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MI
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Tel: (01702) 206835 Fax: (01702) 205843
Cover Subject
TTC: Nederhorn television transmitter in the Berner Oberland. Signals have been received in the UK via DXTV. Photo: The Niederhorn Swiss Collection.

Disclaimer. Short Wave Magazine aims to give readers information, in a way that is accessible, up-to-date and relevant. However, the information contained within the magazine is compiled in good faith, but we cannot guarantee its accuracy or completeness. The magazine is not responsible for any errors or omissions made in the publication of the information. Any views or opinions expressed in the magazine are those of the contributors and do not necessarily reflect the views of the magazine or its publishers.

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Good Listening
**editorial**

Another year starts! I trust that you have all made your New Year resolutions - hopefully one of them is to get the most out of your favourite hobby.

I have just returned from Denver, Colorado, having been with Brown Owl on 'granddaughter inspection duties'. I was interested to hear the announcement made at the start and finish of each flight prohibiting the use of any electronic equipment, including portable CD players and lap-top computers, below an altitude of 10000 feet. I was also slightly amused that they found it necessary to emphasise that tampering with or destroying the smoke alarms in the toilets was against Federal Law. The flight between Washington and Denver in both directions was on the new B-777 - in my view the 'Windows 95' of the aircraft world. Still, the damped loo seats were interesting to watch in action! Doubtless Godfrey Manning will have something to say about the fact that the designers seem to have forgotten an engine or two.

Massive paper increases have compelled us to increase the price of your favourite magazine from this issue. You can avoid the increase by taking out a subscription. Kathy has agreed to hold subscription rates for at least the next three months. Be assured that we only take such steps when it is really necessary and that we are committed as ever to bringing you the best listening magazine bar none.

Dick Ganderton G8VFH

**letters**

Dear Sir

In response to Mr D. Evans (SWM December), I have recently purchased an AOR AR1500E and am now to scanning. As a 15 year old and, a previous games console owner and current PC owner, I have had experience with several magazines. All of the console magazines do not contain information on scanning related products. The PC magazines concentrate on business software and therefore there is no room for scanning related articles in either.

So, it is important that SWM does introduce a section that will deal with computer software. There are already small sections devoted to arthor, scanning, etc but another section on computer software would not discredit the magazine at all. If some readers do not like the section, I doubt if they would stop buying the magazine over one small article.

Also, you already have a Junior Listener section, but how about a junior mail? I am sure that there are several younger listeners that may feel intimidated by the older readers' letters. This section would allow younger listeners to communicate on the subject.

SWM is the best magazine on the market with the widest range of subjects taste for everyone. Keep it up! These are my views. I hope that you will not be newing my subscription this year.

Good luck to H. McIntyre, a man after my own heart, for daring to introduce a long awaited 'beef', but, sadly for me, the interest matter does not justify the price of SWM.

D. Preston

Wallasey, Merseyside

We are sad to hear that you will not be renewing your subscription. At SWM we try hard to be all things to all men! On the whole we believe that we produce a balanced publication covering a broad range of readers wish to read about. The feed back that we receive does indicate that we have got it just about right. There will always be, however, those readers who want other topics covering. We do our best to reflect our readers wishes, but, it is not possible to please everybody all of the time. And yes, there are many readers who do 'trawl through the columns of LM&S every issue. Since the current subject matter does not interest you, perhaps you could write and let us know what your specific interests are.

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Dear Sir
I am writing in the hope that through your 'Letters' page, I can appeal to your readers for help in locating a copy of the Instruction Manual for a WIN
108 airband receiver. I recently bought one second-hand, but it didn’t have a manual with it.
I have worked out most of the functions, but some still elude me, this is
where the manual would be handy! I would be willing to either borrow one
for photocopying or buying the manual, I will return the cost of postage to
the sender.
I can be contacted at the following address using the following reference
number: Ian 2C200, PO Box 1, Glasgow G69 6EF. Please advise your
readers to use the postcode, otherwise their manuals may get lost. Many
thanks in anticipation.
Ian McCallum
Easterhouse
Glasgow

Can anyone help Ian with a manual for his WIN-108, we do have a very
good track record for help such as this. So please assist if you can. - KN

Dear Sir
I have been following with considerable interest the debate in the
editorial pages centred around the balance between pure radio coverage and
that given to the associated use of computers.
As an advisor for Information Technology, my work involves
supporting schools as pupils develop their interest and understanding as they work with computers to support
their work. There is an increasing awareness of computers. It is apparent
too, through reading your magazine and Elaine Richard’s column in particular, that many young people are
interested in both radio and computers. As more sophisticated and
reliable software is developed, it seems natural that the two
technologies should come together, both are able to enhance other and
stimulate growing interests.
I began my interest in radio through reading articles in your
magazine. At the same time there was numerous advertisements for
computer software to enable radio enthusiasts to develop their hobby
further. In my work with schools, I know that there is considerable
interest in using the computer to decode radio signals, weather satellite
technology is just area, either through direct down loading of radio signals to
tape for later interpretation or using weather dish aerials linked directly to
the computer.
I would agree that with so many computer magazines it is essential that a balance between ‘pure’ radio users and those of us who use our radion with our computers. I believe that at the present time, the balance is about right. It is important that the full range
of information technology is used not only to support new interests and I believe that your magazine is doing this just this. Long may it continue!
For those of us whom this is a new hobby we need impartial and as sound advice. The local company
Southern Scanning & Shortwave is one such company and have done much to develop my interest in radio and I would recommend it to your
readers.
I should be pleased to hear from schools developing the two
technologies to support work in the National Curriculum. Colin Geatrell
Advisor Team Leader
Dorset Information Technology
Wareham
Dorset

Dear Sir
It has been most interesting to see Feba Radio featured on recent
News Pages. We have supported Feba for many years and it is
encouraging to see it receive editorial copy in a secular
magazine.
Thank you also for Rich
McVicar’s splendid article on Radio Alakzam. I hear Rich regularly from Ecuador is quite good on my small
portable sets, (YB600 & ATS800). It was from hearing the EDXG
feature in DX Spytime that I
joined the World DX Club.
L. Mason
Hassocks, West Sussex

Inflight Radios &
Other Electronic Gear

Dear Sir
I thought that I would put pen to paper following Colin Goodall’s letter in the November SWM. I am always
wary of electronic devices aboard aircraft. However, banning their use does not solve the potential EMC
problems. Both avionic electronics and consumer equipment need to be designed with EMC in mind.
Of more interest to your readers, a friend of mine who recently travelled to the USA told me that Continental Airlines new 777 aircraft have a
position (1 believe 12) on the passenger headphone section which gives the cockpit communications audio. So you can listen to the pilots and
ground without the need for airband radio. You are charged for
headphones though so take your own (3,5mm stereo jack plug).
Simon Lloyd Hughes GW0VN

Barry
S. Glamorgan

Having just travelled on United's
'super-type' 777 I was not impressed with the in-flight 'entertainment'
system. My own headphones didn’t
work in the 777’s audio socket! - Ed.

To: dick@pupub.demon.co.uk
Subject: Computer Articles

Mr McIntyre writes opposing Matthew
Bruton’s eminently sensible
suggestions from a previous letter. Mr
McIntyre admits to knowing little
about computers and not wishing to
support new interests and I believe that
his hobby then that is fine but let
him give the same consideration to
the substantial body of s.w.l.s that do
not share his viewpoint.

Mark Brickley...via the ‘net

STOP PRESS

F.G. Rylands G2VF

As we closed for press we learned the sad news that F.G. Rylands G2VF passed away on 9 November 1995.
He was well known to readers of SWM for his regular
advertisements for his G2VF loop antennas and a.t.u.s and for his various hits.

The Very Heavy Radio

The Editorial Gremlins struck again with the review of the Drake R5A Communications Receiver. Those of you who have mastered the
metric weights and measures will have realised immediately that this set does not really weigh over a quarter of a tonne! The real weight
is - as stated in the Specification box - 5.9kg.

Is there something you want to get off your chest? Do you have a problem
fellow readers can solve? If so then drop a line to the Editor.
October 19: The Aberystwyth & DARS West Wales Amateur Radio Club has been formed so that all radio enthusiasts, whether they be Licensed readers. If you have any queries about a particular event, please contact the organisers direct. The organisers cannot be held responsible for information on Rallies, as this is supplied by the organisers and is published in good faith as a service to readers. If you’ve been growing a long-distance rota to a rally, it could be worth ‘phoning the organisers direct to check if it’s going to be held at all. 6pm - 9pm. The Six Counties of Jamaica cannot be held responsible for information on rallies, as this is supplied by the organisers and is published in good faith as a service to readers. If you have any queries about a particular event, please contact the organisers direct.

Editor
Tying then you may already have
look at. Of course, if you are into DX
Tyneside this could be one to have a
Edinburgh, Bristol, Motherwell, or
SAT1). So if you live in London,
broadcasting DW-tv on Channel 30
TeleWest Communications plc are re-
television on your cable channel.
have come across Deutsche Welle
Short Wave Magazine, January 1996
Some of you may
now (you can already watch Ira and
Some of you may
to be overheard'.

HCJB
I've received a QSL and other
information from HCJB recently.
HCJB is an international Christian
short wave radio station
broadcasting from Quito in Ecuador.
English is just one of fifteen
languages they use, these range from
Georgian to Rikongo and Nordic to
Quichua! They issue six different
QSL cards during the year and send
out programme schedules and
tourist information about Ecuador.
To receive a QSL card, you must
include in your report the name of
the programme you heard, the
time in UTC that you were listening, the
date and frequency the programme
was heard on and some programme
details so they can verify that it was
one of their broadcasts you heard.
Every year, HCJB spend thousands
of dollars on postage sending out
their QSL cards and so they
request that all QSL requests are
accompanied by an IRC.
Programmes to look out for are
Ham Radio Today on Wednesdays
at 1730 on 15.490 (this is heard in
Europe so hopefully should be
a good signal) and DX Partyline on
Saturdays at 1730 on the same
frequency. For a wider interest,
programmes like What's Cooking
in the Andes (1730 on Thursdays)
and Blues, Rags & Jazz (Tuesdays
at 1830) could be worth listening for.
The address for the English
Service of HCJB is: Box 1717-691,
Quito, Ecuador. Of course, you can
e-mail them these days on:
english@mhs.hcjb.com.ec

DW-tv
Some of you may
have come across Deutsche Welle-
television on your cable channel.
TeleWest Communications plc are re-
broadcasting DW-tv on Channel 30
now (you can already watch RTL and
SAT1). So if you live in London,
Edinburgh, Bristol, Motherwell, or
Tynside this could be one to have a
look at. Of course, if you are into DX
TVing then you may already have
watched some of their output direct!
Reading their magazine DW-tv for
December (well the English bits of it)
they have some interesting
programmes planned. Some are news
programmes, some are documentaries
and others entertainment based. The
magazine is really a listing of all the
programmes for the month of
December and also contains short
features on some of the programmes.
Contact DW for your copy if you are interested.

Mene Mene Tekel Parsin
Yes, the writing is probably on the
wall for those who enjoy listening to
the emergency services.
Apparently, a project is underway to
completely overhaul the emergency
communications of the police.
The police service are looking at the
logistics to moving to the new
European TETRA standard for
emergency service radios. Any
changes will be implemented
between 1998 and 2003 and 'it aims
to enhance the communications
available to operational officers
wherever they may be and to reduce
dramatically the opportunities for
their conversations to be overheard'.
I don't imagine anyone will be
surprised to hear this as it was bound
to happen eventually.

TV and Radio Information
By TV and radio information I don't
mean the Radio Times or other
listings, but two little booklets called
Television Transmitting Stations and
Radio Transmitting Stations. The first,
Television Transmitting Stations, is a
joint BBC/ITC publication that lists all
terrestrial television transmitters in
the UK. In one section the
transmitters are listed by region telling
you which channels they use to
transmit BBC1, BBC2, ITV and CH4,
the antenna group, power and which
BBC and ITV company that use them.
In the second section the stations are
listed alphabetically with the National
Grid Reference, transmitter number,
who the landlord is, the height of the
antenna and on which page in the first
section you will find them listed.
Finally, it gives you some useful BBC
and ITA addresses.
From reading this booklet, I think
you can get a copy from either BBC
Engineering Information, White
City, 201 Wood Lane, London W12
7TS or ITC Engineering
Information, Kings Worthy Court,
Kings Worthy, Winchester,
Hampshire SO23 7QA. I think I
would include an s.a.e. (A5 size is
plenty big enough) with any request.
The second booklet is from the
BBC. It lists all the domestic BBC radio
transmitters as well as a variety of bits
of information about them. I thought
the section on local radio would be
very useful to those who enjoy
listening to these stations - especially
when it's not your local station. It lists
each radio station (for example Radio
Bristol) and then tells you where its
transmitters are. In this instance, they
are Wendip, Ilchester Crescent and
Bath using 95.5, 94.9 and 104.6MHz
respectively as well as Mangotsfield
and Taunton on 1.548 and 1.323MHz.
The level of power that each of these
transmitters use is also useful when
you are trying to work out which of
the stations transmitters you are
picking up. Finally, at the back of the
booklet they give the Grid Reference
for every single one of the transmitters
mentioned.
The address at the front of the
booklet is: BBC Engineering
Information, Villiers House, The
Broadway, Faling, London W5
2PA. Again, I would include an s.a.e.
with any requests for the booklet.

New Release
As always, Link Electronics have kept
me posted when they have a new
scanner in the shop (many thanks for
that). The PRO-25 is a new
release from Realistic with 100
channels covering 66-88, 108-174,
406-520 and 806-956MHz. It can scan
at 50 channels per second in
memory mode, or 100 steps per
second in search mode. The scanner
has all the normal whistles and bells
that an enthusiast would expect
from Realistic. The PRO-25 can be
driven by dry cells, NICads or from
a 9V power supply. It comes
complete with antenna, belt clip
plus manual. Link Electronics, 216
Lincoln Road, Peterborough PE1
2NE

...and finally
Thank you to all who send me information for use in the column, may I wish
you a very Happy Christmas and Peaceful New Year. Please keep all the
information coming, news on contests, awards and other news of interest to
the young or beginners in general most welcome.

Short Wave Magazine, January 1996
Mr Analog at Hesing Technology

Iwatsu Electric Co. Ltd. announce a new series of economically priced oscilloscopes by the name of 'Mr Analog'. All units have a 150mm screen which provide a clear and distinct display. Currently the range comprises five models with bandwidths up to 1MHz and sensitivities down to 2mV/Div. Timebase sweep speeds range from 500ms/Div. to 20ns/Div. with an accuracy of ±2%. Included is a timebase x10 multiplier to provide the fastest timebase speed of 2ns/Div.

Full on-screen parameter display, frequency counter and cursor measurement capability makes this an attractive new family of instruments. For full details and current prices please contact, Hesing Technology, 41 Bushmead Road, Eaton Socon, Cambs PE19 3BT. Tel: (01480) 386156, Fax: (01480) 386157.

Morse Course

Morse code courses, to prepare for the RSGB Amateur Radio 12w.p.m. Morse test will commence Friday evenings 1800-1930 as of 12 January 1996 at Newport College. Full details from the college. Tel: (01635) 370000/3553 quoting course ref. 99208B. Or direct from Ray Oliver G3NDS, Morse Course (01480) 386157.

Radio and TV News

Radio amateurs and TVDXers make use of meteor shower signal propagation for v.h.f. signal reflection achieving signal skip distances between 500-1700km. Apart from random Meteor Scatter which occurs daily there are several main intensive shower periods which will generally offer more scope for reliable signal pings. Courtesy of Neil Bone, of the British Astronomical Society, here is the list:

- operates as follows -
  EESTI TV chs. Tallinn ch.R2, Partu R4; Narva R2; Rohru R5
  Privately operated Estonian TV using state owned transmitters -
  RTV - Narva R2; Haapalu R3;
  ETVV Narva R2; Haapalu R3
  Kanal 2 - Kohha-Narva R1;
  Polska R1; Kunda R1
  Estonia intend to end use of the low v.h.f.f.m. Band 68-73MHz by
  the year 2005 and transfer all f.m. radio

<table>
<thead>
<tr>
<th>Name</th>
<th>Overall Period</th>
<th>Peaking dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quadrantids</td>
<td>January 1-6th</td>
<td>January 3-4</td>
</tr>
<tr>
<td>Lyrids</td>
<td>April 19-25</td>
<td>April 21-22</td>
</tr>
<tr>
<td>May Aquarids</td>
<td>April 24-May 20</td>
<td>May 4</td>
</tr>
<tr>
<td>Cetids</td>
<td>May 7-June 6</td>
<td>May 14-25</td>
</tr>
<tr>
<td>Delta Aquarids</td>
<td>July 15-August 20</td>
<td>Jul 28/29, Aug 6/7</td>
</tr>
<tr>
<td>Perseids</td>
<td>July 23-August 30</td>
<td>Aug 13-15</td>
</tr>
<tr>
<td>Orionids</td>
<td>October 16-27</td>
<td>Oct 20-22</td>
</tr>
<tr>
<td>Taurids</td>
<td>October 20-November 30</td>
<td>Oct 31-Nov 5</td>
</tr>
<tr>
<td>Leonids</td>
<td>November 15-20</td>
<td>Nov 17/18</td>
</tr>
<tr>
<td>Geminids</td>
<td>December 7-16</td>
<td>December 13/14</td>
</tr>
</tbody>
</table>

In November 1966 the Leonids MS produced a major and very intense storm and a similar performance is expected in 1998 or 1999. It's likely that there will be a marked improvement in activity this year onwards. The 1996 storm lasted nearly an hour and my experience was of an hour of Band 1 TV similar to a very intense Sporadic E opening - with the improved performance available some 30 years on it would be wise to check out Band 3 as well this time round!

Estonian TV - as a Sporadic E catch services to the established 88-108MHz band.

NOAA Marine Reception from ICS

ICS Electronics Ltd. have upgraded and improved their NOAA Marine WXSAT receive system for PC compatibles. The new model is somewhat un-imaginatively called the WS-4. Particularly important is an improved antenna, which allows satellites to be received when they are close to the horizon, thus increasing the observation range. This compact antenna has two sets of four folding elements mounted on a 900mm stainless steel pole which incorporates the standard 1in marine mounting 'thread' at its base.

