The greatest aid towards writing in all its forms has been the introduction of the computer and I have made good use of this facility.

Since 1985 I have suffered a progressive disease of the spinal column which has now confined me to a

wheelchair. At that time I considered ceasing writing but then came to terms with my affliction, and was grateful that I still had the use of my arms and hands and apparently my brain! My writing has been more prolific in affliction than previously. During the past few years there have been the odd occasions when there was no way my health would allow me to produce these columns. David VK5KK substituted for me a couple of times. Occasionally the task of preparing information to meet a printing schedule has been almost beyond me but inner strength has prevailed so, in 25 years, there have been very few missed occasions.

My disease will eventually destroy me but, in the meantime, I thank God that I have been spared to continue to be useful despite a handicap. I am grateful for a loving, caring wife who has supported me all the way and continues to do so. Life without her would be unbearable.

Closing with two thoughts for the month:

1. Those who make the worst use of their time most complain about its shortness, and
2. Kids have it tough. Where they used to walk to school and keep warm by running part of the way, now they stand and shiver waiting for the bus!

**73 from The Voice by the Lake.**

\*PO Box 169 Meningie SA 5264  
FAX: 085 751 531 Packet to VK5ZK for VK5LP  
ar

## Silent Keys

*Due to space demands obituaries should be no longer than 200 words.*

The WIA regrets to announce the recent passing of:-

S J (Jim)	LLOYD	VK1JL
A L	LANGFORD	VK2ASX
T (Tom)	CAHILL	VK2IY
L W P (Lewis)	SMITH	VK2LS
A R	GRAY	VK2RO
D A (Des)	GREENHAM	VK3CO
W H	FINCH	VK5AWF
O H (Owen)	LANGHAM	VK7OL

### Rear Admiral Surgeon Dr John (Jim) Lloyd OA VK1JL

"Jim" was made an Officer of the Order of Australia in 1978. He was born 15 June 1923 and passed away on 15 September 1994, aged 71.

He served in the British Army during World War II. He completed his medical training in Britain and was only 29 when he came to Australia and joined the RAN in May 1952. He was promoted to Rear Admiral Medical in May 1976 on

appointment as Director General Naval Health Services. He retired from the RAN in April 1981. During the early 1970s he served as a member of the Federal Executive of the WIA.

While on secondment to the Royal Navy, he became a member of the Royal Navy Amateur Radio Society (RNARS) and fostered its goodwill within Australia. As a founding member with his number 49 and callsign VK1JL, he became one of the first operators to use the RNARS callsign VK1RAN with his log entry on 21 June 1986.

His involvement with amateur radio in the Royal Australian Navy extends back to the days of the Australian carrier era. He often told of operating a 2 metre transceiver off the coast. He was one of the first amateurs to write a Defence Instruction covering amateur radio operations in the Royal Australian Navy. Somehow his instruction "Amateurs may

operate from ships at sea" was converted to "Amateurs may not operate from ships at sea" as the story goes.

The first opening ceremony of the Baden Powell Scout station VK1BP, was from Camp Cottermouth in 1974. It moved to Government House in 1976. He became an operator of VK1BP in 1979 and Chief Operator in 1982. Together with Dick Perryman, National Scout Secretary, and Peter Hughes, National JOTA co-ordinator, he saw to the yearly setting up of VK1BP on the lawns of Government House, in preparation for the opening speech by the Governor General, the Chief Scout and Chief Guide. His most famous quote "Never the same operations twice" was heeded by all.

He was famous for his linear amplifier that glowed in the darker surrounds of the pavilion as transmission occurred and caused many a modern Scout and Guide to wonder at the glow of the 813 valve plates. His bright conversation and patronage will be sorely missed at this year's Jamboree Of The Air. True to predictions, operations will be different this year.

He was also very active in the St John Ambulance Brigade and loved being involved in the rescue craft on race days at the Royal Canberra Yacht Club.

Our sympathy is extended to his wife, Mary, from all at the Royal Naval Amateur Radio Society, Scout Association and organisations associated with him during his active and fulfilling life.

Take care "Jim" and a final 73 from us all.

Dave Lyddieth VK1DL/VK1RAN,  
and Chief Operator VK1BP

### **Harry Vause VK2HV/VK4HV/VK1HV**

Harry Vause QX2125 of Balmain, Townsville, and ex Heard Island 1950 ANARE, died on 8 September of a heart attack, aged 81 years.

Harry was born at Brisbane on 17 January 1913, educated at Blackheath and Thornburgh College, Charters Towers, spending most of his youth at Townsville and playing Rugby for North Queensland as Rugby Premiers 1928 and Brisbane Premiers 1938/39.

When WW2 was declared he joined the Army, serving in the 6th Division Cavalry Commandos, as they later became known, and was twice wounded in North Africa fighting against the German/Italian armies led by General Rommel. He was in Tobruk during the siege, later returning to Australia to recover from the wounds.

Working as a waiter during the evening, he studied for a First Class Commercial Operators Certificate with AWA during the day. After passing the exams he went to

sea as a Radio Officer with the Merchant Navy for a number of years, circumnavigating the world seven times. He then joined the Department of Civil Aviation and was posted to various positions on the east coast of Australia.

He was selected in 1949 as Radio Officer for the Australian National Antarctic Research Expedition to Heard Island, travelling there on HMAS Labuan LST 3501. He performed his duties with excellence under the trying conditions caused by Auroras. He was well liked by all expedition members, and the three Radio men, Harry, John Gore VK1PG and myself (VK2YG) kept in constant contact for 45 years.

There could only be one Harry Vause and he will be sadly missed.

Leo McGarrigle VK2YG

### **Lewis Smith VK2LS (ex VK2AWS)**

Lewis Smith had been a wireless enthusiast ever since hearing the words "Hullo, this is the BBC calling" on his first home made radio.

Lewis was a very active radio amateur and became one of the founding members of the Oxley Region Amateur Radio Club. He received the Clubman of the Year Award in 1984 for his assistance and help and for club activities. He was awarded Life membership of the club in 1994. He received many amateur radio operating awards.

For many years he conducted a local network where local amateurs could chat on a weekly basis from the comfort of their home.

Lewis had the firm belief that a good amateur is a citizen of the world, that he promotes peace and friendship and that the barrier to distance and isolation no longer exists. He found amateur radio the ideal form of communication providing a common ground for people regardless of wealth or status, bringing together the greatest possible diversities of human endeavour in one common bond.

Lewis was always willing to assist and instruct anyone interested in radio or electronics. In the passing of Lewis Smith VK2LS the amateur fraternity has lost a good friend.

Peter Alexander VK2PA

### **Lindsay Stephens VK2ACO**

Lindsay Stephens VK2ACO passed away on 6 August at the age of 71 after a long illness. True to his nature, Lindsay fought a long hard battle against cancer before succumbing with dignity.

Lindsay had devoted his whole life to communications. He played his part in providing radio communications for the RAAF in Northern Australia and New

Guinea during the dark days of World War 2. The remainder of his working life was spent in the PMG and Telecom where he attained the position of Supervising Engineer North Coast (NSW) before his retirement. Lindsay tackled work, amateur radio and all of his life with enthusiasm and a burning passion for excellence. Nothing was ever done half heartedly. Retirement did not lessen Lindsay's drive to tackle new technical challenges. At the time of life when many people let their expertise stagnate, Lindsay kept his wealth of knowledge fresh and up to date.

Lindsay leaves behind his wife Doris and three daughters. Those of us who knew Lindsay through work or play share their loss as we warmly remember the enrichment of his companionship. May the ideals he passed onto us continue to flourish.

Duncan Raymont VK2DLR

### **Owen Langham VK7OL**

With the passing of Owen Langham on 13 September one of the true gentlemen of the WIA has gone from us. But the members of the Tasmanian WIA will long remember one who made his mark through his strength of character, his quiet unassuming manner and the way he always saw the best in everyone.

Owen spent his life in various areas of the North-West coast and had been "playing around" with radio since his boyhood, but it was not until he retired as maintenance engineer at the Devonport Ovaltine factory that he set about to study for his call, obtaining his Novice licence in 1982 and his full call in 1983.

He was an active member of the famous Tasmanian "Sewing Circle" and recently had lent his support to the new Central Highlands Radio Club. His shack was an example to all of us — walls lined with awards and a place for everything.

Owen had a strong Christian faith in the old Methodist tradition and he lived that faith. His life spoke more than any words could ever do. Since a heart attack five years ago he regarded every new day as a bonus but that heart could not cope with a serious leg operation.

To his wife and best friend, Nancy, and their children we give our condolences. We have all been better people for having known VK7OL.

Ron Churcher VK7RN  
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**Sign up a new member  
today — we need the  
numbers to protect  
our frequencies and  
privileges.**

# Spotlight on SWLing

Robin L Harwood VK7RH\*

The BBC World Service has confirmed that it is going ahead with six regional editions of World Service programming in 1995. No commencement date has been announced yet but there has been plenty of opposition to the proposed changes from the wide international audience. At least the "Beeb" should be given the opportunity, in my humble opinion, to trial the new concept. They also stated that each of the regional editions will include programming of interest to the listeners within that geographical area, yet will still include a World focus.

Signals from London to the Pacific area of late have been poor, mainly due to the declining sunspot count. Sadly, the powerhouse that used to be on 7150 kHz from 0545 till 0810 UTC was dropped. 9410 and 12095 kHz don't become audible here until 0700. I realise that the BBC has rebroadcasting outlets on AM and FM in Sydney, Melbourne, Auckland, Brisbane, Christchurch, Wellington and Hobart. Some of these are available by subscription, whilst the Brisbane, Hobart and Melbourne outlets are via the Print

Handicapped stations, on an overnight basis. 7RPH, in fact, broadcasts the BBC continuously from 11.00 pm Saturday evenings until Monday morning at approximately 7 am. Very convenient for me to listen to through the daylight hours when no propagation exists. Also, note that "Newshour" program is carried live over the ABC News and Parliamentary network at 0500 and 1300 UTC.

At the height of the "Cold War", many of the international broadcasters had programming in a variety of language groups. Now this conflict has ended, most of these stations have dramatically slashed their output due to budgetary constraints. Radio Moscow had the largest output with about 61 at one time. On 26 September, the number of languages was further reduced from 47 to 38. As well, the general output from all Russian external services was cut back. This has reduced a little the congested allocations. Perhaps the only international broadcaster who hasn't reduced its language groupings or output is China Radio International in Beijing.

Monitor Radio International in Boston relinquished control of their first shortwave sender, WCSN in Scotts Corner, Maine, early in September. As I have mentioned in the past, an Adventist splinter group in Florida purchased the sender and began broadcasting when MRI wasn't using the station. I logged it at around 0145 UTC on the unusual split channel of 9852.5 kHz. However, MRI has indicated that the new owners will apply for a callsign change to WVHA. The station probably will be known as the "Voice of Historic Adventism".

One of the e-mail echos I have access to is "rec.radio.shortwave" on FIDONET. However, I can't get any information on how to access an Australian oz-sw echo that I know is available. The sysop of my main FIDONET BBS is rather slow at posting this and I would be interested in finding out where it is available and its access, etc. Please reply to my e-mail address either on FIDONET or INTERNET.

Well, that is all for November. Until next time, the very best of listening and 73!

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## WIA News

### Progress in Radio Sport

Amateur radio a sport? Well, if you combine radio direction finding and cross-country jogging, amateur radio becomes a sport! Rather like a foxhunt and footrace, if you like.

It's a rapidly growing aspect of amateur radio in Asia and Europe, and it's taking off in North America (see *WIA News*, in October *Amateur Radio*). The object is to locate a series of transmitters spread around a course which meanders through the countryside. The transmitters are turned on and off at sequenced intervals, just to make things a bit more challenging.

Australia's leading exponent of amateur radio direction finding (ARDF) is the redoubtable Wally Watkins VK4DO. Wally's no "spring chicken", so you can see it's a sport for all ages.

Wally refereed at the 7th World ARDF Championships in Sweden, after attending the Region 3 IARU Conference in Singapore. Frank Sleep VK4CAU is competing at the Championships in Sweden.

If you want to see what ARDF's all about, Wally has prepared a short video tape, copies of which he has circulated to each Division. Radio clubs may get copies direct from VK4DO for \$10 (to cover post and packing). The tape covers highlights from the 1993 Region 3 ARDF games held in China. ARDF games are serious stuff, says Wally. In the tape, emphasis is placed on the importance of the games as can be seen by the many high ranking government officials present.

Wally says, "We were told that if China had won the Olympic Games in the Year 2000, ARDF would have been a demonstration sport as it was in the Asian Games a few years ago."

Wally will return from Europe on 6 December. Write to him at PO Box 432, Proserpine QLD 4800.

Meanwhile, ARDF is catching on in Queensland. Several groups are reportedly building receivers based on a design by VK3MZ. The Redcliffe Amateur Radio Club are coordinating activities. It is anticipated that Australia's first radio sport competition will be held in Brisbane

early in December.

In the far North, Ron VK4BRG has developed a kit for a 2 m antenna based on the successful HB9CV design. In NSW's West, a group at Bathurst are working on an 80 m transmitter. Timers for sequencing the transmitter on and off are a bit of a problem, according to Wally. The ZLs are working on an EPROM version while awaiting information to come from Europe which Wally has promised to follow up while in Sweden.

The South East Radio Group (SERG) in Mount Gambier, SA, will host Wally to give a lecture and demonstration at their annual convention in June next year. Wally is prepared to give a lecture and demonstration to other interested groups while travelling from Proserpine to Mount Gambier, on the basis of being billeted in each area.

The next Region 3 ARDF Championships will be held in Townsville, probably in 1996, a decision made at the September IARU Region 3 Conference in Singapore.

# HF PREDICTIONS

Evan Jarman VK3ANI

## The Tables Explained

The tables provide estimates of signal strength for each hour of the UTC day for five of the bands between 7 and 28 MHz. The UTC hour is the first column; the second column lists the predicted MUF (maximum useable frequency); the third column the signal strength in dB relative to 1  $\mu$ V (dB $\mu$ V) at the MUF; the fourth column lists the "frequency of optimum travail" (FOT), or the optimum working frequency as it is more generally known.

The signal strengths are all shown in dB relative to a reference of 1  $\mu$ V in 50 Ohms at the receiver antenna input. The table below relates these figures to the amateur S-point "standard" where S9 is 50  $\mu$ V at the receiver's input and the S-meter scale is 6 dB per S-point.

V in 50 ohms	S-points	dB( $\mu$ V)
50.00	S9	34
25.00	S8	28
12.50	S7	22
6.25	S6	16
3.12	S5	10
1.56	S4	4

0.78	S3	2
0.39	S2	-8
0.20	S1	-14

The tables are generated by the GRAPH-DX program from FT Promotions, assuming 100 W transmitter power output, modest beam antennas (eg three element Yagi or cubical quad) and a short-term forecast of the sunspot number. Actual solar and geomagnetic activity will affect results observed.

The three regions cover stations within the following areas:

**VK EAST** The major part of NSW and Queensland.

**VK SOUTH** Southern-NSW, VK3, VK5 and VK7.

**VK WEST** The south-west of Western Australia.

Likewise, the overseas terminals cover substantial regions (eg "Europe" covers most of Western Europe and the UK).

The sunspot number used in these calculations is 22.4. The predicted value for December is 21.9.

## VK SOUTH — SOUTH PACIFIC

UTC	MUF	dB $\mu$ V	FOT	14.2	18.1	21.2	24.9	28.5
1	18.5	18	15.0	23	18	11	0	-14
2	18.8	18	15.5	24	19	12	1	-12
3	18.8	18	15.5	24	20	12	1	-12
4	18.8	19	15.4	26	20	13	1	-12
5	18.7	20	15.2	27	21	13	1	-13
6	18.4	21	15.0	30	22	13	0	-14
7	18.1	24	14.7	33	24	13	0	-16
8	17.3	26	14.0	35	23	12	-4	-21
9	16.4	27	13.3	35	21	8	-9	-28
10	15.5	28	12.4	33	18	4	-15	-37
11	14.7	29	11.7	31	14	-1	-22	...
12	14.0	30	11.1	29	11	-5	-28	...
13	13.5	30	10.7	27	8	-9	-33	...
14	12.9	31	10.2	25	5	-13	-39	...
15	12.3	31	9.5	23	1	-18	...	...
16	11.4	33	8.7	18	-6	-28	...	...
17	11.2	33	8.5	17	-7	-30	...	...
18	11.0	32	8.3	15	-9	-33	...	...
19	11.6	25	8.7	15	-5	-25	...	...
20	13.3	21	9.8	18	4	-10	-32	...
21	15.4	19	11.6	22	12	1	-15	-34
22	17.1	19	13.1	23	16	7	-6	-22
23	17.9	18	14.0	23	18	10	2	-17
24	18.4	18	14.6	23	18	11	0	-14

## VK WEST — SOUTH PACIFIC

UTC	MUF	dB $\mu$ V	FOT	7.1	14.2	18.1	21.2	24.9
1	22.4	14	17.8	...	17	19	16	10
2	22.5	14	18.2	...	16	19	16	10
3	22.9	14	17.0	...	17	19	17	11
4	22.9	15	18.9	-36	18	20	17	11
5	23.0	16	18.8	-28	21	22	18	12
6	22.7	17	18.6	-15	24	23	20	12
7	22.4	19	18.2	3	29	26	21	13
8	22.0	21	17.8	22	34	29	23	13
9	20.9	23	16.8	37	37	30	22	11
10	19.7	25	15.8	44	38	29	20	8
11	18.7	26	14.9	48	38	27	18	5
12	17.8	27	14.2	50	37	26	16	2
13	17.0	28	13.5	51	36	24	13	-2
14	16.3	28	12.9	50	35	22	11	-5
15	15.7	29	12.3	50	34	20	8	-9
16	14.8	30	11.3	49	32	18	4	-14
17	13.7	31	10.4	49	29	13	-1	-21
18	13.5	31	10.2	48	28	12	-2	-23
19	13.4	26	10.1	31	24	10	-4	-24
20	14.1	22	10.6	15	22	11	-1	-18
21	16.2	19	12.8	-1	21	15	6	-6
22	18.9	16	14.3	-19	20	18	12	3
23	21.0	15	16.1	-30	19	19	15	8
24	21.9	15	17.1	-37	17	19	16	9

## VK EAST — AFRICA

UTC	MUF	dB $\mu$ V	FOT	7.1	14.2	18.1	21.2	24.9
1	14.6	12	10.2	-26	12	7	0	-13
2	13.2	7	10.1	-37	7	3	-4	-18
3	13.6	4	10.3	...	4	3	-3	-15
4	16.4	5	12.4	...	3	5	2	-5
5	19.9	7	14.0	...	1	7	7	2
6	20.0	7	14.0	...	0	7	6	2
7	20.2	7	14.1	...	0	7	7	2
8	20.2	8	14.1	...	1	8	7	2
9	19.5	9	14.2	...	4	9	7	2
10	18.5	10	14.0	...	7	10	7	0
11	17.4	11	13.8	...	11	11	6	-2
12	16.4	13	13.1	-28	14	11	5	-5
13	15.6	16	12.4	-10	17	12	4	-8
14	15.1	20	11.9	7	21	13	3	-11
15	14.5	24	11.4	27	25	13	2	-14
16	13.9	26	10.8	35	26	12	0	-18
17	13.3	28	10.2	40	25	10	-3	-23
18	12.8	30	9.7	43	25	8	-6	-27
19	12.5	30	9.3	43	24	7	-8	-30
20	13.2	29	9.0	44	26	10	-4	-24
21	12.7	26	8.7	31	22	7	-7	-28
22	12.3	22	8.5	18	18	4	-9	-29
23	12.3	17	8.5	2	14	3	-9	-28
24	13.0	14	9.1	-9	13	5	-6	-22

## VK SOUTH — AFRICA

UTC	MUF	dB $\mu$ V	FOT	7.1	14.2	18.1	21.2	24.9
1	14.1	15	10.7	-11	15	8	-1	-15
2	14.6	12	11.0	-24	13	8	0	-12
3	17.5	12	13.8	...	11	11	7	-1
4	20.6	11	14.6	...	9	13	11	5
5	20.6	10	14.8	...	6	11	10	5
6	20.8	10	14.8	...	4	10	9	5
7	20.6	9	14.6	...	4	10	9	4
8	20.4	9	14.5	...	4	10	9	4
9	20.3	10	14.4	...	6	11	9	4
10	19.5	11	13.8	...	9	12	9	3
11	18.5	12	13.0	...	11	12	9	1
12	17.2	14	12.1	-28	15	13	7	-2
13	16.1	16	11.3	-11	18	13	5	-6
14	15.2	19	10.6	7	21	13	4	-10
15	14.8	23	10.2	25	25	14	3	-13
16	14.1	26	9.7	35	26	13	0	-17
17	13.7	28	9.5	39	26	12	-2	-21
18	13.2	29	9.2	43	26	10	-4	-24
19	13.1	30	9.2	44	25	9	-5	-26
20	13.3	29	9.4	44	26	11	-4	-24
21	13.5	28	9.4	39	26	11	-2	-22
22	13.2	24	9.2	27	22	9	-4	-23
23	13.2	21	9.3	16	19	8	-4	-23
24	14.0	18	9.9	3	18	9	-1	-17

## VK WEST — AFRICA

UTC	MUF	dB $\mu$ V	FOT	7.1	14.2	18.1	21.2	24.9
1	13.3	21	10.1	11	19	8	-4	-22
2	13.7	17	10.4	-4	16	8	-2	-18
3	16.6	14	13.1	-24	15	12	6	-5
4	20.6	13	15.8	...	14	15	12	5
5	21.3	12	15.8	...	10	14	12	6
6	21.3	11	17.5	...	8	13	11	6
7	21.4	10	17.5	...	7	12	11	5
8	21.1	10	17.2	...	7	12	10	5
9	20.8	11	16.9	...	8	12	10	4
10	20.5	11	16.6	...	10	13	10	4
11	19.7	12	16.2	...	13	14	10	3
12	18.6	14	15.0	-27	17	15	10	1
13	17.5	17	14.1	-7	21	16	9	-2
14	16.6	20	13.2	12	24	17	8	-5
15	15.7	24	12.5	30	28	17	6	-9
16	15.2	26	12.0	39	29	16	4	-12
17	14.5	27	11.8	43	29	15	1	-16
18	14.0	29	10.9	45	28	13	-1	-20
19	13.4	29	10.3	46	27	10	-4	-25
20	12.9	30	9.8	46	25	8	-8	-30
21	12.6	30	9.5	45	24	7	-10	-32
22	13.3	30	10.0	46	26	10	-5	-26
23	13.4	28	10.2	39	25	10	-4	-25
24	12.8	24	9.7	25	20	6	-8	-28

## VK EAST — ASIA

UTC	MUF	dB $\mu$ V	FOT	7.1	14.2	18.1	21.2	24.9
1	27.1	15	21.8	...	20	24	23	19
2	28.0	13	21.4	...	19	23	22	18
3	28.6	13	22.3	...	19	23	22	19
4	29.6	14	22.5	...	20	24	24	20
5	30.1	15	23.4	...	22	26	25	22
6	29.0	16	23.8	-30	24	27	26	22
7	27.8	17	22.7	-15	28	29	26	22
8	26.4	18	22.0	8	33	31	27	21
9	25.1	20	20.3	32	39	34	29	21
10	23.8	21	19.1	40	40	34	27	18
11	22.8	22	18.2	46	41	33	26	16
12	22.3	22	17.7	49	41	33	25	15
13	21.3	23	16.9	53	41	32	23	12
14	20.2	23	16.0	52	40	30	20	8
15	18.8	23	14.5	52	37	25	14	-1
16	17.3	23	13.2	51	34	20	7	-10
17	15.8	25	12.2	50	30	15	0	-19
18	13.5	25	10.4	48	22	2	-17	...
19	10.5	27	8.1	43	4	-26	...	...
20	10.6	27	8.2	42	5	-25	...	...
21	15.8	20	12.0	29	25	12	-1	-20
22	23.5	16	18.2	5	30	27	21	13
23	25.4	16	20.3	-18	25	26	23	17
24	25.9	16	21.0	-32	22	24	22	17

## VK SOUTH — ASIA



VK EAST — EUROPE									
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9	
1	9.7	-1	7.6	24	1	-11	-26	...	
2	8.9	-8	7.0	-29	0	-12	-27	...	
3	9.0	-12	7.1	-35	0	-10	-24	...	
4	10.4	-8	8.0	0	0	-6	-16	-34	
5	13.2	-4	10.5	...	1	4	-6	-19	
6	16.3	4	13.1	...	1	4	1	-7	
7	18.8	7	15.1	...	1	7	5	0	
8	20.8	7	16.7	...	4	10	9	4	
9	22.0	12	17.8	...	11	15	13	8	
10	22.7	15	18.4	-4	21	21	18	11	
11	21.7	20	17.4	4	28	25	21	13	
12	20.7	22	16.6	22	33	27	21	12	
13	20.1	23	16.0	37	36	28	20	9	
14	18.6	23	14.8	42	34	24	15	2	
15	16.4	25	13.1	45	32	19	7	-8	
16	14.2	26	11.6	44	26	11	-4	-24	
17	12.6	27	9.9	42	21	2	-2	...	
18	11.1	28	8.7	40	14	-8	-19	...	
19	10.4	29	8.1	39	10	-15	-38	...	
20	9.9	29	7.7	38	7	-19	...	...	
21	9.5	26	7.3	31	5	-20	...	...	
22	9.5	19	7.3	16	4	-18	...	...	
23	9.9	11	7.7	0	4	-13	-32	...	
24	10.1	5	7.8	-14	3	-11	-27	...	

VK SOUTH — EUROPE									
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9	
1	10.4	4	8.1	-19	4	-8	-22	...	
2	9.6	-3	7.5	-29	1	-10	-24	...	
3	9.6	-8	7.6	-38	0	-8	-21	...	
4	11.4	-5	8.6	...	1	-3	-12	-27	
5	14.6	0	11.6	...	0	1	-2	-12	
6	18.1	4	14.5	...	-2	4	3	2	
7	20.6	6	16.6	...	-3	5	6	6	
8	21.9	8	17.9	...	-2	7	8	6	
9	21.5	10	17.5	...	0	9	10	7	
10	20.7	12	16.7	...	7	13	12	7	
11	19.6	15	15.8	...	15	16	13	7	
12	18.5	19	14.8	-6	23	20	14	5	
13	17.5	23	14.0	20	29	22	14	2	
14	16.7	26	13.3	34	32	22	12	-1	
15	16.1	27	12.7	40	32	21	10	-4	
16	15.3	26	12.2	43	29	16	3	-15	
17	13.6	27	10.6	44	25	8	-7	-28	
18	12.1	28	9.4	42	19	0	-19	...	
19	11.2	29	8.6	41	15	-6	-27	...	
20	10.7	29	8.2	40	12	-11	-34	...	
21	10.4	29	7.9	39	11	-13	-37	...	
22	9.7	23	7.4	24	5	-19	...	...	
23	9.4	15	7.3	10	3	-18	...	...	
24	10.8	11	8.3	-5	7	-7	-23	...	

VK WEST — EUROPE									
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9	
1	11.0	14	8.5	3	7	-9	-26	...	
2	10.1	6	7.8	-11	2	-13	-30	...	
3	10.1	-1	7.9	-26	0	-11	-26	...	
4	12.0	0	9.1	...	2	-4	-14	-30	
5	15.6	4	12.4	...	3	3	-2	-12	
6	19.4	7	15.6	...	1	7	5	0	
7	22.0	7	17.8	...	1	0	8	4	
8	24.0	8	19.4	...	0	0	10	7	
9	25.1	9	20.4	...	1	1	10	9	
10	24.6	11	20.0	...	4	12	13	11	
11	23.5	13	19.5	...	10	16	15	11	
12	22.3	16	18.0	-27	20	21	18	11	
13	21.1	20	17.0	9	29	25	19	11	
14	20.2	22	16.1	33	34	27	20	10	
15	19.1	22	15.0	39	34	24	15	3	
16	16.5	24	13.5	42	30	18	6	-9	
17	14.6	25	11.4	44	27	12	-2	-22	
18	12.9	27	10.0	43	21	3	-14	-37	
19	12.0	27	9.2	42	18	-2	-22	...	
20	11.4	28	8.7	41	15	-7	-28	...	
21	11.0	28	8.4	40	13	-10	-33	...	
22	10.9	28	8.5	40	12	-11	-32	...	
23	10.6	27	8.1	35	11	-12	-34	...	
24	10.6	20	8.2	19	9	-11	-31	...	

VK EAST — EUROPE (Long Path)									
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9	
1	10.0	-4	7.5	-33	2	-6	-18	-36	
2	10.2	0	7.8	-25	3	-6	-18	-37	
3	10.4	5	7.9	-16	5	-6	-19	-39	
4	10.0	7	7.7	-9	5	-8	-23	...	
5	9.2	10	7.2	2	3	-14	-32	...	
6	9.2	17	7.3	13	4	-15	-35	...	
7	10.8	23	8.5	25	12	-6	-24	...	
8	13.7	24	10.9	33	23	9	-4	-23	
9	13.2	25	10.0	25	22	11	-1	-17	
10	13.2	17	10.1	-3	16	8	-1	-15	
11	16.5	12	13.1	-36	12	11	6	-2	
12	15.9	6	12.6	...	4	6	3	-4	
13	15.2	1	12.3	...	-1	3	0	-6	
14	14.6	-3	11.3	...	-4	1	-1	-8	
15	13.9	-7	10.7	...	-6	0	-2	-9	
16	13.3	-9	10.1	...	-6	-1	-3	-10	
17	13.0	-11	9.8	...	-6	-1	-3	-11	
18	13.7	-8	10.2	...	-7	-1	-3	-9	
19	14.7	-5	11.5	...	-6	0	-2	-9	
20	13.0	-8	10.1	...	-4	-1	-5	-14	
21	11.5	-10	8.9	...	-2	-2	-8	-19	
22	10.7	-11	8.2	...	0	-3	-11	-24	
23	10.2	-10	7.8	...	1	-4	-13	-29	
24	10.0	-7	7.6	...	1	-5	-16	-33	

VK SOUTH — EUROPE (Long Path)									
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9	
1	9.3	-7	7.1	-30	0	-10	-23	...	
2	9.5	-2	7.3	-23	1	-11	-25	...	
3	9.5	2	7.3	-14	1	-12	-28	...	
4	9.2	5	7.1	-6	1	-15	-33	...	
5	8.4	8	6.6	2	-2	-23	...	...	
6	8.5	14	6.7	11	-2	-26	...	...	
7	9.7	22	7.7	23	5	-18	...	...	
8	12.1	23	9.6	29	16	-1	-17	...	
9	13.5	24	10.5	31	22	8	-5	-23	
10	10.5	21	8.1	20	10	-8	-26	...	
11	10.5	14	8.1	3	8	-6	-22	...	
12	14.9	13	10.3	-22	13	9	2	-9	
13	14.2	5	10.1	...	5	5	0	-11	
14	13.7	0	9.5	...	1	2	-2	-12	
15	13.2	-5	9.2	...	-2	0	-3	-12	
16	12.8	-9	9.0	...	-4	-1	-4	-13	
17	12.8	-10	9.0	...	-5	-1	-4	-12	
18	13.6	-9	9.6	...	-6	-1	-3	-10	
19	13.4	-8	10.5	...	-5	-1	-5	-13	
20	11.8	-12	9.2	...	-3	-2	-7	-18	
21	10.4	-15	8.1	...	-2	-3	-10	-23	
22	9.8	-16	7.6	...	-1	-5	-13	-28	
23	9.3	-15	7.2	...	0	-6	-17	-33	
24	9.2	-12	7.0	-38	0	-8	-20	-38	

VK WEST — EUROPE (Long Path)									
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9	
1	8.9	-18	6.8	...	-2	-10	-21	-38	
2	9.0	-14	7.0	-37	-2	-11	-23	...	
3	9.0	-10	7.0	-31	-2	-13	-26	...	
4	8.7	-7	6.8	-23	-2	-15	-31	...	
5	8.0	-7	6.3	-14	-5	-21	...	...	
6	8.1	-7	6.4	-9	-5	-23	...	...	
7	9.1	7	7.2	-1	1	-19	-38	...	
8	11.3	13	9.0	5	7	-7	-22	...	
9	14.0	16	11.2	10	15	4	-7	-24	
10	13.3	22	10.3	28	19	5	-8	-26	
11	10.6	15	8.2	8	7	-8	-24	...	
12	10.4	7	8.0	-8	4	-8	-22	...	
13	14.6	6	10.4	-38	6	3	-3	-14	
14	14.7	1	9.0	...	0	2	-2	-11	
15	14.1	-4	9.7	...	-4	-1	-4	-12	
16	13.5	-8	9.2	...	-6	-2	-5	-13	
17	13.0	-11	8.9	...	-7	-3	-6	-14	
18	12.6	-14	8.7	...	-8	-4	-6	-14	
19	12.6	-13	8.7	...	-7	-4	-8	-17	
20	11.2	-17	8.8	...	-6	-5	-10	-21	
21	9.9	-31	7.7	...	-10	-12	-20	-34	
22	9.3	...	7.2	...	-14	-17	-27	...	
23	8.9	-39	6.9	...	-13	-18	-28	...	
24	8.8	-30	6.8	...	-8	-14	-25	...	

VK EAST — MEDITERRANEAN									
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9	
1	9.2	-3	7.0	-23	0	-12	-28	...	
2	9.2	-9	7.1	-34	0	-11	-25	...	
3	12.8	0	10.0	...	2	0	-8	-21	
4	19.1	6	14.7	...	1	6	5	0	
5	24.7	8	18.9	...	-2	8	10	8	
6	27.0	9	21.1	...	-3	9	12	11	
7	26.3	10	21.5	...	-2	9	12	11	
8	25.4	11	20.7	...	0	11	13	11	
9	24.3	12	20.2	...	6	14	14	11	
10	23.1	14	18.6	...	13	17	16	12	
11	21.8	17	17.5	-22	21	21	18	11	
12	20.8	20	16.6	6	28	25	19	11	
13	20.1	23	16.0	27	33	27	20	10	
14	19.3	24	15.3	37	35	27	19	8	
15	18.4	2							

# HAMADS

## TRADE ADS

● **AMIDON FERROMAGNETIC CORES:** For all RF applications. Send business size SASE for data/price to RJ & US Imports, PO Box 431, Kiama NSW 2533 (no enquiries at office please ... 14 Boanyo Ave Kiama). Agencies at: Geoff Wood Electronics, Sydney; Webb Electronics, Albury; Assoc TV Service, Hobart; Truscotts Electronic World, Melbourne and Mildura; Alpha Tango Products, Perth.

● **WEATHER FAX programs for IBM XT/ATs** \*\*\* "RADFAX2" \$35-00, is a high resolution shortwave weatherfax, morse and RTTY receiving program. Suitable for CGA, EGA, VGA and Hercules cards (state which). Needs SSB HF radio and RADFAX decoder. \*\*\* "SATFAX" \$45-00, is a NOAA, Meteor and GMS weather satellite picture receiving program. Needs EGA or VGA & WEATHER FAX PC card, + 137 MHz Receiver. \*\*\* "MAXISAT" \$75-00 is similar to SATFAX but needs 2 MB of expanded memory (EMS 36 or 4.0) and 1024 x 768 SVGA card. All programs are on 5.25" or 3.5" disks (state which) plus documentation, add \$3-00 postage. ONLY from M Delahunty, 42 Villiers St, New Farm QLD 4005. Ph (07) 358 2785.

● **THE ANTENNA EXPERIMENTER'S GUIDE**, by Peter Dodd G3LDO. 200 pages, 120 illustrations, includes material not previously published. Building simple RF test equipment for measuring resonance, Z and field strength. Antenna optimising & VHF modelling. Computer measurement & mathematical modelling. Masts and experimental antennas. Price \$AUS25.00, inclusive of P & P & Airmail. Cash \$AUS or Visa. Obtainable, Peter Dodd, 37 The Ridings, East Preston, West Sussex BN16 2TW, U.K.

## FOR SALE NSW

● **DECEASED ESTATE. TRIO SSB transceiver** model TS510, s/n 920056; TRIO Remote VFO model VFO-5D s/n 910272; TRIO Speaker/Power supply model PS-150 s/n 920189; ICOM SSB solid state transceiver model IC-701 s/n 00055; ICOM Speaker/power supply model IC-701PS s/n 00301, 20 amps 10 mins. on/off (50% duty cycle); ICOM computerised remote controller model IC-RM3 s/n 01002; ICOM desk microphone model IC-SM2 s/n 07706. Includes instruction manuals. COLLINS transceiver model KWM-2; COLLINS amplifier model 30L-1; COLLINS Speaker/power supply model 516F s/n 61656; KW107 Supermatch (seems to match the above) s/n AT1095; YAESU Musen monitor scope model YO-100 s/n 6G11004; DRAKE wattmeter model W-4; R L Drake Co SSR-1 communications receiver s/n 12967. Sale is by tender to WIA NSW Division, PO Box 1066, Parramatta NSW 2124.

● **NATIONAL Panasonic transceiver** RJX-1011D HF SSB/CW amateur transceiver, CW filter, T-

notch filter, RJX-V1011 external VFO, RJX-S1011 speaker. Top class transceiver with all manuals and instruction books \$1200. Niels VK2BKQ QTHR (02) 481 8781.

● **TOWER** 50ft, tilt-over, wind-up, complete with guys and HAM 2 rotator \$450. Buyer to remove. Les VK2AFG QTHR (02) 683 4101.

● **KENWOOD TS-440SAT HF txcvr** complete with 270 Hz and 500 Hz CW filters excellent condition \$1,500; **KENWOOD PS-50 20 A heavy duty PSU** \$300; **UNIDEN 2020 HF txcvr** with CW filter \$500. Above prices all negotiable. **NALLY Tower** good condition \$800 ono purchaser to remove; **SCALAR 3-el 14/21/28 Yagi** good performer \$500. Terry VK2ALG QTHR (060) 25 3292.

● **YAESU FT-747GX c/w FM** and mobile bracket vgc \$850 ono or swap for IC-735/TS430S (must have transverter facilities) with cash adjustment. Alan VK2DXE (02) 552 2950.

● **STILL** a few left Philips 828 with complete kit and full information to convert to 6 m (nxtals) \$60. Posted in VK. David VK2BDT (048) 21 5036.

● **1989 TO 1993 60 copies Amateur Radio** \$30 plus freight; **FT-101B** excellent condition with spare driver and final valves \$400. R Henry VK2GZ QTHR.

● **FT-901DM, HF xcvr** with YD-148 base mike, inbuilt power supply, DC-DC converter, xcvr comes with modifications from CQ magazine, all cords and plugs s/n 8F-020667 including service manuals vgc \$950; **FL-2100Z linear amp** with WARC bands, service manual s/n 080297 ex cond \$1,000; **MFJ 1.5 kW Tuner**, black body, service manual ex cond s/n 026990 couple of months old \$450; **SP-901 External Speaker** for the above \$50; **COMPLETE station**, can separate \$2,400. Steve VK2SPS (02) 9999 2933.

● **LARGE QTY components** mostly professionally reclaimed from working devices, includes caps, trimpots, FETs, opto-isolators, crystals, regulators, switch-mode toroids, heatsinks & lots smt devices, sockets/terminals. All at roughly 20% of wholesale less tax prices. For list/prices contact Colin VK2XXE on fax (02) 970 6636 or PO Box 634, Mona Vale NSW 2103.

● **VALVES** 807 (3) \$10 ea, EF50 (6) \$5 ea unused; **KAYPRO portable** (20 kg) computer, 10 meg disk, 4 meg software with all manuals \$450; **CITIZEN printer** \$125; **HEWLETT Packard vectra computer** 286 with 287 maths coprocessor 1.44 meg \$275. W. Senior VK2WS QTHR (067) 75 2158.

● **SPECTRUM Analyser** Tektronics, with service manual & module 1L20 in 545 B- frame, checked from Tucker Electronics USA, up to 4.2 GHz \$1,500; **CLARK mast, pump-up**, with compressor, full length 5 m for portable use (12 V) \$1,500; **TV Transmitter** 426 MHz, 10 m output material cost \$525. Erich VK2WH (02) 958 1985.

● **AEA PK900 TNC** hardly used absolutely as new in carton c/w, handbook, all cables

accessories \$1,200 ono; **YAESU YC500S frequency counter** \$350. Peter VK2APP QTHR (063) 83 6206.

## FOR SALE VIC

● **CUSHCRAFT R5 vert 1/2 wave** 14 thru 28 MHz as new with 15 m 213 co-ax \$400 ono. Stan VK3VJQ (051) 55 3475.

● **DECEASED ESTATE.** Icom 740 mint condition \$850; 2 m Colinear vertical \$50. L Gibson (03) 783 8714.

● **IBM clone 386DX 25 MHz**, 40 Mb hard disk, 3 1/2 and 5 1/4 fdds, mouse, 200 W ps, VGA, all in minitower case with monitor and Star NX10 printer. All in vgc. Several useful programmes available if required \$900 ono. Harold VK3AFQ QTHR (03) 596 2414.

● **TET-EMTRON TE-23M 20-15-10 minibeam** assembled near new list \$440 sell \$250; **VIC 20 Computer, RTTY-CW hi-tech software**, BMC green screen monitor, 1541- II disc drive, disc case, 2 x PS, manuals, all working (no modem) for \$150. Andy VK3UJ QTHR (03) 726 8879.

● **SHACK Clean-out**, last items remaining, **Pye 469 MHz base repeater station**, QEO3/20 final, 1970 vintage, 19" rack mounting \$60; **US Army BC221AA freq meter**, c/w calib'n book & spare valves exc condn \$40; **HILLS Tower**, 2 section elevates to 14 m, c/w winch and brackets for tilt over \$250. John VK3FH QTHR (03) 894 4298.

## FOR SALE OLD

● **YAESU FT757** good condition \$850. Brian VK4BOW (018) 18 1274.

● **LABTECH CRO mod Q0155 20 meg dual trace** with probes, manual, original box as new s/n 6056232 \$450. C Stennett VK4ECS (071) 25 3415.

● **ARRL QSTs 1952 thru 1993** eight copies missing. Bill VK4QF QTHR (07) 870 8785.

## FOR SALE TAS

● **ICOM ICW21AT Dual-band handheld FM transceiver**, 2 months old, rrp \$1,200 asking \$740. Extended RX coverage to 950 MHz, also airband, cross-band repeater, with manuals, original packing and circuits. Dennis VK7YAO (002) 24 0518.

## WANTED VIC

● **NALLY Tower**, 2 section elevating to 14 m, pref Melb or Peninsula area. John VK3FH QTHR (03) 894 4298.

## WANTED OLD

● **LAFAYETTE com rcvr model HE30** photocopy of circuit/manual or any info will pay costs. Trev VK4ARB OTHR (07) 269 8848.

## WANTED WA

● **CAPACITOR vacuum variable** approx 10-250 pF or similar. Please phone Peter Smith VK6AQ (09) 307 4960 AH or (09) 380 2722 BH.

● **POWER SUPPLY 240 V AC input**, 12 V DC 25 A output (to supply transceiver). Bill VK6LT QTHR (09) 457 1080.

● KENWOOD TL922 or TL922A HF linear amplifier in good condition. Steve VK6VZ (09) 298 9330.

**MISCELLANEOUS**

● THE WIA QSL Collection (now Federal) requires QSLs. All types welcome especially rare DX pictorial cards special issue. Please contact Hon. Curator Ken Matchett VK3TL, 4 Sunrise Hill Road, Montrose Vic 3765, Tel (03) 728 5350. ar

**Editor's Comment**

Continued from page 3

Greater Melbourne area, would like to be involved in the publication of *Amateur Radio*, we want to hear from you. Ideally we need people who have had some experience in print media, but most vital is a good knowledge of technical English. A sincere interest in the long-term future of the WIA is essential.

Can we hope for sufficient response so that some of us might soon be able to retire?

**Bill Rice VK3ABP**  
Editor  
ar

**QSP News**

**WARNING**

All Icom Transceivers and Receivers should always have serial numbers when purchased. The removal or altering of the serial number voids the warranty. For this reason, ensure this is not the case at the time of purchase.

Further, Icom Australia has a strict policy of not repairing units where the serial number has been removed. Among many other reasons, this ensures stolen units are not serviced. Please consider this when purchasing any secondhand equipment.

Please call our office for the name of your nearest authorised dealer, or should you have any queries relating to our warranty.

**Bob Wiley**  
National Sales & Marketing  
Manager  
Icom Australia

**For All Your Requirements**

AUTHORISED DEALER FOR:

**KENWOOD**

**ICOM**

Amateur ■ Commercial  
Marine Communications



Shop 3, 443 Albany Highway,  
Victoria Park, WA 6100.  
Telephone (09) 470 1118  
Facsimile (09) 472 3795

**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 per issue 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.

\*Copy typed or in block letters to PO Box 2175, Caulfield Junction, Vic 3161, 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.

\*WIA policy recommends that Hamads include the serial number of all equipment offered for sale.

\*Please enclose a self addressed stamped envelope if an acknowledgement is required that the Hamad 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: \$25.00 for four lines, plus \$2.25 per line (or part thereof) Minimum charge — \$25.00 pre-payable.

State: .....


Not for publication:

Miscellaneous

For Sale

Wanted

Name:..... Call Sign: ..... Address: .....

## 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 AND PRINTING:

Industrial Printing and Publishing Pty Ltd, 122 Dover Street, Richmond, 3121.  
Telephone: 428 2958

## MAIL DISTRIBUTION:

R L Polk & Co Pty Ltd, 96 Herbert St, Northcote, Vic. 3070. Tel: (03) 482 2255

## CONTRIBUTIONS TO AMATEUR RADIO

Amateur Radio is a forum for WIA members' amateur radio technical experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for possible publication. Articles on computer disk are especially welcome. The WIA cannot assume responsibility for loss or damage to any material. "How to Write for Amateur Radio" was published in the August 1992 issue of AR. A photocopy is available on receipt of a stamped, self addressed envelope.

## BACK ISSUES

Available only until stocks are exhausted. \$4.00 to members, which includes postage within Australia.

## PHOTOSTAT COPIES

When back issues are no longer available, photocopies of articles are available to members at \$2.50 each (plus \$2.00 for each additional issue in which the article appears).

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.

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## HOW TO JOIN THE WIA

Fill out the following form and send to:

The Membership Secretary  
Wireless Institute of Australia  
PO Box 2175  
Caulfield Junction, Vic 3161

I wish to obtain further information about the WIA.

Mr, Mrs, Miss, Ms:.....

Call Sign (if applicable):.....

Address:.....

State and Postcode:.....

## VK QSL Bureaux

The official list of VK QSL Bureaux. All are Inwards and Outwards unless otherwise stated.

VK1	GPO Box 600 Canberra ACT 2601
VK2	PO Box 73 Teralba NSW 2284
VK3	40G Victory Boulevard, Ashburton VIC 3147
VK4	GPO Box 638 Brisbane Qld 4001
VK5	PO Box 10092 Gouger Street Adelaide SA 5001
VK6	GPO Box F319 Perth WA 6001
VK7	GPO Box 371D Hobart Tas 7001
VK8	C/o H G Andersson VK8HA Box 619 Humpty Doo NT 0836
VK9/VK0	C/o Neil Penfold VK6NE 2 Moss Court Kingsley WA 6026

# WIA Divisional Bookshops

The following items are available from your Division's Bookshop  
(see the WIA Division Directory on page 3 for the address of your Division)

	Ref	List Price	Ref	List Price
<b>ANTENNAS</b>				
Ant. Compendium Vol 2 Software 5.25" IBM Disk	BR293	\$20.00		
Antenna Compendium Vol 2 — ARRL	BR292	\$32.00		
Antenna Impedance Matching — ARRL	BR257	\$52.00		
Antenna Note Book W1FB — ARRL	BR179	\$26.00		
Antenna Pattern Worksheets Pkt of 10	BR902	\$3.00		
Easy Up Antennas	MFJ38	\$39.25		
G-QRP Antenna Handbook — RSGB — 1992 1st Edition	BR452	\$22.50		
HF Antenna Collection — RSGB	BR391	\$44.00		
HF Antennas for all Locations — Moxon — 2nd Edition	BR188	\$45.00		
Antenna Compendium Vol 1 — ARRL	BR163	\$26.00		
Novice Antenna Notebook — DeMaw W1FB — ARRL	BR162	\$20.00		
Physical Design of Yagi — 3.5" IBM Disk	BR388B	\$20.00		
Physical Design of Yagi — 3.5" Mac Disk Excel Format	BR388C	\$20.00		
Physical Design of Yagi 5.25" IBM Disk	BR388A	\$20.00		
Physical Design of Yagi Antennas — The Book	BR388	\$52.00		
Practical Antennas for Novices	BR35	\$19.00		
Practical Wire Antennas — RSGB	BR296	\$32.00		
Reflections Transmission Lines and Antennas — 5.25" IBM	BR348A	\$20.00		
Reflections Transmission Lines and Antennas — ARRL	BR348	\$52.00		
The Antenna Handbook — ARRL 1994 edition with disk	BR370A	\$65.00		
Transmission Line Transformers — ARRL	BR329	\$40.00		
Yagi Antenna Design — ARRL	BR164	\$40.00		
<b>HANDBOOKS</b>				
ARRL Handbook — 1995	BR369	\$66.00		
Electronics Data Book — ARRL	BR201	\$32.00		
Radio Communication Handbook — RSGB	BR266	\$44.00		
Radio Theory For Amateur Operators — Swainston — 2nd Ed	BR265	\$47.50		
Space Radio Handbook — GM4IJJ — RSGB	BR439	\$47.00		
World Radio TV Handbook	BR450	\$40.00		
<b>HISTORY</b>				
200 Meters and Down 1936 — ARRL	BR198	\$21.00		
50 Years of the ARRL — 1981	BR196	\$8.00		
Bright Sparks of Wireless	BR394	\$44.00		
Dawn of Amateur Radio	BR395	\$58.00		
World at Their Finger Tips	BR38	\$23.00		
<b>INTERFERENCE</b>				
Radio Frequency Interference — ARRL — 1992 Edition	BR186	\$40.00		
The Radio Amateurs Guide to EMC	BR36	\$25.00		
<b>MISCELLANEOUS</b>				
Amateur Radio for Beginners — RSGB	BR392	\$13.50		
Beyond Line of Sight	BR459	\$26.40		
Design Note Book W1FB — ARRL	BR357	\$20.00		
First Steps in Radio — Doug DeMaw W1FB	BR385	\$14.00		
G-QRP Circuit Handbook — G Dobbs — RSGB	BR441	\$31.00		
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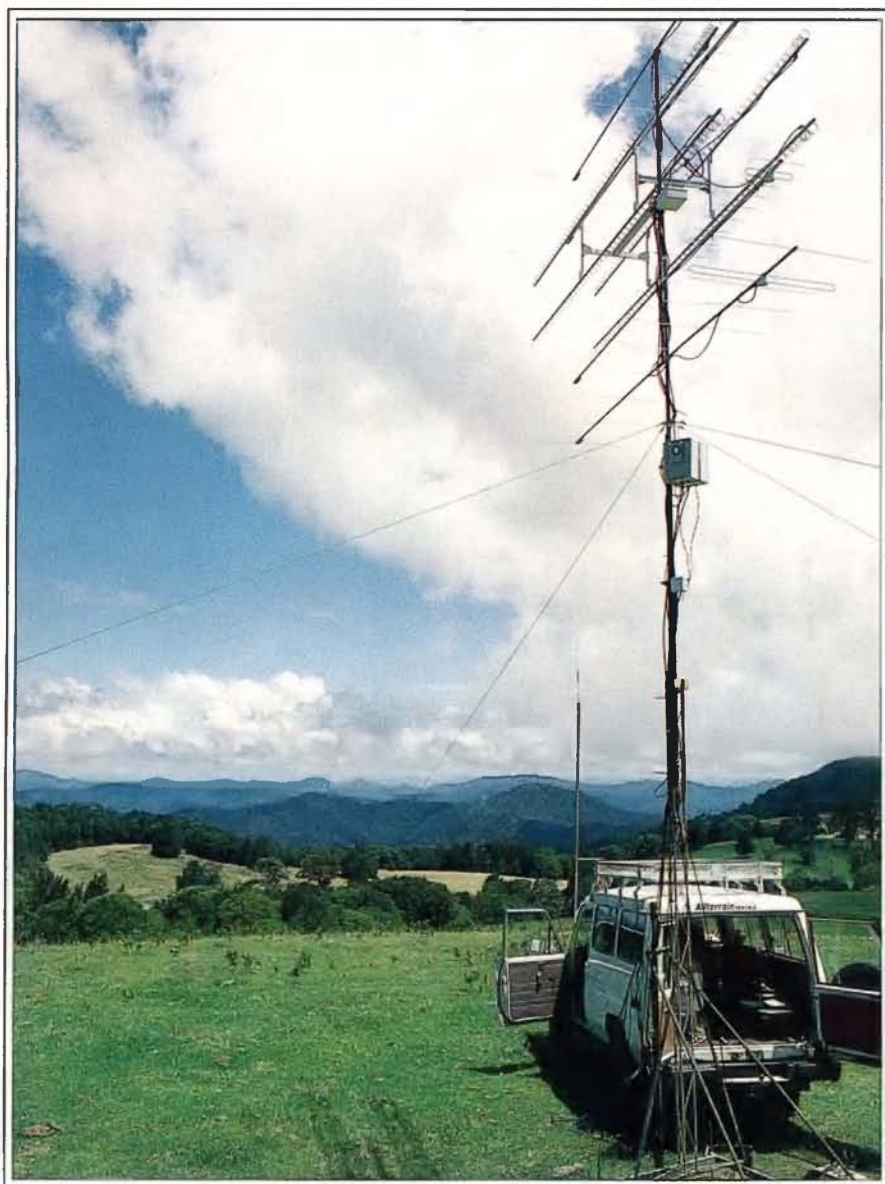
IC-738

# RADIO AMATEUR

DECEMBER 1994  
Volume 62 No 12



*Journal of the Wireless Institute of Australia*



## IN THIS ISSUE:

- Review of ICOM IC-738 HF Transceiver
- Transportable Tiltover Tower
- PLL Carrier Detector for 7910 Packet Modem
- The Cradbig Charger

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Amateur Radio is published by the Wireless Institute of Australia, ACN 004 920 745 as its Official Journal, on the last Friday of each month.

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Deadlines	Editorial	Hamads
January	05/12/94	07/12/94
February	09/01/95	11/01/95
March	06/02/95	08/02/95

Delivery of AR: If this magazine is not received by the 15th of the month of issue, and you are a financial member of the WIA, please check with the Post Office before contacting the registered office of the WIA. ©  
Wireless Institute of Australia 1994

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**Cover**

Are you ready for the 1995 VHF-UHF Field Day which will take place on 14-15 January 1995? Doug Friend VK4OE operated portable at Dorrigo in NSW in the 1994 VHF-UHF Field Day, and will be active in the 1995 Field Day. Of special interest in Doug's 1994 Field Day station was the array of four loop Yagis for 1296 MHz, with a homebrew mast-head power amplifier using four Mitsubishi M57762 power modules.

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A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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## Federal QSP

Perhaps, since this is effectively the Christmas issue, I might be permitted to say something about religion. "What!" I hear you say. "Bring religion into Christmas? Whatever next?"

I was fortunate enough to have grown up in those halcyon days when inflation was a constant and predictable low percentage and there was something called the basic wage linked to the cost-of-living. So you could be sure that anything bought on hire purchase would be paid for by regular wage increases. There were more vacancies than people to fill them and everyone leaving school was certain of a job. Anyone who had the ability and wanted to go to university was guaranteed a place and it was as close to being free as could be.

We are told that things had to change because the tariff barriers which were protecting Australian industry made it very inefficient, so that it was costing the taxpayer a lot. Was it costing the taxpayer more, I wonder, than the ten percent unemployment we seem to have exchanged it for?

But how things have changed. Now everyone has to compete for the few jobs in a manner reminiscent of the Chicago meatworks in 1922. Only those with an aggregate score above a particular value are able to compete with each other for the limited university and college places. Nursing is no longer a vocation and the places for student nurses are reserved for those with the best marks in maths and physics. Our judicial system has always been an adversarial system where, instead of seeking for the truth, the better presented case will be the winner. Everything seems to be competitive and polarised. If I have the job, you haven't. If you are right, then I must be wrong. Disagreement is everywhere. This is no less true of the amateur movement and has even been known to occur within the WIA Federal Council!

So I come at last to religion and the religion I want to talk about is the Quakers or The Religious Society of Friends to give them their full name. If they have a disagreement or a problem they refuse to settle it by a majority vote and leave a minority feeling disgruntled. Nor are they satisfied to achieve a consensus, which is only another way of saying compromise, in which no one is completely satisfied. They will go on talking until they find a solution which everyone can conscientiously accept. And the unexpected delight of all this is that often a novel and original solution will emerge that would not otherwise have been thought of.

Could we not as amateurs move against the trend to confrontation and settle our differences by looking for what is good or rational or acceptable in each others' position and try, for as long as it takes, to build on it to achieve a true agreement. This could be good practice to prepare

for the SMA's intended policy on the resolution of interference issues. No longer will we be able to adopt a holier-than-thou attitude and too bad for the neighbour so long as our transmissions are clean. The SMA will expect the parties to resolve the problem by mutual agreement and assistance, with the SMA acting as a consultant. If the problem remains unresolved it may act as arbitrator or refer the parties to a conciliator.

Something else which has changed is the meaning of the word "merry". In the original meaning of the word, I wish you all a Merry Christmas.

**Bruce Hedland-Thomas VK600**  
**VK6 Federal Councillor**  
 ar

# Editor's Comment

## Consensus

I am about to confess to shameless plagiarism of the theme of Bruce Hedland-Thomas on the adjacent page, because it is so appropriate to our present situation, be it in employment, local, State or Federal government, and even, as Bruce says, in WIA affairs.

It was at the October meeting of Federal Council that Bruce gave me his draft QSP, and I suspect that he, as well as I, thought much about its

aptness as discussions proceeded. I would differ slightly about the meaning of the word "consensus", though. I feel it implies something more praiseworthy than "compromise", being in fact the best way of resolving all differences.

Bruce refers to society these days being "polarised", and again his assessment is "spot on". It is a fact that few things are entirely right and few entirely wrong, but usually fall somewhere on the grey-scale spectrum in between. Most of the world's problems are caused by those who doggedly insist on identifying with the extremes.

May I also wish you all a very merry Christmas and a happy New Year.

**Bill Rice VK3ABP**  
 Editor  
 ar

## WIA Divisions

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually in their residential State or Territory, and each Division looks after amateur radio affairs within its area.

Division	Address	Officers	Weekly News Broadcasts	1995 Fees	
VK1	ACT Division GPO Box 600 Canberra ACT 2601 Phone (06) 247 7006	President Rob Apathy Secretary Len Jones Treasurer Don Hume	VK1KRA VK1NLJ VK1DH	3.570 MHz LSB, 146.950 MHz FM, 438.525 MHz FM each Monday evening (except the fourth Monday) commencing at 8.00 pm. Repeated on Wednesday evening at 8.00 pm on 146.950 MHz FM.	(F) \$70.00 (G) (S) \$56.00 (X) \$42.00
VK2	NSW Division 109 Wigram Street Parramatta NSW (PO Box 1066 Parramatta 2124) Phone (02) 689 2417 Freecall 1800 817 644 Fax (02) 633 1525	President Michael Corbin Secretary Pixie Chappie Treasurer Terry Ryeland (Office hours Mon-Fri 11.00-14.00 Mon 1900-2100)	VK2PFQ VK2KPC VK2UX	From VK2WI 1.845, 3.595, 7.146*, 10.125, 24.950, 28.320, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 (*morning only) with relays to some of 14.160, 18.120, 21.170, 584.750 ATV sound. Many country regions relay on 2 m or 70 cm repeaters. Sunday 1000 and 1930. Highlights included in VK2AWX Newcastle news, Monday 1930 on 3.593 plus 10 m, 2m, 70 cm, 23 cm. Voicemail highlights on (02) 724 8793. The broadcast text is available on packet.	(F) \$66.75 (G) (S) \$53.40 (X) \$38.75
VK3	Victorian Division 40G Victory Boulevard Ashburton Vic 3147 Phone (03) 885 9261	President Jim Linton Secretary Barry Wilton Treasurer Rob Hailey (Office hours Tue & Thur 0830-1530)	VK3PC VK3XV VK3XLZ	1.840MHz AM, 3.615 LSB, 7.085 LSB, 53.900 FM(R) Mt Dandenong, 146.700 FM(R) Mt Dandenong, 146.800 FM(R) Mildura, 146.900 FM(R) Swan Hill, 147.225 FM(R) Mt Baw Baw, 147.250 FM(R) Mt Macedon, 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday.	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK4	Queensland Division GPO Box 638 Brisbane QLD 4001 Phone (07) 284 9075	President Murray Kelly Secretary Lance Bickford Treasurer Roger Bingham	VK4AOK VK4ZAZ VK4HD	1.825, 3.605, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, 28.400 MHz. 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday. Repeated on 3.605 & 147.150 MHz, 1930 Monday	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK5	South Australian Division 34 West Thebarton Road Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Garry Herden Secretary Maurie Hooper Treasurer Bill Wardrop	VK5ZK VK5EA VK5AWM	1820 kHz 3.550 MHz, 7.095, 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 34 579.000 Adelaide, ATV 444.250 Mid North Barossa Valley 146.825, 438.425 (NT) 3.555, 7065, 10125, 146.700, 0900 hrs Sunday	(F) \$72.00 (G) (S) \$58.00 (X) \$44.00
VK6	West Australian Division PO Box 10 West Perth WA 6872 Phone (09) 434 3283	President Cliff Bastin Secretary Ray Spargo Treasurer Bruce Hedland-Thomas	VK6LZ VK6RR VK6OO	146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 1.825 3.560, 7.075, 14.115, 14.175, 21.185, 28.345, 50.150, 438.525 MHz. Country relays 3.582, 147.350(R) Busseton 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 146.700 at 1900 hrs.	(F) \$60.75 (G) (S) \$48.60 (X) \$32.75
VK7	Tasmanian Division 148 Derwent Avenue Lindisfarne TAS 7015 Phone (002) 43 8435	President Andrew Dixon Secretary Ted Beard Treasurer Phil Harbeck	VK7GL VK7EB VK7PU	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, 144.150 (Hobart) Repeated Tues 3.590 at 1930 hrs	(F) \$69.00 (G) (S) \$55.65 (X) \$40.00
VK8	(Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).			Membership Grades Full (F) Pension (G) Needy (G) Student (S) Non receipt of AR (X)	Three-year membership available to (F) (G) (X) grades at fee x 3 times.

Note: All times are local. All frequencies MHz.

## ■ Equipment Review

# ICOM IC-738 All Mode HF Transceiver

Reviewed by Ron Fisher VK3OM\*

As the saying goes, "when you're on a good thing, stick to it". At the same time, however, a few updates and improvements will never go astray. First, there was the IC-737 which I reviewed in the August 1993 issue of *Amateur Radio*. Then, with a few slight changes, the IC-737A. Now, with even more improvements, the IC-738.

Let's look at the first two quickly and then the new IC-738 in detail. Of course in between all of these, ICOM brought out the IC-736 which I reviewed in the July 1994 issue of our magazine. All four transceivers are closely related and from a distance would be impossible to pick apart.

Back to the beginning. The IC-737 was a high performance rig which lacked a few desirable features such as VOX, RF gain control and adequate metering. The IC-737A partially overcame this by adding VOX. The IC-736 included an RF gain control, better metering and, of course, six metre coverage as well as a built in AC power supply. It also introduced a one Hz tuning rate and display. There was no provision to operate the transceiver from a 12 volt

DC supply so the IC-736 is a dedicated base station only. Enter the IC-738 with all of the operating features of the IC-736, less six metres and the AC power supply.

The IC-738 is 12 volt powered so it is suitable for mobile or portable operation. For home station use you will need an external 13.8 volt power supply such as the PS-15, PS-30 or the PS-55, all of which are available from your ICOM distributor.

### Features and Facilities

In order to save you referring to my two earlier reviews, I will run through the main features of the new IC-738. For a mobile transceiver it is fairly large. It is a bit difficult to relate this to ICOM's latest advertisements that claim "ICOM radios are getting sleeker and slimmer". It looks as if Duncan has lost a kilo or two but I am not so sure about the IC-738!

The overall dimensions are 111 mm high, 330 mm wide and 285 mm deep. Overall weight is 8.6 kg. One of the highlights of the series is the large LCD readout. Illuminated in bright orange with black numerals, the intensity can be adjusted by an

internal preset control. Following on from the earlier models, the "S" meter is rather dull. The transmitter covers all amateur bands from 160 to 10 metres while the receiver has full coverage from 30 kHz to 30 MHz. Operating modes for both transmit and receive are SSB, CW, AM and FM. The transceiver comes with three filters, a 2.1 kHz for SSB and CW, a 6 kHz for AM and a 12 kHz for FM.

Narrow CW filters are available as options. The one Hz tuning rate and readout introduced on the IC-736 is there in the IC-738. Front panel layout is unchanged from the IC-736 and the number and location of controls are the same as the original IC-737. However, the compression level control has been shifted to the rear panel to make way for the RF gain control and the "tune" button is now the meter switch. Meter functions are: "S" meter on receive and ALC, RF power output and SWR on transmit. These are selected sequentially with each push on the meter button, with the LCD indicating the mode selected. One important difference between the IC-738 and the IC-736 is that the final RF amplifier on the 738 is powered from the 13.8 volt line whereas the 736, with the benefit of an AC power supply, allows its final to run from a 40 volt line. However, as we shall see later, the intermodulation distortion performance of the IC-738 is very good none-the-less.

### On The Air

I found it virtually impossible to pick any differences between the 738 and the 736. Again, an ICOM HM-36 hand microphone was supplied and, for the tests, I also used an SM-6 desk microphone. Transmitted audio was again rated as thin and slightly harsh. The speech processor was effective in adding a degree of punch to the signal. A generous 100 watts was obtained on all bands and intermod distortion was found to be better than -30 dB, an excellent result for a 13.8 volt powered transceiver. Overall, the receiver performed very smoothly except for the rather muffled audio response. The AM performance, in particular, sounded very woolly.

There was almost no difference in audio quality between SSB reception of an AM signal and the actual AM mode. I measured -15 dB at 3 kHz on



ICOM IC-738.

the IC-736 and it sounded just as bad on the IC-738. My guess is that the receiver audio amplifier has a sharp cut off above about 2 kHz and this affects all modes. There might well be a simple modification to overcome the problem. No doubt time will tell.

All of the great operating features of the IC-736 are retained with such things as the double band stacking register, the memo pads for quick entry of temporary memories and, of course, the one hundred and one normal memories all of which are fully tunable. Also the front panel key pad allows direct frequency input.

### On Test

It soon became obvious that the overall performance of the IC-738 was identical to the IC-736 in almost all parameters except, of course, that the IC-738 does not operate on six metres. To save referring to the earlier IC-736 review, I will run through a few of the more important test results. Transmitter power output in the CW mode was in the range of 124 watts

on 160 metres to 107 watts on 10 metres. It is possible to reduce the power output down to about five watts with the "RF PWR" control. This control operates on all modes. Transmit intermodulation distortion was estimated to be just in excess of -30 dB as referred to normal SSB speech output which is very good for a 12 volt powered transceiver.

On the receive side, the sensitivity in SSB mode at 14.2 MHz was 0.14  $\mu$ v for 10 dB SINAD. The "S" meter indicated S9 with an input of 20  $\mu$ v measured with the "Preamp" switched in. Sensitivity and "S" meter indication was even across the bands. Once again I was not impressed with the quality of AM signals so I repeated the tests I carried out on the IC-736. The results were much the same. The -6 dB points were at 250 Hz and 2.2 kHz with the response down -16 dB at 100 Hz and 3 kHz.

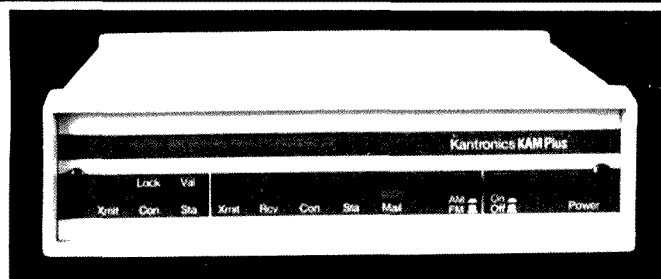
The notch filter produced a notch depth of -28 dB, however, I thought that the notch width was a bit too wide

at the top giving a rather hollow sound to the audio. Audio power output is excellent with more than the specified 2.6 watts being produced at less than 10% distortion and the product detector distortion still an amazing 0.3%. Stability tests came up with an even better result than I found in the IC-736, with total drift of less than 15 Hz over an extended operating period. Again I would very much like to try an IC-738 with the optional high stability master oscillator installed. Over all, an excellent result.

The IC-738 is one of the best performing transceivers on the market at the moment. Pity about the transmitted and received audio quality.

### IC-738 Instruction manual

The instruction manual for the IC-738 also doubles for the IC-736. Well, why not. After all, the operation is exactly the same in 95% of their functions. The format of the book is very much the same with excellent



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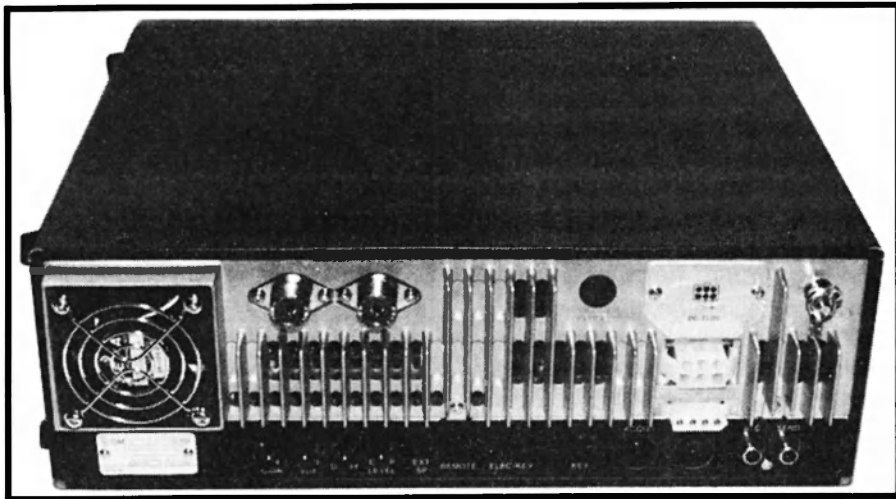
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Rear panel of the IC-728.

line drawings to describe operation. Photographs detail several adjustment points that could come in handy in the future. Again there is no technical description of how the IC-738 works. On the basis that the manual now covers two different models, I am going to drop my score rating one point to seven out of ten.

### IC-738 Conclusions

There is no doubt that ICOM have responded to a demand for increased operating facilities with the IC-738. However, I have to ask a few questions. Why weren't they included in the original IC-737, as I asked in my original review? So, having gone this

far, why not a bit further? The biggest surprise is that an inbuilt AC power supply is not offered as an option. There is certainly room for it, and one fits very well into the IC-736. My other wish is that the positions of the RF gain and the squelch controls should be changed over, with the RF gain concentric with the AF gain and the squelch positioned as the minor control. Then, with a meter position for measuring compression, the IC-738 (or will it be the IC-739?) would rival the top-of-the-line transceivers on the market at the moment.

The IC-738 is priced at \$2901.20 which is nearly \$300 up on the price of the original IC-737. Of course, the IC-738 replaces both the IC-737 and 737A and these are no longer available.

Thanks to Duncan Baxter for the loan of our review IC-738 transceiver. For further information on availability of the IC-738, give Duncan a ring at ICOM on (008) 338 915.

\*24 Sugarloaf Road, Beaconsfield Upper VIC 3808  
ar

## WIA News

### Packet Radio Users and the Law

Since a telephone computer bulletin board user in West Australia copped a \$40,000 judgement in a defamation action earlier this year (see *WIA News*, May issue), there has been protracted debate among the radio amateur community about the liabilities of packet radio use.

Under the current radiocommunications regulations governing the amateur service, any packet radio station forwarding messages is responsible for their content. Add to this the situation under defamation law that any station operator transmitting or forwarding a message originating from another station having defamatory content is a "knowing publisher", even though their station automatically forwards messages. The originator and all forwarding stations are liable under defamation law.

The problem is, a practice has allegedly arisen in which packet operators use the callsigns of other stations to transmit messages which are possibly defamatory or otherwise in breach of the amateur regulations. Suggestions have been circulated that the "problem" could be readily circumvented by using software which provides for packet message "authentication" by users. Such authentication software employs encrypted character strings embedded in the packet message, but there has been concern that the use of this type of software may also transgress the amateur regulations.

A spokesman for the SMA has advised, in responses to individuals, that the existing and foreshadowed amateur regulations allow the use of such encrypted strings for authenticating packet messages. The SMA spokesman

has also indicated the Agency would be reluctant to legislate that authentication be mandatory, or to specify a particular system. Reduced regulation, wherever possible, is the aim.

To be on the safe side, packet BBS operators should store and view messages to confirm that the contents are not libellous or in breach of amateur regulations. Even with authentication, the SMA spokesman points out, Section 108(d) of the Radiocommunications Act 1992 places the onus on all licenses, including packet BBS operators, not to permit their stations to be used to affront, alarm or harass other people.

In the USA, the FCC places the onus on the originator and first PBBS station to keep the content of messages within the law. In Australia, it is every operator's responsibility.

## ■ History

# Darwin Revisited WICEN and Cyclone "Tracy" — Christmas 1974

*Ted Gabriel VK4YG\* recalls the momentous events of 54 and 20 years ago.*

This Christmas day marks the 20th anniversary of the devastation of Darwin by Cyclone "Tracy" and the massive relief effort to aid the stricken city and its citizens.

It was also the greatest challenge faced by WICEN and amateur radio operators. How this emergency was handled is fully described in the article "The Christmas of '74" in *Amateur Radio* of June 1985, Vol 53, No 6, page 18.

The WICEN National net for Darwin was activated by VK4YG and John Roberts VK4TL in Cairns when a request by Bob VK8RR, the Manager of OTC Darwin, for an urgent message to his headquarters in Sydney, that the OTC and VID, Darwin shipping radio, transmitter site had been wrecked.

This was the first official traffic which was handled by a WICEN operation that lasted for seven days and involved many amateurs nationwide and included the marathon effort by Slim Jones VK8JT at the Darwin Base Station.

My first acquaintance with Darwin was in May 1940 when, as a young RAAF pilot, I was posted to No 12 GP

Squadron located on the civil aerodrome at Parap.

In June 1940 the Anson flight was moved to the new RAAF base to form No 13 GR Squadron, flying Lockheed Hudsons.

No 13 was involved in action against the Japanese in the area north of Australia. It won many battle honours and was, along with No 2 Squadron, awarded the United States Presidential Unit Citation.

My next visits to Darwin were in the 1950s as a pilot with Qantas. The city had recovered from the wartime bombing raids, was growing steadily and shedding the image of a wild and isolated frontier style town.

Following cyclone "Tracy" Darwin was again rebuilt, this time to modern building standards and cyclone regulations, to become an attractive tropical city.

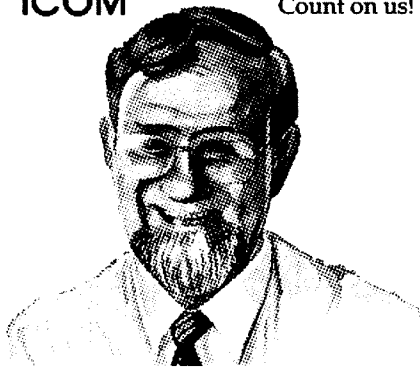
The years passed and in 1990 I returned to take part in the 50th Anniversary of the RAAF base and the honouring of No 13 Squadron as the "City of Darwin Squadron".

*\*PO Box 245, Ravenshoe QLD 4872  
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# Antennas

## A Transportable Tiltover Tower

*\*\*"Doc" Wescombe-Down VK5HP/VK4CMY describes the antenna mast that you might just be looking for.*

This project

- cost less than \$50 to build
- suits CLUB and INDIVIDUAL use
- is transportable (when dismantled) and suits fixed base or field day application
- supports HF, VHF or UHF arrays
- may be guyed or unguyed
- assembles/disassembles in less than 30 minutes
- can be built by one person in one day
- can be handled and erected by one person
- suits temporary use including caravan parks

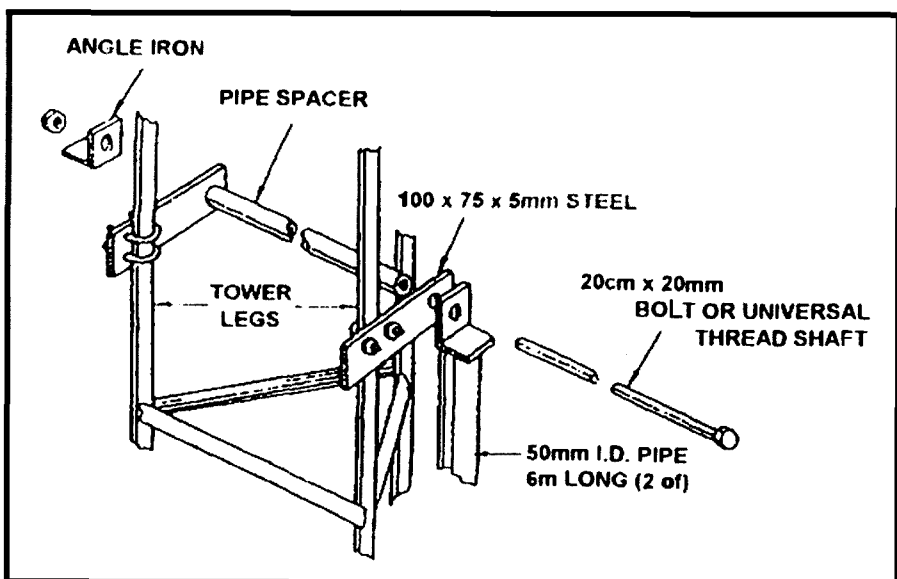
We may start with a 70 cm diameter x 12 mm thick steel baseplate to which 2 x 30 cm long x 50 mm steel tubes are mounted. These will sleeve into the two 6 metre heavy-wall cradle section steel pipes and locate them in place.

A recycled 200 litre (44 gallon) drum has the top removed and 2 x 50 mm holes drilled in the base (along

with other water drain holes around the drum base rim) so that it slides over the 30 cm steel tubes and then sits on the steel base plate. For more substantial operations, the 200 litre drum may be bolted to one, two or three additional drums which, when filled with ballast, increase both the base area and base mass and thus enhance all weather stability.

Once the drum is in place, the 6 metre cradle section is lowered into the drum and located on the two 30 cm pipe locaters. Large pieces of local rubble, buckets of gravel, etc may then be used to fill the drum — this provides the base mass of stability whilst the base plate adds both mass and area to the base.

After ensuring the cradle section is vertical, the hinge is assembled and the 6 metre lattice mast section bolted in place, tilted over to the ground. A stepladder is needed for this assembly. Details of the hinge assembly are shown in Figure 1



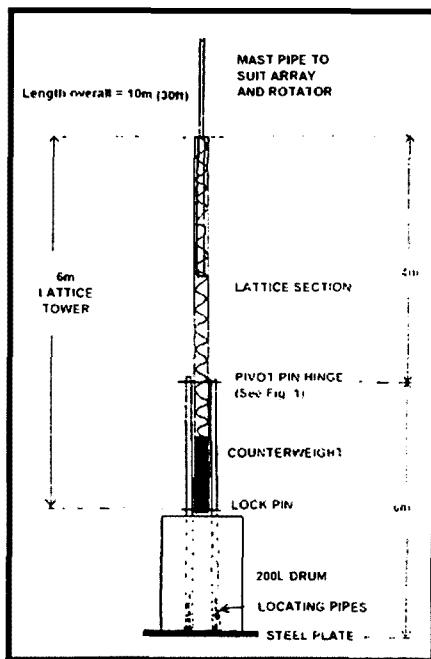
**Figure 1 — Hinge bearing detail.**

(copied from "HINTS AND KINKS FOR THE RADIO AMATEUR ARRL 1974") but note that two U-bolts should appear on each 100x75x5 mm flat plate whereas the original sketch shows two on one side and only one on the other.

The lattice mast section has a 90 cm concrete counter weight poured "in situ" using 3 ply or heavy cardboard taped to the mast for formwork. The formwork may be removed the following day and the concrete counter weight kept damp for a few days.

This counter weight offsets the weight of a large HF array and may be correspondingly smaller if only VHF or UHF arrays are to be used.

The lattice mast, together with rotator and mast pipe if used, is then pulled horizontal and rested on a stepladder while the antenna is installed. The whole hinged section is then pulled vertical by a single hand rope and the locking bolt installed. The completed assembly is shown in Figure 2.



**Figure 2 — Complete tower assembly.**

More sophistication may be obtained by using a gin pole with boat winch, but it's not essential. Overall height is 10 metres (without masthead pipe) and I have used a 4 element 15 m/6 element 10 m quad on a 9 metre boom atop this unit quite successfully.



Some Council by-laws prohibit permanent antenna installations in excess of 10 m in height but, if such a transportable unit were built using a base support of 4 drums bolted together (Figure 3), stability without permanence could be achieved if the installation were to be a bit taller than 10 m.

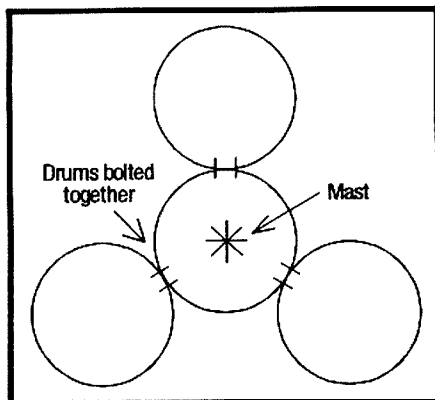


Figure 3 — Top view of tower assembly.

### Parts List

- 1 x 200 litre (44 gallon) drum
- 1 x bag of concrete mix
- 1 x 70 cm diameter x 12 mm thick steel plate
- 2 x 30 cm x 50 mm OD heavy steel pipes
- 2 x 6 m x 50 mm ID steel pipes (2.5 mm wall)
- 1 x 6 m x 15 cm triangular mast section (OR single pipe mast as an alternative)

Assorted pieces of strap iron etc for cradle section crossbracing (within 200 litre drum)

Hinge hardware (see Figure 1), paint to suit, welding rods, packing tape to hold formwork.

\*C/- Post Office Dalveen Qld 4374 ar

## QSP News

Did your November copy of *Amateur Radio* arrive late last month? Did you wonder why?

Well, it was delivered on time to the mailing house on the last Friday in the month, but they had a machine failure which took several days to fix.

However, it was worth waiting for, wasn't it?

## Technical

# The CRADBIG Charger

Reg Carter VK3CAZ\* says it's "Crude, Rude And Disgusting But It Goes!" and then tells how.

During the months either side of the midwinter solstice a friend, reliant on Solar Panels to charge 360 Ah of 12 volt batteries powering his home, finds his rig pulls the energy out faster than the solar cells can put it in.

Consequently there was a need for a good 20 to 30 A battery charger. There are plenty of petrol-driven 12 volt (nominal) generator sets on the market but being designed to run 12 volt appliances they are pretty useless at charging batteries. As soon as the battery voltage nears 13 volts or so the charging current drops off and it takes a lot of petrol to fully charge the battery. A car alternator as supplied is really no better since it, too, is designed to run the car's electrical systems with its charging of the vehicle battery a somewhat secondary feature. Once the battery reaches 13.8 volts or so it ceases to charge at any appreciable rate and so fails dismally as a charging system.

So we set out to make a battery charger with a good output, starting off with a small 3 1/2 horsepower petrol engine mounted on a steel frame. A second-hand alternator (Lucas in our case) was obtained, checked out for serviceability and

then stripped down. The stator windings and output diodes were left strictly alone but all the regulator side feeding the rotor, or excitation coil, was removed leaving just the two brush holders. One of these brush holders was connected to the frame of the alternator and the other brush connection brought out as an external connection. Once the alternator had been re-assembled it was mounted on the frame so that it could be driven by a "Vee" belt (in the correct direction as shown by the arrow stamped on it) at about 2 to 2 1/2 times engine speed, as determined by the size of the pulley fitted to the driving engine. Then the alternator output connection and the frame of the alternator (its negative output terminal connection) were connected to the batteries via an ammeter capable of reading 40 A. The new connection for the excitation coil was returned to the positive output terminal of the alternator via a 32 cp (approx 18 watt) automotive direction indicator globe and an on/off switch as shown in Fig 1.

Once the petrol engine had been started and had warmed up, we ran it up to a speed of 1400-1500 rpm.

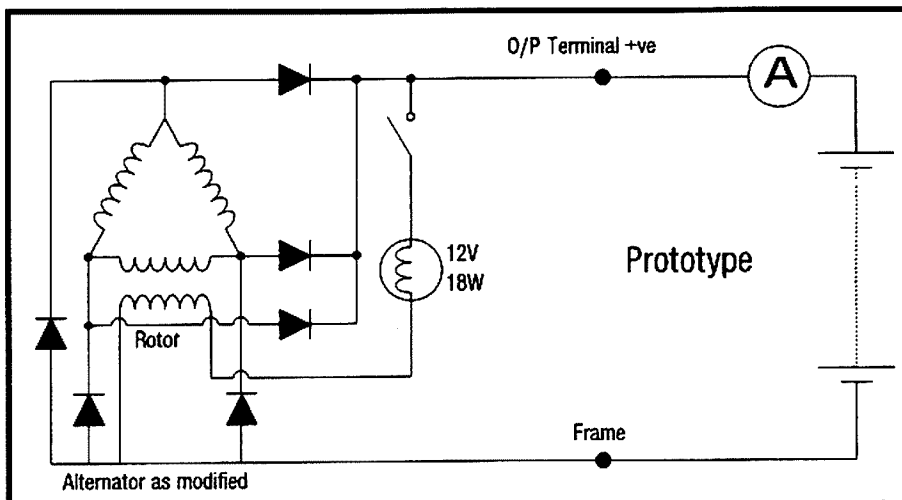
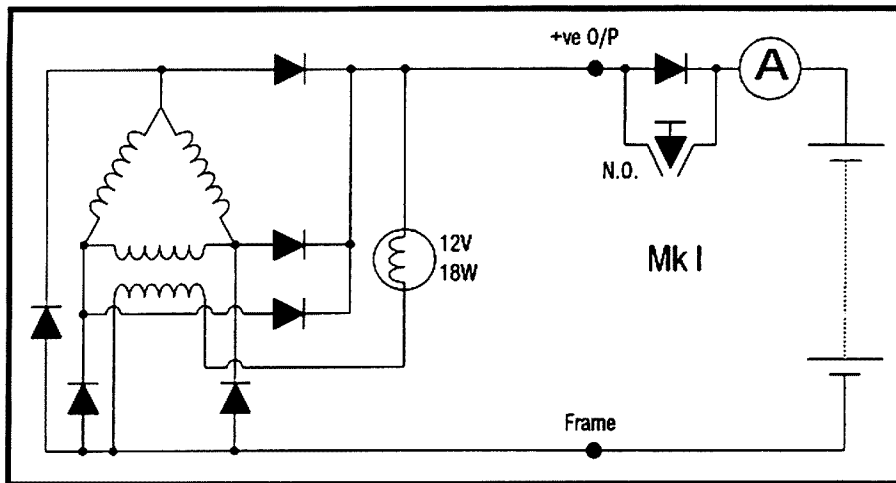


Fig 1.



**Fig 2.**

Then the switch was closed so that (by later measurement) a current of about 2.2 A flowed in the rotor. The alternator was delivering around 20 A to the battery and this could be increased to 25-30 A by increasing the engine speed. The series globe in the excitation circuit provided a measure of output stabilisation since it was not at full brilliance and so if the output voltage of the alternator rose so did the resistance of the globe and consequently the excitation was reduced. We had a virtually constant voltage charging system.

This first model delivered about 60 Ah per litre of petrol so at Ballarat prices it was about 0.82 c per Ah. I rather like the new unit of Ah/l so will use that!

This prototype did, however, possess two flaws, one minor and the other major. The minor flaw was that if the petrol engine stopped for any reason some of the hard-won charge flowed back from the battery through the excitation coil and was wasted in lighting the series globe, until the switch was opened. This flaw was overcome by fitting a 70 amp diode, mounted on a heatsink, in series with the output lead and fitting a momentary-contact, normally-open, push-button switch rated at about 5 A to bypass the diode. The switch in series with the globe was removed and the lamp wired permanently to the output terminal connection, see Fig 2.

**Mark I**

Now, in operation, once the petrol engine was running correctly the

push-button was momentarily depressed allowing the battery to initially excite the alternator. Once released the alternator excited itself and delivered its output. If the engine stopped, the diode, being reverse-biased, isolated the battery from the charging system thus remedying the first flaw.

The major flaw was that the system was so simple that there was little to go wrong and if the globe, the only thing that could fail, went open-circuit the system was "fail-safe". That, of course, is no way for an amateur-built thing to behave, so it had to be made more sophisticated so as to increase the probability of failure. By the way, have you ever looked up the original and still true meaning of the word "sophisticated" especially when used in the perfume industry. I am glad I make no claims of being sophisticated!

Anyway, in an attempt to

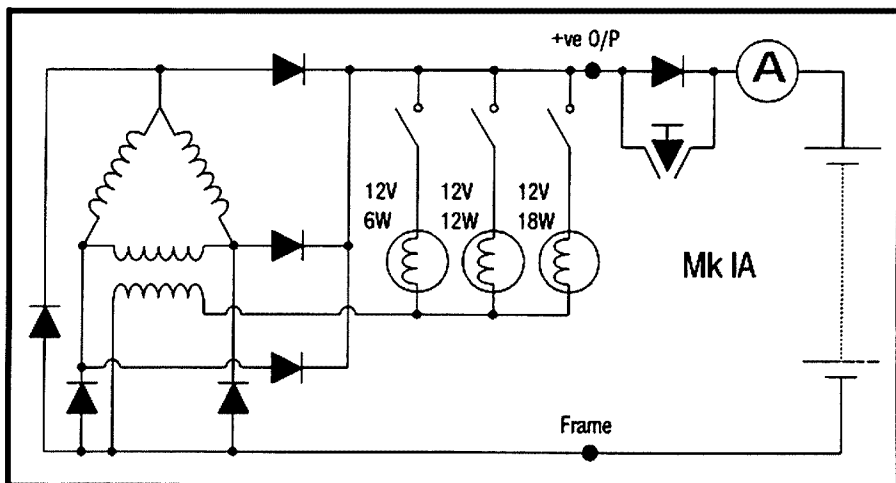
complicate the issue it was contemplated that we replace the single globe with three globes, of 6, 12 and 18 watts rating, each controlled by an individual on/off switch. This, it was felt, would permit the selection of six different charging rates as selected by single switches or combinations of switches. The Mark IA as shown in Fig 3, was still-born as it was deemed not to be complex enough nor fallible enough!

It was finally decided that the only way to introduce enough fallibility into the system was to use semi-conductors to control the excitation current. This, it was felt, would ensure sufficient failures to provide the maximum inconvenience when using the charger.

Thus emerged the Mark II controller as shown in Fig 4. This was built and proved disgustingly reliable and successful, giving outputs up to 40 A and being capable of so loading the engine as to stall it!

The semi-conductors were fitted with, or to, heatsinks; these being a "flag" for the BD139 and a Minifin section for the 2N3055. The whole unit was built into a metal box with the two large heatsinks for the 2N3055 and series diode being mounted on opposite ends.

Take your pick of excitation schemes but be warned that this is NOT a power supply, it is a battery charger! If you consult a GOOD book on the subject of lead-acid secondary cells, most of which you will find were written quite some years ago, it will point out that the terminal voltage of a lead-acid cell at "top of charge" is



**Fig 3.**

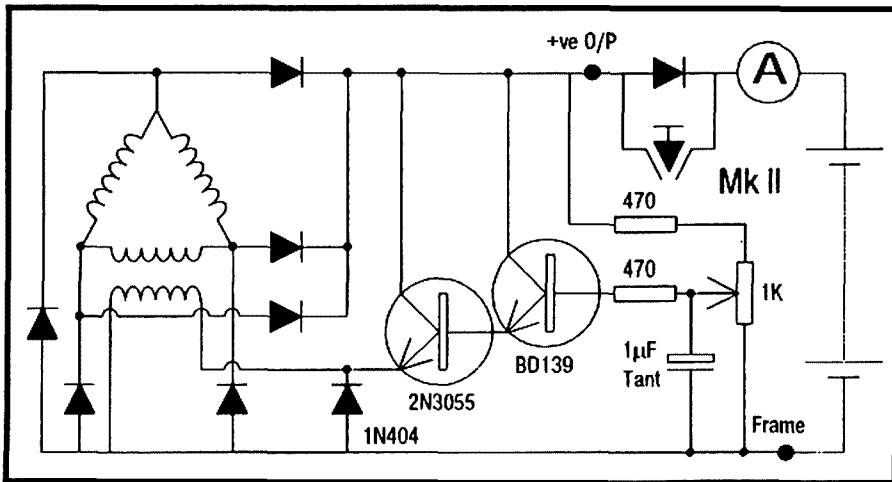


Fig 4.

between 2.5 and 2.8 volts per cell dependent on several factors including temperature, charge rate and acid density among others. That means that the terminal voltage of your battery when fully charged can be as high as 16.8 volts. If you allow for a little internal resistance such as is found in "the old battery used for field days" and have a charging current of 15-20 A then it may well exceed 17 volts. Should you be stupid enough to connect your precious rig

to a supply of that value it won't like it at all and you may let all the brown smoke out of the components so they don't work at all! So remember, if you build something like this, it is a BATTERY CHARGER.

Eric VK3FRO did all the hard work of making up the frame and mounting the bits plus turning my suggestions into hardware and any credit should really be his. Anyway the Mark II has delivered 30 A continuously for six hours without distress at a rate of about 75 Ah/l (I like that unit!)

Good luck and have a go choosing whichever Mark takes your fancy and will meet your needs. But remember, "what isn't there can't go wrong".  
ar

## WIA News

### Family Membership

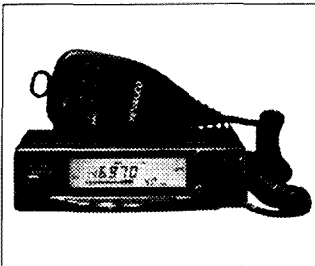
A proposal from the VK7 Division that a "family membership" grade be investigated, has been recommended to the Federal Council by Jim Forsyth VK7FJ, Federal Councillor for VK7. The proposal is to be investigated by the new Federal Secretary, with a view to reporting to Council as to costs and feasibility at the next quarterly meeting in February, next year.

The NZART has a family membership grade. Details of its operation was described to the Federal Council by NZART delegates who attended the WIA's Federal AGM in May.

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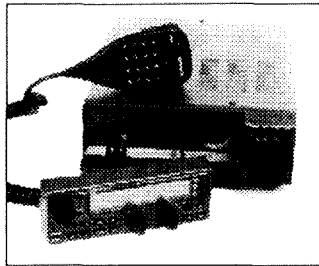
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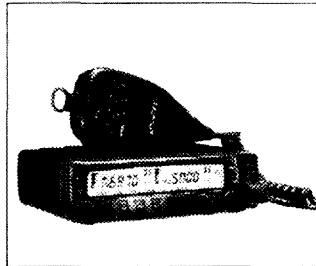
TM-251A 2m DATA MOBILE

- ☆ 1200/9600 BAND PACKET
- ☆ 41 MEMORIES (EXPANDABLE TO 200)
- ☆ 5 METER SQUELCH
- ☆ BUILT IN DIGITAL RECORDING
- ☆ DUAL BAND RECEIVE
- ☆ 50 W OUTPUT POWER.



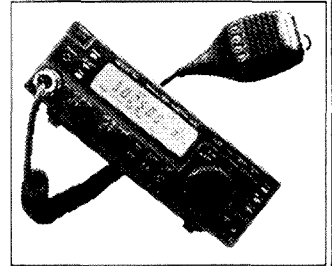
TM-255A 2m ALL MODE

- ☆ 1200/9600 BAND PACKET
- ☆ DETACHABLE FRONT PANEL
- ☆ ALL MODE OPERATION
- ☆ 101 MEMORY CHANNELS
- ☆ TWIN TUNING DIALS
- ☆ 40W OUTPUT POWER



TM-733A DUAL BAND MOBILE

- ☆ 1200/9600 BAND PACKET
- ☆ DETACHABLE FRONT PANEL
- ☆ DUAL RECEIVE VHF & UHF
- ☆ 72 MEMORY CHANNELS
- ☆ 5 METER SQUELCH
- ☆ 50/35W OUTPUT POWER



TS-60S 6m ALL MODE

- ☆ 100 MEMORY CHANNELS
- ☆ DUAL VFOs
- ☆ DUAL MENU SYSTEM
- ☆ ALL MODE SQUELCH
- ☆ COMPUTER CONTROLLABLE
- ☆ 90W RF OUTPUT

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## ■ Digital

# A PLL Carrier Detector for the 7910 Packet Modem

*Lou Destefano VK3AQZ\* further improves his packet modem.*

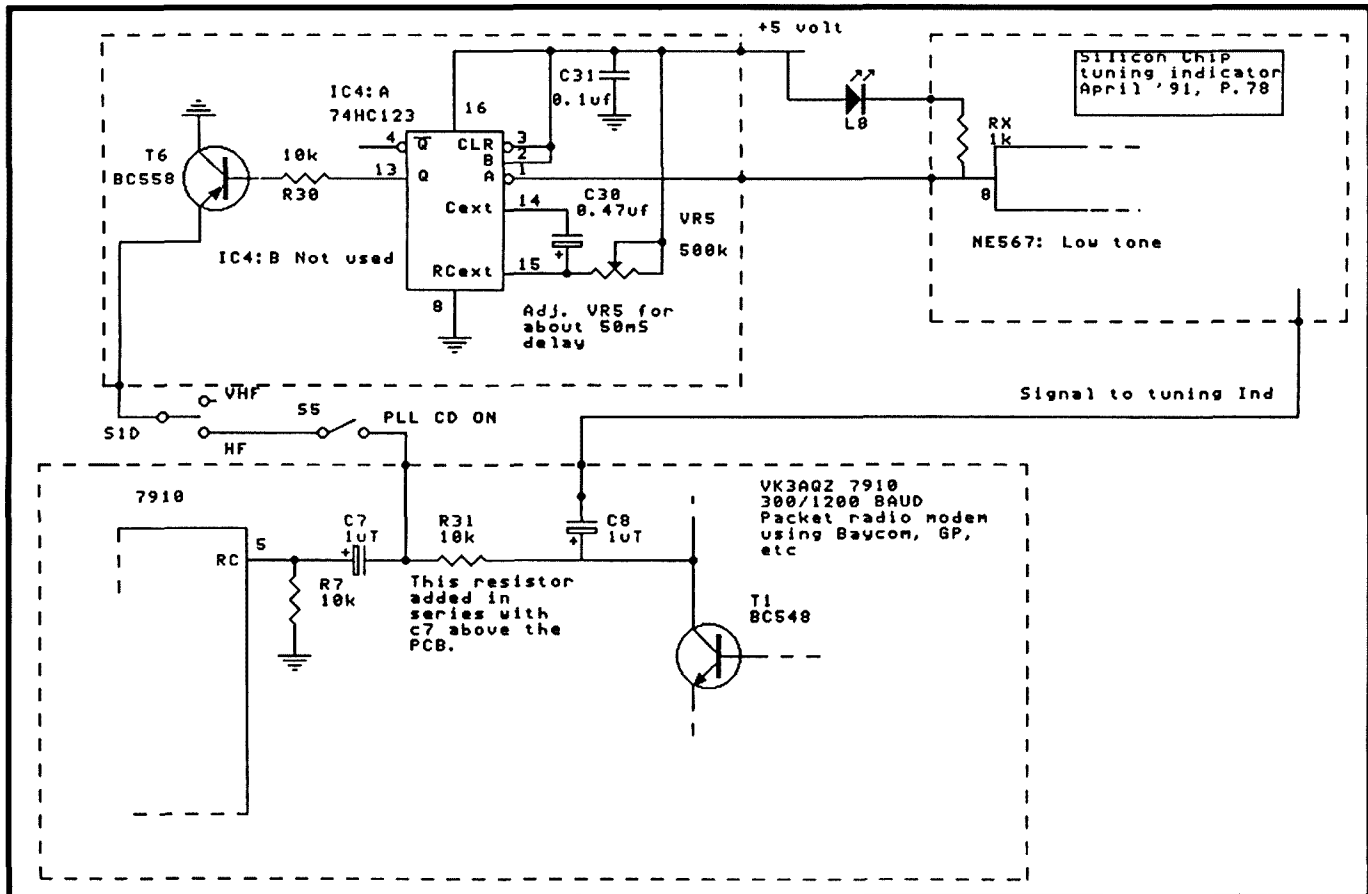
The 7910 300/1200 Baud packet radio modem uses the carrier detector function within the 7910 chip for determining channel activity. Some software uses the chip's carrier detected squelch to commence transmission. In addition to the presence or absence of data, Baycom also uses software bit count detection, and this can be selected by setting the Carrier parameter to 0 or 1. Because the 7910 was designed for telephone line use, the carrier detect circuit triggers with moderate levels of noise, and thus prevents the

software from commencing transmission, even though the channel is clear of packet signals. Software detection is an improvement, but still not satisfactory. This problem mainly affects HF packet. VHF packet normally uses FM, which uses a separate mute in the receiver, and thus does not present a problem.

The modem circuit I built incorporated a tuning indicator system published in Silicon Chip, which uses a pair of phase locked loop chips (NE567) as narrow band

tone detectors. It was noticed that the tuning indicator LEDs did not come on with noise as readily as the carrier detect LED on the 7910. Because the NE567 is a PLL device, a tone needs to be received before it locks up properly. Using this information, I built a simple interface between the tuning indicator and the 7910 which acts as an audio squelch into the 7910. The circuit consists of a re-triggerable monostable (74HC123) which is driven by the NE567 and turns a squelch transistor off in the presence of one of the packet tones.

The tuning indicator uses one PLL chip for the packet low tone and one for the packet high tone. It was found that it was only necessary to interface to one detector and a small delay used to span the time interval of the other tone. The delay was also necessary to stop the squelch transistor pulsing the input to the 7910 at the data rate and confusing the modem. After some experimentation, I adjusted the timing trippot for around 50 to 100 msec. If this time is too long, your transmission delay will be extended, which will slow up the



data throughput. The 74HC123 consists of two monostables and it was intended to use one for each tone. However, this is not necessary and so the other one is left unused.

The output of the monostable is fed into a PNP transistor (T6) which is connected to the junction of the coupling capacitor feeding the input of the 7910 (pin 5), and a resistor going to the collector of the amplifier transistor, T1. Resistor R31 is added by removing the positive lead of the 1  $\mu$ f Tantalum capacitor from the pcb, and placing the resistor between this flying capacitor lead, and the pcb hole. Make sure the resistor goes into the correct hole which takes it to the collector of T1 and effectively provides DC power to the squelch transistor. If you have a CRO, connect it to the junction of R31 and C7 and observe the unmuting action of T6 when the low tone LED lights up. Adjust VR5 so that there is no pulsing at this point with packet data, and a suitable delay exists after the tone drops off.

The monostable input is derived from pin 8 of the NE567 and this point goes low when the correct tone is received. It is a negative going pulse and so it is fed into the negative trigger input of the 74HC123. The Q output of the 74HC123 is used to drive the PNP squelch transistor. When the Q output is low, T6 is turned on and effectively shorts the incoming audio to ground. When the Q output goes high, the transistor turns off and the audio is allowed to enter the 7910. I could have tried to squelch the TTL side of the 7910 output, but I was concerned about the effect of pulsing the data line on and off. However, the extra delay available using that method would be beneficial. With the method used here, you can observe the carrier detect LED coming on and off, which is handy when setting the receive level. After the addition of this circuit, I find I can turn the audio level up considerably higher before noise starts to affect the packet transmission.

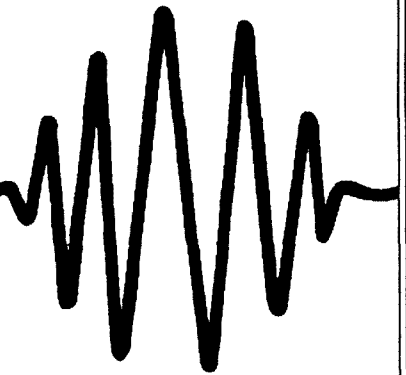
The muting transistor connects to

the main pcb via an on/off switch and a fourth pole of the VHF/HF selector switch. This disables the muting function on VHF as it is not needed. The other switch was added so that I could observe the effectiveness of the mute, and also disable it if I felt it affected the receive in any way. In practice I now leave it on all the time. As there are only a few parts I built the unit on a small IC test pad PC board that you can buy from Tandy and other electronics hobby suppliers. A piece of matrix board would also suit.

\*7 Worthing Road Devon Meadows VIC 3977 ar

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number CE 0000

## ■ Technical

# Technical Abstracts

Gil Sones VK3AUJ

### Peg Vice for Printed Circuit Boards

Holding and manoeuvring components and printed circuit boards together with other tools is difficult. A holder or vice is useful but they can be expensive if used infrequently. A simple and cheap device was described in the October 1994 issue of *Radio Communications* in "Novice Notebook" by Ian Keyser G3ROO. The idea comes originally from John G0FZW and uses nails, clothes pegs, and a piece of board to produce a versatile vice for holding a printed circuit board (PCB) while you work on it.

Parts count for the device is very small being only four nails, four clothes pegs and a scrap of wood. The pegs should preferably be made of wood with a spring closer.

The Peg Vice is shown in Fig 1. A suitable piece of board is selected as the base for the device. A scrap of particle board or the offcut from a plank would be suitable. A matrix of holes is drilled in the base to suit the size of the nails being used. The holes should be slightly larger than the nails and should be drilled about 10 mm deep.

The clothes pegs should be wooden, for preference, but plastic could be used. Drill a hole in each peg to suit the nails being used. The nails should have their heads removed. Insert the blunt head end of the nails into the holes in the pegs. You may be able to just push the nails tightly into the holes in the pegs. A spot of glue may be required.

*This simple device will free your hands while working on a printed circuit board.*

To use the vice the pegs are clipped to the edges of the PCB and the nails slipped into suitable holes in the base. The PCB is then conveniently supported whilst inserting components. To solder the parts place a piece of cardboard over the PCB and invert the board and re-clip the pegs to hold the PCB whilst soldering and trimming leads.

This simple device will free your hands while working on a printed circuit board. The cost is very small and the device can be quickly made to suit the job on hand.

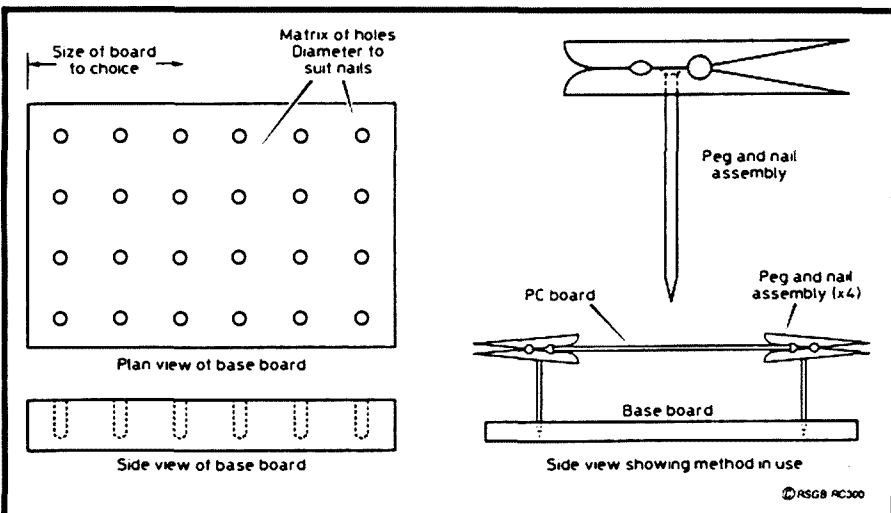


Fig 1 — Handy Peg Vice designed by G0FZW.

### Simple HF Fox Hunt Equipment

A simple technique to use a small portable radio as an HF direction finder was published in the August issue of *QST*. The authors were O G Villard Jr W6QYT, G H Hagn and J M Lomasney WA6NIL from SRI International.

The system uses a small portable radio, such as a SONY ICF 7600, held on a metal plate. An enhancement to reduce user body effects is the use of a simple Faraday cage made from a mailing tube and wire.

Basically the radio is mounted on a square conductive plate with the whip antenna extended along the diagonal of the square plate (see Fig 2). The antenna should always be in the plane of the plate. Fig 3 shows how the radio's whip is pointed end on with respect to an incoming radio wave. The wave has parallel fronts and so the whip is aligned so as to be perpendicular to the electric field. No RF current is induced in the whip except as a result of field distortion caused by the radio itself. If the re-radiated energy is electrically symmetrical with respect to the whip, however, the antenna will still null the signal.

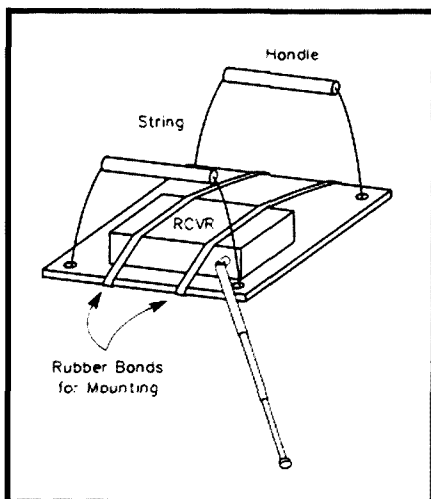


Fig 2 — Receiver Mounting on conductive plate. The whip should lie along the diagonal and be in the plane of the plate. Rubber bands hold the receiver in place.

By mounting the radio on a conductive plate as shown in Fig 2 the reflected energy is symmetrical. In the null direction neither the incident wave nor the backward

directed symmetrical receiver scatter induce signal energy into the whip and the radio. The null direction is the diagonal of the plate extended in the direction of the whip. The result is a clean null if there are no additional signal sources present.

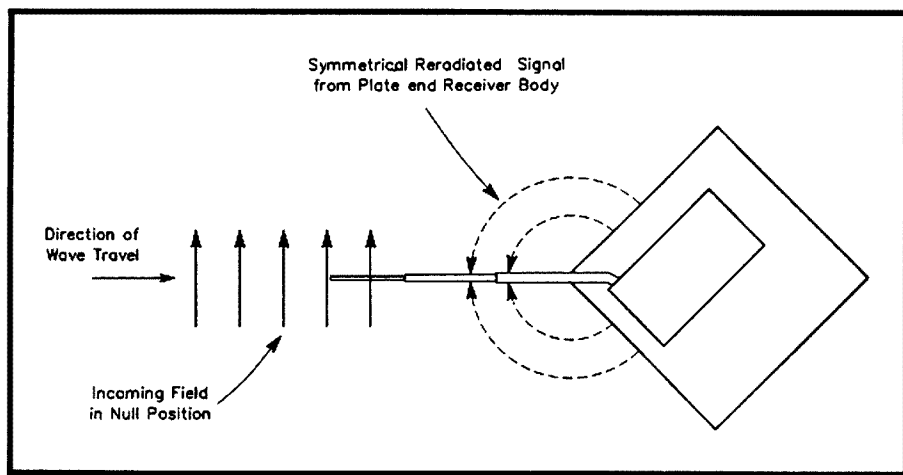
Small portable receivers are thin enough to mount face up on the metal plate. The radio is grounded to the plate and is then effectively part of the plate. The plate could be a sheet of printed circuit laminate. The plate plus receiver as shown in Fig 2 and Fig 3 are equivalent electro-magnetically to the plate alone. A good null is obtained when the incident wave is aligned with the receiver whip. The wave re-radiated from the receiver also has a null in that direction. The whip must lie along an extension of a diagonal of the plate and must be in the same plane as the plate.

The length of the whip is not critical. A long whip will give a bigger signal but may be awkward. If the whip is too short the reduced sensitivity will be accompanied by a poorer bearing accuracy. The plate can be a sheet of metal or a piece of printed circuit board laminate or even a card covered in aluminium cooking foil. The plate should be somewhat larger than the radio so as to accommodate the shape of the radio and the asymmetric whip mounting on the radio.

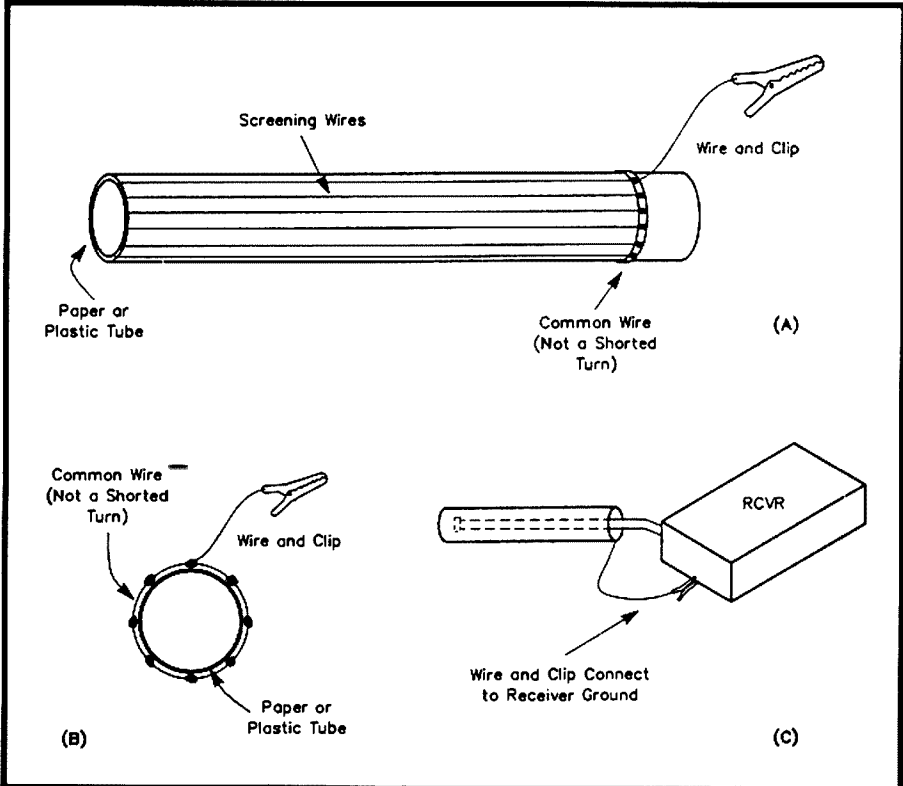
The whole setup is suspended from non-metallic strings and held clear of your body whilst rotating it to find the null. Elastic bands should be used to secure the radio to the plate. This will help maintain the radio position fixed with respect to the plate and help you to avoid dropping it. The null will be along the line of the whip and the diagonal of the plate.

To reduce sensitivity and make a null more apparent a partial Faraday shield can be used. This is placed over the whip and it will also help with re-radiation effects from nearby objects such as your body. The screen can be made simply and cheaply from a plastic or cardboard tube by taping some wires to it. The construction is shown in Fig 4. A suitable tube would be a mailing tube or an offcut of plastic conduit.

Body absorption can be used also



**Fig 3 — Field lines of the Incoming wave are perpendicular to the whip and induce no voltage in it. The receiver mounted on the conductive plate is symmetrical with respect to the whip. Parts of the end-on incoming signal wave are uniformly scattered and don't upset the antenna null by inducing voltage into the whip.**



**Fig 4 — Faraday shield over the whip reduces signal pickup and makes directional nulls more apparent. (A) is a side view. (B) is an end view. (C) shows the Faraday shield in place. Use tape to hold the wires in place.**

as a check on the direction. Hold the radio with the whip in the Faraday shield screen vertically against your body and turn around. The signal will suffer greatest absorption to your rear where body absorption is greatest. This can be used to check the null obtained.

This seems to be a simple

technique but it could be used to good effect backing up other more sophisticated equipment. It would also be useful in tracking down noise sources with simple equipment. You should be ready to explain to interested onlookers though as the strange antics will not go unnoticed!

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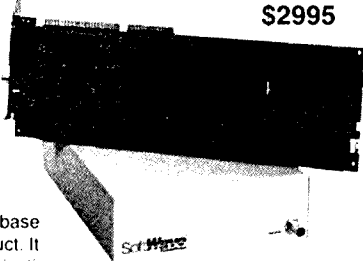
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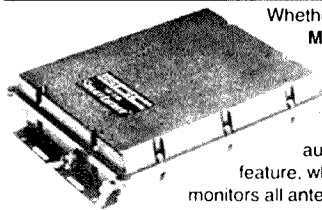
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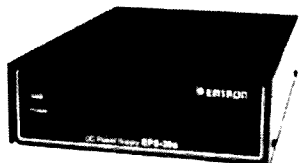
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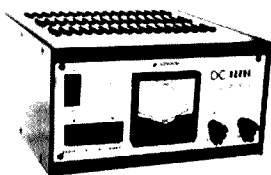
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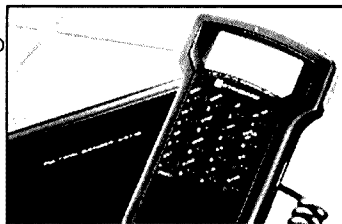
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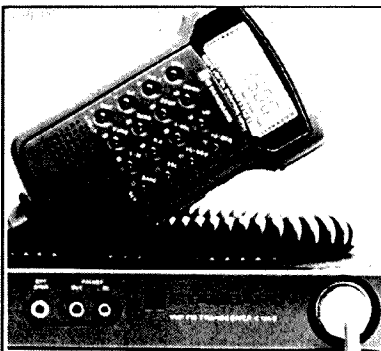
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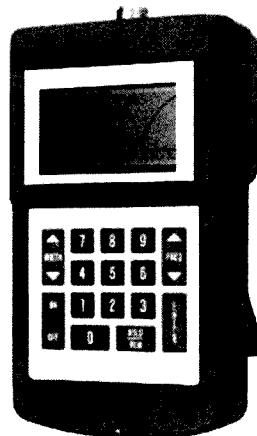
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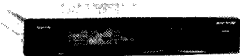
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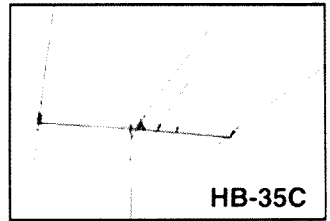
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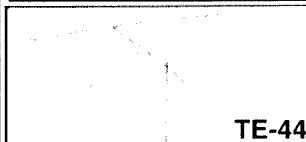
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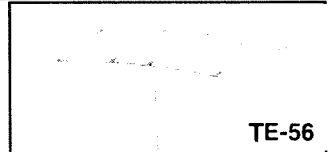


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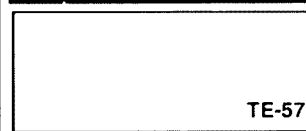
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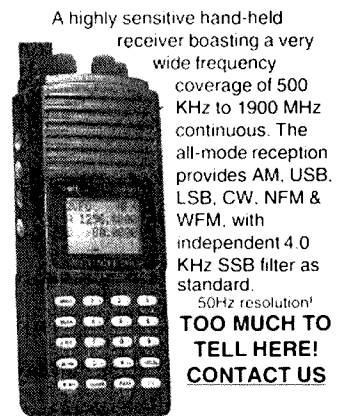
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# Roof Top Run — January '94

*Jack Bramham VK3WWW\* found out about the Roof Top run in the best way short of actually running in the event. His account was previously published in the EMDRC Bulletin.*

I had been looking forward to this event for quite some time so, with eldest daughter Erica in tow, we left Melbourne on New Year's Eve headed for Falls Creek. Upon arriving there we decided to move out further to escape the New Year's Eve revellers. We found a few family groups at Langsford's Gap West caravan park who had decided that 2130 was close enough to celebrate the new year.

## **Saturday, 1 January. Temperature 2.5°C.**

The weather was looking fine for our 8 km hike from Watchbed Creek to Roper's Hut. We were to join up with two other hikers but by 1230 they had not arrived so we pressed on. This is where the hard work started, with Erica complaining that her pack was rubbing. I relieved her of it and strapped it to the top of mine. With this problem out of the way we continued on and after many rests finally arrived at Roper's Hut around 1600. We were both totally exhausted and it took me about thirty minutes to recover sufficiently for the job of setting up antennas.

Bob VK3UI had told me that this location was bad for transmitting so I had brought in a 4 element Yagi, a 6 m mast, a small 2 m linear, two 6.5 Ah gel cells, a 1.2 Ah gel cell, a dual band HT and a 2 m HT plus plenty of patch leads, power cables, tools, etc. I was determined to open up either VK3RNE or VK3RHO. While setting up the mast I had left my 2 m HT monitoring VK3RNE, but not expecting to hear anything, I was surprised to hear Bob come on. Did this mean that I didn't need all the extra equipment? A quick call to Bob confirmed that I was readable into the repeater on 5 watts using a rubber ducky antenna. Didn't Murphy say

something like "if you don't have it you will be sure to need it". I proved that the reverse is also true "if you take it you won't need it".

## **Sunday, 2 January**

At 0545 the VK3AWI operator stirred us into action with a wake up call. Weather conditions were not good. With gale force winds on the summit of Bogong and also Mt Hotham the runners were in for a tough time. Light rain had been falling since about 0430.

The race started at 0623 but the first runner was not due to reach our checkpoint until about 0915 so there was plenty of time to have breakfast and prepare ourselves. Our checkpoint was manned by myself, my daughter and two ladies who had an interest in the race but also wanted to experience some of Victoria's beautiful high country.

We could hardly believe that the first runner to reach us had just run from Mountain Creek at the base of Mt Bogong, up the staircase to the summit, along to Maddison's Hut, down across the Big River and up Duane Spur following the Alpine walking track to our checkpoint. He looked as though he had just started 200 metres down the track! Most of the runners were in a similar state but this fellow continued in this vein throughout the entire event. Even after he had run the 60 km from the start to the finish at the summit of Mt Hotham he still had enough energy to run from the summit down to where his car was parked, get a pullover and then run back up to the top again in time to watch the next competitor arrive!

At 1330 the last bunch of runners arrived at our check point. After strapping up one slightly sprained ankle and feeding them with fruit,

lollies and chocolate we filled their water bottles and they were on their way again. Our job was over and we could pack up our gear for the walk out. The return trek was a bit easier for me as I had by this time managed to offload about 14 kg of gear onto the back of a friendly hiker. Back at the car we stowed everything away and headed for the "Cosy Kangaroo" in Bright where it was good to eat some real food and chat to some of the other operators and also a few of the runners.

## **Monday, 3 January 0045**

Back home again after a very enjoyable experience but, for the life of me, I can't work out who is crazier, the runners or us! Later in the afternoon before putting everything away I weighed my pack as it would have been when we started out and it came to 43 kg excluding the water bottle and food. Be assured, next year the contents will be severely pruned. On second thoughts perhaps I should just enter the race instead. Hi! Hi! Thanks to Bob and the boys for a very well organised event.

\*46 Nurlendi Road, Vermont VIC 3133

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## **QSP News**

### **Canadian Radio Amateur Elected to Key ITU Post**

At the ITU Plenipotentiary Conference in Kyoto, Japan on 30 September, the International Telecommunication Union (ITU) elected Canadian radio amateur Robert W Jones VE3CTM to replace retiring Richard C Kirby W0LCT as Director of its Radiocommunication Bureau.

VE3CTM is currently the Director General of the Radio Regulatory Branch, under Industry and Science Canada, which regulates amateur and other radio service. His work with the ITU began in 1975 in preparation for the 1977 and 1979 World Administrative Radio Conferences (WARCs). He attributes his professional interest in radiocommunications to having become a licensed radio amateur as a teenager in 1959.

News item supplied by David Wardlaw VK3ADW

## ■ Digital — Humorous

# Packet Explained for the Beginner

*Chris Davis VK1DO\* originally wrote this humorous look at packet radio for the ACT Divisional broadcast.*

Here in the ACT, the packet group have done their usual excellent job presenting a back to basics evening. You might have missed it? However, it's not too late. Now you can absorb the wonderful novelties and unique qualities of the renowned world of packet. Here are a few valuable tips.

This specially prepared article is written by our skilled correspondent whose background includes diverse keyboard experience, and an innate knowledge of matters packet. What this writer doesn't know about packet is anyone's guess.

So then, back to basics. Some readers will be baffled by the terminology used in many technical articles. Don't worry. Just read on steadily and the jargon and terms will be broken down word by word, term by term.

First there is the term Packet. Some misguided types have tried to propagate some nonsense about data communications and the way in which the mode sends data in groups called packets. This is incorrect. The term PACKET stands for **Protocol Arranging Common Knowledge Excluding Truth**.

The term KISS stands for **Keep Interfering Several Stations** simultaneously.

Some operators who have experimented with the mode TCP/IP somehow manage to delude themselves that it is some sort of fast reliable file transfer mode. A routine examination of the band during its operation will reveal that TCP/IP stands for **Transmit Continuous Packet Interference Progressively**.

Having covered some of the terms relating to protocols and modes, perhaps I should cover some of the terms you are likely to encounter when you have actually connected to

someone or something. Firstly there is BULLETIN. In day to day life this is a well respected journal. In packet it means something quite unrelated. BULLETIN stands for **Basically Useless Listing Lacking Entertainment Taste Interesting Nobody**.

DIGIPEATING is another misunderstood term bandied about by the nervous packet gurus who try and disguise what they are actually up to. Some creative types have claimed that DIGIPEATING relates to the extension of one's range by using another person's station.

DIGIPEATING actually stands for **Don't Install Good Isopols Purposely Every Antenna That Infiltrates Nowhere Goes**.

So what about NODES? NODES stands for **Nobody On Deck Except Sysop**. Sysop is another one. SYSOP stands for **Send Your Signals On Phone**.

Then there is NETROM of course. A very useful cheery abbreviation. NETROM stands for **Nothing Else To Report Old Man**.

Don't forget RETRY. RETRY stands for **Really Expecting To Respond Yesterday**.

Another popular term is LINKSTATE. LINKSTATE stands for **Last Item Not Known Send To Anywhere Trace Excluded**.

BBS stands for **Band Busy Still**.

And last but not least there is BYE. Once you type this on your terminal, BYE describes what is happening on the band while you are away. **Burning Your Ears**.

I hope you feel enlightened! So, NETROM for now.

*\*123 Hawkesbury Cres Farrer ACT 2607*

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## WIA News

### New WIA Members

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of October 1994

L20980 MS H GODSALL  
L20981 MR H GUTTE  
L20982 MR D E ROBINSON  
L20984 MR H J ROWLAND  
L30902 MR W CHRISTIE  
L50325 MR D P GLYNN-ROE  
L50326 MR J B WHITEFORD  
L50329 DR C J TYSON  
VK1ARA MR A R A DAISUKE  
VK2CAP MR H PREHN  
VK2IBF MR A KENZIAN  
VK2MOM MR B SHIPTON  
VK2MON MR A TURVEY  
VK2QC MR K SHARPE  
VK2TDT MR D J TAYLOR  
VK2TFT MR E M STRINGER  
VK3FCA MR D HUF  
VK3JJX MR I MANSON  
VK3MWW MS M WILLIAMSON

VK3ZJB MR J A BLANCH  
VK4APK MR P W KIECK  
VK4CPG MR C P GERHARDT  
VK4CXB MR G E HAYWARD  
VK4DZB MR G O BRAND  
VK4EJ MR B T MCIVOR  
VK4IF BRISBANE VHF GROUP  
VK4SKL MR A M MCCASKILL  
VK5AFA MR D J RAYNER  
VK5AGT MR W C FRYER  
VK5AJK MR J J KLEINRAHM  
VK5JI MR V J M BOSHER  
VK5KTZ MR M J A WHITING  
VK5LTD MR C LARWOOD  
VK5NFJ MR J F T  
NIEUWENHUIZEN  
VK5NWH MR W R HOLMAN  
VK5PBF MR G C NICHOLSON  
VK5RC MR R SCHESTAVIN  
VK5SE MR K P THOMPSON  
VK5ZEA MR M CAREY  
VK5ZIK MR R W DUNCAN  
VK5ZJI MR S C ADKINS  
VK7LS MR L A COOPER  
VK7MAJ MR A J TABART

## ■ Operating

# Forever Courteous

*Bob Hawksley VK2GRY\* has a word or two about the old-world niceties of CW operating.*

In this troubled world there's a group of individuals embracing every race and creed but who are distinguished from the rest of mankind by being courteous to a fault. Dating from the moment the trade of telegraphist came into being, today the group consists largely of ham operators whose numbers now reach into the millions.

Yet ham operators are not noted for gregariousness. Rather, they prefer to spend much of their time alone surrounded by their apparatus. Like star to faint star they call to each other across the sky and since they know nothing of rank their conversations bear witness to their love for one another.

Never in my years of CW operating have I ever copied a harsh or cross word. On phone, regretfully, I've heard the occasional lapse but on CW never. Within that pristine and disciplined medium the chit-chat is replete with the milk of human kindness and an enormous reluctance to say goodbye. Whereas at the start of a contact this characteristic may not be apparent it soon becomes so, as one follows it through. Let me give a typical example, fictitious, of course, lest anyone thinks I'm getting at them!

I hear a CQ. Wondisi. Don't often hear anybody from that region. I reply. And Wondisi replies. Good. Another bit of rare DX for the log. Wondisi is brief and to the point, nothing lavish: TKS FER CALL = UR RST 579 = QTH UMDALA = NAME TONI = HW?

My reply is in a similar vein: 589, QTH SYDNEY NAME BOB. Toni replies: FB FB SOLID DR BOB OM. Dear Bob Old Man? A touch familiar to stern Australian ears but fairly common from some parts of the world. The French sometimes say Dear Bob Old Boy but I suspect it is

to give themselves moments of the utmost hilarity. Like Australians taking off the Poms. It is hilarious. Toni continues: RIG ERE 1 KW ES 3-EL BEAM = WX FINE 32C = HW DR BOB OM?

I trot through the same agenda rig, ant, and wx (I baulk at saying DR TONI OM) and then I play the QSL card ploy which is a polite way of saying I can't think of anything else to say. Back comes Toni: R R DR BOB OM = SURE QSL FB FB = HW UR FAMILY?

Ah! For some peoples talk of family is *de rigueur*. In parts of Asia it is rare to get down to the nitty gritty without a full and frank disclosure of family. It provides an opportunity for parents to bemoan the trials and tribulations of bringing up their children or to bask in the reflected glory of their achievements. Toni doubtless has been fretting to get to the topic because not to do so would be, for him, the height of discourtesy. So I rattle back appropriate details including grandchildren and Toni replies: FB FB DR BOB OM = HVE 5 WIFES 5 WIFES 10 BOYS 10 BOYS 8 GIRLS 8 GIRLS = U CUM UMDALA ES MKE QSO DR BOB OM = HW?

I reply with proper praise and avoid the more earthy response of FB SOLID OM HI and then say that since I am an OT I must QRT soon so that I can go to bed/dinner/out, whichever excuse seems appropriate, and I

conclude with 73s to TONI and his family and I hope to see him again and good luck and good DX and sure I'll QSL and even as I do so I realise that it would be unthinkable for me to say anything less because not to do so would be terribly rude...

For good measure I even add VA though VA no longer seems to mean what it used to mean: *I am ceasing transmitting*. Today it's more like: *He seems to be more or less at the end of our chat but if you want to carry on then go for your life because I've got all night*.

Toni is well versed and doesn't miss a beat. OK OK BOB DR OM ES VY GLD MEET U ES SURE U CUM UMDALA ES QSO WID FAMILY ES WIFES ES NW 73 73 ES SURE QSL ES CUAGN GD DX DR BOB OM GN GB E E.

To which I make a suitable reply but stop short of reciprocating the invitation because accommodation is limited and I can scarcely remember the name of my own family let alone one with 18 children and 5 wives. So I sign gently off and VA for the second time.

Unabashed Toni chimes back: FB BOB DR OM ES TKS FER FB QSO ES WEN U CUM UMDALA FB WELCOME 73 ES CUAGN ES GD DX GN GB AR E E. To which I reply E E and Toni EE's and then, without batting an eyelid he bursts into full-flighted CQ song and he's away again.

I glance at the clock and realise I've been nattering for 32 minutes. I enter the log and then quietly creep along the band hoping to have one of those quick, simple and unencumbered contacts where RST, name and QTH are exchanged and that's the lot. Courtesy is lively but it does take time!

\*21 Wallumatta Rd Newport NSW 2106

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**Repeaters — additions, deletions, alterations. Have you advised the WIA Of changes needed to the Repeater List?**

## ■ Technical

# Another Tip for Using the Noise Bridge

Lloyd Butler VK5BR\* describes a method of achieving higher resistance resolution with the usual type of noise bridge.

### Bridge Configuration

The elements of the RF bridge are a signal source, a balancing network and a signal detector. The usual form of bridge utilises a signal source which is set to frequency of measurement. This form of bridge operates with an untuned detector which, in effect, is a broadband circuit (refer Fig 1).

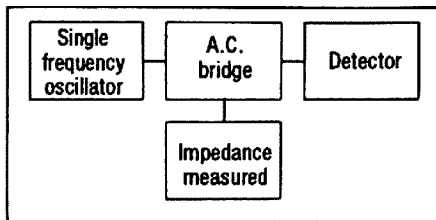


Figure 1 — Conventional form of RF bridge.

The noise bridge, used in amateur radio to measure the impedance components of antenna circuits, reverses the arrangement. The signal source is broadband or untuned and the frequency of measurement is set by a tuned detector, normally the radio shack receiver (refer Fig 2). This simplifies the equipment as the signal source is provided by a simple noise generating circuit and a built in detector is not required.

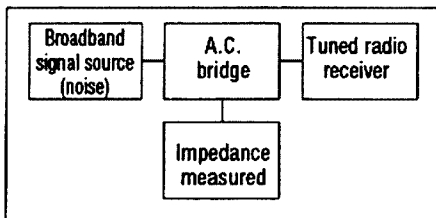


Figure 2 — Noise bridge.

### Use of Single Frequency Source

In general the noise bridge balances with a sharp null to give defined readings of resistance and

reactance on the respective dials. However, I have found that for certain combinations of the two components, the resistance null can be very broad making it difficult to decide on the precise value of resistance component. I have noticed this effect, in particular, when the measurement unknown has dominant inductive reactance and the resistance component is small.

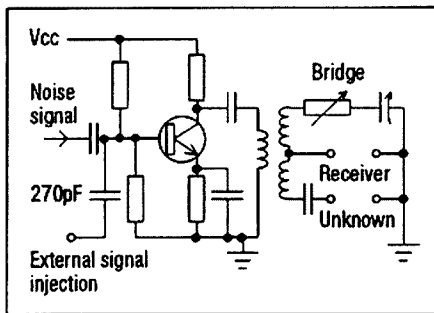


Figure 3 — Modification to noise bridge for external signal.

The resistance balance resolution can be sharpened up by substituting a single frequency signal source for the noise signal (in effect, reverting to the configuration of Figure 1). In my own bridge, I have fitted an external terminal pin connected via a capacitor into the base of the last amplifier transistor which couples the noise signal into the bridge network (refer Fig 3). Connecting my test bench signal generator into the terminal feeds its signal into the bridge network. The signal level from the generator is set high enough to override the noise source. For a receiver operated in the SSB or CW mode, an unmodulated signal is used to produce a beat note at the receiver audio output. The bridge is adjusted for a null in that output or a minimum reading of the S meter (if fitted). If the signal generator has amplitude modulation of tone, this can also be

used with the receiver set for AM mode.

I have not attempted to examine too deeply the reasons for the improved resolution but I suspect it is related to the significant receiver bandwidth. Receivers used for AM and SSB have a bandwidth of at least several kilohertz. Basically, the noise bridge network is a capacitance balancing circuit not critically affected by frequency when measuring fixed capacitance. However, when inductance is measured, the inductive reactance is subtracted from an internal capacitive reactance and the resultant capacitive component is frequency dependent. Furthermore, if the measured impedance is an antenna system, its components will be frequency dependent regardless of whether it looks capacitive or inductive. Considering these factors, one can well imagine the bridge having better resolution when operating at a single frequency than when operating with a signal spread over several kilohertz as defined by the receiver bandwidth.

For a receiver equipped with a narrow band crystal filter, one might consider switching in the filter as an alternative means to restrict the bandwidth and hence improve resolution of the bridge measurement. I haven't had a suitable receiver to experiment with this but I can anticipate one possible problem. Signal power detected in the receiver from the noise source is directly proportional to the receiver bandwidth and the narrowed bandwidth might reduce the noise source level too much for fine adjustment near the balance point of the bridge. This could defeat the initial objective in improving resolution. There is no such problem in using the single frequency signal source as signal power of the single frequency is not affected by bandwidth.

This simple modification, to allow external signal injection, is well worth while. I have made use of it many times when the adjustment null, using the noise source, was not well defined. The single frequency source often sharpens up resolution of the null very nicely.

\*18 Ottawa Avenue Panorama SA 5401

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# ALARA

Sally Grattidge VK4SHE\*, ALARA Publicity Officer

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First, a reminder to all those YLs who have been asked to tell their stories for the history being compiled by Federal Historian, John Edmonds. Please do not leave this in the "too hard" basket for too long. You don't have to create a literary masterpiece, just a short friendly letter telling something of what it was like being a woman in amateur radio in the early days.