ICS weather satellite systems were instrumental in Nicerette winning the 199 Fastnet Race by a margin of over 2hrs.

The WS-4 system comes complete including antenna, receiver, connecting cables and software, and is priced at £704.95 inc. VAT. For more details contact Robin George, ICS Electronics Ltd., Unit V, Rudford Ind. Est. Ford, Arundel, West Sussex BN18 8BD. Tel: (01903) 731101, Fax: (01903) 731105.

Radio amateurs and TVDXers make use of meteor shower signal propagation for v.h.f. signal reflection achieving signal skip distances between 500-1700km. Apart from random Meteor Scatter which occurs daily there are several main intensive shower periods which will generally offer more scope for reliable signal pings.Courtesy of Neil Bone, of the British Astronomical Society, here is the list:

<table>
<thead>
<tr>
<th>Name</th>
<th>Overall Period</th>
<th>Peaking dates</th>
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<tbody>
<tr>
<td>Quadrantids</td>
<td>January 1-6th</td>
<td>January 3-4</td>
</tr>
<tr>
<td>Lyrids</td>
<td>April 19-25</td>
<td>April 21-22</td>
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<tr>
<td>May Aquarids</td>
<td>April 24-May 20</td>
<td>May 4</td>
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<tr>
<td>Cetids</td>
<td>May 7-June 6</td>
<td>May 14-25</td>
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<tr>
<td>Delta Aquarids</td>
<td>July 15-August 20</td>
<td>Jul 28/29, Aug 6/7</td>
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<tr>
<td>Perseids</td>
<td>July 23-August 30</td>
<td>Aug 13-15</td>
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<tr>
<td>Orionids</td>
<td>October 16-27</td>
<td>Oct 20-22</td>
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<tr>
<td>Taurids</td>
<td>October 20-November 30</td>
<td>Oct 31-Nov 5</td>
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<tr>
<td>Leonids</td>
<td>November 15-20</td>
<td>Nov 17/18</td>
</tr>
<tr>
<td>Geminids</td>
<td>December 7-16</td>
<td>December 13/14</td>
</tr>
</tbody>
</table>

In November 1966 the Leonids MS produced a major and very intense storm and a similar performance is expected in 1998 or 1999. It's likely that there will be a marked improvement in activity this year onwards. The 1996 storm lasted nearly an hour and my experience was of an hour of Band 1 TV similar to a very intense Sporadic E opening - with the improved performance available some 30 years on it would be wise to check out Band 3 as well this time round!

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**Two from Isoplethics**

The ATU Gang
Newly available is a family by Jacksons Bros. budget-priced, single-gang variable capacitors developed for use in low and medium power antenna tuning and matching units. The LA/400 and LA/200 have 400pF and 200pF swings, respectively, with an air gap of 0.61mm. Testing is performed at 1.25kV. The LA/100 has an air gap of 1.27mm and a swing of 80pF. It is tested to 2kV and is especially suited to open wire feeder tuners.

The LA1 range are available priced at £11.90 each direct from Isoplethics.

Hi Z Headphone Transformer
High impedance headphones - as required for simple radio receivers - crystal sets and single valve sets - seem to be no longer available. A new transformer that matches hi-fi low impedance headphones with minimum loss could well be the answer. The AOP-1 one of a new range developed by Isoplethics for valve applications can handle primary currents up to 25mA and audio powers up to 1.5W. Overall dimensions of 67 x 37 x 44mm include mounting lugs and solder tags. The AOP-1 is priced at £8.25. Both of these products are available from Isoplethics, 13 Greenway Close, North Walsham, Norfolk NR28 0DD. Tel: (01692) 403230.

**Rental via the 'Net**

Livingstone rental announce what they claim to be the first electronic equipment catalogue on the Internet. At the information contained in the company's catalogue-on-disk for Windows in presented in the online implementation. The additional benefit of this method off retrieval, Livinstone believe is global access, via any computer that supports World Wide Web access. Updates are also instantly implemented.

Also offered is the facility to download the whole Windows catalogue direct or to request the paper or disk versions by post.

Users will derive optimum benefit from the service by using a Web browser that supports Tables, The Livingston Rental Internet Catalogue is usable with any browser, The URL to the catalogue is http://www.livingston.co.uk

For further information contact Graham Harris, Livingston Rental, Livingston House, Middlesex TW11 0LB. Tel: 0181-943 5151, Fax: 0181-977 643.

**New ATU and ASU Kits from HOWES**

The CTU9 Antenna Tuner is a new addition to the Howes range of antenna tuning units. It is a close relative of the popular CTU8 receiving model reviewed in December '94 SWM. It has all the features of its brother, but has the additional facilities of a bypass switch, a balun transformer and additional terminal posts for connection of balanced and unbalanced wire antennas.

The new ASU9 antenna selector enables up to three antennas to be used with a short wave receiver, antennas are selected by a rotary switch. The unit includes an attenuator with 0 to 5dB attenuation in 5dB steps. In practice, the receiver's built-in attenuator often only provides the option of too little or too much attenuation. The ASU9's 5dB steps give it much more flexibility in the control of received signal levels.

Styling of the ASU9 is designed to compliment the CTU8 and CTU9 ATUs. Both kits comes complete with case, printed and punched panels and all parts to build the unit. It is also available factory built.

The CTU9 costs £39.90 in kit form or £69.90 ready built. The ASU9 costs £27.90 in kit form or £49.50 ready built. Post and packing is £4.00 in either case (prices include VAT at 15%). C.M. Howes Communications can be contacted at Eydon, Daventry, Northamptonshire NN11 3PT. Tel: (01327) 260178.

**Quantum Leap for Timewave**

The new all mode DSP-599zx is a noise filter that combines a 'hyperspeed' d.s.p. processor with an alphanumeric display. Featuring quick select' push buttons and optical encoders to wipe out noise. Make those heterodynes disappear like magic, and the weak signals pop out of the noise.

Includes continuous filter tuning from 5kHz for modes such as a.m. broadcast, n.b.f.m. for v.h.f./u.h.f. and sophisticated data modes. The DSP-599zx is field upgradeable. The easy to read back-lit i.c.d. display provides a simple way to read, set and recall all of the setting.

The DSP-599zx costs £349, and is available from Nevada Communications, 189 London Road, North End, Portsmouth, Hants PO2 9AE. Tel: (01705) 662145, Fax: (01705) 690626.

**A Good Day Out at Martin Lynch and Son**

The recent open day at the Martin Lynch and Son's Amateur Radio Exchange Centre, was very well attended. Radios and ancillaries, food and drink and raffle prizes were in abundance. Newly born Master Henry Lynch was also in attendance - although unlike his father he spent most of the time sound asleep. 1995 marked the First year of 'On-demand' Morse tests run by the RSGB. If you missed this annual event this time. Make sure it's in your Diary for 1996. Details can be obtained from Martin Lynch and Son, 140-142 Northfield Avenue, Ealing, London W13 9SB. Tel: 0181-566 1120, Fax: 0181-566 1270.
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Short Wave Magazine, January 1996
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Short Wave Magazine, January 1996
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**Just send us your name, address and phone number, together with four first class stamps and we’ll send you our bumper short wave information pack, including a copy of our famous Listener’s Guide!**
"Mr Perkins," Young Golly read from the sheet. "We shouldn't have accepted this, he's complaining about reception of the BBC World Service."

"He's probably listening on the broadcast band," Kilocycle Ken said. "With the deregulation of broadcasting, that rich guy bought a frequency and got a contact with the BBC. I don't know how he makes money from it. Does it for love I suppose."

The complainant's address was a city council pensioner housing complex of semi-detached flats. Kilocycle Ken noted a copper wire antenna strung to a poplar tree. That wasn't usual these days. "Not the usual s.w.I.," he said. "What is the usual?"

Young Golly asked. "There are plenty of active short wave listeners, not all just kids either. It takes skill to find the weak stations, the unusual ones."

Young Golly said, "I can never understand why anybody can get excited listening on short wave for fun. I hated my compulsory monitoring training, listening to that tape with all the different types of signals."

"The h.f. bands are not what they used to be," Kilocycle Ken said. "The only people who seriously monitor now are the secret service."

Hard Way

"Satellites is the way to go," Young Golly said. "You never came up the hard way. Like most old time radio inspectors, we were all radio operators who enjoyed the job, Morse men, listening to signals that were just sparrow farts! At Awarua Radio, at the bottom of the South Island, we regularly communicated with passenger liners while they were still in the Thames after leaving the London docks."

"In the good old days," Young Golly said sarcastically. "Before I became a professional operator, I was a keen short wave listener on my three valve set which I made myself, plug-in coils, no digital read-out, just a 0 to 100 dial with pencil marks on it so I could remember where the stations were. I'd listen to anything, ships using Morse, I'd copy their telegrams. I listened on the amateur bands too, before I became an amateur myself. The Californian kilowatt amateurs used 'phone, but there was a lot of Morse. A British guy in Tibet with the callsign AC4YN was the most famous amateur. The Australian short wave stations broadcast to their outback relaying ordinary broadcast programmes, like that radio serial, Dad and Dave. They don't make programmes like that anymore."

Young Golly sighed.

Kids Today

"I remember hearing on the American Armed Forces Radio a boxing match with Joe Louis fighting, sometime in the 1940s when I was a boy, I can't remember who he fought. I listened on 3MHz, on an Arc 5 aircraft receiver I got after the war, to the flying boats landing on Auckland harbour. And all those foreign languages, a thrill. You kids today miss so much, so blase, so sophisticated."

"Yeah," Young Golly said, bored.

"I didn't write away often, cost too much, threepence for an overseas letter in those days, but I had cards pinned to the wall. My mother used to complain about them ruining the wallpaper, but it was the best wallpaper as far as I was concerned! And I listened on the standard broadcast band to ZJV Suva, only 1920km away from here, but Fiji was exotic. In the late afternoon on the
broadcast band, signals rolled in from the Americas, like XERF Del Rio Texas. One of their preachers used to shout, ‘Send one dollar and we’ll pray for you’. You could even be sent a real diamond ring for five dollars. It was a 50kW clear channel station, came in as clear as a bell, but then there wasn't the electrical noise in those days."

"I thought we had cleaned up most of the noise with our interference regulations."

Young Golly said.

"Still plenty out there, otherwise we’d be out of a job."

"That’s a point," Young Golly agreed.

"Sacramento California used to come in loud and there was a station in Honolulu broadcasting from the Fish Bowl in Waikiki. There was also a programme, Hawaii Calls, broadcast from the Moana Hotel with Webley Edwards, Hawaiian music. You could hear the surf and the tradewinds, or was it just atmospheric noise?"

"Then there was 2UE Sydney, it transmitted all night. In those days all the New Zealand broadcasting stations closed down at 10pm, or midnight at the latest."

"If we don’t get out of the car we’ll be here until midnight!" Young Golly said.

**Ancient Radio**

Mr Perkins was English. He might once have been in the army, a small grey moustache, red-faced, ramrod straight, wearing khaki serge trousers, a green duckshirt Harris tweed jacket with leather buttons.

The small flat was barely furnished, a narrow bed, neatly made, a copy of Queen Elizabeth II’s coronation portrait on one wall.

The radio was an ancient valved Murphy in a mahogany cabinet, huge edge-lit dial, push-button band change switches.

Mr Perkins stabbed a button and tuned along the 31m band. "Listen to that noise, it’s somebody using something!" he said, loudly.

Kilocycle Ken said, "The BBC World Service is available on the standard broadcast band, try 1386kHz."

"That’s not the real BBC," Mr Perkins said scornfully. "The BBC should only be received on short wave because the transmissions are not beamed this way."

"It is a challenge," Mr Perkins said.

"So why complain about the interference, it is part of the game, if you like to call it that."

"It has been very bad lately, external, local, around here, not the usual noises. I suspect the old woman next door is using hair curlers, mutton dressed as lamb, think she’s got her eye on me."

Kilocycle Ken explained that radio inspectors didn’t investigate short wave complaints, their job was to protect the local broadcasting stations, but nevertheless they would have a listen out.

"Don’t tell the woman next door I’m complaining about her."

"Of course not," Kilocycle Ken said.

Young Golly said, "Mr Perkins reminds me of that television programme, One Foot In The Grave."

"The BBC gives him something to cling to," Kilocycle Ken said. "His past. Home."

Young Golly said, "Obviously he didn’t make his fortune out here in the colony, if he ended up in a council flat."

"That could be the hell of it," Kilocycle Ken said sadly.
Ray Fautley G3ASG has always had a fascination for radio communication, ever since he was a particular band of radio frequencies at specific times and writing down what I heard.

To keep the service 'under wraps' as a civilian member of the RSS I would be given a Royal Observer Corps identity card and issued with an ROC uniform for use when attending the occasional VI local area group meetings. Thank goodness I was never asked to identify any aircraft!

It was at one of these group meetings that I met a pre-war amateur who had been a leading DX operator and a pathfinder in the 20s and 30s for the ten metre band - the late Nell Corry G2YL. She sent superb Morse and it was a hell of a job to keep up with her when she did the practice sending!

The relevant authorities would provide me with all the requisites including a radio set enabling Morse signals to be heard. However, I had already built myself a superhet receiver, which included a tuned r.f. stage with plug-in coils and this turned out to be far better in performance than the sets issued to Vls at that time.

So, equipped with log and message pads, envelopes and postage stamps, I started to listen for two hours, four evenings a week, always on the same band, 7 to 7.5 MHz (or rather Mc/s as it was then!).

**General Search**

My job, as a VI, was called General Search (GS), which meant patrolling up and down the same 500kHz (kc/s) listening - for what? No information was given about what I was supposed to be listening for, so I wrote down everything I heard and hoped I was doing the right thing!

The morning following each evening watch, my log sheets consisting of callsigns heard, preambles, 'chat', frequencies, times and any coded messages (recorded on the special message pads) were sealed in a "SECRET" envelope.

This envelope was then sealed inside another envelope which was sent to an address well etched into my memory, PO Box 25, Barnet, Herts. That's what the postage stamps were for!

It says much for the postal system during those terrible war days of persistent air raids and bombing. A log posted on say, Tuesday morning, would appear back on the front door mat on the Thursday morning, of the same week!

My log would have several different rubber stamp marks across the various callsigns such as 'SUSPECT', 'MORE PLEASE' or perhaps '2/345' or similar figures. Gradually I got to understand that 'SUSPECT'

mean that the famous 'Box 25' team at Barnet had probably not had this particular station reported before, 'MORE PLEASE' meant just that, try to find the same station again and report what it was sending.

The parts of my log stamped with a number, eg. 2/345, indicated that 'BOX 25' was aware of this particular service and already had it covered by other Vls whose job was known as Allotted Watch (AW). These Vls would listen for specific stations at specified times.

The messages copied were always in a code of some sort, often in five letter groups, sometimes if five figure groups and occasionally in mixed figure and letter groups.

After a few weeks of listening, I got to recognise some signals that were nearly always present, at the same time and on the same frequency, usually using the same callsign. These were mostly innocuous press stations sending in news reports to their various agencies, such as Reuters.

In time, I found to my surprise that I could 'pigeon-hole' various groups of operators by their 'fists', ie. by the way they sent their Morse signals. For example, I could recognise Russian operators by the way they sent figures, for they seemed to send rapid fire groups of dots with quite long dashes.

At the end of sending sessions, some operators would add various bits of extra personal information which, I think, probably helped in identifying them. This copy was referred to as 'chat'.

Some 30 years after the war had ended, so also ended the period of secrecy concerning the RSS and its operations. The following story of the importance of

“.....I was told not to mention anything about this visit to anyone.....”

It wasn’t surprising that the whole of the Second World War was spent in the radio industry testing and fault-finding equipment for the armed forces. Most of this period was spent at a shadow factory of Marconi’s, W. T. Co. at Hackbridge in Surrey.

During this time, a radio friend asked me if I would like to swap my Home Guard out-of-working hours duties for something quite different, which he said was connected with radio. My curiosity fully aroused, so I jumped at it.

He asked me if I could read Morse, or if not, was I prepared to learn? Yes, was my answer to both questions as my Morse speed was not very high.

He gave me no idea of how this Morse reading could be used, and although after a few weeks of practice I managed to read up to twenty words a minute, I had no idea what it was all for!

That is, until I received a visit at home from a somewhat serious gentleman who questioned me as to my place of birth and age, etc. This visit ended with me signing a paper and age, etc. This visit ended the period of secrecy.

I was told not to mention anything about this visit to anyone. Perhaps you can guess how my parents viewed these rather unusual happenings, especially as I was told not to discuss it with them.

**Morse Signals**

A little later, another visitor arrived who explained that I had been enrolled in the Radio Security Service (RSS) as a Voluntary Interceptor, or VI. This would entail my listening to Morse signals on a particular band of radio
about 12 years old, which has given him a profession and a life long hobby.

...Somewhat serious gentleman....

the VIs work, especially the General Search operators who listened to anything and everything, can now be told.

Radio Operators

In the beginning, many amateur radio operators who had been regularly communicating around the world using Morse code before the war were recruited into the RSS in various functions. In fact, it was a group of such amateurs who were members of the Radio Society of Great Britain (RSGB), together with a government department, that resulted in the formation of the RSS very early on in the war.

One of its functions was to attempt to locate enemy agents in this country who might use radio to contact their German authorities. It appears that very few actual spies were found by the VIs as these were located as soon as they arrived in this country by other organisations.

However, something a great deal more important than the location of a few spies was ‘stumbled upon’ (in the usual British bumbling way!) by the VIs listening all over the UK. It was the experience of a continually spreading network of German secret stations all over occupied Europe, as well as in neutral countries, with a few even in North and South America.

Messages between these stations were intercepted (quite unknowingly!) by the VIs and eventually the RSS, together with the famous Bletchley Park decoders put together details of the network. Many lives were saved by the information gained from ‘listening in’ to these stations.

Specific Instructions

When the invasion of occupied Europe drew near, VIs were given specific instructions where and what to listen for after the news of the invasion had been made public. My own memory is that although I had no more knowledge of the invasion date than any other non-VIP, for the evening two hour watch before the invasion actually started, there was very, very little to listen to, except the well known news agency services. None of the ‘suspicious’ type of stations were received which seemed a bit odd, it was as if the ether had gone ‘dead’.