Only three replies from VK4 so far (results in the other states unknown), so come on ladies, do it now, before you are up to your ears in Christmas cards.

It is nice to hear two new calls on the Monday night net. Welcome to Elaine VK4MEM, secretary of Gympie ARC and zucchini grower, and Diane VK4MFP from Logan City in the Brisbane area.

Summer is here with the usual increase in noise on 80 metres, so just a reminder that there are two Queensland nets for YLs in that state who have difficulty hearing the Southerners on Monday nights. The VK4 YL net originates in Townsville on Friday nights at 0930 UTC, somewhere near 3575 kHz, and the DRL (District Radio Ladies) comes from Rockhampton every second Thursday at 1100 UTC, also near 3575 kHz.

Christine VK5CTY visited her family in Melbourne recently, but also met with some other ladies. She spent a day with Bron VK3DYF and Gwen VK3DYL discussing ALARA matters, as well as enjoying their company.

Christine and her OM Geoff VK5TY had afternoon tea with Valda VK3DVT and Marlene VK3EQO (ex VK5QO), and then called in on Mary VK5AMD on their way through Bordertown. At Murray Bridge they shared an unexpected meal with Meg VK5AOV and her OM David VK5OV, before completing their trip in time to join in the ALARA Monday night net.

Margaret VK4AOE and OM Ervon are trying to grow Bully Beans (they sound a bit mean, but apparently sheep like them). The precious irrigation water disappears down huge cracks in the parched ground, and Margaret wonders if someone on the other side of the world is getting wet!

## JOTA

Sally VK4SHE and Bob VK4AAH manned one of seven JOTA stations in the Townsville area with about fifty Brownies, Guides, Cubs and Scouts at the Wulguru Scout Den. Bob picked up some DX on 15 metres, and it was discovered that you can't work 14 MHz with Packet in the next room. Propagation to the Sydney area was especially good on 14 MHz.

Most of the participants were Cubs and Brownies and, as it is quite exhausting concentrating on every word so that you can pounce every time someone says "I don't know what to say", the operators were happy to close down at ten o'clock and go to bed.

There were some amusing moments, like when an entire group in New South Wales sang "Happy Birthday" for one of the Cubs. In an effort to get away from one word overs SHE whispered to one young operator "Ask them what activities they are doing". This produced a good North Queensland "What are you doing?" and the answer "Talking to you on the radio."

VK4WIC was the callsign used by Neil VK4NF and Margaret VK4AOE during the JOTA operations with Dalby Yumborra Cubs, Brownies and Joeys, as well as the Dalby Guides. They commenced about 0400z using 40 m, 80 m and 2 m. Packet was also running but, unfortunately, there did not seem to be anyone operating that mode. QRN was evident during the afternoon which spoiled otherwise good signals, but they managed to enjoy contacts with VK4s and VK2s as well as ZL2AS.

Some of the young people handled their contacts like veterans. Joeys experiencing their first JOTA were all willing to take the mike, though tiny voices did not transmit very well and the little

fellow who nodded in reply to a query was not heard till he was persuaded to say "yes" instead of the nod.

Julie VK4JJB operated on the Saturday for Bundaberg West Cubs and had visiting groups. She had eighteen boys and three girls. On Sunday she went to help with the main group. Elaine VK4MEM was part of JOTA in Gympie and operated mainly on 2 m.

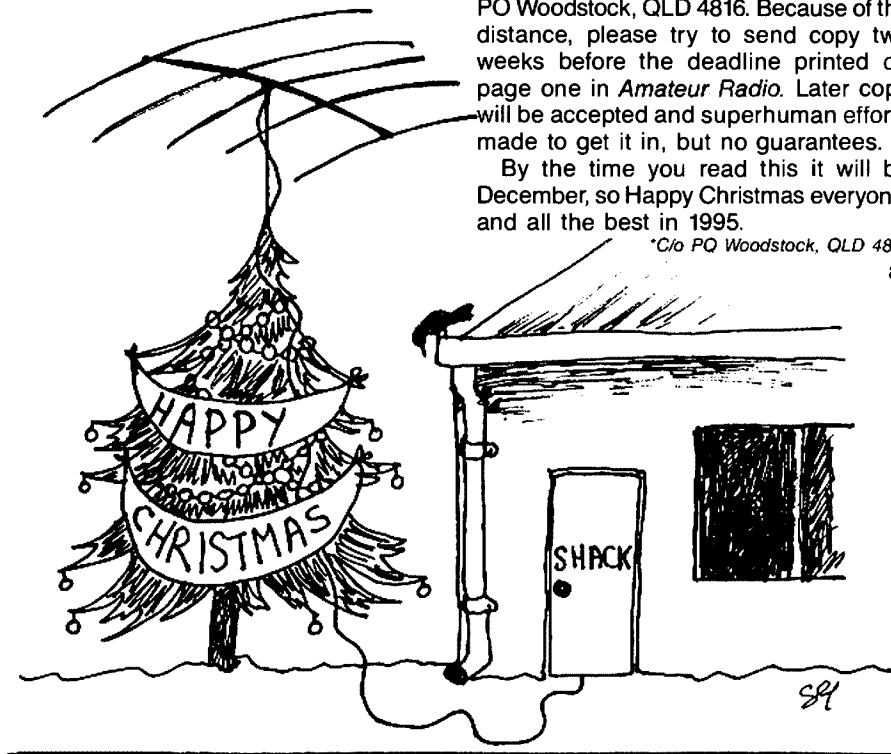
District Radio Ladies participated in JOTA in the Rockhampton area with Guides and Brownies. Robyn VK4RL, Rob VK4SEA, Mary VK4PZ and Gordon VK4GM set up and operated until 11.45 pm on Saturday (Robyn turns into a pumpkin at midnight — at least that's what she told the kids, anyway!). Lorna and Ted VK4QI joined in for a few hours. Packet was flavour of the day — they could not keep the kids off the keyboard. No problems getting anyone to talk and contacts were enjoyed on HF and 2 m. The Guides were examined for their Radio badges and all passed.

Pat VK3OZ did not work JOTA this year, but received a call on 2 m during the evening from a local JOTA station who had a Scout Leader looking for a CW contact. They were able to have a QSO on 80 m, transferring to 15 m when 80 was found to be too noisy at the JOTA QTH. The QSO was enjoyed by Pat and the Leader, who was not an Amateur and knew very little about Amateur procedure. This was Pat's first CW JOTA contact in three years involvement.

I am now the ALARA Publicity officer, so please send your news items to me C/o PO Woodstock, QLD 4816. Because of the distance, please try to send copy two weeks before the deadline printed on page one in *Amateur Radio*. Later copy will be accepted and superhuman efforts made to get it in, but no guarantees.

By the time you read this it will be December, so Happy Christmas everyone, and all the best in 1995.

\*C/o PQ Woodstock, QLD 4816  
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# AMSAT Australia

Bill Magnusson VK3JT\*

**National co-ordinator**  
Graham Ratcliff VK5AGR  
Packet: VK5AGR@VK5WI

**AMSAT Australia net:**  
Control station VK5AGR

Bulletin normally commences at 1000 UTC, or 0900 UTC on Sunday evening depending on daylight saving and propagation. Check-ins commence 15 minutes prior to the bulletin.

Frequencies (again depending on propagation conditions):

Primary 7.064 MHz. (usually during summer).

Secondary 3.685 MHz. (usually during winter).

Frequencies +/- 5 kHz for QRM.  
**AMSAT Australia newsletter and software service**

The newsletter is published monthly by Graham VK5AGR. Subscription is \$30 for Australia, \$35 for New Zealand and \$40 for other countries by AIR MAIL. It is payable to AMSAT Australia addressed as follows:

AMSAT Australia  
GPO Box 2141  
Adelaide SA 5001

## Sunday Night Not

Please note that for the remainder of the summer daylight saving period the Sunday night net will be conducted at 0900 UTC with early check-ins at approximately 0845 UTC. The frequency for this period will be 7.068 MHz +/- QRM.

## AO-21 Falls

On Monday 17 October DB2OS reported what looks like the demise of OSCAR 21. AO-21 was an amateur payload on board a large Russian satellite

called INFORMATOR-1. It is unclear at the time of writing whether the fault lies in the AO-21 package or in the larger system. The INFORMATOR-1 satellite had come to the end of its mission and attitude and thermal control had been suspended by the control station about a month ago. The amateur package had, however, been left switched on. DB2OS is investigating the position but it appears unlikely that we will hear AO-21 again.

This amateur radio package had become very popular among those equipped with only the most modest of gear. The down link signal was always very strong and at times stations using only a vertical antenna could be heard working through the FM repeater. Recently AO-21 had added a WXsat image to the down link telemetry cycle. I have severe noise problems on two metre receive so I never bothered to try to decode this signal but I'd certainly like to hear from anyone who was successful. The FM down link also carried good will messages from time to time. The last one commemorated the anniversary of the first moon landing by playing Glenn's "Small step for man" tape. This was operational until shortly before the untimely demise of AO-21.

## Home-brewers Report

I have received a number of replies on the subject of home brewing of satellite related equipment. It seems that this aspect of our hobby is alive and well. Dick VK3ABK is putting together what is shaping up to be a fine satellite station. He is building G3RUH type modems and decoders. The antenna system is taking shape with crossed Yagis on 2 m and 70 cm on an az/el mount with pre-amps at the feed point. Dick is obviously serious

about this satellite business. He is pressing into service some older type gear including a Yaesu FV-102 VFO and an IC-202 transmitter. Dick's approach is to do things properly but as cheaply as possible. So far the list of home brewers includes Dick VK3ABK, Bob VK3BNC, Ron VK6TF, Max VK3LMT and Mike VK3KYW. More of their exploits later.

Congratulations guys. More news on this front would be great. The initial response was unexpectedly high. Maybe we are not developing into a "plug and play" group after all.

## Digital Comms on Phase 3D

It's gradually becoming clearer that we can expect some rather spectacular goodies when phase 3D is operational. Lyle Johnson WA7GXD of the RUDAK-U development team recently reported on the progress of the digital comms package for phase 3D. It seems they are planning for as many as 10 channels operating simultaneously. There is also the possibility of, wait for it, a 256 kilobit/sec modem on board. This data rate would support real time motion video! RUDAK will be the prime comms path for the earth imaging cameras and will also be connected to the GPS, Global Positioning Satellite experiment.

The RUDAK system will use two computers, one based on an NEC V53 processor and the other on an Intel 386EX. They will each have 16 megabytes of error corrected memory. By comparison the microsats have 256 kilobytes of memory. The projected 10 year lifetime of phase 3D means that the designers have somehow had to ensure that tomorrow's users are not held back by today's technology. The "average user" will not be forgotten. Phase 3D's RUDAK will have a 1200 bps modem, a 9600 bps modem switchable to 19.2 kbps and maybe 38.4 kbps. Two DSP units, good for about 56 kbps, will complete the impressive line up.

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## Dish Feeds for 2.4 GHz and "S" Mode

An excellent article on this subject appeared in the Sep/Oct '94 edition of Amsat-NA's Journal. It is written by Ed Krome KA9LNV. Ed has a good practical approach to this subject and the article is easy to read even for first timers. He takes the reader through the fundamentals of dish design and then develops these ideas further into dish feed requirements. I've contacted Ed with a view to using parts of the article in this column.

The move to "S" mode is not as hard as many believe and once you get over that initial fear of microwaves it's fairly plain sailing. The old problem of "re-inventing the wheel" is still a possibility. Most of the texts available seem to presuppose a certain amount of experience. For this reason Ed's article is most welcome. I look forward to relating some of his thoughts in this column in coming months.

### News from VK5ESC (Equipment Supplies Committee)

In the Amsat-VK newsletter No 115, Graham reported a new high performance kit from the VK5 Equipment Supplies Committee. It is a 2401 MHz receive converter for "S" mode use. This will fill a gap in the market. The only alternatives appear to be to roll your own from scratch, a mighty task requiring lots of experience, or purchase something from overseas. There are a number of amateur suppliers in the States and Europe dealing in this sort of gear and it will be interesting to see how the VK5 converter stacks up against the competition. The new design uses a teflon PCB and an MGF1302 GaAsFET followed by MMICs. It has the usual 145 MHz output for use into any two metre amateur all mode receiver and offers the choice of two local oscillator designs.

I'd like to hear from anyone who has completed this converter, particularly if they could give an idea of how it compares with the older design and maybe how it lines up in comparison to the imported devices. We are really indebted to the VK5 ESC guys for the excellent efforts they have put in over recent years to get a lot of people on the air on satellites and VHF/UHF. Building your own can be a daunting task on these bands. As well as an array of kits they have a good stock of odd components that may prove difficult to source otherwise. You can obtain their catalogue by writing to them at PO Box 789, Salisbury, SA 5108. SASE, please.

\*359 Williamstown Rd, Yarraville VIC 3013  
Packet: VK3JT@VK3BBS

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## AWARDS

John Kelleher VK3DP — Federal Awards Manager\*

The very best of Christmas cheer to all. Another year has passed with only praise from me for those who have participated in the Awards program. In the main, I think I have got it right for 99 percent of the contributors. The other one percent have sent me applications for certificates and upgrades (very nice applications, mind you), but they have left off identifying the country they have claimed for various call signs now long extinct although they still apparently qualify for some unknown DXCC country. Maybe, if you were to follow this simple rule, I may not become "confused", as another well known amateur put it.

This month, after several requests for its publication, I will begin with the CQ WPX (World Prefixes) program.

### CQ WPX Award

The CQ WPX Award recognises the accomplishments of confirmed QSOs with the many prefixes used by amateurs throughout the world. Separate distinctively marked certificates are available for two-way SSB, CW and mixed modes. All applications for WPX certificates must be submitted on the official application form CQ 1051A. This form can be obtained by sending a four by nine inch SAE to the WPX Award Manager, Norm Koch K6ZDL, PO Box 880, CR-13, Clovis NM 88101, USA.

All QSOs must be made from the same country. All call letters must be in strictly alphabetical order, and the entire call letters must be shown. All entries must be clearly legible. Cross-mode contacts are not valid for CW or two x SSB certificates.

Certificates are issued for the following modes and number of prefixes: Mixed (any mode) — 400 prefixes; CW and SSB — 300 prefixes. Separate applications are required for each mode. Cards need not be sent, but they must be in the possession of the applicant. Any and all cards may be requested by the WPX Award Manager or by the CQ DX committee. The fee for each certificate is \$US4.00 for CQ magazine subscribers (with recent mailing label) or \$US10.00 for non-subscribers.

### Prefixes

The two or three letter/numeral combination which forms the first part of any amateur call will be considered the prefix. Any difference in the numbering, lettering, or order of same shall constitute a separate prefix. The following would be considered different: W2, WA2, WB2, WN2, WV2, K2, KA2, KB2, etc.

Any prefix will be considered legitimate if its use was licensed or permitted by the governing authority in that country after 15 November 1945.

### WPX Honour Roll

This certificate recognises those operators and stations that maintain a high standing in confirmed, current prefixes. The rules, therefore, reflect the belief that Honour Roll membership should be accessible to all active amateurs, and not be unduly advantageous to the "old timers". A minimum of 600 prefixes is required to be eligible for the Honour Roll. Special issue prefixes will be considered current for as long as they are assigned to a particular country, and deducted as credit for Honour Roll standings one year after cessation of their use or assignment. It follows, therefore, that Honour Roll standings may have to be updated annually.

### VERON Jubilee Award

The Dutch amateur radio society VERON celebrates its 50th anniversary in 1995. During this jubilee year, beginning 1 January 1995, they are issuing the VERON Jubilee Award.

This award can be applied for by all licensed radio amateurs who are able to establish contact with at least 100 stations in the Netherlands during the entire year of 1995. SWLs may also apply for the award. All bands and modes can be used. No QSL cards and no fees are required.

If you wish to apply for the award, send an extract of your log to the Award Manager, Sytse Wybenga, Certificate Manager VERON, Pr Bernardlaan 60 8501 JG Joure, The Netherlands. Applications close in March 1996.

### Worked Republic of India Award

The Amateur Radio Society of India presents the revised rules for the "Worked Republic of India" award.

1. Available for QSOs (CW, AM, SSB and RTTY) on any HF band (160 to 10 m, including WARC bands) with stations in mainland India, the Lakshadweep (Laccadives) and the Andaman and Nicobar Islands, on or after 26 January 1950.
2. Original QSL cards, or log extracts, duly certified by an office bearer of the country's IARU-Recognised Member society, should be submitted to the Awards Manager. An accompanying



# DICK SMITH ELECTRONICS



## Don't Go Without A Yaesu Mobile Transceiver!

Whether you're going bush or operating around town, a quality mobile transceiver from Yaesu delivers the best performance.

### FT-2400H Rugged 2m Transceiver

The ultimate in dependability and reliability! The FT-2400H is built using commercial grade mechanical and electronic construction techniques and meets the tough USA MIL-STD-810C shock and vibration requirements, so you know you're getting the highest quality. A one-piece die-cast chassis/heatsink allows three-step output of up to 50 watts without forced air cooling. Plus, fibreglass circuit boards and chip components provide professional-grade reliability. It has a large backlit LCD screen, backlit knobs and 31 tuneable memories (which can store frequency and a four-character name of your choice). A customised microprocessor also provides Auto Repeater Shift to suit Australian conditions. Two-stage track-tuning and a dual FET mixer improve receiver intermod performance. Scanning functions include programmable scan limits, selectable scan resume modes, memory skip, and priority monitoring. Seven selectable channel-steps and CTCSS encode are standard features. Comes complete with MH-26 hand mic., mobile mounting bracket and DC power lead.

Cat D-3630

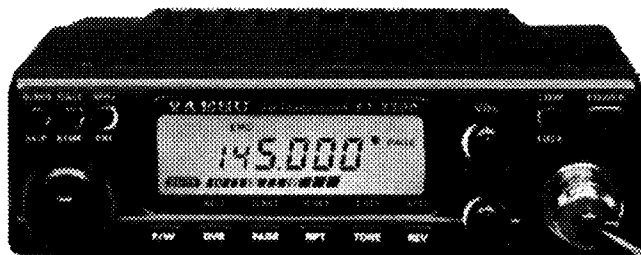
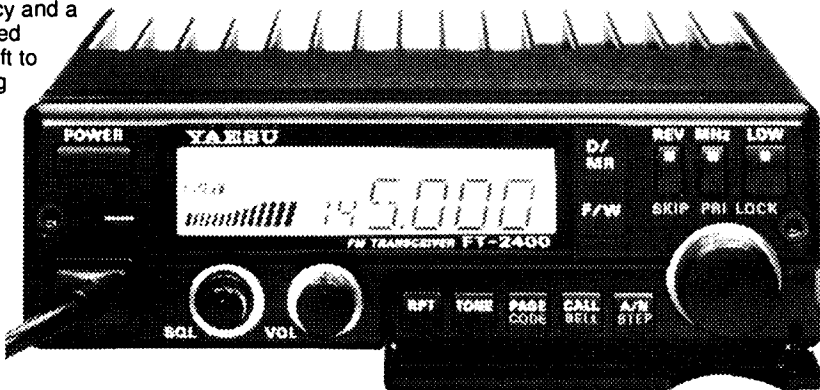
**2 Year Warranty \$699**

#### Specifications

**General**  
 Frequency range: Transmit 144-148 MHz  
 Receive 140-174MHz  
 Channel steps: 5, 10, 12.5, 15, 20, 25 & 50kHz  
 Current Consumption: Receive: 400mA  
 Transmit: 12 Amp (Hi power)  
 Dimensions: 160 x 50 x 180mm (w/o knobs)

**Receiver**  
 Intermediate Freq: 21.4MHz & 455kHz  
 Image Rejection: Better than 70dB  
 Maximum AF Output: 2.0 watts into 8 ohms @ 10% THD

**Transmitter**  
 RF Output power: 50/25/5 watts (Hi/Med/Low)



**\$699**



**2 Year Warranty**

### FT-2200 Compact 2m Transceiver

The new FT-2200 is a compact, fully featured 2m FM transceiver providing selectable power output of 5, 25 and 50 watts, and includes the latest convenience features for more enjoyable mobile or base station operation. Built around a solid diecast chassis, it provides 49 tuneable memories, a large variety of scanning modes, an instant recall CALL channel, 7 user-selectable channel steps from 5kHz to 50kHz and is just 140 x 40 x 160mm (not including knobs). Backlighting of the large LCD screen, knobs and major buttons is even automatically controlled to suit ambient light conditions.

Also provided is a 38 tone CTCSS encoder, DTMF based paging and selective calling with Auto-Page/Forwarding features, and 10 DTMF auto-dial memories. The LCD screen provides a highly legible bargraph Signal/P.O. meter plus indicators for the various paging and repeater modes. An optional internal DVS-3 digital recording/playback board can also be controlled from the front panel, giving even greater messaging flexibility. Supplied with an MH-26D8 hand microphone, mobile mounting bracket and DC power lead.

Cat D-3635

# SAVE \$300!

A deluxe 2m/70cm dual-band hand-held transceiver offering easier operation and more features than ever before, and now at an unbelievably low price! The FT-530 provides a flexible dual receiver facility with separate volume and squelch controls, allowing you to listen on two frequencies in the same band, or one frequency on both bands! Plus, the exclusive Australian version features full 70cm band coverage (420-450MHz), selectable Auto Repeater Shift on both 2m and 70cm (suits Australian band plan), and extended receiver coverage as standard. Two VFOs and 41 tunable memories per band are provided, together with keypad or dial frequency entry, seven tuning steps and a one-touch CALL channel. The dual 5.5-digit LCD screen includes many functional indicators plus separate signal/P.O. bargraphs for both receivers. An LCD voltmeter function is provided so you can even monitor your battery's performance under load and estimate remaining battery life.

Other top features include: Inbuilt dual CTCSS encode/decode, CTCSS scanning, an auto battery saver (ABS) for extended battery charge life, a cross-band repeater facility and inbuilt clock with alarm and snooze functions. Also provided is VOX circuitry for use with the optional YH-2 headset, a user replaceable lithium back-up battery, and DTMF selective calling and paging. A DC supply jack allows transceiver powering and NiCad charging, with RF output in four steps up to 5W at 12V. The FT-530 comes complete with a high-capacity 1000mAH NiCad battery, antenna, belt-clip, carry case and approved AC charger.

Cat D-3620

#### Specifications

##### Frequency range:

Transmit 144-148MHz, 420-450MHz  
Receive 130-174MHz, 420-500MHz,  
800-950MHz

##### Current Consumption:

Auto power off 150uA  
Standby (saver on) 16.8mA (both bands)

Dimensions: 55(W) x 163 (H) x 35mm(D)

##### Transmitter:

Power Output: 5, 3, 1.5, 0.5 (at 12V)  
RF Power Output 2.0W (2m), 1.5W (70cm)  
(Supplied 7.2V 1000mA/H NiCad)

##### Receiver:

Sensitivity: 2m:<0.158uV, 70cm: <0.18uV  
(Ham bands only, 12dB SINAD)  
Audio Output 300mW at 8 ohms (at 12V)



**SAVE \$300**

**Hurry,**

**This incredibly low price is only valid until  
31st December 1994, or while stocks last.**

Customers who purchased an FT-530 between 15/8/94 and 30/9/94 as part of our previous promotion should have received bonus gift vouchers to cover their purchase. Please contact the store where you purchased your FT-530 if you have not received your Gift Vouchers.

**2 year warranty**

**\$699**

# End of Year Specials!



**Grab a Christmas bargain while stocks last. Prices are valid until 31st December 1994, and some items have only limited stock available. Some units may be shop soiled, but full warranties apply.**

1. Revex HF/6m W502 SWR/PWR meter, made in Japan, with accurate P.E.P. metering  
Cat. D-1360 **\$179 SAVE \$20**
2. Yaesu FT-26 2m handheld, with 700mA/H NiCad, carry case, extended receive, **2 year warranty.**  
Cat. D-3600 **\$399 SAVE \$70**
3. Yaesu FT-415 deluxe 2m handheld, with 1000mA/H NiCad, carry case, extended receive and many more features.  
**CLEARANCE** Cat. D-3610 **\$499 SAVE \$30**
4. Yaesu FT-815 deluxe 70cm handheld, with 1000mA/H NiCad, carry case, 430-450MHz coverage, **2 year warranty.**  
**CLEARANCE** Cat. D-3615 **\$499 SAVE \$200**
5. Yaesu MH-12A2B standard speaker/mic.  
Cat. D-2115 **\$59.95 SAVE \$10**
6. Yaesu MH-18A2B mini speaker/mic.  
Cat. D-2117 **\$49.95 SAVE \$10**
7. Digitor 2m RF amplifier, 0.5 to 5w input, up to 30w output, GaAs Fet receive pre-amp, large heatsink  
Cat. D-2510 **\$139.95 SAVE \$30**
8. Mastercharger intelligent fast charger suit handhelds, complete with cigarette lighter lead. Suits most Yaesu handhelds, optional adaptors for other models/brands.  
Cat. D-3850 **\$159.95 SAVE \$10**
9. Yaesu FT-712R 70cm mobile transceiver, 35w FM output, 430-450MHz coverage, hand microphone, **2 year warranty.** Cat. D-3330 **\$599 SAVE \$150**
10. Yaesu FT-5200 deluxe 2m/70cm mobile transceiver, 50w output on 2m, 35w output on 70cm, 32 memories, **2 year warranty.**  
Cat D-3310 **\$1399 SAVE \$100**
11. Revex W540 VHF/UHF SWR/PWR meter, made in Japan, covers 140-525MHz.  
Cat. D-1370 **\$179 SAVE \$20**
12. Yaesu FT-840 H.F. mobile transceiver, **2 year warranty,** with hand microphone.  
Cat. D-3275 **\$1695 SAVE \$200**
13. Yaesu FT-890 deluxe HF mobile transceiver, 160m-10m, extended receive, all mode (SSB,CW,AM,FM), RF speech processor.  
Cat. D-3270 **\$1995 SAVE \$300**
14. Yaesu FT-990 HF base station transceiver, in-built auto antenna tuner and AC power supply, RF speech processor, DDS, digital audio filtering, IF shift and IF Notch, 500Hz CW filter standard. Ex-demo units only at this price!  
Cat. D-3260 **\$3295 SAVE \$700**
15. Yaesu FL-7000 1.2kW HF linear amplifier, in-built high-power auto antenna tuner and AC power supply. Ex-demo units only.  
Cat. D-2549 **\$2995 SAVE \$1300**
16. Yaesu SP-5 large desk speaker with audio filters  
Cat. D-3230 **\$199 SAVE \$50**
17. Yaesu NC-15 desktop charger, for parts use only.  
Cat. D-3511 **\$2.95**

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NEW STORE OPENS DECEMBER: 272 MOGGILL RD, INDOOROOPIILY, QLD  
STORES ACROSS AUSTRALIA AND NEW ZEALAND  
\*MAJOR AMATEUR STOCKIST STORES SHOWN IN RED

letter should clearly indicate the award desired.

3. Contacts with the same Indian station on different bands will count for points, but both stations must be fixed. Contact with, or from portable, maritime or aeronautical mobile stations are not eligible.
4. A minimum of 100 points should be earned to qualify for the award as per the table below, showing the number of points per QSO.
5. The fee for the award is five IRCs. If original cards are sent, additional IRCs should be included to cover return postage.

### Points Table

Band	Mainland Stations		Stations in VU4 & VU7
	VU2	VU3 Sp Pfx	
160	3 pts	4 pts	5 pts per QSO
80	2 pts	3 pts	4 pts per QSO
40	2 pts	3 pts	4 pts per QSO
20	1 pt	2 pts	3 pts per QSO
10	1 pt	2 pts	3 pts per QSO

Special prefixes such as VU9, VU25, VU40, AT0, etc must be clearly indicated on the QSL card.

The decision of the Awards Manager will be final and binding in all cases. Applications should be sent to Vice President and Awards Manager, Amateur Radio Society of India, 40 Ghalib Apts, Parkwana Road, Pitampura, Delhi 110 034, India.

### Ken Stevens VK5QW

Lastly, but importantly, allow me to introduce another member of the WIA DXCC Honour Roll, who is also a licensed rails bookmaker in South Australia. In his own words, Ken Stevens VK5QW has enjoyed the DXCC challenge, saying that long hours and plenty of patience made him a lot of wonderful friends. Ken is also interested in working US counties, which total 3067, so he has his work cut out for him.



**Ken Stevens VK5QW, a member of the WIA DXCC Honour Roll.**

\*PO Box 2175 Caulfield Junction 3161 ar

## Club Corner

### Darwin Amateur Radio Club Cyclone Tracy Commemorative Event Station

The Darwin Amateur Radio Club (DARC) will be activating a special event station from 18 to 31 December 1994 as a 20th year commemorative recognising the devastation of Darwin on 25 December 1974 and the amateur radio involvement in the aftermath.

It is hoped to get the special event call sign VI8TRACY, but this has not been confirmed as yet by the SMA.

Operating frequencies of this special event station will be as follows:

Phone	CW
3618 kHz	3530 kHz
7065 kHz	7009 kHz
14175 kHz	14009 kHz
21175 kHz	21130 kHz

Mark Sellers VK8MS

### Eastern and Mountain District Radio Club Exams

The EMDRC has reinstated a quarterly examination schedule for all licence classes. Exams will be scheduled in February, May, August and November of each year. SWLs or persons wishing to upgrade their licence are invited to contact the Club's Examination Manager, Geoff Atkinson VK3YFA on (03) 876 4850.

### EMDRC to go to the moon

A number of club members have recently been involved in the construction of two DL6WU 15 element antennas for Moonbounce on two metres. At press time preparations were being made to test the array on VE3ONT. Our aim is to enter the International EME competition in 1995. Interested? Contact Christopher Platt, VK3KCP on (03) 629 2653.

### Packet Kits

EMDRC has arranged for the supply of a high quality PCB and components to build the Baycom Packet Modem described in the July, 1993 issue of *Amateur Radio*. The kit will be available at the initial price of \$50.00. Contact Chris Travers VK3XGT on (03) 723 7126 to obtain your kit.

### February Guest Speaker — John Day on Packet

The guest speaker for the February Meeting will be John Day VK3ZJF from Daycom who will talk about and demonstrate Packet Radio. The last

presentation by John on this subject resulted in a full house, so be early! The meeting will be held at the Nunawading Council Offices, Maroondah Highway, Nunawading at 8.00 p.m. on Friday, 3 February, 1995

Christopher Platt VK3KCP

### Radio Amateurs Old Timers Club (RAOTC)

Members are reminded that there will not be a broadcast in January. Broadcasts on 6 February and 6 March 1995 will be at the same time as in November 1994.

Members having problems with reception of our 40 metre transmissions are reminded that there is a simultaneous transmission on 3.650 MHz.

### Ivan Hodder, ex VK3RH

I would appreciate hearing from anyone who can give me Ivan's current address as I have some information which would be of great interest to him.

Allan Doble VK3AMD ar

## A. J & J COMAN ANTENNAS

Dual band Co/linear 2M&70cm	\$ 95
2M co/linear 2 5/8	\$ 93
12 ele 2M	\$123
6 M J-pole	\$109
6 M co/lin 6 dbd rad 4.NEW	\$150
6 ele 6 M	\$196
Duo 10-15 M	\$265
3 ele 15 M	\$190
3 ele 20 M	\$298
20 m log-yag array 11.5 dbd	\$685
M B Vert NO TRAPS 10-80 M	\$255
Tri band beam HB 35 C 5 ele	\$675
40 M linear loaded 2 ele	\$484
13-30 M logperiodic 12 ele	
all stainless/steel fittings	\$885
70 cm beam 12 ele ball/Feed	\$102
23 cm slot fed 36 ele brass cons	
s/solder-assembled. 18 dbd	\$170
80 m top load/cap/hat vert.	\$260
3 ele 40m l/cap hats 60mm boom	\$785
2 m 144.190 2.2 wavelength boom	\$145

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**LOT 6 WEBSTERS ROAD,**  
**CLARKFIELD 3429**  
**PHONE 054 285 134**

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**MFJ MFJ**

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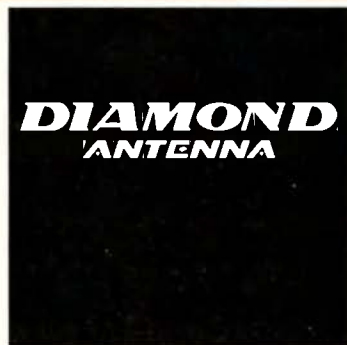


**AMERITRON**

NEW Solid State HF Linear Amplifiers



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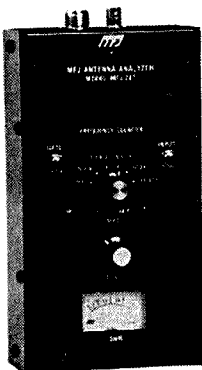
# SWR & Power meters



The MFJ SWR Analysers are designed for the ultimate in convenience when tuning antennas, checking amplifiers and installing feed lines. They have a low level R.F. source, an SWR bridge and a fully automatic SWR calculating circuit that offers point and shoot convenience with excellent accuracy.

They cover all popular amateur and many commercial bands and can be powered by a 9V battery (not supplied) or an external 9-18V DC source.

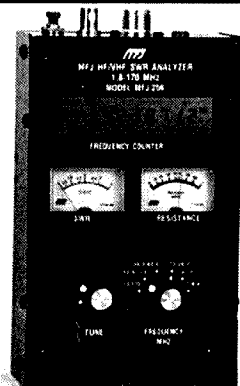
- MFJ207** 1.8-30MHz **\$199**
- MFJ208** 138-156MHz **\$199**
- MFJ209** 1.8-170MHz **\$275**
- MFJ217** 30-60MHz **\$199**
- MFJ218** 150-170MHz **\$199**
- MFJ219** 420-450MHz **\$225**



**MFJ249** SWR analyser **\$499**

When the MFJ SWR Analysers were first introduced to Australia both Neil Duncan and Ron Fisher commented that it would be nice if they had a built-in frequency counter for accurately setting or reading the frequency. Well MFJ listened! Now MFJ has added a complete 150MHz counter into the SWR analyser. BUT then MFJ decided it should cover VHF as well so the MFJ249 covers 1.8-170MHz, without a break! Use it as a digital display for the internal signal source or as a frequency counter with .01, .1, 1 & 10 second gate times giving you 0.1Hz resolution!

Then MFJ said, well what about the serious HF guys who need to know the feedpoint impedance? Well the MFJ259 now gives you everything! SWR, resistance and a frequency counter all in one.



**MFJ259** SWR analyser **\$549**

## Crossed needle SWR/Wattmeters

Don't risk your expensive 2m or 70cm rig by transmitting without knowing your SWR! Shows peak or average forward and reflected power with power ranges of 200 & 20 watts forward, 5 & 50 watts reflected. At a glance you can see SWR, so there's no more risky guessing! Illuminated, large, two-colour meter makes reading easy. Black aluminium cabinet measures 184 x 114 x 90mm. Lamp uses 12 VDC (supplied externally)

The MFJ-815B has peak and average reading functions which let you monitor SWR, forward and reflected power. Peak or average power in 2 ranges, 200 & 2000 watts forward and 50 & 500 watts reflected, and SWR from 1:1 to 8:1. Covers 1.8 to 30 MHz. Accuracy is  $\pm 10\%$  of full scale. Black aluminium cabinet measures 184 x 114 x 90mm. SO-239 connectors. Meter lamp uses 12 VDC (supplied externally).

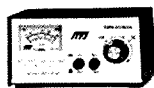


**MFJ817** VHF/UHF SWR mtr **\$199**



**MFJ815B** HF SWR mtr **\$175**

## VHF & HF SWR & Wattmeters



The MFJ812B covers the 2M amateur band, reading forward and reflected power in two ranges (30 or 300 watts). Also lets you read relative field strength from 1-170MHz or SWR from 20 metres through 2 metres.

**MFJ812B** **\$74.95**

### HT power meter



Reads the output power of two metre hand-held transceivers. Five watts full scale with 50Ω BNC connector. 50 x 57 x 40mm

**MFJ840** **\$45.00**

## Terminating Power Meter



The MFJ816 HF SWR & wattmeter lets you read forward and reflected power on two scales of 30 and 300W from 1.8-30MHz. Easy to read two colour meter scale, case size 114 x 57 x 75mm.

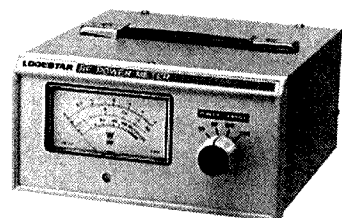
**MFJ816** **\$74.95**

### HT SWR meter



Measure power and SWR of 2M hand holds. Read SWR from 1:1 to 1.6:1 and power up to 5 watts. 50Ω BNC connectors, 50 x 57 x 40mm.

**MFJ841** **\$92.00**



The PM-330 is a terminating type power meter for use from 1.8-500MHz. Full scale 0.5W to 120W in three ranges.

- \* Frequency range 1.8-500MHz
- \* Impedance 50Ω  $\pm 2\%$
- \* VSWR < 1.15 at 500MHz.
- \* Connector 'N' female
- \* Size - 190Wx105Hx230D

**PM-330** Power meter **\$279**

## Noise Bridge

The MFJ202B has long been recognised as one of the world's finest noise bridges. Boasting a hand calibrated resistance scale and an extended capacitance range of  $\pm 150$ pf and built-in range extender the MFJ202B covers the range from 1 to 100MHz with ease!

Works with any receiver or transceiver. Case size 108 x 108 x 50mm, uses 9V battery (not supplied)

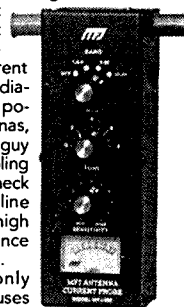


**MFJ202B** Noise bridge **\$149**

## Antenna Current Probe

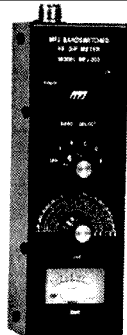
The MFJ206 is designed to measure RF current without the need for direct connection. Determine the current distribution, RF radiation pattern and polarisation of antennas, transmission lines, guy wires, building cabling and enclosures. Check for transmission line radiation due to high SWR or poor balance of open wire lines.

Measures only 100x50x50mm, uses 9V battery (not supplied) or external DC source.



**MFJ206** RF Current probe **\$199**

## Bandswitching Dip meter



Works just like a Grid Dip Oscillator but has a bandswitch and uses only one external coupling coil rather than one for each band. No coils to change, no sensitivity control and you can connect a counter to accurately measure the frequency. Great for workbench and antenna work, the MFJ203 covers 1.8-30MHz in five overlapping ranges.

**MFJ203** DIP meter **\$249.95**

## Solid state dipper



This modern, solid state, Dip Oscillator covers pretty well every need you can find for such a device. The DM-4061A covers the range 1.5 - 250MHz in 5 ranges, can function as a dip oscillator or an absorption wavemeter, plus has 2kHz modulation for receiver testing. Uses a single 9V battery (supplied) or an external source of 9-12V (not supplied).

**DM4061A** DIP meter **\$175**

## High power wattmeters

- The Mirage MP series wattmeters cover all amateur bands up to 1.3GHz
- \* Remote coupler mounting
- \* Peak or average reading
- \* No charts or graphs needed
- \* 5 year warranty
- \* Quality meter movement
- \* Operates on 9-13.8V DC

- MR-MP1** 1.8-30MHz 2kW **\$367**
- MR-MP2** 50-200MHz 1.5kW **\$367**
- MR-MP3** 420-450MHz 150W **\$412**
- MR-MP4** 1.26-1.3GHz 100W **\$437**



### 1.5kW Tapped inductor tuner



- Peak reading power and SWR meter with two ranges (200W & 2kW)
- Covers entire 1.8-30MHz range
- 6 position antenna switch for coax lines, random wire or balanced lines or external dummy load.
- Super heavy duty balun wound with Teflon wire
- Compact 273W x 514H x 381D all metal case

**MFJ962C** 1.5kW tapped inductor **\$520**

### 3kW Differential 'T' tuner



- 3kW Differential-capacitor & roller inductor
- New, more accurate directional coupler
- Current mode balun reduces feedline radiation
- 6 position antenna switch
- Continuous coverage from 1.8-30MHz
- Wide spaced capacitor for true 3kW rating
- Compact 273W x 514H x 381D all metal case

**MFJ986** 3kW Differential - 1 **\$652**

### 3kW Deluxe tuner



- Widest matching range for lowest possible SWR!
- High-Q roller inductor positioned for best efficiency
- Extra heavy contact pressure for greatest reliability
- Covers entire 1.8-30MHz range
- 50Ω 300W Dummy load built in
- 6 position antenna switch
- Compact 273W x 514H x 381D all metal case

**MFJ989C** 3kW Deluxe **\$785**

### 300W Deluxe tuner without dummy load



So you would like all of the features of the MFJ949E but don't want a dummy load? The MFJ948 is identical to the MFJ949E but has no dummy load!

**MFJ948** Deluxe 300W, no dummy load **\$292**

### 300W Deluxe tuner with dummy load



- Full 1.8-30MHz coverage
- Peak and average reading crossed needle SWR/Power meter (can be illuminated)
- Built in 300W dummy load
- 6 position antenna switch
- 4:1 balun for balanced lines or long wires
- Full 12 month warranty

**MFJ949E** Deluxe 300W with 'the lot' **\$337**

### 300W General purpose tuner



The MFJ941E covers the full 1.8-30MHz range, has front panel-mounted antenna switch, 12 position tapped inductor, 4:1 balun and sturdy metal case. Size: 267W x 73H x 178D.

**MFJ941E** 300W general purpose tuner **\$247**

### Tuners for 2metres & 70cm



For mobile or base station operation choose the MFJ921 (two metres) or MFJ924 (70cm) for an efficient little tuner that will handle up to 300W PEP in a compact 203 x 64 x 75mm package.

**MFJ921** 2 metre tuner 300W **\$154**

**MFJ924** 70cm tuner 300W **\$154**

### Tuner / Preselector for transceivers



The MFJ1040B helps you dig those weak signals out from the sludge which is not rejected by the front ends of some transceivers. This combination of a receive preselector and a 300W rated tuner could be just the trick! Also has 20dB attenuator, handles two receivers, two antennas and has automatic RF sensing bypass circuit. Covers 1.8-54MHz. Requires 12V DC.

**MFJ1040B** 300W tuner/preselector **\$222**

### NEW MFJ Tuner + Artificial Ground

Throw up a random wire anywhere and work the world! Sounds great doesn't it, and the NEW MFJ934 combination tuner and artificial ground makes it possible. By putting the heart of an MFJ941E 300W antenna tuner with crossed needle SWR/power meter, and an MFJ931 portable operation in one box you get everything you need for portable operation and you save money into the bargain!

When you don't need the artificial ground the MFJ934 functions as a normal tuner.



**MFJ934** Ground & tuner combined **\$365**

### The smallest VersaTuner!



The smallest of the VersaTuner range. Size: 127 x 64 x 150mm. Power rating: 200W. Match dipoles, vees, random wires, beams and mobile whips with either coax or balanced line feed from 1.8 to 30MHz

**MFJ901B** 200W VersaTuner **\$135**

### Long-wire tuner



This simple little tuner will allow you to operate just about anywhere with a random wire antenna. Matches high or low impedances, handles 200W PEP and is small enough to fit in your pocket. 50 x 75 x 50mm.

**MFJ16010** 200W Long wire tuner **\$93.90**

### MFJ931 Artificial Ground



Does your rig bite? Well, maybe it isn't hungry — it could just be that the ground connection you have is not adequate. A specialised tuner with an RF current meter, the MFJ931 can tune a piece of wire or an existing ground wire to place an RF earth right at the transceiver. Covers 1.8-30MHz, measures 190 x 89 x 178mm.

**MFJ931** Ground system tuner **\$176**

### 300W Mobile tuner



The MFJ945D has a crossed needle SWR/power meter and is equally at home in the car, caravan, motel room, tent or your home station. Small size: 200W x 52H x 150D.

**MFJ945D** 300W mobile tuner **\$198**

### QRP Portable antenna tuner



The MFJ971 tuner can be used at any frequency across the entire 1.8-30MHz HF spectrum. Rated at 200W this versatile little tuner matches the MFJ CW transceivers and MFJ9420 SSB transceiver in size and can be fastened to them.

- Crossed needle SWR/power meter
- Covers 1.8-30MHz
- 4:1 balun included
- Dimensions: 165Wx63.5Hx152D

**MFJ971** Portable tuner **\$203**

### Mobile antenna matcher



Help your mobile rig run better with this simple yet effective mobile antenna matcher. Measures 64 x 64 x 40mm

**MFJ910** Mobile antenna matcher **\$42.70**

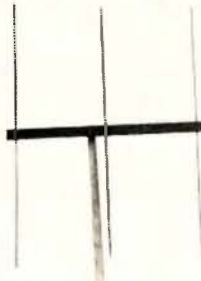
# lots of antennas!

## 2mtr 3 el Yagi

The unique design of the MFJ1763 3 element 2mtr yagi allows it to be assembled and disassembled in seconds! Ideal for portable or emergency use, can be mounted vertically or horizontally for either FM or SSB operation and it exhibits low SWR right across the two metre band.

Can be kept easily in the boot of your car.

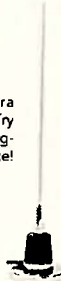
MFJ1763 \$97.00



## 2mtr 5/8λ magbase

Need a bit of extra punch when mobile? Try this for size and magnetic base convenience!

MFJ1728B \$37.50



## Dual band mag-base mobile

With a heavy magnetic base this 19 inch tall antenna is 1/4λ on 2mtrs and 5/8λ on 70cm, with 4.5mtrs coax and plug. Has BNC adaptor for HTs!

MFJ1724B \$36

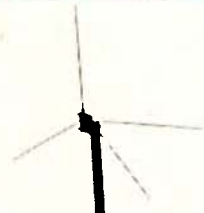


## 2mtr 1/4λ g-plane

## 2mtr 5/8λ g-plane

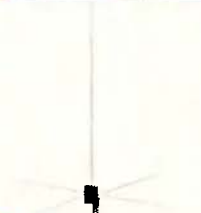
## Dual Band ground plane

## 2mtr 1/2λ J pole



2mtr unity gain vertical  
Fits 25-40mm mast

MFJ1740 \$32.50



2mtr gain vertical  
Fits 25-40mm mast

MFJ1750 \$49



The same size as the MFJ1740 but for both 2 metres and 70cm!

MFJ1754 \$62.50



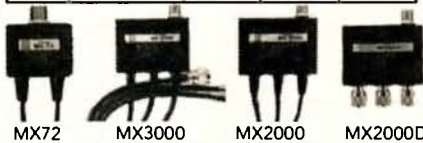
The ideal travelling companion. Roll up your MFJ1730 and stick it in your pocket! J-pole type antennas are omnidirectional, have good gain and need no ground plane.

MFJ1730 \$37.50

## Duplexers and Triplexers

For dual band or triple band transceivers, multiple radios or sharing a run of coax the duplexers and triplexers offer low loss and excellent isolation for a variety of applications. The M connector shown in the table is an improved UHF type for lower losses.

Model	Passbands	Common Connector	Separate Connectors	Price
<b>DUPLEXERS HF or 2m / 70cm</b>				
MX72N	LPF: 1.6-30MHz & 140-150MHz HPF: 400-460MHz	M(F)	LPF: M(M) HPF: N(M)	\$89
MX72H	LPF: 1.6-30MHz & 140-150MHz HPF: 400-460MHz	M(F)	LPF: M(M) HPF: M(M)	\$89
<b>TRIPLEXERS HF or 6m or 2m / 70cm / 23cm</b>				
MX3000	LPF: 1.6-160MHz BPF: 350-500MHz HPF:	N(F)	LPF: M(M) BPF: M(M) HPF: N(M)	\$159
MX3000N	LPF: 1.6-160MHz BPF: 350-500MHz HPF:	N(F)	LPF: M(M) BPF: M(M) HPF: M(M)	\$159
<b>TRIPLEXERS HF or 6m / 2m / 70cm</b>				
MX2000	LPF: 1.6-60MHz BPF: 110-170MHz HPF: 300-950MHz	M(F)	LPF: M(M) BPF: M(M) HPF: M(M)	\$159
MX2000D	LPF: 1.6-60MHz BPF: 110-170MHz HPF: 300-950MHz	M(F)	LPF: M(M) BPF: M(M) HPF: N(M)	\$159



## Outdoor Active Antenna

The MFJ1024 is an active receiving antenna designed for use out of doors. Mounted away from sources of electrical noise the MFJ1024 offers the opportunity for reception of signals in the range 50kHz to 30MHz where other types of antennas are just not practical.

The indoor control unit has a 20dB attenuator, adjustable gain, a receiver switch to select between two receivers and an antenna switch to select either the active outdoor antenna unit or an auxiliary antenna. Measures 150 x 75 x 125mm. The remote unit has the 1370mm whip attached to the amplifier box which is supplied with a mounting plate and hardware to suit most situations. Fifteen metres of RG58 coax with the appropriate plug fitted is supplied connected to the unit. Just hook it up and go! Requires 12V DC supply (not supplied)

MFJ1024 Outdoor active antenna

\$293

The MFJ1022 Active Antenna covers the frequency range 300kHz - 200MHz and will operate with any receiver. A J310 FET and an MRF901 transistor combine to give you excellent HF large signal handling and good VHF weak signal performance. The telescoping 500mm detachable whip gives good reception but stores easily.

Wherever you go the MFJ1022 is ready to go with you! Size: 102 x 85 x 32mm, use 9V battery (not supplied) or external DC supply.

MFJ1022 300kHz-200MHz active antenna

\$99

## TERLIN Outbacker™

OUTBACKER™ antennas are pretuned multiband whips with a separate tap for each band. These models are supplied set up for all amateur bands from 80 through 10 metres. Fine tuning can be done with the extendible tip on the antenna.

Get hold of the Australian antenna designed for Australian conditions when you want to go mobile!

When you come to mount your antenna why not look at the Terlin spring base? The OUTBACKER™ spring base is machined from billet brass, chrome plated for protection. The spring is zinc plated steel, all insulators are Nylatron. The base is mounted with a 1/2 inch bolt on the bottom while the antenna base (3/8 UNF stud) screws into the top. Coax fitting is SO-239.

MT120 Outbacker, 1.2m long  
MT121 Outbacker 1.7m long  
MT122 Perth 2.1m long  
MT123 Outbacker Spring base

\$273  
\$300  
\$327  
\$110

## All band Preselector/tuner



A low cost solution for receiving only where tuning and/or preselection is required. For use at long, medium or short wave, this handy little unit covers 150kHz to 30MHz. Has tuner bypass and receiver grounding provisions.

MFJ956 Tuner/Preselector

\$99.00

## Receiving tuner/preamp



Don't miss that rare DX station because your receive antenna wasn't tuned correctly! With the MFJ959B you can provide proper impedance matching for optimum signal transfer and up to 20dB of preamplifier gain. A 20dB attenuator helps reduce overload problems. Select between two antennas and two receivers. Requires 9-18V DC, 229 x 50 x 150mm.

MFJ959B Receiving tuner/preamp

\$225

## Selective HF Active Antenna

Preselector circuitry minimises inter-modulation, provides additional RF selectivity and reduces the effects of noise from outside the band you have tuned. Inbuilt RF amplifier lets you use the MFJ1020A as a preselector with an external aerial. Covers the frequency range 300kHz to 30MHz. Operates from 9V battery (not supplied) or external 9-18V DC supply. 127 x 50 x 150mm plus telescoping whip.



MFJ1020A Selective active antenna

\$199



# even more antennas!

## Super-LOOP

The MFJ1786 loop is fully welded from aluminium tube for better Q, lower losses and reduced microphonics compared to others made with flat strip. Ideal for portable operation, flat dwellers, caravan parks or anywhere space is limited. Needs no radials, counterpoise or antenna tuner. MFJ's Super Hi-Q Loop is remotely tuned, but needs no control cable, everything is carried on the coax! Remote control unit for operation from 12V DC or internal battery supplied.

- Small, only 915mm diameter
- Tubular radiator for better performance
- VERY quiet receiving antenna
- Remote controller supplied
- Built-in crossed needle SWR/Power meter
- DC powered for convenience



**MFJ1786**

10-30MHz continuous coverage loop

**\$625**

## Hand Held Antennas

### For 2 m & 70cm

The MFJ Pocket Linear family has been acclaimed, both here and overseas, as the greatest thing to happen to HT's since the rubber ducky itself! Gives you a significant increase in range and performance.

MFJ1710 (left) is a 3/8 wave telescoping antenna for 2 metres. Collapses to fit in shirt pocket, complete with clip. Approx 133mm long collapsed, approx 622mm extended.

**MFJ1710 \$24.90**

MFJ1712 (centre) is a wonder for dual band use. Collapsed (184mm) it is a 1/4 wave on 70cm, extended, (482mm) it is a 1/2 wave on 2 & 1/2 wave on 70!

**MFJ1712 \$37.50**

MFJ1714 (right) is an end fed half wave for two metres which leaves anything else just looking rather sad! Acclaimed in ARA as "the best I have ever used" by VK3CE. He should know, he owns one! Needs no groundplane. When collapsed it works like a rubber ducky.

**MFJ1714 \$42.50**

The NEW MFJ FlexiDuck antennas are compact antennas for your hand held offering high performance. They can't stab you—they will bend, flex and twist with you! Ideal where you need gain but can't take the risk on using a solid antenna such as the 'Pocket Linear' family.

MFJ1717 (right) is a 400mm long FlexiDuck which gives top performance in a safe, easy to use antenna for your 2 metre or 70cm hand-held. The MFJ1717 is a full size half-wave on 70cm and a full size quarter wave on 2 metres.

**MFJ1717 \$44**

The MFJ1716 (centre) is a full-size quarter wave on 70cm and a loaded half wave on 2 metres. 223mm tall.

**MFJ1716 \$38**

MFJ's new 'ShortyDuck' is the ideal replacement antenna for your existing 2 metre hand-held.

MFJ1718 (left) is an efficient 108mm 'ShortyDuck' for 2 metre hand-helds. Impedance matched for maximum gain the MFJ1718 employs a high-Q helically wound resonator.

**MFJ1718 \$30**



## HF roll-up dipoles



Just the thing to use with the MFJ9020, or any other QRP HF transceiver! Lightweight, easy to carry, easy to put up.

- MFJ1770 15mtr **\$87**
- MFJ1771 17mtr **\$87**
- MFJ1772 20mtr **\$87**
- MFJ1773 30mtr **\$87**
- MFJ1774 40mtr **\$87**

## 2m/70cm duplexer



Nowadays we seem to use so many multi-band mobiles, hand-helds and antennas, but often we need to use two radios or two antennas! Obviously we need a duplexer. The MFJ916 duplexer is a compact, low-loss unit for 2m/70cm antennas or radios. UHF socket on common port, UHF plugs on separate ports.

**MFJ916 2m/70cm duplexer**

**\$69**

## Efficient 80 & 40 metre vertical



Designed as a high performance antenna for 80 and 40 metres, the MFJ1792 features a full size quarter wave radiator for 40 metres — that's a full 10 metres of ruthless radiating power!

End loading, the most efficient form of loading, is used for 80 metres. This is accomplished by a virtually lossless 1.3m capacitance hat and a high-Q coil wound with Teflon™ covered wire on a low loss fibreglass form.

The entire length of the antenna is always radiating power. It has a unique built-in L-network for lowest SWR, is made of high strength 6061-T6 aluminium tubing, super strong solid fibreglass insulating rod and stainless steel hardware.

Handles 1500watts PEP SSB, includes heavy duty mount. Antennas of this size require guying.

For best possible performance on the low bands you need to use radials, counterpoises or a ground screen.

TRI-BAND version — the MFJ1793 is the same size as the MFJ1792 but includes a full size quarter wave radiator for 20 metres.

**MFJ1792**

80/40mtr vertical

**\$359**

**MFJ1793**

80/40/20mtr vertical

**\$405**

## Half-wave vertical



The MFJ1796 is a truly low-cost half wave, ground independent vertical antenna for 40, 20, 15, 10, 6 & 2 metres.

Standing only 3.6m high and with a tiny 60cm foot print the MFJ1796 is a truly useful antenna. Light enough to be handled by just about anybody, but a serious antenna at the same time. Efficient, high-Q loading coils and an air cored balun combine to reduce losses. Durability is assured by the use of heavy walled aluminium tubing, machined aluminium parts and stainless steel hardware. All coils are wound on tough, low loss, ceramic formers using high durability Teflon™ coated wire. Teflon™ insulated coax is used from the decoupling balun to the feedpoint.

A half-wave section for six metres and for two metres adds versatility. You can individually adjust the MFJ1796 on each band. Adjusting one band has minimal influence on other bands.

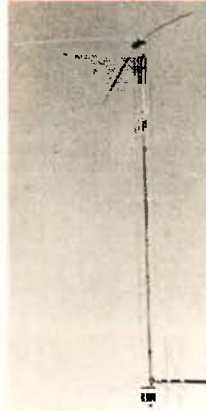
- Covers 40, 20, 15, 10, 6 & 2 metre bands
- Needs no radials or ground plane
- Made from highest quality materials
- Only 3.6m high

**MFJ1796**

6 band half-wave vertical

**\$449**

## 10 band 80-2m vertical



Self supporting and only 6.1 metres tall the MFJ1798 requires no ground radials and offers terrific performance on 10 amateur bands from 80 through 2 metres.

Separate full size radiators are used on 20, 17, 15, 12, 10 and 2 metres. On 6 metres the 17 metres radiator becomes a 3/4λ gain radiator. The active radiator works as a stub to decouple everything beyond it. In phase antenna current flows in all parallel radiators. This forms a very large equivalent radiator and gives you very wide

bandwidths. The radiator stubs provide automatic bandswitching, and there is absolutely no loss associated with loading coils or traps.

On 80, 40 and 30 metres the MFJ1798 employs highly efficient top-loading to give excellent bandwidth, an efficient, low radiation angle and automatic bandswitching.

- 10 bands - 75/80, 40, 30, 20, 17, 15, 12, 10, 6 & 2 metres
- Separate full size radiators
- End loading for 80, 40 & 30 metres
- Elevated top feed for better performance
- Low radiation angle
- Very wide bandwidth

**MFJ1798**

10 band half-wave vertical

**\$599**

# Antenna accessories

## Heavy duty 4 pos coax switch

**Lightning Protection, centre ground pos'n.**  
The MFJ1704 series switches are designed for use up to 500MHz and are offered with UHF or type-N connectors. They handle a full 2.5kW PEP with extremely low SWR. Isolation is better than 60dB at 30MHz and still >50dB at 500MHz.



**MFJ1704** with UHF(F) connectors **\$132.50**  
**MFJ1704N** with N(F) connectors **\$157.50**

## MFJ1701 6 positions SO239

The MFJ1701 is a six position switch intended for use up to 2kW PEP in 50 to 75Ω systems at frequencies up to 30MHz. A high quality ceramic wafer switch is used and unused terminals are grounded.



**MFJ1701** 6 position HF switch **\$78.50**  
**Remote Coax Switches**



The Ameritron RCS-4 is a remote controlled coax switch that selects one of four outputs by supplying all control voltages through the coax cable itself. You get two units, a switching box that mounts outside on the tower or wall and the control console placed at your operating position.

No. of positions **4**  
Loss at 30MHz **<.05dB**  
VSWR **<1.1:1 from 1.8-30MHz**  
Power **1.5kW ave**  
**2kW PEP**  
Switching time **50ms**  
**RCS-4** HF 4 pos remote switch **\$297**

The RCS-8V switch allows you to remotely select up to five antennas, so you can replace five runs of coax with one. Your RCS-8V will handle up to 5kW up to 30MHz and 1kW up to 150MHz. Uses 8 core cable (not supplied) to connect the two units.

No. of position **5**  
Loss (150MHz) **<.05dB**  
VSWR **<1.2:1 DC-250MHz**  
Impedance **50Ω**  
Power **5kW below 30MHz**  
**1kW at 150MHz**  
**RCS-8V** 5pos HF/HF rmt switch **\$328.80**

## Heavy duty 2 pos coax switch

**Lightning Protection, centre ground pos'n.**  
The MFJ1702B is a redesigned version of this very popular switch that combines new features, such as a centre grounded position and 2.5kW PEP (1kW CW) rating for use in 50Ω systems. The new MFJ1702BN, with 'N' type connectors is rated to 1.1GHz. Isolation >60dB @ 300MHz and >50dB @ 450MHz. Insertion loss <0.2dB, SWR <1:1.2.

**MFJ1702B** with UHF(F) connectors **\$49.50**  
**MFJ1702BN** with N(F) connectors **\$72.00**

## MFJ1700B 2 x 6 positions SO239

The MFJ1700B has two ceramic rotary switches that let you select 1 of 6 antennas and 1 of 6 transceivers in any combination. Rated 2kW PEP for 50-75Ω loads, unused terminals grounded.



**MFJ1700B** 2 x 6 position HF switch **\$148.00**  
**Diamond coax switches**



Diamond coaxial switches are designed for high performance up to 1000MHz for UHF connector types and to 3000MHz for the 'N' connector type. Rated at 1.5kW they offer extremely low VSWR and insertion loss with excellent isolation throughout their frequency range.

**DM-CX210A** 500MHz UHF(F) connectors **\$79**  
**DM-CX210N** 3GHz N(F) connectors **\$149**

## Low-Pass filters for HF

This is the best low pass filter we have tested. Crafted from the finest materials the Bencher low pass filter offers a minimum of 80dB attenuation in tests conducted to measure the harmonic suppression in Ch 2 TV and higher.



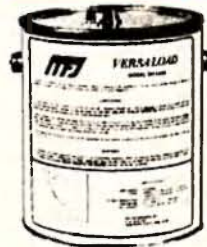
**MT093** Bencher Lowpass filter **\$109**  
**MFJ Lowpass Filter**

Eliminate or minimise TVI with the MFJ low pass filter. Ensure your transceiver does not cause harmonic interference to your neighbour's TV. Rated to carry 1.5kW from DC-30MHz, SWR <1.5:1, minimal insertion loss, high harmonic attenuation.



**MFJ704** Lowpass filter **\$80.50**

## 50Ω Dummy Loads



The MFJ250X handles 1kW CW or 2kW PEP for 10 min, 200W CW or 400W PEP cont. Fill with transformer oil (not supplied). Low VSWR: 1.2:1 to 40MHz, 1.5:1 30-300MHz, 2:1 300-400MHz. Safety vent with removable cap. SO-239 connector, measures 191 H x 168 DIA, with carrying handle.

**MFJ250X** 1kW can type load **\$75.00**  
**1.5kW DC-650MHz**



Another MFJ first! This load will handle 1.5kW for 10 seconds, 100W for 10 minutes. SWR <1.1:1 at 30MHz, <1.3:1 at 650MHz and usable to 750MHz. Measures 75 x 75 x 178mm.

**MFJ264** 1.5kW load UHF connectors **\$135.00**  
**MFJ264N** 1.5kW load N connectors **\$158.00**

## 300W DC-150MHz

The MFJ260B air cooled dry load is rated at full load for 30 seconds, and is supplied with a derating curve. SWR <1:1.1 to 30MHz, <1:1.5 30-150MHz, 57 x 57 x 178mm



**MFJ260B** 300W load UHF connectors **\$75.00**  
**MFJ260BN** 300W load N connectors **\$89.00**

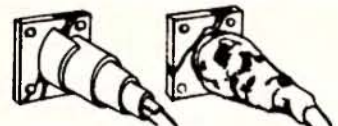
## 50Ω Load resistors



These precision 50Ω carbon on ceramic resistors are the same high quality parts used in the MFJ260B and MFJ264 loads.

**RA38** ..... **\$52.03** **RA39** ..... **\$86.40**

## Coax-Seal sealant



If you have any type of outdoor antenna you should be using Coax-Seal® sealant. Coax-Seal is a black rubber based material especially designed to protect any outdoor connection or connector.

Coax-Seal is a non-conductive, non-contaminating, waterproof substance which remains flexible at any temperature. Coax connectors are not waterproof, and exposed solder connections will deteriorate.

Available in two sizes — please enquire for volume pricing.

**HD124** CoaxSeal 12.7mm x 1.5m **\$5.50**  
**HD125** CoaxSeal 25mm x 14.5m **\$14.50**

# AMERITRON

## Valve & Solid State HF linears

ALS-500M 600W SOLID STATE 13.8V DC LINEAR



ALS-500M

600W PEP solid state linear

**\$1850**

- Fully solid state - no tuning
- 600W PEP, 400W CW output
- Continuous coverage 1.5 - 30MHz
- Load fault & thermal protection
- Excellent harmonic suppression
- Compact: 89 x 229 x 381mm weighs 3.5kg
- Requires 13.8V @ 80A peak

Now, an economical fully solid state amplifier for mobile, portable or base station use. With less than 100W drive into the low SWR input of the ALS-500M you get a full, quiet 600W PEP output. This amplifier is well protected and is built with traditional American made Ameritron pride and quality.

**AL811 600W PEP HF Linear amplifier**

**Input:**  
Circuit type: Pi-network, slug tuned coils  
Maximum drive power permissible: 100 watts  
Typical drive for rated output: 75 watts

**Output:**  
Circuit type: Pi-network  
30 second carrier: 550 watts  
1/2 hour PEP two tone: >600 watts  
Efficiency: typically >70%

**Power Supply:**  
Full load voltage: 1500 V  
Full load current: 550 mA  
AC Input: 240V 50Hz max 4A.

**Metering:**  
Multimeter: reads HV and plate current  
Grid meter: reads PA grid current  
ALC: Negative going, 0-20 V adjustable

**Efficiency**  
CW & SSB (envelope crest): >70%

**Physical:**  
Dimensions: 406D x 350W x 203H  
Weight: 13.7kg

**Frequency Coverage**  
160, 80, 40, 30, 20, 17, 15, 12 and 10 metres  
Third Order IMD at Rated Output: -33dB

**AL811H - 4x811A 800W PEP**

Four 811A tubes, fully neutralised. Covers all bands 160-10 metres. Tubes mounted vertically for reliable operation, has ALC and can be fitted with QSK-5 for full QSK.



AL811H 800W PEP linear amp

**\$2095**

**QSK-5 PIN DIODE QSK switch**

Utilising the latest in PIN-diode technology the QSK-5 will handle 2.5kW PEP, 2kW CW in normal amateur service with SWR <1.5:1. Handles 750W in continuous modes like RTTY, SSTV and FM. Connected externally to the amplifier. Extremely quiet in operation. Optional cooling fan will permit 1500W continuous operation.



QSK5 2.5kW QSK switch

**\$785**



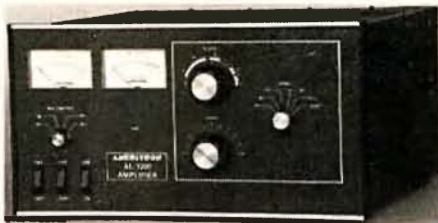
AL811

600W PEP HF linear

**\$1460**

**AL1200 - 3CX1200A7 1.5kW PEP**

With a serious transmitting tube and a serious Peter Dahl 'C' core transformer the AL-1200 is an extremely rugged, yet affordable linear. QSK available as an option.



AL1200 1.5kW PEP linear amp

**\$4850**

**AL-1500 - 3CX1500 1.5kW PEP**

With only 65W drive the 3CX1500 (8877) in the AL-1500 will deliver a full 1.5kW PEP



AL1500 1.5kW PEP linear amp

**\$6050**



**No tuning, no fuss, no worries,  
just turn on and operate!**

The revolutionary new Ameritron ALS-600 amplifier is unique - it uses four rugged TMOS RF Power MOSFET transistors to deliver 700W PEP with a clean output and unrivalled solid state performance.

Intended for base station operation, the ALS-600 is supplied with a multi-output 50V power supply complete with power supply voltage and current metering.

- Output 700W PEP, 600W CW
- Continuous coverage 1.8-30MHz.
- Instant bandswitching, no tuning, no warm-up
- SWR protection prevents amplifier damage.
- Over power protection with ALC.
- Extremely quiet!
- Compact, 152 x 241 x 305mm
- 12V DC output to power accessories
- Choke input power supply for improved regulation and reduced AC line current peaks.
- Fully tested in Australia before delivery.

The matching ALS-600PS power supply, supplied with the ALS-600 is the same size as the amplifier and supplies 50V DC at up to 25A for the amplifier. Power supply can be mounted out of the way to reduce clutter and congestion on your operating bench.



ALS600

700W PEP HF linear

**\$2995**

**AL80B - 3-500Z 1000W PEP**

Combine Ameritron's Dynamic ALC technology with instantaneous RF Bias and an Eimac 3-500Z and you have one of the best possible 1kW linears you can buy. QSK available as an option.



AL80B 1kW PEP linear amp

**\$2850**

**AL82 - 2 x 3-500Z 1.5kW PEP**

The classic contesters' linear with a pair of Eimac 3-500Z tubes and a 1.8kW power supply. Like all Ameritron linears it covers 160-10 metres.



AL82 1.5kW PEP linear amp

**\$4650**

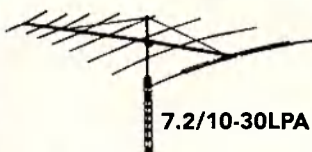
When the quest is for excellence in antennas there can only be one result... and this is it!

From one of the world's great antenna manufacturers, just for you!

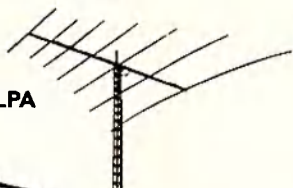
Every KLM antenna is designed with the amateur in mind, but with no sacrifice of quality! Made from only the best weather-resistant materials, Lexan insulators and all stainless steel hardware, these antennas are quite possibly the best you can buy, but they also have a price tag to match. The entire range is shown on these pages. Many types are held in our warehouse for immediate delivery. Others are usually available within 4 to 6 weeks from the USA. So whatever your interests try KLM and enjoy!

### HF Log Periodics

Model	10-30-7LPA	7.2/10-30LPA
Frequency MHz	10-30	7.2/10-30
Gain dBd	7typ	3/7typ
Length M	9.15	12.8
Elements	7	8
Price	\$2500	\$2900



10-30-7LPA



KT-34XA

KT-34A

Model	KT-34A			KT-34XA		
	14-14.35	21-21.45	28-28.97	14-14.35	21-21.45	28-28.97
Frequency MHz						
Gain dBd	7	7	7	8.5-9	9-9.5	11-11.3
Elements	4			6		
Length mtrs	4.87			9.76		
Price	\$1250			\$1800		

### What makes one manufacturer stand out?

In the case of antennas it is simple. The designs must be good. These are, they have been created by some of the best designers in the business. The materials must be good. These are, because only the best will do for the craftsmen at KLM. They select only the best quality aluminium alloys for booms and elements, all stainless steel hardware, precision-moulded insulators and the best quality materials for baluns and chokes. The antennas must work, and without doubt the owners of KLM antennas will tell you that their antennas do work.

Time and time again the products of this one company have been proven to perform beyond expectations by commercial, government and amateur users. Place your faith in KLM and you can be assured of spare parts availability for many years to come as well as one of the best antennas you can buy.

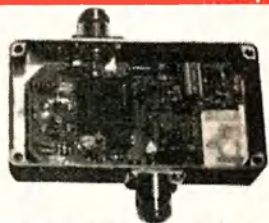
But how do we know they are the best? The copiers tell us! If these weren't the best antennas you could get, why would so many people want to copy them? Trouble is you can never rely on the copy to perform as well as the original! Can you?

### HF Monoband beams & Rotatable dipoles

Model	20M-6	20M-5	20M-4	15M-6	15M-4	10M-6	10M-4
Frequency MHz	13.9-14.4	13.9-14.4	13.9-14.4	21-21.5	21-21.5	28-30	28-30
Gain dBd	11	9.7	7.7	11	7.7	11	7.7
Length M	17.38	12.8	6.4	10.97	4.27	8.38	3.05
Elements	6	5	4	6	4	6	4
Price	\$2300	\$1640	\$1060	\$1325	\$576	\$830	\$525

Model	80M-3	80M-2	80M-1	40M-4	40M-3	40M-2	40M-1
Frequency MHz	3.5-4	3.5-4	3.5-4	7-7.3	7-7.3	7-7.3	7-7.3
Gain dBd	7	4	0	7.2	6.5	4.9	0
Length M	18.3	10.98	NA	12.8	9.76	4.88	NA
Elements	3	2	1	4	3	2	1
Price	\$10500	\$5900	\$1930	\$2300	\$1700	\$1250	\$510

### GaAs-FET VHF & UHF Preampifiers



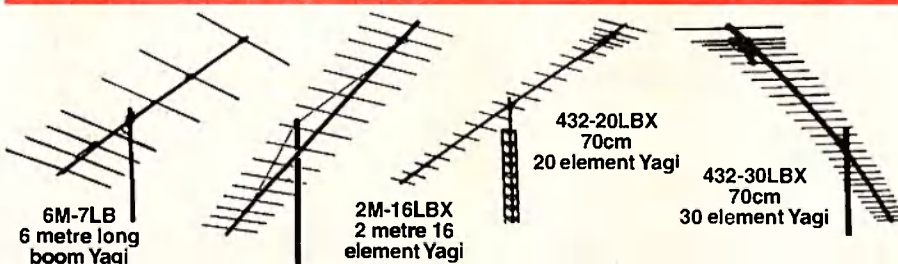
These preamplifiers from Mirage Communications use the latest in GaAs-FET technology to provide every keen VHF/UHF amateur with a line of high quality amplifiers for use indoors or at the masthead. Mastmount versions as well as in-shack types are available.

Mirage preamps can be controlled and powered by radios such as the ICOM IC-271/471 & 275/475/575 which have internal preamp power supply and control facilities.

- Automatic RF switching
- GaAs-FET for best performance
- In-line design for ease of operation
- Switchable gain settings
- Gain of >20dB, Noise figure < 0.6dB
- Power handling 160W
- Power - nominal 13.8V DC
- Mast mount (KP2) has DC coupler supplied

KP1/10M	28-30MHz In-shack preamp	\$279
KP1/6M	50-54MHz In-shack preamp	\$279
KP1/2M	144-148MHz In-shack preamp	\$279
KP1/70cm	430-450MHz In-shack preamp	\$279
KP2/10M	28-30MHz Masthead preamp	\$329
KP2/6M	50-54MHz Masthead preamp	\$329
KP2/2M	144-148MHz Masthead preamp	\$329
KP2/70cm	430-450MHz Masthead preamp	\$329

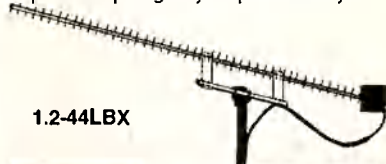
### VHF & UHF Antennas



Model	6M-5	6M-7LB	2M-8	2M-11X	2M-13LBA	2M-16LBX	440-10X	440-16X	432-20LBX	432-30LBX
Frequency MHz	50-52	50-52	144-148	144-148	144-148	144-148	420-470	420-450	425-440	430-440
Gain dBd	9.7	11.5	10.3	12.5	13.3	14.5	11.5	13.5	15.3	17.3
Length	3.6	7.85	2.21	4.67	6.55	8.54	1.45	3.66	3.76	6.68
Elements	5	7	8	11	13	16	10	16	20	30
Price	\$522	\$760	\$254	\$218	\$248	\$506	\$171	\$313	\$378	\$443

### 23cm (1.2 GHz) ANTENNAS

The KLM antenna range for 23cm are all supplied completely assembled and pre-tuned at the factory, with the exception of the 44 element version which is in two pieces requiring only simple assembly.



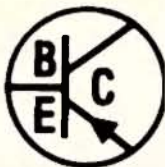
Model	1.2-15LBX	1.2-24LBX	1.2-44LBX
Frequency MHz	1260-1300		
Gain dBd	13.6	16.2	18.2
Elements	15	24	44
Length mtrs	1.07	1.82	3.76
Price	\$238	\$285	\$398

### SATELLITE ANTENNAS

Every KLM satellite antenna is supplied with any necessary phasing harness and a remote polarisation switch. Non-conducting fibreglass booms, rotor systems and complete tracking systems are also available.



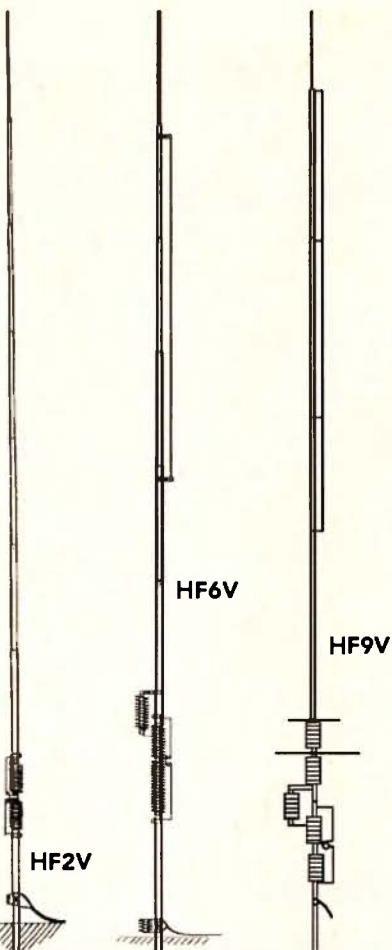
Model	2M-14C	2M-22C	435-18C	435-40CX
Frequency MHz	144-150	144-148	420-450	420-440
Gain dBd	11	13	12	15.2
Elements	2x7	2x11	2x8	2x20
Length mtrs	3.89	5.82	2.23	4.45
Price	\$423	\$553	\$550	\$589



## Butternut is back!

Butternut Electronics Co. has been producing what are possibly the world's most loved vertical antennas for amateur HF use for many years. Whether you need 80 & 40 metres or all 9 bands, eighty through 6 metres, you will find a Butternut combination to suit. The ever popular HF-6V can have 160 metres added to it, as can both the HF-9V and the HF-2V.

All Butternut antennas and accessories are in stock at Daycom right now, just waiting for your call!



### Butternut HF-6V

Butternut's most popular vertical, covers 80-10 metres, 12 & 17 metres can be added with the A1712 kit, 6 metres with the A6 kit and 160 metres with the TBR-160S kit. The HF-6V can be used with any of the Butternut accessories listed on this page.

#### Electrical and Mechanical Specifications

Shipping weight: 5.4 kg.  
 Height: 7.9 m.  
 Feedpoint impedance: nominal 50Ω through included matching line.  
 VSWR at resonance: 1.5:1 or less on all bands in typical ground level or above ground installations.  
 Bandwidth for VSWR of 2:1 or less:  
 10 metres — 1500 kHz  
 15 metres — entire band  
 20 metres — entire band  
 30 metres — entire band  
 40 metres — 280 kHz  
 80/75 m. — 40 to 100 kHz  
 Power Rating: 1.5kW SSB and CW all bands  
 Wind loading: 0.49 sq. metres  
 Unguyed wind survival: 129 km/h assuming no icing or precipitation

#### Installation

Comes complete with 0.6m. tubular mounting post (15.8mm. O.D.) for direct placement in earth or into standard steel TV mast (19mm. O.D. with 1.5mm wall) or Butternut Mounting Post Sleeve (Model MPS). Eye-level adjustment of 80, 40 and 30 metre resonator coils; length adjustment on 15 and 10 metres; 20 metre adjustment is a function of 40 and 30 metre tuning. Coils for 80/75, 40 and 30 metres are 4.76mm diameter aluminium wire, air wound and self supporting; typical spacing between adjacent turns is 12.7mm. or greater.

**HF6V 6 band HF vertical \$423**

### 18 & 24 MHz WARC Band Adaptors

Allows the Butternut 5 and 6 band verticals to operate on the 18 and 24 MHz WARC bands with full automatic switching. Model A-17-12 (not shown)

**A1712 17 & 12 metre add-on kit \$100**

### 160 Metre Adaptor (Model TBR-160-S)

Attaches to the base of Butternut HF verticals for automatic bandswitching 160 through 10 metres with a slight reduction in 80/75 metre bandwidth. 160 metre bandwidth for 2:1 SWR is 10-20 kHz depending on ground losses. Rated at 500 watts CW - 1200 watts PEP input to final.

**TBR160S 160 metre add-on kit \$160**

### 30 metre Resonator Kit

Model 30 MRK Resonator kit for 30 metre operation. Not for use with Top Loading Kit.

**30MRK 30 metre add-on kit \$100**

### Top Loading Kit 80 - 40 Metres

Model TLK Top loading kit of 4 x 7.60m stranded umbrella wires. Provides increased bandwidth and efficiency on 80 and 160 metres. (The top loading kit cannot be used with the 30 metre resonator).

**TLK Top loading kit for 80 & 160 mtrs \$48**

### Roof Mounting Kit (Model RMK-2)



For model HF6/9V and other Butternut verticals. Includes 2-ft tripod tower, STR-II radial kit, mounting post sleeve (Model MPS), plated lag screws and complete instructions. Shipping weight: 4.9 kg.

**RMK2 Roof mounting kit \$155**

### Butternut HF-9V

The Butternut HF9V-X is the same as the HF6V-X but includes WARC bands and the 6 metre kits in a single package.

Bandwidth for less than 2:1 SWR:

6 metres	1MHz
10 metres	1500 kHz
12 metres	200kHz
15 metres	entire band
17 metres	200kHz
20 metres	entire band
30 metres	entire band
40 metres	280 kHz
80/75 m.	40 to 100 kHz

**HF9V 9 band HF vertical \$529**

### DX the 80 & 40 Metre Bands

Self-supporting vertical antenna designed for optimum performance on the 80 and 40 metre bands. Features full automatic band switching using Butternut's exclusive Differential Reactance Tuning<sup>®</sup> system. Provides greater radiation at lower wave angles.

#### Electrical and Mechanical Specifications

Height: 9.75 m  
 Feedpoint impedance: 50Ω  
 VSWR at resonance: 1.5:1 or less  
 Bandwidth for VSWR of 2:1 or less: 40 metres full band  
 80 metres 90 kHz  
 Power Rating: 1 kW 80 & 40 metres  
 Unguyed wind survival: 97 km/h

**HF2V 80 & 40 metre vertical \$400**

### A no-radial vertical that covers 80 or 75 metres?

#### THERE IS ONE NOW!

No, we won't insult your intelligence by telling you that it's a "half wave" or that ANY vertical will operate more efficiently without a good radial system than with one; it certainly won't! But if you've no room for even the smallest radial system just install the most efficient multiband vertical in the business, the HF9V, over our counterpoise kit BN-CPK. You'll not only save a tidy sum but you'll work DX that the shorter and more lossy no-radial "half-waves" can't touch because both the HF6V and HF9V use longer active element lengths for higher radiation resistance and greater efficiency on more bands than any of the so-called half-waves. Ask for the free brochure and receive technical note DLS-1 "Dirty Little Secrets from the Antenna Designer's Notebook" that shows you how to calculate the probable efficiency of any vertical antenna using the manufacturer's own specs — so you won't have to learn the truth the hard way!

### Counterpoise Kit

Model CPX Counterpoise Kit for Butternut models HF6V-X and HF9V-X substitutes for ground or elevated radials. Self-supporting tubing bolts onto base of antenna. Mast not provided.

**CPK Counterpoise kit \$110**

### Stub Tuned Radial Kit (Model STR-2)

Kit of four stub-tuned radials for 40, 20, 15 and 10 metres, each 11.8m long and completely assembled with end insulators. Also includes coil of # 18 copper-clad steel wire and insulators for four 30 metre radials (7.3m) and one 75/80 metre radial (maximum length 20.7m)

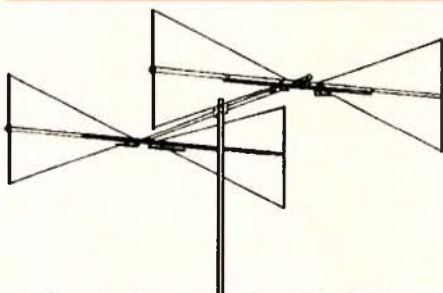
**STR2 Stub tuned radial kit \$100**

### Mounting Post Sleeve (Model MPS)

A 600mm. tube of 32mm. diameter aluminium to accommodate mounting post of HF6/9V. May be left in earth for easy removal of antenna and mounting post, recommended as protection in installations where U-bolts or locking bolts contact the mounting post.

**MPS Mounting post sleeve \$20**

### Butternut HF5B MiniBeam



For gain where you really didn't think it was possible! The BUTTERNUT HF5B "Butterfly" beam is designed for those locations where just about any other rotatable antenna won't fit. This compact beam uses no messy traps and can be turned with a small rotator. High quality stainless steel hardware is used throughout to ensure your HF5B will last.

#### HF5B specifications:

Bandwidth for <2:1 VSWR:-

10 metres 1500kHz  
 12,15,17m entire band

SWR at resonance: ≤1.5:1

Gain:-

10 metres	5dBd
12 metres	5dBd
15 metres	5dBd
17 metres	0dBd
20 metres	3dBd

Front to back ratio:

Front to side ratio:

Power handling:

Feed impedance:

Wingspan:

Boom length:

Turning radius:

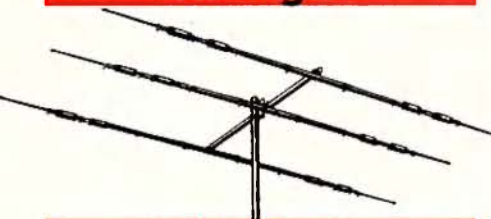
Vertical spreaders:

20dB
30dB
1kW
50Ω
3.84m
1.83m
2.12m
1.83m

**HF5B 5 band mini-beam \$650**

# HF vertical and beam antennas

## HF Yagis



## World Ranger

### Multiband YAGIS for 10, 12, 15, 17, 20, 30 & 40 M

Our three and four element triband beams provide the versatility and performance you need for reliable communications around the world. Cushcraft's World Rangers are made to last with 6063-T832 aluminium tubing, weatherproof traps, stainless steel hardware and fibreglass insulators. They are designed with fewer parts for easier assembly, lower weight and less windload.

The add-on kits shown below can be used to add 30 or 40 metres to the A3S and A4S or 30 metres to the unique WARC band A3WS dual band beam.

Model	A4S	A3S	A3WS
Frequency	28.21,14	28.21,14	24.15
Number of elements	4	3	3
Forward gain, dBS	8.9	8	8
Front to back ratio, dB	16	14	14
Power, watts PEP	2000	2000	2000
Boom length, metres	5.48	4.27	4.27
Longest element, mtrs	9.75	8.45	7.68
Turning radius, mtrs	5.49	4.72	4.4
Max mast size, mm	50	50	50
Wind load, square metres	51	47	38
Weight, kg	18.8	12.3	10.24
Price (inc tax)	\$1099	\$916	\$689

## World Ranger

### 30 & 40 mtr add-on kits

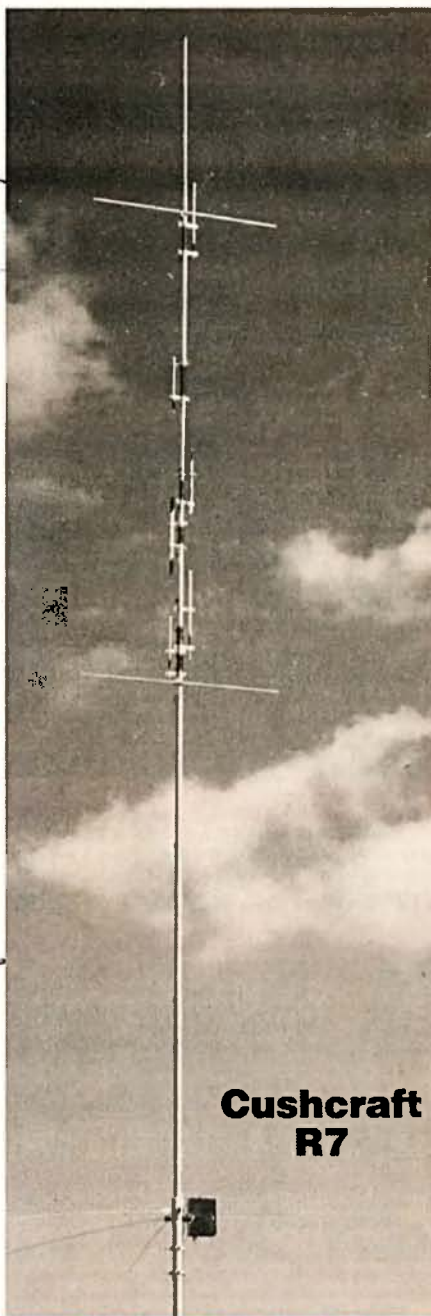
Model	A743		A744		A103
Frequency, MHz	7	10	10.72	8.66	10
Driven element length	10.72	8.66	10.72	8.66	9.8
Wind load square metres	.05	.03	.05	.03	.05
Bandwidth, kHz	125	150	125	150	250
Power, watts PEP	2000	2000	2000	2000	2000
Weight, kg	1.6	1.05	1.6	1.05	1.5
Price (inc tax)	\$299		\$299		\$299

## ROTATABLE DIPOLES



Model	D40	D4	D3	D3W
Frequency	7	28.21,14.7	28.21,14	24.18,10
Bandwidth, kHz	200	>350*	>500	>200
Power, watts PEP	2000	2000	2000	2000
Length, metres	12.88	10.92	7.86	10.37
Wind load, square metres	12	12	08	08
Weight, kg	5.5	5.9	4.1	5
Price (inc tax)	\$507	\$566	\$419	\$429

Cushcraft rotatable dipoles come in four models: a single bander for 40 metres, three and four banders, as well as the new D3W for three WARC bands. Their size means they can be mounted high above trees for better performance than a wire dipole without the worry of a tribander on a tall mast or tower.



## Multiband HF verticals

### Half-wave verticals for **R5, R7** 7,10,14,18,21,24,28 MHz

IT'S THE ONE YOU'VE ASKED FOR! Amateur radio's most popular vertical antenna design now gives you **30 & 40 metres WITH NO GROUND RADIALS!** Only 6.9 metres (22.5 feet) tall, the R7's small footprint and ground independence gives you mount anywhere flexibility. Ideal for confined spaces and unobtrusive in home units, the R5 and R7 offer simple assembly (it takes about sixty minutes) automatic frequency selection and only 7 short (1 metre) counterpoise rods mean you worry about DXing, contesting or rag-chewing, not what the neighbours or XYL think!

Convenience is only one reason to own a Cushcraft R5 or R7 vertical—the main reason is performance. The only connection to your rig is a single coax. No band switching, no remote tuning and you can have amateur radio's best performance to size ratio antenna on 30 & 40 metres—a total of **SEVEN** bands today!

Model	R5	R7
Frequency, MHz	28.24,21,18,14	28.24,21,18,14,10,7
Gain, dBi	3	3
Electrical length	Half-wave	Half-wave
SWR 2:1 bandwidth	Full band	Full band
Power, watts PEP	1800	1800
Radiation angle	16°	16°
Height, metres	5.2	6.9
Max mast size, mm	45	45
Wind load, square mtr	.13	.21
Weight, kg	4	5.6
Price (inc tax)	\$702	\$937

## HF Verticals

### 80 - 10 metres

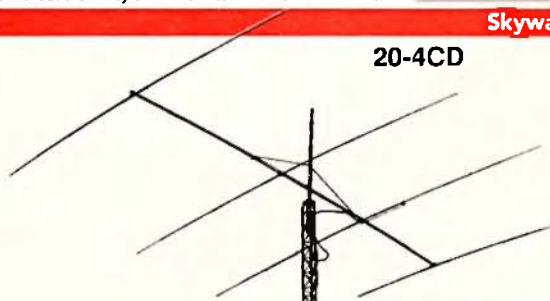
As well as the popular and very successful half-wave verticals, the R5 and R7, Cushcraft offers three, five and eight band quarter wave verticals with high quality, heavy duty construction with all stainless steel hardware. These compact antennas are ideal wherever you have the space for ground radials but not for a beam antenna.

For use with any of these antennas the APR18 radial kit consists of 6 pre-cut radial assemblies with connecting lugs all ready to attach to the base of the antenna.

Model	AVJ	AVS	APBA
Frequency MHz	28.21,14	28.21,14,7,3.5	28.21,18,14,10,7,3.5
Gain, dBi	3	3	3
Electrical length	1/4 wave	1/4 wave	1/4 wave
SWR 2:1 bandwidth	Full band	Full band 80M-70MHz	Full band 40M-150MHz 80M-80MHz
Power, watts PEP	2000	2000	2000
Radiation angle	18°	18°	18°
Height, metres	4.2	7.4	7.92
Max mast size, mm	42	42	42
Weight, kg	2.3	3.65	4.23
Wind load, square mtr	.10	.19	.14
Radials required	Normally yes		
Radial kit to suit	APR-18A (set of 6) \$130		
Price (inc tax)	\$207	\$424	\$535

## Skywalker Monoband Yagis

### 20-4CD



Model	10-4CD	10-3CD	TEN-3	15-4CD	15-3CD	20-4CD	20-3CD	40-2CD
Frequency	28-29.7	28-29.7	28-29.7	21-21.45	21-21.45	14-14.35	14-14.35	7-7.3
Number of elements	4	3	3	4	3	4	3	2
Forward gain, dBd	10	8	8	10	8	10	8	5.5
Front to back ratio, dB	30	30	25	30	30	30	30	20
Power, watts PEP	2000	2000	2000	2000	2000	2000	2000	2000
Boom length, metres	4.88	3.05	2.44	6.10	4.27	9.75	6.1	6.9
Longest element, mtrs	5.34	5.38	5.49	7.11	7.06	11.0	10.96	12.9
Turning radius, mtrs	3.5	3.05	3.0	4.72	4.11	7.2	6.1	7.29
Max mast size, mm	50	50	50	50	50	50	50	50
Wind load, square mtr	.29	21	.20	.42	.32	.75	.51	.57
Weight, kg	11.4	5	4.5	11.4	9.1	25	13.7	20
Price (inc tax)	\$507	\$390	\$264	\$605	\$517	\$1072	\$750	\$1072

# VHF & UHF Vertical and beam antennas

## FM Yagis

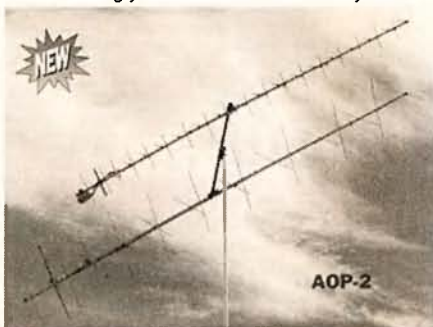


For both voice and for packet operation, Cushcraft's FM Yagis and Boomer FM Yagis are ideal choices no matter what type of operation you are interested in. High gain, clean radiation patterns, ease of assembly and materials of the highest quality are all part of the story.

Model	A148-3S	A148-10S	A148-20S
Frequency, MHz	144-148		
Number of elements	3	10	20
Forward gain, dBd	7.8	13.2	16.2
Front to back ratio, dB	25	24	24
Power, watts PEP	1000	1000	1000
Boom length, metres	.85	3.6	2.1x3.6
Turning radius, mtrs	.8	1.8	2.0
Max mast size, mm	51	51	51
Wind load, square mtr	.02	.11	.26
Weight, kg	.7	2.7	6.8
Price (inc tax)	\$92	\$163	\$447

## OSCAR Antennas

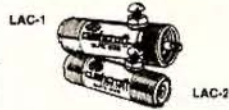
Here's the system to get you going for amateur satellite operation. The Cushcraft AOP-2 'OSCAR Pack' includes the 738XB for 70cm, and the 22XB for 2metres. The 70cm antenna has a polarisation switching relay and the pack includes all details and dimensions for assembling your own OSCAR antenna system.



Model	22XB	738XB
Frequency, MHz	144-148	432-438
Gain dBdc	14	15.5
2:1 SWR Bandwidth	4MHz	6MHz
Max Power PEP	600W	250W
Boom length	5.9	4.37
Turning radius	3.35	2.6
Wind load sq mir	.24	.13
Weight	5	3.5
Price	\$580	\$536

## Blitz Bug Lightning arrestors

The Cushcraft Blitz Bug arrestors use a patented three point static discharge cell design. They have a sealed chamber, constant static drain and controlled discharge. Blitz bugs are rated at 2kV to 500MHz with negligible insertion loss.

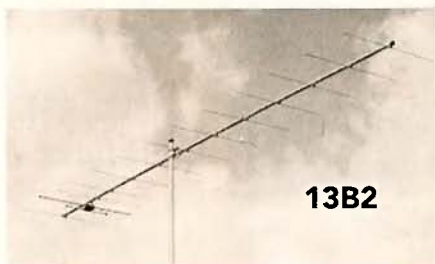


LAC1 with UHF plug & UHF socket  
LAC2 with UHF sockets

\$28.80  
\$28.80

## Boomer FM, SSB and CW Yagis

The Cushcraft Boomer range are state of the art VHF and UHF Yagis, supplied complete with all necessary mounting hardware. The 26B2 is a combination of two 13B2s and a cross boom for vertically polarised FM use.

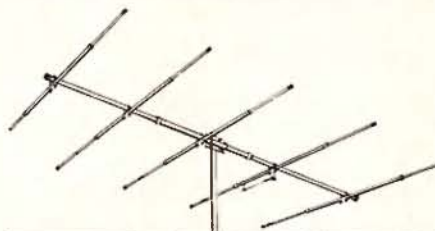


13B2

Model	6174B	124WB	13B2	17B2	26B2	424B
Frequency, MHz	50.51	144-148	144-148	144-148	144-148	432-438
Number of elements	6	4	13	17	21 (Vert)	24
Forward gain, dBd	14	10.2	15.8	16	18.8	18.2
Front to back ratio, dB	30	24	26	25	28	28
Power, watts PEP	2000	2000	2000	2000	2000	2000
Boom length, metres	10.36	1.22	4.57	6.45	4.57	5.3
Longest element, mtrs	2.97	1.04	1.02	1.04	1.02	34
Turning radius, mtrs	5.39	1.22	2.7	5.26	3.18	3.06
Max mast size, mm	50	50	50	50	50	50
Wind load, square mtr	45	0.04	1.7	36	17	21
Weight, kg	11.83	1.36	3.1	7.19	3.05	2.06
Price (inc tax)	\$810	\$141	\$274	\$472	\$776	\$315

## Sideband Yagis

The performance of these budget antennas will surprise you! They are light weight, durable and easy enough to assemble that you will be on air in an afternoon. Good bandwidth, tapered elements and direct 50Ω matching with the Cushcraft 'Reddi-Match' make these fine antennas a delight to use.



Model	A50-3S	A50-5S	A50-6S	A144-7S	A148-10S	A430-11S
Frequency, MHz	50.51	50.51	50.54	144-146	144-148	432-438
Number of elements	3	5	6	7	11	11
Forward gain, dBd	8	10.5	11.2	11.1	13.2	13.2
Front to back ratio, dB	20	23	24	20	20	20
Power, watts PEP	1000	1000	1000	1000	1000	1000
Boom length, metres	18	37	61	25	34	14
Longest element, mtrs	30	30	30	102	102	26
Turning radius, mtrs	18	23	34	15	16	81
Max mast size, mm	50	50	50	36	51	30
Wind load, square mtr	17	25	41	08	11	04
Weight, kg	3.16	5	8.2	1.82	2.7	1.4
Price (inc tax)	\$225	\$369	\$449	\$100	\$163	\$116

## Lightning arrestors

Protect your valuable equipment from lightning induced surges of up to 5000 amperes with a Cushcraft constant impedance gas discharge lightning arrester! The LAC4 series have replaceable gas tubes which clamp surges to about 50V in about 100 nanoseconds, much quicker than the voltage rise time of lightning pulses.



LAC4 200 watt with UHF connectors	\$81.30
LAC4H 2kW with UHF connectors	\$89.40
LAC4N 200 watt with N connectors	\$105.70
LAC4NH 2kW with N connectors	\$109.80
LC2 200 watt replacement cartridge	\$34.55
LC2KW 2kW replacement cartridge	\$38.62

## Ringo verticals

10, 6, 2 metres & 70cm

The basic Ringo family are 1/2 wavelength designs which have the antenna connected to the mast for DC and so have inbuilt lightning protection. Nor do they build up static charge like many other designs to interfere with your enjoyment of the amateur VHF and UHF bands.

Model	AR-10	AR-6	AR-2	AR-450
Frequency, MHz	26-29.7	50-54	135-160	430-450
SWR 2:1 Bandwidth, MHz	>1.5	2	10	20
Gain, dB	3.75	3.75	3.75	3.75
Power, watts FM	1000	1000	1000	500
Radiation angle	16'	16'	16'	16'
Height, metres	5.36	3.1	1.2	4.3
Max mast size, mm	32	32	32	22
Wind load, square mtr	.16	.03	.02	0.1
Weight, kg	1.82	1.14	0.68	.46
Price (inc tax)	\$136	\$136	\$96	\$94

Model	ARX-2
Frequency, MHz	135-160
SWR 2:1 Bandwidth, MHz	>6
Gain, dB	4.5
Power, watts FM	1000
Height, metres	2.8
Max mast size, mm	32
Wind load, square mtr	.03
Weight, kg	1.82
Price (inc tax)	\$116

## RINGO RANGER

For that bit of extra gain where space does not permit the installation of decoupling radials for an antenna such as the ARX2B then the ARX2 is for you.

## RINGO RANGER II

Cushcraft's Ringo Ranger II has more gain, less wind load and greater mechanical integrity than other two metre antennas. You will readily appreciate the benefits of this amazing antenna! The Ringo Ranger II has built-in lightning protection, UV stabilised insulators, heavy duty heavy wall tubing, improved decoupling radials to prevent feed line radiation and all weather performance only available in antennas costing many times more. It's the performer - over 500,000 have been sold world wide!

Model	ARX2B	ARX450B
Frequency, MHz	135-160	435-450
SWR 2:1 Bandwidth, MHz	>3	>10
Gain, dB	7	7
Power, watts FM	1000	1000
Radiation angle	7'	7'
Height, metres	4.3	1.5
Max mast size, mm	32	32
Wind load, square mtr	.05	.02
Weight, kg	2.73	.5
Price (inc tax)	\$140	\$140

## Dual Band Ringos

Experience the performance and appearance advantages of an all-aluminium dual band antenna. The AR270 and AR270B incorporate Ringo Ranger technology in a lightweight and durable design with all stainless steel hardware.

A single coax is all you need to get your new dual band rig working to its full performance!

Model	AR270	AR270B
Frequency, MHz	144-148	435-450
SWR 2:1 Bandwidth, MHz	>4	>15
Gain, dB	3.7	5.5
Power, watts FM	250	250
Height, metres	1.13	2.3
Max mast size, mm	51	51
Wind load sq mir	03	.044
Weight, kg	.91	1.09
Price (inc tax)	\$175	\$254

The NEW AR270B has two 5/8λ elements on 2 metres and four 5/8λ elements on 70cm. It is broadbanded for minimum SWR on both bands. It is easy to assemble with three rigid aluminium tubing sections, a durable mast mount and factory sealed coils for best performance.

**DIAMOND  
ANTENNA**

New to DAYCOM this year is the **Diamond Antenna** range of fine HF, VHF and UHF antennas from Japan. Made from the highest quality materials these antennas should serve you well for many years to come!

**DIAMOND HF WIRE ANTENNAS**



**W8010 \$249**

Five band wire trapped dipole, 80, 40, 20, 15, 10 metres

- Maximum power rating 1.2kW(PEP)
- Length 19.2m ■ Weight 2.5kg

**W735 \$199**

Two band wire trapped dipole, 80, 40 metres

- Maximum power rating 1.2kW(PEP)
- Length 26m ■ Weight 1.85kg

**W721 \$199**

Two band wire trapped dipole, 40, 15 metres

- Maximum power rating 1.2kW(PEP)
- Length 12.4m ■ Weight 1.2kg

**DIAMOND HF TRAPPED VERTICALS**

**CP6 6 band trapped vertical**

- Bands: 80, 40, 20, 15, 10 & 6 metres
- Max Power: 200W SSB
- Impedance: 50Ω
- VSWR: <1.5:1
- Length: 4.6m
- Radial length: approx 1.8m
- Weight: 4.9kg
- Mast size: 30-62mm

**CP6 6 band trapped vertical \$579**

**CP5 5 band trapped vertical**

- Bands: 80, 40, 20, 15 & 10 metres
- Max Power: 200W SSB
- Impedance: 50Ω
- VSWR: <1.5:1
- Length: 4.6m
- Radial length: approx 1.8m
- Weight: 4.5kg
- Mast size: 30-62mm

**CP5 5 band trapped vertical \$539**

**CP725 4 band trapped vertical**

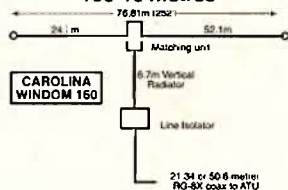
- Bands: 40, 15, 10 & 6 metres
- Max Power: 200W SSB
- Impedance: 50Ω
- VSWR: <1.5:1
- Length: 3.4m
- Radial length: approx 1.8m
- Weight: 3kg
- Mast size: 30-62mm

**CP725 4 band trapped vertical \$469**

**RADIO**

**Carolina Window 160**

160-10 metres



**Specifications**

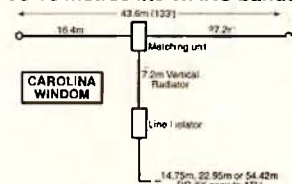
- Bands: 160 - 10 metres
- Radiator length: Horizontal 68.58m.
- Feedline: 50Ω coax cable
- Matching: Matching unit & transmatch
- Transmatch: Yes, needed
- Power Rating: 1500 Watts
- Rec. Height: 12m, usable at 10.7m

**MT105 \$220**  
Carolina Window 160

**WORKS**

**Carolina Window**

80-10 metres inc WARC bands



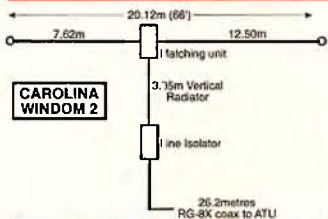
**Specifications**

- Bands: 80 - 10 metres
- Radiator length: Horizontal 40.25m.
- Feedline: 50Ω coax cable
- Matching: Matching unit & transmatch
- Transmatch: Yes, needed
- Power Rating: 1500 Watts
- Rec. Height: 11m, usable at 9m

**MT103 \$169**  
Carolina Window

**Carolina Window - 2**

40-10 Metres inc. WARC bands



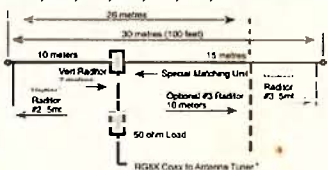
**Specifications**

- Radiator length: Horizontal 20.13m.
- Feedline: 50Ω coax cable
- Matching: Matching unit & transmatch
- Transmatch: Yes, needed
- Power Rating: 1500 Watts
- Rec. Height: 9.2m, usable at 7.6m

**MT104 \$169**  
Carolina Window 2

**Carolina Beam**

80, 40, 20, 17, 15, 12, 10 metres



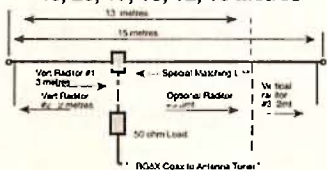
**Specifications**

- Radiator length: Horizontal 26m or 30.5m.
- Feedline: 50Ω coax cable
- Matching: Matching unit & transmatch
- Transmatch: Yes, needed
- Power Rating: 1500 Watts
- Rec. Height: 12m, usable at 9m

**MT109 \$220**  
Carolina Beam

**Carolina Beam 2**

40, 20, 17, 15, 12, 10 Metres



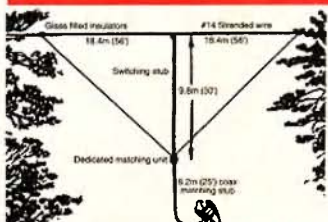
**Specifications**

- Radiator length: Horizontal 13m or 15m.
- Feedline: 50Ω coax cable
- Matching: Matching unit & transmatch
- Transmatch: Yes, needed
- Power Rating: 1500 Watts
- Rec. Height: 9m, usable at 8m

**MT110 \$198**  
Carolina Beam 2

**SUPER LOOP**

80, 40, 20, 17, 15, 12, 10 Metres



**MT106 \$200**  
Super Loop

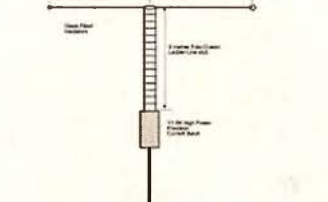
The SuperLoop is a high performance full wave 80 metre loop antenna with a stub that opens the loop on 40 metres and other bands.

**Specifications**

- Bands: 80 - 10 metres
- Polarisation: Both vertical & horizontal
- Radiator length: Horizontal 34.2m.
- Feedline: 50Ω coax cable
- Matching: Matching unit & transmatch
- Transmatch: Yes, needed
- Power Rating: 1500 Watts
- Rec. Height: 12m

**G5RV Plus**

80, 40, 30, 20, 15, 10 Metres



**MT115 \$121**  
G5RV Plus antenna

- ✓ Computer Optimised
- ✓ #14 Hard-drawn copper antenna wire
- ✓ Glass-filled Insulators
- ✓ Poly-coated Tuning Stub
- ✓ Coax Seal supplied for connectors

**Specifications**

- Frequency coverage: 80 - 10 metres
- Polarisation: Horizontal
- Radiator length: 102 feet
- Matching method: Stub & transmatch
- Transmatch needed: Yes
- Recommended coax: RG-8X
- Power Rating: >> 1500 Watts
- Recommended Height: >12m



# Glasmaster<sup>®</sup> On-glass antennas

- 144-148 / 430-440MHz
- 2.6dB gain @ 2m
- 6.3dB gain @ 70cm
- VSWR <1.5:1
- Power: 50 Watts
- Field tunable
- 4.3m RG-58 cable
- PL-259 plug fitted
- Modern black finish

## GM270 \$119

- 144-148MHz
- 2.5dB gain
- VSWR <1.5:1
- Power: 50 Watts
- Field tunable
- 4.3m RG-58 cable
- PL-259 plug fitted
- Modern black finish

## GM144 \$79.95

GM144RW	Replacement whip for GM144	\$19.80
RWW144	Whip, base and remount kit	\$49.80
GM270RW	Replacement whip for GM270	\$23.80
RWW270	Whip, base and remount kit	\$71.80
TGMKD	Remount kit for either model	\$17.50

### 5 Bands mobile

- 75, 40, 20, 15 & 10 metres
- 1.22m mast with 3/8-24 thread
- 40/75m easily tunable
- Resonators & top section included
- Parts available separately

## AB5 \$239

### HF Monoband whips

- Available for all HF bands
- 1.22m helical lower section with 1.22m stainless steel whip section
- Very economical
- Lightweight
- Strong fibreglass forms

Model	Band	Bandwidth	Price
PHF160	160m	12kHz	\$195
PHF75	75m	36kHz	\$60
PHF40	40m	60kHz	\$48
PHF30	30m	100kHz	\$48
PHF20	20m	150kHz	\$48
PHF17	17m	175kHz	\$48
PHF15	15m	200kHz	\$48
PHF12	12m	300kHz	\$48
PHF10	10m	500kHz	\$48
PHF6	6m	1MHz	\$48

### 3/8-24 antenna mounts



MM3401 \$120  
Triple mag mnt



VL-105ADT \$15  
Heavy d. ty mount



VL-219 \$22  
Bumper mount



SS504 \$22  
HD Spring

# The finest from Japan!

DIAMOND Antenna is one of the most respected names in Japan, with a huge range of HF, VHF and UHF mobile and base station antennas. Made only from the highest quality materials and finished to perfection DIAMOND is an antenna to be proud of!

**DIAMOND**  
ANTENNA

Model	Bands	Gain	Power	VSWR	Length	Radial Length	Weight	Mast Dia	Price
<b>Triple band base station antennas</b>									
X7000	2m 70cm 23cm	8.3dB 11.7dB 13.7dB	100W 100W 60W	<1.5:1	5m	52cm	2.2kg	30-62 mm	\$399
X6000	2m 70cm 23cm	6.5dB 9dB 10dB	100W 100W 60W		3.05m	52cm	1.8kg		\$359
X5000	2m 70cm 23cm	4.5dB 8.3dB 11.7dB	100W total		1.8m	19cm	900g		\$299
X4000	2m 70cm 23cm	3.15dB 6.3dB 9.7dB	100W total		1.3m	19cm	700g		\$279

Model	Bands	Gain	Power	VSWR	Length	Radial Length	Weight	Mast Dia	Price
<b>Dual band base station antennas</b>									
X700H	2m 70cm	9.3dB 13dB	200W	<1.5:1	7.2m	52cm	3.8kg	30-62 mm	\$599
X510M	2m 70cm	8.3dB 11.7dB	200W		5.2m	52cm	2kg		\$389
X510N	2m 70cm	8.3dB 11.7dB	200W		5.2m	52cm	2kg		\$389
X400	2m 70cm	7.9dB 11dB	200W total		4.6m	52cm	2.2kg		\$299
X300	2m 70cm	6.5dB 9dB	200W	<1.5:1	3.1m	52cm	1.5kg	30-62 mm	\$249
X200	2m 70cm	6dB 8dB	200W		2.5m	52cm	1.2kg		\$229
X50	2m 70cm	4.5dB 7.2dB	200W		1.7m	19cm	900g		\$169
X30	2m 70cm	3dB 5.5dB	200W		1.3m	19cm	800g		\$149

Model	Bands	Gain	Power	VSWR	Length	Radial Length	Weight	Mast Dia	Price
<b>Single band GH series verticals</b>									
GH28	28-29.7 MHz	3dB	1kW PEP	<1.5:1	5.1m	60cm	2.6kg	25-42 mm	\$159
GH10	27-28 MHz	3dB	300W AM		5.6m	60cm	2.6kg		\$149
GH62	50 MHz	6dB	200W PEP		6.3m	1.5m	2.7kg		\$199
GH6	50 MHz	3.4dB	200W PEP		3.4m	1.5m	1.8kg		\$149

Model	Bands	Gain	Power	VSWR	Length	Radial Length	Weight	Mast Dia	Price
<b>Triple band 8m/2m/70cm vertical</b>									
V2000	6M 2M 70cm	2.15dB 5.2dB 8.4dB	150W	<1.5:1	2.5m	92cm	1.2kg	30-62 mm	\$249

Model	Bands	Gain	Power	VSWR	Length	Weight	Price
<b>N series mobile whips</b>							
N407	23cm	8.4dB	50W	<1.5:1			\$135
N510	2m 70cm	3dB 5.5dB	200W		960mm	250g	\$119
N516	2M 70cm	4.5dB 7.2dB	120W		1.63m	500g	\$179

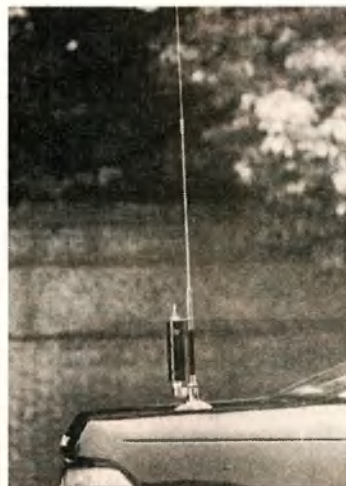
Model	Bands	Gain	Power	VSWR	Length	Weight	Price
<b>CR series mobile whips (UHF base)</b>							
CR627	6m 2m 70cm	2.15dB 4.5dB 7.2dB	120W total	<1.5:1	1.51m	450g	\$169
CR1027	10m 2m 70cm	2.15dB 4.5dB 7.2dB	200W (100W 70cm)		1.61m	450g	\$199
CR6	6m	2.15dB	200W			200g	\$89

Model	Bands	Gain	Power	VSWR	Length	Weight	Price
<b>SG series mobile whip</b>							
SG6000	6m	2.15dB	200W	<1.5:1			\$129

### DIAMOND HF mobile whips

Diamond HF whips are available as complete assemblies (MD4020 shown on right) or as a whip element (MD200) to which you add bottom loading coils. Buy the whip and add coils as you need them. Base and mount are extra.

Model	Description	Price
<b>HF Mobile whip</b>		
MD4020	40 metre mobile whip. 2m long	\$299
<b>HF Mobile whip system</b>		
MD200	Mobile whip element without loading coil	\$179
MDC80	80m interchangeable loading coil	\$139
MDC40	40m interchangeable loading coil	\$129
MDC20	20m interchangeable loading coil	\$129
MDC15	15m interchangeable loading coil	\$119
MDC10	10m interchangeable loading coil	\$119
MDC6	6m interchangeable coil	\$119



MD4020

## VHF/UHF Power amplifiers

### Compact HT power amplifiers



Two models, one for 2 metres (RFC2-23) and one for 70cm (RFC4-32) are designed as low cost power amplifiers for use with traditional 2 watt hand-held transceivers. These compact amplifiers are designed for SSB use as well as FM and so can be used with all mode portables or mobiles such as the Yaesu FT-290R and FT-790R etc.

**RFC2-23** 2mtr 2-30W, with preamp **\$339**  
**RFC4-32** 70cm 3-20W, with preamp **\$450**

### Dual band HT power amplifier

The 2/70G has two independent amplifiers, one for 2 metres and one for 70cm with band sensing circuitry to automatically select the band you are transmitting on.

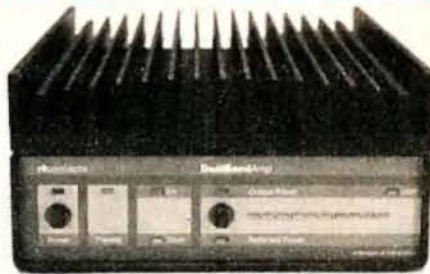
Separate GaAs-FET preamps are provided for each band, so you get improved weak signal performance on both bands!

Frequency range: 144-148MHz  
 430-440MHz  
 Power input: 1 to 5 watts  
 Maximum input: 7 watts  
 Power output: 30W on 2 metres for 5W in  
 20W on 70 cm for 5W in  
 into 50Ω load, ALC limited  
 <6A @ 13.8V DC  
 226x129x52mm  
 Connectors: BNC female

**RFC 2/70G** **\$555**  
 2m/70cm HT power amp

All Mirage and rfconcepts amplifiers have a full twelve month warranty with service carried out in Australia by Daycom.

### High power dual band amplifier



The revolutionary new rfconcepts 2/70H amplifier is without question the most technologically advanced power amplifier on the market today.

**ONE AMPLIFIER** - The 2/70H isn't just two amplifiers in one box. It is a single amplifier using a dual RF-Power MOSFET device with a total of six broadband transformers for optimal matching over the entire frequency range.

**TWO FILTERS** - An amplifier of this power capability needs to have separate filters for each band. These are automatically selected in the 2/70H—don't worry, just transmit!

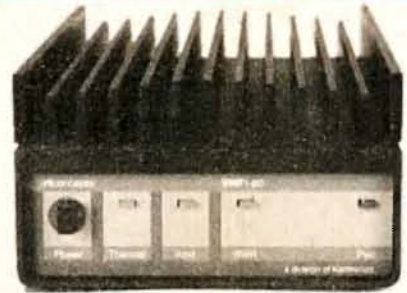
**SWR PROTECTION** - The 2/70H has a high performance dual-directional coupler in the output circuit which automatically calculates SWR, not just measures returned power. You can monitor output power or SWR on a front panel LED indicator.

Frequency range: 144-148MHz, 430-440MHz  
 Power input: 20 to 50 watts (FM only)  
 Maximum input: 50 watts  
 Power output: 200W (2 metres) 125W (70 cm)  
 Current: <40A @ 13.8V DC  
 Size: 204x305x102mm  
 Weight: 5kg  
 Connectors: Type 'N' female

**RFC 2/70H** **\$1482**  
 2m/70cm High power amp



### High power HT amplifiers



The rfconcepts VHF1-60 is the perfect mate for your 2 metre hand-held radio. Given 1 to 8 watts input, you get a full 60 watts of RF output power automatically. When operated with a dual-band handie-talkie, the VHF1-60 automatically senses a 2-metre input and produces 60 watts. When 70 cm input is present, the VHF1-60 leaves the amplifier off, passing the signal directly to the antenna.

Frequency range: 144-148MHz  
 Power input: 1 to 8 watts  
 Maximum input: 8 watts  
 Power output: 60W into 50Ω load,  
 ALC limited  
 Current: <14A @ 13.8V DC  
 Size: 127x229x74mm  
 Weight: 3.2kg  
 Connectors: SO-239 (UHF female)

**RFC VHF1-60** **\$510**  
 2M HT 60W power amp

The rfconcepts UHF-50 is the 70cm version of this amplifier. Designed to take 3 watts in and produce 50 watts out it has all of the same features as the VHF1-60.

**RFC UHF-50** **\$539**  
 70cm HT 50W power amp

**RFC 2-315** **\$650**  
 2mtr 30-150W power amp

**RFC 2-417** **\$650**  
 2mtr 45-170W power amp

**RFC 4-110** **\$845**  
 70cm 10-100W power amp

**RFC 4-310** **\$845**  
 70cm 30-100W power amp

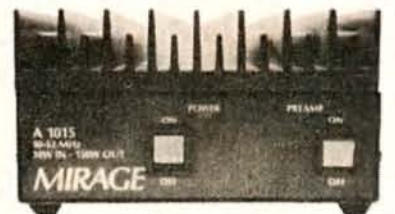
## MIRAGE VHF/UHF Power amplifiers for all modes

**MR-A1015G** 6mtr 10-150W with preamp **\$807**  
**MR-A1035G** 6mtr 10-350W with preamp\* **\$1355**  
**MR-B23** 2mtr 2-30W no preamp **\$275**  
**MR-B23G** 2mtr 2-30W with preamp **\$365**  
**MR-B215G** 2mtr 2-150W with preamp **\$785**  
**MR-B108G** 2mtr 10-80W with preamp **\$470**  
**MR-B1016G** 2mtr 10-160W with preamp **\$785**  
**MR-B2516G** 2mtr 25-160W with preamp **\$660**  
**MR-B5016G** 2mtr 50-160W with preamp **\$660**  
**MR-B1030G** 2mtr 10-300W with preamp **\$1425**  
**MR-B2530G** 2mtr 25-300W with preamp **\$1425**

**MR-B5030G** 2mtr 50-300W with preamp **\$1390**  
**MR-B1060G** 2mtr 10-600W with preamp\* **\$2270**  
**MR-B2560G** 2mtr 25-600W with preamp\* **\$2270**  
**MR-B5060G** 2mtr 50-600W with preamp\* **\$2270**  
**MR-D15N** 70cm 1-15W no preamp **\$415**  
**MR-D26N** 70cm 2-60W no preamp **\$585**  
**MR-D100ATVN** 70cm 1-52W for ATV **\$860**  
**MR-D1010N** 70cm 10-100W no preamp **\$860**  
**MR-D1010ATVN** 70cm 10-100W for ATV **\$860**  
**MR-D3010N** 70cm 30-100W no preamp **\$794**

Amplifiers marked \* require 28V DC supplies, all 2metre amplifiers have SO239 connectors, UHF types have 'N' connectors.

## MIRAGE



Built in the USA to the highest standards, all Mirage amplifiers carry a full one year warranty from the factory with local service available. High power amplifiers are fitted with copper heatsink inserts. All Mirage amplifiers can be remote-controlled to permit mounting in a convenient location.

# hy-gain<sup>®</sup> by Telex

## Hy-Gain...the best made products for the radio amateur

Daycom is always trying to bring the best amateur products to Australia, which is why we have added Hy-Gain to our range this year. Rotators are in stock now and antennas will be added during the year. Please call for more details.



### Hy-Gain AR40 - .28m<sup>2</sup>

For small communication antennas up to .28m<sup>2</sup>, the AR40 is an economical rotator using a disc brake and low voltage control. Ideal for medium size VHF/UHF arrays.

- Dual 12 ball bearing race
- Automatic position sensor
- Fully automatic control
- Solid state control
- Low voltage operation
- Maximum mast size 52mm
- Includes lower mast support



### Hy-Gain CD4511 - .79m<sup>2</sup>

The same external dimensions as the AR40 but heavier duty, the CD4511 will handle a 4 element tri-band or that bigger VHF array with ease.

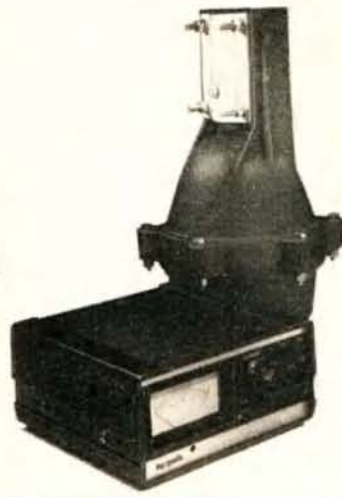
- Dual 48 ball bearing race
- Diecast ring gear
- Stamped steel gear drive system
- Illuminated directional indicator
- Snap action control switches
- Low voltage control
- Maximum mast size 52mm
- Includes lower mast support



### Hy-Gain HAM IV - 1.4m<sup>2</sup>

Heavy duty antennas, such as large tribanders and big HF monobanders need a heavy duty rotator, like the HAM-IV with its wedge brake.

- New high strength ring gear
- Dual 98 ball bearing race
- Electric locking steel wedge brake
- Illuminated directional indicator
- Zener regulated control circuit
- Snap action control switches
- Maximum mast size 52mm
- Lower mast support optional.



### Hy-Gain T<sup>2</sup>X Tailtwister - 1.9m<sup>2</sup>

For multiple HF antenna arrays or HF+VHF arrays the T<sup>2</sup>X 'Tailtwister' has the grunt to handle the big jobs!

- Thickwall castings for large load handling
- 138 ball bearings
- Triple bearing race
- Machined hardened steel drive gear
- Electric locking steel wedge brake
- Low voltage control
- Maximum mast size 52mm
- Lower mast support optional

AR40 rotator

**\$503**

CD4511 rotator

**\$704**

HAM-IV rotator

**\$997**

T<sup>2</sup>X Tailtwister rotator

**\$1250**

**Mast bearings, mast clamps, cable and parts all available, please call for details!**

### Bencher 1:1 balun

The Bencher balun is a 1:1 matching device designed for feeding antennas needing a balanced feed from a coaxial cable. No ferrite core is used in this design so there is no saturation effect to cause TVI. Even better, the Bencher balun is rated at 1.5kW continuous, 5kW peak, and is able to withstand significant mismatch without introducing distortion,

harmonic radiation or causing TVI.

- ❖ UV resistant case
- ❖ Heavy brass terminals
- ❖ Plated copper lugs
- ❖ Custom 'O' ring on connector
- ❖ No rusting parts

MT091 Bencher 1:1 balun **\$66**

### Outdoor balun-in-a-box

Use balanced line without the hassle of bringing it inside with the MFJ912 balun box. Works with most tuners to feed any balanced line so you can still use ladder line. Mounts on wall or tower.



MFJ912  
Outdoor balun

**\$99**

## RADIO WORKS baluns



A 1:1 current mode balun rated at 1.5kW for dipoles, inverted-V's and trapped dipoles. Use on 80-10 metres. Stainless steel fittings

MT113 **\$48**  
B1-2K 1:1 balun



A 4:1 current type balun with heavy duty 'X' core construction for loops, Delta loops, folded dipoles etc. on 160-10 metres. Our best 4:1 balun.

MT111 **\$87**  
B4-2KX 4:1 balun



An economy 4:1 voltage type balun for loops, Delta loops, folded dipoles etc. on 80-10 metres or for low impedance 160 metre applications.

MT114 **\$67**  
B4-2K 4:1 balun



A high performance 4:1 balun for feeding open-wire line into the shack with coax. Withstands high SWR loads from antenna tuners.

MT112 **\$105**  
New Remote



The 1:1 balun designed for feeding Yagis. It has a 5kW power rating and excellent balance to help improve beam performance on 160-10M.

MT095 **\$67**  
Y1-5K 1:1 balun

## ANTENNA WIRE SUPPORT ROPE

### 450Ω Open wire line

This is a window type ladder-line. Conductors are #18 CopperWeld wire. It is perfect for use in any application requiring a low loss open wire line. Colour: Black only.



MT3028 **\$36.00**  
30mtr roll

Get our wire antenna fact book for more information on wire antenna materials, including insulators.

### #14 Hard drawn Copper

This is the standard antenna wire. Stranding is very tight, it is flexible, has a long service life, and is easy to use. For all wire antennas up to 150ft between supports.

WL001X100 **\$26.60**  
30mtr roll  
WL001X150 **\$39.93**  
45mtr roll

### #13 VARIFLEX insulated

Extremely tough jacket over a very flexible wire. About as stiff as hard-drawn 7-strand wire. Use when insulated wire is desired, in trees, for example. Resistant to acid rain and corrosive contaminants in the air.

WL002X150 **\$78.65**  
45mtr roll

### Dacron rope

4-7mm MilSpec rope. This is a very special Dacron® polyester line that far outlasts Nylon line in typical amateur service. It has an outer abrasion resistant cover that is impregnated with a special chemical that resists the aging effects caused by the sun. The centre core is made of very strong solid braided Dacron®. The result is a long life support line that doesn't stretch. You cannot buy this type of support line at your friendly hardware store, so we keep a stock on hand in 30 metre & 60 metre hanks

WL004X100 **\$26.60**  
30mtr hank  
WL004X200 **\$53.24**  
60mtr hank

# Kantronics packet solutions

## HostMaster-MAC

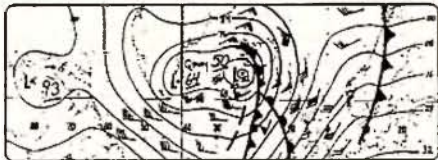
All the usual Macintosh interface features you would expect with all of the modes that a KAM+ can deliver. In fact HostMaster-MAC delivers more than many packet only programmes!

- ✓ Separate window for each connection with full split-screen functions.
- ✓ 10 buffers for EACH MODE.
- ✓ FACTOR support for KAM+ & enhanced KAM.
- ✓ Packet conferencing or round-table packet, even non-HostMaster users can join in.

ML072 HostMaster-MAC

**\$95**

## SuperFax-II



Weather Facsimile (WEFAX) reception programme for Kantronics TNCs

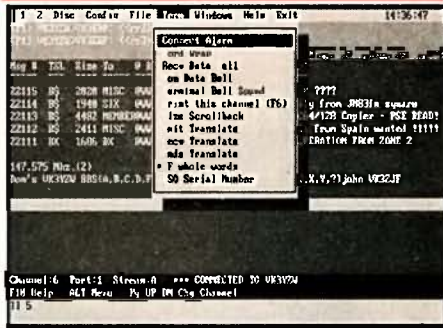
- \* **Unattended:** automatically detects, synchronises & saves picture to disk.
- \* **Semi-unattended:** automatically detects start of picture, synchronises, receives picture to buffer.
- \* **Manual mode:** synchronise incoming picture with function keys, capture incoming picture to buffer, turn buffer on/off, or save directly to disk.
- \* View from buffer or disk file.
- \* Display black on white, or white on black.
- \* Print captured picture to Epson or compatible graphics printers & most 9 pin graphics printers.
- \* 120 lpm for weather or 60 lpm for wire photos.
- \* Split-screen terminal mode
- \* Supports CGA, EGA, VGA & Hercules graphics..

Requires Kantronics KAM or KPC series using version 2.8 or later firmware.

ML055 Superfax for IBM-PC

**\$45**

## HostMasterII+



The Host MasterII+ terminal programme provides a great way to carry on a packet conversation (or several conversations) monitor what else is happening on the channel while keeping everything separate. Plus, with the KAM, work any HF mode at the same time.

The XmitEcho window shows characters as they are transmitted by an HF mode. What you receive from a mode other than packet, such as RTTY, ASCII, AMTOR or Pactor, displays in the Non-Packet Receive Window.

- ✓ Menu driven from keyboard or mouse.
- ✓ 10 buffers, each sent with single keystroke.
- ✓ FACTOR support for KAM+ & enhanced KAM.
- ✓ Replay last line typed on each channel.
- ✓ Scroll back in Monitor and Receive windows.
- ✓ Supports up to 50 line VGA video
- ✓ Upload and Download Binary or ASCII files. Each window can capture to its own separate file.
- ✓ Edit and save Receive Scrollback buffers.
- ✓ Character Translations supported separately for transmit and receive.
- ✓ Supports mouse, printer, COM ports 1-4
- ✓ Text Editor, with cut and paste capability

ML060 HostMasterII+ for IBM-PC

**\$110**

## Give your KAM 128K RAM, Pactor and now G-TOR!!

The KAM Enhancement Board provides KAM owners with the same features as the new KAM Plus. The Enhancement Board fits easily within the KAM case, plugging into the EPROM and RAM sockets. Many optional features for the KAM are now standard in the Enhancement Board:

- G-Tor & Pactor
- on-board real-time clock
- battery-backed RAM

New hardware and firmware features have been added, most significantly, the expansion of RAM and EPROM space to 128K bytes. The enlarged RAM creates about 100K of personal mailbox space! The increased EPROM space makes possible additional firmware features and provides room for future expansion.

**New hardware features:**

- 128K bytes of RAM
- EPROM space expanded to 1 Megabits
- Replaceable lithium cell for clock & RAM backup

**New firmware additions:**

- New-user and expert command sets
- Enhanced mailbox command set
- Extended RTTY & AMTOR character sets
- On-line help messages for each command
- Enhanced CW: Farnsworth, weighting, tone transmitted CW

ML030D KAM enhancement board **\$160**

## Update your KAM+

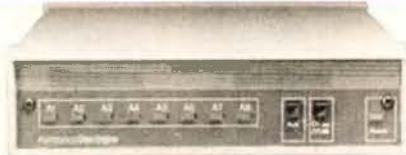
See, is it out of date already? No, not really, the folks at Kantronics just like making it better and better! Any KAM-Plus (or KAM with enhancement board) can be updated to include the latest HF mode, G-Tor, and all of the latest enhancements to the ever-popular Kantronics multi-mode controllers.

## Update HostMasterII+

HostMasterII+ owners with version 3.0 or later can upgrade to version 3.3, the latest edition with full support for G-Tor and Pactor.

# KANTRONICS - Specialised Packet Solutions - KANTRONICS

## Kantronics Data Engine



The Kantronics Data Engine is built to keep pace with our changing times. For faster packet or experimentation and development, while remaining compatible with today's AX.25 system, a Data Engine is your answer.

You can install a second modem for dual port operation. Modems are available with data rates up to 19,200 baud. G8BPQ Packet Switch firmware is also available.

- \* EPROM sockets for up to 1/2 MB of firmware
- \* V40 processor 10 MHz clock (PC compatible)
- \* Each port capable of >56 K baud, full or half duplex (depending on installed modems)
- \* Install modems internally, or externally via back panel connectors
- \* Low power: nominally 150 mA @ 12 VDC
- \* Size: 45 x 150 x 225mm, Weight: 1.2kg

ML034 Data Engine only

**\$669**

ML034A DE with 1200bps modem

**\$792**

ML034M3 Modem developer's kit

**\$45**

ML034M4 Firmware developer's kit

**\$45**

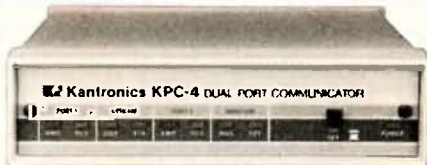
ML036 DE 1200bps modem

**\$172**

ML038 DE 9600/19k2 bps modem

**\$212**

## KPC-4 Dual-port Packet Controller



The KPC-4 is a Packet Communicator with two radio ports and two modems. You can operate from both ports at the same time, and if desired provide a gateway between them.

Most commands have dual-port settings allowing you to adjust each port to the characteristics of the attached radio and operating conditions.

- \* Software Carrier Detect — you can run open squelch and detect weaker signals.
- \* Personal Packet Mailbox (PBBS) features: programmable size, reverse forwarding, TO field editing, mail-waiting indicator.
- \* Automatically transfer connects to PBBS.
- \* Host Mode for HOSTMASTER software
- \* Weather Facsimile reception with optional programme
- \* Full duplex capability.
- \* KISS mode for TCP/IP or BBS use.
- \* Baud rates: 1200, 600, 400, 300.
- \* 32K RAM.
- \* Supports up to 26 packet connections (streams).
- \* Size: 45 x 150 x 200mm, 1.2kg
- \* Requires 12 VDC at < 250 mA
- \* Optional SmartWatch — Stores PBBS messages, and keeps date and time when unit is turned off.

ML032 KPC-4 dual port packet TNC **\$599**

## Kantronics WeatherNode



The Kantronics WeatherNode collects data from attached sensors and stores it in battery-backed RAM, which can then be accessed via packet radio or telephone modem. To request information from the WeatherNode, you simply connect, and request information with the Data command.

The WeatherNode connects to the serial port of your TNC, and may also be connected to your computer serial port. Front panel switches allow three modes of operation, local, remote or bypass. The Bypass mode bypasses the WeatherNode completely and allows you to use your TNC normally.

- \* External & internal temperature sensors supplied.
- \* Temperature readings in °F or °C.
- \* Data command retrieves only the information you want.
- \* Password protected remote access.
- \* Connects to any TNC.
- \* RS-232 or TTL levels selected by internal jumper.
- \* Accepts up to seven sensors.
- \* Size: 45 x 152 x 203mm, 1kg.
- \* Power Requirements: 11 - 20 VDC, <45 mA

ML043A WeatherNode

**\$642.00**

ML043S3 Anemometer

**\$244.20**

ML043S2 Rain gauge

**\$190.80**

# multi-mode mastery – Kantronics

- ✧ Dual Ports
- ✧ HF & VHF Packet
- ✧ AMTOR Modes A & B
- ✧ AMTEX / NAVTEX
- ✧ RTTY (Baudot & ASCII)
- ✧ CW (5-99 WPM)
- ✧ Sophisticated PBBS
- ✧ Can use different modes on VHF and HF simultaneously!