Early the next morning the invasion actually started, followed very soon by its announcement on the BBC News. Why had the German services stopped transmitting, even before the invasion started? Was it a coincidence, or was it just me?

Future Re-Union

During 1979, the BBC produced a programme entitled The Secret Listeners about the formation of the RSS and the activities of the VIs during the war. Transmitted on BBC2, it was a thirty minute documentary of which unfortunately I saw only about half.

Probably many ex-VIs never even saw it at all. Will the BBC ever give it another showing? I hope so because I think those of us still around who listened to all those ‘dits’ and ‘dahs’ so long ago could say ‘That’s what I did’ in answer to the question ‘What did you do in the war Daddy?’.

Finally, are there any of you out there who were VIs? I’d like to contact any of you still around. What about some sort of re-union some time in the near future? - while we’re still able!
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Radio By Numbers

John Griffiths, our regular Scanning columnist, explains how radio has played more than a passing role in the murky world of espionage.

There is ample documentation to illustrate the fact that, on a daily basis, intelligence is gathered by ships, aircraft, satellites and listening posts throughout the world. If you’ve got it, then you can be certain somebody, somewhere, wants to know something about it.

Yet, despite all the technical advances of ELINT - Electronics INTelligence - gathering, there is still a great need for HUMINT (HUman INTelligence). The fantasy world of authors like Ian Fleming and Tim Sebastian is reality for many thousands of people employed by organisations such as the well known and now defunct KGB, its military counterpart GRU, by DIS and D6 who are known in the UK, incorrectly, as MI6 & 6 by MOSSAD, the CIA, NSA and many, many more.

Organisations such as these provide careers for people and their nets are spread throughout the world. There are, however, other agents whose employment is never put on record and for whom a regular career ladder is something they will never set a foot on.

It is these people, known as traitors, spies who are recruited by ‘the other side’ for many and varied reasons who are the meat of this article. Without this army of ordinary agents, there is a certainty that the Intelligence Services would not function as efficiently as they do.

Numbers Stations

Changing tack slightly, you have almost certainly come across the many numbers stations operating in the h.f. spectrum. You don’t even have to have a b.f.o. in order to pick-up many of these transmissions! These stations are now the subject of amateur scrutiny via ENIGMA - The European Numbers Information Gathering and Monitoring Association, who, far from being anyway in involved with the intelligence services of any country are just people, like myself, who are fascinated by the stations and banded together to pool what we knew.

I went further and delved into many books in order to discover if I could find our more. What I did, not only had me intrigued, it surprised me!

Radar Specialist

During the 60s, an ex RAF Flight Lieutenant by the name of Frank Brossard, who had been a radar specialist, worked in the Air Ministry. His work was involved with guided missiles and, quite obviously, he was handling very sensitive material indeed.

However, Brossard had problems. He was short of money and he liked to drink. It was these two factors which had the KGB approaching him to request that he make some ‘drops’ for them in return for financial reward. Brossard agreed. In all, he made nine such drops before he was caught in 1965. Sentenced to 21 years, it was later calculated that Brossard’s Soviet connections had got very high quality information in considerable quantities indeed.

Brossard was instructed to make a drop, how, when, where, by a very easy code indeed. He would listen to Radio Moscow and when they played five songs in a row, such as ‘Moscow Nights’, ‘The Volga Boat Song’, he was to decipher the code on his pad, the result being his instructions. It was so easy that it probably escaped all but the most serious attention, and it certainly worked for Brossard, as he was in Soviet hands for four years! It is just one example of how coded messages are sent.

Spy Kit

However, it isn’t all one sided. In December 1981 two Mexicans were stopped at Gatwick by Immigration. In their luggage was a wealth of very interesting stuff indeed, and very definitely a spy kit! Officers found Luis Garcia and Antonio Sanchez had over $18 000, some false passports, a radio transmitter, code pads and instructions.

Whilst the unfortunate Mexicans were sentenced to seven years each, British Intelligence decided to use the radio to gather information of their own. With the aid of a Royal Navy warship on west Indies Station, the transmitted signal was DF’ed as was its reply. The triangulation pointed towards Havana, Cuba, and the text sent was identified as originating from a station calling itself RMA.

This was almost certainly a station operated by the DGI- Cuban Intelligence - which is almost a branch office of its KGB mentors. The text was sent in what is, to ENIGMA monitors, standard format of 95 x 5 letter groups. What the message was about, only British Intelligence knows!

Prime Catch

Sometimes, the murky world of the spy gets darker and Geoffrey Prime - who is still known as The GHCQ Spy - was no exception. Long before Prime got to GHCQ, he was ‘employed’ by the KGB, having approached a Red Army officer in Berlin while he was still in the RAF and offering his services. Prime was a good catch. Employed in the RAF with SIGINT - Signals Intelligence - he provided the Soviets with good quality material. Yet there was much better to come.

After leaving the RAF, Geoffrey Prime was sent to East Berlin by his Soviet paymasters and underwent an espionage course. Once back in the UK, he was accepted by GHCQ at their London site, where he handled intelligence destined for Cheltenham. It was after Berlin that he gathered his spy kit together, comprising of a tape recorder, one-time deciphering pads and a short wave radio receiver.

Prime would receive the numbers text from his controllers, decipher it on his pads and act upon it. It is simple enough if you know the formula.

In the fullness of time, Geoffrey Prime transferred to Cheltenham GHCQ and was given higher security clearance as well as being made Head of Section. This pleased his KGB handlers immensely and, summoning him to Vienna, he was asked to defect - being rewarded, if he did, with the rank of KGB Colonel and all that went with it. Prime refused. After all, he had much better conditions in the UK.

However, Prime did not tell his handlers of his worries. A ‘spy catcher’ trial in the US had exposed two spies and Prime felt it was too close to home for him. On his return to the UK he resigned from GHCQ - but not before handing over 500 photographs of highly sensitive documents indeed to his KGB mentors.

Prime, though ‘retired’ from GHCQ, and, in effect, from the KGB, was again asked to come to Vienna where he was paid for his previous work and also asked to rejoin GHCQ. Once more he refused. In 1981 he was asked to come to Potsdam, where £4000 exchanged hands and the
Feature

**Request to return to his old job made again.** This time, however, Prime had other worries.

It is well known that Prime's interest in young girls brought the spotlight on to him. A paedophile, he had catalogued a massive 'library' of home address and telephone numbers, which he intended to follow up. He did, however, lose control and attempted to attack a young girl. The girl screamed, Prime panicked and he quickly left the scene. Not before the intended victim had had a good look at him, however.

West Mercia Police were also on the lookout for a 'pest' and Prime seemed to fit the bill for it. Interviewed, he probably put his espionage training to good use and fooled the police. It got him off - but the strain proved too much and he made a confession to his wife about his deviancy and his activities as a spy. In November of 1982 Geoffrey Prime was given 38 years in jail, 34 for his espionage and four for his attack.

The depth of the damage done to Intelligence was never fully revealed. As a result, GCHQ now give staff a polygraph as well as frequent positive vetting during recruitment and also during service.

**Unique Method**

So, these number stations carry messages which are certainly intended for spies, all over the world. With the range of short wave transmissions, the cheapness of equipment, it is obvious that number stations will be continuing their unique method of contact. After all, a cheap Russian made Selena Vega 215 can easily pick-up RCS. You certainly do not need the 'super-duper' mini radios used by the likes of James Bond!

If you listen in to the honey-voiced ladies on the air - like the sensual 'Lincolnshire Poacher', who gets her name from the signature tune played before broadcasts, or the exotic Yankee Hotel Foxtrot with her endearing vocal inflections - who knows who you are listening to? DI5? DI6? NSA? DGI? KGB?

The fact that you are intercepting a coded message to someone is, at least for me, something of a thrill. What it means is beyond me, but within ENIGMA, we must surely have amateur cryptographers and analysts who may well have broken the codes! It's a pity there is no way to find out if we have!

As a monitor, I sit, sometimes for hours, trying to search for alterations in the messages which signify change. Finding an alteration may well mean that a different pattern is about to begin. Sometimes, when stations go off the air for no reason, you wonder if they've been 'silenced'. For me, and I'm sure for many other ENIGMA monitors, it is an adjunct to short wave listening that is, like the messages themselves, a little bit out of the ordinary.

To many others, perhaps crouched over a radio in some freezing attic or in some domestic location with a pen and a pad at their side, the numbers mean something very different indeed....

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**A selection of numbers stations you can monitor**

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Traffic</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.840</td>
<td>Four figure groups</td>
<td>a.m.</td>
</tr>
<tr>
<td>7.532</td>
<td>German numbers station</td>
<td>a.m.</td>
</tr>
<tr>
<td>7.605</td>
<td>Mike India Whiskey Two repeated</td>
<td>a.m.</td>
</tr>
<tr>
<td>7.845</td>
<td>Five figure groups</td>
<td>a.m.</td>
</tr>
<tr>
<td>11.545</td>
<td>UNID numbers station</td>
<td>u.s.b.</td>
</tr>
<tr>
<td>11.570</td>
<td>Five figure groups</td>
<td>a.m.</td>
</tr>
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Short Wave Magazine, January 1996
The well known 'Command' series of receivers and transmitters has been well documented over the years but the more recent members of the collecting/restoring game might be interested in a few points regarding these sets. Designed by the Aircraft Radio Corporation of the USA they began life around 1936/37. After a series of short run production units of a RAT/RAV set built for the Navy the more well known Command series evolved. In 1940 Command sets with the nomenclature ATA and ARA for transmitters and receivers appeared, these were all finished in black crackle paintwork. After May 1940 the Signal Corps bought the same sets with the nomenclature SCR-274N, the N indicating Navy. These sets were supplied both in black crinkle and plain aluminium finish. From 1943 onwards the US Navy acquired an improved version, the AN/ARC-5, finished in black. The receivers, the various models virtually identical save for the frequency determining components, covered from 190kHz to 27MHz in seven ranges. The receiver had its power dynamotor fitted to the rear of the set, this is the main item often missing on surplus examples. A 30-40MHz version was constructed in the UK from a BC-455, it was designed to receive the UK instrument landing signals being used at the time in the UK. The option, however, was never taken up by the US users.

What's Inside?
The receivers use six valves in a conventional superhet design, r.f. - mixer/oscillator - two i.f. stages - Detector/b.f.o. - a.f., and have the minimum of controls, tuning, antenna tuning, b.f.o. on/off and r.f/i.f gain. These controls could be remotely operated from the control box. The transmitter is of a simple robust design, a triode acting as a master oscillator drives a pair of 1625s, this is an 807 valve with a 12V heater on a 7-pin base. The oscillator operates in a Hartley configuration and there is the added refinement of a magic eye valve. This is used to check dial calibration against a crystal fitted in the set. There are no buffer valves or multipliers, the oscillator drives the p.a. directly. It must be said that the sets were expertly designed, the stability of the oscillator is excellent in itself but added to this is the fact that there is very little pulling of the oscillator frequency by either the p.a. or antenna loading. The p.a. on the ATA and SCR-274N units were amplitude modulated on the screen grids only where as the ARC-5 units had anode and screen modulation applied. The r.f. output of the units varied depending upon model and frequency coverage, but was never much more than 20W.

Variants and Accessories
The photographs show a BC-458-A transmitter, external and internal views, along side a BC-453-B receiver of the same series for comparison. The under view of the Left to right, BC-453-B receiver, BC-458-A transmitter.

More historical radios. Ben Nock G4BXD, takes a look at the Command series of receivers and transmitters that originated in the USA in the mid-1930s.
transmitter shows the oscillator tuning capacitor near the rear of the set, the two large valve bases in the centre being for the 1625s. The p.a. tuning capacitor is situated nearest the front of the set, the relay in the centre switching the p.a. cathodes and oscillator h.t. A further relay mounted behind the front wall connected the antenna to the transmitter on transmission. A typical full station set-up could comprised three receivers, the BC-453-B (190-550kHz), a BC-454-B (3-6MHz), a BC-455-B (6-9.1MHz), one to four transmitters, BC-696-A (3-4MHz), 457-A (4-5.3MHz), 458-A (5.3-7 MHz) and a 459-A (7-9.1MHz). As many as eight receivers could be installed in certain situations. Also fitted would be a control box (BC-450-A) that contained the receiver frequency indicators - the receivers being remotely tuned from the control box, an antenna relay unit (BC-442-A), a radio control box (BC-451-A) and a modulation unit (BC-456-A) which also housed the h.t. dynamotor supplying power for the transmitters. A number of mounting plates for various combinations of receivers and transmitters were also available. The transmitters, like the receivers, had very few controls, the transmitter has a frequency adjustment and an antenna loading and tuning. p.a. tuning was mechanically coupled to the oscillator tuning so that the p.a. was always in tune with the oscillator at all frequencies. The sets, despite the very high quality and simplicity of design and use, were short lived. The WWII conflict saw them widely used in all forms of aircraft but the rapid advancement of technology and the increasing demands upon frequencies and operation saw the development of more sophisticated equipment with even the use of the British v.h.f. radios to take the place of the command set.
in certain roles. For anyone who would like to try and fire up a Command transmitter, the 7-pin plug on the rear connections are shown in Table 1:

**Table 1:**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>oscillator h.t. (200V), ground to transmit, ±12V (assuming the set has been changed over from the original 24V requirement)</td>
</tr>
<tr>
<td>3</td>
<td>grounded to transmit, ground</td>
</tr>
<tr>
<td>4</td>
<td>ground</td>
</tr>
<tr>
<td>5</td>
<td>±12V (assuming the set has been changed over from the original 24V requirement)</td>
</tr>
<tr>
<td>6</td>
<td>p.a. screen grid either modulated or straight h.t., (centre pin) - p.a. h.t. modulated or straight (400V).</td>
</tr>
</tbody>
</table>

For c.w. use the actual p.a. h.t. supply is keyed! The receiver, again assuming the 12V mod has been done, will need 12V at about 1A and 200-250V h.t. at 40mA. If the 3-pin dynamotor plug is still in place on the rear drop of the set then the pin nearest the rear is ground, looking from the front the left hand pin is l.t. and the right h.t. If the control box controls have not been added to the front of the set you will need the connections from the 8-pin plug behind the lower front panel as shown in Table 2:

**Table 2:**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ground via a 50kΩ pot</td>
</tr>
<tr>
<td>2</td>
<td>ground</td>
</tr>
<tr>
<td>4</td>
<td>audio o/p</td>
</tr>
<tr>
<td>5</td>
<td>ground via a s.p.s.t. switch (closed - b.f.o. off, open - b.f.o. on).</td>
</tr>
</tbody>
</table>

These sets, despite their age and simplicity are a pleasure to use. Considering the small and simple p.s.u. required for the receiver one of these sets could prove an interesting talking point located on any modern day collector's shelf.
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Short Wave Magazine, January 1996
MVT-7200 UK

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**Next Day Courier Service**

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With the number of emergency calls made to our Fire Brigades around the country increasing on a daily basis and the nature of incidents becoming more and more complex, today's modern Fire Brigades rely heavily on their radio schemes for communication and call-out facilities.

In days gone by, the method used to relay messages from the scene of a fire to the local City or Borough Fire Brigade's control room was via the telephone network and fire appliances carried loose change as part of their kit! It wasn't until the mid-1950s that local Fire Brigade's were equipped with radios and even then this was a shared system with the Police.

Eventually, in the mid-1970s, the Fire Brigades around Britain went 'state-of-the-art' and almost without exception, all fire appliances were fitted with radio sets tuned to dedicated Fire Brigade frequencies. It was around this time also that the call-out sirens around our towns and villages fell silent, as the part-time (retained) firefighters were now being called from their homes or places of work to the local fire stations by their new pocket radio alerters.

Further Modernisation

The mid-1970s brought further modernisation to the Fire Brigades as the older City and Borough Brigades, each having their own individual local control room, were amalgamated into larger, more efficient Metropolitan, Shire or County Brigades utilising just one centralised control room to handle and process the incoming emergency calls, the mobilisation of the appliances and the communications to and from the appliances for the whole of their region.

The compliment of fire appliances housed at any one of the larger brigades fire stations varied from just a single fire engine, based at one of its many small village stations and manned by the retained firefighters called out by their 'bleepers', to a large city station, housing as many as six or more appliances including specialist fire and rescue vehicles, such as hydraulic platforms, rescue tenders or turntable ladders.

Each one manned 24 hours a day by professional wholetime firefighters.
Unique Callsign

Each of these appliances within its county is assigned its own unique callsign. This callsign is generally derived from the type of appliance it is and the station at which it is based, also known as its home station. As an example, the first or front line appliance of one of our larger county brigade's takes its callsign from its home station's number. This home station number basically depends on the number of fire stations within the county.

If, for instance, the county in question has 48 fire stations, then the callsign of the first or front line appliance for each of these 48 stations would be 01 to 48. Thus if the small village fire station's number is 21, then its fire engine's callsign is 21. Likewise, the larger town or city fire station within that brigade housing more than one appliance is also allocated its own station number. Therefore, its first line firefighting appliance takes that number as its callsign.

The station number is also used in the other appliances callsigns bases at the same station, but is prefixed by another number identifying the type of appliance it is. For instance, a hydraulic platform has the prefix 7, and if based at station 48, would have the callsign 748. Similarly, a rescue tender, prefix 3, from the same station would take the callsign 348.

Amongst the other more commonly called on appliances are the stations second firefighting appliance, prefix 1, the emergency tender, prefix 9 and the turntable ladder, prefix 10.

Booking Mobile

Once an appliance is turned out to an incident and whilst dealing with that incident, the messages that are sent back and forth between the appliances and control are kept strictly to operational and procedural requirements and are of a set format.

As the initial call out is usually sent to the local fire station via telexprinter from a regional brigade control room, the first radio message sent, is back to the control room to inform them that the appliance is en-route to the incident. This procedure is known as 'booking mobile' and includes the details on the teleprinter message, the name of the officer in charge of the appliance and the number of crew onboard.

This fire boat had the callsign Fire Boat 39 and also carried a Marine band v.h.f. radio for communication with the Marine Emergency Services, together with its dedicated radio for the Fire Brigade Radio Scheme.

instance, the message 'in attendance' is sent to inform control they have arrived. Depending on the nature of the incident, the sub-officer in charge will decide whether he can manage the situation with the men and equipment he has to hand and send a 'stop message' informing control that no further assistance is required at this incident.

Assistance Message

Alternatively, if the sub-officer is faced with a situation needing more equipment or manpower, then an 'assistance message' is sent back to control with the request for further appliances, etc. as required. Again these messages are of a set format which cuts down on amongst other things air time; vital when one control room is handling the emergency calls for a whole county.

The 'stop message' will include the name of the officer in charge, the address of the incident and the equipment in use, i.e. the number of breathing apparatus and hoses for example. Another option open to the officer in charge, which further cuts down on valuable air time, is known as the 'H report' in which a coded message such as 'Lima 3' is sent from the incident back to control.

Coded Messages

These coded messages are only used when such things as scrub, heathland or rubbish are involved in fire and would not necessitate a full fire report. In the case of the 'Lima 3' message, the 'Lima' indicates what is involved in the fire and the '3' the means of putting it out such as water from hosereels or bucket, etc.
would be sent back in the form 'ZD from 21 stop message over'. Control would then acknowledge and the message 'From leading firefighter Smith, stop for waste ground, Copsley Grove Hightown, H report form Lima 3' would be passed.

An 'assistance message' is sent to control when further appliances or manpower is required at the incident. This type of message is known as a 'make-up' and would be sent using the terminology, 'Make pumps three, hydraulic platform required'. The officer in charge of the incident is asking for two more pumping appliances and one hydraulic platform to be mobilised to the incident. Assistance from other utility services such as the gas or electricity boards would also be requested in the 'assistance messages'.

Once the extent of the incident has been assessed, an 'informative message' is relayed to control, informing them of such things as the size of the building involved, to what extent the fire has taken hold, what equipment is in use and whether all persons are accounted for. It is now unknown for the officer in charge of an appliance to put back a brief informative when he books 'in attendance' in the form of '21 in attendance, smoke issuing', or '21 in attendance, building well alight', warning control that other appliances may well be required.

**Contact Point**

When more than one appliance is in attendance at an incident, only one will act as the contact point, and all radio messages are passed through this fire appliances radio set. The appliance acting as the contact point leaves its blue lights flashing, indicating its purpose to the firefighters at the scene of the incident, and all other radio sets are turned off.

At larger more protracted incidents, a specialised control unit is brought in to manage the communications between the fireground and brigade control with any further 'assistance or informative messages' sent as necessary to keep brigade control appraised of the situation and bring in further appliances as required.

As before, when the incident is brought under control, a 'stop message' is sent, and operations scaled down. As appliances are released from the incident, they book 'mobile to home station'. This indicates to control that they are available to take on further calls, should they be required, allowing control to release any fire appliances drafted in to cover the area to resume to their own station ground.

**Home Station**

On arrival back at station, the appliance is booked off radio watch by the message, 'closing home station'. The fire appliance is then available for call again, via the fire station's teleprinter system.

For the future, some brigades have already invested in 'push-button' technology for the routine messages such as 'booking mobile', 'in attendance' and 'closing home station'. Some brigades are also fitting radio linked teleprinters to the cabs of their appliances giving firefighters on the ground instant access to such details as the nature of the buildings they are attending, or hard copy of information on today's many volatile and dangerous chemicals they are called upon to deal with.

Technology is so essential when we think of the old adage 'send reinforcements, we're going to advance' and the complexity of the messages sent and received in a busy fire and rescue service.

---

Control Room, handling an incoming emergency call and mobilising appliances to the incident. (All photos courtesy of Hampshire County Council Fire & Rescue Service).
PC-MANAGER for WINDOWS

New WINDOWS software package for the AR8000 & AR2700

We are happy to announce the arrival of the new WINDOWS management software package for remote control of the AR8000 & AR2700 using an IBM compatible computer running Windows 3.xx or Windows/95. Facilities include memory/search bank upload, download, editing, sorting, automode bandplan data change, spectrum display and sound recording to disk (also requires CU8232 interface or equivalent plus serial lead).

OPTOELECTRONICS Scout & AOR AR2700 / AR8000

If portability is of prime concern and “hand carry” is the only possibility then the Scout may help you locate those elusive transmissions when visiting airshows, motorsport events etc. The Scout is similar to a conventional frequency counter in that it measures the frequency of any transmission from 10MHz to 1.4GHz which is 10dB to 15dB higher than the ambient RF background level. However, the Scout distinguishes itself from a traditional frequency counter by being able to differentiate between random noise and coherent RF transmissions. This exclusive feature developed by OPTOELECTRONICS is called DIGITAL FILTER & AUDIO CAPTURE.

Of particular interest to operators of the AR2700 & AR8000 is the ability to connect the Scout directly to the receiver (small modification required) so that active frequencies are automatically fed to the AOR receiver which immediately jumps to the active frequency reported by the Scout, this feature is called REACTION TUNE. Scout £399

The AR3030 short wave receiver provides coverage from 30 kHz – 30 MHz with all mode receive. The legendary 6 kHz mechanical AM filter is fitted as standard along with a 2.4 kHz Murata filter for SSB and an additional filter for NFM. Stability is excellent due to the standard fitting of a TCXO.

AR3030 £699

We are happy to announce the arrival of the new WINDOWS software package for the AR8000 & AR2700 using an IBM compatible computer running Windows 3.xx or Windows/95. Facilities include memory/search bank upload, download, editing, sorting, automode bandplan data change, spectrum display and sound recording to disk (also requires CU8232 interface or equivalent plus serial lead).

PC-MANAGER for WINDOWS £49 + £3 P&P

HAWK-5000 for WINDOWS

New WINDOWS software package for the SDU5000

HAWK-5000 is a brand new PC control package for the SDU5000 spectrum display unit. HAWK-5000 will work in conjunction with the AR3000A plus ICOM IC7100 receivers. Video frames may be stored to disk for replay at a later date and SONOGRAM makes identification of signal changes very easy. Spectrum data can be processed by HAWK-5000 to produce channel occupancy for export into formats suitable for other AOR packages so providing automatic loading of memory channels. The computer must be a minimum of 486DX66 IBM compatible with fast graphics and running Windows 3.xx or Windows/95 (also requires a serial lead). A necessity for the professional listener.

HAWK-5000 for WINDOWS £99 + £3 P&P

The SDU5000 is a spectrum display unit designed with the AR3000A, ICOM R7000, R7100 & R9000 in mind. It will also be ported for the new AR5000. Locating brief transmissions has never been so easy, by using the MAX facility any transmission within ± 5 MHz may be identified and signal strength measured in dBm. A small modification is required to the standard AR3000A to provide compatibility but the AR3000A PLUS is ready to go. SDU5000 £799

The AR3000A has established itself as a high performance base mobile receiver offering an extremely wide frequency coverage of 100 kHz - 2036 MHz and all mode receive.

AR3000A £949,
AR3000A PLUS (customised version) £995
AOR AR5000 – “The new horizon”
New wide band all mode base receiver

New high performance base/mobile wide band receiver offering **great sensitivity** and **excellent strong signal handling**. The AR5000 is housed in a newly designed **solid metal cabinet** and provides a very wide receive frequency coverage from **10kHz to 2600MHz**, all mode reception FM, AM, USB, LSB & CW and MANY microprocessor facilities aimed toward professional monitoring and the dedicated listener. **First stocks expected around Christmas ’95/early 1996. Please phone or send a S.A.E. for a leaflet. £ T.B.A.**

AOR AR7030 – “Superior by design”
New high dynamic range short wave receiver

A new standard of performance is provided by the new UK designed & built AR7030 receiver. Strong signal handling is stunning, typically providing **IP3 figures greater than +35dBm** (preamp off - around +25dBm preamp on), dynamic range greater than 100dB in AM mode with a 7kHz filter and greater than 105dB in SSB modes with a 2.2kHz filter. All this and **GREAT SENSITIVITY** better than 0.5uV for 10dB S/N in AM mode and better than 0.3uV for 10dB S/N in SSB. Selectivity too is razor sharp offering greater than 90dB at 10kHz SSB and greater than 100dB @ 20kHz. The AR7030 is British designed by the highly acclaimed John Thorpe and is built by AOR MANUFACTURING LTD of Belper, Derbyshire. **First stocks expected around Christmas ’95/early 96. Please phone or send a S.A.E. for a leaflet. £ T.B.A.**

The AR8000 UK receiver is without doubt the most full featured wide band hand held receiver on the market today. Frequency coverage is from 500 kHz – 1900 MHz without gaps. All mode reception AM, NFM, WFM, USB, LSB & CW... twin frequency display, alphanumeric text comments, optional computer control etc. **AR8000 UK £410**

The AR2700 receiver is the very latest high tech hand held receiver from AOR. Frequency coverage is 500 kHz – 1300 MHz with receive modes of NFM, WFM & AM, Optional voice record chip available. **AR2700 UK £269**

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IN ORDER TO ENSURE FULL SUPPORT OF AOR PRODUCTS VIA AOR (UK) LTD RIGHT BACK TO THE FACTORY IN JAPAN, CHECK THAT YOUR RECEIVER CARRIES A SILVER PRINTED STICKER OR PRINTED LABEL ON THE CARTON BOX CONFIRMING “UK SPECIFICATION” AND “DISTRIBUTED BY AOR (UK) LTD” - thank you.

TIP OF THE MONTH

**Battery pack for AR800E receiver**

If you have in your possession one of the “very first” hand held wide band receivers THE AR800E, do not despair if the NiCad pack should eventually fail. Although it has not been commercially viable for AOR to continue with manufacture of the NiCad pack due to reduced demand (NiCads do not like to kept on the shelf for long periods of time!), many battery re-manufacturers provide a repair/refurbishment facility for NiCads.

One such company is: E.S.P. Batteries, 565 Uppingham Road, Leicester LE5 6QA. Tel: 0116 241 3796.

Simply contact them to confirm price etc, then forward your old NiCad pack. The connector is used to produce the new pack which will duly be returned to you (providing you pay for the service of course) ready to plug into your AR800E (no soldering is required by you at all). Prices are quite reasonable. Please contact E.S.P. for details or other UK battery re-manufacturers for a quotation.

01773 880788
### Scanning Receivers

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Frequency Range</th>
<th>AM, FM, WFM, 500 memory channels</th>
<th>Price (Save)</th>
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</thead>
<tbody>
<tr>
<td>Yupiteru MVT-7100</td>
<td>All Mode Scanning Receiver</td>
<td>500kHz - 1300MHz</td>
<td>AM, FM, WFM</td>
<td>£295 (£124)</td>
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<tr>
<td>AR-2700</td>
<td></td>
<td>500kHz - 1300MHz AM, FM, WFM, 500 memory channels</td>
<td></td>
<td>£239 (£30)</td>
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<tr>
<td>AR-1500EX</td>
<td></td>
<td>500kHz - 1300MHz ALL MODE</td>
<td></td>
<td>£259 (£40)</td>
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<tr>
<td>AR-8000</td>
<td></td>
<td>500kHz - 1900MHz AM, FM, WFM, 100 memory channels</td>
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<td>£399 (£41)</td>
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<tr>
<td>ICR-1</td>
<td>100kHz - 1300MHz AM, FM, FM wide, 100 memory channels</td>
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<tr>
<td>R-100</td>
<td>100kHz - 1856MHz AM, FM, FM wide, 100 memory channels</td>
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<td></td>
<td>£589 (£80)</td>
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<tr>
<td>ICR-7100DC</td>
<td>25MHz - 2GHz AM, FM, WFM, SSB, 900 memory channels</td>
<td></td>
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### HF Receivers

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<th>Model</th>
<th>Description</th>
<th>Frequency Range</th>
<th>AM, SAM, USB, LSB, CW, 500 memory channels</th>
<th>Price (Save)</th>
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<tr>
<td>SONY: Short Wave Receivers</td>
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<tr>
<td>ICF-SW100E</td>
<td></td>
<td>30kHz - 30MHz</td>
<td>AM, SAM, USB, LSB</td>
<td>£189 (£30)</td>
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<tr>
<td>ICF-SW7600G</td>
<td></td>
<td>30kHz - 30MHz</td>
<td>AM, SAM, USB, LSB</td>
<td>£175 (£20)</td>
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<td>ICF-SW55</td>
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<td>30kHz - 30MHz</td>
<td>AM, SAM, USB, LSB</td>
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<tr>
<td>ICF-SW77</td>
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<td>30kHz - 30MHz</td>
<td>AM, SAM, USB, LSB</td>
<td>£349 (£50)</td>
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<tr>
<td>ICF-PRO80</td>
<td></td>
<td>30kHz - 30MHz</td>
<td>AM, SAM, USB, LSB</td>
<td>£315 (£50)</td>
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<tr>
<td>AIR 7</td>
<td></td>
<td>10kHz - 2600MHz</td>
<td>AM, SAM, USB, LSB</td>
<td>£269 (£30)</td>
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<tr>
<td>ICF-SW1E</td>
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<td>10kHz - 2600MHz</td>
<td>AM, SAM, USB, LSB</td>
<td>£149 (£20)</td>
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<tr>
<td>FRG-100</td>
<td>30kHz - 30MHz AM, SAM, USB, LSB, CW, FAX, FM, 100 memory channels</td>
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<td>£529 (£70)</td>
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<td>AR-3030</td>
<td>30kHz - 30MHz AM, SAM, USB, LSB, CW, FAX, FM, 100 memory channels</td>
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<td>AR-7030</td>
<td>0-32MHz AM, SSB, CW, FM, DATA &amp; NBFM, 100 memory channels</td>
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<td>R-5000</td>
<td>100kHz - 30MHz SSB, CW, AM, FM, 100 memory channels</td>
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<td>£775 (£120)</td>
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<tr>
<td>R-71E</td>
<td>100kHz - 30MHz AM, SAM, BW, RTTY (optional), 99 memory channels</td>
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<td>£899 (£160)</td>
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All discounts are based on recommended retail prices.

### Scanning Antennas

<table>
<thead>
<tr>
<th>BNC Fitting</th>
<th>Material</th>
<th>Price (Save)</th>
</tr>
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<tr>
<td>TSC-2601</td>
<td>144/430/500MHz</td>
<td>£15.95 A</td>
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<tr>
<td>TSC-2602</td>
<td>144/430/1200MHz</td>
<td>£21.50 A</td>
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<td>TSC-2603</td>
<td>144/430/900MHz</td>
<td>£22.50 A</td>
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<tr>
<td>CH-600MX</td>
<td>144/430/1296MHz</td>
<td>£29.50 A</td>
</tr>
<tr>
<td>2/3/5.5dbi</td>
<td>£22.50 A</td>
<td></td>
</tr>
</tbody>
</table>

### Contact Information

- **Showroom/Mail Order**: 9.30-5pm, 9-1pm Sat. Tel: (01703) 251549
- **Service Dept**: 9-5 Mon-Fri. Tel: (01703) 255111
- **SMC Ltd HQ Southampton**: S M House, School Close Chandlers Ford Ind Estate, Eastleigh, Hants SO5 3BY. Tel: (01703) 251111 Fax: (01703) 256307
- **ARE Communications**: 6 Royal Parade, Hanger Lane, Ealing, London W5A 1ET. Tel: 0181-997 4476 9.30am - 5.30pm Monday-Friday, 9.30am - 1.00pm Saturday
- **Reg Ward & Co**: 1 Western Parade, West Street, Axminster, Devon EX13 5NY. Tel: (01297) 34918 9.00am - 5.15pm Tues-Sat
- **SMC (Northern)**: Nowell Lane Ind. Estate, Nowell Lane, Leeds. Tel: (0113) 235 0606 9.30am - 5.00pm Monday-Friday, 9.00am - 1.00pm Saturday
- **SMC Birmingham**: 504 Alum Rock Road, Alum Rock, Birmingham B9 3HJ. Tel: 0121-327 1497 9.00am - 5.00pm Tuesday - Friday, 9.00am - 4.00pm Saturday

**Short Wave Magazine**, January 1996
Radio Secrets of the War
The Young Linguists

David White G3ZPA tells the story of the three young ladies who could speak fluent German. He then recounts the goings on at Whaddon Hall.

In the far off days of early 1940, three young ladies decided to volunteer their services to King and country and enrolled in the Women's Auxiliary Air Force (WAAF). It was not long before the WAAF authorities discovered that the three girls - who did not know each other then - had one unique talent that made them very much sought after. They all spoke German fluently. This ability unwittingly put them in at the forefront of the beginnings of the radio war, which was about to start as the Battle of Britain loomed near.

Early in 1940, the British Air Ministry had decided to set up a radio eavesdropping station at RAF Hawkinge near Folkestone, Kent in an endeavour to listen to German voice transmissions and all kinds of signals other than Morse code. The communications receivers supplied were made by Hallicrafters and covered the whole of the V.H.F. bands, which was indeed fortunate as in May 1940 voice transmissions were heard on 41MHz coming from German Stuka dive bombers.

After a few days of ever more and louder signals, it was realised that nobody could actually speak or understand the German language properly. The Air Ministry, realising that this was an amazing oversight, decided to set up a radio eavesdropping station at RAF Hawkinge. By mid-July there were about 16 of them at the house - 'Maypole Cottage' - just outside the airfield perimeter. The three girls arrived at Hawkinge knowing absolutely nothing about radio whatsoever, but were immediately given intensive training by experienced RAF (male) W/T operators and literally thrown in at the deep end so to speak.

As soon as the radio operator picked up a German voice transmission he would immediately call out 'got one' and one of the girls would immediately write down the message in a log book and translate it. As time went by, the girls became very experienced in tuning the complicated Hallicrafters receivers and were able to search and listen on their own. All logs would be sent by despatch rider twice a day to Station X at Bletchley Park and the Air Ministry in London and telephone messages were sent to Nr 11 Group at RAF Uxbridge. By August, the bombing was so intense on Hawkinge that it was decided to relocate all the WAAF personnel to a newly acquired site at West Kingsdown on the Kentish Downs leaving the male wireless operators to brave it out at Hawkinge.