**\$729** Stock No. **ML030E**  
Freight \$15

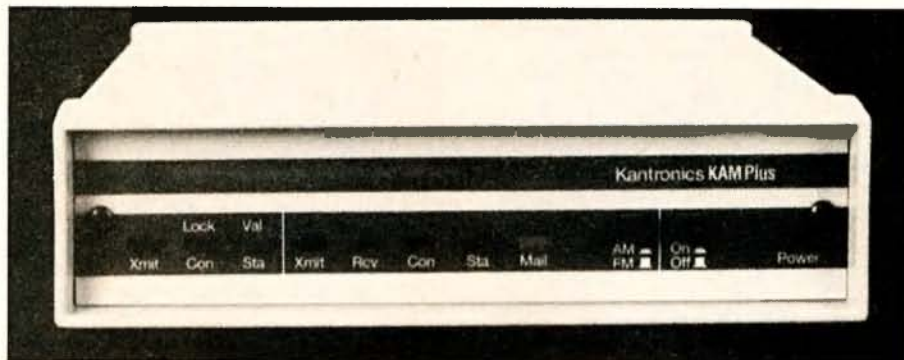
## Two Radio Ports, Two Modems

The KAM+ has two radio ports, one especially for HF modes and one for VHF packet. Both ports can be used simultaneously, allowing you to operate packet from both ports at the same time, or provide a packet gateway between the two ports. If you are using the HF port for a mode other than packet, your VHF port can still be operational with your packet mailbox, digipeater, and KA-Node functions. If you are using a Host Mode terminal programme, you can simultaneously work VHF packet and any HF mode. Amtor & Pactor users have access to the same mailbox as VHF packet users.

### Modes

The VHF port is used for 1200 baud packet, and reception of weather facsimile (WEFAX) when used with an HF radio.

The HF port supports 50 to 300 baud packet; 20 to 500 baud RTTY/ASCII; Amtor Mode A (ARQ) and Mode B (FEC or SELFEC), G-Tor, Pactor, Navtex/Amt message formats; preprogrammed 170, 425 and 850 Hz shifts, plus user definable mark and space tones; as well as 5 - 99 words per minute CW with Farnsworth mode.



The KAM+ also supports a personal packet mailbox accessible from both ports and from Amtor as well as Packet modes. KISS mode for high level protocols such as TCP/IP works in multi-drop mode. Host mode for enhanced terminal programmes. KA-Node (similar to Net/Rom) for links which are more reliable than digipeating. You can also set up a Gateway or KA-Node between the two ports.

- ✧ Software Carrier Detect – run open squelch and detect weaker signals.
- ✧ Full duplex capability on VHF port
- ✧ Large bargraph tuning indicator for easy HF tuning.
- ✧ AMTOR – provides for 7 or 9 char SELCALLS, relinking, and compatibility with 4 char operation.
- ✧ CW – Selectable bandwidth and centre frequency
- ✧ NAVTEX / AMTEX – Using AMTEX mode you can copy ARRL bulletins.
- ✧ RTTY / ASCII – User definable mark & space tones.

- ✧ Personal Packet and Amtor/Pactor/G-Tor Mailbox (PBBS) features: programmable size now up to 500K bytes, reverse forwarding, TO field editing, mail-waiting indicator
- ✧ Automatically transfer connects to PBBS
- ✧ Host Mode support for simultaneous VHF packet and any HF mode
- ✧ Weather Facsimile (WEFAX) reception with optional programme.
- ✧ Battery-backed RAM and Clock built-in. 128K RAM with option to 512K.
- ✧ Reliable, fast acting AGC eliminates the need for a manual threshold adjustment
- ✧ Size: 45 x 150 x 225mm, 1.2kg
- ✧ Requires 12 VDC at < 300 mA

### Options

- ✧ Terminal and Wefax programmes for PC compatibles, Macintosh and Commodore C64/128.
- ✧ Host Master terminal programmes provide capability to simultaneously work VHF packet and any HF mode (for PC, C64 or Macintosh).

## Kantronics KPC-3



The high performance, low power, small sized TNC. This TNC for both new and experienced users features a dual-level command set with 23 and 1380 commands respectively and incorporates the Kantronics full-featured PBBS system.

The KPC-3 and KPC-9612 are Kantronics answers to the high costs, high power consumption and lack of features of some manufacturers. These packet controllers are suitable for portable and emergency operation as well as having all of the features you need for home operation.

- ✧ New-user mode for simple operation and set-up.
- ✧ Two comprehensive and easy to read manuals make installation and operation truly easy.
- ✧ Has HOST MODE for HostMaster software.
- ✧ Complete with KISS mode, KA-NODE and WeFax, just like all the 'big' TNCs!
- ✧ PBBS works just like WORLI BBS system!

ML073 KPC-3 packet controller **\$279**

ML073B Real-time clock option kit **\$35**

## Kantronics KPC-9612



Full dual port performance at both 9600 baud and 1200 baud with cross-port gateway and digipeating, enough to make the competition weep! The KPC-9612 has all of the features of the KPC-3 and a whole lot more!

The KPC-9612 combines the features of the KPC-3 with a new 9600 baud modem designed for ease of setup and low power operation.

With the KPC-9612 Kantronics have also added several control lines in each port so that you can control relays or radios with ease from your packet software. Fully remotely controllable with password protection. Supplied as standard with 32K of RAM.

KPC-9612 specific features:

- ✧ Easily adjusted output levels.
  - ✧ Simple to adjust equaliser.
  - ✧ Cross port gateway.
  - ✧ Dual port mailbox
  - ✧ Cross port digipeating
  - ✧ Ideal for PACSAT operation at 9600 baud.
  - ✧ Multi-drop KISS for ease of use with NOS
- ✧ Full featured mailbox with easily expandable memory for up to 512K mailbox memory.
  - ✧ Lithium battery back-up for static RAM.
  - ✧ Remote access with password protection.
  - ✧ Room for user-installed 9V battery.
  - ✧ Operates on 6-20V DC @ <20mA (KPC-3) 6-20V DC @ <40mA (KPC-9612)
  - ✧ Software command to turn LEDs off for even lower power consumption.
  - ✧ Measures only 130mm wide, 20 high and 130 deep, weighs <500g.
  - ✧ Supplied with PACTERM software for IBM-PC, optional HostMaster software for IBM-PC, Macintosh and Commodore-64 computers.
  - ✧ Optional cables available for easy installation.
  - ✧ 100% designed and manufactured in the U.S.A. for the highest quality and reliability.
  - ✧ Full 12 month warranty.

ML074 KPC-9612 packet controller **\$535**

## Savant packet software (Macintosh)

- ✧ Animated icons show channel status
- ✧ Split window interface
- ✧ Status bar shows channel information
- ✧ Open as many concurrent connections as you want
- ✧ System 7 compatible, 32 bit clean
- ✧ Works with any KISS capable TNC

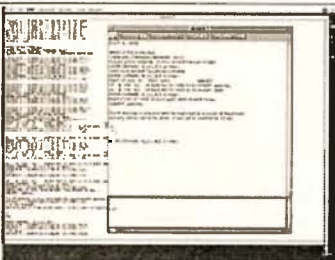
Savant software for the MAC is the best we have found for packet use. A simple and intuitive to use programme, Savant has all the features you could want. Works with AEA, DRSI, PacComm, MFJ or Kantronics TNCs in KISS mode.

**BX468**  
Savant software

**\$79**

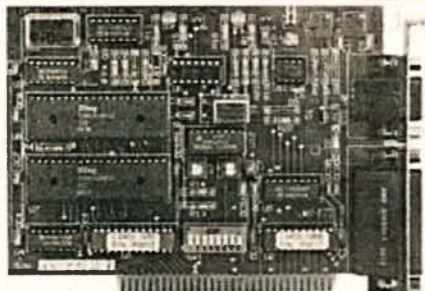
## Savant!

software for the Macintosh will work with all Kantronics, DRSI, MFJ or other packet equipment having KISS mode!



# DRSI

## PC\*Packet adaptors



Enjoy packet without the need for TNCs cluttering up the place! The DR SI PC\*Packet Adaptor is the ideal way to get on packet without losing COM ports on your computer, especially if you are running a BBS or network system. All DR SI PC\*Packet Adaptors have two separate output ports allowing them to use one or two radios. The three types differ in the configuration of the modems on the card and those supported externally.

### PC\*Packet Adaptor Type 1.

The basic type with one on-board 1200 bps AFSK modem for VHF/UHF use and provision for one external modem. The second port can be connected to an HF modem or a high speed modem. Optional DCD card can be fitted.

**ML004** DR SI type 1 card **\$299**

### PC\*Packet Adaptor Type 2.

The Type 2 adaptor has two 1200 bps modems for BBS and more sophisticated applications. Both ports may have DCD cards fitted.

**ML005** DR SI type 2 card **\$363**

### HF Modem

For use with type 1 cards, the DR SI HF modem offers superior performance. Power is derived from the PC\*Packet Adaptor but the modem can be placed with the HF radio for ease of tuning and use.

**ML009** HF modem **\$171**

## Faster Packet!



### High speed options and TNCs

All MFJ controllers are available with the 2400 baud modem fitted for easy operation of 300, 1200 & 2400 bps packet. You can order the controller factory modified with the TURBO option fitted by using the following model numbers.

**MFJ1278BT** 2400 bps MFJ1278B **\$799**

**MFJ1270CT** 2400 bps MFJ1270C **\$429**

**MFJ1276T** 2400 bps MFJ1276 **\$519**

Any MFJ TNC, and most types from other manufacturers which have a standard modem disconnect header, can be fitted with the MFJ2400 2400 bps QPSK modem.

**MFJ2400** 2400bps for MFJ TNCs **\$200**

**MFJ2400X** 2400bps for PK-232 **\$200**

The MFJ9600 is a 9600bps modem compatible with the G3RUH design and compatible with the 9600 baud products manufactured by PacComm, DR SI and Kantronics.

**MFJ9600** 9600bps modem card **\$245**

You can also order any MFJ TNC with a 9600 baud modem fitted.

**MFJ1278BQ** 9600 bps MFJ1278B **\$829**

**MFJ1270CQ** 9600 bps MFJ1270C **\$459**

**MFJ1276Q** 9600 bps MFJ1276C **\$549**

Note: Not all radios are compatible with 9600 baud operation.

DAYCOM, Australia's leading packet supplier, can fit you out with the best in high speed packet and memory expansion options.

Our showroom has all of the latest packet equipment on display, just waiting for you to try it on air, whilst our workshop is uniquely equipped to sort out your interconnection and set-up problems. If you need assistance, just call!

### Upgrade your existing MFJ1278!

If you already have an MFJ1278 or MFJ12781 you can upgrade your existing multi-mode controller to have most of the features of the MFJ1278B. You will have PACTOR, enhanced mailbox and with the latest Multicom upgrade you get all of the colour SSTV features and ease of use of the new MFJ1278B.

**MFJ56A** upgrade with 32k RAM **\$160**

**MFJ56B** upgrade with 128k RAM **\$200**

**MFJ56C** upgrade with 512k RAM **\$500**

### Memory Expansion

For expanding MFJ1278B, MFJ1270C, MFJ1276, KPC-3 or KAM+ controllers order these kits:

**MFJ45A** 32k RAM chip kit **\$16**

**MFJ45B** 128k RAM chip kit **\$30**

**MFJ45C** 512k RAM chip kit **\$400**

## DR SI Packet TNCs

The DR SIDPK-2 redefines the state of the art in TAPR TNC-2 compatible packet controllers. It is a compact, low power, ALL CMOS design with 100% TNC-2 firmware compatibility and runs ROSE or NET/ROM. It comes with version 1.1.8a TAPR firmware, enhanced with the DR SI Personal Message System (PMS).



- ★ TNC-2 compatible 1200 bps TNC
- ★ Optional HF modem (ML009)
- ★ Runs ROSE & NET/ROM firmware
- ★ Includes paKet 5.1 software
- ★ Personal Message System
- ★ Battery-backed RAM
- ★ Power required <40mA @ 12VDC
- ★ No-tune crystal-locked modem
- ★ Quality American made

**ML006** DR SI DPK-2 TNC **\$279**

### Low cost 9600bps at last!

The DR SIDPK-9600 takes the technology of high speed packet one step closer to the 'plug and play' goal we have all been waiting for. For the first time assembling a 9600bps system can be almost as simple as getting a 1200bps system on air.



The DR SIDPK-9600 is the ideal TNC for high speed packet radio. A single chip FSK modem is combined with a custom programmable logic device to produce a TNC which is 100% compatible with the G3RUH and K9NG modem designs.

Modem is jumper selectable for 4800, 9600 and 19,200bps speeds with serial port speeds of up to 38.4kbps. Uses any TAPR TNC-2 compatible firmware without modification.

- ★ TNC-2 compatible high speed TNC
- ★ Jumper-selectable speeds
- ★ Runs ROSE & NET/ROM firmware
- ★ Includes paKet 5.1 software
- ★ Personal Message System
- ★ Battery-backed RAM
- ★ Power required <40mA @ 12VDC
- ★ Radio modification details supplied
- ★ Quality American made

**ML010** DR SI DPK-9600 TNC **\$459**

## Packet Connecting cables

Radio Type	TNC Type				
	MFJ DR SI Paccom	AEA PK232	AEA PK88	Kantronics HF	Kantronics VHF
Icom/Yaesu Handheld	MFJ5024	MFJ5024X	MFJ5024Z		MFJ5024YV
Kenwood Handheld	MFJ5026	MFJ5026X	MFJ5026Z		MFJ5026YV
Yaesu 8 pin radios	MFJ5080	MFJ5080X	MFJ5080Z	MFJ5080YH	MFJ5080YV
Icom 8 pin radios	MFJ5084	MFJ5084X	MFJ5084Z	MFJ5084YH	MFJ5084YV
Kenwood/Alinco 8 pin radios	MFJ5086	MFJ5086X	MFJ5086Z	MFJ5086YH	MFJ5086YV

MFJ packet cables all types listed above

**\$37.50**

### MIC/TNC SWITCH



Make life even easier, use the MFJ1272B Microphone / TNC switch with any radio using a standard 8 pin microphone plug. Suits ICOM, Kenwood, Yaesu & others.

Internal jumpers permit custom configuration of connections, speaker input and output available for older radios.

**MFJ1272B** for MFJ/DR SI TNCs **\$87.00**

**MFJ1272BX** for AEA PK-232 **\$99.00**

**MFJ1272BYH** for KAM HF port **\$99.00**

**MFJ1272BYV** for Kantronics VHF port **\$99.00**

**MFJ1272BZ** for AEA PK-88 **\$99.00**

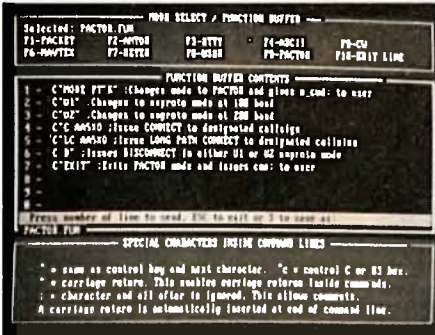
**MFJ1272M** for MFJ/DR SI TNC to RJ45 **\$87.00**

**MFJ1272MX** for AEA PK-232 to RJ45 **\$99.00**

**MFJ1272MYV** for Kantronics VHF port **\$99.00**

**MFJ1272MZ** for AEA PK-88 **\$99.00**

**MFJ1278B & Multicom give you FAX, SSTV and WEFAX too!**



MFJ1289 MultiCom software gives you easy to use menu-based operation of all 10 modes of the MFJ1278B (or older MFJ1278s): Packet, Pactor, Amtor, 16 grey level FAX, B+W or Colour SSTV, RTTY, ASCII, CW, Navtex and a full featured Contest Memory Keyer.

#### High Resolution FAX

You can see up-to-date weather information right on your screen, as well as photo FAX from AP and UPI as well as others. The MFJ1278B and MultiCom will transmit as well as receive in FAX mode.

#### Colour SSTV

MFJ's MultiCom can use a PCX format graphic file as an SSTV picture to be sent and will save incoming pictures in this format for later use. Now you can use all of the features of your new graphics packages on the PC to generate exciting SSTV pictures.

**MFJ1289 \$110**

Advanced software system.

### SOFTWARE

MFJ software supports the features of the MFJ digital data controllers on a range of computers:

- MFJ1284 Basic pack for IBM-PC All basic features but no grey scale FAX or SSTV. **\$49.95**
- MFJ1287 Starter pack for Apple Mac. Basic features, no grey scale operation, but has FAX **\$49.95**
- MFJ1282B MULTICOM for Commodore C64/128 Latest version with lots of new features. **\$79.95**
- MFJ1283 Basic pack (tape) for VIC-20 A simple terminal programme. **\$49.95**
- MFJ1288 Packet picture software. Can be used with any packet hardware for packet pictures. **\$19.95**
- MFJ1290 MultiCom for Commodore Amiga, fully featured all mode software **\$79.95**

# MFJ Packet & multimode controllers MFJ

**MFJ1278B — our most popular multimode!!**



Only the MFJ1278B brings you the widest possible selection of modes, 10 in all including Pactor, AMTOR, Colour SSTV, 16 level FAX, Packet, RTTY, ASCII, Navtex, CW and memory keyer, all in one box and easy to use!

But for 1995 MFJ makes the MFJ1278B even easier to use with two new options:

- Internal real-time clock  
To keep you on time all the time, and:
- Scope tuning adaptor—which allows you to use an oscilloscope with the MFJ1278B to correctly and easily tune RTTY and other signals.

**MFJ1278B \$649**

Multimode with Pactor

MFJ43 Real time clock

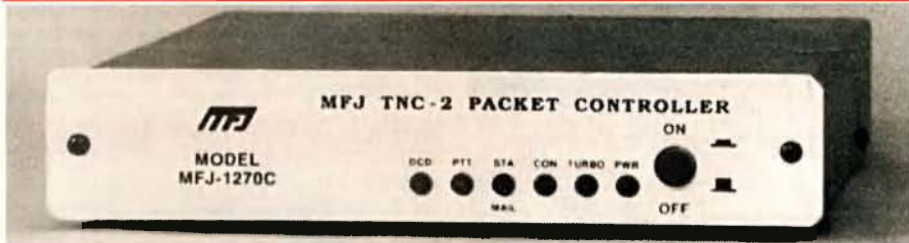
**\$58**

MFJ44 Scope tuning indicator

**\$78**

- ★ New **PACTOR** mode
- ★ 32k bytes **enhanced** packet mailbox expandable to 128k or 512k bytes.
- ★ Auto forward and reverse forwarding of mail.
- ★ Mailbox sysop paging and chat mode.
- ★ New **COLOUR SSTV** functions (with Multicom software)
- ★ Transmit and receive colour SSTV in Robot, Scotty and Martin formats.
- ★ 16 grey levels for FAX and SSTV
- ★ Dramatically improved Automatic Signal Analysis.
- ★ 19,200 baud terminal data rate.
- ★ 1 megabit EPROM for future expansion.
- ★ 2400 and 9600bps modems available.

## MFJ HF/VHF Packet Radio controllers



Thousands of these robust, basic TNCs are in use all around the world by individual amateurs as well as in digipeaters and bulletin board systems. You get the full TAPR TNC-2 with many MFJ exclusive enhancements which combine to give the MFJ1270C the reputation of being the most reliable TNCs in the world today.

Now the new MFJ1270C has built-in provision for memory expansion, EPROM expansion and terminal baud rates up to 19.2kbps. The ON/OFF switch has been moved to the front panel and a monitor amplifier

has been added. HF DCD circuitry has also been enhanced. Surely this is the best value in town for packet only use!

Designed to operate from 12V DC (power supply not included) the MFJ TNCs have RS-232 and TTL serial (for Commodore 64) interfaces as well as software to support IBM-PCs, Apple MACs and Commodore C64 and 128.

**MFJ1270C \$259**

1200bps VHF/UHF

## Packet plus PACTOR TNC



Now you can have all of the features of the MFJ1270C, the most reliable packet TNC in the world, plus PACTOR, precision tuning indicator for HF and an extra 32K of memory for your packet mailbox.

PACTOR is an exciting new HF mode which combines the best features of Packet and Amtor plus new innovations. It gives impressive weak signal performance, error correction, higher baud rates, data com-

pression and full 8 bit data transmission.

The MFJ1276 has a precision 20 LED tuning indicator, plus all of the necessary features for both HF and VHF packet operation.

**MFJ1276 \$349**

Packet/Pactor TNC

## MFJ Deluxe hybrid phone patch



### MFJ624D

Deluxe hybrid phone-patch

MFJs Deluxe hybrid phone patch, the MFJ624D is designed to give you crisp, clear, hum free audio, and that is what phone patching is all about. It is pre-wired for Kenwood, ICOM, Yaesu and Alinco radios, or others using standard 8 pin microphone connectors.

You have the option of using either VOX or Push to Talk. Pi section RF filters and PC board construction help to eliminate RF feedback into the patch unit. You can use the MFJ624D with virtually any rig.

Built-in VU meter monitors phone line levels to prevent cross-talk. Adjustable null depth permits the greatest possible isolation between transmitter and receiver, in fact there are separate gain controls for transmit and receive audio to eliminate the need to repeatedly make adjustments before and after using the patch. Phone line connections use standard 'modular' phone jacks. Jacks provided for speaker, audio in and audio out. Uses 12V DC (power supply not included) or 9V transistor radio type battery.

This American made phone patch will give you more quality and more features than patches costing many times more.

This item is not approved for direct connection to Telecom Australia lines.

# \$225

## CLOCKS

### MFJ112 - World time clock

Not only shows you the time at any QTH throughout the world, it also gives you an attractive world map so you can see the place where your contact is! Displays hours, minutes, seconds, user selectable daylight saving time feature, push buttons allow you to move east or west and a flashing map segment shows the time zone. Great gift idea!



MFJ112 DXers World Clock

# \$62.50

### MFJ105 24 hour wall clock

Powered by a single 'AA' size battery the MFJ105B is a true 24 hour wall clock with a 250mm diameter face. Ideal as a station clock, it offers excellent readability across the room!



MFJ105B 250mm 24 hour clock

# \$49.88

### 12/24 Hour clocks

Read both UTC and local time with the convenient MFJ108B dual time clock. One unit is 24 hour for UTC, the other 12 hour for local time. Or you can choose the MFJ107B single 24 hour clock.



Mounted in a brushed aluminium frame these clocks feature huge 16mm characters, long life battery included.



MFJ107B 24 hour LCD clock

# \$24.88

MFJ108B Dual LCD clock

# \$49.88

## FAX, WeFAX, RTTY & CW with simplicity!



With the NEW MFJ1214 you will be able to use your radio to receive and transmit brilliant, full colour news photographs, incredible WeFAX maps and RTTY. With easy to use menu driven software, comprehensive manuals and the now famous MFJ JumpStart guide you will be enjoying your radio even more than ever!

The MFJ1214 is a combination software and hardware package for specific computers. Presently, versions are available for the IBM-PC and compatibles and the Commodore AMIGA. It is hoped that versions for the Macintosh and other computers will be available soon. Everything you need is included; you don't need to buy any other software to get going and the only hardware you need is a connector to suit your radio.

Enjoy RTTY, including news broadcasts, ASCII,

WeFAX for weather maps and FAX for all sorts of news service photographs as well as amateur radio operators sending FAX images to each other.

The MFJ1214 offers 16 levels of grey scale for really top quality FAX and WeFAX images. There is even a built-in timer function allowing you to begin automatic reception of weather maps, which can then be saved to disk automatically, printed on your printer or both if you wish.

VERSATILE ZOOM FEATURE allows the selection and enlargement of areas of the images for close inspection of detail.

- ✧ 16 level grey scale
- ✧ Full colour FAX photos, up to 32,000 colours
- ✧ RTTY with on screen tuning indicator
- ✧ RTTY text editor built-in
- ✧ Save text or images to disk or display them — your choice!
- ✧ CW regeneration for cleaner signals
- ✧ CW keyboard mode for effortless CW sending
- ✧ Software and cables included for either IBM-PC or Amiga computers.

MFJ1214PC for IBM-PC

# \$345

MFJ1214AM for Commodore Amiga

# \$345

## DC Multiple outlet boxes



MFJ1116 - Eight pairs of binding posts with switch, fuse and Ammeter. Every shack needs one!

MFJ1116 Deluxe DC outlets

# \$112.00

MFJ1118 - Our biggest DC outlet unit. Handles a total of 35A. You can power two HF or VHF rigs through two pairs of 30A binding post terminals, each pair is individually fused. Five pairs of terminals, with a fuse and master switch, are provided for powering accessories, with a 15A maximum current capability.



MFJ1112 - Six pairs of binding posts for general purpose 12V distribution. RF bypassing fitted to keep your DC lines clean.

MFJ1112 DC outlets

# \$74.88

Supplied with 6 feet of 8 gauge cable with ring terminals attached.

MFJ1118 DC outlets

# \$162

## SPEAKER MICROPHONES

### Compact Size

MFJs speaker microphone lets you carry your hand held safely on your belt yet still monitor and talk with convenience. These microphones have quality electret inserts and wide range speakers for superb audio on both transmit and receive.

Earphone jack is provided on plug.



MFJ283 Alinco (split jacks)

# \$62.50

MFJ284 Icom or Yaesu

# \$62.50

MFJ286 Kenwood

# \$62.50

### Tiny size

MFJs Tiny-sized speaker microphones give you all the features in a tiny package. High quality electret inserts and wide range speakers give superb audio quality. Each mike has an earphone jack on the microphone, an indicator LED for PTT and a swivelling lapel/pocket clip and MFJs unconditional one year warranty in a package only 50 x 32 x 6.5mm!



MFJ285 Icom, Yaesu, Alinco

# \$62.50

MFJ285W W2A & SRA series Icom

# \$62.50

MFJ285L with right angle connector

# \$62.50

MFJ287 Kenwood

# \$62.50

MFJ287L with right angle connector

# \$62.50



# Audio Processing

## Timewave DSP-9



- ✓ Reduce noise & interference
- Adaptive noise filter for SSB & AM
- ✓ Eliminate heterodynes
- Multiple automatic notch filters
- ✓ Sharp Speech and CW filters
- Linear phase FIR (finite impulse response) filters, one set for SSB, another for CW... 1.8, 2.4, & 3.1 kHz Bandpass (SSB) 100, 200 Hz & 500 Hz Bandpass (CW)

Digital signal processing is the latest revolution to hit the amateur radio scene. Properly implemented digital signal processing has the ability to enhance the performance of YOUR station. With the Timewave Technology third-generation DSP systems you get superior performance at remarkably low cost. CW filters as narrow as 100Hz that don't ring, amazingly effective heterodyne elimination and with the DSP-59+ a range of filter combinations that should cope with just about any situation, and a random noise reduction capability which really works.

DSP-9 DSP signal processor

**\$339**

## Timewave DSP-9+



- ✓ Reduce noise & interference
- Adaptive noise filter for SSB & AM
- ✓ Eliminate heterodynes
- Multiple automatic notch filters
- ✓ Sharp Speech and CW filters
- Linear phase FIR (finite impulse response) filters, one set for SSB, another for CW... 1.6, 2.0, & 2.4 kHz Bandpass (SSB) 100, 200 Hz & 500 Hz Bandpass (CW)
- ✓ Programmable CW centre frequencies 400, 500, 600 or 800Hz
- ✓ HF Data filters
- For HF Packet, PACTOR, G-Tor, AMTOR and RTTY with programmable centre frequencies.
- ✓ Switchable AGC

The Timewave DSP-9+ adds HF digital mode filter options to the DSP-9 and incorporates switchable AGC and selectable centre frequency combinations not provided for in the DSP-9.

DSP-9+ DSP signal processor

**\$449**

## Timewave DSP-59+



- ✓ Reduce noise & interference
- Adaptive noise filter for SSB & AM
- ✓ Eliminate heterodynes
- Multiple automatic notch filters
- ✓ Sharp Speech and CW filters
- SSB: HPF 200Hz-1.6kHz LPF 1.7kHz-3.1kHz
- ✓ Programmable CW centre frequencies
- Centre frequencies: 400Hz-1.0kHz
- Bandwidths: 25-600Hz
- ✓ HF Data filters
- For HF Packet, PACTOR, G-Tor, AMTOR and RTTY, SSTV & WEFAX with programmable centre frequency options.
- ✓ Switchable AGC

The Timewave DSP-59+ offers the most flexible array of filters in the range as well as a series of programmable options to suit just about any need! Great for SWLs as well as the amateur who is really serious about working the weak signal DX stations.

DSP-59+ Advanced DSP signal processor

**\$629**

## MFJ432 Voice Keyer



Gain an unfair advantage during a contest by cloning your voice!



buttons and still have your voice after the contest. You can store four natural sounding messages in a total of 20 seconds. EEPROM technology keeps messages stored for up to 10 years — no backup battery needed.

You can also repeat a message continuously. It makes it sooooo easy to call long CQs during poor band conditions. It's easy to use — just plug your 8 pin microphone cable into the MFJ-432 and plug its cable into your transceiver's 8 pin mic connector. Internal jumpers let you customize it to your rig.

Built-in speaker lets you monitor stored messages. Has jack for remote control operation. Uses 9 volt battery (not included) or external DC supply.

MFJ432 Voice keyer

**\$219**

Store frequently used phrases like "CQ Contest this is VK3ND" ... "You're S9" ... "QTH is Melbourne."

Let this new MFJ Voice Memory Keyer™ call CQ, send your call and do contest exchanges for you in your own natural voice!

Operate most of a contest by pressing a few

## HF QRP CW transceivers

- ✓ 5W semi-break in CW transceiver
- ✓ Models for 15, 17, 20, 30, 40 metres
- ✓ High performance superhet receiver
- ✓ 8 pole crystal filter
- ✓ RIT and vernier tuning
- ✓ Automatic Gain Control
- ✓ Built-in sidetone generator
- ✓ Optional built-in Curtis chip keyer
- ✓ Optional narrow audio filter



MFJ9000 series QRP transceivers

**\$399**

## MFJ9420 20mtr SSB transceiver

- ✓ 12W PEP output
- ✓ Simple operation: no microprocessors!
- ✓ RF speech processing
- ✓ 8 pole crystal filter
- ✓ Covers 14.150-14.350MHz
- ✓ Automatic Gain Control
- ✓ Dynamic microphone included
- ✓ Optional CW adaptor adds 'low end' of band coverage
- ✓ Range of accessories available



MFJ9420X 12W transceiver with r.t.c.

**\$519**

## MFJ784 DSP signal processor



The MFJ super DSP Filter automatically eliminates heterodynes, reduces noise and interference simultaneously on SSB, AM, CW packet, AMTOR, PACTOR, RTTY, SSTV, WEFAX and FAX as well as weak signal EME and VHF signals.

- ❖ Reduce noise & interference
- Adaptive noise filter for SSB & AM
- ❖ Eliminate heterodynes
- Multiple automatic notch filters
- ❖ Sixteen preset filters
- Use these or programme your own.
- ❖ Tunable high pass & low pass filters
- HPF: 200Hz-2.2kHz LPF: 1.6-3.4kHz
- ❖ Programmable CW centre frequencies
- Centre frequencies: 300Hz-3.4kHz
- Bandwidths: 50-680Hz

MFJ784 DSP signal processor

**\$499**

## MFJ Short Wave receiver kit



Remember hunching over your regenerative receiver for hours with a pair of phones pressing uncomfortably against your ears? Did you ever wish you could relive some of that excitement?

This little beauty performs — it has an RF amplifier stage and it goes into regeneration smoothly without pops or dead spots. Covers the popular shortwave and amateur bands. Can be operated from a 9V internal battery. Has two headphone outlets for 'Walkman' type headphones.

MFJ8100K SW receiver kit

**\$135**

# Keyers & code practice

## MFJ's MORSE-MASTER Menu driven memory keyers!



Smooth speed control is possible from 5 to 100 WPM using the AnalogSet mode where the paddle is used to vary the speed.

### MESSAGE SYSTEM

Built-in editing system allows corrections without re-entering the entire message. You can chain messages together or send them separately. You can even interrupt a message whilst it is being sent and then resume the message!

Message sequences can be repeated with pauses, so you can send CQ, interrupt to listen for a replay and recommence calling CQ with just one button. You can even insert commands for the keyer into the messages so that you can customise serial number exchanges and automatically increment numbers with just a single button push.

### POWERFUL MORSE TRAINER

With both Farnsworth and normal timing the MFJ MORSE-MASTER lets you use the common 5 character group method as well as random 1 to 8 character groups for code practice and training. You can even create a practice session in memory then play it back later... truly amazing! Uses 9V battery (not supplied) or external 12V DC supply.



The SUPER MORSE-MASTER is possibly the most sophisticated memory keyer ever devised!

With the MFJ493 you get all of the features of the MFJ492 MORSE-MASTER but with a host of add-on features like these:

- 32,000 characters of memory
- Can use standard AT type keyboard for sending
- Built-in serial port for automatic control & loading memories from computer. Can edit, display and save messages remotely.
- As you key CW, ASCII is sent to serial port for monitoring or recording transmissions.
- Adds QSO simulator to MFJ492 training features.

Uses 12-15V DC supply, not included. Works with standard 101 key AT keyboard.

MFJ's MORSE-MASTER is so easy to use you may never read the manual! Its unique menu system allows you to control absolutely every feature of this amazing Memory Keyer. From the menus you can:

- Save and play messages
- Set starting serial number
- Decrement serial numbers
- Set speed, weight & sidetone
- Use iambic, semi-auto or handkey modes
- Turn sidetone on & off
- Tune transmitter
- Built in sidetone speaker with tone adjustable from 300-3000Hz.
- Compensates for transmitter keying characteristics
- Keying output can be turned off for practice
- Memory can be expanded to 8000 characters

## Piggyback a MORSE MASTER onto a BENCHER Iambic key



**MFJ492 MORSE MASTER Keyer \$225**  
**Deluxe Electronic Keyer**



The MFJ407C Deluxe Electronic Keyer can be used with a straight key, a single lever or dual lever paddle with type A or B iambic keying for sending high quality Morse code. Full iambic keying with a dual lever paddle, dot-dash insertion, semi automatic dots and manual dashes, dot-dash memory, self completing dots and dashes, jam proof spacing and instant start keying.

Speed, weight, tone and volume controls are all on the front panel as well as ON/OFF, tune and semi-auto/auto switches. The weight control will provide negative as well as positive weighting.

The MFJ407C has a built-in speaker and uses a 9V battery (not included) or an external DC source, enclosed in a black aluminium cabinet measuring 178 x 51 x 150mm.

**MFJ407C Deluxe electronic keyer \$155**

**MFJ493 Super MORSE MASTER keyer \$309**  
**PC Memory keyer**

Let this amazing hardware and software package for your IBM-PC or compatible turn your computer into a full fledged memory keyer!



With 10 banks of 10 memories you can have a total of 100 function key macros. You can send a message within a message, pause to key in information, send part of a message at a different speed. Send CW beacons, have automatic serial numbering for contesting and all of this with on-line help! You can use a straight key, a single lever or dual lever keyer or send code from the keyboard.

**MFJ1268 PC Memory keyer \$95.00**

## MFJ Stand alone MORSE KEYBOARDS



**MFJ451**

Morse Code Keyboard

**\$195**

The MFJ451 stand-alone keyboard has a 200 character type-ahead buffer and two 100 character message memories. With all functions controlled from the keyboard sending Morse Code has never been easier, or more fun!

### Super CW Keyboard



The MFJ452 'Super CW Keyboard' has all of the features of the MFJ451 with the addition of a two line LCD display, you see what is being sent on one line while you see what you are typing on the other, and a total of eight 2500 character memories.

Nonvolatile memory stores all your messages and settings for up to 20 years! Commands can be stored in messages, for example you can have auto-incrementing serial numbers sent automatically!

**MFJ452 Morse keyboard with display \$289**

### 32K memory CW keyboard



In the MFJ498 you not only get all of the features of the world's most powerful Morse code keyboard but you have 32K of lithium battery backed-up memory and a complete code training system, all in one box!

Like all of the MFJ Morse keyboards you can plug in an iambic key and use the unit as a complete high performance keyer.

**MFJ498 32K Morse keyboard & display \$399**

## Deluxe Code Practice Oscillator



The MFJ557 Deluxe code practice set features a straight Morse key on a heavy non-skid steel base. The MFJ557 lets you practice code wherever you are, and it is powered by a 9V battery (not included) or an external DC source, it's easy to use wherever you go.

A volume control is provided to permit adjustment to a comfortable listening level. A tone control permits you to adjust the frequency and for privacy you can plug in an ear-piece, or for classroom situations you can plug in an extension speaker.

Measures 216 x 57 x 95mm. Finish is all black.

**MFJ557 Code practice oscillator set \$84.10**

# Morse keys and keyers

## Solid Brass Morse Key



The Kent Morse Key Kit is engineered to the highest specifications from solid brass. Uses solid silver contacts & sealed ball race bearings, ensuring totally free pivot movement with minimum friction and eliminating side play. Precision contact and spring adjustment with fine pitch threaded screws with instrument knurled heads.

**MM004** Morse Key kit **\$151.25**

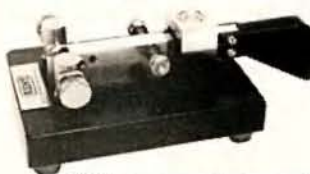
## Kent Iambic Paddle



The twin paddle (iambic) Morse key can be used with the KENT iambic keyer, MFJ Morse keyers, the MFJ1278 multi-mode controller and internal keyers such as those available for ICOM or Kenwood transceivers.

**MM005** Morse Key kit **\$181.50**

## Kent Single Paddle Key



The KENT single paddle key is designed to allow each individual operator total flexibility in setting and adjustment, achieved by the unique springing arrangement which allows separate right and left spring tension adjustment with finger tip control.

**MM003** Keyer kit **\$151.25**

## Kent Electronic Keyer



The KENT Electronic Morse Keyer Kit uses CMOS logic to generate Morse at speeds from 5 to 40 words per minute at the standard dot-dash ratio of 1:3. The kit is supplied with the circuit board pre-assembled and tested. You only supply a bit of labour to complete the assembly.

**MM007** Keyer kit **\$156**

## Bencher Iambic Keyer



**MM001** Black **\$151.25**  
**MM002** Chrome **\$187.55**

With adjustable contact spacing, precise tensioning adjustments and plated copper contacts the BENCHER keyers are truly precision instruments designed to last you a lifetime. A choice of base finishes is available with the key mechanism made from chrome plated brass. Bencher keyers work as well as they look and give you a truly 'smooth as silk' keyer, whatever your needs.

## Bencher single lever key



**MM003** Black **\$151.25**  
**MM003A** Chrome **\$187.55**

## Logikey CMOS keyer & Remote Controller



The LogiKey keyer is driven by the key itself so you don't need a host of controls. Try it, it is amazingly effective! Can be used with any iambic keyer unit, such as the Bencher, Vibroplex and MFJ units seen on these pages.

**MM008** Keyer **\$248.40**



The LogiKey keyer can be fitted with an optional remote control unit which can be mounted to the Bencher Iambic Keys. Take the controls of the keyer direct to the key, right where you want to use them. The remote control is shown here attached to an MM001 key. (Key not included in price)

**MM008A** Remote control **\$84**

## Vibroplex Original



The Vibroplex Original is little changed today from the original design of 1890. Considered by many to be the greatest 'semi-automatic' keyer ever made.

**MM011P** Gold base **\$420**  
**MM011D** Chrome **\$285**  
**MM011S** Grey wrinkle **\$260**

## Vibroplex Iambic



Based on the Vibroplex Original, the iambic brings the Vibroplex tradition to the modern world of iambic keying and fully automatic keyers. Will work with any iambic keyer.

**MM012P** Gold base **\$350**  
**MM012D** Chrome **\$260**  
**MM012S** Grey wrinkle **\$240**

## Vibroplex Vibrokeyer



The Vibroplex Vibrokeyer is designed for the 'Bug' user who wants to move to electronic keyers. Its single lever paddle arrangement initiates the automatic dots and dashes of the electronic keyer with the same motion used to operate the 'Bug'.

**MM013D** Chrome **\$250**  
**MM013S** Grey wrinkle **\$190**

## Vibroplex Brass Racer



Available in two versions, one with an internal electronic keyer, the Brass Racer is the latest in the Vibroplex line. Using magnets for tensioning, this delightful little key is just the thing for mobile, DXpedition or portable use, just the thing when space is at a premium!

**MM014** with keyer **\$320**  
**MM015** key only **\$130**

## Electronic Keyer II



The MFJ401B Econo-Keyer II uses the world famous Curtis 8044ABM integrated circuit. It lets you send iambic, automatic, semi-automatic or manual with your dual lever, single lever paddle or straight key. Front panel speed control covers 8 to 50 WPM and the volume control adjusts to give a comfortable listening level. Internal controls are provided for weight, dot-dash spacing and tone. Uses 9V battery (not included), measures 102 x 51 x 89mm.

**MFJ401B** Keyer **\$106.90**

## Custom keyer for Bencher Iambic Paddles



Combine all of the features of the MFJ keyer with the Curtis 8044ABM IC and put it in a package that mounts directly onto the Bencher Iambic keyers and you have the MFJ422B! Power it with an internal 9V battery or from an

external DC power source. Also mounts on MFJ564 paddles.

**MFJ422BX** Keyer **\$160**  
**MFJ422B** Keyer & key **\$292**

## MFJ Iambic Paddle



MFJ Deluxe iambic paddles feature a full range of adjustments in tension and contact spacing, self adjusting nylon and steel needle bearings, contact points which almost never need cleaning, precision machined frame and non-skid feet on a heavy chrome base. Can be used with the MFJ422BX keyer and the MFJ490X MorseMaster keyer.

Chrome plated base and metal parts.  
**MFJ564** Iambic paddle **\$110**

### The Scout

The remarkable new Scout automatically finds frequencies and records them and will tune a receiver. Record a series of frequencies and then load them to a scanner for review.



- 10MHz-2.8GHz frequency range
- Six hour battery life
- Works 10-120 metres from transmitter
- Use as frequency counter too!
- Exclusive Optoelectronics digital filter and capture technology.
- 50 memories for discrete frequencies.
- 250 hit counter for each memory
- Reaction tunes some receivers.
- Interfaces to PC for datalogging.

**25** Frequency Scout **\$820**

### HandiCounter 3000A

The world's most highly advanced hand-held counter. Covers to 3GHz with frequency and multi-function features, Period, Ratio and Time Interval, all in the palm of your hand.



- 10Hz-3GHz, 0.1Hz resolution
- Period, time interval, ratio, average
- 250MHz direct counting
- Dual 50Ω/1MΩ inputs.
- Exclusive Optoelectronics digital filter and capture technology.
- 10 digit LCD display
- 1x10<sup>9</sup>/yr time base
- Optional TCXO available
- Interfaces to PC for datalogging.

**3000A** HandiCounter **\$719**

### HandiCounter M1

The M1 counter has the same 10Hz-2.8GHz range as the 3000A but no universal counter functions. Digital filter and capture still available as well as digital communications port.



- 10Hz-3GHz, 0.1Hz resolution
- 250MHz direct counting
- 50Ω/1MΩ input.
- Exclusive Optoelectronics digital filter and capture technology.
- Sensitive inputs for ease of use.
- 10 digit LCD display with electroluminescent backlighting.
- Low power, 4 to 5 hours battery life
- Interfaces to PC for datalogging.

**M1** HandiCounter **\$512**

### Mini HandiCounter 3300

The smallest member of the family still offers 1MHz-2.8GHz performance, 10 digit LCD display and long battery life in a package almost too small to believe.



- 1MHz-2.8GHz, 0.1Hz resolution
- 250MHz direct counting
- 50Ω input.
- Sensitive inputs for ease of use.
- 10 digit LCD display.
- Low power, 4 to 5 hours battery life.
- Easily replaced battery pack.
- Maximised sensitivity for picking up transmitters at greatest distance.
- Very compact, true pocket size.

**3300** MiniCounter **\$286**

### Decode tone information

The DC440 decodes CTCSS, DTMF & DCS signals output from receiver. Can be computer interfaced for logging purposes.



**DC440** Tone decoder **\$532**

### Collecting data with a frequency counter



Many Optoelectronics products, including the 25, 3000A, M1, SSM220A and 8040 can be connected to a PC for data collection and logging. When used in conjunction with the DC440 decoder tone frequencies can be recorded as well.

Please call for details of optional interfaces and software!

### 8040 Multi-Function bench/portable counter

A 10 digit electroluminescent backlit LCD display, 3GHz performance and all the features of a universal counter make the 8040 a winner for general purpose bench, laboratory or field use.



This counter 'big brother' to the 3000A and has additional signal conditioning and options for higher stability time bases. Both 50Ω and 1MΩ inputs are provided for both inputs and each has a separate trigger level control.

**8040** Multifunction bench/portable counter **\$1700**

### Communications Interceptors

Optoelectronics presents a totally new instrumentation concept, the Model R10 FM Communications Interceptor. Developed for two-way communications testing, it has significant impact in security, counter-surveillance and recreational communications monitoring applications.

The Interceptor™ measures deviation (wide and narrowband), relative signal strength, signaling tones (CTCSS, DCS, and DTMF) using the companion DC440 Decoder. The R10 can be used for any measurement requiring demodulated FM. The R10 is ideal for testing VHF, UHF and Cellular transmitters and can be a low cost highly portable substitute for a service monitor in some applications.

#### New Technology

The Interceptor™ responds to any strong signal present, unlike a conventional radio receiver or scanner. Conventional receivers are stabilised and tuned to a particular frequency by an internal oscillator. The Interceptor™ is stabilised by the signal it is receiving. The advantage of this process is that the Interceptor™ does not have to be tuned to a frequency in order to receive a signal. Any FM signal from 30MHz to over 2GHz can be intercepted without gaps in coverage. The Interceptor™ is completely automatic for hands free operation.

#### Security & Counter Surveillance Applications

This great sensitivity to Near Field signals makes the Interceptor™ ideal for RF security

and counter surveillance applications. The signal strength bargraph is useful in locating stuck transmitters or listening devices concealed in a room or automobile.

#### Communications Monitoring

In the Near Field — Unlike the scanners and receivers that must be tuned to a specific frequency or scanned through a fixed frequency range, the Interceptor™ will provide an exciting new dimension to recreational monitoring with near instant response to strong signals. Communications monitoring hobbyists will be able to take the Interceptor™ on cruise ships, to military bases, theme and amusement parks/zoos, airports, to space shuttle launches, parades, sporting events, car races and anywhere else two way FM communication is used.

The Optoelectronics R-20 AM near field interceptor is useful for detecting AM signals and measuring the strength of signals from .5-2500MHz. It can be used for amateur, CB or AM broadcast testing as well as for locating hidden transmitters (bugs) and checking microwave oven leakage.



**R10** Interceptor **\$729**



**R20** Interceptor **\$245**

### SSB220A SSB counter

The truly unique SSB220A can measure the actual output frequency of an SSB transmitter! Also useful for general purpose applications to 3GHz.



By feeding a known audio signal to the transmitter you can easily determine which sideband and what frequency is being transmitted. The SSB220A uses the latest direct digital synthesis and digital signal processing technologies.

**SSB220A** 3GHz SSB counter **\$825**

# THE NEW 1995 ARRL HANDBOOK

Every so often, a book comes along which becomes an instant classic. It's no exaggeration to describe the 1995 edition of The ARRL Handbook for Radio Amateurs in those lofty terms.

For this edition, the ARRL assembled the best and most knowledgeable writers on subjects ranging from analogue electronic theory to transceivers, repeaters to DSP, circuit construction to interference, transmission lines to antennas and propagation. If it's amateur radio, it's in the 1995 Handbook... It would be impossible to list all the features that make this respected book the one reference all amateurs around the world will find indispensable. A few highlights will provide an idea of the scope of the 1995 Handbook:

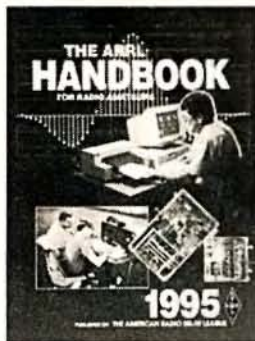
• In the Modes chapter, you'll find an overview of the many ways amateurs communicate, from the on/off keying of Morse Code to the complex but

powerful digital techniques which will guide amateur radio communication into the next century.

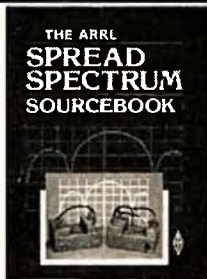
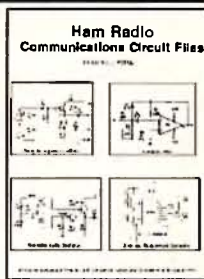
- Whether you're an experienced builder or a neophyte, you'll find the Circuit Construction chapter useful as it takes you from schematic to finished project.
- The AC/RF Sources chapter explains, clearly and concisely, modern oscillator and synthesiser design.
- Mathematics for Amateur Radio provides a refresher course in the math concepts which form the basis of amateur radio and electronics.
- The Station Setup and Accessories chapter shows how to set up or enhance your station for top performance; among other projects, includes a boom/headset mic and three computer interfaces.
- In the Transceivers chapter, you'll learn about the systems and design which go into modern radio equipment. Projects include a beginner's shortwave receiver, QRP transceivers and a 50W solid-state linear amplifier.
- The References chapter brings together, into one place, the tables and charts amateurs need and use most often.

Order Code BR369 © 1995 ARRL

\$66.00



## REFERENCE, PRACTICAL CIRCUITS & DESIGN



### RADIO COMMUNICATION HANDBOOK — RSGB

The RSGB's *Radio Communication Handbook*, 5th Edition reprinted 1988. The society does not revise this handbook annually (or even frequently). Instead, the book changes when technology has changed sufficiently to justify it. This means that each new edition is virtually a new book, each chapter being completely revised and updated. And it's practical down-to-earth information which every amateur needs... One of the attractions of radio communication is the way in which fundamental ideas and techniques remain valid in the mist of innovation. This large handbook with 22 chapters will help in many ways.

Order Code BR266 5th ed. ©1988 RSGB

\$56.00

### HAM RADIO COMMUNICATIONS CIRCUIT FILES

Volume 1 by Ed Knoll, W3FQJ, first printed 1980, reprinted 1991 - Large 210 x 275mm 86 pages. Even the casual experimenter can become expert with Ed Knoll's *Ham Radio Communications Files*. This book covers bipolar and field-effect transistors and linear ICs. Each circuit has been built and carefully checked out by the author. The component values are given on each schematic diagram. An explanation and often a suggested experimental procedure are included with each circuit.

Teach yourself solid state electronics by beginning with the first circuit and proceeding through the 61 circuits in this easy-to-follow book. The circuits are arranged for progressive study as in a course with experiments.

Teachers or experienced hobbyists will find they can go directly to the individual chapters for inspiration or ready-to-use circuits.

Order Code MFJ37 1st ed. ©1980 MFJ

\$24.95

### AMATEUR RADIO TECHNIQUES

By Pat Hawker, G3VA. This is an ideas book and a source book, not a conventional text book. It assumes the reader has (and uses!) his or her handbooks and therefore does not repeat basic theory and practice. Instead, it concentrates on new or little-understood techniques; some sophisticated, but many others which can be simply incorporated into an amateur station. This ever-popular work brings together a variety of circuit ideas and devices, information on antennas, plus many constructional and fault-finding hints, gathered in over 22 years of writing the *Technical Topics* column in the RSGB's *Radio Communication*.

Chapter headings: • Semiconductors • Components and Construction • Receiver Topics • Oscillator Topics • Transmitter Topics • Audio and Modulation • Power Supplies • Aerial Topics • Fault-Finding and Test Units.

Order Code BR393 7th ed. © 1991, RSGB

\$30.00

### THE ARRL ELECTRONICS DATA BOOK

Doug DeMaw, W1FB, presents a handy reference for the RF design engineer, technician, radio amateur and experimenter. This one source has all of those regularly-used tables, charts and those hard-to-remember formulas. You'll also find hundreds of popular circuit diagrams of oscillators, mixers, amplifiers and other devices, and their operating parameters including ferrite materials. This book may be used alone or to complement *The ARRL Handbook* and belongs in every technical library.

Order code BR201 2nd ed. ©1988 ARRL

\$40.00

### AMIDON FERRITE & POWDERED IRON

#### TECHNICAL DATA BOOK

This edition of the very popular Amidon Data Book was completely revised and updated in 1992. This volume contains inductance charts, flux density curves and wire turns charts on iron powder and ferrite cores for RF, RFI suppression, switch-mode power supplies and broadband transformer applications. It also covers surface-mounting beads, RF coil assemblies, 'E' cores, rods and pot cores. Many new sizes and shapes have been added since the last printing. Daycom stocks ALL the items in this book.

Order code BR44 © 1992 Amidon Associates

\$12.50

### TECHNICAL TOPICS SCRAP BOOK

'Technical Topics' is one of the most popular columns in the RSGB's magazine *Radio Communication*, and has been for many years. Each month Pat Hawker presents an invaluable selection of circuit ideas and devices, information on antennas and related topics, plus many constructional hints. This book contains the complete *Technical Topics* columns from 1985 to 1989 inclusive, together with a new index.

Order code BR37 1st ed. ©1993 RSGB

\$35.00

### SPREAD SPECTRUM SOURCEBOOK

If you're tired of hunting for bits and pieces of information on spread spectrum, the *ARRL Spread Spectrum Sourcebook* is for you. You'll find reprints of most spread spectrum articles from *QST* and *OEX*, as well as articles and news items from the *AMRAD Newsletter*. Also included in this 384-page softcover book is historical information on spread spectrum's beginnings and an introduction by Robert Dixon, a well-known author on this subject.

All the information you want — in one place — at your fingertips! The hunt is over...

Order code BR365 1st ed. ©1991 ARRL

\$52.00

### SOLID STATE DESIGN FOR THE AMATEUR

First published by the ARRL in 1977 and reprinted by popular demand with corrections. This large book of 256 pages by Doug DeMaw and Wes Hayward has become the 'bible' of many an avid home-brewer, and with good reason. *Solid State Design for the Radio Amateur* is among the select few technical books which have sold more than 50,000 copies. Why has it achieved this enviable milestone? For one thing, it's chock full of good, basic information — circuit designs and their applications and descriptions of receivers, transmitters, power supplies and test equipment. Much of the data such as that on transistor modelling cannot be found in any other publication.

Order code BR171 1st ed. © 1977 ARRL

\$32.00

### HINTS AND KINKS FOR THE RADIO AMATEUR

This book from the ARRL is a collection of practical ideas from the ever-popular *Hints and Kinks* column of *QST*. Amateur radio know-how from amateurs who know how. Every article is new — this edition is not just an update. Join the contributors to *QST*'s most popular technical column as they share hands-on experience in virtually every aspect of amateur radio. Whether you sample the delights by way of mic, key, keyboard or camera; whether you prefer the test bench to the traffic net or mobbing to moonbounce; whether your enjoyment of amateur radio spans days or decades. *Hints and Kinks* has fixes, tidbits, updates, projects, antenna systems and many practical tips. Offers many modifications to popular rigs including Icom, Kenwood, Yaesu, AEA, Ameritron, Drake, Heath, MFJ, Ten-Tec and Collins. 172 pages 210 x 275mm.

Order code BR330 13th ed. ©1992 ARRL

\$26.00

### W1FB'S DESIGN NOTEBOOK

Do you like to build amateur radio equipment? Would you like to? If your answer to either of these questions is yes, then this book by Doug deMaw, W1FB is for you. The infamous Doug strikes again! Another supremely practical book published by the ARRL, this plain-language book is filled with simple, practical projects which can be built using common hand tools. You'll not need exotic or hard-to-find components to build the projects, nor will you need elaborate test equipment to make them work. This book is full of all sorts of useful information on designing and building your own equipment. Has complete receiver and transmitter designs as well as all sorts of useful info and partial designs for the home-brewer.

Order code BR357 1st ed. ©1990 ARRL

\$26.00

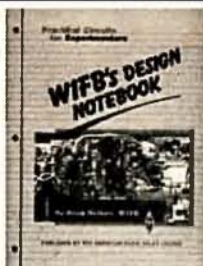
### TRANSMISSION LINE TRANSFORMERS

This second edition includes some 100 extra transformers, many interesting and unexpected designs, using both the Ruthroff and Guanella approaches. Though the primary goal of the book is to supply a great variety of transformers for matching 50Ω cable to antennas in the 1.5 to 30 MHz range, many of them should perform well in other areas. Daycom Communications stocks most of the ferrite materials used in this book. 150 x 230mm hard bound

Order code BR329 2nd ed. ©1991 ARRL

\$52.00

# REFERENCE, PRACTICAL CIRCUITS & DESIGN (cont.)



## MOTOROLA RF DEVICE DATA 1994

This 6th edition has been revised in 1994 in one volume. It presents technical information for the several product families that comprise the Motorola portfolio of RF products. They include bipolar, LDMOS, MOSFET RF power and Gallium Arsenide chip technologies in a variety of packages, also discrete components, hybrid modules, and integrated circuits. This new edition presents a considerable number of changes.

Order code BR47 © 1994, 6th ed. Rev. 4 **\$42.00**

## MOTOROLA RF AND VIDEO APPLICATIONS

This application book from Motorola has a total of 37 application notes on a wide range of RF and video applications. Some of the applications include... • Get 600 watts RF from four power FETs • Low-cost device gives broad band performance at 3 watts out • 300 watt amplifier using TP1940 MOSFET push-pull transistors • Phase-Locked Loop design fundamentals • Impedance matching networks applied to RF power transistors • A simplified approach to VHF power amplifier design • Tuning diode design techniques

Order Code BR428 DLE413/E **\$65.00**

## MOTOROLA COMMUNICATIONS APPLICATIONS

This application book from Motorola contains a total of 44 application notes on a wide range of communications subjects. Some of the applications include • MC1596 balanced modulator • Line driver and receiver applications • Equalisation of DTMF signals using the MC34014 • VHF narrow band FM receiver design using the MC3362 and MC3363 dual conversion receivers • Infrared sensing and data transmission fundamentals • MC68HC05B4 radio synthesiser • Low power FM transmitter system MC2831A • Basic concepts of fibre optic communications • Serial to parallel converter using the MC6870P3.

Order Code BR376 DLE411/E **\$58.00**

## INTERFERENCE HANDBOOK

By William R Nelson, WA6FQG, and edited by Bill Orr, W6SAI. WA6FQG is a former RFI investigator for Southern California Edison Company. This 250-page book is written from an RFI sleuth's perspective and is a diary of his experiences in solving interference problems. His experiences run the gamut from the common (arcing thermostats) to the bizarre (loose metal sheathing in a temporary building next to a 250kV transmission line). Besides all sorts of power line interference causes and solutions, this book covers electrostatic discharge (rain or snow static), grounds and grounding, vehicle noise suppression, RFI from non-linear devices, how the power company locates RFI, how to 'RFI-proof' your transmitter, how some receivers suffer from self-inflicted RFI, and solutions to RFI in various electronic devices.

Order code BR181 2nd ed. 1988 **\$25.60**

## RADIO FREQUENCY INTERFERENCE

### How to Find It and Fix It

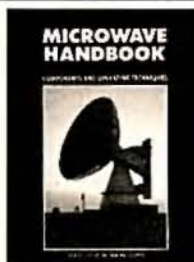
What is it? • Black bars that flash across a TV picture in a curious, rhythmic pattern. • A garage door opener which opens or closes the door by itself. • A raucous buzz which drowns out AM stations. • Car engine stumble or hesitation near radio towers. • A touch-controlled lamp with a mind of its own. These strange behaviours (and countless others) may be effects of electromagnetic interference.

If you experience these or similar problems, this book can help. Here, the ARRL has combined the work of numerous interference experts for your convenience. Chapters explain how to: • Locate help • Resolve conflicts • Locate interacting equipment • Discuss RFI/EMI problems and cures for specific electronic systems: Transmitters; Stereos and other audio devices; Televisions; Power Lines; Computers; Telephones; and Cars.

This book is published by the ARRL, paperback, 210 x 275mm.

Order Code BR186 1st ed. ©1991 ARRL **\$40.00**

# VHF and MICROWAVE



## THE ARRL UHF/MICROWAVE EXPERIMENTER'S MANUAL

This book is written for the growing number of radio amateurs who are discovering that there is life on our frequencies above 420MHz! Chapter topics of this 448-page book include • A brief history • Safety • Propagation • Microwave devices • Transmission media • Design techniques • System design • Microwave fabrication techniques • Antennas and feedlines • Earth-Moon Earth (EME) communications • Getting started in microwave measurements, and • Tackling microwaves with microcomputers. 448 pages, 200 x 280mm. There are 26 programmes for PC-compatible computers on diskette (available separately) to aid in performing various tasks described in the book.

Order code BR325 1st ed. ©1991 ARRL **\$52.00**

Order code BR327 5.25" or 3.5" (State which when ordering) **\$22.00**

## RSGB MICROWAVE HANDBOOKS

Microwave Handbook Volume 1, ©1989, covers operating techniques, systems analysis and propagation, microwave antennas, transmission lines and components, microwave semiconductor tubes. Microwave Handbook Volume 2, ©1991, continues where Volume 1 leaves off, with construction techniques, common equipment, microwave beacons and repeaters, test equipment, safety, filters and additional circuit data. Microwave Handbook Volume 3, ©1992, contains a review of microwave theory and practice, reference information, practical designs, hints and tips. Covers 1.3-24GHz.

Vol. 1 - BR318 Components & Operating Techniques **\$38.00**

Vol. 2 - BR437 Construction & Testing **\$57.00**

Vol. 3 - BR447 Bands & Equipment **\$57.00**

## ALL ABOUT VHF AMATEUR RADIO

By William I. Orr, W6SAI, this VHF handbook is for every amateur on six metres and up. Contains: • VHF propagation • The VHF bands, an overview • The VHF repeater and how it works for you • VHF moonbounce communications • Amateur satellite communications • VHF vertical and mobile and beam antennas you can build • VHF interference and how you can suppress it.

Order code BR216 2nd ed. ©1988 **\$25.60**

## THE VHF/UHF MANUAL

By G. R Jessop, G6JP. This tome has long been the standard text book on the theory and practice of amateur radio between 30MHz and 24GHz. No serious VHFer should be without this book. You'll find information on the history of VHF/UHF communications, propagation, tuned circuits, receivers, transmitters, solid state and valve equipment, filters, antennas, microwaves, space communications and test equipment.

Order code BR267 4th Edition © 1983 RSGB **\$40.00**

## THE VHF/UHF DX BOOK

The VHF/UHF DX Book from DIR Publishing of the UK helps you with one of amateur radio's greatest challenges: contacting stations in far away places. Here's some of what you'll find: • how to assemble your VHF/UHF station • VHF/UHF propagation information • operating techniques • designs for UHF and VHF transmitters • antennas • transmitters • power amplifiers & EMC • power supplies • station control • test equipment. Much more.

Order Code BR27 1st ed. ©1992 DIR Publishing **\$52.00**

## THE UHF COMPENDIUM from Germany

Parts 1, 2, 3 & 4 of this work are available in English. Parts 1 & 2 are contained in Volume 1. Parts 3 & 4 are found in Volume 2. Part 5, printed only in German, is in Volume 3 All Volumes are 8.5" x 11".

Vol. 1 (parts 1 & 2) BR250 **\$75.00**

Vol. 2 (parts 3 & 4) BR251 **\$75.00**

Vol. 3 (part 5, in German only) BR354 **\$62.50**

## YOUR VHF COMPANION — ARRL

Your VHF Companion lets you explore the fascinating activities on the VHF bands: FM and repeaters, packet, CW and SSB, satellites, amateur television, transmitter hunting and more. A handy reference section helps you locate equipment, books, magazines and software. A must for all new hams and all 'veterans' as well!

Order Code BR461 1st ed. ©1992 ARRL **\$21.00**

# VHF/UHF/MICROWAVE & PACKET CONFERENCE PROCEEDINGS

The following volumes represent much of the most interesting material presented at the five of the largest VHF/UHF conferences in the English-speaking world. These collections are essential reading for anyone interested in operation at or above 70cm.

## AMSAT-NA PROCEEDINGS

1987 ORDER CODE BR199 \$10.00  
 1988 ORDER CODE BR378 \$17.00

## MICROWAVE UPDATES

Microwave Update 1993 ORDER CODE BR467 \$32.00  
 Microwave Update 1994 ORDER CODE BR51 \$32.00  
 Microwave Update 1988 ORDER CODE BR183 \$17.00  
 Microwave Update 1987 ORDER CODE BR174 \$17.00

## VHF SOCIETY PROCEEDINGS

27th Central States VHF Society Oklahoma City, Oklahoma 1993 ORDER CODE BR470 \$32.00  
 28th Central States VHF Society Oklahoma City, Oklahoma 1994 ORDER CODE BR50 \$32.00

## PACKET RADIO PROCEEDINGS

Each of these volumes contains a wide range of papers on all forms of digital modes and presents the history of packet radio from day one

Number 11, 1992 ORDER CODE BR174 \$32.00



## PRACTICAL FILTER DESIGN

Although filters are basically easy to understand, you don't get this impression from most books! This is a non-mathematical treatment for electronics hobbyists and technicians.

This Australian-published book, written by Jack Middlehurst, looks at the circumstances where filters are needed, indicates which ones to choose for specific applications, and discusses their laminations. Details are given of the circuits, construction and tuning of LC filters, as well as simple active filters, state variable filters and switched capacitance filters. Butterworth, Chebyshev and elliptic forms of low-pass, high-pass and band reject filters are described, as well as active and passive crossover and notch filters.

To truly remove any difficulties with mathematics, computer programs in GW BASIC are provided on disk so that filters and their properties can easily be predicted.

ORDER CODE BR472 \$35.95 Includes free 3.5" DISK

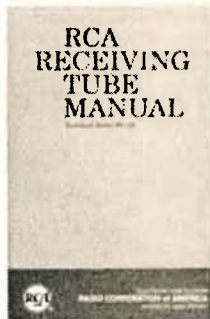


## RCA RECEIVING TUBE MANUAL

We have obtained a shipment of RCA Tube manuals from the USA. Published in 1959 (not a copy) this manual has a most complete data section covering valves from the '30s to the end of the valve era. There is also approx. 68 pages of valve application data plus information on valve testing and a section of circuits — in all, 385 pages of information.

This manual has been prepared to assist those who work or experiment with electron tubes and circuits. It will be valuable to engineers, service technicians, experimenters, students, radio amateurs and all others technically interested in electron tubes.

Order code BR34 \$22.00



# PACKET RADIO ... RTTY ... AMTOR BOOKS



## PROH: Packet Radio Operators Handbook

Buck Rogers, K4ABT, packet radio editor of CQ Magazine — the godfather of packet radio — spent two years compiling information to write the most comprehensive handbook ever for the packet radio user. With PROH you can become a PRO by having this handbook as ready reference for the most useful applications in packet radio today. In this book you will learn everything you need to know to build a packet station. It covers all modes in use today including ROSE and 9600 baud operation.

Order code MFJ3036 \$26.00

## YOUR GATEWAY TO PACKET RADIO

All the answers and much more are in this book by Stan Horzepa, WA1LOU, published by the ARRL.

In the five years since the ARRL first published *Your Gateway to Packet Radio*, interest in packet has exploded! To keep up with the expanding interest and evolving technology, this second edition contains 73 more pages — and nearly 50 per cent of the original material has been revised. Newcomers will still find the basics on installation and operating procedures.

Order code BR169 2nd Edition ©1989 ARRL \$32.00

## THE PACKET RADIO OPERATORS MANUAL

This new packet radio manual from CQ Communications written by Buck Rogers, K4ABT is a big 220 x 228mm and contains 162 pages. Covers packet radio, packet video, networks, nodes, gateways, antennas RFI causes, defining RS232... and a lot more.

Order Code BR43 ©1993 CQ Communications \$37.50

## AX.25 Amateur Packet-Radio Link-Layer Protocol

This protocol is intended as a guide to aid in the design and use of amateur packet-radio systems, in order to ensure link-layer compatibility between stations. The link layer is level 2 of the International Organisation for Standardisation (ISO) seven-layered reference model of Open Systems Interconnection (OSI).

Order code BR178 Version 2 ©1984 ARRL \$20.00

## PACKET RADIO PRIMER

From the RSGB, this book is written by Dave Coomber, G8UYZ and Martyn Croft, G8NZU. This introduction to the exciting new world of packet radio will help any beginner to get started with the minimum of fuss. Detailed, practical advice on connecting equipment followed by a guide through the maze of configurations possible.

Order Code BR440 ©1991 RSGB \$28.00  
**NOSintro**

An introduction to the KA9Q Networking System by Ian Wade, G3NRW. In NOSintro you'll find a wealth of practical information, hints and tips for setting up and using the KA9Q Networking Operating System (NOS) in a packet radio environment. The emphasis is on hands-on practicalities. You'll see how to install NOS on a PC, how to set up the control files, and lots more.