Eavesdropping

West Kingsdown became the headquarters of the R/T eavesdropping service, known as Nr 63 Wireless Unit of the RAF. This was linked to the main W/T Headquarters Nr 61 Wireless Unit at Cheadle near Stoke-on-Trent. The girls often listened in to the German fighter pilots and could hear them issuing attacking orders on their FUG16 V.H.F. radio sets, which covered 38 to 43MHz, but felt powerless because they could also hear the radio transmissions of the Spitfire and Hurricane pilots, but could not warn them of an imminent attack by the high-flying Messerschmitt fighters.

All the British fighter groups covering the south of England came increasingly to appreciate the value of the information supplied by the radio eavesdropping station at Kingsdown and put pressure on the Air Ministry for more of this which resulted in the Air Ministry approving the creation of several small Coastal Intercept Stations, given the code name of Home Defence Unit (HDU) to ensure that all German Luftwaffe voice transmissions were given complete coverage. The HDUs were set up at Strete near Kingsbridge in Devon, Gorleston near Great Yarmouth, Scarborough on the east Yorkshire coast, Beachy Head near Eastbourne and Ingoldmills near Skegness on the Lincolnshire coast. These HDUs were all connected to West Kingsdown by telephone to give advance warning and the three girls - who by now had got to know each other - were posted to these units as by the end of 1940. They were now very experienced radio operators as well as knowing all the code and swear words that the German pilots were using!

Elizabeth Jones (I'm using their present day married names) was sent to Gorleston HDU, which had taken over Gorleston House near the Lynx pub and was immediately put on 24 hour watches with each watch consisting of five German speaking R/T operators and one W/T operator who did not speak German but listened for the German Knickebein navigation beams and any Morse code transmissions. They also kept the Great Yarmouth Navy Intelligence Headquarters informed of the presence of German E-boats so that the naval OIC could despatch the equally fast British motor torpedo boats (MTBs) to try to intercept them.

It was very demanding work with five hour watches, which consisted of day one 8am to 1pm, then 6pm till midnight. Day two was 1pm to 6pm, then midnight to 8am, followed by 48 hours off. Patience Lambert was sent to Capel Cliffs near Dover and kept the Navy headquarters there informed of what had been heard from the high speed E-boats which were such a menace to British shipping and also supplied Kingsdown HQ.

Marguerite Morton was sent to Scarborough HDU to listen for aircraft coming from Norway as well as Europe and the E-boat traffic as well. Throughout this period,
Radio Secrets

To Nash

To Calverton

Plan of Whaddon Hall.

To Bletchley

To Kingsdown

Girls all agreed that working conditions were very basic the living accommodation and food were generally disgraceful, but the thought that others were dying or under fire meant that they considered themselves well off indeed!

One of the main duties was to listen to the morning test transmissions of the Knickebein and X and Y bomber navigation beams as the German technicians attempted to align these beams over that night's target as chosen by the Luftwaffe. In the years that followed, the three girls were moved around by the HDU stations as well as to HQ at Kingsdown, keeping the flow of valuable information coming in and one unusual task which was extremely valuable to bomber command was the monitoring of the progress of the RAF bombers over Germany by listening to the German plotting stations as they tracked the British bombers over Germany, well out of range of our own radar. We could obtain the exact position and time of arrival, thanks to the Germans and especially their night fighters, which always stayed in a fixed area.

Because of co-operation between the Y services, the WRAF assisted the WRENs of the Navy's at Great Yarmouth Naval HQ and were so successful in locating the German E-boats by listening to them and then getting a position fix from the Navy direction finding station at Southwold, which resulted in the destruction of so many of the E-boats that the WAAF flight sergeant in charge was asked to accept the British Empire Medal on behalf of the unit.

Late in 1944, the station at Kingsdown was unlucky enough to be hit by a V1 pilotless flying bomb, so it was decided to close it and move to a better radio reception area near Canterbury in order to listen to the German pilots, who had by this time been forced out of France with the now receding front line in Holland and Belgium. Marguerite Morton remained at the UK monitoring stations, but Elizabeth Jones was sent to the new monitoring headquarters in France and Patience Lambert finished the war at the Y Station in Belgium until all three were demobbed in 1945.

Upmost Secrecy

They had all been sworn to upmost secrecy throughout the duration of the war, so they and all the other WAAF WRENS and ATS girls of the Y Service have largely felt forgotten by the war historians, but let it not be forgotten that these girls played an extremely unsung, but vital part in gathering every bit of intelligence from the enemy without which secret sites like Station X at Bletchley Park could not have operated so efficiently.

Today, in 1995, the three friends are pensioners, quietly enjoying life in the peaceful Hampshire countryside, perhaps not appreciating that it is peaceful because of the part they played over 50 years ago to make it so.

Whaddon Hall

We have discussed the role of the many military and other radio stations located in the various parts of the UK, whose primary duty was to pass all the information intercepted from the enemy to the Code Breaking Centre at Bletchley Park (Station X) and as these messages numbered several thousand daily throughout the duration of the war, then all of them needed to be (a) decoded, (b) distributed to the relevant section, (c) decisions made and (d) the information acted upon.

One can now begin to appreciate the huge scale of the task when it was realised that almost 12000 people were employed on this task in Station X. But what happened to all this information gleaned from the enemy?

Once a decoded message had been passed to the correct departments of the War Office, Air Ministry and Admiralty, then various routes for any outgoing traffic were employed, so we will look at just one of these routes. Deep
in the heart of the rural North Buckinghamshire countryside lies a small quiet village called Whaddon, where nothing much happened except for occasional whistle drives in the village hall and summer church fetes, etc., but the commencement of hostilities in 1939 saw a dramatic change to the quiet lifestyle of the villagers.

A very large mansion called Whaddon Hall located to the northern outskirts of the village became the headquarters of the Special Communications Units (SCU) with its own radio station placed in its extensive grounds. Other secret radio stations were also located close by at Weald and Nash.

**Spectacular Views**

One particular station was set up at the rear of Whaddon Church on a large area of land nearby called Church Hill, with spectacular views across the countryside. This secret two-way radio station was built right on top of the hill in the path of the prevailing westerly winds and was therefore named the Windy Ridge Wireless Station. Only the top brass, such as Brigadier Gambier-Parry and his subordinates, knew that this was the Special Operations Group of the SCU and its primary responsibility was to transmit the information provided by Station X to both the British and later the American armies in the field.

Each army headquarters, whether British or American, had been allocated a mobile radio unit which was a large army van fitted up with 2-way W/T radios and they were always staffed by British Military Operators. In fact, the operators stationed with the American groups lived in luxury compared with those at British army posts, which made the latter quite envious.

Windy Ridge is the hill at the highest point in Whaddon and the receive antennas, which were mainly dipoles and Marconi end-fed wires, were located in the field nearby and one of the antennas was actually attached to the chimney of the house that stood next to the vicarage, which was several hundred yards to the north of the station.

These all fed in to the two main Nissen type huts of the wireless station and both buildings were placed side by side and constructed with a concrete base then a low brick built wall foundation and then a curved corrugated iron roof was placed on top and a very large emergency generator was placed adjacent to one of the huts.

One hut contained 20 operating positions, each fitted with a single National HRO communications receiver, a pair of headphones and a Morse key. A large antenna distribution panel stood at one end of the hut and this enabled the operating staff to select any transmit or receive antenna to be connected to any selected operating position or 'bays' as they were known.

Keying lines for the telegraph keys were connected to a secret transmitting site in the Cotswold Hills and the power of the transmitters was mainly 350W with a few 200W ones. The second hut contained several teleprinters which received the messages from Station X which was only 6km away.

All the operating staff were posted there direct from their signals training and only those that came out top of the Morse code training classes were specially selected for these secret duties. Most of the 100 staff were army personnel, but there were also at least 12 airmen and one lone sailor, who was posted there in a rare moment of compassion by the Navy after he had been left behind when his ship sailed without him while he was recovering from illness. The ship was then sunk in the Mediterranean with the loss of all hands.

The unit had taken over the Whaddon Village Hall and many Nissen huts were constructed in a field at the rear of the hall as living accommodation for the staff. The vast majority of the outgoing messages from Station X was in 5-letter cipher and the number of these messages increased all the time, reaching a peak in the final year of the war.

In order to protect the security of the army units involved, they were all given code names such as Sybil, Pack, Mermaid, Atlas, etc. In 1944, although the date of the D-Day landings was top secret, all the wireless operators at Windy Ridge realised that a great event was about to take place when most of the radio stations they were transmitting to closed down for a period, and this was the time when all the armies were embarking for the Normandy Landings.

**Chocolates**

When they opened up again, many of them were in France and other temporary code names were allocated to extra stations, these used chocolate names such as Fry, Cadbury, Rowntree, etc. The gradual progression of the Allied armies was noticed as the frequencies were raised gradually as they moved towards Germany, but at the end of December 1944, consternation reigned at Windy Ridge when the Mermaid station radiated in 3-letter 'Q' code that they were being bombed and that they were destroying their equipment and secret codes and then contact with them was lost.

It turned out later that the code name Mermaid was the American First Army which had been overrun in the last major counter-attack of the combined German forces, known as the Battle of the Bulge. On the day before the Germans finally surrendered, all the operating staff at Whaddon Hall radio station were told to look out for a German station that was going to call them to try and surrender the German army.

Whaddon failed to pick up this signal despite much searching, but the operators at Windy Ridge did hear it. It took them a while to realise that Whaddon had not heard it so they telephoned Whaddon Hall to advise them where to look, but it was too late and the signal was lost. It is sobering to think that if a contact had been made, then the war might have finished one day earlier!

Windy Ridge was built at the beginning of the war. Signals dwindled after hostilities had ended, but the station did continue for some years afterwards before finally being abandoned and the site on Church Hill reverted back to the farmer who then used the redundant buildings for agricultural purposes until many years later when vandals set light to the buildings and the fire resulted in total destruction despite the Bletchley Fire Brigade attending quickly.

The Germans must have known about the Whaddon Hall and Windy Ridge stations as they did have a few bombs dropped on them, but they all missed the stations. Although one of them destroyed a house that stood on its own a few hundred yards away. Two of the original signals staff were buried in the small Whaddon church cemetery and one of the now fading headstones can still be seen today with the Royal Corps of Signals badge carved beautifully at the top of the stone, "Signalman 2639713 Pearson, you did your duty for your country".

---

Short Wave Magazine, January 1996
S.A.P.

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Comes complete with protective rubber base, 4m RG58 coax cable and BNC connector. Built and designed for use with scanners.
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Price £249.99 Save £80
NOW £169.99 + £5 P&P
PC TRACK version 3.1

If you are 'into' satellites in any capacity, whether monitoring signals, actively using their data for scientific research, or as a radio amateur, a tracking program is essential. Until a few years ago there were a limited number of programs available; now the situation is different. A variety of both commercial and shareware programs are readily available - if you know where to look - to cater for virtually all needs.

For some years I used two programs - InstantTrack and TrackIt, both of which have operated reliably, allowing me to judge any new software that I came across. The programs BirdDog and STS-Plus have faired well on my computer. Readers of my 'info' column kindly send me shareware programs from time to time and, when space permits, I have included descriptions in the column. Copies of PCTrack, written by Thomas C. Johnson of Johnson Scientific International, arrived at my computer from a BBS (Bulletin Board System) and an earlier version came from a correspondent. I have been running version 3.04, then the latest - 3.1 on two computers and believe that the program justifies a reasonably comprehensive review.

Hardware Requirements

A PC-compatible computer using an 80386(SX or DX) or 80486(SX or DX) CPU is needed, running DOS version 5.0 or later, and a minimum of 2Mb RAM. A maths co-processor is preferred but is not essential. About 5Mb of hard disk space are required, and a mouse can be used. The program runs in DOS protected mode, so can access all system memory. I ran the software on a 486SX running at 25MHz and on a 386DX running at 33MHz, with a co-pro fitted, and finally on a 486DX2-66MHz machine. There was a significant speed increase on the better processors - see later. The program uses standard VGA (640 by 480 pixels).

General description

PCTrack is a shareware program; the author asks users to run it for up to 60 days and then register - cost £45 (about $60) - and obtain an enhanced version. The software comes as a suite of files and programs and is easily installed on a hard drive. It includes two large databases operating within the program; one holds up to 300 satellites, the other up to 300 sites. Calculations are done to double precision accuracy, so for the best results, recent satellite Kepler elements should be used - see later. Many satellites can be shown simultaneously on the graphical display, including footprints (circles of visibility on the earth below), and groups of satellite (eg., weather or amateur radio satellites, Glonass, etc.) can be set up.

Even at this stage I must say that this is one of the best programs of its type that I have used. Many parameters - colours associated with certain items, sites, time formats and views - are adjustable, giving considerable control over the display. Future passes can be identified, and even sections of the pass which are illuminated by the sun can be seen - ideal for monitoring 'visible' satellites. The updating of Kepler elements is almost automatic.

Getting started

The program arrived as a compressed 'ZIP' file, which I expanded within a temporary directory. Installation was straightforward, using the program provided. It was already set up with an almost full database of satellites and had several sites (locations) pre-programmed with details of major cities around the world. I selected London, but later edited in Plymouth. The program is started by entering PCT.

The starting screen is the launch pad from which you can select the type of display required. It contains a Menu and shows the version number as 3.1. Main Menu choices include File, Edit, View and Options, and can be selected either by clicking with a mouse or using F10 to activate, then pressing the first letter - F, E, V, or O. I used the keyboard method at first, to check that everything worked without the need for a mouse. After mastering that, I changed to mouse operation, which I found considerably more convenient. Some sections require entries in various parts of the screen - the mouse was speedier than the Tab key for these entries.

The sensible choice for the first use of the program is to configure the software using Options, System configure. This allows setting of the time/date formats - I set time to UTC, with no offset - then set the date format to the English standard - day:month:year.

Several function keys are programmed, but act differently according to the screen display; for example, when used from the Main Menu, F3 starts text display tracking of the primary satellite, but F3 selects global viewpoint when used from the tracking display. With the built-in help display there were no problems. From the Main Menu, the program can be started in graphical tracking mode, by pressing F2, or selecting View, Track Graphics.

Parameter Files

Having started the graphical display, the nature of the software design can now be appreciated. From the Main Menu, function key F2 loaded the default parameter file - 'default.prm', or whichever file was last used. This file, and others already present (called *.prm), has been pre-set with satellites and American sites. The screen shows either a three-dimensional globe with orbiting satellites, or a Mercator projection, depending on which was previously used. Press F4 to swap between 3D-global view and Mercator.

PCTrack allows the user to generate different satellite groupings eg., weather, amateur radio, geostationary satellites and many more, and to associate different sites with each. Each grouping is called a parameter file and the satellites selected must already exist in the Master satellite database. From this database, individual files having any combination of satellites can be saved as parameter files. To access the file-editing facility, we return to the initial Main Menu screen by pressing Escape.

Using File, Open you are shown the preset parameter files eg., weather.prm, any of which can be edited. I prepared a METEORS.prm file, to include all current group three METEORS together with earlier group two METEORS (2-20 and 2-21) - a total of eight satellites. I also modified the weather.prm file; nearly all the CIS WXSATs were already present in the database.

Editing Satellite Files

To customise your (weather satellite) parameter file, you Open it from the Main Menu, then select Edit, Satellites (or press F5). The display allows editing of the Master Satellite database, you can Edit, Add, Delete or Activate a selected satellite. This is also where you select your Primary satellite - the one which runs in Text tracking mode.

I found this facility intuitive; when Active is selected, the Master database is on the left of the screen, the right side shows currently active satellites selected for the parameter file. With a deft click of the mouse you can select any satellite for transfer to or (remove) from the active set, or delete it from the Master database. You can create a new parameter file or save the present one with a new name.

The sites which appear on the display are called the primary and secondary sites,
though only one need be selected. Sites are edited by selecting F6 or Edit, Sites from the Main Menu. Clicking the mouse on the site, followed by transferring it to the Primary site box, is all that is required. You can edit the site by entering your own latitude and longitude, as accurately as you can obtain. Atlases can provide this information, or better still, a local Ordnance Survey map, and estimate your height above sea level.

**Importing Satellites**

Updating the database with new Kepler elements was straightforward. I had a new set of NASA 2-line elements, called ‘apt.all’, in a directory called Kepler. Using File, Import, you can read either 2-line or AMSAT format. The full filename and path was entered and the file read. New satellites can be entered in the same way - assuming the database is not already full. If necessary, satellites can be deleted from the database.

**Changing the Display**

Within the graphical display screen, a new Menu of hidden keys is available; to see the list, press F1 (the Help key). Within tracking mode, using F2 you can activate a fast-forwards display; this mode calculates where the satellites are going. The amount by which time is incremented in fast-forward mode is adjustable; the left/right cursor keys select the second, minute and hour parameters; the up/down keys increment and decrement respectively.

Both displays - Mercator and 3D - are impressive, and, as becomes increasingly clear with this program, both are adjustable. While in global view (F4 switches to global from Mercator), press F3 to change the position of your viewpoint. There are eight choices of perspective, four fixed longitudes seen from near the globe, and four from further away. Each option also illustrates the satellite’s height above the globe. I was impressed with this, though wanted to change the viewpoint to zero longitude, rather than remain over the USA. Documentation explains that the registered version allows this flexibility - where’s my credit card!

On first running this program, the tracking display included two other sections, one showing the Primary ground site selected for this file. Below this is an AER chart - showing the azimuth, elevation and rising/setting of each satellite when above the horizon of the selected site. You can remove or display the ground site using F6. Without the sites, the Mercator map or globe expands to fill the screen. To see the AER display in action (assuming it was empty while you were running the program), press F2 to activate fast-forwards, and watch the display. As each satellite comes over the horizon, its entry appears in the lower section, showing its calculated position. Tracking can be paused using F7. After changing certain options you may want to refresh the screen - press F5.

**Attributes**

The versatility of this software becomes apparent as each new option is tried. Parameter files have attributes which can be changed. To select any attribute, you must use the tab key, then change it using the up/down cursor keys. The mouse is not used in this pull-down window. Attributes include footprints, satellite name display, sun position, site names and satellite lines of sight (lines connecting the ground station to the satellite, when above the horizon - unfortunately abbreviated to LOS). Several attributes have multiple choices! Let’s look at one - footprints; this attribute can have any of five options - single (no trail is left), cont (continuous, in which the satellite leaves a trail), cvis (as for svis, but a trail is left during the period of site visibility), and off (no footprint). Setting either cvis or svis and enabling fast-forwards, quickly clutters up the screen with satellite trails - hence the use of F5 to clear the display.

The LOS attribute is worth mentioning; if set, a ‘line of sight’ is drawn between a satellite (while above the horizon) and the ground site, and it leaves no trail), cvis (as for svis, but a trail is left during the period of site visibility), and off (no footprint). Setting either cvis or svis and enabling fast-forwards, quickly clutters up the screen with satellite trails - hence the use of F5 to clear the display.

Certain display colours can be changed using F9. Care has to be taken while doing this; during my experiments with colour, I inadvertently set the satellite footprints to blue as the background. While changing other footprint options, I could not initially understand why the footprints had disappeared. Perhaps this illustrates the flexibility of the customising - as well as my fallibility!

**Printouts**

The software includes a facility to print pass details for future reference. A range of printers can be configured. Using the Scan option, a time period can be entered and a list of mutually visible passes for the two
ground stations will be produced. As usual there is a choice! You can produce a disk file (for incorporation into a word processor) or simply print it out directly. The program does not appear to actually produce passes for just one ground station, though the list that I produced using Plymouth only, matched well with data from my normal tracking software. There are additional facilities within the scan option - more detailed printouts and a 'visualisation' option; this latter shows the 3-D view illustrating the passes.

**Documentation**

Considerable! Several files are included with the program suite; a quick-look file called QUICKSTRT.DOC (16Kb) and a larger tome called USRGUIDE.DOC (51Kb). I read each file, taking notes as I plodded through, realising at each stage just how comprehensive this software is. The index alone is longer than documentation supplied with some commercial software!

**Problems and Bugs**

If you do not have a co-pro, a 486DX or a reasonably fast machine, you may find the program updates slowly, possibly taking several seconds between updates. The software calculates the positions of all active satellites in the current parameter file - the more satellites on display - the longer it takes. Frankly, this didn't bother me, except when making changes - the software only responds after completing its calculation sweep - so one can feel a little impatient when there are a large number of active satellites. In normal operation, with eight satellites displayed, on a slow machine it may momentarily appear to have stopped; on my 33MHz 386DX (with co-pro) screen updates occurred every 1.5 seconds. My 25MHz 486SX took 12 seconds between screen updates. With two satellites displayed, updates then took about 0.5 second. This is not a meaningful problem when you know what is happening. Running on my 486DX2-66MHz, screen updates were better than 1 per second. I do not see a necessity for screen updates this frequently anyway.

The screen display is VGA, using 640 by 480 pixels, a little low by today's standards, though generally acceptable.

Bugs? I have not found any so far!

**Availability**

If you are a member of the Remote Imaging Group, PC-Track can be downloaded from their BBS on (01945) 440666. You may also find it on other specialised BBS such as Starbase1 on 0171-703 3593 and 0171-701 6914. Alternatively, send me a (PC-compatible) 3.5in disk, together with prepaid return package and 50p towards collection costs and I will provide a copy by return, including the latest Kepler elements for you to import into the program. These are also available routinely from me - see my 'Info in Orbit' column.
Merry Christmas

and

Prosperous New Year
to all our
Readers & Advertisers
**NEW MVT-7200**
The latest update on the YUPITERU front, an enhanced MVT-7100. All the bits that you wanted on its predecessor.
Deposit £40, 12 payments of £33.33, total £449 ZERO APR

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The best seller, bar none. Alpha tagging memories and the ONLY scanner worth considering for "Reaction Tune".
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What is Reaction Tune?
Simple. Connect a suitably modified by our engineers AOR-8000 (or AR-2700), to the latest Optoelectronics SCOUT and when the counter "sniffs" a transmission out of the air it INSTANTLY puts the scanner to that frequency! The AR8000/SCOUT combo instantly removes the frustration of seeing Two-Way communications happening before your eyes and wondering which frequency they're on!

**PACKAGE 1**
New AR-8000 Scanner + Scout + Interface = £799.00
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A new Scout complete with Nicads Charger & Antenna £399.95
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**NEW AR-7030**
Announcing the AR-7030

Richard and Tak of AOR UK were all fired up at the recent Leicester Show. The Lynch mob got an invite to see the new UK + Japan "joint venture". There were the usual drinks and assortment of crisps and nuts, (Pistachio's are really tasty but have you ever tried getting one open with a glass of wine in your hand?), and up the end of the room was a crowd of people (incl AHHH!!!)

Bobbing up and down trying to see what was a demo of their latest UK shortwave receiver. Finally it was my turn to turn the ever so important Tuning type assembly of the cabinet, (you AEHHH, I could now see why everybody adoration for the AOR and the new AR-7030!)

In just over twelve months, AOR have engineering. No frills, yet immense performance is up with the very best. Want to take something home with only going to bed that night?

On show at the Lynchy open day, the No less than twenty three orders we demonstration alone.

Production ramps up towards the end of the year, the Icom IC-706, I won't be knocking the obviously a good product but something that we have built and don't think we'd do it again. Included in the FIVE YEAR WATERPROOF MONEY BACK GUARANTEE. If you don't like it send it back and I'm sure you'll agree that it was a good choice.

That's no risk at all. Either The new AR-7030. Price to be fixed.

**AR-5000**
Another "star of the show" was the AR-5000 scanning receiver. Covering 10kHz to 2.6GHz, the new receiver is aimed at the hobbyist/professional markets. See AOR's advert for full details. Price around £2k (ouch!), but like its worth every penny.
The produced a timeless piece of.

If you are stuck for space and need a good high performance SHORTWAVE ANTENNA then order your today!

MyDEL
MyDEL MINIMAG PROSCAN - Mini Magnetic antenna 100-1GHz £29.95
MyDEL HELICON - Specifically designed for All shortwave antennas and all the handheld/face scanners. Can be mounted indoors or outside. £59.95
Long Wire Balun - MyDEL MLWB 200 is an old but around £800-£995.

DRAKE RF-200 - The latest improved version, better ergonomics, more memory, improved AGC and more. ONLY £199.95 + p&p £3.00

The best selling Shortwave RX and the very best re-sale value!
Deposit £111, 12 payments of £79.00, total £795. ZERO APR

JOHN WILSON, all saying OOH, realised but around £800-£995.

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JRC NRD-535
Back in stock. The very best Shortwave Receiver, all options now available.
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No machine can match its SHORTWAVE PERFORMANCE for under £500.
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The only company to offer the famous base scanner with direct conversion shortwave coverage.
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Very much under rated, superb tonal quality and sports VHF airband in the price.
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The latest improved version, better ergonomics, more memory, improved AGC and more. ALL FILTERS FITTED!
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Earphones
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As used by many government establishments throughout the world, the new MyDEL P-300 easy to wear "over the air" is available now, including FREE PAY! (State which scanner the P-300 is for when ordering).
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The Enhanced MCL-1100 is easily available with either the improved Synop Decoder. Available at a bargain price.
RRP £495. Lyceny special offer only £475, including FREE P&P.

AERIAL SYSTEMS
DATONG AD-370270 The pair of Active Aerials were originally designed for the Royal Navy several years ago and to date, no other manufacturer has been able to offer such performance from a compact design.
If you are not for stuck for space and need a good high performance SHORTWAVE ANTENNA then order your today!

Datong AD-270 (internal): £59.95 AD-370 (external) £79.95 p&p £10.

VCM VectorVac AT-100
Active antenna and preserve, 300KHz-30MHz supplied with own whip antenna. Ideal for budist looking!

DECODING SOFTWARE
AEA FAX 111
" State of the art decoding software" - SWM July
All that is needed to decode Weather FAX, RTTY, ASCII, FEC. (Stormalar/Navtex) and CW using your computer is a RX-111. The new improved version has a built in database, wave-scope function and lots more, as reviewed by SHORTWAVE MAGAZINE in the July issue.
£119.95 + p&p £3.00

SKYCOM ICR-X
Allows full control of the main ICOM receivers including ICR-705, ICR-700 and ICR-900. Supplied with the interface to connect directly to your PC. Only £64.96 incl VAT, p&p £3.00

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Shortwave top ten all free finance!
ANNOUNCING THE NEW LOWE HF-250

The Lowe HF-250 is set to become the new world standard for mid-priced receivers. Building on the worldwide success of our HF-225 and HF-150 models, the new HF-250 combines Lowe’s traditional high standards of performance and quality of construction together with the advanced facilities and control features required by today’s discerning listener.

Deposit: £103. 12 x £58.00

Features
- Frequency range from 30kHz to 30MHz
- Tuning step size 8Hz
- Back-lit display
- Display resolution now 100Hz
- 255 memory channels
- Memory channels also store frequency, mode, filter selection and attenuator setting
- Computer control is standard via built-in RS232 port
- RS232 reads to and from the radio for upload/down load of memory data
- Clock with two independent timers
- Fixed level output for decoding and tape recording
- Tape recorder switching output
- Fast tuning in 10kHz steps
- 1MHz up/down tuning
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Options
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530kHz -1650 MHz
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NEW AOR-5000
This new receiver is due at the end of the year. It is a high performance base/mobile all mode scanning receiver covering 30kHz - 2.6GHz. This unit is aimed at the professional and semi-professional user and is computer controllable.

Price around £2000

AOR

AOR-3000A
RRP £999.00
500kHz - 2036MHz
SSB/CW/AM/FM/DATA
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INTRODUCING THE NEW DRAKE R8A
- 100kHz - 30MHz wide coverage
- Fastband tuning
- Built in Pre-Amp & Selectable AGC
- Twin VFO’s & Timer Functions
- Dual Noise Blanker
- AM, LSB, USB, CW, RTTY & FM

The new R8A with its full compliment of filters as standard now boasts:
- Improved ergonomics — Single key press will select your mode & bandwidth as well as a programmable auto selection of the bandwidth when changing mode.
- More memory — 440 memory positions
- Faster scanning — Memory channels are scanned at about 40 channels per sec.
- Alpha numeric display — Program names can be displayed on the front panel. The seven character display is user programmable.
- Expanded RS232 control — Allows customised reports of frequency, mode, memory, channel, name and signal strength.
- Improved AGC — The AGC has a smoother attack for improved SSB listening.
- Tone control — Expanded control of the high frequency range.
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The R8A’s performance is truly staggering, it has a full compliment of filters; synchronous AM detector; multiple scan facilities; 440 memory channels; plus all mode coverage. Why not part exchange your old receiver for this latest model from the USA, we offer excellent PX deals call our hotline now!

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AOR

AOR-2700
RRP £299.00
500kHz - 1300MHz
WFM/NFM/AM
Deposit £35.00
6 x £44.00

MAGELLAN GPS 2000
- Tracks up to 12 satellites
- 15 metre accuracy
- 17 hour battery life
- Lat Long or Nat Grid

only £199

MAGELLAN GPS 2000
Tracks up to 12 satellites
15 metre accuracy
17 hour battery life
Lat Long or Nat Grid

only £199
What is the connection between William of Orange and the No. 10 Army Microwave Communication Set? Phillip C. Mitchell explains that both were efficient means of communication used in the Second World War, and can be found amongst the thousand or so exhibits at the Royal Signals Museum at Blandford Forum.

William of Orange was the name given to a humble carrier pigeon who was awarded the 'Dicken Medal' (the animal equivalent of the VC) for a record high speed dash of 418km with messages from the Arnhem bridgehead to HQ in the UK. This of course has nothing to do with radio, but is mentioned here as a novel means of communication, unjammable and not subject to the vagaries of propagation or jamming by the enemy!

However, turning to the more conventional mode that the No. 10 represents, the introduction in August 1944 of 'Wireless Station No. 10 Mark 1' as it was then known, into the Army inventory was hailed as a major technological achievement in using microwave techniques for communication purposes. These sets were produced in time to be used to provide an invaluable 8-channel radio link between Field Marshal Montgomery's tactical HQ in Germany and London.

The self-contained trailer station with the two parabolic microwave roof mounted antennas (one receive, one transmit) had an optical range of 80km and two identical co-located stations were needed to complete one link in the communication chain. The parabolic dish antennae were demountable and many found their way to the tops of high buildings, church towers and even windmills to ensure optimum visual sighting to the next link in the chain. The operating

---

**Diagram of Type 3 Mk II Suitcase Transceiver (Spy Set):**

- Antenna terminal
- Meter
- METER SELECTOR
- COIL HOLDER
- TRANSMITTER
- RECEIVER
- POWER PACK
- SPARES BOX CONTENTS:
  - 1 x 20m ANTENNA WIRE
  - 1 x EARTH WIRE
  - 1 x TELEPHONE HEADSET (LB)
  - 1 x TRANSMITTER KEY
  - 2 x MAINS AND BATTERY LEADS
  - 2 x 12 FUSES
  - 1 x 4 SPARE VALVES
  - 1 x SCREWDRIVERS
  - 2 x CONTINUOUS PLUG PINS
  - 10 x 3-pin ADAPTORS
  - 1 x 2-pin ADAPTOR
  - 4 x TANK COILS

---

Short Wave Magazine, January 1996
frequency was between 4.410 and 4.880GHz and the transmitter power 100-400mW to send the pulse code modulated signals.

With power from two 3kVA generating sets to feed each set's 165 thermionic valves, there would not appear to have been any problems with heating the trailer! The '10 set' remained in active service well into the 1950s - a truly revolutionary piece of radio equipment and forerunner of the many microwave links in use today.

Many examples of conventional army radio communications equipment are on display such as the MkII mobile h.f. transceiver which saw continuous service from 1935 up to and during the Second World War. Prospero, the first British communication satellite launched in 1970 together with a model of its launch vehicle Black Arrow are also on display.

Amongst the more esoteric exhibits can be found a fine collection of Second World War spy radios, some suitably disguised as innocuous suitcases for transmit in enemy territory by army and Special Operations Executive (SOE) agents.

The Type 3 MkII, designed by Major John I Brown, Royal Signals, and introduced in 1942 is a fine example of these transmitter/receiver suitcase sets. Some 7000 of this particular type were manufactured in the UK at the factory at Stoneleigh.

**Specification of Type 3 Mk II Suitcase transceiver (Spy Set) c. 1942**

**Transmitter Circuit:**
- Oscillator-doubler driving Class C amplifier, crystal controlled.
- Provision for frequency doubling.
- Plug-in tank coils to cover 3.0-16MHz.
- Plug-in transmitting key.
- 500V at 60mA.
- 230V, 18mA or 6.3V at 1.1A.
- Average fundamental power 20W
- Second harmonic power 20W.

**Power input:**
- 97-140V or 190-250V, 40-60Hz at 70W transmit, 40W receive.
- 6V accumulator, 9.5V transmit (key down) 3.5V (key up).

**Receiver Circuit:**
- Four valves. 7-stage superheterodyne primarily designed for c.w. reception.
- Three wave bands. 3.1-15.5MHz.
- BFO pitch controlled switch.
- 470kHz.
- 470kHz ±MHz.
- 1-3mV for 10mV output at 1kHz.
- 50mV into 120Ω headset.

**Intermediate frequency:**
- 3.5MHz.

**BFO:**
- 3.5MHz ±MHz.

**Sensitivity:**
- 1-3mV for 10mV output at 1kHz.

**Output:**
- 50mV into 120Ω headset.

**Power Pack:**
- Mains:
- DC:
Park and saw service in most enemy territory during the Second World War. One wonders what became of these quite advanced sets, apart from the one on display at the museum.

The museum houses many other items of army radio communications in use up to the Gulf War and attracts approximately 12000 visitors a year. Plans are well advanced for a new Royal Signals Museum, using improved modern display techniques, in a more accessible location than at present, to be opened in 1994.

The museum current location at Blandford Camp is signposted from Blandford Forum, Dorset on the A354 Salisbury/Dorchester road.

Fig. 4: Field Marshal Montgomery's letter.

ACKNOWLEDGEMENT WITH THANKS FOR ASSISTANCE IN COMPILING THIS ARTICLE I GIVE TO DR. THWAITES, DEPUTY DIRECTOR AND MAJOR PICKARD, CURATOR OF THE ROYAL SIGNALS MUSEUM.

Pre-publication Offer

Satellite Projects Handbook
Weather Satellites and Beyond
Lawrence Harris

Those of you who read Lawrence’s regular column, “Info in Orbit” in SWM will already be familiar with the high quality of material that he writes.

Here is a chance for you to acquire what is certain to become the WXSAT bible.

For SWM readers we have arranged a special pre-publication offer that allows you to save £2.00 from the normal cover price of this invaluable reference book.

Offer price £12.99
Postage and packing £1.00 per book (£1.75 overseas).

Order your copy now.

The Satellite Projects Handbook will be published at the end of January we will be shipping books ordered through this offer very soon afterward.

Note it is SWM policy that payments, however made, will only be encashed on shipment of order.
1. Jim PSU-101A Mk5. UK manufactured regulated 230V AC power supply NOW with ADJUSTABLE radio base holder, combined. For use with most pocket scanners. (Please state radio type). Ideal for handheld frequency counters from Optoelectronics, etc. 2 DC output sockets, one for radio the other for accessories. 12 volt DC output. A 9 volt output version for Tandy, Comtel, Netset etc available. (PSU - 101ATA). PRICE £34.95.

2. Jim PSU-101AC Mk5. As above but includes 12” fitted 50ohm coaxial cable assembly with BNC plug and socket for base antenna connection. PRICE £36.95.

3. Jim BH-A3A. Universal base holder, now with ADJUSTABLE radio base holder, combined. Convenient, safe support of radio. Adjustable front stop. Heavy duty chrome base. TWO models "If you don't need the cable why pay for it". PRICE ONLY £12.95.

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It doesn't seem a year ago since we last sent customers our usual Christmas greetings, but then again, we have had a busy year due to your continued support. Thank you to everyone and hope you all have a good Christmas.

Peter, G4KKN

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I was not until I started work at a calibration laboratory that I really began to understand instruments that I had been working with for many years in my job as a communications engineer. I had, like others, wrestled with signal generators, oscilloscopes, spectrum analysers and the idea of such things as decibels, distortion factors, sensitivity figures and bandwidth, etc., but it was only after having spent six months in a calibration lab that they all began to make real sense. Here I was faced on a daily basis with having to actually calibrate and measure these things accurately. More importantly, it would be my name that went on the calibration certificate! In the field it had been "Yes, that's about 3dB down", in the calibration laboratory, "about 3dB" is not a statement that I could make with confidence.