Order Code BR468 \$45.00

## Your RTTY/AMTOR COMPANION

Explore HF digital communications with your multi-mode controller. This book, by Steve Ford, WB8IMY, is your introduction to the exciting world of HF digital communications. Learn how to assemble your own RTTY/AMTOR station and communicate effectively on the air. You'll also learn the basics of new HF digital modes such as CLOVER and PacTOR.

Order Code BR45 1st ed. ©1993 ARRL \$21.00

## RTTY TODAY

This is the only modern book on RTTY that we know of for the radio amateur. Home computer systems used with multi-mode controllers and dedicated electronic terminals have opened the way for everyone to enjoy the action regardless of their technical background.

Order Code BR003 Universal Electronics ©1993 \$20.50

## THE RTTY LISTENER

The RTTY LISTENER is a special magazine to inform and educate amateurs and SWLs on tuning various types of Digital Signals. This book contains issue's #1 through 25

Order Code BR23 ©1991 2nd ed. Universal Radio \$40.00  
 The RTTY Listener issues #26 to 30.

Order Code BR24 ©1992 1st ed. Universal Radio \$12.50

The RTTY Listener issues #31 to 33.

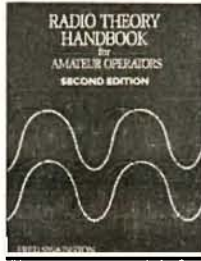
Order Code BR42 ©1994 1st ed. Universal Radio \$9.50



# HELP FOR NEW HAMS & MORSE

## AUSTRALIAN RADIO THEORY HANDBOOK

This 1991 edition by Fred Swainston was written to cover the Australian SMA syllabus for the Novice and Amateur Operator Certificates of Proficiency. It contains the theory necessary to pass the Australian Certificates of Proficiency and is concise and easy to understand. The books sets out to teach those who have no knowledge of radio theory or electronics. The subjects in the book are presented in a logical sequence with test questions at the end of each chapter, covering key points in the text. A separate chapter on the mathematics required for amateur examinations has also been included, because this area often presents a problem to those studying radio theory. Sample examination papers are included. 341 pages 1991 11" x 8"



Order code BR265 2nd ed. 1991 **\$47.95**  
**FIRST STEPS IN RADIO**

This book is a reprint of the wide-ranging *First Steps in Radio* series by Doug DeMaw, W1FB published in 1984 and 1985 in QST. The entire QST series is reproduced here. You will find this book a great help for newcomers to learn the electronic theory needed for licensing exams and to gain some insight into how radio equipment works.

In *First Steps in Radio* you will find basic explanations of circuit components, see these components assembled into practical circuits, and see how the circuits make up your radio gear. Additional segments cover antennas, propagation and radio frequency interference at a beginner's level.

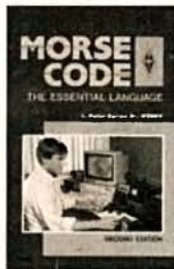
Although you may never 'roll your own' equipment, you will gain an understanding of what goes on behind the front panel and take pride in that knowledge.

Order Code BR385 1st ed. ©1985 ARRL **\$16.00**  
**MORSE CODE: THE ESSENTIAL LANGUAGE**

Written by L Peter Carron, W3DKV, this book tells of the evolution from the straight key to computers. It gives practical advice on learning the code and its modern-day uses. There are seven chapters: • Why the code? • A history of telegraphy • The code • Learning to receive and send • High-speed operation • Distress calls • The future.

The history of Morse Code is steeped in tradition, not only in amateur radio but in other services as well. Although some of the thoughts it conjures up are of times gone by, the code is as useful today as it was on the day of its invention. The 1991 edition of this small book will help you find out much, and help you to learn or re-learn the code.

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## VIBROPLEX

Collector's Guide

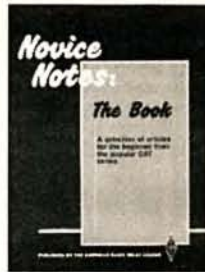


## VIBROPLEX COLLECTORS GUIDE

This new book, written by Tom French, W1IMQ, is a must for anyone interested in Morse keys. There are reproductions of every Patent for the Martin keys. The AUTOPLEX in 1903, then the first VIBROPLEX key in 1904. All the patents are reprinted in full, complete with the original patent drawings.

Many details and old advertisements are reproduced to aid in identifying the manufacturing date of your bug. Also chapters on adjusting your bug and the 'collectible' keys. 215 x 280mm

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## HELP FOR NEW HAMS

Most of us have come across newly-licensed amateur radio operators whose first and only thought is to get on the air and make contacts. On the other hand, many of us have known amateurs who fail to renew their licenses. They may have been full of enthusiasm at first, but for one reason or another it soon wore off. The ARRL wrote to a sample of these people, asking them why. Many said they had never made a contact! They had questions about every aspect of amateur radio. They wanted someone to answer these questions and to help them choose, install and operate their first stations. Doug DeMaw, W1FB wrote this new book to help these new amateurs get started in amateur radio.

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Some strive for complete understanding of the theory of propagation and antennas. Others learn as much as they can and eventually reach a state where they believe they understand. This all-important state is often achieved by practical experimentation. In this book John Heys uses the immense wealth of his experience to guide the beginner along the lines of 'learning by doing'. Follow some or all of the designs, make changes and observe the effects, make notes of the changes and results, and quite rapidly a greater understanding will be achieved and, who knows, some as yet undiscovered design may be produced!

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## G-QRP ANTENNA HANDBOOK

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**QRP NOTEBOOK**

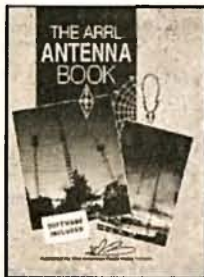
You can work the world with five watts or less! In this book Doug DeMaw, W1FB, presents construction projects for the QRP operator, from a simple one-watt crystal-controlled transmitter to more complex transceiver designs. Rather than simply presenting a collection of completed units, Doug guides you through the projects 'building-block' style. This way you gain an understanding of how the circuits operate and learn how the building blocks might be put together in other configurations. 11" x 8.5" 80 pages.

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# ANTENNA BOOKS

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**Antennas and Techniques for Low-Band DXing**

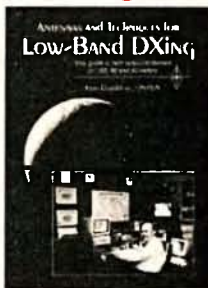
By John Devoldere, ON4UN

Crammed with antennas and techniques, LOW-BAND DXing can be your ticket to low-band success. Draws on the experiences of successful DXers and the author's own considerable experience. John Devoldere shares with you the tips and techniques that can make the difference between a station that takes part in a contest and the one which wins.

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By Doug DeMaw W1FB

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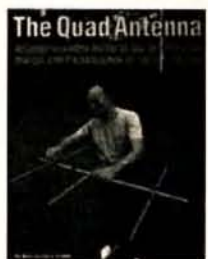
For the most part this book presents simple wire and tubing antennas that can provide satisfactory performance for a host of operating objectives. This text also dispels some of the common misconceptions about antennas which get passed over the air and at hamfests. Free advice is not always accurate, despite the good intentions of the giver who offers his assistance! 128 pages 200 x 280mm

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A comprehensive guide to the design and construction of high-performance quad antennas by Bob Haviland, W4MB. This large 220 x 280mm book is the only book we know of for the Quad antenna. It has chapters on • Delta Loops and arrays, • Mechanical design • Optimising a Quad design • Ground elements • Multi-band Quad feed systems • Multi-element Quads, plus many more. Haviland first began his Quad work 20 years ago when he moved to a location which wouldn't support a full-size Yagi, and decided a Quad would provide a smaller size alternative.

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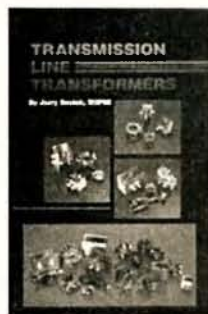


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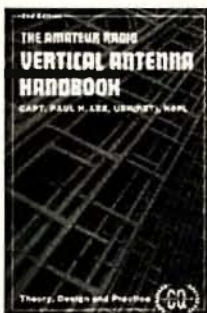
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This book contains 20 chapters on the design and building of vertical antennas. • Optimum antenna design for DX • Basic principles of vertical antennas • Base impedance and methods of feeding and matching • Short vertical antenna considerations • Directional vertical antenna design • Theoretical aspects of vertical stacking • Broad-band vertical antenna designs and configurations • Designing a specific directional vertical antenna including feed system • Using an equilateral triangle configuration for a simple directional array • The operation and design of the folded unipole antenna • The effects of earth on the efficiency of radiation and vertical pattern. Several practical designs are included.

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Following a brief history of antennas in the first chapter, the next three chapters deal with basic concepts and the theory of point sources. These are followed by chapters on Linear, Loop, Helical, Biconical & Cylindrical antennas. Then on antenna arrays, reflectors, slot, horn, complementary and lens antennas. The last four chapters discuss broad-band and frequency independent antennas, for special applications including electrically small and physically small antennas, remote sensing, radar scattering and measurements. The appendix has many useful tables and references. Hard bound, 892 pages.

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By Joseph J Carr. It covers all frequencies from 160 metres to UHF and microwaves. It starts off with chapters on propagation and transmission lines. The transmission line chapter contains many no-nonsense equations, and that's really all we need to understand and construct transmission lines. Smith charts are also covered. Without an understanding of these, stubs and matching sections become very difficult.

There is a chapter on antennas for town-house and apartment dwellers. Many practical construction techniques are described and there is a very good section on grounding. The computer programs for antenna design section is very informative and there is plenty of information for 'hackers'.

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## PRACTICAL WIRE ANTENNAS

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This handy reference: • Covers basic, do-it-yourself antennas for shortwave broadcast, FM broadcast, MW, LW, utilities, for present and prospective amateurs and scanner listeners • Features basic construction procedures for both receive and transmitting antennas • Includes information on dipole variation, vertical variations, beams, long wires and other special types and configurations • Details proper testing procedures • Discusses advanced antenna designs, including beams, phased elements and other types • Provides information on band frequencies, time considerations and sources of data. 162 pages 210 x 280mm

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73

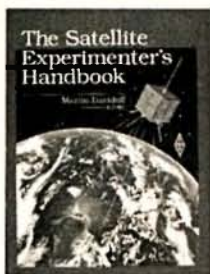
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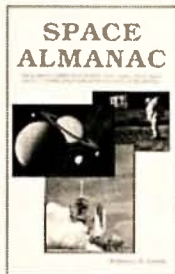
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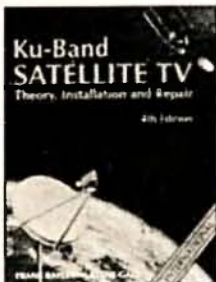
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By Frank Baylin and Brent Gale

A clear presentation and explanation of worldwide Ku-band satellite television. This fourth edition has been expanded with additional sections on small dishes, European DBS satellite TV, flat plate antennas, actuators, LNB and satellite receiver electronic design, worldwide scrambling technologies, link analyses, fixed antenna installations, interfacing receivers and decoders and aligning a polar mount without a compass.

The book explores the background of Ku-band reception equipment with a detailed survey of frequency allocations for broadcast satellites around the globe. Retrofitting Ku-band components onto C-band TVROs is discussed with a step-by-step examination of multiple-receiver systems and distribution networks. Existing North American, Soviet, European, Japanese and Australian Ku-band broadcast systems are outlined and, finally, a consistent and comprehensive method of troubleshooting and repairing TVROs, detailed description of different types of test equipment.

Order Code BR12 4th ed. **\$60.00**

## THE 'HOW-TO' OF SATELLITE COMMUNICATIONS

This new book by Dr Joseph Pelton, a seasoned veteran of the industry, is a brilliant excursion through the world of satellite communications. For any serious user of satellite services, it gives even a novice the knowledge to design, evaluate and purchase any type of data, audio or video services. 250 pages/photos. Topics include:

- How geosynchronous satellites work
- The design, construction or purchase of satellite capacity
- The fundamentals of earth station operation
- Global and ISDN standards
- One & two-way spread spectrum VSATs & interactive technology
- How and why to buy satellite networks and services
- Voice and data networks
- Video services and digital television
- The future of satellite communications

Order Code BR15 ©1991 **\$49.00**

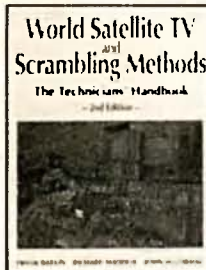


## WORLD SATELLITE TV AND SCRAMBLING METHODS

By Frank Baylin, Richard Maddox, John McCormack

This thorough text is a must-buy for technicians, satellite professionals and do-it-yourselfers. The design, operation and repair of satellite antennas, feeds, LNBs, receivers and demodulators is examined in detail. An in-depth study of scrambling methods and broadcast formats is a backdrop to a discussion of all American and European current satellite TV technologies including the VideoCipherII, Oak Orion, FilmNet, Sky Channel, EuroCypher, D2MAC, BSB and Teleclub PayviewII. Circuit and block diagrams of all components are presented and clearly explained throughout the book. This expert guidance on testing, servicing and tuning is complemented by a wealth of detailed illustrations. 356 pages, 220 x 280mm, over 200 photos, diagrams, wiring, schematics, tables and appendices.

Order Code BR11 ©1991 2nd ed. **\$76.00**



## SATELLITE OFF-AIR & SMATV

By Frank Baylin, Steve Berkoff and Tim Meints

A comprehensive study of satellite master antenna TV (SMATV) systems. This thorough manual clearly presents the concepts behind private cable systems as well as technical details of construction and operation. Private cable systems are installed in apartment complexes, hotels, motels, hospitals, caravan parks and auditoriums, as well as in many other multi-unit environments.

This book explores the background and history of this rapidly-evolving field. Off-air and satellite head ends, and all components from antennas to processing and mixing electronics are studied in detail. The chapter on distribution systems explores the components required to supply a high-quality signal to every television set. Numerous examples are provided as illustrations of each stage of design. Complex design issues such as inserting locally-originated signals, two-way services and satellite audio reception are also studied. The chapter on systems operations presents methods to manage one or more systems as well as a logical approach to troubleshooting.

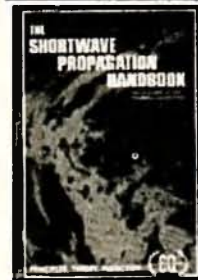
258 pages, 215 x 280mm.

Order Code BR13



**\$80.00**

# OPERATING ... DX ... SHORT WAVE LISTENING



## THE ARRL OPERATING MANUAL

Fourth edition, 1991. The ARRL Operating Manual is the most complete book about amateur radio on-the-air operating ever produced! If you really want to be 'in' on what is happening in amateur radio today, you need a copy of *The ARRL Operating Manual*. In the operating awards chapter 88 popular operating awards are described and illustrated in full colour. Other topics covered include: • Short wave listening • The amateur radio spectrum • Basic operating • Antenna orientation • DXing • Overseas DXing / DXpeditions • Emergency Communications • Image communications • Contests • Operating awards • RTTY communications • Packet radio • FM and repeaters • Satellites • VHF/UHF operating • Reference section. 8" x 11", 1.25 inches thick

Order code BR192 ©1991 ARRL 4th ed. **\$48.00**

## THE RSGB OPERATING MANUAL

This most extensive book from the RSGB contains much information of use to all amateurs. It contains chapters on: • Setting up a station • Operating practices and procedures • DX • Contests • Mobile, portable and repeaters • Amateur satellites • RTTY • Slow-scan TV • Special event stations. It also contains eight appendices including: • DXCC countries list • Worldwide legal time • Amateur frequency allocations • Foreign language phone contacts • Standard frequency stations • Callsign list • Continental and regional maps

Order Code BR359 ©1985 RSGB 3rd ed. **\$31.00**

## RADIO AURORAS

By Charlie Newton G2FKZ. Published by the RSGB, 1st Edition 1991, this book tells all you would ever want to know about amateur radio communication by means of Auroral propagation. It gives a readable account of what causes Auroras, how they are forecast and how to best use them to work DX. There are seven chapters and an index. Chapter titles include: • How an Aurora begins • The sun's part • Magnetic fields of the Earth and Sun • How an Aurora comes about • The problems of field-aligned propagation • Auroras on bands other than two metres • An analysis of amateur work during Cycle 21 and comparison with Cycle 19 • The big storm of 13/14 March, 1989. This book is a 'must read' for anyone interested in an in-depth study of radio wave propagation.

Order code BR381 ©1991 RSGB 1st ed. **\$30.00**

## THE SHORTWAVE PROPAGATION HANDBOOK

2nd Edition — Revised 1990. By George Jacobs and Theodore J Cohen. These two leading authorities on propagation have teamed up to produce what is clearly the definitive work on this fascinating subject. For the first time anywhere, propagation is explained in simple language so the average reader can fully understand, use, and produce their own propagation data. This book truly is a 'must read' for the radio amateur and shortwave listener, and all others who make use of the shortwave radio spectrum.

The information contained in this book should significantly enhance one's ability to understand and to make better use of the ionosphere. We feel that this book is one of the most useful — and usable — volumes available today on the subject of propagation. 150 x 200mm, 150 Pages

Order code BR268 2nd ed. ©1990 CQ Publications **\$22.00**

## THE DXCC COMPANION

By Jim Kearman, KR1S.

The newcomers guide to DXing or how to work your first hundred countries. A very readable little volume full of useful hints about how to work the DX and not make enemies! Discusses QSLing, equipment, antennas, propagation and lots more in a very easy to understand way.

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## PASSPORT TO WORLD BAND RADIO New 1994

World band radio explodes with hundreds of programs you can't begin to find on ordinary radios or TV. From the haunting island music of Radio Tahiti to the incomparable reporting of the BBC, it's a broadcast menu that's one part Newsweek, another National Geographic.

There is a whole world just waiting for you, day after day. Order your new 1995 edition of *Passport to World Band Radio* today. You won't believe what you've been missing. Includes a radio buyers guide and an extensive listing of broadcasts country-by-country.

1993 edition pictured above — 1995 edition is due in stock November 1994

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# OPERATING & DX

## MAIDENHEAD LOCATOR WORLD ATLAS

The ARRL World Grid Locator Atlas (Maidenhead Locator) contains 19 maps listing all 32,000 Maidenhead locator squares. Also there is a very complete index of all world major cities to make it easy to find the correct page, a quick-to-look-up world map divided into 324 fields, and a BASIC computer program listing for finding direction and distance. Every DXer or contesting amateur should have one in the shack... 216 x 279mm.

Order code BR197 ARRL **\$13.00**

## ARRL DXCC COUNTRIES OF THE WORLD

This is the ideal way to record the DXCC countries you've worked and QSLed. • ARRL DXCC Countries List and rules for DXCC certificate. • Contains DXCC award application form • An up-to-date listing of the DXCC countries • A table of all deleted countries • A table of the allocation of international callsign series • Rules for obtaining the DXCC award • Complete tables of all countries with provision to record countries, mode and frequency.

Order Code BR386 ©1983 ARRL **\$5.00**

## AMATEUR RADIO AWARDS (RSGB)

This third edition gives details of major radio amateur awards throughout the world. Each award is listed in an easy-to-understand format giving all the information on how to achieve the award. An innovation for this edition is the provision of checklists so that the amateur can keep a record of his or her progress.

Order Code BR297 ©1988 RSGB 3rd ed. **\$30.00**

## WORLD PREFIX MAP (RSGB)

A superb wall map (Mercator projection) in full colour and laminated, giving amateur radio callsign prefixes worldwide. 1200 x 830mm, it also shows world time zones, IARU squares and much more.

Order Code BR397 RSGB Plastic Laminated **\$25.00**

## CALL BOOKS for 1995

### AUSTRALIAN RADIO AMATEUR CALL

BOOK 1995 Edition

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### International Call Book 1995

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## ATV ... SSTV

### SSTV EXPLAINED

This new book published in 1992 by the BATC by Mike Wooding G6IQM contains 150 pages providing newcomers to SSTV with the basic knowledge that they will need to build and operate a station. Whether you decide to build a home-brew slow-scan station from designs contained herein, use a commercial converter, or operate a computerised system, this book will have something for you.

Order Code BR39 **\$30.00**

### THE ATV COMPENDIUM

Edited by Mike Wooding, G6IQM, for The British Amateur Television Club.

This book will serve to inform those interested in amateur television, practically those of you involved in home construction. Includes projects that use of 'state-of-the-art' techniques and devices, without precluding those who do not own sophisticated test equipment or have degrees in mechanical engineering.

Order code BR270 BATC **\$17.50**

### AN INTRODUCTION TO AMATEUR TV

A new book from the British Amateur Television Club, edited by Mike Wooding, G6IQM and Trevor Brown, G8CJS. Eight chapters in 154 pages, full of information and circuits on theory and construction.

Order Code BR389 ©1992 BATC **\$20.00**

### THE BEST OF CQ-TV VOLUME 2

Edited by Mike Wooding, G6IQM, and published by the British Amateur Television Club in 1989, this 100-page book is full of ATV projects, 29 in all.

Order Code BR273 ©1989 BATC **\$17.50**

## TRANSMITTER HUNTING

### TRANSMITTER HUNTING

#### Radio Direction Finding Simplified

In this book by Joseph D Moell, K0QV & Thomas N Curlee, WB6UZZ, you'll find out how direction finding can be both fun and practical. Combine the techniques taught in this book with those used by search and rescue teams and you learn how RDFing can even save lives. Explore the challenge of hidden transmitter hunts and locating causes of accidental and malicious interference to amateur communications. Find out how to get started, about directional antennas, Doppler RDF units, S-meters, direction finding from fixed sites, VHF mobile techniques, T-hunting from orbit, hunting below 50MHz, how to be the 'Fox' and triangulation using two BASIC programmes. 323 pages 7" x 9"

Order code BR222 ©1987 4th ed. **\$43.00**



## THE COMPLETE DXER

Since its first publication to rave reviews in 1983, W9KNI's masterpiece, *The Complete DXer*, has become the standard text for the new DX hunter. Now considerably revised and updated, this second edition (1988) fully retains the approach and feel of the original classic while adding two important new chapters of special interest to SSB operators. Every significant aspect of DXing is covered, from learning how to really listen, how to snatch the rare ones out of pile-ups and how to secure that elusive QSL, plus advice on siting, equipment selection and antennas. Chapter after chapter of 'reports from the front' detail life in the pile-ups, the excitement of landing the new one, the agony of defeat; and all in a manner guaranteed to entertain and educate.

Order code BR194 2nd ed. **\$32.00**

## AUSTRALIAN SCANNER REGISTERS

These registers list, by frequency, many utilities and companies of interest to those with scanners or general-coverage VHF/UHF communications receivers. Each has details of police and other emergency service systems.

Order Code BR355 Victoria **\$40.00**

Order Code BR355N New South Wales **\$40.00**

Order Code BR355S South Australia and Northern Territory **\$40.00**

## FERRELL'S CONFIDENTIAL FREQUENCY LIST

Listing all stations by frequency from 1602 kHz to 29,713.5 kHz, the frequencies cover air flights, ships at sea, Interpol, embassies, military and coastal stations — in fact, any radio transmission in the utility field, whether by voice, CW or radioteletype and, in addition, this year the CFL also contains new and valuable information about the speed and shift of RTTY stations, as well as the many possible modes that may be utilised from ASCII through ARC-E3 to FAX. All details have been triple-checked for accuracy up to the moment that the manuscript was submitted to the printer.

Order Code BR387 **\$40.00**

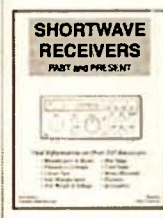


## HISTORY...

### SHORT WAVE RECEIVERS PAST AND PRESENT

Written by Fred Osterman, this book contains vital information on over 200 shortwave receivers made over the last 25 years. Includes manufacturer and model, circuit type, year manufactured, size, weight and voltage features, value when new, value used, modes received and accessories. Most receivers are shown with photos. This book, a great guide to the used receiver market, provides the radio hobbyist with concise information on the value, features, and performance of current and former short wave radios. Prices shown are for the US market but are a good guide for use in Australia. 216mm x 129 104 pages.

Order code BR253 ©1991 1st ed. **\$22.00**

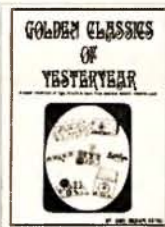


### THE GOLDEN CLASSICS OF YESTERYEAR

Remember the 6L6 rigs, the Heathkit DX100 or Collins' fabulous KWM-1? How about the Globe Scout, Hallicrafters, RME, Hammarlund, National HROs, Eimac tubes, EF Johnson, WWII rigs, Bugs by Vibroplex, McElroy or Dow Key...?

All these famous names plus many more you'll recognise are in *Golden Classics of Yesteryear*. It's all amateur radio in content and it's jam-packed with real-life tales, transmitters, receivers, favourite circuits, telegraph keys, bugs and other amateur topics. There's also EASY-TO-BUILD weekend projects, transmitters, receivers and many other projects from the 1920s, 30s, 40s and 50s. 279mm x 216 60 memorable pages.

Order code MFJ30 ©1988 MFJ **\$21.50**



### THE BRIGHT SPARKS OF RADIO

This new book by G R Jessop, G6JP, was published by the RSGB in 1990. It covers the heritage years of radio from Marconi to the 'secret listeners' of 1939-45. High quality, hard bound with many photographs and diagrams.

Order Code BR394 ©1990 RSGB **\$44.00**

### FIFTY YEARS OF ARRL

In May 1914 a small band of radio amateurs led by the late Hiram Percy Maxim, W1AW and Clarence Tuska started a national organisation and named it the American Radio Relay League. Since that time, the story of amateur radio has been closely identified with the history of the league, the chronicle of amateurs working together. In 1946, the Golden Anniversary of the league, its magazine QST covered this tale in serial form. This material is now gathered here as a historical reference, supplementing but not replacing the only other comprehensive history, *Two Hundred Metres and Down* by Clinton B DeSoto. 150 Pages 6" x 9"

Order code BR196 **\$8.00**

### 200 METERS AND DOWN

THE STORY OF AMATEUR RADIO by Clinton B DeSoto was first published in 1936 by the ARRL. At that time Mr DeSoto, then a radio amateur and a student of journalism, started to do what no one had ever done for amateur radio — to write its full history for the benefit of generations to come. This volume has been reprinted exactly as it was in 1936 and is an invaluable source of amateur history. 6" x 9" 184 pages

Order code BR198 ©1991 ARRL **\$20.00**



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6AM8A		\$15.32	6GJ5		\$20.44	5894	PENTA	\$117.40
6AN4		\$15.32	6GK6		\$31.28	6146B	GE	\$77.00
6AN8A		\$30.65	6GM5		\$35.85	6146B	National/Penta	\$47.85
6AQ5		\$9.69	6GT5		\$49.35	6550A	GE	\$87.00
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6AT6		\$10.22	6HF5	Select Pair	\$ POA	8417	ECG/GE	\$49.65
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6AX4GTB		\$15.32	6JS6C	Selected Pr	\$ POA	8981	GE	\$65.37
6AX5GT		\$23.55	6L6GB / GC		\$22.14	3-500Z	RFP Premium	\$237.00
6AX5GTB		\$13.62	6L6GT		\$19.65		Matched Pair	\$499.00
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6BL8 / ECF80		\$11.92	6S2A		\$18.73	4-65A	EIMAC	\$229.25
6BM8		\$20.96	6S4A		\$18.73	4-400C	EIMAC	\$419.70
6BN5		\$42.58	6SK7GT		\$37.47	3CX100A5 / 7289	EIMAC / GE / RCA	\$175.78
6BN8		\$31.31	6SL7GT		\$20.85	3CX400A7 / 8874	EIMAC	\$941.89
6BQ5		\$14.14	6SN7GTB		\$17.85	3CX800A7	EIMAC	\$890.67
6BQ6		\$15.32	6U8A / 6KD8		\$20.85	3CX1200A7	EIMAC	\$1395.02
6BQ7A		\$20.44	6U9		\$9.60	3CX1500A / 8877	PENTA	\$1518.29
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6BZ6		\$15.32	6X4		\$19.07	3CX3000A7	EIMAC	\$1886.27
6C4		\$21.81	6X5GT		\$17.13	4CX250B / 7203	EIMAC	\$269.00
6CA7 / EL34		\$19.65	6X8A		\$20.43	4CX250B / 7203	RFP Czech	\$229.00
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6CD7 / EM34		\$89.85	12AQ5		\$15.32	4CX1000A7	PENTA	\$1021.67
6CG8A		\$9.64	12AT7A		\$15.32	4CX1500B / 8660	PENTA	\$1296.90
6CL6		\$30.79	12AU6		\$15.32	KT88	PENTA	\$36.00
6CM5		\$13.62	12AU7A		\$15.32	<b>TRANSMITTING TUBES</b>		
6CM7		\$13.62	12AX7A		\$15.32	Eimac and Penta Transmitting, Thyatron, and		
6CQ8 / 6U8A		\$15.32	12BA6		\$15.32	Magnatron Tubes carry manufacturers limited war-		
6CS6		\$15.32	12BY7A		\$41.85	ranty against defective material and workmanship for		
6CS7		\$15.32	12BZ6		\$35.85	12 months. Defective tubes must be returned prepaid		
6CW4		\$46.37	12BZ7		\$15.32	accompanied by original purchase receipt and failure		
6CW5 / EL86		\$18.73	12DQ6B / 12GW6		\$24.00	report details. Surplus tubes have a 90 day limited		
6CW7		\$30.65	12JB6		\$59.85	warranty.		
6CX8		\$30.65	572B / T160L	RFP Premium	\$120	<b>TUBE BRANDS</b>		
6DJ8		\$12.20		Matched pair	\$252.00	The brands shown in this list are those that were		
6DQ6 / 6GW6		\$29.87		Matched quad	\$505.00	available at the time of printing. Whilst every effort will		
6DR7		\$36.68	807	Ceramic Base	\$11.00	be made to supply the brands listed, if you have a		
6DS4		\$46.37	810	Cetron	\$235.26	requirement that only ONE brand is acceptable then		

Eimac and Penta Transmitting, Thyatron, and Magnatron Tubes carry manufacturers limited warranty against defective material and workmanship for 12 months. Defective tubes must be returned prepaid accompanied by original purchase receipt and failure report details. Surplus tubes have a 90 day limited warranty.

The brands shown in this list are those that were available at the time of printing. Whilst every effort will be made to supply the brands listed, if you have a requirement that only ONE brand is acceptable then please note this condition on your order, otherwise we will assume that substitutes are acceptable.

# R.F. Power transistors & hybrids

## VHF/UHF 27-1000MHz

## HF (2-30MHz)

## RF Power modules

Type	Po W	Freq Range	Gain dB	Package Type	per Each	Matched Pair
MRF207	1	G	8.2	T0-39	\$8.77	
MRF208	10	G	10	145A-09	\$42.77	
MRF212	10	F	9	145A-09	\$50.54	
MRF220	4	F	12	211-07	\$36.29	
MRF221	15	F	6.3	211-07	\$36.29	
MRF222	25	F	-	211-07	\$48.73	
MRF224	40	F	4.5	211-07	\$46.00	\$102.38
MRF226	13	G	9	145A-09	\$64.68	
MRF227	3	G	13.5	T0-39CE	\$19.31	
MRF229	1.5	E	10	T0-39CE	\$41.47	
MRF231	3.5	E	10	145A-09	\$69.85	
MRF233	15	E	10	145A-09	\$41.20	
MRF234	25	E	9.5	145A-09	\$84.70	
MRF237	4	F	12	T0-39CE	\$15.97	
MRF238	30	F	9	145A-09	\$41.47	\$95.90
MRF239	30	F	10	145A-09	\$44.06	\$101.08
MRF240	40	F	9	145A-09	\$47.95	\$108.86
MRF240A	40	F	9	211-07	\$47.95	\$108.86
MRF245	80	F	6.4	316-01	\$77.44	\$191.79
MRF247	75	F	7	316-01	\$77.64	\$171.06
MRF248	80	F	11.3	316-01	\$111.97	\$253.22
MRF250	50	F	4.4	316-01	\$61.57	
MRF260	5	F	10	T0-220CE	\$29.81	
MRF261	10	F	5.2	T0-220CE	\$37.58	
MRF262	15	F	6.3	T0-220CE	\$37.58	
MRF264	30	F	5.2	T0-220CE	\$40.03	
MRF309*	50	H	7	316-01	\$121.18	
MRF314*	30	D	10	211-07	\$75.16	\$180.13
MRF314A*	30	D	10	145A-09	\$93.31	\$206.05
MRF315*	45	D	9	211-07	\$119.22	\$255.96
MRF315A*	45	D	9	145A-09	\$84.23	\$182.72
MRF316*	80	D	10	316-01	\$181.31	\$388.51
MRF317*	100	D	9	316-01	\$167.69	\$368.04
MRF321*	10	I	12	244-04	\$69.33	
MRF327*	80	H	7.3	316-01	\$160.69	\$336.94
MRF340*	8	D	13	T0-220CE	\$38.50	
MRF492	70	C	11	211-11	\$38.76	\$88.12
MRF497	40	C	10	T0-220CE	\$43.95	\$92.01
MRF515	.75	J	8	T0-39	\$7.52	
MRF555	1.5	J	10	317D-01	\$12.21	
MRF557	1.5	K	8.0	317D-02/2	\$14.26	
MRF559	0.5	K	8	317-01	\$7.07	
MRF607	1.75	F	11.5	T0-39	\$7.07	
MRF627	.5	J	10	305A-01	\$24.62	
MRF629	2	J	8	T0-39CE	\$19.31	
MRF630	3	J	9.5	T0-39CE	\$19.31	
MRF641	15	J	7.8	316-01	\$56.90	\$124.41
MRF644	25	J	6.2	316-01	\$64.80	
MRF646	40	J	4.8	316-01	\$71.92	
MRF650	-	I	-	316-01	\$84.70	
MRF648	60	J	4.4	316-01	\$87.34	\$186.61
MRF652	5	J	10	244-04	\$41.59	
MRF653	10	J	7	244-04	\$51.72	
MRF654	15	J	7.8	244-04	\$59.61	
MRF680	7	J	5.4	T0-220AD	\$36.29	
MRF752	25	J	8	249-05	\$62.20	
MRF754	8	J	6	249-05	\$126.71	
MRF843	15	K	7	244-04	\$90.71	
MRF843F	15	K	7	319-04	\$147.73	
MRF846	40	K	7	319-04	\$116.63	
MRF873	15	K	7	319-04	\$142.43	
MRF1946	30	F	10	211-07	\$44.06	
MRF1946A	30	F	10	145A-09	\$44.06	
MRF2628	15	G	12	244-04	\$33.67	
SD1278-1	40	F	8	211-07	\$41.60	
SD1441	150	F	5	316-01	\$232.70	
SD1477	100	F	6	316-01	\$194.87	
2N3553*	2.5	F	10	T0-39	\$8.45	
2N3866*	1	H	10	T0-39	\$3.24	
2N4427	1	F	10	T0-39	\$5.03	
2N5090	2	F	13	145A-09	\$77.50	
2N5589	3	F	8.2	144B-05	\$31.46	
2N5590	10	F	5.2	145A-09	\$24.20	
2N5591	25	F	4.4	145A-09	\$43.77	\$88.12
2N5641*	7	F	-	1440-05	\$41.47	
2N5642*	20	D	8.2	145A-09	\$42.77	
2N5646	10	J	6.0	244-04	\$59.61	
2N5944	2.0	J	9.0	317D 02/2	\$36.29	
2N5945	4	J	8	244-04	\$36.20	
2N5946	10	J	6	244-04	\$51.50	
2N6080	4	F	12	145A-09	\$37.21	
2N6081	15	F	6.3	145A-09	\$36.05	
2N6082	25	F	6.2	145A-09	\$37.21	
2N6083	30	F	5.7	145A-09	\$37.21	\$84.23
2N6084	40	F	4.5	145A-09	\$36.29	\$84.23
2N6097 PNP	40	F	-	145A-09	\$77.58	
2N6255	3	F	7.8	T0-39	\$12.53	

Type	Po W	Package Style	Each	Matched Pair	Matched Quad
MRF401	25	145A-09	\$38.88		
MRF406	20	211-07	\$42.51	\$98.49	\$207.35
MRF412	80	211-11	\$57.02	\$150.33	\$309.72
MRF412A	80	145A-10	\$69.98		
MRF421	100	211-11	\$64.68	\$139.96	\$284.84
MRF422*	150	211-11	\$98.49	\$220.30	\$461.34
MRF426	25	211-07	\$50.54	\$114.04	
MRF426A	25	145A-09	\$64.80	\$147.73	\$305.83
MRF427**	25	145A-10	\$51.58	\$119.22	\$243.63
MRF428*	150	211-11	\$145.78	\$280.00	\$575.96
MRF429**	150	211-11	\$116.52	\$258.78	\$543.50
MRF433	12	211-07	\$34.99	\$66.61	\$171.06
MRF435*	150	211-11	\$346.06	\$726.00	
MRF448**	250	211-11	\$187.91	\$401.73	\$821.61
MRF449	30	211-07	\$58.32	\$127.00	\$264.37
MRF449A	30	145A-09	\$58.32	\$127.00	\$264.37
MRF450	50	211-09	\$33.47	\$80.35	\$165.88
MRF450A	50	145A-09	\$36.95	\$84.23	\$173.65
MRF453	60	211-11	\$44.06	\$102.38	\$215.12
MRF453A	60	145A-10	\$47.95	\$119.22	\$222.90
MRF454	80	211-11	\$36.17	\$86.83	\$154.59
MRF454A	80	145A-10	\$51.72	\$129.48	\$258.92
MRF455	60	211-07	\$28.39	\$61.71	\$129.48
MRF455A	60	145A-09	\$30.99	\$68.97	\$152.92
MRF458	80	211-11	\$46.54	\$123.87	\$258.81
MRF460	60	211-11	\$60.91		
MRF464*	80	211-11	\$64.80	\$150.33	
MRF466*	40	211-09	\$82.30	\$181.06	
MRF475	12	T0-220	\$20.60	\$64.16	
MRF476	3	T0-220	\$20.62	\$51.72	
MRF477	40	T0-220CE	\$45.14	\$76.46	
MRF479	15	T0-220CE	\$48.73	\$106.26	
MRF485*	15	T0-220	\$36.17		
MRF492	90	211-11	\$38.76	\$88.12	\$196.98
MRF492A	90	145A 10	\$59.61	\$136.07	\$285.10
SD1405	75	211-11	\$58.50	\$124.88	
SD1407*	100	211-11	\$105.00	\$242.00	
2SC2290	80	211-11	\$38.73	\$93.19	
2SC2879	120	211-11	\$43.95	\$101.71	\$222.64
2SC2509	15	T0-220CE	\$38.73	\$95.90	
2SC2097	85	316-01	\$83.37	\$160.43	

### SPECIAL HIGH OUTPUT 2-30MHz 12V types

SRF2072	65	211-07	\$33.28	\$73.81	\$200.86
SRF3662	120	211-11	\$64.13	\$140.36	\$312.18
SRF3775	75	211-07	\$35.70	\$78.65	\$162.14
SRF3795	90	211-11	\$38.72	\$89.54	\$174.24
SRF3800	110	211-11	\$42.35	\$94.38	\$198.44

All TRANSISTORS NPN, 12V unless noted  
(\*=28V,\*\*=50V)

### RF Power MOSFETs

Type	P in watts	P out watts	Gain dB	Vdd Volts	Package Type	Price inc. tax
1.5-150 MHz SSB FETs, data shown at 30 MHz						
MRF138	0.6	30	17	28	211-07	\$94.38
MRF140	4.7	150	15	28	211-11	\$173.03
MRF148	0.5	30	18	50	211-07	\$92.57
MRF150	2.9	150	17	50	211-11	\$153.67
MRF156	6	600	20	50	368-01	\$987.66
2-200 MHz VHF AM/FM FETs, data shown at 150 MHz						
MRF134	0.4	5	11	28	211-07	\$46.65
MRF136	0.75	15	13	28	211-07	\$57.02
MRF166	0.5	20	16	28	211-07	\$65.25
MRF136Y	1.9	30	12	28	3198-01	\$139.15
MRF137	1.9	30	12	28	211-07	\$70.20
MRF171	2.8	45	12	28	211-07	\$105.30
MRF172	8	80	10	28	211-11	\$120.40
MRF173	4	40	13	28	211-11	\$89.78
MRF173CQ	4	80	13	28	316-01	\$87.53
MRF174	15.8	125	8.3	28	211-11	\$215.38
MRF141	10	150	10	28	211-11	\$190.13
MRF141G	13	300	14	28	375-01	\$415.00
MRF175GV	8	200	14	28	375	\$337.28
MRF151G	5	300	17	50	375-01	\$422.29
2-400 MHz UHF AM/FM FETs, data shown at 400MHz						
MRF161	1.4	5	11	28	244-04	\$72.00
MRF162	1.2	15	11	28	244-04	\$72.00
MRF163	2.5	25	10	28	244-04	\$89.70

Part Number	Freq Range	P in mW	P out W	BIAS Class	Price inc tax
BGY45B	148-174	150	28	C	\$87.50
CA2832	1-200	1	1.6	A	\$142.88
CA2885	40-500	40	2	A	\$162.00
M57704EL	335-360	200	13	C	\$112.28
M57704L	400-420	200	13	C	\$112.28
M57704M	430-450	200	13	C	\$103.28
M57704H	450-470	200	13	C	\$112.28
M57704SH	490-512	200	13	C	\$112.28
M57704UH	470-490	200	13	C	\$112.28
M57706	145-175	200	8	C	\$93.83
M57710A	156-160	200	28	C	\$83.03
M57713	144-148	200	10	AB	\$87.12
M57714	450-470	100	7	C	\$114.53
M57714EL	335-360	100	7	C	\$125.78
M57714M	430-450	100	7	C	\$114.53
M57714UH	470-490	100	7	C	\$125.78
M57715	144-148	200	10	C	\$102.25
M57716	420-450	200	10	AB	\$163.35
M57719N	142-163	200	10	C	\$104.00
M57721M	400-450	10	7	C	\$120.83
M57726	144-146	200	40	C	\$159.75
M57727	144-148	200	25	AB	\$127.05
M57729	430-470	600	25	C	\$169.40
M57732	144-175	20	7	AB	\$69.63
M57732L	135-160	20	7	AB	\$69.63
M57735	50-54	200	17	AB	\$148.39
M57737	144-148	200	25	C	\$117.40
M57739C	825-851	30	6	C	\$111.94
M57741L	148-160	200	25	C	\$137.95
M57741H	156-168	250	25	C	\$137.95
M57741M	164-275	300	25	C	\$145.20
M57744	905-915	400	13	C	\$143.89
M57745	430-450	300	25	AB	\$186.19
M57747	144-				

# for the home brewer...

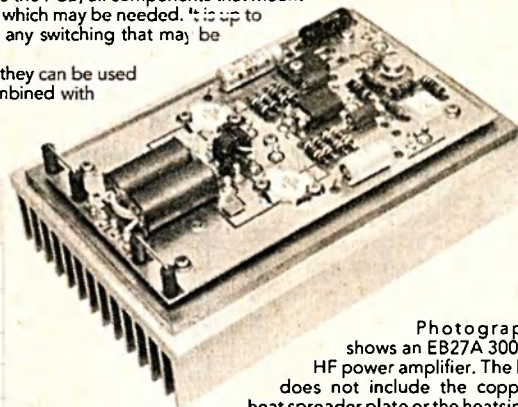
## Motorola app note POWER AMPLIFIERS - short form kits

These RF power amplifier kits offer a wide range of amplifiers in short form kits. All of these kits include the PCB, all components that mount on the PCB, the active devices and any necessary unusual wire such as high temperature enamel or Teflon which may be needed. It is up to the builder to provide heat spreading, heat sinking, forced air cooling, connectors, output filtering and any switching that may be necessary.

All of these amplifiers are linear units with any necessary bias stabilisation provided on the PCB, thus they can be used in any desired mode including CW, SSB or FM. When used well below their maximum ratings and combined with appropriate filtering they are eminently suited to testing applications.

Applications for these kits include amateur, commercial or instrumentation HF amplifiers, FM broadcast amplifiers and drivers and amateur or commercial VHF amplifier systems.

Application Note	Frequency Range	Power In	Power out	DC Supply	Devices used	Price inc tax
AN779L	1.6-30	+8 dbm	20W	12.5V@5A	2 x MRF475 2 x MRF476	\$201.00
AN779H	1.6-30	-10 dbm	20W	12.5V@5A	MHW591 2xMRF433	\$224.00
EB63	2-30	1-5 W	140W	13.6V@22A	2xMRF454	\$213.00
AN762	1.6-30	1-5W	140W	13.6V<30A	2xMRF454	\$224.00
EB27A	2-30	18-20W	300W	28V@20A	2xMRF422	\$334.00
AN758	2-30	15-18W	300W	50V@14A	2xMRF429	\$391.00
EB104	2-30	6W	600W	40-50V @18-20A	2xMRF150	\$1,064.00
AR313	10-150	15W	300W	12-28V @22A typ	MRF141G	\$920.00
AR305	10-175	15W	300W	40-50V @12-15A	MRF151G	\$920.00



Photograph shows an EB27A 300W HF power amplifier. The kit does not include the copper heat spreader plate or the heatsink.

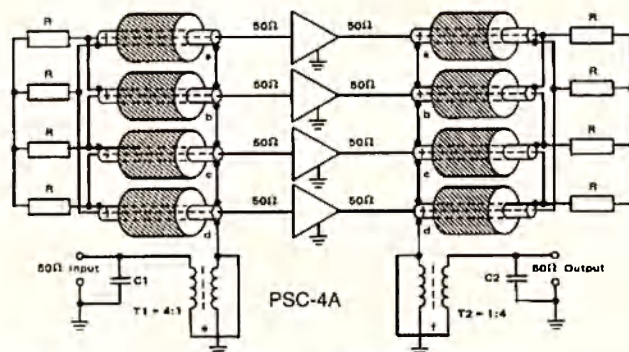
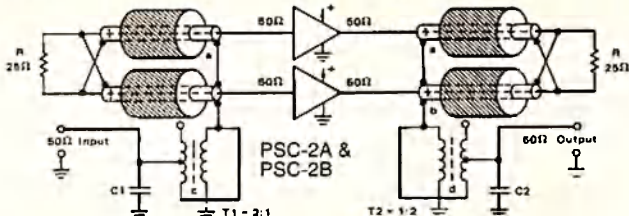
All other components, including pre-wound and assembled transformers are included in all of the kits. Individual components and selections of parts are available for all models, please enquire for details. All of these kits are strictly in accordance with the original Motorola application notes with additional details and assembly notes included where necessary. Only top quality components and materials are used in assembling these kits!

### High Power splitter / combiners

In the mid-1970's Motorola released an application note, AN-749, by Helge Granberg with details of the design of hybrid power splitters and combiners for HF use. These three types are produced to Granbergs original designs and have been successfully used in many applications over the years.

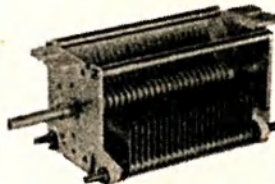
Careful construction using uncommon materials is necessary to ensure the best possible performance from combiners such as these, for this reason all types are supplied complete assembled and tested. Whilst provision is made for power ballasting resistors they are not fitted. See Motorola RF Devices data book, Vol 2, pp 7-98 — 7-106 for more details.

Type Number	Application Notes	Power Rating	Price inc tax
PSC-2A	Motorola AN749 AN758	600W PEP	\$168.00
PSC-2B		1000W PEP	\$192.00
PSC-4A		1200W PEP	\$216.00



### Transmitting Capacitors

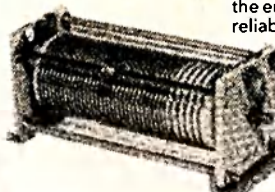
High quality capacitors for linear amplifiers are hard to find, but now you can use these top quality MFJ capacitors in your own projects at realistic prices!



Stock Number	Value pf	Depth	Power Rating	Used In	Price inc tax
CH48	300 pf	45 mm	300 W	MFJ-901	\$24.30
CH49	245 pf	267 mm	3 kW	MFJ-989	\$79.20
CH50	250 pf	280 mm	3kw	MFJ-986	\$96.00
CH51	250 pf	165 mm	1.5 kW	MFJ-962	\$58.80

### High Power roller inductors

These high performance roller inductors are the same as those used in the MFJ antenna tuners across the entire HF spectrum. They are extremely robust and reliable units for any home-brew application.



Stock Number	Power Rating	Used with	Used in	Price inc tax
CG297	3 kW	CH49	MFJ-989C	\$128.40
CG298	3 kW	CH50	MFJ-986	\$146.70

### Broadband ferrite transformers



Stock Number	Core Length	Price inc tax
TC43	6mm	\$7.20
TC44	13mm	\$7.80
TC45	19mm	\$9.00
TC46	25mm	\$9.00
TC47	32mm	\$10.20

### High Power splitter / combiners



Stock Number	Type	Core (mm)	Power PEP	Price inc tax
TC48	Input	6x13	70W	\$7.20
TC49	In/Output	13x13	300W	\$9.00
TC50	Output	6x29	1500W	\$10.80
TC51	Output	13x29	2500W	\$11.88



# Coax connectors and cable...

## BNC clamp style cable male



**PC34** \$3.60  
Standard clamp connector for RG58 style 50Ω cable

**PC35** \$3.60  
Standard clamp connector for RG59 style 75Ω cable

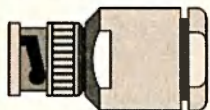
**PC36** \$6.78  
Square cut (easy assembly) cable plug for RG58 50Ω

**PC37** \$6.78  
Square cut (easy assembly) cable plug for RG569 75Ω

**PC38** \$26.11  
Standard clamp plug for RG178 submin 50Ω cable

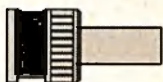
**PC158** \$8.28  
Standard clamp plug for RG174 submin 50Ω cable

## BNC clamp type for large cables



**PC171** \$6.35  
Clamp cable male for RG213 and similar 50Ω cable

## BNC Crimp type cable male



**PC39** \$5.94  
Crimp plug for RG174/179 submin 50Ω cable

**PC40** \$3.18  
Crimp plug for RG58 style 50Ω cable

**PC42** \$2.76  
Crimp plug for RG59 & RG62 cable with captive contact

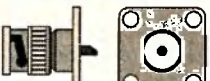
**PC156** \$3.90  
Crimp plug for RG174 submin 50Ω cable

## BNC bulkhead mount male



**PC129** \$9.36  
Single hole mount male

## BNC flange mount male



**PC136** \$6.60  
Small flange male

## BNC clamp type cable female



**PC28** \$4.45  
Standard clamp cable female for RG58 style 50Ω cable

**PC29** \$5.98  
Standard clamp cable female for RG59 75Ω style cable

## BNC crimp type cable female



**PC999** \$  
Free cable female for RG58 style 50Ω cable

## BNC bulkhead clamp female



**PC30** \$5.78  
Clamp type bulkhead female for RG58 style 50Ω cable

**PC31** \$5.35  
Clamp type bulkhead female for RG59 style 75Ω cable

## BNC bulkhead crimp female



**PC33** \$5.62  
Crimp type bulkhead female for RG59 & RG62 type cables

**PC170** \$5.66  
Crimp type bulkhead female for RG58 style 50Ω cables

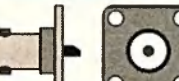
## BNC bulkhead mount female



**PC24** \$2.28  
Bulkhead mount female for thin panels

**PC25** \$5.46  
Bulkhead mount female for thick panels

## BNC flange mount female



**PC32** \$3.80  
Standard flange mount female

## BNC in-series adaptors



**PC44** \$3.02  
Female-female adaptor



**PC106** \$5.62  
Female-female bulkhead mount adaptor

**PC107** \$6.54  
Female-female bulkhead mount adaptor, insulated



**PC43** \$9.07  
Male-male adaptor



**PC45** \$8.76  
BNC F-M-F tee adaptor

## TNC cable male connectors



**PC151** \$2.81  
Standard clamp male for RG58 style 50Ω cable



**PC161** \$3.66  
Crimp type cable male for RG58 style 50Ω cable

## TNC female connectors



**PC175** \$3.32  
Bulkhead female



**PC176** \$5.65  
Flange female

## Type N clamp type cable male



**PC54** \$6.50  
Clamp type cable male for RG58 style 50Ω cable



**PC53** \$8.50  
Clamp type cable male for RG213 style 50Ω cable



**PC166** \$15.00  
Clamp type cable male for 10D-FB and 9913 50Ω cable

## Type N crimp type cable male



**PC137** \$5.16  
Crimp type cable male for RG58 style 50Ω cable

**PC152** \$14.22  
Crimp type cable male for RG213 style 50Ω cable

## Type N flange mount male



**PC138** \$20.83  
Standard flange mount male

## Type N cable female



**PC169** \$10.20  
Clamp type cable female for RG213 style 50Ω cable

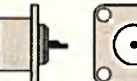
## Type N bulkhead female



**PC56** \$6.48  
Standard single hole female

**PC52** \$26.92  
Single hole mount for .44in hole, same size as BNC connector

## Type N flange female



**PC57** \$6.54  
Standard flange mount female

## UHF connectors



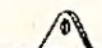
**PC17A** \$3.12  
Teflon insulated cable plug for RG-213 size cable



**PC18** \$0.42  
reducer sleeve for RG58.



**PC19** \$0.42  
reducer sleeve for RG59.



**PC15** \$7.04  
Single hole mounting socket



**PC16** \$3.54  
Four hole flange mounting socket.



**PC22** \$4.26  
Female - female adaptor or joiner.



**PC20** \$10.37  
Female - male - female TEE adaptor.



**PC23** \$2.27  
Male - male adaptor or joiner.

## CO-AXIAL CABLE

A comprehensive range of co-axial cable for all your RF needs, three types of subminiature for internal and instrumentation use, standard sizes in three impedances for communications, television and computer use, semi-rigid types for microwave use and low loss cable for long runs at VHF and UHF in communications installations. Note that the low loss types, 9913 style and 10DFB cables both use special connectors, enquire for details. Connectors for semi-rigid cable are stocked in SMA and type N.

Stock Number	RG type	Zo Ω	Loss db/100m @400MHz	Price per mtr
<b>Subminiature PVC insulated</b>				
WB36	RG174	50	65.6	\$1.32
<b>Subminiature TEFLON® insulated</b>				
WB37	RG178	50	95.1	\$2.69
WB35	RG179	75	68.9	\$4.56
<b>Semi-Rigid TEFLON® insulated</b>				
WB57	RG405 .085"	50	34	\$14.93
WB56	RG402 .141"	50	21	\$14.93
<b>Standard style PVC insulated</b>				
WB38	RG58	50	33.1	\$1.02
WB54	RG213	50	15.4	\$2.76
WB70	9913	50	8.9	\$4.99
WB71	10DFB	50	6.8	\$7.92
WB39	RG59	75	23	\$1.44
WB41	RG62	93	17.4	\$1.14

# Why not a Ten-Tec?

**TEN-TEC**



The SCOUT from Ten-Tec gives you full QSK CW operation, superb quality SSB and all the features you need in a compact single band transceiver. BUT you only need to change a small band module to add other bands, pull one out, plug another in, it's that simple. All amateur bands are available from stock for the SCOUT.

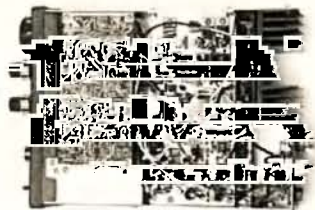
**SIMPLICITY:** For either CW or SSB you just sit down and operate! Master your new radio in only minutes — every feature is right on the front panel making this radio so easy to use it will absolutely amaze you!

**SIZE:** At half the size of other small transceivers and with much lower power consumption the SCOUT makes mobile and portable operation supremely simple! It's 64H x 184W x 248D size and 2.4kg weight tell the story.

**SELECTIVITY:** The revolutionary, patented "Jones" filter results in a variable bandwidth 8 pole crystal filter from 500Hz to 2.5kHz at the turn of a knob. No CW filters or optional SSB filters, they are all in the box already!

**SMART:** Add to all of this a state-of-the-art RISC processor which provides synthesizer like performance with continuous tuning and crystal stability with the exclusive FLS frequency locking system. It also provides built-in 5-50wpm lmbic keying and an easy to read digital display.

**POWERFUL:** The 50 watt output power of the SCOUT is enough to work the world but saves on battery power. Less than 10A required for full output, <4.5A for 5W output and on receive it only needs 600mA.



The SCOUT is just like every other product in the TenTec range. Painstakingly designed and carefully built to an extremely high standard with the highest quality components in the USA. In these photographs you can see that the SCOUT might be small but is built to last through many years of tough service.

Part of the success of the SCOUT is the simple band module, shown here with an American quarter (a bit larger than a 10 cent piece) the module removes all of the expense and complication of band switching from the radio, simply pull out one and plug in another!

Adding to all of the great features from TenTec is the support you will get from DAYCOM, we have full facilities for warranty and non-warranty service of TenTec radios, amplifiers and accessories. All TenTec accessories for the SCOUT are carried in stock.



## TT-555

SCOUT 555 with one band module of your choice

**\$1199**

Band modules for SCOUT

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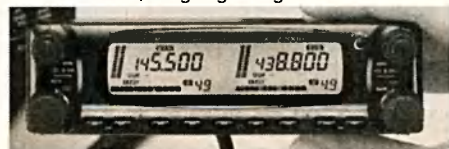


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## Book Review

# The ARRL Antenna Book

(17th Edition)

Edited by R Dean Straw

Published by ARRL 1994

ISBN: 0-87259-473-4

Paperback 736 pages, 277 mm by 208 mm, plus a 1.44 MB disk.

Reviewed by Evan Jarman VK3ANI

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This is a new edition of the ARRL antenna handbook, one of the most read books in amateur literature. You know, from previous editions, what to expect before opening it. This is one of the benchmark publications of any amateur's library. The only question to ask is, how do you improve a good book?

Antenna theory and practice is common to all facets of amateur radio. It is the area where improvements can be made to a station by a "home brewer", without specialised equipment. Also, the changes can be dramatic, with less effort than in other areas. It is the area of greatest interest to amateurs. It is also the most diverse. An ideal area for a reference book.

This edition concentrates on the practice of antenna construction starting from the basis of antenna type. There are fifteen chapters, each concentrating on a particular antenna type. They are Loop, Limited space, Multiband, Multielement, Broadband, Log periodic, HF Yagi, Quad, Long wire and Travelling wave, Direction finding, Portable, Mobile and Maritime, Repeater systems, and VHF/UHF and Space communications. These are broad topics ensuring that every commonly, and most uncommonly, used antenna is described. Each is dealt with in a pragmatic style. Mathematics is kept to a minimum to make it easier to read. Areas such as log periodic arrays require knowledge of what a logarithm is and they do use the occasional inverse trig function. Where used, complex numbers (eg impedance) are resolved into real (eg resistance) and imaginary (eg reactance) components. These are handled separately to simplify understanding.

The new edition contains changes in most chapters. One, the chapter on HF Yagis, has been completely re-written. The section on performance optimisation is very good. It starts with the design goals, then examines the effect of changing dimensions, and concludes by examining a large number of designs. This allows the reader to design a Yagi either from scratch or by using one of the set designs.

This edition also contains a 1.44 MB floppy disk of computer software. It is for

IBM/C personal computers using DOS. There are programs on gamma match design, element taper, propagation, transmission lines and Yagi design. The programs are generally text display and the program on elevation is of use only in the USA. The gems in the software are the Yagi programs, in particular the Yagi analyser. The program allows you to go through the optimisation of a Yagi described in the book, at the touch of a button. It includes a library of designs to choose from. The display is graphical (and well done) using a EGA/VGA monitor. However, it can be modified for Hercules or CGA. It is a good example of a program that is easy to use and easy to interpret.

The emphasis in the book appears to be on practical understanding. It is a reference book. There is an enormous amount of material. Years of experience from many sources. Each of the chapters makes liberal use of diagrams, graphs, tables and photographs. This makes it easy to understand what is being described. It was easy to quickly understand the principles of the

"Telarama" even though I had never heard the name before.

Using the index, it was easy to locate all my favourite topics. They had all the detail required. Many had references to other articles, for further study. All the topics that I could think of were included. The one topic that I felt should not have been included, was not. That particular antenna is still referred to in some magazines even though it has been described in technical literature as "a waste of good coax". The job of sifting wheat from chaff is protracted and obviously still done. It is always reassuring to know that you can rely on this book as authoritative.

The first edition that I purchased was very long on theory, particularly transmission line. This edition has concentrated more on the practice. The change has not been radical, more evolutionary. Theory is included to balance the how with the why, but does not dominate.

The chapters on ancillary topics are still included. They are Safety first, Ground effects, Antenna selection, Transmission lines, Coupling transmitter to the line, Measurements and Smith chart calculations. All have the detail that one expects of the book.

This is a new edition of an old favourite. It has been one of the best references in the past. The editor has incorporated change and kept the book as an authority as technology improves. The publishers clearly want this book to continue as the definitive reference in the amateur's library. ar

## WIA News

### Boost to SMA Liaison

Liaison with the SMA at Federal level will encompass a more cohesive team approach following a decision of the WIA Federal Council at its October quarterly meeting.

The principal SMA Liaison team now consists of Federal SMA Liaison Officer, Gavan Berger VK1EB (appointed at the Federal AGM in May), Federal President Neil Penfold VK6NE, and Federal Vice Chairman Roger Harrison VK2ZRH. For particular meetings where specific knowledge or expertise is required in given areas of the hobby, other people will be called on to participate in meetings with the SMA.

While SMA liaison has, in the past, been conducted with several WIA people occasionally present at various meetings, this new approach is expected to improve communication between the SMA and the WIA and keep the Federal Council more closely associated with activities and negotiations. Federal President Neil Penfold was to seek a team meeting with the SMA Spectrum Manager, Christine Goode, and other senior SMA staffers at the earliest available opportunity with a view to outlining general agendas, issues and approaches for future meetings. It was hoped that this could be done in early December.

# Contests

Peter Nesbit VK3APN\* Federal Contest Coordinator

## Contest Calendar Dec 94 — Feb 95

Dec 2/4	ARRL 160 m Contest	(Nov 94)
Dec 10/11	ARRL 10 m Contest	(Nov 94)
Dec 26 to Jan 28	Ross Hull VHF/UHF Contest	(Nov 94)
Dec 31	Canada Winter Contest	
Jan 1	ARRL Straight Key "Night"	
Jan 7/8	ARRL RTTY Roundup	
Jan 14/15	VHF/UHF Field Day	
Jan 14/15	HA DX CW Contest	
Jan 27/29	CQ WW 160 m DX Contest	
Jan 28/29	UBA Belgium SSB DX Contest	
Feb 11/12	PACC CW/SSB DX Contest	
Feb 11/12	Spanish RTTY Contest	
Feb 18/19	ARRL DX CW Contest	
Feb 24/26	CQ 160 Metre SSB Contest	
Feb 25/26	RSGB 7 MHz CW Contest	
Feb 25/26	UBA Belgium CW DX Contest	

Well, it's hard to believe another year is almost over. Last January, my plans for the year included converting the rig to full QSK, putting up a phased array, finishing a home brew SSB linear, getting started on packet, tracking down some local power line noise, and maybe even writing an article or two for *Amateur Radio* in my remaining "spare time". All this was to be achieved within the constraints of a 60+ hour job, a part-time masters degree, and normal domestic duties! It should be no surprise that the aforementioned tasks remain as intact as ever, and show no signs of abating for some time yet.

Unfortunately, these things have kept me off air more than I would have liked, to the extent of even missing some good contests. However, it's simply a result of priorities, in which family, job, and study are given precedence over the hobby of radio.

I remember visiting a ham years ago, who was renowned for his ability to work DX. He had a large rural property, covered with enormous beams, and would be exchanging S6 reports with DX stations long after they had disappeared into the noise for everyone else. He was on for hours every day, working long path, short path, and every other path imaginable. As I trudged up the side drive, marvelling at the antennas, I was startled by a bark from the kitchen window "HE'S UP THE BACK!" Somewhat taken aback I attempted to exchange pleasantries, but to no avail, so I continued on to the shack where a very pleasant evening was spent chatting about DX, antennas, rigs, and so on.

On the way home, I was troubled by my inability to reconcile the image of my

friend as a top DXer, envied by all, with that of someone whose domestic atmosphere fell somewhat short of Utopia. Perhaps I had arrived on a bad day, or maybe I was reading too much into the event, but it did remind me of the sort of hostility I had witnessed in other households where amateur radio had all but taken over. From that point on, I vowed to always try and keep a healthy balance between amateur radio and other responsibilities of life, even if it sometimes meant skipping the occasional DX opening or contest.

With the Christmas holidays approaching, and the chance to catch up on projects and spend more time on air, let's not overlook the family. As each year passes, those close to us get older, fall sick, or become less accessible one way or another. By all means nurture the on-air friendships, but don't forget that at the end of the day we are just simple human beings, with a need to give and receive companionship with those we love. We are here for so little time, let's make the most of it while we can. The DX will be there tomorrow!

Merry Christmas to all of our valued readers.

Thanks to VK3KWA, LA4YW, The Radio Amateur Club of Canada, CQ, QST, and *Radio Communications*. Until next month, good contesting!

73, Peter VK3APN

## Contest Details

The following contest details are supplemented by the "General Rules & Definitions" published in April 1993 *Amateur Radio*.

## Canada Winter Contest

Dec 31, 0000z to 2359z Saturday

Amateurs worldwide are invited to join this yearly contest, sponsored by the RAC. Categories are: single operator single band, all band, or all band QRP (5W O/P); and multioperator. *There are no single mode categories.* Use 160-2 m, CW or phone (SSB, AM, FM etc). On CW try 25 kHz up on the half hour, and on phone 1850, 3775, 7075, 7225, 14175, 21250, 28500. Any station can work any other for credit. For each Canada QSO score 10 points, and each non-Canada QSO 2 points. QSOs with official Canadian RAC stations are worth 20 points (RAC suffix). Note that CW and phone QSOs must be made in the appropriate sub-band to be valid (I expect 160 m is exempt from this rule, due to the absence of coordinated international sub-bands).

Canadians will send RS(T) + province, all others (incl VE0) will send RS(T) + serial. Multipliers (max 12) are counted once per band and mode (ie 12 on 160 m SSB, 12 on 160 m CW, 12 on 80 m CW etc). Provinces are listed later in this column. Final score equals total points x total multiplier. Send logs to "RAC, Box 356, Kingston, Ontario, K7L 4W2, Canada" by 31 January 1995.

## ARRL Straight Key "Night"

Jan 1, 0000z to 2400z Sunday

This is a yearly activity period on New Year's Day, for stations using a straight key. It is not a contest, there are no serial numbers, and ragchewing is encouraged. US stations usually congregate 60-80 kHz up from the band edge. Use "SKN" instead of RST in the exchange, to indicate to other stations you are using a straight key. Send a list of stations worked plus your vote for best fist heard, most interesting contact etc, by 8 January to: "ARRL SKN", 225 Main Street, Newington, CT, USA 06111.

## ARRL RTTY Roundup

Jan 7/8, 1800z Saturday to 2400z Sunday

The object is to contact as many local and overseas stations as possible on Baudot RTTY, ASCII, AMTOR, and packet (attended). More than one digital mode may be used, but QSOs and multipliers are counted once only regardless of mode. The bands allowed are 3.5-30 MHz, on frequencies recommended for digital operation (no 10, 18 or 24 MHz). Categories are: single operator all band (1) max 150 W O/P, (2) more than 150 W O/P; multi-operator single transmitter all band. A maximum of 24 hours operating time is permitted out of the 30 hour contest period. At least two separate rest periods must be taken, each at least 15

minutes long, with the on and off times clearly marked in the log. Listening time counts as operating time.

Exchange signal report and QSO number. W/VE stations will send signal report and state/province. Score one point per QSO. A station may be worked once per band for points credit. The multiplier is the total US states worked (except KH6 & KL7), Canadian provinces (including VE8 & VY1), and DXCC countries (except USA and Canada). KH6 and KL7 count as countries. Multipliers are counted once overall, not once per band. The final score is the total points times the multiplier. Check sheets are required for logs with 200+ QSOs. Mail your log and summary sheet by 7 February to: "ARRL RTTY Roundup", 225 Main Street, Newington, CT, USA 06111. Alternatively, logs can be sent on DOS disk, or to the ARRL BBS (203-665-0090), or via Internet to contest@arrl.org.

### HA DX CW Contest

Jan 14/15, 2200 Saturday to 2200z Sunday

This popular contest takes place on the third full weekend of January each year. Categories are single operator single or multiband, multioperator single or multitransmitter, and SWL. Bands are 160-10 m. Exchange RST + serial number; HA/HG stations will add a 2 letter county code. Codes for each call area are (1) GY VA ZA, (2) KO VE, (3) SO TO BA, (4) FE, (5) BP, (6) NG HE, (7) PE SZ, (8) BN BE CS, (9) BO, (0) HA SA.