Most laboratories who undertake calibration today are required to be accredited to National Standards. The National Measurement Accreditation Service, under the auspices of the Department of Trade & Industry, is the body which overseas the calibration of the laboratory. The calibration laboratories are at the forefront of development technology. The engineers who work in these laboratories are highly skilled and are expected to maintain and develop these skills in order to keep abreast of modern developments.

The calibration laboratory is one of the few places nowadays where several apprentices are usually being trained, both academically and on the job, for a calibration engineer is a highly specialised type of engineer who needs a great deal of training in order to perform his functions correctly.

It also requires a special type of outlook. The calibration engineer must be both accurate and extremely conscientious in his work. A mistake on his part will be reflected by all future users of the equipment that he calibrates.

End users of electronic instruments utilised in such fields as electronics, aviation, medicine, research and development rely on the accuracy of those instruments for their own results. It's not too much to say that, in some instances, life itself depends on them. At the same time, it is of little use attempting to proceed with the calibration of an instrument that is obviously faulty.

The calibration engineer must therefore also be experienced in the repair of a wide range of instrumentation and facilities must be available to enable such repairs to be carried out. With the huge range of test equipment available today, this alone is a mammoth task, requiring the engineer to be constantly updating his knowledge and practices.

**Extremely Expensive**

The equipment used to take measurements in the calibration laboratory is, of course, extremely expensive. It must itself be calibrated periodically against National Standards, apart from the in-house calibration that is required to undergo at regular intervals.

All of these calibration stages must be traceable back to the National Standard. This naturally tends to make calibration an expensive business. Nevertheless, it is essential that engineers and others who use instruments in their day-to-day tasks can be assured of the accuracy of the readings that their instruments give them. There is nothing worse than trying to fault-find with an inaccurate instrument, or to diagnose a patient with high blood pressure with an instrument that is reading low.

Since few end users have access to any documentation other than an operating manual, the laboratory also has to maintain a large library of service manuals, each of which can cost up to £250 for a complex modern instrument. To give some idea of the task facing a modern calibration laboratory, the monthly throughput of instruments at the laboratory where I am currently employed is around 1500.

**Grant**

Granted many of these instruments are of the same type, nevertheless, the type range is extremely wide, covering everything from the humble AVO to the latest all singing all dancing digital network analysers, together with some pretty sophisticated equipment from satellite and broadcast television stations.

The customer, too, requires his instruments turned round rapidly, seven days is about the limit that most people can afford to be without what is, perhaps, their major piece of test equipment, and the laboratory has to be staffed and geared to satisfy this. After all, the customer is the reason for our existence.

Obviously no one engineer can be expected to cope with such a tremendous range. Even so, calibration engineers are a pretty costly item and in today's economic climate there is great pressure on individual engineers to expand their area of knowledge. Rotation of engineers through various departments on a six monthly basis ensures that they at least have a broad understanding of most items of equipment that pass through the laboratory. At the same time, the ongoing apprentice scheme ensures that future calibration engineers will be available to replace those who leave.

What of the laboratory itself? Apart from the normal provision of test benches, storage areas and spare parts, the laboratory has to be air conditioned and both temperature and humidity maintained and monitored at specific levels. Every
equipment specification states quite plainly under what temperature and humidity levels its calibration must be performed and the laboratory must be capable of providing these levels. Since they vary from equipment to equipment, separate rooms must be provided over which a range of levels can be maintained.

The instrumentation used for calibration is, by its very nature, extremely accurate. In a typical laboratory, for example, measurements of voltage can be made to an accuracy of ±4 parts in 10¹⁰, whilst frequencies can be measured to ±2 parts in 10⁻¹⁰. Accuracies of ±4 parts in 10⁻⁹ can be made to an accuracy of ±4 parts in 10⁻⁸. An instrument that can perform this function, costing well in excess of £15000 and providing field strengths in excess of 200V per metre for the frequency range 10kHz to 1GHz!

The use of such an instrument, which as imagined can be dangerous to health and safety, requires specialised personnel trained in its operation and is yet another area in which capital costs will take some time to recoup. All things considered, the calibration laboratory is quite an expensive project to set up, but because of the tight controls in respect of temperature and humidity, does provide an extremely comfortable environment in which to work.

The technical challenges presented by the work in a calibration laboratory are extremely stimulating and at times can be both humorous and sad. Many firms who send work in purely because they are attempting to secure BS5750 certification seem not to understand the principles behind it. I recently had a screwdriver appear on my bench with a label tied to it stating 'Please calibrate and issue certificate!' It is mandatory in our laboratory that anything sent in by the customer must go through the complete process and so the screwdriver was duly inspected, cleaned and returned to the customer - without a calibration certificate!

Amazement

Another never ending source of amazement is the age of some pieces of equipment that appear on the benches. Marconi instruments in particular seem to be ageless. Signal generators from World War II years regularly turn up for calibration, and in most instances, a touch here and there is all that is needed to bring them back to the manufacturer's specification. Built like the proverbial brick toilet, it would take something on the lines of a Chieftain tank to drag them off frequency once they have been set. They are usually handed over to the nearest apprentice (always under close supervision) while the engineer waits for the desperate cry of 'What are these funny glowing lamps in here?'

Then too, equipment from what used to be our overseas colonies will appear - usually containing the body of some large, hairy and particularly repulsive insect that had crawled in to make a nest.
Ron Ham

Firstly, may I wish you all a very happy Christmas and a prosperous new year and secondly, to tell you that, after 51 years in radio and the past 20 years writing monthly columns for Short Wave Magazine and Practical Wireless the time has come for me to retire. Before completing this, my final column, I would like to thank all of you, our readers and the Editorial Staff at PW Publishing for your support. It's been a happy relationship all around and I would like also to thank those members of the British Astronomical Association who have sent me auroral, solar and magnetic data to support the propagation reports that many of you have sent in.

Observations

In Edinburgh, Ron Livesey uses a 2.5in refractor telescope with a 4.0in projection screen for his daily sunspot observations of the sun and in September he identified one active area on the sun's disc on the 3rd and 4th and two on days 21, 22, 23, 24, 25 and 26.

During his daily sunspot observations, Patrick Moore (Selsey), also using the projection method, found the sun's disc "spotless" on September 12, 13, 28 and 29 and October 1, 2 and 5. He noted three spots on October 26.

Aurora

Ron Livesey, the auroral co-ordinator for the British Astronomical Association, received reports of auroras described as 'glows or patches' for the overnight periods on September 20, 21, 22 and 28/29, "homogeneous arcs and bands" on 5/6, 24/25 and 27/28, 'rays' on 27/28 and 28/29 and 'active forms or flaming or flickering light' on 2/3 and 27/28. Such detailed reports came from observers in Banff, Carlisle, Crossse, Edinburgh, Fair Isle, Glengarnock, Helsinki, Kincardine, Mexborough, Mingavie, Morpeth, Peel, Portpatrick, RAF Kinloss and St. Andrews. Ron reports that the aurora on 27/28 was most active at 2040 and visible to an altitude of 40° from the Isle Of Man.

Magnetic

The magnetometers operated by John Fletcher (Tuffley), Tony Hopwood (Upton on Severn), Karl Lewis (Sattash), Ron Livesey, David Pettitt (Carlisle), Tom Rackham (Goostrey) and Tony Rickwood (Gillingham), between them, recorded strong disturbances to the earth's magnetic field on September 5, 11 and 27 and lesser events on days 2, 4, 7, 8, 9, 10, 12, 14, 15, 23 and 28.

Weather

In October I recorded only 1.23in (approx. 32mm) of rain compared to 4.54in (approx. 115mm) for the same period last year. Most of this fell in the first week followed by small amounts on the 17th and 25th. In general the month has seen many fine and mild days and some good clear night skies for the visual astronomers among you. The daily variations in atmospheric pressure from September 26 to October 25, Fig. 2, were taken at noon and midnight from my own barograph here in Sussex.

Tropospheric

From his home in Edinburgh, George Garden found some tropospheric DX on October 8. Although signals varied in strength Concert Boy receiver and a "very erratic" picture from the Bilsdale transmitter of Tyne Tees TV. I saw signs of co-channel interference on pictures on the u.h.f. band while the pressure was high at 30.4in.
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transmitted. Pictures from
his station in Glasgow. John
told me that during the event, on
October 21 and 22, they made
contacts around Europe from their
shack at Auchengillan and that a
camcorder and the video screen
grabber system on his computer
was used for some of the slow-
scan television pictures which they
transmitted. Pictures from
England, Fig. 3, Italy, Fig. 4,
Jordan and Spain, were among
those received. “We had a fine
time and everybody enjoyed this
event,” said John.

At his location in Stirling
GMOVRP received some fine
quality pictures during his slow-
scan contacts in October with
stations in Alaska, Germany, Fig. B
and Italy. Both GMOVRP and
GMOVUK have exchanged s.s.t.v.
signals on 144.5MHz and are very
enthusiastic toward SSTV.

SSTV
“The Glasgow club, GS4AGG, was
again active for Jamboree On The
Air,” wrote John Scott GM7UIK
from his station in Glasgow. John
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Author’s Hardware
That’s it folks, I trust that you have
enjoyed reading my efforts as
much as I have in preparing the

longer you use with details about your
receivers, antennas, local
interference sources, etc. We
would also be pleased to receive
copies of your reception reports.
All this information helps other
enthusiasts to compare their DX
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DXers seem to use large
outdoor antenna systems
nowadays but despite this,
many produce excellent
reception logs, sometimes
using only simple antennas
located in the lounge or
bedroom!

Transatlantic Events
No-one can argue that the 1995
Sporadic-E season was one of the
better ones in terms of the number
of unusual or exotic signals plus
the quality of reception.
Transatlantic openings were very
much in evidence during June and
July, particularly in the 6-metre
band at around 50MHz.

According to a report by Ian
Johnson (Bromsgrove), Spanish
Channel E2 signals at 48.25MHz
were almost a daily occurrence in
the USA. Unfortunately,
transatlantic TV activity is usually a
one-way event because the lowest
USA TV channel is located at
68.25MHz (Channel A2) and the
m.u.f. (maximum usable
frequency) only passed this mark
on relatively rare occasions. One
such occurrence on July 7
permited the reception of TV
signals as high as channel A5 at
77.25MHz.

Asian Signals
In Japan, extreme-range signals
(over 4000km) were received on
June 8 at 0230UTC from
Doordarshan TV (India) on
Channel E4. At a slightly shorter
distance, pictures with sound from
transmitters in Thailand were
identified on a number of
occasions throughout the summer
on Channels E2 and E3.

by Keith Hamer & Garry Smith, 17 Cohlham Gardens, Derby DE22 4FS

DXTV
Welcome to this new
monthly series for DXTV
enthusiasts. Regular
readers will no doubt be aware
that Ron Ham has compiled his
DXTV column for many years
and has now decided to retire.
We would like to wish Ron ‘all
the best’ and hope that he will
enjoy his extended leisure days.
Many DXers have been
encouraged by Ron’s articles
over the years and we hope to
continue the enthusiasm that
readers have for this fascinating
hobby. Hopefully, readers will
support this new DXTV column.
Feedback from readers will
certainly help fellow enthusiasts.
Please don’t feel that, because
you may have only recently
started DXing, your reception
won’t be worthy of mention.
Reception from British TV
transmitters is also part of the
hobby and so is the interest in
TV graphics such as test cards,
clocks and captions. Overseas
readers please note: let us have
information about reception in
your part of the world, or even
information about TV in your
country. Remember, someone’s
dream of an exotic signal could
be the reception of your local TV
station!
Let us know what equipment
you use with details about your
receivers, antennas, local
interference sources, etc. We
would also be pleased to receive
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Middle East Signals

TV signals from the Middle East were commonplace, especially in Europe where Iranian TV was received virtually on a daily basis. Well, maybe a slight over-exaggeration but reading through the logs it seemed like it! In the UK, various Middle East stations were identified including Saudi Arabia on Channel E3 (three times) and Iran on Channel E2 for over 90 minutes on the morning of July 1. There were several other instances of Arabic reception but these remain unidentified.

Tropospheric Reception

The long hot summer produced excellent tropospheric reception conditions at times. August was particularly eventful for Band III and u.h.f. DXing with many Scandinavian stations being received as well as those in France, Belgium, Germany and the Netherlands. Perhaps some of the most distant reception was achieved by Stephen Michie (Bristol) who identified the Norwegian (NRK) Halden transmitter on Channel E11 using only a small hand-held indoor Band III array!

Fig. 1: RTBF-1 (Belgium) on Channel E8 received by Tim Tebbs (New Romney, Kent).

Fig. 2: Danish TV-2 PM5534 from Hedensted on Channel E30 received by Stephen Michie (Bristol).

Fig. 3: Rumanian identification caption seen on Channel R2 by Stephen Michie.

Fig. 4: Iran Channel E2 received in Derby on 1 July 1995.

Fig. 5: Iranian programme previews on Channel E2.

Fig. 6: Saudi Arabian PM5534 with 'HZ 22 "CHANNEL 3" identification, received on Channel E5 in Derby on 1 July 1995 at 0745UTC.

Sporadic-E

Sporadic-E season. It was identified on September 14, 15 and 16 - in fact twice on the 15th! During October it was identified twice on the 28th. We wonder whether this particular transmitter, considering its relatively low transmission frequency, could be identified on a daily basis if the channel was monitored for long enough?

Meteor-Shower Reception

If you are reading this column before January 3, prepare yourself for a deluge of meteor shower activity in Band I and also possibly in Band III. The Quadrantids shower peaks around January 3 and 4 and can provide lots of interesting signals, particularly from Scandinavia and Central Europe. Recent years have been poor in terms of TV signal propagated by ionised meteor trails but perhaps 1996 may be better. For normal meteor-shower reception, the signals are only visible for a second or two so you need lots of perseverance and cat-like reactions to be able to identify these brief signals. Fortunately, the Quadrantids shower can produce extended activity resulting in a deluge of co-channel signals resembling patchy Sporadic-E reception. When this occurs it is worth trying your luck with Band III channels. In the past, distant countries such as Finland, Rumania, Italy and the former USSR have been identified in Band III.

Contact Address

As we mentioned at the beginning of this column, we would be delighted to hear from enthusiasts around the world. Please send DXTV reception reports, equipment news, off-screen photographs and general information as soon as possible to: Garry Smith, 17 Collingham Gardens, Derby DE22 4FS, England.
How to use the Propagation Charts.

The charts contain three plots. The lower dashed line represents the lowest usable frequency (LUF), or ALF (Absorption Limiting Frequency). The chances of success below this frequency are very slim.

The middle line indicates the optimum working frequency (OWF) with a 90% probability of success for the particular path and time.

Lastly, the upper dashed line, represents the maximum usable frequency (MUF) a 50% probability of success for the path and time.

To make use of the charts you must select the chart most closely located to the region containing the station that you wish to hear. By selecting the time chosen for listening on the horizontal axis, the best frequencies for listening can be determined by the values of the intersections of the plots against frequency.

Good luck and happy listening.
NEW VHF/UHF Frequency Guide with Callsigns

"Launched" at the International Air Tattoo in July our latest VHF/UHF frequency list has been updated to include the latest changes but in addition we have added a comprehensive callsign section which lists nearly 7,000 military callsigns with aircraft type and operating unit. The book now totals 232 pages, ring bound and is available for £11.50 plus £1 postage and packing.

If you would like further information please feel free to telephone, write or E-Mail, it would be nice to speak with you.

You can E-Mail us via CompuServe at 100117,535 or the Internet on info@javiation.demon.co.uk (please note spelling of Javiation when sending E-Mail!). If you have a WWW browser go http://www.demon.co.uk/javiation for an on-line catalogue.
The broadcast media startled the quiet Saturday evening of November 4 1995 with a news flash that Israel's Prime Minister Yitzhak Rabin had been shot down at a peace rally in Tel Aviv. For several alert satellite enthusiasts this meant that Israeli based news groups would soon be uplinking live reports and two-way interviews. I arrived home from work at 2230 and on hearing the news quickly checked out the Clarke Belt that - as expected - was extremely busy with various live news packages and reports.

Feeds outbound were monitored on Eutelsat II F1 with the JCS (Jerusalem Capital Studios) offering news material to numerous broadcasters. Eutelsat 16°E was feeding CBS news in NTSC direct into the "States for their own network consumption, if 14° at 7°E in action though news packages used SIS (Sound in Syncs) and Intelsat K's 21°W REuters lease (11.449GHz) was offering continuously updated news as more information unfolded - re-runs of earlier material.

Later in the evening an east-bound Intelsat K live statement was carried from President Clinton at the White House both with sympathy for and in appreciation of the work achieved by Yitzhak Rabin. (The Intelsat K President Clinton speech activity was delayed relative to Astra that suggested that the White House feed had arrived in Europe by others means - such as a C Band feed - and then relayed once more for European distribution by Reuters)

November 5 concentrated on the sense of mourning after the assassination and with the world's leaders arriving for the funeral the following day. After the funeral, outrage followed with demonstrations that again were widely reported via the TV services.

It's a good idea to keep a check on Intelsat K activity since the Reuters leases offer a wide variety of signal sourcing from world-wide networks. November 12 found the Sky News reporter Jeremy Thompson shivering in a Washington street - discussing live with London the problems of the American government that was due to shortly run out of $s after restrictions on increasing borrowing power were not eased by the US government.

John Locker (Wirral) is incidentally receiving relatively strong signals from PAS-4 about 2 degrees above the horizon, the bird is very low in the UK sky at 68° East. The published footprint for the European Ku coverage in fact includes much of the UK, slicing off Scotland and Ireland. I've received a letter from an old friend - Stathis Panagiotidis, Thessaloniki, Greece who has also been upgrading his receiving equipment. The new receiver replaces the veteran Amstrad SX320 (threshold 8dB) with a Samsung KR610S sporting just a 4dB threshold. Suddenly signals that were very poor have now an 'impressive improvement on weaker satellites such as the Astra' series, Greece being well out of the design footprint coverage. And an interesting well-off-beam catch are Sirius 5.2E signals. Usually a 2.4m dish is needed for quality reception of the 35-36DBW signals but Stathis uses just a 1m dish. Another catch has been the Russian GAL's 1 at 71°E with the TV6 MOCKBA output at 11.836GHz - a very powerful signal. PAS-4 at 68°E is well received with the Arabic ART-3 and ART-Europe output (11.525/11.650GHz horizontal). Note: To help TVDXers I've asked Stathis for an update on the Band 1 transmitter situation in his region.