Score six points per HA/HG QSO, and three points for each non-HA QSO outside your own continent. Multipliers are the total HA counties worked per band. Final score equals total points x multiplier. Separate logs for each band are requested. Send logs with summary sheet and declaration within six weeks to "Hungarian Radioamateur Society, Box 86, Budapest H-1581, Hungary".

### CQ Worldwide 160 Metre DX Contest

CW: Jan 27-29, 2200z Friday to 1600z Sunday;  
Phone: Feb 24-26, 2200z Friday to 1600z Sunday.

The CW and Phone sections of this contest are scheduled for the last full weekend of January and February each year. The object is to contact as many stations worldwide on 160 m as possible. VK to VK contacts are permitted for contest credit. Categories are single and multioperator. The use of packet, a spotting net, or logging assistant makes you multi-op. Suggested DX frequencies are 1830-1835; W/VEs will usually operate

outside this window. Look for Japan on 1907-1912.

Exchange RS(T) plus prefix or country abbreviation (W/VE will send RST plus state/province). Score two points for contacts with stations in own country, five points with stations in other countries in the same continent (continental boundary as for WAC), five points for contacts with /MM stations, and ten points with stations in other WAC continents.

Multipliers are US states (max 48, KH6 & KL7 not included); Canadian provinces (max 13, as VO1 & VO2 are considered separately); and DXCC & WAE countries including KH6 and KL7. Maritime mobile stations no longer count as multipliers. The final score equals the total QSO points times total multiplier (US states + VE provinces + DX countries). Indicate CW or SSB on the envelope, and mail the log and paper summary sheet to: "CQ 160 Metre Contest, 76 North Broadway, Hicksville, NY 11801". Mailing deadlines are 28 Feb for CW, and 31 March for SSB.

### Canadian Provinces & Territories

Because so many American contests count Canadian provinces and territories as multipliers, I thought it would be helpful to list them for once and for all. So, for future reference, please note the following list:

Newfoundland (VO1, VO2); Prince Edward Island (VY2); Nova Scotia (VE1, CY9, CY0); New Brunswick (VE1); Quebec (VE2/VA2); Ontario (VE3/VA3); Manitoba (VE4); Saskatchewan (VE5); Alberta (VE6); British Columbia (VE7/VA7); North West Territories (VE8); Yukon (VY1).

### Results of 1993 SAC Contest

(Call/QSOs/points/mult/final score)

CW:				
VK2APK*	178	280	58	16,240
VK6ZH	136	158	47	7,426
VK8AV	96	106	35	3,710
VK4XA	73	73	34	2,482
VK4TT	68	68	34	2,312
SSB:				
VK2APK*	112	170	46	7,820
VK8AV	28	28	21	588

### Results of 1993 ARRL 10 m Contest

Call; Final score; QSOs; Mults; Hrs; Mode (A = mixed, B = phone, C = CW, D = multiop); Output Power (A = 5 W max, B = 150 W max, C = more than 150 W).

VK2APK*	93,024	337	72	36	A	B
VK8BE	1,976	35	19	36	A	B
VK4NEF*	2,600	65	20	36	B	A
VK2ARJ*	5,400	108	25	36	B	B
VK2GAH	1,024	32	16	36	B	B
VK4LW	1,760	80	11	36	B	C

VK4XA*	93,600	390	60	21	C	B
VK2VM	22,196	179	31	9	C	B
VK4ICU	2,304	72	8	36	C	B
VK3EFO	1,548	43	9	36	C	B
VK2QF*	69,688	281	62	36	C	C
VK4TT	54,180	301	45	36	C	C
VK1DX*	114,800	646	82	36	D	

(ops VK1s FF MOJ PJ, VK2s ILK IVK)

### VHF — UHF FIELD DAY 1995

Presented by John VK3KWA

The annual VHF/UHF Field Day will be run on the weekend of 14/15 January 1995. The Ross Hull Contest will be in progress at this time and any contacts made for one can be counted for the other. Please remember that the Field Day exchange must include your Maidenhead locator, and that repeat contacts are allowed for the Field Day but not the Ross Hull Contest.

Several minor rule changes have been made in response to comments made by entrants last year. The timing of the Field Day has been changed to correspond as closely as possible to midday local time (within the constraints imposed by our annual mixture of standard and daylight savings times).

The flexible 24-hour period has been dropped because last year most stations packed up 24 hours after the start of the Field Day and there were few contacts to be had on the Sunday afternoon. The rules have also been changed to exclude 24-hour entrants from also submitting six-hour logs. There have also been minor changes to the general rules.

### Duration

VK6 only: 0400 UTC Saturday 14 January to 0400 UTC Sunday 15 January. All other call areas: 0100 UTC Saturday to 0100 UTC Sunday. In local time, the starting time is therefore 11 am in Queensland, 12 noon in other eastern states, 11.30 am in SA, and 12 noon in WA.

### Sections

- A: Portable station, single operator, 24 hours.
- B: Portable station, single operator, 6 hours.
- C: Portable station, multiple operator, 24 hours.
- D: Home station, 24 hours.

Entrants may submit logs for only one section. Six-hour operation must be for six consecutive hours, starting on the hour.

### General Rules

All modes and bands above 30MHz may be used. Contest exchanges should not be made on recognised DX calling

frequencies. Repeater, satellite and cross band contacts are not allowed.

Operation may be from any location. You may work stations within your own locator square. Each station may use only one callsign. A station is portable only if its equipment is portable.

### Contest Exchange

RS or RST reports, a three-digit serial number, and your Maidenhead locator. Serial numbers need not be consecutive.

### Repeat Contacts

Stations may be worked again on each band after three hours.

### Scoring

One point per contact. The band multipliers are:

6 m 2 m 70 cm 23 cm 13 cm Higher  
x1 x4 x7 x10 x13 x16

For each band, multiply the number of contacts by the number of locator squares worked on that band, then by the appropriate band multiplier. For example, on 2 metres, 20 contacts x 4 squares x 4 = 320 points. See the sample scoring table below.

### Logs

For each contact: UTC time, band, station worked, serial numbers and locator numbers exchanged, points claimed.

The front sheet should contain name, address and callsign, section entered, the period of operation to be scored (if entering the six hour section), and a scoring table.

The scoring table should be as follows:

Band	Contacts	Squares	Mult.	Total
6 m	xxxx	x xxxx	x 1 =	xxxx
2 m	xxxx	x xxxx	x 4 =	xxxx
70 cm	xxxx	x xxxx	x 7 =	xxxx
etc.				
Overall Total				xxxx

### Entries

Post logs to the Manager, VHF-UHF Field Day, PO Box 2175, Caulfield Junction VIC 3161. Logs must be received by Monday, 30 January 1995. Early logs would be appreciated.

### Awards

The overall winner will be the highest all-band scorer in Section A. Awards will also be made to the highest scorer on each band in Section A, and the highest scorers in Sections B, C and D.

PO Box 2175, Caulfield Junction, VIC 3161  
ar

## Divisional Notes

### VK2 NOTES

Richard Murnane VK2SKY

The VK2 Notes return (again!), hopefully for good this time. In late September, Roger Harrison VK2ZRH resigned from the VK2 Council making a number of claims of illegal activities on the part of several Councillors. Council accepted his resignation, but rejected his stated reasons for doing so. Tony Liolio VK2ZL fills the vacant position left on Council, and Pixie Chappie is now Divisional Secretary; several other Council portfolios have been reallocated.

Things are at last getting back on an even keel. The broadcast team (most of whom had resigned over the last year) have now returned, and the Divisional President, Michael Corbin VK2PFQ, gives an address to the members each week. What he says might not always be what you'd like to hear, but it is what needs to be said.

The damage caused to the Dural facility when it was "closed down" in January is still being repaired, but most services have been restored.

The Divisional Voice Mailbox on 724-8793 seemed to fall into disuse shortly after the AGM. Hopefully, this service will soon carry the weekly news highlights from VK2WI once again.

Evidence is currently being prepared for an approach to the courts to allow the Division to hold fresh elections. Meanwhile, the interim Council is attempting to conduct the business of the Division with the help of an increasing number of volunteers. A handful of habitual malcontents on packet appear to have plenty of spare time on their hands; perhaps they'd care to do something positive for the Division?

### Spares Required for Dural

The Division is looking for type 807 valves for the AM broadcast transmitters at Dural. Our last request for 810's brought a good response — can we depend on you again? We're also looking to restore our broadcast service on 6 m SSB and we require a crystal locked transceiver for that band, with an output power of at least 10 watts. If you can provide the goods, please contact the Divisional Office.

### Message from the President

As this will be the last opportunity before Christmas, on behalf of myself and the "Council", I wish members, readers and their families a happy and Holy

Christmas, and everything you wish for yourselves in the New Year.

Michael Corbin VK2PFQ

### VK3 Notes

Barry Wilton VK3XV

### Christmas Holidays

The WIA Victoria office will close on 15 December 1994, and reopen on 7 February 1995. Membership applications received by post during this period will be processed.

### 80 Metre DX Window

A submission prepared by Peter VK3QI and David VK3EW has been tabled by WIA Victoria, and we are confident the SMA will soon grant an extension to the bandwidth of this important DX window.

### EMC and Amateur Operators

WIA Victoria has been closely monitoring the development of cable television and the proposed methods of distribution. The recently stated intention of Optus to distribute via fibre optics, line amplifiers and co-ax cable suspended overhead on poles currently used for electricity supply is of concern.

There could be potential for interference on amateur frequencies, and also for amateur operators to interfere with domestic television, if this method of distribution is utilised.

When the matter was raised with the SMA, a less than satisfactory response was received, and the SMA advised any problems encountered would be the responsibility of the telecommunications watch-dog, Austel.

WIA Victoria is dissatisfied with this response and intends to vigorously pursue this matter.

### Nominations for Council

Nominations for the 1994/95 Victorian Division Council close at noon on Friday, 13 January 1995. Nominations will only be accepted on forms available from the Secretary. Nomination forms must be obtained prior to close of business on Thursday, 15 December 1994. Nominations may be returned by ordinary mail to the office, and will be processed during the holiday period.

### Sunday Broadcast

During the year several members requested the broadcast be extended to the 20 m band to cater for mobile users



in interstate areas. Two surveys conducted produced very little in the way of support for the proposal.

Material for the broadcast continues to be in short supply and we are in need of a willing hand to produce scripts on a regular basis.

If there is not sufficient interest in the broadcast, and news gathering and production assistance is not forthcoming in the new year, Council will need to look to other options which include reducing the number of broadcasts put to air in any one month.

### Special Projects Funding

This initiative was very successful with financial assistance being provided for a number of projects which are now nearing completion. The majority of applications received for assistance involved extension to the packet network and linking of services.

We hope to be able to continue this assistance for projects of benefit to members in the new year, and submissions will be welcomed from other special interest groups.

Members will be advised both in *Amateur Radio* and on the Divisional broadcasts when requests should be made.

**The Council Extends Seasons Greetings to All Members.**

### VK6 Notes

*Peter Parker VK6BWI*

At its Annual General Meeting on 5 October at Wireless Hill, the WA Amateur Digital Communications Association elected the following:

President	Phil VK6AD
Vice President	Ian VK6ZGA
Secretary	Rob VK6ABR
Technical Officer	Joe VK6ZTN
Broadcast Officer	Clem VK6CW
Auditor	Frank VK6JK
Committee	Rob VK6VP, Ray VK6RR, John VK6NT, Trish VK6QL.

Wireless Hill is an excellent VHF site, providing good coverage around the Perth Metropolitan area. The Association's PBBS is located here and has a user port on 144.725 MHz. RTTY users on 146.600 MHz can be linked through to the packet network by this system. The PBBS also transmits on 14.109 MHz to link us with the outside world. 147.575 MHz is used for forwarding between BBS systems.

It is understood that a digipeater at Cataby, between Perth and Geraldton, is proposed. To play your part in ensuring that this and other exciting projects come to fruition, you are welcome to attend the

Association's monthly meetings. They are on the first Wednesday of every month (except January) at the Wireless Hill Meeting Room, starting at 8 pm.

### Special Divisional Meeting Attracts Potential Amateurs

For many years, amateur radio study courses in Perth had been run through the TAFE system. These were dropped about two years ago. The Division has realised that, in this age of user pays and devolution, we must take our own initiatives to train and examine the amateurs of tomorrow. Accordingly, we held a special meeting on 3 October to ascertain interest for a proposed amateur radio course. Thanks to word-of-mouth and advertising in local newspapers, enough people attended to warrant a course being started. It will have begun by the time you read this, the first class being held on Tuesday, 8 November.

The class is being conducted every Tuesday night for approximately two hours over a twenty week period. It's being held in Bullcreek and the instructor is Allan Bell VK6SK. For further information on this and future courses, contact the WIA Divisional Education Coordinator, Rob VK6THB, on (09) 434 3283.

The VK6 Division wishes its members a safe and prosperous 1995.

### "QRM" — News from the Tasmanian Division

*Robin L Harwood VK7RH*

Sadly I have to report that two more VK7 hams have died recently. Rick Bray VK7ZZ passed away on 26 October after a long illness. He came from England and worked at the Australian Maritime College for nine years. He was active in several community groups, including the Northern Caverneering Group, and served as secretary of the Northern Branch of the WIA in the mid-eighties. He was also a driving force behind the AMC Amateur Radio Club. Rick checked in occasionally during the past year on the daily Tasmanian Sewing Circle Net on 3590 kHz.

Harry Bracken VK7BR was another amateur who was active in the North in the mid-sixties. He worked in the PMG's Department at various locations within the State.

As we come to the end of the calendar year, it seems to have become traditional for each Branch to wind up with either a BBQ or a Christmas Dinner. At deadline time only the Northern Branch has yet to finalise their plans, but these should be

announced on the weekly VK7NB broadcast on Wednesdays at 1930 hours locally on repeater 7000 and 3590 kHz.

The Southern Branch, also now known as VK7OTC, will be holding a Christmas BYO BBQ at the Domain Activity Centre on Sunday, 4 December from 11.00 am. The Northwestern Branch will be holding a Christmas Dinner at the Bass & Flinders Motel in Ulverstone on 13 December. This will be in lieu of the normal monthly meeting. For further details contact David Spicer VK7ZDJ.

The only scheduled monthly meeting will be the Southern Branch at the Domain Activity Centre on 7 December at 2000 hours. January is the quietest month with neither Northern nor Southern Branches meeting. However, the Divisional broadcast will be continuing throughout January although VK7NB will be in recess till the end of January.

In conclusion, may I, on behalf of the Tasmanian Division, extend Season's Greetings to all members of the Division and look forward to your active participation in 1995 which, coincidentally, is the Centenary of the Development of Wireless by Guglielmo Marconi.

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# How's DX

Stephen Pall VK2PS\*

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The other night I had a very bad dream. I woke up in a sweat. I dreamed that the US Treasury had decided to withdraw the \$US1.00 note from circulation. Can you imagine, if that ever became a reality, what would happen to the direct QSLing system? The well known "green stamp" no more! Disaster!

Not necessarily so. One opinion is that most of the award programs, which require a physical QSL card for proof of contact, will be forced to change their rules. Another opinion says that it will be not a problem, the bureau system will be used. At present most of the serious DXers do not use the bureau system because of its predictable weaknesses — slow, often very slow (one to three years, or more, turn around of cards); and the unpredictability, especially in the developing countries, of the existence or non-existence of QSL bureaus.

As a last resort, if there are no more green stamps, we will have to use IRCs, the International Reply Coupon system. This would seem to be the logical conclusion. There are some problems with IRCs also. Postal authorities in some countries, for example Germany, have a fixed monetary value placed on them. The German postal system values one IRC at DM 2.00 whilst the air-mail postage from Germany to a foreign country outside Europe, say Australia, is DM 3.00, so you need to send two IRCs to the German QSL Manager. Postal rates, the purchase price of IRCs, and the monetary foreign exchange system are interlinked. A year ago, and I am talking now about the Australian situation, one IRC cost a little over one Australian dollar (actually, \$A 1.35). If you bought some IRCs lately you found that you had to pay \$AUS2.00 for each of them. A hefty price increase and it was not publicised widely. On the other hand the purchase price of one IRC in Japan is 150 Yen which equates neatly with \$AUS 2.00.

What I am saying is this, and I am sticking my neck out for predicting the future, be prepared for a considerable increase in the near future of Australian Postal rates to foreign countries. Do not be misled by the multi-colour four page pamphlet released recently by Australia Post entitled "Five year price freeze". That refers only to a domestic standard letter rate of 45c which will be frozen, at least until the beginning of 1997. The difference between 1997 and 1994, if my maths are correct, is only three years. Maybe

Australia Post uses a different mathematical system.

To make this polemic short my advice is to do all your direct QSLing now, before the end of the year, at a cheaper postal rate. Talking about the end of the year? Yes, the 12 months of 1994 are nearly over. I wish all my readers a joyous season, a healthy, prosperous and peaceful New Year, and good propagation on all bands.

## What is a DX Country?

With the present controversy surrounding the Pratas Island operation, the Scarborough Reef activity, the non-acceptance of the P5RS7 operation for DXCC credit, and the recent deliberations about the minimum size of a country, I feel it is time to summarise for readers the present rules of the DXCC regarding the definition of a "country".

When an area in question meets at least one of the following three points, it is eligible as a separate country listing for the DXCC countries list.

### Point 1 Government

Independent country or nation-state having sovereignty. Points to consider include: Body of society united together politically with definite territory, definite population, organised or controlled under one exclusive regime and engaging in foreign relations, has the capacity for international agreements, diplomatic relations, possible membership in United Nations, membership in the International Telecommunication Union, authorised user of ITU allocated callsign prefixes, issues currency, stamps, regulates foreign trade, etc.

### Point 2 Separation by Water

An island or a group of islands which is part of a DXCC country established by reason of Government, is considered as a separate DXCC country, if:

- The island, or the island group, are situated offshore, geographically separated by a minimum 225 miles of open water from a continent, or island or island group that makes up any part of the "parent" DXCC country; and
- A "second" island of the same DXCC country must have a separation by water of at least 500 miles from the first island and a separation of 225 miles from the "parent country".

## Point 3 Separation by Another DXCC

### Country

- Where a Point 1 DXCC country (government) composed of one or more continental land areas or of continental land areas and islands, is totally separated by an intervening DXCC country into two land areas which are at least 75 miles apart, two DXCC countries are created.
- Where a Point 1 DXCC country (Government) composed entirely of islands is totally separated by an intervening DXCC country into two areas, then two DXCC countries result. No minimal distances required by separation.

## Point 4 Ineligible Areas

- Any area which is unclaimed or not owned by any recognised government.
- Any demilitarised zone, neutral zone, buffer zone.
- The following do not count as a separate DXCC country from the host country: embassies, consulates, extra-territorial legal entities of any nature including, but not limited to, monuments, offices of the United Nations Agencies or related organisations, other intergovernmental organisations or diplomatic Missions.

Of course, the above is a precis of the rules and regulations of the DXCC award. If you want the total information about the Award, send \$US2.00 for a handsome 30 page booklet entitled "The ARRL DXCC Countries List" containing an application form for the award to: The ARRL, 225 Main St, Newington, CT 06111 USA. Your booklet will arrive by sea-mail.

## Bhutan A5

It was late in October on a Thursday night at a Japanese restaurant in Sydney's Crow's Nest area. A small group of amateurs raised their glasses to the expected success of an upcoming possible DXpedition to Bhutan. Jim VK9NS was full of enthusiasm. Atsu VK2BEX, a well known DXpeditioner in his own right, and myself, not yet a DXpeditioner but a recorder of this column, were the listeners.

Jim recalled the many years of negotiations and preparations prior to his first visit to that country, between 21 March and 11 April 1990, when he made approximately 15,000 QSOs. Jim went back to Bhutan a year later with Kirsti VK9NL. He hoped to operate again but did not succeed in obtaining permission to operate. However, he has maintained close contact with the Bhutanese officials since 1991. Finally there was some result. In October 1994 he was invited to Bhutan by the Bhutanese Ministry of

Communication for a visit in connection with the Amateur Radio Service. Jim passed through Sydney on his way to the Kingdom of Bhutan on 27 October. He intended to stay in Bhutan, and possibly also in Bangladesh, until the end of November. An old friend and DXer, Kan JA1BK, will accompany him on his Bhutan adventure.

For those who are not familiar with the geography of Bhutan here are a few basic facts about the country. It is situated in the south eastern part of Asia, immediately south of the Himalayas. China, India and Nepal are the neighbouring countries. It is a small mountainous country of about 47,000 square km in area with a population of approximately 1.5 million. The capital of the country is Thimpu with about 12,000 residents. The Kingdom of Bhutan has been governed by a dynasty of hereditary kings since 1907.

Bhutan was more or less a closed country and has opened up to outside western influence only since World War II. Road improvements have opened up many parts of the country and airlines have been established with neighbouring countries. Despite modernisation the Bhutanese try to retain their unique religious and cultural heritage. The future of amateur radio lies entirely with the Bhutanese. Pradhan A51PN was the last Bhutanese who operated amateur radio from that country in the early 1980s. Jim's visits in 1990 and 1991, and his present visit, hopefully will assist in establishing the amateur radio service for the Bhutanese and for the rest of the amateur radio fraternity.

### Decision of the DXCC Awards Committee

The DXAC, the DX Advisory Committee, made some recommendations as reported in a press-release on 24 August (See November *Amateur Radio*) about the minimum size for a new DXCC country.

The DXCC Awards Committee has voted five to two against the DXAC's recommendation as per a news release issued on 6 October. Those voting against shared the feeling that a minimum size rule was not needed.

Awards committee chairman, Chuck Hutchinson K8CH, advised the result with DXAC chairman, Bob Beatty W4VQ, immediately after the vote. Standard operating procedure for the committee allows the DXAC to resubmit a recommendation (with or without changes) on appeal, and Chairman Beatty has announced his intention to do that. Individuals may send comments to ARRL HQ. Comments addressed to the DXAC will be read by members of both committees.

DXAC Chairman Beatty has declared



Jean Michel TR8JH, Gabon, with a child from the local village.

a moratorium on new DXCC country petitions that may be affected by a minimum size rule. This moratorium will continue until such time as the deliberation on this issue is complete.

### Future DX Activity

- Dave A22MN is very active on all bands. He will stay there until March 1995. QSL via WA8JOC.
- HS0/DL2VK is Reiner who is active from the Northeast of Thailand — Nakhom Phanon — for 6 months starting 10 October. He prefers CW but works also in SSB and digital modes.
- There is a rumour, originating from Germany, that a group of ZLs intend to activate the Balleny Island group (Antarctica) from Sabrina Island in December 1994. Sabrina Island is located on the West side of the island group. On the island there are the ruins of a polar station built in 1948 but abandoned some years later.
- FR5HG/E is active on Europa Island, length of stay not known. Europa is a small rocky and sandy island located at 22° 20' S and 40° 21' E off Madagascar.
- Walt G4NYY, Tim G4VXE, and Dave WG3I will be active from Nassau, New Providence island from 10 to 18 December on 160 to 10 m, including the WARC Bands. Operation will be mainly in CW. Callsigns will be C6A/home call. QSL via home call.
- T1J1R is active. Randy is a missionary who arrived in Cameroon with his family in July and will be there for the next four years. QSL via N7VEW.
- VK0IX will be active from Casey base, Antarctica. QSL via VK5PO.
- HH1D and HH1T are Darlene KC8CTC and her husband Tim KB8CTD. They are missionaries in the mountain area of Haiti. QSL via NE8Z.
- Jeff VP9NC is active mostly on CW. QSL to WB2YQH.
- Peter XT2BW has returned to Burkina Faso and expects to be active until the end of 1994. QSL to WB2YQH.
- There was some news back in June 1994 that Joe DF1AL was planning a DXpedition to Congo, TN, from 27 February to 6 April 1995. No further news has come to hand since.
- A92FV is on the bands. His length of stay is unknown. The operator is G0OAB and he is active on the CW bands.
- The following Canadian special prefixes may be used to commemorate the International Year of the Family from 29 October to 29 December: VB, VG, X09, X00, XN9, XN0.
- Joe FK8GY will be active from Lifou Island in the Royalty Group (OC-33), between 10 and 12 January 1995 on 20, 40 and 80 metres. Those who work him will receive a Diploma from the REF, the French national amateur body. QSL to Box 7219 Noumea, New Caledonia.

### Interesting QSOs and QSL Information

E = East Coast W = West Coast M = the rest of Australia.

- VR2KF — Kazu — 14226 — SSB — 1200 — Oct (E). QSL to Kazu, GPO Box 4724, Hong Kong.
- 9Y4NG — Arnold — 14225 — SSB — 1303 — Sep (E). QSL to A Griffith, 646

Ocean Ave, Gulf View, Laromain, Trinidad.

- 5T5JC — Eric — 7083 — SSB — 0654 — Sept (E). QSL to F6FNU, Antoine Baldeck, BP 14, F-91291, Arpajon Cedex, France.
- HC5EA — Edgar — 14191 — SSB — 0506 — Oct.(E). QSL to The Manager, PO Box 14, Cuenca, Ecuador.
- HS0/DL2VK — Reiner — 14020 — CW — 1121 — Oct (W). QSL to DL2VK, Reiner Eischens, Diezer Str, 95, D-65549, Limburg, Germany.
- YN5JAR — Jose — 7083 — SSB — 0642 — Oct (E). QSL to Jose Antonio Roman Matus, PO Box 122, Jinotepe, Nicaragua.
- 8J1RL — Masa — 14018 — CW — 0953 — Sep (W). QSL to Japanese QSL Bureau.
- 9J2GO — George — 14164 — SSB — 0527- Sep (W). QSL to George, 56 Datura Ave, Luanshya, Zambia, Africa.
- VU2LX — Laxman — 14015 — CW — 0218 — Sep (W). QSL to K Lakshmannan, 30/3 Nanjappa Rd, Shanthi Nagar, Bangalore, 560027, India.
- 4L4TL — Tom — 14190 — SSB — 0537 — Oct (E). QSL to TA7KA, Mr Omar, PO Box 71, TR-61000, Trabzon, Turkey.
- JW8GV — Ala — 7084 — SSB — 1108 — Oct (E). QSL to The Manager, PO Box 27, Longyearbyen, N-9170 Norway.
- 9V1XQ — Mike — 7083 — SSB — 1001 — Oct (E). QSL to G4PKP, John Jones, 24 Matthew St, Liverpool, Merseyside, England, L2 6RE.

### From Here, There and Everywhere

- Hartmut 9X5HG was reported on SSB on 20 m early in October. Apparently he went back to Rwanda to salvage whatever was possible from the ruins of his house. He indicated to his QSO partner, SV1CRY, that "my time in Africa is over". He closed down on 21 October and returned to Germany.
- Contacts with XY1HT, the demonstration station activated by Japanese amateurs for the Manmar authorities, has been approved for DXCC credit. There were a number of contacts with seven neighbouring countries using SSB and SSTV.
- If you have worked Jon VP8CQJ on the Falkland Islands, send your QSL with reply envelope and IRC to Jon Capp, 9 Hawthorn Rd, Gatley, SK8 4LX, UK.
- Cliff 5W1GC, who is well known to the VK/ZL DXing fraternity, returned to the US on 31 October. His new QSL address is Cliff Luxion KE5GC, PO Box 1808, Aurora, IL 60507, USA.
- If you worked XF4M on Revillagigedos, send your card to AA6BB.

- Those who are operating in the 75 m "DX window" must have heard a very strong RTTY signal on 3796.5 kHz, causing severe QRM. This signal appeared intermittently early in October. According to the FCC the signal is coming from the Caribbean, probably from Haiti, and it could be of US military origin.
- 9N1SC was the call of a Mount Everest DXpedition activated by G4SSC.
- The QSL address of FG5BG is Georges Santalikan, 44 Rue Amedee Fengarol Brest, F-97130, Capesterre, Guadeloupe, FWI France
- Is this a trend for the future of amateur radio? The IOTA Committee of the RSGB and Yaesu UK Ltd, announced that they have entered into a sponsorship agreement by which Yaesu becomes the principal sponsor of the RSGB IOTA Program. The agreement is a worldwide agreement and runs for three years from 1 October 1994.
- Did you know this? The DXCC Award came into being as a result of an article in October 1935 "QST" entitled "How to count countries worked; a new DX scoring system" by Clinton B De Soto W1CBD. He described the first country criteria as "The basic rule is simple and direct; each discrete geographical or political entity is considered to be a country."
- Art NN7A sent me a note about his proposed activity in Victoria, South Australia and Northern Territory during the month of November. Unfortunately, his letter arrived after the deadline for the November issue of *Amateur Radio*. Art operated as VK3FBM and his wife Dede as VK3JKQ from various places including Phillip Island (OC-136) and Kangaroo Island (OC-139). Please QSL direct to Art Phillips, PO Box 201, Flagstaff, Az 86002 USA or via the W7 QSL Bureau.

- ZL6DJ was a special event station celebrating the Diamond Jubilee of the NZART.
- If you worked 3D2BE, QSL to HB9KAS.
- A contact with ED5DX can be confirmed via EA5BYP.
- T12JJP was active from Cocos Island (Pacific Ocean) from 20 to 29 October as T19JJP
- Kan JA1BK is returning the donations that were made for the P5RS7 DXpedition, which was not accepted for DXCC credit.
- Did you know that before you are allowed to operate on SSB as a resident of Bermuda (VP9), you must first have 500 CW contacts?
- VK9RNI is a new 6 metre beacon being installed on Norfolk Island.
- If you come across a ZL1BAI callsign, he is none other than Jim VK9NS.
- The correct QSL manager for the contest station HG73DX is HA1KSA. This includes past, present and future activity. Direct or via the Bureau.

### QSLs Received

H44MS (3W DL2GAC) — YJ0AVH (2M VK4CRR) — TK5BF (2W op) — HP8ADU (5W op) — F5NBX (2W op) — S59AA (2M op) — V44KAI (3M op) — YS1DRF (6W W2PD) — C41A (5W 9A2AJ) — VP2EJ (4W N6ZJM).

### Thank You

Many thanks to those who have contributed to this column, but especially to VK1FF, VK2KCP, VK2KFU, VK4AAR, VK6DX and VK9NS. Special thanks also to the following sources of information, *QRZ DX*, *The DX Bulletin*, *DX News Sheet*, *The W6GO/K6HHD QSL Managers List*, *INDEXA*.

\*PO Box 93, Dural, NSW 2158

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Jim TU4EI, Ivory Coast, with pot spider monkey "Bobo".

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# FTAC Notes

John Martin VK3KWA, Chairman, Federal Technical Advisory Committee\*

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## 2.4 GHz Band Plan

This further revised plan takes into account all comments received on the earlier drafts, and it is proposed to present it to the WIA Federal Council for formal adoption early next year. The plan allows both terrestrial and satellite operation with a single transverter crystal. Other main features include two wideband channels, each 18 MHz wide, for FM ATV, and separate FM simplex segments for voice and data.

A fully detailed copy of this plan has been circulated to all states and copies are also available on request via the WIA Federal Office.

### 2400-2403 SATELLITES

2403-2406 NARROW BAND MODES (Note 1)

2406-2424 WIDEBAND MODES (Note 2)

2424-2425 NARROW BAND MODES (Note 3)

2425-2426 FM SIMPLEX (VOICE)

2426-2428 FM SIMPLEX (DATA)

2428-2430 FM DUPLEX (Note 4)

2430-2448 WIDEBAND MODES (Note 2)

2448-2450 FM DUPLEX (Note 4)

### Notes

1. The 2403-2404 MHz segment subdivided as per existing plan for 2304 MHz, ie DX calling frequency 2403.1 MHz. Inband linear translators possible using 2404/2424 MHz, and crossband on 2405 MHz.
2. FM ATV frequencies 2415 +/- 9 MHz and 2439 +/- 9 MHz. Recommended primary channel for FM ATV: 2430-2448 MHz. The 2406-2424 MHz channel to be available until/unless required by future satellites.
3. Reserved for possible use for Region III NB and linear translators.
4. These segments intended primarily for links but could also be used for experimental repeaters.

## 1.2 GHz Band Plan

The new plan for this band is still under discussion but a decision will be needed soon. A number of comments have been received from repeater groups, ATV groups and others, and there is general agreement on changing over to the international standard 20 MHz repeater split after the remaining 1275 MHz radars close down.

There were some objections to the band plan proposal circulated in July, especially over the bandwidth and placement of the ATV channel, and the need for a wideband data segment. A further revised proposal is shown below

which I believe overcomes the problems in the earlier plan.

The main changes are an 18 MHz wide ATV channel at 1274-1292 MHz, and new FM simplex segments for voice at 1294 MHz and data at 1297 MHz. A fully detailed copy of this plan can be obtained on request via the WIA federal office.

This proposal has already been circulated to all WIA Divisions, and comments would be appreciated as soon as possible. I am hopeful that agreement can be reached in time for the plan to be finalised and approved at the same time as the 13 cm plan early next year.

1240-1270 No change from current band plan

1270-1272 NARROW BAND MODES (Note 1)

1272-1273 LINKS

1273-1274 REPEATER

OUTPUTS

1274-1292 ATV CHANNEL 2 (Note 2)

1274-1281 AM ATV

1283 +/- 9 MHz FM ATV

1285-1292 AM ATV

1292-1293 LINKS

1293-1294 REPEATER INPUTS

1294-1295 FM SIMPLEX (VOICE) (Note 3)

1295-1297 NARROW BAND MODES (Note 1)

1297-1300 FM SIMPLEX (DATA) (Note 4)

### Notes

1. These segments subdivided as per existing plan for 1296 MHz.
2. Recommended use for simplex or repeater outputs.
3. Channel spacing 25 kHz, calling frequency 1294.5 MHz.
4. Intended primarily for high speed data with 100 kHz channel spacing. Further details to be discussed with packet radio groups.

## Packet Radio Band Plan Proposal

The South Australian Division has proposed an increase in the number of packet radio channels on both 2 metres and 70 cm, and the allocation of several 70 cm repeater pairs for use by regenerative repeaters. This proposal has been circulated to all Divisions together with an alternative proposal from FTAC. Full details of all of these proposals will be published next month.

## National Foxhunting Channels

It has been suggested that there is a need for national foxhunting channels on VHF bands. I do not have much information on foxhunt activity, except that the mode used is usually FM and that different states use different frequencies. A national foxhunting frequency would simplify matters for national competitions and reduce the possibility of QRM. For that reason it would be a good idea to pick channels in the less used parts of each band.

I would appreciate any comments and suggestions on this. To start the ball rolling, I would suggest the following channels: 53.300, 145.300, 433.850.

On 23 cm, the frequency depends on proposed changes to the band plan. If the new 23 cm band plan shown above is adopted, I would suggest 1294.850 MHz for the foxhunting channel.

## 80 m DX Window

Mr Peter Allen, Acting Manager, Technical Services Team of the SMA has written confirming that the Regulations relating to the 80 m DX window are as described in last month's notes.

He stated that the carrier frequency for LSB stations in this window should be limited to 3.798 to 3.800 kHz.

He also stated it is most important that services operating immediately below the 80 m DX window do not receive interference from out-of-band amateur transmissions.

\*PO Box 2175, Caulfield Junction, VIC 3161  
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## WIA News

### New Federal Secretary

Mr Lewis Badge has been appointed the new WIA Federal Secretary. His appointment was made by the WIA Federal Executive at the quarterly extraordinary convention over the weekend of 29-30th October. He took up his appointment in early November. Mr Badge is an accountant by profession and has a commercial background as a company secretary.

Donna Reilly, who served as Federal Secretary following Bruce Thorne's resignation in August, has returned to her previous role as Office Manager.

# International Amateur Radio Union Monitoring Service (IARUMS) — Intruder Watch

Gordon Loveday VK4KAL\*

## Live Intruder Watching Nets

This material was taken "off air" by VK4BRG and passed to VK4KAL.

Are you concerned about the future of our exclusive frequencies, their orderly use by amateurs and the growing number of pirates, intruders and QRM on our bands? If so, please read on. I make the following suggestions:-

1. Only we ourselves will take full care of our hobby. We must speak for ourselves and protect our own interests.
2. The Intruder Watch organisations and monitoring system are doing just that, but do not receive enough support. If all of us just devoted a few hours operating time, even once a month, to logging intruders and reporting them to the co-ordinators, it could make a really big difference.
3. About 75% of the reports received by the intruder watch services appear to lack the vitally needed information necessary to "busting an intruder"; eg QTH(country), or identity of the intruder. This information is usually missing for the following reasons:-  
(a) Intruders do not usually give this information in their transmissions;  
(b) Reports by only one or two amateurs are usually of short duration, thus insufficient information could be gathered, except time, date, frequency; and  
(c) The intruders do not always follow regular schedules and may re-appear on other frequencies in our bands on other days.

I think this situation can be radically improved with live on-air reporting through a Worldwide Intruder Watch Network, which would operate by collecting on air reports (often live) and pooling the resources of radio amateurs checking into the network, eg by rotating beams from different countries, a good idea of the approximate location of an intruder can be determined and, with co-operation of net amateurs in the country concerned, the location narrowed down even further. A report then can contain the vital information leading to effective results — intruders generally do not like to be famous!

These efforts need co-ordinating in an efficient and organised manner, with net frequencies, co-ordinators, net control stations and region networks. Such a

network can assist all intruder watch monitoring systems in a more effective way than relying on the slow process of the postal system and the few dedicated amateurs sending in regular reports by mail. It is also much more fun to have a live net where fellow "intruder busters" can meet and share information and expertise, using RDF techniques, language skills and knowledge of propagation, unusual modes, as well as taking advantage of our wide geographical dispersal. A monthly bulletin could still be compiled and sent to subscribers listing monitored intruders.

If you are interested in joining this effort, either as a casual reporter, checking into the net, as a control station, or co-ordinator, or regular monitor, please contact ST2AA @ I5FLN.ITA.EU or call ST2AA on 14.068, giving: Call and Name; rigs/antennas; modes used; ways in which you can help; postal address; and/or BBS.  
73 de Lou ST2AA.

It would seem that we in VK have a very good general set up, but these notes should be read with the desire to increase our number of observers in ALL STATES. The coming months are going to allow a greater number of intrusions to be heard. DON'T COMPLAIN to your pal overseas, SEND me your complaint, Freepost

Number 4, and get him/her to lodge a similar complaint in their country. It is your fault if you DO NOT ACT, NOW.

## Some Notes on Intrusions from Indonesia

From IARUMS notes of September 1994, an Indonesian broadcast station comes on air on 7.098.7 MHz before 1000 UTC, no set time, often 0945 UTC at S 4 (on scale of 1 — 5). Some distortion, program is speech and "hit parade". Bearing from Brisbane of 305 to 310 degrees, ID as Island of Java.

Note that in 1988/89, 7.098 MHz was assigned to Yogyakarta, Indonesia with low power of 10 kW; logs of those years gave reports of S3. The listing was 7.098 variable by 0.5 kHz. No ITU listing above this in 1994.

Most interference seems to be in the lower frequency bands at present.

PA7 is a 21 MHz intruder. Tfc is "Ministry of Foreign Affairs". The frequencies are 21.110, 21.114 or 21.220 MHz. Also to be found on this latter frequency is BR6, active with Tfc often at 0400 and 0600, but has moved frequency to either 21.114 or 21.110. I suspect this was due to amateur pressure. More amateurs should pile up on this frequency and squeeze BR6 off the air.

Moscow Naval Radio has claimed 14.171 MHz, ditto RIW on 21.255.5 MHz and UMS again on 21.284.1 MHz. French Military on 21.384.6 MHz (with ARQ mode). VRQ Hanoi and MNR UUMS on 21.031.5 MHz. What are they playing at? These frequencies have been strenuously defended for as long as they have been infringed (I can go back about 28 years).

Frequency	Date	UTC	EMN	Details
3.578.3	23/02/94	0935	A3E	non AM B/C
3.6200	10/02/94	1200	A3J	B/C Indonesia, music
7.0000	12/02/94	1140	J3E/U	Indonesia TFC, Lima Kali etc
7.0050	07/11/93	1045	J3E/U	CB interference
7.0100	31/01/94	1210	J3E/U	3 way, Timor/Jakarta/Padang
7.0150	12/02/94	1140	J3E/U	2 way, m ops Jakarta
7.0500	03/03/94	1650	A3E	B/c stn, M F voices, Timor
14.030	22/02/94	1210	A3E	Indonesian lang, music.

\*Federal Intruder Watch Co-Ordinator, Freepost No 4  
Rubyvale QLD 4702 or VK4KAL@VK4UN-1  
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## Education Notes

Brenda M Edmonds VK3KT\* Federal Education Coordinator

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In September I had the pleasure of attending the IARU Region 3 Conference in Singapore. I had not thought of attending until it was pointed out that there were a number of items on the agenda in which I would be very interested or to which I could contribute. A full report from Kevin Olds, the WIA delegate, has already been published, but I would like to elaborate on some of my special interests.

A major item was the proposal for international recognition of amateur licences to reduce the formalities required when amateurs wish to visit another country, or to change address permanently.

In Region 1 this is being done by way of the CEPT licence agreement. Countries which are signatories to this agreement accept the licences of all other such countries, so that reciprocal licences are not needed for visits. In addition, the European countries are investigating the possibilities of a "Harmonised" licence,

ie a licence syllabus which is mutually agreed so that licences issued by all countries are of equal standard.

In Region 2 the same result is achieved by an International Permit, similar to an international driving licence, which is accepted by all the countries which have joined the scheme.

The Conference agreed that Region 3 countries should seek international recognition for their licences, but gave no directions for further action. In Australia, the SMA is presently working towards the acceptance of our licences for CEPT accreditation. New Zealand has already been accepted into the scheme. It seems to me that there is room for both approaches, ie the agreement with the European countries and the development of the "harmonised licence" in the Pacific area. From what I have seen, the examination syllabuses in some neighbouring countries are very similar to ours although, of course, the depth may vary and I have not seen many overseas examination papers.

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## An Old Timer Reflects....

Des Greenham VK3CO (SK) continues to look back over 50 years of amateur radio operation.

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Is HF radio communication irrelevant today?

I wonder, after a recent experience. Our Rotary club was hosting a group from Brazil and one night one of the team asked me if I could take her to a "card" phone. I took her to the phone and I sat in the car waiting. She returned to the car in about seven minutes and told me she had called Brazil and ascertained a phone number in Japan, then called Japan and arranged her plans for a visit. All this in seven minutes and at a moderate cost!

This demonstrates modern technology and, in comparison to a Ham station calling CQ, makes us look quite primitive. This episode caused me to recall an experience in 1950 when communication overseas by phone was very limited and not readily available to the public. One day, on 15 metres, I heard a station in Hawaii calling "CQ Melbourne". As I was living in Melbourne at that time I answered the caller. I was asked if I knew a place called "Springvale" and answered in the affirmative. He told me the story.

His commanding officer at the US Navy base on Oahu Island had arranged for his Australian wife and daughter to visit her parents who lived in Springvale. It was thought she had arrived but no message had been received from her and he was concerned for their safety. After receiving the address, my wife and I set off late at night to find the missing lady. We finally found the house in a remote part of Springvale and I will never forget the surprise on the lady's face when I announced that I had been speaking to her husband in Hawaii!

We arranged for Joan and her daughter to visit our home and speak with her husband. This went well and we had a regular "sked" each Sunday afternoon for the entire time of her visit here. This was 40 years ago and we kept in touch for many years until Joan's unfortunate death some 2 years ago.


This was amateur radio in those days, and is only one of numerous stories where amateur radio provided a special service for people.

A lot of Conference time was spent discussing ways in which amateur radio could be encouraged in countries where amateurs are not presently active. In some there is actual prohibition of such activities, but in others there are perhaps a couple of amateurs who need help to gain recognition from their governments and to enable training and encouragement of new recruits. I will discuss some of the suggested strategies in a later column.

In addition, of course, the interchange and discussions which took place outside the Conference sessions were of great value. I found it very rewarding to meet with representatives of the RSGB and other societies and to hear how their examinations are structured, or the problems which beset them. Some problems seem to be common to many societies. We are very lucky in the good relationship which exists between the WIA and the SMA.

My main regret from the trip was that there was not enough time to talk to more of the delegates and observers. There was obviously a lot of information available which I could not collect in the time.

\*PO Box 445, Blackburn VIC 3130  
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## Over to You — Members' Opinions

All letters from members will be considered for publication, but should be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.

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### JOTA Went Well

Well, JOTA is over for another year. I would like to thank various people in this year's event, where I assisted. I am a recent amateur of only 12 months, and it was my first go at JOTA. The first time for everything is always different from what one expects.

Contrary to what I had heard about the organisation between the Scouts/Guides and amateur radio operators, I compliment the Tea Tree Gully Baden Powell Scout Group for the orderly conduct of the various groups of Scouts and Guides that were present over this JOTA weekend. Not only this but for the help given to me during the times I was "in the chair". My thanks go to Diane, Ivan (Skip), Bob, and to those behind the scenes. Special thanks to Trevor VK5ATO for supplying, and allowing me to operate, his equipment. It's a pity not more amateurs assist in this event.

Hopefully I will be back next year with a full call sign and will try a little harder to bring in those elusive DX stations to JOTA.

John P Malusa VK5ZJP  
7 Pope Crescent  
Hope Valley SA 5090

### Wrong "Facts"

I refer to *Amateur Radio*, September 1994 and the letter sent in by Jack van Schaik VK3AAC. Regarding this letter, my thoughts are these:- Don't be sarcastic unless you know all your facts are correct.

VK3AAC should have known that in 1957 VK2ZAB could not have gained access to any HF band by passing CW at 5 wpm as no such exam existed then. Furthermore, VK2ZAB would not have had any further luck by passing a 10 wpm exam as the required CW speed at that time was 14 wpm. Not only this, but after three months from sitting the theory exam the entire test theory and CW may have had to be taken. This latter point could be open to doubt but the first two points have been documented.

Victor Barker VK2BTV  
41 Skyline Street  
Gorokan NSW 2263

### High School Help

Richard Jenkins VK1RJ, in the Federal QSP in the August issue of *Amateur Radio*, emphasised the need to help schools develop radio interests. Jim Beattie VK4WJB followed this up in *Over to You* in the October issue.

Since retiring to Leeton, NSW nearly three years ago, I have been endeavouring to assist with the formation of an Electronics Section in the Leeton High School. The young people there have responded in a very positive manner and several have expressed an interest in amateur radio.

With a vision of perhaps forming a Leeton Amateur Radio Group I have tried to encourage these young people but with a degree of difficulty in expanding that interest. Any ideas both practical and theoretical, or offers to sell material suitable to encourage further developments, would be highly appreciated.

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## Packet World

Grant Willis VK5ZWI\*

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### Setting TNC Audio Levels

Your packet station will work most efficiently if your audio transmit and receive levels are set correctly. The best performance is found with an audio deviation of your FM signal of around 3 kHz. It is unfortunate that a large proportion of packet stations run well in excess of this figure! In the case of packet, LOUDER IS NOT ALWAYS BETTER. A similar case also occurs with the receive audio from your radio speaker output to your TNC. Many people either set their receive audio level too low or too high. If it is too low, you will miss packets because the modem could not resolve them properly, and if it is too high you will miss packets due to the audio distorting in the modem.

In setting both transmit and receive audio levels in the absence of any test equipment, always set both controls to a minimum and then increase your receive level until you are copying packets on an active channel and then, while trying to connect, slowly increase your transmit audio level. Once you have connected, stop adjusting your levels as you are now in the ballpark.

Another problem with packet tones that you transmit and receive may be that the relative levels between the 1200 Hz and 2200 Hz tones are not the same. (You will only notice this on a CRO, although it can have a marked effect on your receive error

I am not a teacher, being there only to assist, and depend on the good will of the staff. My own personal equipment was unfortunately relinquished when leaving New Zealand for Leeton.

Patrick H Adams VK2GRQ  
(formerly ZL3AAR)

1/37 Palm Avenue Leeton NSW 2705

### Northcote High School Re-unions

I would be pleased to hear from any VK members who were students at Northcote and District High School, Melbourne, between 1940 and 1950.

Northcote High Ex-Students Association have been actively engaged in class re-unions and information is required for our newsletters, etc.

Max Morris VK3GMM  
PO Box 222  
Rye VIC 3941  
ar

rate). This difference can be caused by the pre-emphasis and de-emphasis in your FM transmitter/receiver not being correct. Some experimentation with audio filters between the TNC and the radio can improve the situation.

### Choosing RF Power Output Level and Antennas

One of the primary causes of performance degradation on any packet channel is HIDDEN TRANSMITTERS. If your station can't be heard by most, if not all, of the other packet stations on a channel, then you are going to suffer collisions. You should, where possible, use antennas and RF power that enable you to hear as many stations on the channel as possible, NOT JUST THE LOCAL BBS OR REPEATER. A good starting power is probably 10 to 25 watts, with a reasonable omnidirectional antenna that is clear of any local obstructions.

Country stations may have difficulty hearing many stations (in many cases it will be impossible) due to terrain or distance but, in the cities, you should be able to come close. To assist in hearing other stations, your choice of operating frequency should be made carefully. Operating frequency should be based on the channel with the closest BBS or Packet repeater. If everyone else in an area did the same then the distances between all operators on a channel is



likely to be reduced and hence the probability of everyone hearing everyone else is increased.

### Setting Basic TNC Parameters

I will look at the various TNC parameters over coming issues. This issue I will start with the TXDELAY parameter.

**TXDELAY** — Transmitter Keyup Delay. This parameter tells your TNC how long it has to key up your transmitter before sending any data on the channel. The TXDELAY parameter needs to be set to a value longer than the time it takes your transmitter to turn on and start sending its RF. This time period can be governed by the lockup time of the radio's synthesiser, or the pull in time of a relay. It should also be as long as the slowest squelch on the channel (although most squelches appear to operate faster than most transmitters).

A good starting point is to set this to 250 milliseconds (check your TNC or modem software manual for any multiples used in the actual command — many TNCs will use a parameter of 25 to represent 250 ms). You should either increase or decrease this parameter as required. If you are having problems connecting (and you have already set your audio levels) you could try making this parameter fairly long (say 500 ms). Make sure you can connect to someone and then slowly reduce this in increments of 50 ms until you can no longer connect. Then increase it by 50 ms and leave this set. Be aware that the TNC's default value may not always be correct for your particular station.

That's an introduction on how to connect a packet station together. There are lots of tricks and tips that can be employed.

If you are having problems getting started you should try contacting your local radio club where you are likely to find other packet operators who can help you.

### Software Available

There is a large variety of packet software available for the PC. If you are using a TNC then a good basic starters" program is "YAPP" written by WA7MBL. This offers basic terminal support as well as the ability to send and receive binary files using the YAPP protocol supported by most BBS stations.

Some other packages available, as either freeware or shareware, include PaKet6, LanLink, TPK, Graphic Packet, Super Packet, PTM and many others. Your final choice of software depends on the features you want. Even most telephone modem terminal programs can be used with packet TNCs. If you are looking for a good packet program (and more importantly help in configuring it) then contact your local radio club or a local packet operator in your area. They should be able to help you get started.

### Conclusion

Next month I will look a little more at TNC parameters. I will also take a look at how a packet BBS station can be put together and, in particular, give an insight into the VK5TTY remote packet BBS in Adelaide.

If you have a question you think would be of interest to other packet operators as well, then why not send it in to the *Packet Doctor*, c/o WIA SA Div, GPO Box 1234 Adelaide SA 5001. Your answer might appear in future editions of "Amateur Packet World".

*c/o GPO Box 1234, Adelaide SA 5001*  
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## WIA News

### WIA Federal Budget

The October quarterly convention of the WIA Federal Council, held in Melbourne over 29-30th of the month, considered the 1995 budget in some depth.

Forecasting a further small decline in income from membership subscriptions, together with a fall in costs in some areas, the Council looked at the Federal Office operations and decided on a conservative approach, budgeting for economies in several critical areas. Overall expenditure was set at a level below the past years' figures.

However, an increase in SMA Liaison costs was budgeted to cover travel expenses expected following a separate Council decision to boost representation over the coming year. Costs for production of *Amateur Radio* magazine were maintained at forecast levels.

In an effort to economise on Federal Office computer system costs and to further streamline office operations, the computer system software and hardware is to be upgraded, commencing in January. Bill Wardrop VK5AWM, VK5 Federal Councillor, volunteered his services to assist in this process and is to spend some time in the Federal Office during January.

## \*\*\* Ham Log: New Version 3.1 Release!!! \*\*\*

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# Pounding Brass

Stephen P. Smith VK2SPS\*

Integrated circuit technology has always fascinated me, especially the family range of IC chips the 8043, 8044, M, B, and ABM versions.

At one time or another in your amateur career you would have come across one of the abovementioned chips, and have probably replaced an older version 8043 with the newer 8044. I recently did this in my Yaesu 901DM transceiver. Or are you into home brewing an electronic keyer for personal use? These chips are symbolic to electronic Morse code reproduction where simplicity and speed are the major concerns to the operator.

Before we look at the family of IC chips, a little background history on the founder is called for. John G Curtis, founder of Curtis Electro Devices Inc was born in Bradford, Pennsylvania in 1930 and obtained his amateur call W3NSJ at the age of 17. John Curtis graduated from the Pennsylvania State University in 1952, obtaining a BS in Electrical Engineering. He joined and served with the US Navy from 1954 to 1959, during which time he was stationed in Yokosuka, Japan.

After his discharge from the navy as a Lieutenant he was employed by the Signetics Corporation, an integrated circuit manufacturer. In 1968 John founded Curtis Electro Devices, specialising in electronic keyers and Morse keyboards. His first electronic keyer was the EK-38. Sometime later the 8043 IC chip was introduced to the American market. This chip underwent a number of design changes over the years and at present we have the 8044ABM.

Currently the company manufactures test equipment along with the ABM IC chip for the commercial market. Mr Curtis also holds the extra class call sign of K6KU.

Let us now focus our attention on the family range of integrated circuits. Starting with the 8043 and working our way through to the 8044 ABM. Chips covered will include M, B and ABM versions of the 8044 IC chip.

## 8043 Version

The 8043 was first introduced in 1973 and was the first integrated circuit designed specifically to perform the electronic Morse keyer function. Utilising CMOS metal Gate technology using FET switching for noise immunity and low power consumption, it was then "state of the art" electronics.

The IC included a clock oscillator, debouncing circuitry for the key paddles,

logic to produce dashes and iambic mode (alternating dots and dashes when both paddles are held together), sidetone oscillator, weighting circuitry (to lengthen dots or dashes) and, finally, an output stage capable of driving the NPN Keying Transistor. Under operating conditions, 90% of the power consumed is used for driving the sidetone and output transistor.

## 8044 Version

Around 1975 an improved version of the 8043 was introduced to the market and its designation was changed to 8044. It included two major improvements. Firstly, it did not require a symmetry adjustment to equalise the length of dots and spaces, and it added dash memory for the true iambic operation (dashes could now be inserted reliably). Secondly, the clock oscillator was re-designed as the 8044 required a clock capacitor of one half the value used in the 3043 chip. The 1 megohm symmetry trimmer necessary for the 8043 could (and should be removed).

## M Version

In 1980 the M version of the 8044 was introduced. These versions consisted of a speed indicating function to the circuit. The 8044 and 8044M were kept reasonably compatible by adding the required two new pins to the end of the package. This allowed the M version to sit in a socket designed for the plain 8044 just by allowing two pins on one end to overhang the socket. A 50  $\mu$ A analog meter is used with the speed readout (Pin 12 of the IC). I will go into greater detail in part two.

## B Version

Two years later it became apparent there had developed two types of iambic keyer circuits (squeeze) keying. Type A already existed in the earlier ICs and the new type was designated type B. Basically, type B iambic is where a squeeze released during an element, say a dot or a dash, will cause another alternate element to follow the one being produced. Confused? Say you want to make the letter "C". You release during the second dah (or the space following) and the last dit will automatically transmit. Presumably, this further reduces the effort to produce some letters. This chip was designated 8044B.

## ABM Version

1986 saw the production of the new 8044ABM chip, a product of the latest design and processing technology available in the integrated circuit industry. This 20 pin IC rolled all the characteristics of the earlier models into a single IC package. I should bring to your attention that the 8044ABM is not pin compatible with the earlier designs. It does have

switchable type A and B iambic, switchable negative or positive weighting, and an output for an analog speed meter as mentioned earlier. Capable of A or B iambic and Meter ready, we use the suffix "ABM" (see Fig 1 for pin connections).

The 8044ABM incorporates filters which eliminate the effects of key bounce on both make and break. Another invisible quality is RF immunity, to prevent false triggering by RF on the paddle leads. The dots and dashes inputs are equipped with active pull up resistors which exhibit only few hundred ohms impedance to the power supply when the key is opened.

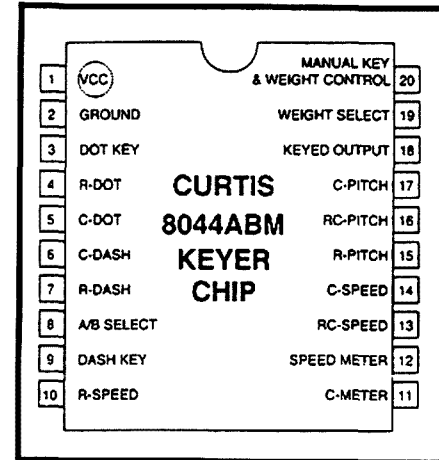


Fig 1.

## Electrical Specifications

Supply Voltage	4 V DC — 12 V DC max 5-9 V DC recommended
Quiescent Current	Less than 50 $\mu$ A at 5 V DC
Operating Current	10-30 mA keydown
Speed Range	Unlimited using external R & C 6-50 wpm
Dot-Space-Dash Ratio	1: 1:3 standard, A or B iambic.
Weight Control	Weight can be + or - via the weight control pot
Sidetone Oscillator	Internal using external R & C.
Package	20 pin DIP

## References:

*The ARRL Handbook 1980-1994*  
*Curtis 8044 Series Information Book*  
*Curtis 8044ABM Application Note*

Next month we continue with the 8044ABM, having a closer look at its operating features. Until then I wish all readers of this column a very merry Christmas and a happy and safe New Year.

\*PO Box 361, Mona Vale NSW 2103  
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HE9LNU	1025 UTC	Mode
	21 June	SSB
Remarks	Op.	STAN



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IVEN KERR (A-3AL) RUSSELL

QSO

EST. QSO

QRI QSB

QRM QRN

TRANSMITTER

RECEIVER

ANTENNA

Remarks

## SNOJP

No Pope in history has travelled so extensively as Pope John Paul II. The papal visit has been celebrated in several countries by the special issue of a QSL card to mark the occasion. Norway (special prefix LE3JP), XX3JP (Madeira Is), 6DAPAX (Mexico), VI3PVA and HG52JP (Hungary), to name just a few. Poland, the birthplace of the present Pope, has marked his visits with QSLs of various prefixes. The card (with its special suffix as well as prefix), celebrated the papal visit to Poland in 1983. Card was donated by Radio Austria International.

## VK4FFG

This is a QSL of the club station of the Australian Naval Amateur Radio Society in Brisbane. It shows some of Australia's guided missile frigates (FFGs) namely the HMAS Adelaide, Canberra, Sydney and Darwin. Hence the significance of the FFG suffix in the call-sign. Club members feature some other Australian warships on their individual cards, including HMAS Vendetta, Australian destroyer HMAS Arunta and the frigate HMAS Barwon. Card donated by Terry VK2ALG, Hon Sec of the ANARS.

AUSTRALIAN NAVAL AMATEUR RADIO SOCIETY  
 Club Station - Brisbane, QLD

ANARS 006

**VK4FFG**

## VE9AL

Very few amateurs will have ever seen a Canadian QSL with the prefix VE9. This QST: the station VE9CNE was featured as pre-war portable call-sign of station VE3AL. In the December 1935 issue of QST the station VE9CNE was featured as a special station set up for the Canadian National Exhibition of August and September 1935 at Toronto. Recently Canada has issued other prefixes with the nine numeral but they have been authorised for special events only, eg VY90R (Hamfest 1993), CG9ASJ (200th anniversary of the city of Saint John in New Brunswick), and VY9CC (20 years of communication). Card donated from Estate of A B Leonard of Drouin.

## CF25A

The call-sign CF25A is yet another uncommon one from Canada. It was a special call commemorating the 25th anniversary of the Canadian flag. The station was operated by the Maple Leaf Radio Society president VE3XN during February and April 1990. Card donated by Jim, operating as A51JS from Bhutan on his 1990 DXpedition.

## A-3AL

This was the pre-war call-sign of one of Australia's radio pioneers, Vernon Kerr. He spent over forty years as a technical officer with the Royal Flying Doctor Service operating out of such outback towns as Cloncurry, Charters Towers and Charleville. A member of the WIA, he was honoured with a life membership of that Institute. Further details can be found in the publication *Halcyon Days* by Alan Shawsmith VK4SS. Vernon went on the air in 1926 using the call A-3AL just a year before Australia started using its OA prefix (to be replaced by VK in 1929).

## CQOVY

This particularly attractive multi-coloured QSL card from Portugal celebrated the country's presidency of the European Economic Community. It shows the flags of both Portugal and the EEC. The prefix CQ zero is a relatively new one for Portugal (CT was used exclusively for many years). Things changed in 1983 when the prefixes CQ, CR, CS and CU were issued. The CQ zero prefix is reserved for the celebration of special occasions. Card donated by Roth VK3BG.

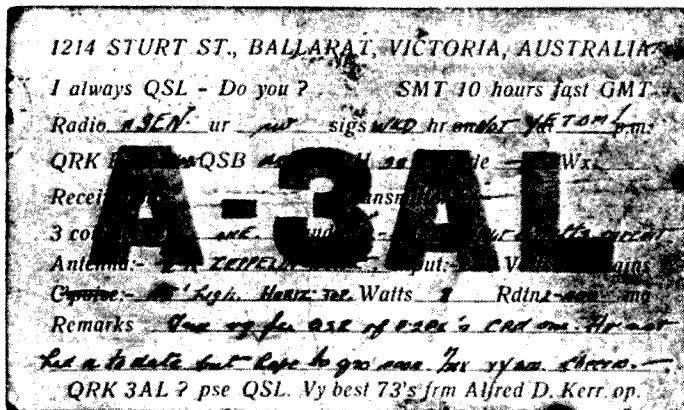
This is

CF25A was the special call authorized by Communications Canada for the Canadian flag's 25th Anniversary. Maple Leaf Radio Society president, VE3XN operated CF25A from February 15 - April 15, 1990 to make 10790 QSO's in 21 DXCC countries. Thank you for being a part of Canadian history.

**CF25A**

I am pleased to confirm our radio communications as shown below.

CONFIRMING QSO WITH	DAY	DATE	UTC	MHZ	RST	2 WAY
A51JS	3	FEB 1990	1144	14.120	59	✓



## Thanks

The WIA would like to thank the following for their kind donation of QSL cards towards the collection (supplementary list):

Bill VK2XT  
 Athol VK3CP  
 Ray VK3JI  
 Mavis VK3KS  
 Stan VK3TE  
 Ivor VK3XB  
 Mike VK6HD  
 Quintin ex VK6QF  
 Richard VK7ZZ

Ronaldo PS7AB  
 Bob W5KNE  
 Paul 3B8AD.

Also the families and friends of the following "Silent Keys" (supplementary list):

A B Leonard VK3EN  
 Bob Stevens VK3OJ (courtesy of Herb VK3JO)  
 John (Jock) Vaile VK3PZ  
 Allen Styles VK3TV (courtesy of Philip VK3KIE)  
 Arthur (Art) Smith VK3UX (courtesy of Jim Linton)

Ron Bainbridge VK4BRZ  
 Bill Wallace VK4KHZ (courtesy of Joan VK6BJE).

## Author's Note

Why not contribute to the WIA National QSL Collection and save something for the future? I especially welcome special commemorative prefix QSLs, pictorials, and thematics. I may be able to feature some of these in future columns. Arrangements can be made for large card collections.

\*4 Sunrise Hill, Montrose VIC 3765 Tel (03) 728 5350  
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## Repeater Link

Will McGhie VK6UU\*

### Power Supply

Power supplies for repeater sites have to be first class. A long duty cycle and reliability are needed for round the clock power for your repeater.

One of our mains powered repeater sites servicing the Perth area requires a considerable number of amps. The site houses two voice repeaters, a BBS, several digital systems and WIA News link equipment. The receive-only current runs at 3 amps and, with all systems running during the WIA News, peaks at 30 amps.

Perth experienced a major power black out at the start of 1994 with no mains power for most of the day. One casualty of this power failure was the demise of the power supply at this repeater site. Even though the equipment remained on air due to the large battery capacity of 500 ampere hours, when the mains power returned the 15 amp float battery charger suffered a major burn out. The condition of the battery charger, however, was not evident until the low battery warning tone appeared on one of the repeaters several days later.

Armed with a 4 amp battery charger (all I could find), I headed to the site. Investigation showed that the battery

charger was dead and could not be fixed on site. All that could be done was place the small 4 amp charger across the large 500 ampere hour battery bank and hope it could make some progress at keeping the site on air. With a constant 3 amp demand from the equipment, plus extra load when one or more of the six transmitters on site keyed up, there was little that a 4 amp charger could do but slow the decline in the battery condition. Quickly a 5 amp regulated supply was put together and placed in service the next day. At least for the time being both these supplies could make some headway towards charging the battery bank.

This situation showed that with only one power supply at the repeater site it was easy to be caught with your pants down. Rather than one big supply, two smaller supplies could offer better reliability. Dare I say it is unlikely for both supplies to die at the same time. However, without comprehensive monitoring one could die without being noticed and remain out of service and then, at a later time, the second one die. Just how far do you go towards making the system 100% reliable?

This possibility aside, the two power

supply system was put in place with a second larger supply being constructed to provide 12 amps. The repeater power supply system now consists of two regulated 13.8 volt units, one a 5 amp, and the other a 12 amp. These power supplies sit across the 500 ampere hour battery bank. During peak demand the battery system makes up the shortfall. The battery also provides emergency power during mains failure. This set-up works well and provides reliable power for the repeater site.

It was during the design stage of the 12 amp supply that I decided to try an idea that had been on my mind for a while. Can you parallel up the cheap, easy to obtain, 78 series regulators? These regulators provide 1.2 amps, with overload and temperature protection, all in one easy to wire up and heat sink package, but would they run in parallel, and would each supply the same current? The problem is that if one of the regulators has a slightly higher output voltage it will supply more current than the other regulators and get upset. The answer is yes! 78 series regulators can be wired in parallel provided their output voltages are within 100 mV of each other.

I obtained several 7815 regulator chips and measured their output voltages. Unfortunately, there was a surprising variation of as much as half a volt. However regulators from the same manufactured batch were within 100 mV of each other. If you can purchase regulators from the same manufacturer and the same batch, the power supply I came up with may be for you. Measure each regulator to be sure that they are all within 100 mV of each other.

Starting with a 7815 chip, the 15 volt output is dropped by 0.6 of a volt in the 1 amp diode, and with a 0.56 ohm resistor in series to help balance the current distribution between regulator chips, a 12 amp regulated supply was constructed that float charges a battery to 13.8 volts.

Note the large smoothing capacitor of 100,000  $\mu$ F. This may be on the high side but, as I had one, it was used. However,

with such a large capacitor the bridge rectifier may not like the large switch-on current surge so the 6.8 ohm resistor charges the capacitor until the relay R1 operates and shorts out the resistor. I found the relay would not operate unless there was a capacitor at the output of the bridge, hence the 5000  $\mu$ F.

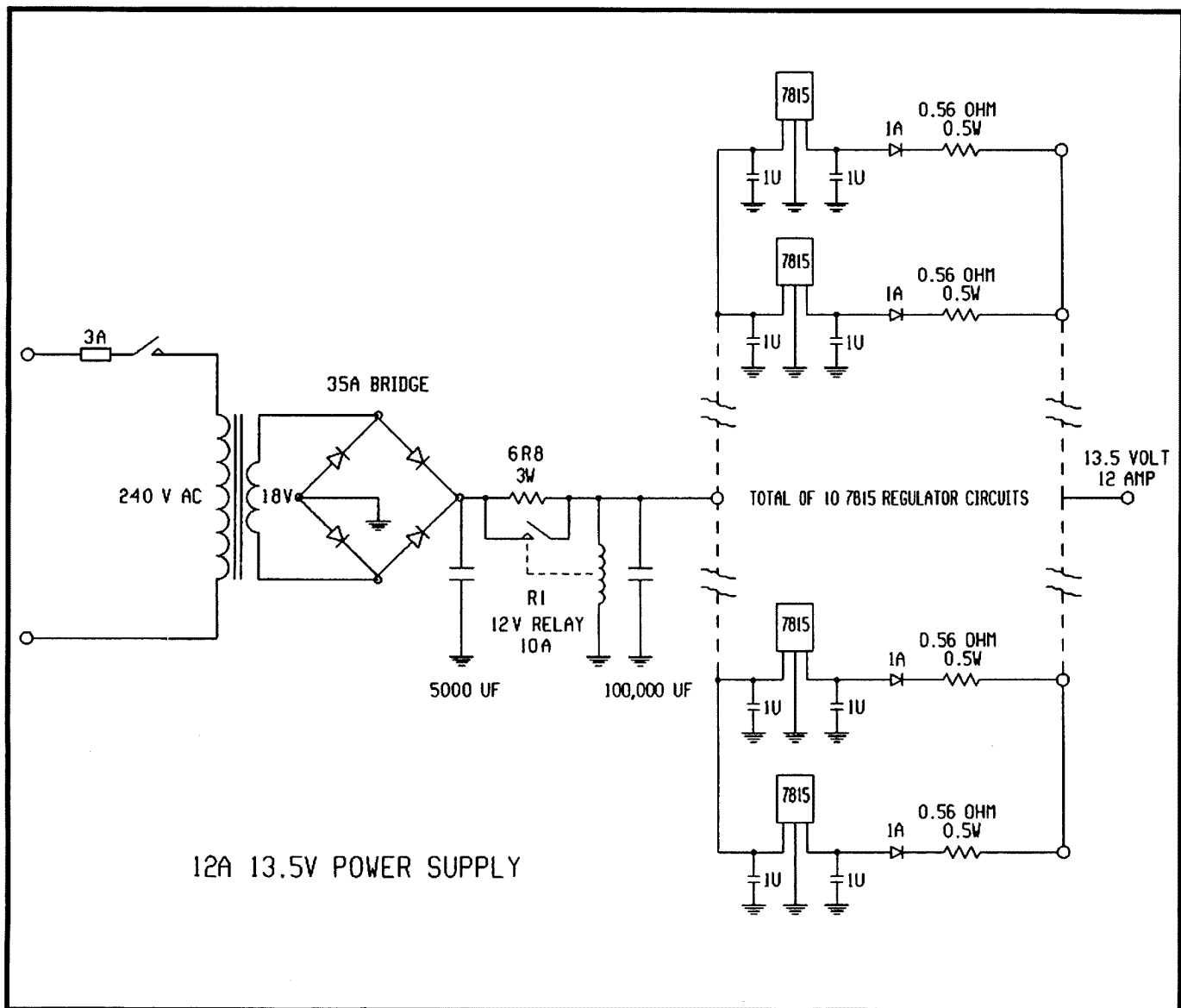
When calculating the size of the smoothing capacitor required in a power supply, there is a simple rule. For every amp drawn from a 10,000  $\mu$ F capacitor there is 1 volt of ripple. If you double the capacitor to 20,000  $\mu$ F, then 1 amp will result in half a volt of ripple. With the 100,000  $\mu$ F capacitor shown, and the supply providing 12 amps, the ripple voltage will be 1.2 volts. The 7815 regulator requires a minimal 2 volt differential between input to output to regulate. For the 7815 the input voltage must not drop below 17 volts at the bottom

of the ripple. If it does the output will contain 100 Hz hum. This may or may not be a problem when floating a battery but it is best avoided. Even a small amount of hum across a battery supply at a repeater site can find its way into equipment.

The 7815 chips require heat sinking and this is made easier as no insulation is required between the mounting surface and earth. Note the 1  $\mu$ F capacitors on each input and output of the 7815s. Without these capacitors the 7815 may become unstable.

I could go on with further thoughts on the power supply but I already have used a large slice of *Amateur Radio*. If you have any queries on the power supply, or decide to use the idea, I can be contacted as shown below.

\*21 Waterloo Cr Lesmurdie 6076 VK6UU @ VK6BBS  
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# Spotlight on SWLing

Robin L Harwood VK7RH\*

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1994 is rapidly coming to a conclusion. Over these past twelve months we have had severe reception difficulties mainly because of the low sunspot count. The higher frequencies above 15 MHz were virtually unusable, whilst propagation on the lower frequencies was marginal to fair quite often. Although, as I'm writing this, the higher frequencies are exhibiting some activity around 1100 UTC, but this is rather temporary, I feel.

Many international broadcasters have had budgetary cutbacks, affecting programming and/or transmission output. Radio Moscow International has increasingly begun cutbacks to the extent that they are now using only 38 languages compared to about 60 at the height of the Cold War. Also, the English World Service has also reduced their transmitting output. I have noted several e-mail messages on the Shortwave Echo complaining of the difficulty in finding Moscow, especially in North America.

Some stations have disappeared from the spectrum altogether. Radio KGEI in San Francisco closed down in the middle of the year. This religious broadcaster mainly beamed into Latin America in Spanish. Another religious broadcaster, WCSN in Maine, ceased operating in October as part of the "Christian Science Monitor" network. The sender was sold about a year back to a Florida based Adventist group which is not connected to Adventist World Radio. A callsign change was mooted but I haven't heard the station since the new owners took full possession. The popular "Swiss Shortwave Merry-go-round" DX show on SRI with the two Bobs, Messrs Zanotti and Thomann, also was axed in June. There was an e-mail outcry about Swiss Radio International over this, trying to have the program re-introduced.

Despite the budgetary gloom, some broadcasters actually increased their output and influence. Radio France International is reportedly increasing the number of languages aired and is investing in additional transmitting sites in Thailand and in Africa. They have recently completed the upgrade of their French sites. The other growth area, particularly in the US, seems to be the increasing number of private religious broadcasters. To get a clear channel, many of these stations are operating well outside the normal broadcasting allocations. This has caused some interference to other spectrum users who are legitimately allocated these

frequencies by their administrations. Diplomatic protests to the American FCC have had limited success. WEWN and WSHB were forced to moved off some 5 MHz channels following SMA protests that they were interfering with our RFDS communications network. Despite this, WWCR has now appeared on 5065 kHz up until 0800 UTC, and again from 1200 UTC, with "Brother Stare". The frequency choice hasn't gone down well with tropical band DXers, either.

And while I am on tropical band DXing, I recently heard a new country between 2045 and 2107 UTC. Nairobi was logged on 4935 kHz with American country & western music followed by a time check indicating it was midnight locally. Before signing off, news headlines in English were heard, followed by a Christian religious devotional. However, I found the pronunciation impossible to follow as the signal rapidly faded.

I also note that the General Overseas Service of All India Radio in Delhi, directed to Oceania, is being heard quite well now at 1050 UTC on 15180 kHz. For many years it has been rather difficult to hear AIR at this time but they have upgraded their facilities and installed new additional senders near Goa and Bangalore. Their modulation has vastly improved. Other frequencies used at this time are 15050 and 17387 kHz. Radio Pakistan in Karachi, on the other hand, are on 7085 kHz variable in local languages and English from 1030 UTC, yet their modulation is horrible as is their frequency stability. Naturally, they are in the exclusive amateur allocation but it may be a transmitter spur from 7310 kHz which is in parallel, yet Karachi has had a registration on 7085 with the ITU for some time.

Don't forget that around the Christmas New Year period, several special broadcasts are planned. The "Festival of Nine Lessons and Carols" will again be on Christmas Day at around 0935 on the BBC World Service. One of my Tasmanian cousins was privileged several years back to attend this live. She confirmed that it indeed is pre-recorded about a week prior to Christmas in King's College Chapel in Cambridge. Midnight Mass from St Peter's Basilica in the Vatican is also available on shortwave. However, I find that the relay via WEWN is better than direct from Vatican Radio.

Don't forget that on 5 January, the Orthodox Christmas is celebrated. This is due to the Orthodox communion still

being on the Julian calendar, while the majority of western churches are on the Gregorian calendar.

Also, don't forget the major ocean yacht races after Boxing Day. Not only do the Sydney-Hobart and Melbourne-Hobart races conduct their communications on HF, but also races between Queenscliff and Devonport plus Sydney to Coffs Harbour and Southport (QLD), are staged over the same period. It is a very hectic time on the channels of 4483, 2524, 2182 and 8711 kHz. The calling channel is either 4125 or 2182 kHz. All use USB.

In conclusion, may I extend my wishes for Christmas and hope that 1995 will bring in more peace and stability than we have had over this past 12 months. If you have any news, don't forget my e-mail address or Packet BBS is there. Take care and good monitoring!

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VK7RH@VK7BBS.LTN.TAS.AUS.OZ  
Internet: robroy@clarie.apana.org.au  
Fidonet: Robin.Harwood 3:670/312  
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## Update

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### Beam Antennas With Bent Elements — Part 2

The author of this two part article, John Sproule VK2AGT, has advised us that there was a minor error in a statement two thirds of the way down column two on page four of the September issue of *Amateur Radio*.

The statement *If  $\theta_{12} < 45$  deg, then  $\cos 2\theta_{12}$  is positive and therefore  $R_1 = R_{11}$ . This is for a Yagi. Should read *If  $\theta_{12} < 45$  deg, then  $\cos 2\theta_{12}$  is positive and therefore  $R_1 < R_{11}$ . This so for a Yagi.**

It might be a good idea to correct your copy of the September 1994 issue of *Amateur Radio* now. ar

## WIA News

### World Radio Sport Championship

Just in case you were thinking of joining in the fastest growing aspect of this hobby around the world — amateur radio direction finding (ARDF) — the deadline for teams entering the 1995 World Radiosport Team Championships has been extended to 28 February, 1995. The event will be held in Washington, DC, in the United States (see October *WIA News*).

# VHF/UHF — An Expanding World

Eric Jamieson VK5LP\*

All times are UTC

I hope last month's columns were not too much of a culture shock but at least you now know a little more about what makes me tick! It was unfortunate that space restrictions meant many interesting snippets of amateur radio activity, particularly during the AM days and portable operation, had to be omitted. However, my notes only make a portion of an interesting magazine and as such I am fortunate to be allowed the space that is available each month.

## Australian News

John VK3ATQ sent a fax to say that between 2115 and 2130 weekdays there is activity on 50.115 MHz. John and Rupert VK3BJN are both in Melbourne and have regular contacts with David VK3DY at Maffra, Lloyd VK3KFO at Briagalong, and John VK3BQS at Sale. As the latter three have their beams pointing west John suggests stations in VK5 may hear them. The short time slot is necessary due to work commitments but they would welcome other contacts particularly from country stations.

From Port Pirie, Neil VK5ZEE sent me a packet message via Garry VK5ZK to the effect that recently he re-activated his callsign and is now active on 50, 144 and 432 MHz chasing SSB contacts. He is attempting to start a nightly net on 144.125 at 0945 and 432.125 at 1015. Contacts so far have been to VK5BWG at Port Augusta and VK5KK in Adelaide and others would be welcome. The Adelaide two metre beacon is a fairly constant S3 but the 432 beacon has not been heard.

Neil runs 10 watts on six to a 5 element beam, on two an output of 80 watts to a 13 element horizontally polarised antenna; also a 20 element crossed Yagi fitted with an elevation rotator for satellite use. On 432 he has 35 watts to two 27 element horizontal KLMS and an 11 element vertically polarised antenna. His aim is to eventually erect 4 x 13 elements for two metres EME contacts.

In the October issue of *Amateur Radio* my columns included a copy of Steve Gregory's (VK3OT) ARRL DX Century Club Award for six metres, the only one issued to an Australian amateur. In addition I have received copies of two additional certificates awarded to Steve; they are from the UK Six Metre Group, the first for working 100 countries on 50 MHz and the second the Worked All Europe Award for contacts with 20 European

countries on 50 MHz all by using CW. Good work Steve.

Mark VK5AVQ ex-VK0AQ, advises that he has checked the VK5VF beacons and found six metres was OK, the two metre beacon frequency was corrected as it had drifted slightly. The 70 cm beacon antenna was broken so temporary repairs were affected but the high SWR may have damaged the unit so it will need an overhaul. The 1296 beacon is still absent.

Mark has lumbered himself with the job of rebuilding the 70 cm repeater again (!) after which he plans to construct 10 GHz equipment for his own use. Sandwiched somewhere will be time to re-erect his six metre antenna in readiness for the Es season.

A note from Steve VK5AIM drew my attention to a paragraph in the VK5 Journal in the August issue of *Amateur Radio* which announced that Adelaide's first six metre repeater is being tested. When ready the South Coast Radio Club will install the FM repeater on Chandlers Hill. Transmit frequency is 53.750 and receive 52.750 MHz. I hope to be advised

when the repeater is fully operational so that readers throughout Australia will know of its existence.

Steve also sent information from *Radio Communication* for June 1994 indicating that Rex VK8RH has built a beacon to be operated from Jakarta in Indonesia on 50.042 MHz with the callsign YBOZZ. No other details are available.

## Contests

The Ross Hull Memorial VHF-UHF Contest commences at 0000 Monday 26 December 1994 to 2400 Saturday 28 January 1995 and all bands above 30 MHz may be used. Single operator only and one contact per station per band per UTC day. RS or RST numbers plus a three-digit serial number to be exchanged plus location or Maidenhead locator of station worked — this to allow for the computing of distances.

Logs must be received by Monday 20 February 1995 and should be posted to: WIA Ross Hull Contest Manager, PO Box 2175, Caulfield Junction, VIC 3161.

The above is a very brief outline of the contest mainly to draw your attention to it. Full details were published on page 34 of last month's issue of *Amateur Radio*. The Contest Manager makes the usual request that DX calling frequencies should be kept clear as much as possible.



From left: Geoff GJ4ICD/JY8IC, Mohammad JY4MB, Nick G3K0X/JY80X, HRH Prince Raad JY2RZ and Neil G0JHC/JY8JH in the JY7SIX shack housed in the Marriott Hotel, Amman, Jordan.

Print courtesy of GJ4ICD.



The 1995 VHF-UHF Field Day will take place on 14/15 January 1995 and will run in parallel with the Ross Hull Contest with rules much the same as in previous years (see the Contests column in this issue of *Amateur Radio*).

Doug VK4OE telephoned to say he would be operating in the Field Day Contest from a suitable site near Dorrigo in northern NSW on all bands from six metres to 2304 MHz. Given reasonable conditions he expects contacts to Sydney and Brisbane on 144 and 432 SSB to be relatively easy and special attention will be given to 1296 MHz. If conditions and circumstances permit he will try 2304 MHz with anyone so equipped.

He will be calling and listening on 144.100, 432.100 and 1296.100 and will shift up 15 kHz on each band for any sustained operating. On 50 MHz the frequency will depend on band conditions and there should be no problems with Es contacts. If Doug cannot be reached on 144 or 432 then you might try telephoning him on 018 191 066 while out in the field!

## Overseas News

From the same publication is a Locator Squares Table which shows G3IMV at the top with 1139 squares comprising 434 on 50 MHz, 15 on 70, 513 on 144, 125 on 430 and 52 on 1.3 GHz. He is closely followed by Geoff GJ4ICD with 611 on 50, 1 on 70, 264 on 144, 121 on 430 and 68 on 1.3, for a total of 1065 squares. In addition there are 15 operators with scores above 500 squares. All this indicates what can be done when you live in a region with a high

density of amateur radio operators spread over a large area.

In a letter from Neil G0JHC received in June I missed an interesting point. He said that the day after returning from a stint at operating JY7SIX, the Jordanian DXpedition station, he managed to work the station. He mentioned the station has been heard several times over the 4000 km distance. The Jordanian beacon is JY6ZZ and operates on 50.075 MHz. It was built and donated by Lawrence GJ3RAX and Geoff GJ4ICD.

But then Neil writes that on 10/6 JY7SIX worked into North America on multi Es at over 10,000 km! That's a long haul for Es with at least four hops involved and this is rare indeed. I will try and obtain more details of the contact/s and report later. Also, see photograph.

Ted Collins G4UPS reports that Leif Johansen LA9ZV, became a Silent Key on 30/8 as the result of a heart attack at the age of 49 years. Many stations in Australia would have worked Leif on six metres. Also, George Heeringa PA0FM became a Silent Key on 19/8 at the age of 73 years. George will be remembered also for his operation on six metres as P43FM.

Ted also provides an interesting comment on the state of six metres in the UK. *Has it been a good or bad season? Although there have been very few openings across "the pond", from here in Devon I have worked/heard 65 countries since 1 January 1994 up to 15 August. Several countries like ZD8 are included as heard because only the beacon is operational. I guess newcomers will feel*

*very pleased to have more than 60 countries worked in such a short space of time! Indeed...VK5LP.*

## From the USA

Emil Pocock W3EP in his World Above 50 MHz in QST for October 1994 has the news for which I have been waiting. That concerns the monumental contacts which occurred from 11 to 14 July 1994 when so many bands opened from USA to Hawaii, in the process setting two world records. I had known for some time that the spanning of that path had occurred but was lacking details. Let Emil tell you about the interesting occurrence.

*The reliable transpacific duct outdid itself this season, replacing sporadic-E doings as the lead story for July. Jack Henry N6XQ called the session "the granddaddy of all 2 metre Hawaii openings". Not only did stations from Oregon to Mexico make contact with the islands on two metres, but the first 2304 MHz Hawaii-to-California QSO was completed and the 902 MHz record extended. Excited stations on both ends of the path made hundreds of contacts on 144 through 1296 MHz, many of them on FM and through FM repeaters.*

*As usual, the KH6HME beacons atop Mauna Loa, Hawaii (BK29go) gave California the first inklings that the duct had formed across 4000 km of Pacific Ocean. N6XQ (DM12) in San Diego heard the two metre beacon weakly on July 3 and 5 and it was loud enough on the 9th to alert the Hawaiians. N6XQ and KH6FOO made a contact soon after. By the 11th Jack heard the Hawaiian beacon at 20 dB over S9 as Paul Lieb, KH6HME himself, arrived on top of the mountain around 2000Z to begin a hectic two days of operating.*

*Stations all along the West Coast were waiting and when Paul made his first call on 144.170 MHz he was swamped with frantic S9 mainland stations and the pile-up remained throughout the day and into the next. By the time the opening died out on the 13th, Paul had filled 16 pages of log, including 148 QSOs on 144 MHz, 6 on 222 MHz, 29 on 432 MHz and 3 on 1296 MHz. Paul made only one contact each on 902 and 2304 MHz but both were record-breakers.*

*N6XQ and KH6HME finally made it on July 13 at 2240Z to extend the transpacific 902 MHz tropo record to 4060 km. Paul's 12 W signal from a short loop Yagi was 529 in California, while Jack's 15 W to a 22 element Yagi was received 519 on the big island.*

*In the midst of all the excitement on the lower bands, Chip Angle N6CA set up his microwave equipment at the Palos Verdes City Hall near Los Angeles and at 2321Z*

## WIA News

### Voice Repeater for MIR Space Station

An upgrade planned for the Russian MIR space station, a popular platform for amateur radio in space activities, should see a 2 m to 70 cm FM voice repeater operational within the next two years, according to a report from 12th Annual Meeting and Space Symposium of the Radio Amateur Satellite Corporation (AMSAT-NA). Held in Florida, USA, in early October, the symposium marked the 25th anniversary of AMSAT.

Other developments outlined at the Florida meeting covered progress on planning for the "Phase 3D" satellite. Due for

launch in mid-1996, Phase 3D will be the largest, and most complex amateur satellite ever assembled.

Among the array of ground-to-satellite (uplink) channels planned is one in the 21 MHz (15 m) HF band. Others will be in the various VHF, UHF and microwave bands. Assembly of the Phase 3D satellite is proceeding on schedule, it was reported. It will be about 2.1 metres in diameter. Meanwhile, it seems the popular OSCAR 13, on which many amateurs "cut their teeth" in amateur space communications, is fated for a fiery death in early December when it is scheduled to re-enter the atmosphere. Thanks to the *ARRL Newsletter* for details.

on July 11 Chip made a 2304 MHz contact with KH6HME for the first Hawaii-to-California contact on that band. The distance was 3979 km. Both stations ran 12 W to 4 foot dishes. Signal reports were 559 both ways.

Unusually strong signals gave some hope that contact could be made on 5760 MHz and 10 GHz as well, but these efforts were not successful with a number of stations spending many hours trying to span the Pacific on 10 GHz, despite the booming signal on 1296 MHz. The wide coverage of the opening was remarkable. Several other Hawaiian stations participated with 144 and 432 SSB/CW gear. KH6HME also worked XE2EED (DM12) in Tijuana, Mexico. The opening extended as far inland as Reno, Nevada.

Hundreds of contacts were also made on two metre FM, both direct and through Hawaiian repeaters, most notably the 147.040 machine on Mauna Loa. Many mobile and even hand-held stations spanned the 4000 km to Hawaii.

KH6HME also made the first successful ATV transmission from Hawaii to California on 440 MHz using 100 watts with the

signal peaking to P4 (nearly snow-free). Paul's equipment was not configured for reception so an ATV two-way could not be made at that time.

Bruce KK6TG, one of those who tried to make the grade on 10 GHz, went up and down the mountains on July 12 and 13 in the Bay area making measurements of signal levels from Hawaii. He found that signal strength rose gradually from sea level to 600 feet and then held constant until about 3500 feet. Bruce saw an extremely sharp inversion boundary, visible as a layer of dark smog, cutting through distant Mount Diablo at about 3800 feet. At 4300 feet he could not hear KH6HME at all. This suggests that the responsible inversion lay just over 3500 feet (1100 metres) altitude in the Bay area, entirely consistent with observations of similar transpacific ducts.

Well, that 2304 MHz contact puts paid to the record held by Reg VK5QR and Wally VK6WG since 17 February 1978 at 1883 km and dashed my hopes of extending the distance to 2000 km by working VK6WG from Meningie. I think the only world record we still hold is the 144 MHz contact on 15 April 1991

between VK4BFO and JI7DMB at a distance of 6763 km but I am open to correction.

## Closure

There is little else to report other than to say that if normal circumstances prevail then Es should be excellent particularly during late November through to early January. Be mindful of two metre contacts when Es conditions are at their best.

Thank you to those who have supported this column during the year by forwarding information. Best wishes to everyone for a happy Christmas and may the New Year be as you would like it.

Closing with two thoughts for the month:

1. Success is being able to hire someone to mow the lawn while you play golf for exercise, and
2. The pain in the neck you complain about may be the result of looking backwards.

**73 from The Voice by the Lake.**

\*PO Box 169, Meningie SA 5264

FAO: 085 751 043 Packet to VK5ZK for VK5LP

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# Technical Correspondence

All technical correspondence from members will be considered for publication, but should be less than 300 words.

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## Interfering Telephone

I have recently suffered from interference to reception on 80 metres which was caused by a neighbour's cordless telephone when hung up! The phone in question was a Telephone Tech CT630.

The interference took the form of a mixture of local broadcast stations appearing at spots around 3.5 MHz, the loudest being on 3447 kHz at S9. There were other signals spaced every 9 kHz.

My station is only 5 km from the local AM broadcast transmitters and the telephone lines are overhead. Apparently the phone line was picking up the broadcast stations and the phone mixing them. The interference was not audible at a friend's house about 300 metres away.

I tried installing an Amidon FT-140-77 ferrite core with 21 bifilar turns as a common mode choke and reduced the interference from S9 to S4. A pair of 2.5 mH RF chokes in series with the line removed the interference completely.

However, the solution finally adopted was for me to repair the plug pack used

with my neighbour's previously defunct phone and restore it to service. The offending phone was returned to K Mart for a full refund.

I was unable to contact the manufacturers of the phone, their only contact information being a telephone

number, now disconnected. Also, I was unable to find a supplier of approved RF filters for use with telephones.

**Richard Rogers VK7RO**

15 Coolamon Road

Taroona TAS 7053

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## Silent Keys

Due to space demands obituaries should be no longer than 200 words.

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The WIA regrets to announce the recent passing of:-

J G (Geoff)	MYERS	VK2UA
J L C	HART	VK3BJY
T N	BROWNLOW	VK5NAF
V D (Doug)	HUMBLE	VK6NDJ
H J (Harold)	BRACKEN	VK7BR
R (Rick)	BRAY	VK7ZZ

### John Geoffrey Myers VK2UA

We regret to announce the passing in early October of John Geoffrey Myers VK2UA. First licensed in 1938 as 21Y, Geoff was a founding member of the Manly-Warringah Club (now the Manly-Warringah Radio Society, of which he was a life member).

Born at Neutral Bay, Sydney, in 1913, Geoff was the first President of the Zero Beat Club and a member of the Harrington's Radio Club. He served with the Australian Armed Forces from 1939 to 1945 as Captain, and later company Commander, with the 4th Division Signals in New Guinea.

After a break of some years, Geoff was re-licensed as VK2UA in 1978 and maintained a keen interest in amateur radio until his passing at age 81. Geoff will be greatly missed by his family and many friends in amateur radio.

**Richard Murnane VK2SKY, on behalf of the Manly-Warringah Radio Society**

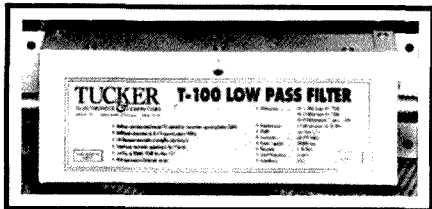
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# What's New

Bob Tait VK3UI\* introduces new products of interest to radio amateurs

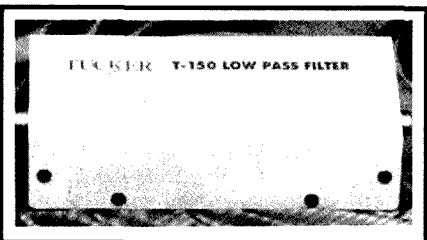
## New Low Pass Filters from Tucker

### Tucker T-100 1500 Watt Low Pass Filter.



Every radio shack should have a low pass filter to insure against problems of TVI from harmonics. The new Tucker T-100 utilises a 9 pole Chebyshev design with a cut-off frequency of 35 MHz. Attenuation at 40 MHz is -70 dB and -60 dB at 65 MHz worst case. The insertion loss is 0.25 dB at 30 MHz with an SWR of less than 1.5:1 and an impedance of 52 ohms. This unit is rated at 1500 watts continuous, and comes with a 1 year warranty. Not bad for \$US49.95

### Tucker T-150 2500 Watt Low Pass. Filter

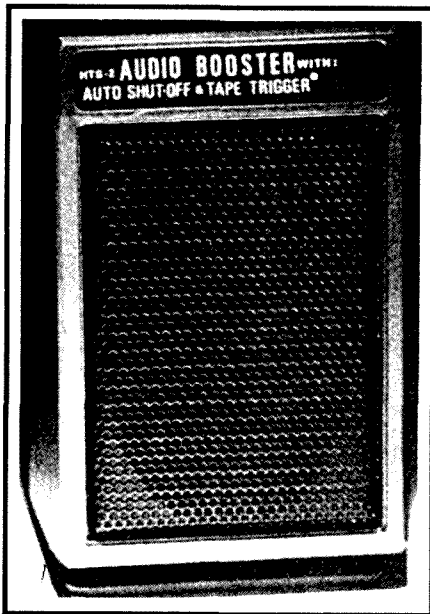


Tucker claim that this is the first 2500 watt low pass filter on the amateur market which is designed to work with high power linear amplifiers. The specifications are the same as its smaller brother but with a higher power rating. The price for this unit is \$US109.00

Both units are available direct from Tucker Electronics and Computers, PO Box 551419, Dallas TX 75355-1419, USA; Fax 214 348 0367

**Have you advised the WIA Federal Office of your new Callsign? Use the form on the reverse side of the Amateur Radio flysheet.**

## Now Hear This! An Audio Booster for your Handheld.



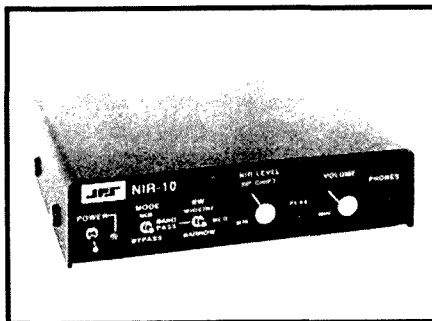
Narvel Electronics Inc have released the HTS-2 audio booster for your handheld transceiver. It comes complete with an internal battery supply and charger unit. A special battery saver circuit shuts off the audio, reducing the battery drain to 1 milliamp, whenever your handheld is squelched for more than 10 seconds. The amp turns on again the instant the squelch opens to produce 1.4 watts into a 3.5 inch oval speaker. A small LED indicates battery saver mode.

A DC power jack and voltage regulator allow you to operate the HTS-2 from external voltage sources (5-15 VDC), or from a standard wall pack. The internal batteries are charged from the external power source. The HTS-2 can accept either + or - ground inputs, so there are no problems about getting it wrong. The unit also has bypass mode and comes complete with 1.5 metres of audio cable. Check these specifications:-

Frequency range	200 — 15,000 Hz.
Input impedance	Variable (100 Ω nominal)
Maximum input	400 mV
Output power	1.4 watts at 4 Ω
Size	69.8 mm x 114.3 mm x 63.5 mm
Weight	2.2 kg
Colour	Silver/Grey

The HTS-2 is available from ZRV Electronics Pty Ltd, PO Box 469, Eltham VIC 3095. Ph (03) 439 3389 or Fax (03) 439 2483 for further details.

## NIR-10 Digital Noise and Interference Reduction Unit.



The NIR-10 is designed to connect to the audio output jack of your receiver/transceiver to enhance the received audio quality of voice and CW signals. Using advanced Digital Signal Processing Techniques (DSP) the unit is able to recognise SSB signals and improve the signal to noise ratio.

Unlike conventional audio bandpass filters, the NIR-10 can actually remove those annoying noises and heterodynes without affecting the speech itself.

There are 4 modes of operation: NIR to reduce or eliminate, heterodynes, white noise, ignition noise, RTTY interference and power line noise; PK (peak) function to reduce white noise (this can be used alone or in conjunction with the NIR mode); NF (notch filter) mode, which removes multiple heterodynes and acts in 3 microseconds; and BP (bandpass) mode — the centre frequency is continuously adjustable, it provides selectable bandwidth, extremely steep skirts, and greater than 60 dB rejection.

A Bypass mode removes all processing delay, but allows the Peak and Notch functions to be used in real time. Connections on the rear panel allow the unit to be bypassed whenever the transmitter is keyed. The NIR-10 is powered from a standard 12 volt DC supply and consumes 1 amp peak. A volume control mounted on the front panel adjusts the output level of the inbuilt audio amplifier and the output is 2 watts into a 3.2 Ω load. A convenient phone jack is also provided.

For further information contact: ZRV Electronics Pty Ltd, PO Box 469, Eltham VIC 3095. Ph (03) 439 3389 or Fax (03) 439 2483.

\*C/o PO Box 2175, Caulfield Junction VIC 3161 ar

# HF PREDICTIONS

Evan Jarman VK3ANI

## The Tables Explained

The tables provide estimates of signal strength for each hour of the UTC day for five of the bands between 7 and 28 MHz. The UTC hour is the first column; the second column lists the predicted MUF (maximum useable frequency); the third column the signal strength in dB relative to 1 μV (dBμ) at the MUF; the fourth column lists the "frequency of optimum travail" (FOT), or the optimum working frequency as it is more generally known.

The signal strengths are all shown in dB relative to a reference of 1 μV in 50 Ohms at the receiver antenna input. The table below relates these figures to the amateur S-point "standard" where S9 is 50 μV at the receiver's input and the S-meter scale is 6 dB per S-point.

V in 50 ohms	S-points	dB(μV)
50.00	S9	34
25.00	S8	28
12.50	S7	22
6.25	S6	16
3.12	S5	10
1.56	S4	4

0.78	S3	2
0.39	S2	-8
0.20	S1	-14

The tables are generated by the GRAPH-DX program from FT Promotions, assuming 100 W transmitter power output, modest beam antennas (eg three element Yagi or cubical quad) and a short-term forecast of the sunspot number. Actual solar and geomagnetic activity will affect results observed.

The three regions cover stations within the following areas:

**VK EAST** The major part of NSW and Queensland.

**VK SOUTH** Southern-NSW, VK3, VK5 and VK7.

**VK WEST** The south-west of Western Australia.

Likewise, the overseas terminals cover substantial regions (eg "Europe" covers most of Western Europe and the UK).

The sunspot number used in these calculations is 22.0. The predicted value for January is 20.7.

## VK SOUTH — SOUTH PACIFIC

UTC	MUF	dBμ	FOT	7.1	14.2	18.1	21.2	24.9
1	17.8	19	14.4	-9	23	18	11	0
2	18.1	19	14.9	-8	23	19	12	1
3	18.1	19	14.9	-5	24	19	12	1
4	18.1	20	14.8	0	25	20	13	1
5	18.0	21	14.7	6	27	21	13	1
6	17.9	23	14.6	16	30	22	14	1
7	18.1	25	14.7	31	34	25	16	2
8	17.9	27	14.5	45	37	26	16	2
9	17.4	28	14.0	50	38	26	15	0
10	16.8	29	13.5	52	37	25	13	-3
11	16.2	30	13.0	53	36	23	10	-7
12	15.5	30	12.4	53	35	20	7	-11
13	15.0	31	11.9	53	34	18	4	-15
14	14.4	30	11.2	52	31	14	-1	-22
15	13.3	31	10.2	51	27	9	-9	-33
16	12.4	32	9.5	50	24	3	-16	...
17	12.3	33	9.4	50	24	3	-16	...
18	12.1	31	9.1	44	22	2	-17	...
19	12.6	25	9.5	26	20	4	-12	-35
20	14.2	22	10.5	14	22	10	-2	-21
21	15.9	21	12.0	5	23	15	5	-9
22	17.1	20	13.1	-1	24	18	9	-3
23	17.6	19	13.7	-5	23	18	11	-1
24	17.8	19	14.2	-8	23	18	11	0

## VK WEST — SOUTH PACIFIC

UTC	MUF	dBμ	FOT	7.1	14.2	18.1	21.2	24.9
1	21.7	16	17.2	...	16	19	16	10
2	21.7	15	17.5	...	17	19	17	11
3	22.0	16	16.3	...	17	19	17	11
4	22.0	16	18.1	-37	18	20	17	11
5	22.1	17	18.1	-29	20	21	18	12
6	21.9	17	17.9	-17	23	23	19	12
7	21.8	20	17.7	0	28	26	21	13
8	22.0	22	17.9	18	33	29	24	15
9	22.0	24	17.9	33	37	31	25	16
10	21.2	25	17.1	44	40	32	25	15
11	20.5	26	16.4	48	40	32	24	13
12	19.8	27	15.8	50	40	31	23	11
13	18.9	28	15.0	52	40	30	21	8
14	18.3	28	14.4	51	39	29	19	6
15	17.2	29	13.3	51	37	26	15	1
16	15.9	30	12.2	50	35	22	11	-5
17	14.9	31	11.4	50	33	19	7	-10
18	14.8	30	11.2	46	32	19	6	-10
19	14.7	26	11.1	30	28	16	4	-11
20	15.4	22	11.5	11	24	16	6	-7
21	17.3	19	13.6	-6	22	18	11	0
22	19.5	17	14.7	-21	20	19	15	6
23	21.0	17	16.1	-32	19	20	16	9
24	21.4	16	16.7	-38	17	19	16	10

## VK EAST — AFRICA

UTC	MUF	dBμ	FOT	7.1	14.2	18.1	21.2	24.9
1	15.3	12	10.9	-32	12	9	3	-7
2	14.1	7	10.8	...	7	5	-1	-12
3	14.5	5	11.0	...	4	4	0	-10
4	16.7	6	12.6	...	2	6	3	-4
5	19.2	7	13.4	...	0	7	7	2
6	19.0	7	13.3	...	0	6	6	1
7	19.1	7	13.4	...	0	7	6	2
8	19.0	7	13.3	...	0	7	6	2
9	19.0	9	13.3	...	3	9	7	2
10	18.9	10	13.2	...	7	11	9	3
11	18.8	13	13.2	...	11	13	10	3
12	18.1	15	13.4	-34	15	15	10	2
13	17.3	17	13.2	-15	19	16	10	0
14	16.8	20	12.8	3	23	18	10	0
15	16.1	24	12.3	24	28	19	10	-3
16	15.2	27	11.7	35	29	18	8	-7
17	14.4	28	11.1	40	29	17	5	-11
18	13.9	30	10.6	43	29	15	2	-15
19	13.7	30	10.3	45	29	15	1	-16
20	14.4	30	9.9	45	30	17	5	-12
21	13.7	26	9.4	28	25	13	1	-16
22	13.4	22	9.3	13	20	10	-1	-17
23	13.5	18	9.3	-2	17	8	-1	-16
24	14.1	15	9.8	-16	15	9	0	-12

## VK SOUTH — AFRICA

UTC	MUF	dBμ	FOT	7.1	14.2	18.1	21.2	24.9
1	15.3	16	11.5	-15	16	11	4	-8
2	15.8	13	12.0	-29	13	11	4	-6
3	18.2	12	13.8	...	11	12	9	1
4	19.2	11	13.8	...	8	12	10	4
5	19.0	10	13.6	...	5	10	8	3
6	19.1	9	13.6	...	3	9	8	3
7	19.0	9	13.5	...	3	9	8	2
8	19.1	9	13.6	...	3	9	8	3
9	19.5	10	13.9	...	5	10	9	4
10	19.3	11	13.6	...	8	12	10	4
11	18.9	13	13.3	...	11	13	10	4
12	18.1	15	12.7	-32	15	15	11	2
13	17.3	17	12.1	-17	19	16	10	1
14	16.5	20	11.5	0	22	17	10	-1
15	16.1	24	11.2	21	27	19	10	-2
16	15.4	27	10.7	34	30	19	9	-5
17	14.9	28	10.3	40	30	18	7	-9
18	14.3	29	10.0	43	30	17	4	-12
19	14.2	30	9.9	45	30	16	4	-13
20	14.5	30	10.2	46	31	18	6	-11
21	14.7	27	10.2	36	29	17	5	-10
22	14.4	24	10.0	23	25	14	3	-12
23	14.5	21	10.2	11	22	13	3	-11
24	15.2	19	10.7	0	20	14	5	-7

## VK WEST — AFRICA

UTC	MUF	dBμ	FOT	7.1	14.2	18.1	21.2	24.9
1	14.1	20	10.8	-7	20	10	0	-16
2	14.5	16	11.0	-8	17	10	0	-13
3	16.7	14	13.1	-27	15	12	6	-4
4	19.7	13	15.1	...	13	14	11	4
5	20.4	12	15.1	...	8	14	11	6
6	20.4	11	16.7	...	7	12	10	5
7	20.4	11	16.7	...	7	12	10	5
8	20.3	11	16.5	...	7	12	10	5
9	20.2	11	16.4	...	8	12	10	5
10	20.4	12	16.5	...	10	13	11	6
11	20.1	13	16.6	...	13	15	12	6
12	19.6	16	15.8	-31	17	17	13	6
13	19.0	18	15.2	-11	22	19	14	5
14	18.3	21	14.6	8	26	21	14	3
15	17.4	24	13.9	29	31	23	14	1
16	16.9	26	13.4	39	33	23	13	0
17	16.2	27	13.1	43	33	22	11	-4
18	15.3	30	11.9	46	32	20	8	-8
19	14.5	30	11.2	47	31	17	4	-13
20	14.0	30	10.7	47	30	15	2	-16
21	13.8	30	10.4	47	29	14	1	-18
22	14.5	30	10.9	47	31	17	4	-13
23	14.5	28	11.1	38	29	16	4	-13
24	14.1	24	10.6	24	24	13	1	-16

## VK EAST — ASIA

UTC	MUF	dBμ	FOT	7.1	14.2	18.1	21.2	24.9
1	25.0	15	20.2	-39	20	22	20	15
2	25.6	14	19.9	...	18	22	20	15
3	26.8	13	20.8	...	18	22	21	16
4	27.6	13	21.0	...	19	23	22	18
5	28.6	14	21.7	-38	21	25	24	20
6	28.1	17	22.7	-28	24	27	26	22
7	27.1	18	22.1	-14	28	29	26	22
8	25.9	19	21.6	8	33	31	28	21
9	24.9	21	20.1	32	39	34	29	21
10	23.9	22	19.2	41	41	35	28	20
11	23.2	23	18.5	46	42	34	28	18
12	23.0	20	17.5	49	41	33	25	14
13	21.0	21	16.0	52	40	30	20	8
14	18.8	22	14.2	52	36	24	13	-2
15	16.8	23	12.9	50	32	18	4	-14
16	15.5	24	11.8	49	29	12	-3	-24
17	14.3	24	11.0	48	25	6	-11	-35
18	12.4	26	9.5	46	16	-7	-30	...
19	9.7	28	7.5	41	-3	-38	...	...
20	9.8	27	7.6	39	-2	-37	...	...
21	14.3	20	10.8	27	20	4	-11	-34
22	21.4	16	16.6	5	28	23	17	7
23	23.4	17	18.6	-17	25	25	21	14
24	23.9	16	19.4	-30	21	23	20	14

## VK SOUTH — ASIA

VK EAST — EUROPE									
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9	
1	9.3	-2	7.3	-21	0	-13	-30	...	
2	8.3	-10	6.5	-24	-1	-16	-33	...	
3	7.9	-15	6.2	-26	-1	-15	-32	...	
4	8.8	-13	6.8	-35	0	-11	-25	...	
5	11.4	-4	9.0	...	1	-4	-13	-29	
6	14.9	2	11.9	...	1	2	-2	-13	
7	17.9	6	14.3	...	3	6	4	-3	
8	20.3	9	16.3	...	5	10	8	2	
9	21.8	12	17.7	...	12	15	13	7	
10	22.6	16	17.9	-14	23	22	18	11	
11	22.3	18	18.0	13	30	26	21	12	
12	21.3	20	17.1	30	34	27	20	10	
13	19.4	22	15.5	38	34	25	16	4	
14	16.6	24	13.3	42	31	19	7	-9	
15	13.7	26	10.9	43	24	7	-8	-31	
16	11.0	28	9.0	40	13	-10	-32	...	
17	9.4	29	7.4	37	3	-26	...	...	
18	8.5	30	6.6	35	-5	...	...	...	
19	8.2	30	6.4	34	-8	...	...	...	
20	8.2	30	6.3	34	-8	...	...	...	
21	8.3	24	6.4	27	-6	-39	...	...	
22	8.5	17	6.5	15	-3	-30	...	...	
23	9.2	9	7.1	0	0	-19	...	...	
24	9.6	4	7.5	-12	1	-14	-32	...	

VK SOUTH — EUROPE									
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9	
1	10.0	4	7.7	-16	2	-11	-27	...	
2	9.0	-5	7.1	-24	0	-14	-30	...	
3	8.5	-12	6.7	-29	-1	-13	-29	...	
4	9.6	-10	7.3	...	0	-8	-20	-39	
5	12.6	-2	10.1	...	0	3	1	-7	
6	16.5	3	13.3	...	0	3	1	-7	
7	19.5	6	15.7	...	-1	6	5	0	
8	21.3	8	17.4	...	-1	8	8	5	
9	21.6	11	17.5	...	2	10	11	7	
10	21.3	14	17.2	...	8	14	14	10	
11	20.8	17	16.7	-37	18	19	17	11	
12	20.1	22	16.1	-2	28	25	20	12	
13	19.4	23	15.5	30	33	26	19	8	
14	17.5	23	13.9	37	31	21	11	-3	
15	14.5	25	11.5	41	26	11	-3	-22	
16	11.7	28	9.6	41	17	-4	-24	...	
17	10.1	29	7.9	39	8	-18	...	...	
18	9.1	30	7.1	37	1	-29	...	...	
19	8.9	30	6.9	36	0	-32	...	...	
20	8.8	30	6.7	36	-2	-34	...	...	
21	8.8	28	6.7	33	-1	-32	...	...	
22	8.5	20	6.6	20	-4	-32	...	...	
23	9.0	14	7.0	9	0	-23	...	...	
24	10.3	10	7.9	-5	5	-11	-28	...	

VK WEST — EUROPE									
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9	
1	10.5	13	8.1	3	5	-13	-32	...	
2	9.5	-4	7.4	-10	0	-18	-37	...	
3	8.9	-4	7.0	-20	-2	-18	-36	...	
4	10.3	-3	7.8	-34	0	-10	-24	...	
5	13.7	2	10.9	...	2	0	-8	-21	
6	18.0	6	14.5	...	2	5	3	-4	
7	21.2	7	17.1	...	1	8	7	2	
8	23.6	8	19.1	...	1	9	10	6	
9	24.8	9	20.2	...	2	11	11	9	
10	24.6	11	20.0	...	5	13	13	10	
11	24.0	12	19.9	...	11	16	15	11	
12	23.3	15	18.8	-22	21	22	18	12	
13	22.0	17	17.7	16	30	25	19	10	
14	19.0	20	15.1	32	31	23	14	1	
15	15.9	23	12.5	38	28	15	3	-14	
16	12.9	25	10.6	40	20	2	-15	-39	
17	11.2	27	8.7	40	13	-10	-32	...	
18	10.1	28	7.8	38	6	-20	...	...	
19	9.7	28	7.5	38	4	-24	...	...	
20	9.5	29	7.2	37	2	-27	...	...	
21	9.4	29	7.2	37	2	-28	...	...	
22	9.6	29	7.5	38	3	-25	...	...	
23	9.8	25	7.5	31	5	-21	...	...	
24	9.8	19	7.6	17	4	-18	...	...	

VK EAST — EUROPE (Long Path)									
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9	
1	8.9	-9	6.7	-30	0	-10	-23	...	
2	9.5	-3	7.2	-25	-1	-9	-22	...	
3	9.9	2	7.6	-19	3	-8	-22	...	
4	9.6	5	7.4	-11	3	-10	-26	...	
5	8.6	7	6.7	0	0	-18	-38	...	
6	8.1	11	6.4	8	-2	-24	...	...	
7	9.1	22	7.2	23	4	-19	...	...	
8	11.8	25	9.4	32	17	0	-17	...	
9	12.8	26	9.8	30	22	9	-3	-22	
10	13.2	18	10.0	2	16	8	-2	-17	
11	16.3	12	12.8	-36	11	10	5	-3	
12	17.7	9	14.0	...	5	9	7	1	
13	16.9	4	13.7	...	-1	5	4	-1	
14	16.0	0	12.4	...	-4	2	1	-3	
15	15.1	-4	11.6	...	-7	0	0	-5	
16	14.5	-6	11.0	...	-7	0	-1	-6	
17	14.2	-7	10.7	...	-7	0	-1	-7	
18	14.1	-6	11.1	...	-6	-1	-3	-11	
19	11.4	-14	8.9	...	-3	-2	-7	-18	
20	9.8	-22	7.6	...	-3	-5	-12	-26	
21	8.8	-31	6.8	...	-5	-11	-21	-38	
22	8.5	-24	6.5	...	-2	-9	-20	-37	
23	8.4	-19	6.4	-38	0	-8	-20	-38	
24	8.5	-15	6.5	-34	0	-9	-22	...	

VK SOUTH — EUROPE (Long Path)									
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9	
1	8.3	-12	6.3	-26	-1	-13	-28	...	
2	8.9	-6	6.8	-23	0	-13	-28	...	
3	9.2	0	7.1	-16	0	-14	-30	...	
4	8.8	2	6.9	-8	0	-18	-36	...	
5	7.8	4	6.1	1	-5	-28	...	...	
6	7.4	9	5.8	9	-10	-38	...	...	
7	8.1	21	6.4	23	-7	-37	...	...	
8	10.3	22	8.2	26	7	-14	-36	...	
9	12.1	25	9.4	33	18	1	-15	-38	
10	9.5	22	7.4	24	5	-17	-39	...	
11	9.6	15	7.4	9	4	-14	-33	...	
12	13.9	12	10.9	-17	11	5	-4	-18	
13	15.7	9	11.1	...	7	8	4	-3	
14	15.0	2	10.4	...	1	4	1	-4	
15	14.3	-2	10.0	...	-3	1	0	-7	
16	13.9	-6	9.8	...	-5	0	-1	-8	
17	14.0	-7	9.9	...	-6	0	-2	-8	
18	12.9	-8	10.2	...	-4	-2	-6	-15	
19	10.4	-22	8.2	...	-6	-7	-14	-28	
20	8.8	...	6.9	...	-19	-24	-36	...	
21	7.8	...	6.1	...	-26	-36	...	...	
22	7.6	...	5.9	...	-23	-34	...	...	
23	7.6	...	5.9	...	-16	-28	...	...	
24	7.9	-25	6.1	-38	-5	-17	-32	...	

VK WEST — EUROPE (Long Path)									
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9	
1	8.0	-36	6.1	...	-11	-21	-35	...	
2	8.5	-17	6.6	-35	-3	-12	-25	...	
3	8.7	-12	6.8	-31	-3	-13	-27	...	
4	8.4	-10	6.6	-24	-3	-16	-32	...	
5	7.4	-11	5.8	-15	-6	-24	...	...	
6	7.0	-8	5.5	-8	-9	-31	...	...	
7	7.6	0	6.0	-2	-8	-31	...	...	
8	9.5	10	7.6	3	0	-18	-37	...	
9	12.4	15	10.0	10	11	-2	-16	-37	
10	11.6	21	9.0	24	13	-3	-20	...	
11	9.7	16	7.5	12	4	-15	-34	...	
12	10.1	9	7.7	-2	4	-11	-27	...	
13	14.1	6	11.1	-32	6	2	-5	-18	
14	16.2	5	11.0	...	2	5	2	-4	
15	15.5	-1	10.7	...	-4	1	0	-6	
16	14.8	-5	10.1	...	-7	-1	-2	-8	
17	14.1	-8	9.6	...	-8	-3	-5	-12	
18	12.3	-12	9.4	...	-6	-4	-9	-19	
19	9.8	-33	7.8	...	-12	-14	-22	-37	
20	8.3	...	6.5	...	-29	-34	...	...	
21	7.4	...	5.8	...	-39	...	...	...	
22	7.2	...	5.6	...	-39	...	...	...	
23	7.2	...	5.6	...	-33	...	...	...	
24	7.6	...	5.8	...	-23	-34	...	...	

VK EAST — MEDITERRANEAN									
UTC	MUF	dBU	FOT	7.1	14.2	18.1	21.2	24.9	
1	8.2	-7	6.3	-19	-2	-19	-38	...	
2	7.8	-16	6.0	-26	-3	-18	-36	...	
3	10.9	-5	8.5	...	0	-5	-15	-32	
4	17.2	5	13.3	...	1	5	2	-6	
5	23.5	8	18.0	...	0	8	9	6	
6	26.3	9	19.9	...	-2	9	11	10	
7	25.9	10	20.4	...	-1	10	12	11	
8	25.5	12	20.7	...	1	11	14	12	
9	24.8	13	20.6	...	6	14	15	13	
10	24.0	16	19.3	...	15	19	18	14	
11	23.2	18	18.6	-18	23	24	21	15	
12	22.4	21	17.9	11	31	28	23	16	
13	21.9	24	17.4	35	37	31	25	17	
14	21.2	25	16.8	41	38	31	25	15	
15	20.1	22	15.1	45	36	27	18	6	
16	17.0	24	12.8	46	33	21	9	-6	

# HAMADS

## TRADE ADS

● **AMIDON FERROMAGNETIC CORES:** For all RF applications. Send business size SASE for data/price to RJ & US Imports, PO Box 431, Kiama NSW 2533 (no enquiries at office please ... 14 Boanyo Ave Kiama). Agencies at: Geoff Wood Electronics, Sydney; Webb Electronics, Albury; Assoc TV Service, Hobart; Truscotts Electronic World, Melbourne and Mildura; Alpha Tango Products, Perth.

● **WEATHER FAX programs for IBM XT/ATs** \*\*\* "RADFAX2" \$35-00, is a high resolution shortwave weatherfax, Morse and RTTY receiving program. Suitable for CGA, EGA, VGA and Hercules cards (state which). Needs SSB HF radio and RADFAX decoder. \*\*\* "SATFAX" \$45-00, is a NOAA, Meteor and GMS weather satellite picture receiving program. Needs EGA or VGA & WEATHER FAX PC card, + 137 MHz Receiver. \*\*\* "MAXISAT" \$75-00 is similar to SATFAX but needs 2 MB of expanded memory (EMS 3.6 or 4.0) and 1024 x 768 SVGA card. All programs are on 5.25" or 3.5" disks (state which) plus documentation, add \$3-00 postage. ONLY from M Delahuntly, 42 Villiers St, New Farm QLD 4005. Ph (07) 358 2785.

● **THE ANTENNA EXPERIMENTER'S GUIDE,** By Peter Dodd G3LDO. 200 Pages, 120 Illustrations, includes material not previously published. Building simple RF test equipment for measuring resonance, Z and field strength. Antenna optimising & VHF modelling. Computer measurement & mathematical modelling. Masts and experimental antennas. Price \$AUS25.00, Inclusive of P & P & Airmail. Cash \$AUS or Visa. Obtainable, Peter Dodd, 37 The Ridings, East Preston, West Sussex BN16 2TW, U.K.

● **STOCK REMNANTS, BUSINESS CLOSED.** All brand new Icom equipment with full warranty. IC-R7100 VHF/UHF receiver \$2,000, AH-7000 Discone Antenna \$200, TV-7100 TV Adaptor for R7100 \$250, IC-707 HF Transceiver \$1,500, IC-728 HF Transceiver \$1,650, IC-R72A Receiver 0.1-30 MHz \$1,250, AH2A Automatic Antenna Tuner \$600, AH2B Mobile Antenna \$150, IC-2SAT 2 m Portable Transceiver \$300, SM8 Base Microphone \$160, SM20 Base Microphone \$180. Brian Stares, PO Koondrook, VIC 3580 Phone (054) 53 1300.

## FOR SALE ACT

● **YAESU FT200 HF txcvr w/FTV650 6 m txvtr,** 10 m preamp, AC and DC psus \$200; BWD 421A dual-trace 12.5 MHz CRO (u/s) \$30; TCA1674 6 m FM txcvr (52.656 fitted) \$10; TWO TCA1675 txcvrs \$5 each; STC132 60 W 2 m FM base txcvr, 5 ch fitted, scanning Rx, r/cont \$30; ST5 RTTY. demod & loop psu \$5; AMSTRAD PC1512 (mono) w/books, software etc \$50; AMSTRAD PC2086 w/books & s/ware, but no HD or mon \$30; VIM 6502 s/board computer, books, appl notes, ASCII kb & monitor \$10;

DATAPRODUCTS 8012 NLQ/graphics printer (minor u/s) \$30; MONO EGA monitor \$10; HP3439A DVM with HP3445A \$20; ORIGINAL software w/manuals, licenses, boxes, etc. Drawperfect & WP Office \$50; MS Fit Sim 3.0 \$20; MS FS Scenery Designer \$20; HARVARD GRAPHICS v3.0 \$80, v2.3 \$50; VENTURA Publisher for Windows Gold v3.0 \$150; QUATTRO PRO v4.0 \$80, v3.0 \$20, v2 \$10; PARADOX SE v1.0 \$30; ADOBE Type Manger for Win \$20; PUBLISHER'S Powerpack v2.0 DOS (scalable fonts for WPerf, LPerf, MSWord, MSWorks) \$20; Free to good homes; Heathkit Sixer (6 m AM); model 15 teleprinter w/p-tape and loop psu. Moving QTH, prices ONO. Mark VK6QI/1 (06) 259 1995.

## FOR SALE NSW

● **EIMAC tubes 4CX1500B \$95; CHANGE OVER RELAYS ceramic frame new \$40; MEGGER & leads good condition \$175; VACUUM relay Jennings & mount \$55; FILAMENT transformer Gresham 2/6.5 V 12 amp new oil filled \$50. Plus freight. Ron VK2DTR (02) 918 3835.**

● **KAYPRO portable computer 10 M HDD lots of legal software \$450; CITIZEN LSP- 10 printer \$125; HEWLETT PACKARD Vectra computer 1.44 M & 360K FDD \$275; NEW valves 807 \$10, EF50 \$5. SASE List. VK2WS QTHR (067) 75 2158.**

● **FRG-9600 Software for EGA/VGA PC, APOSRCH fast search with disk/printer logging, APOSCAN mutiple scan windows, disk frequency data base, disk/printer logging, CAT/RS232 interface included, \$195 both. Tony Richardson VK2APO (02) 310 0426.**

● **KANTRONICS KPC3 VHF TNC with cables and program \$200. Steve VK2YR (02) 821 1803.**

● **LINEAR 2 m Tokyo Hi-power HL-180V, all modes, switchable power 170 W/100 W, switchable pre-amp, requires 13.8 VDC, as new, never installed \$650; STANDARD CNB161 nicad battery pack 700 mAh for standard 2 m handheld, good condition \$60; YAESU FT-4700 dual band 2m/70 cm mobile, with front panel separation kit for secure boot mounting (YSK1L-long 6 metre cable version), brand new, never unpacked \$1190 (\$400 under price of new model including mounting kit). Brad VK2KQH BH (02) 906 5855 otherwise (018) 640 377.**

● **DECEASED ESTATE. RACAL Universal counter 12 MHz type SA535 (not working); AWA Harmonic generator type 10A50065 s/n 92; NO NAME (?) Kilovolt meter MCCES 1944 s/n 732; GENERAL Radio Co inductance bridge type 667-A s/n 518; BRUEL & KJAER deviation bridge type 1504 s/n 85225; RADIO equipment Uniscope (ex DCA s/n 32) s/n 189; MEGA 500 volts no 970573; ZENER diode tester (home brew) well made piece of gear; AWA marker generator type A51740 s/n 130; NO NAME direct current ammeter (Dept Def) Vicrail (?);**

**HOME BREW digital frequency meter (well built) blue case; KEITHLEY Instruments (Clev, Ohio) guarded differential voltmeter model 660A s/n 37693; SIEMENS level meter 200 — 620 kHz model no D2055; KLIRANALYSATOR 30 Hz to 50 kHz model KLA 48 s/n 7480F; MUIRHEAD resistance box type A-25-LS s/n 162374; PLESSEY telegraph distortion measuring set Tx s/n 177 5CBV, similar piece of equipment NO description, only identification ATE British patent No. 6521126; FAIRCHILD Camera & Instrument Corp, signal generator TS-452 A/U s/n 189; MISSION Radio heterodyne frequency meter type CKB-74028 s/n 6086 (M13) with calibration book; MATSUNAGA MFG Co Ltd slide regulator (VARIAC) type SD 282.1; BERCO Rotary Regovolt (VARIAC) 2 amp type 42A s/n 6648; HICKOK model 133B multimeter s/n 5029F; PHILIPS PsuedoRandom Generator O- model 4 s/n 7522 210 00510; HOME BREW variable power supply 0-24 volts approx 2 amps; TEKTRONIX type 422 oscilloscope s/n 006315 (with instruction manual & probes); HOME BREW variable power supply 5 volts; TMC dial & telegraph impulse sender type DATIS 101 s/n 52; HEATHKIT digital IC tester model IT-7400; ROHDE & SCHWARZ Polyskop III type SWOB BN 42472 (inst book); FAIRCHILD 766H/F dual trace type 79-02A s/n 7997; FLUKE differential volt meter model 825A s/n 1653; SYSTRON DONNER counter timer model 1034 s/n 100; GENERAL Radio Mass, modulator pulse generator type 1395-A s/n 334; HEWLETT PACKARD model 214A pulse generator s/n 4140192; SCHOMANDL KG Munchen (Philips-TMC) type ND1M + Q2 s/n 8710; BALLANTINE Laboratories Inc direct capacitance meter model 520 s/n 679; MARCONI Instruments beat frequency oscillator model TF195M s/n B229; TELEQUIPMENT oscilloscope type S43 s/n 33101; SOLARTRON Digital voltmeter model LM1620 200 mv-1 kV s/n 200054; MARCONI Instruments signal generator type TF144G s/n B317; SEFRAM Galvanometer type GTA1; SE Laboratories Ltd UV recorder 3006 model s/n 758/2; SIEMENS 0.2-160 kHz/level oscillator W222 s/n 6/808323; PHILCO Sierra Electronic Operation envelope delay test set model 340B s/n 629; PHILIPS levelmeter LF 30 c/s-15 kc/s HF 4 c/s-660 kc/s STM434/20 s/n 18; PHILIPS Attenuator unbalanced 600 ohm type STM 604/10; PHILIPS PM 2454 AC- millivoltmeter 2 Hz-2 MHz s/n BZ809; HEWLETT PACKARD 522B electronic counter s/n 249-05810; DAWE type 441A wide range oscillator s/n 1101; YAESU frequency counter 30-200 MHz s/n 5C 416115; MICOVAC electronic test meter s/n 22402c; PHILIPS voltmeters model GM6012 s/n BF 6216, model GM6020 s/n D 2689, model 6025 s/n D852; BWD model 506 Oscilloscope s/n 35800. All offers to WIA NSW Division, PO Box 1066, Parramatta NSW 2124, or phone Michael (02) 626 9288.**

**FOR SALE VIC**

- TH3MK3 Triband antenna with HAM-M rotator and connecting cables \$450. Allen VK3SM (03) 386 4406.
- KENWOOD TS43X HF xcvr with FM430 also AM filter mic manual mobile kit and original packing very little on air use \$1325. Graeme VK3BRX (03) 390 8088.
- ICOM 24AT dual band handheld plus BP84 battery pack & extras \$400; BAYSIDE QTH 3 bdr brick plus shack, sea view, Nally tower, 125k. Ted VK3TG QTHR (052) 59 3225.
- UNIDEN 2510 10 m all mode transceiver rarely used \$190. J Glenn VK3AIQ (053) 49 3064.
- CUSHCRAFT R7 HF vertical antenna complete with spare hardware and instructions \$700 ono. Denis VK3BGS QTHR (03) 689 8097 or (018) 058 974 after 6 pm.
- TOWER 60 Ft triangular 3 sections free standing just perfect for your new 40 meter Yagi \$400 ono; SATELLITE dish 4 m good condition \$600 ono. Brian VK3EO (03) 366 7707.
- DECEASED ESTATE OF VK3IW. ICOM IC-751A HF transceiver, internal p/s, mic, audio freq sig readout, \$1,300; ICOM RC-10 frequency controller \$50; ICOM SM-8 desk microphone and inst manual \$50; ICOM IC-2KL solid state HF linear amplifier and inst manual \$1,500; BENCHER Morse paddle \$50; EMOTATOR rotator model 1103MSAX and manual \$400; COAXIAL Cable RG-213/U 50 Ohm 34 metre length \$68; KENWOOD SW-100B SWR power meter \$100; SBE Sidebander IV 23 channel CB modified, would suit conversion to 10 metres \$100. Geoff VK3BGT (059) 775 824.

- YAESU FT7 vgc with manual, mic, mobile mount \$380; BENCHER paddle as new \$100. Bill VK3BR QTHR (03) 584 9512.
- KENWOOD TV502 2 m SSB xverter suits TS520/S/820, EC \$150; DG5 freq display for TS-520S \$150; BENDIX microwave devices VHF/UHF pwr/swr meter 120 watt FSD "N" connectors \$75. Dowkey coax relay 12 V DC "N" connectors \$25. Ron VK3OM QTHR (059) 44 3019.
- TRIBAND BEAM TH3Jr new in box \$450. PacCom TNC-320 VHF/HF packet modem \$300 Ron VK3AEO (03) 707 3405.

**FOR SALE QLD**

- YAESU FT102ZD transceiver \$600; HEATHKIT SB200 linear uses 572Bs \$400; SWAN 500 HF transceiver 230XC PSU 12V inverter electrovoice mike VGC. Peter VK4APD QTHR (07) 397 3751 AH.
- VALVES for amateurs, restorers, collectors. Some in cartons, octais, novals, metals, all tested. Sockets, ceramics, shields. Send 9" x 4" SASE for new list. Reduced prices. Ted VK4YG PO Box 245, Ravenshoe Old 4872, (070) 97 6387.
- KENWOOD TS-120S HF xcvr in perfect working order, includes desk mic & handbook s/n 0012234 \$350 ono. Phil VK4BVM QTHR (071) 59 9757.
- POWER SUPPLY/BATTERY CHARGER ELTEC E721CT, 50 V presettable regulated (switch mode) power supply up to 12.5 amps. Prof quality design incl monitoring, alarms & LED bargraph output current indicator. Compact. As new with performance test sheet. \$280. Gary VK4AR QTHR (07) 353 1695

**FOR SALE SA**

- YAESU FT411 2 m handheld with accessories, as new, original carton s/n 9D080112 \$400 ono; BP270 70 watt solar panel, new, never used \$500 ono; PBC1216 16 amp regulator to suit \$70 ono. John VK5BKE QTHR (08) 250 7259.

**FOR SALE TAS**

- NATIONAL RDC1011D HF transceiver plus ADCV1011 National VFO \$1200; JRC NRD515 all wave receiver 24 memory unit NHD515 \$950; YAESU FT200 transceiver plus speaker power supply \$300. Fred VK7FC QTHR (002) 231 485.

**WANTED NSW**

- ANY IDEAS both practical and theoretical or any unwanted accoutrements for sale to encourage interested high school students in forming amateur radio group in country town. Pat VK2GRQ QTHR (069) 534 730.
- HF LINEAR amplifier; KENWOOD SM-220 station monitor. Malcolm VK2BMS QTHR (02) 257 4583 BH or (02) 958 1114 AH.

**WANTED VIC**

- CIRCUIT Seacom 75A marine txvr cost covered. Willem VK3BTQ QTHR.
- MARCONI termination unit for TF995 B/5 sig gen to provide 50 & 70 ohm outputs. Ron VK3OM QTHR (059) 44 3019.

**MISCELLANEOUS**

- THE WIA QSL Collection (now Federal) requires QSLs. All types welcome especially rare DX pictorial cards special issue. Please contact Hon. Curator Ken Matchett VK3TL, 4 Sunrise Hill Road, Montrose Vic 3765, Tel (03) 728 5350. ar

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.  
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 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.  
 \*Copy typed or in block letters to PO Box 2175, Caulfield Junction, Vic 3161, 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.

\*WIA policy recommends that Hamads include the serial number of all equipment offered for sale.  
 \*Please enclose a self addressed stamped envelope if an acknowledgement is required that the Hamad has been received.  
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State: .....


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Miscellaneous

For Sale

Wanted

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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.

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## CONTRIBUTIONS TO AMATEUR RADIO

Amateur Radio is a forum for WIA members' amateur radio technical experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for possible publication. Articles on computer disk are especially welcome. The WIA cannot assume responsibility for loss or damage to any material. "How to Write for Amateur Radio" was published in the August 1992 issue of AR. A photocopy is available on receipt of a stamped, self addressed envelope.

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Available only until stocks are exhausted. \$4.00 to members, which includes postage within Australia.

## PHOTOSTAT COPIES

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## HOW TO JOIN THE WIA

Fill out the following form and send to:

The Membership Secretary  
Wireless Institute of Australia  
PO Box 2175  
Caulfield Junction, Vic 3161

I wish to obtain further information about the WIA.

Mr, Mrs, Miss, Ms:.....

Call Sign (if applicable):.....

Address:.....

State and Postcode:.....

# WIA Morse Practice Transmissions

VK2BWI Nightly at 2000 local on 3550 kHz

VK2RCW Continuous on 3699 kHz and 144.950 MHz 5 wpm, 8 wpm, 12 wpm

VK3COD Nightly (weekdays) at 1030 UTC on 28.340 MHz and 147.425 MHz

VK3RCW Continuous on 144.975 MHz 5 wpm, 10 wpm

VK4WIT Monday at 0930 UTC on 3535 kHz

VK4WSS Tuesday at 0930 UTC on 3535 kHz

VK4WCH Wednesday at 1000 UTC on 3535 kHz

VK4AV Thursday at 0930 UTC on 3535 kHz

VK4WIS Sunday at 0930 UTC on 3535 kHz

VK5AWI Nightly at 2030 local on 3550 kHz

VK5RCW Continuous on 144.975 MHz, 5 wpm to 12 wpm

VK6WIA Nightly at 1930 local on 146.700 MHz and nightly (except Saturday) at 1200 UTC on 3.555 MHz.



# WIA Divisional Bookshops

The following items are available from your Division's Bookshop  
(see the WIA Division Directory on page 3 for the address of your Division)

	Ref	List Price		Ref	List Price
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Ant. Compendium Vol 2 Software 5.25" IBM Disk	BR293	\$20.00	MORSE CODE	BR223	\$16.00
Antenna Compendium Vol 2 — ARRL	BR292	\$32.00	Morse Code — The Essential Language	BR331	\$24.00
Antenna Impedance Matching — ARRL	BR257	\$52.00	Morse Code Tapes Set 1: 5-10 WPM — ARRL	BR332	\$24.00
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Antenna Pattern Worksheets Pkt of 10	BR902	\$3.00	Morse Code Tapes Set 3: 15-22 WPM — ARRL	BR334	\$24.00
Easy Up Antennas	MFJ38	\$39.25	Morse Code Tapes Set 4: 13-14 WPM — ARRL	BR187A	\$20.00
G-QRP Antenna Handbook — RSGB — 1992 1st Edition	BR452	\$22.50	Morse Tutor 3.5" IBM Disk	BR187	\$20.00
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Novice Antenna Notebook — DeMaw W1FB — ARRL	BR162	\$20.00	<b>OPERATING</b>		
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Practical Wire Antennas — RSGB	BR296	\$32.00	Log Book — ARRL — 9" x 11" Wire Bound	BR202	\$9.00
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