Nicholas Earley (Australia) has been on a well-earned holiday in Canada and notes that many large C Band dishes are still used in the country areas which outnumber Ku band dishes about 10:1. Only one digital receiver was seen in the shops - the RCA model at $1200 though digital receivers are featured in mail order as low as $699. Back home, Nicholas has on order a UK made PACE digital receiver and although the Galaxy company in Victoria have already installed his dish, LNB and downfeeder cable but have no receivers available. An enclosed cutting advises that the Galaxy DTH satellite TV service has run into digital receiver problems, most of the first batch didn't work and have been returned, a new consignment was in transit mid November and might be installed 'just before Christmas'. Some have been on the receiver waiting list since January 1995!

Real DX, John Locker (Wirral) hauls in a weak NHK Tokyo signal from PAS-4 (68°E) just 2 degrees above the Merseyside SE horizon.
**WRITTEN QUOTATIONS AVAILABLE ON REQUEST, SUBJECT TO STATUS. WEEKLY PRICES ARE APPROXIMATE**

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
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<th>Payment Details</th>
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<tr>
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<td><strong>£999.90</strong></td>
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<td>18 x £50</td>
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<td><strong>AOR 8000 with Opto Scout</strong></td>
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<td>24 x £39.75</td>
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Europe

If you have ever felt the urge to become an international broadcaster, move to Italy. Since the beginning of October 1995, broadcasters in Italy have been able to apply for a licence to transmit programmes on short wave to targets outside the country. This theoretically brings under control a rather loose framework which has allowed stations such as the Italian Radio Relay Service to operate transmitters beaming programmes on short wave frequencies. Adventist World Radio, a religious international broadcaster, has announced it has plans to expand its operations at Forlì in northern Italy from its current single 10kW transmitter to a larger set-up. An application was expected to be made to Italy's radio-communications authorities by the end of December 1995. This new law could mean that many more short wave transmissions are beamed from Italy in the coming years.

Recognised World Standard

Deutsche Welle, one of the world's largest international broadcasters, has announced that it is introducing the first all-digital service for listeners in Africa and Asia. The station is making use of the new Digital Video Broadcast or DVB system developed in Europe and that is now a recognised world standard for satellite transmission. DW has leased a transponder on Intelsat 702 over Africa and is sending both its radio and television programmes to the continent using DVB. It is planned that the signals on Intelsat 702 will also be used to feed the new AsiaSat 2 satellite that was due for launch in December. The new AsiaSat bird covers a geographic area that almost no other satellite can achieve - the footprint runs from Eastern Europe to Australia and New Zealand. That means more than three billion people are in the coverage area of the hot bird. All that remains is for every household to go out and buy a satellite antenna and the DVB box to allow them to watch and listen to DW. But the principal reason for DW to use the new technology is to reach rebroadcasters and cable heads and this bold step moves them firmly along the road to gaining more audiences in a part of the world that is developing fast. Listeners in Europe can hear DW on short wave at 2000 every day on 5.96 and 7.285MHz.

Deutsche Welle has been offering help to people who have been displaced by the war in the former Yugoslavia by broadcasting names of missing people in the hope that they can be reunited with family and friends. These 15 minute-a-day transmissions are now also being heard in Germany, relayed by domestic broadcasters Bayerischer Rundfunk, Westdeutscher Rundfunk and SFB in Berlin. Both the BBC World Service and Voice of America run similar programmes to help people get back in touch with others who have been affected by the war.

Analogue satellite television continues to be important, despite the advent of DVB. Romania's press agency has reported the start of TV Romania International, using Eutelsat II-F3 at 16 degrees East. The station is scheduled for three and a half hours every day, starting at 1930UTC. Tune in to the station on the frequency of 11.575MHz.

Increased Budget

France's world broadcaster, Radio France Internationale, is in the very happy position of having a government which is increasing its budget. In November, the station's board of directors met and agreed to an increase of more than 12% in RFI's budget for 1996. This is at a time when most international broadcasters, particularly those in Europe, are facing dramatic cutbacks. For example, Radio Sweden is being forced to trim its operations and the BBC World Service is now worse off in real terms than it was three years ago. The 1996 budget provides 735 million French francs, allowing more development of the improved transmitter facilities at the Issoudun site in France, and the investigation of a new relay station in Asia. At the moment, no site has been chosen, but the station is concerned that other stations are building relays in the region (such as the BBC's new Thailand site). RFI in English is on the air at:

0425-0440 5.99, 7.275MHz
1935-1955 6.03, 7.235MHz
2025-2045 5.99, 7.11, 9.71MHz
2200-2225 5.99, 9.71, 11.815MHz
0900-1110 6.05, 9.645, 11.80MHz

Long Memory?

Listeners with long memories may recall the days when Danish Radio in Copenhagen broadcast in English. After a gap of around 30 years, January 7th sees the start of transmissions in the language again. Danmarks Radio has ceased to run its own transmitters, and instead rents time from the Norwegian authorities. You can tune in to English from Copenhagen, via Norway, in the last 15 minutes of each broadcast. And you can write to the station which is now a recognised world service from St Helena. No more details at the moment, but a full report, if this actually happens, in the next Bandscan Europe in April's magazine!

Co-operation is now the norm rather than the exception when it comes to international radio broadcasting. A new radio station was launched in November broadcasting across the Czech Republic. Czech Radio 6 went the air 6 November, using material from Radio Free Europe, now headquartered in Prague, BBC World Service, Deutsche Welle and the Voice of America. The new station is talk-based, with heavy concentration news, politics and business, and is carried on the medium wave channel of 1287kHz.

St Patrick's Day

Finally, some advance information: look out for unusual short wave transmissions St Patrick's Day, March 17. Several keen short wave enthusiasts in the Republic of Ireland are contemplating hiring transmitters to send special programmes around the world on the Irish Patron Saint's day, perhaps along the lines of the special once-a-year short wave service from St Helena. No more details at the moment, but a full report, if this actually happens, in the next Bandscan Europe in April's magazine!

Peter Shore, c/o SWM Editorial Offices, Broadstone
Hello again! Over the past couple of days winter has finally got around to 'doing its thing', so we must set to and clear up the garden ready for the winter snows. Which is as good a way as any of mentioning that if you use a 'counterpoise' earth arrangement for your antenna, it should be so arranged that the counterpoise wire can't be buried in snow. Should it be under snow, then it will become decidedly useless until you dig it out again or the snow melts!

Most Receivers used by listeners on the short wave bands are fitted with wide enough i.f. filters to cope with a.m. signals. There is much to be said for considering the possibilities of 'closing in' the i.f. bandwidths in order to fit into the additional digital signal processing (d.s.p.) techniques, but as there are always other cheaper possibilities.

Now get a tiny blob of, say, Blu-Tack and stick the pin vertically above the mirror. You can imagine that this pin is in fact fed at its centre with a feeder like a dipole. In the mirror you would see an image of the pin and of the feeder. The pin 'antenna' and its image are both similarly fed; the pin is in fact fed at both ends, but the other half - the image - has disappeared.

Letters

In Barnsley resides Colin Dean who is a member of ISWL. On 3.5MHz sideband he picked up CYOTP on Sable Island and 3VBBB. 14MHz c.w. was the mode for VU2JPS, from the Andamans, while side-band dealt with A71BI, A92EV, VU2JPS, on the Andamans, while VU2JPS, on the Andamans, while A71BI, A92EV, VU2JPS, on the Andamans, while
F
ollowing the write-ups in recent months concerning Emergency Action Messages (EAMs), a number of people have written-in with logs of what they have heard. One person even went so far as to do breakdowns of the EAMs by day, week, day of week, and time of day. Recently, I have been hearing EAMs and Skyking broadcasts from Yokota (Japan) early in the morning, so it seems that the propagation may be improving at last.

One final comment about EAMs. You'll all heard them on h.f., but now you can see how they are used. By the time that you read these words, the film Crimson Tide will be doing the rounds of the cinemas. It is a film about a nuclear submarine which receives an EAM message ordering them to fire their missiles upon an enemy, or to receive another partial EAM countermanding their original launch order. The film goes some way to explain how the message is received and decoded, and then follows ensuing arguments between the senior officers whether they should launch or not.

FYY

The callsign 'Foptrot Yankee Yankee' has been used for many decades by aircraft operating from RAF Finningley. Some of the aircraft are now based at RAF Cranwell (between Sleaford and Lincoln). As a result of the move, the callsign of these flights has changed. They no longer use 'FYY', they use the prefix 'CWY' followed by a two-digit number. As far as I know, station 'BT9P' has not changed its operating frequencies, but I do not know if it has moved to a new location as a result of the airfield closure.

Ferrers Confidential Frequency List (9th ed.) lists the following frequencies for station 'BT9P': 5.381, 5.665, 6.752, 6.920 (u.b.s.) 3.050, 4.749, 4.790, 8.984, 9.024, (RTTY) 4.830MHz. During the Summer, BT9P was heard on 8.980MHz with the following practice message for FYY42: 'FYY42 DE BT9P - IMMEDIATE 121311Z = FROM ABC TO FYY47 = RESCUE 51 AND RESCUE 53 ARE OPERATING NORTH OF YOUR AREA IN SEARCH AREA 54 NORTH TO NORTH 60 AND 01 WEST TO 04 WEST, YOU ARE TO REMAIN BELOW FLIGHTLEVEL 200 UNTIL 121420Z = 1319Z'. The practice message has to be read back perfectly by the student - not very easy, even under ideal conditions.

SCC

The Sea Cadet Corps (SCC) was mentioned earlier this year, and I even mentioned a few of their frequencies. I had a 'spooky' experience in early November while listening to the Sunday morning net on 8.995MHz. Station MF824 passed a message saying that 'This net was mentioned in the October issue of SWM'. The reply from MF304 was 'all SCC frequencies were published earlier this year' (I presume that they mean in the Eavesdropping on the British Military book). Hey folks, people have been talking about me over h.f. I spent the rest of the morning listening to their net, and I am quite impressed with the way they run. This particular frequency suffers a bit from QRM, but the signals are usually very good over most of the UK. Does anybody know if they QSL, or where I should write to?

SAM

I have mentioned the 'Mystic Star' network several times in this column, and I have even listed a few frequencies/channel tie-ins in the Traffic Log over the past year of so. I still get letters asking for a 'full list of tie-ins', but until now I have been unable to help. For those of you not familiar with this network, it is a series of h.f. frequencies between 3 and 27MHz, used by United States VIP aircraft for discrete communications. A lot of the contracts are 'for the clear' (i.e., not scrambled), so it is possible to hear some quite intriguing conversations. Much of the communications is now done by satellite, so the 'Mystic Star' network tends to be used as a backup service. However, there are times when the satellites are not available, or the aircraft equipment is broken; this is when h.f. radio comes to the rescue!

In recent months on the WUN network on the Internet, there have been several conversations regarding the 'Mystic Star' network, and several partial frequency lists have been passed around. I have been in touch with the compiler of one of the lists, and he has given me permission to distribute the list to readers of SWM.

Before you all start writing-in requesting a copy, I should point out a few things about the list. The full 'Mystic Star' network contains 1000 tie-ups, but the list I am offering contains about 200. The list should also be used as a guide only, as the tie-ups do change from time to time. The list contains a few other interesting frequencies, such as some of the USCG discrete frequencies, and an almost complete list of the US Strategic Command h.f. frequencies. Please note, I am not just giving this list away, you will have to do some work yourself to get a copy. I cannot charge for the list, so I will swap you a copy of the list for a copy of your own recent logs. I'm after a full page of logs, not just one or two items on a scrap of paper; don't think that you can write-in claiming 'not to hear anything' - if you can't hear anything on h.f. already, having the list will not help you. Also, please try to check-out some different frequencies from whatever you normally listen to: I'm trying to avoid hundreds of logs for 11.175MHz or the NAT tracks!

So, to get a copy of the list, send me a copy of your own logs, along with a large stamped s.a.e. (self-addressed envelope), and I'll send you the list by return. The address is at the top of the page. For those readers not in the UK, send just the self-addressed envelope, and I'll pay for the stamp (I must be mad!, but it is cheaper). No logs or s.a.e., no list - no exceptions! Happy Christmas everyone.

Graham Tanner, 64 Attlee Road, Hayes, Middlesex UB4 9JE. Internet: gmt@delphi.com
Airband

Christmas Quiz time again! Christine Mlynek chanced upon this subject whilst walking around an aerodrome, and took the photo. You need to tell me what it is, where on the aerodrome you’d find it, and its purpose. In the event of there being more than one good answer, the winner will be the entrant who, in my opinion, has provided the most detailed and accurate description. Any further tie-break will be by random selection. My decision is final and no correspondence will be entered into. Entries to reach me by the February 16 deadline please. The prize is an a.d.f. ‘radio compass’ indicator, made by Aircraft Radio Corporation of New Jersey.

Help Wanted
I don’t think there’s an aeronautical connection, but I can’t help noticing the well-equipped antenna farm at Edlesborough (between Hemel Hempstead, Hertfordshire, and Leighton Buzzard, Bedfordshire). It’s not a place that ever gets mentioned in articles on radio. So, who out there can satisfy my curiosity and tell me what it’s for?

That there’s so little in this column relevant to Scottish readers has been noticed by both myself and Colin Topping GM6HW/RNARS 1870 (Newport on Tay). Did you ever fly in the Navy, Colin? Well, Colin points out that the terrain up there isn’t ideal for v.h.f./u.h.f. but there is, nonetheless, activity at various places. Of course, if readers have any more news on the Scottish aviation scene, please pass it on to me!

I’ll help B.R. Taylor (Woking) with the identification of Whiskey Whiskey. This British Airways Boeing 767-300 is in fact registered G-BNWU. Aircraft are often referred to by the final two letters of their registration, and Whiskey is the internationally-agreed phonetic for W. Phonetics are useful when letters are spoken from a communication system (such as radio) as they reduce the chances of the listener mis-hearing.

News
The future of London’s Helicopter Emergency Medical Service (flown by G-HEMS) is in doubt. The British Medical Journal of 4/11/95, page 1185, reports that funding might cease in 1997. The debate continues as to whether or not there are benefits to patients by rapidly bringing medical care in a helicopter, as distinct from applying first-aid and taking the patient to the medical facilities by road ambulance. Could be one less exciting aeronautical activity in London airspace.

Follow-Ups and Foul-Ups
Sorry about another problem with a caption. In the November issue, page 68, you saw a ‘Prototype’. This wasn’t meant to be a quiz, so no prizes for identifying it as a Hunting Jet Provost.

Receiver Hardware
Will certain parts of the v.h.f. airband be converted to 8.33kHz channel spacing? The story so far: air-traffic control administrations say that they will run out of frequencies for air-traffic quite soon. The airlines reply, hard luck; it’ll take us too long to re-equip with transceivers capable of 8.33kHz channels. The costs and benefits are that the equipment will be expensive, but without the ability to communicate with controllers on all frequencies, certain direct routes will be denied to overflying aircraft and a long, expensive, detour would become necessary.

What can be done about it? Anyone purchasing new equipment should attempt to future-proof by going for the most flexible offering available. As you can see from the review of the Yupiteru MVT-7200 (November page 12) both this and the MVT-7100 offer 50Hz channels. Beware, though, that I’m not sure if this spacing works on a.m. rather than s.s.b. only. You’ll have to check prior to purchase.

Let’s pick two existing adjacent frequencies: 130.0 and 130.025MHz. The new plan enables two extra channels to be interleaved at 130.00833 and 130.01666MHz. I suppose the next channel is theoretically 130.02499MHz but that’s really 130.025; actually, instead of 8.33kHz spacing, we might see ‘eight-and-a-third kHz’. In other words, the existing 25kHz spacing is divided into three parts by inserting two new centre frequencies. The MVT-7200 could be expected to get as close as 130.00835 and 130.01666MHz, which I’m sure will be close enough.

Another suitable receiver is being investigated by James Turner (Huddersfield) who tells me that he hopes the AR-8000 would also be able to tune the nearest 50Hz increment from the channel centre. James thinks that the introduction of the reduced spacing won’t be until 2007. I wonder if the airlines are procrastinating, holding out for something better to come along - such as shared-channel digital communications.

They still haven’t decided what to call the new allocations. As this column is read in industrial circles, let me suggest that the two examples above could be called ‘130.0 plus channel’ and ‘130.02 minus channel’. No change to the nomenclature for existing frequencies. How about it?

Now, antennas. Not an easy problem for Paul Fineman (Orpington) despite having the height advantage of living on the 10th floor. Paul managed to mount an Air 33 antenna (from Haydon Communications, who advertise in this magazine) on the outside of his block of flats, with much improved v.h.f. reception as a result. Haydon tell me that this passive antenna contains a pair of collinear, one centred on the v.h.f. and the other on the u.h.f. airbands. Could this be a solution to others who have restricted locations?

Frequency and Operational News
From the CAA, A1C/90/1995 shows that with the withdrawal of the OW n.d.b. that was on 389.5kHz to the west of Heathrow. A new airway is J11, between Benix, Barlu and Fawb, just east of the Channel Islands. A1C/98/1995 explains that this is to ease the flow of aircraft departing Jersey and then overflying London.

Another military air base closure is Scampton, home of the Red Arrows. A1C/97/1995 says that the Reds will move to Cranwell, but will still train in the same airspace near Scampton. Control is by Waddington Approach 127.35MHz.

Would an aircraft experience a sudden loud bang while in flight? So asks A. Sayner (York). Assuming there’s no fault with the aircraft itself (such as a jet engine surge) the most likely possibility is having run over another aircraft’s wake turbulence. Aircraft (helicopters as well as fixed-wing) leave a vortex wake of disturbed air behind them. This takes some minutes to settle down, and is worse for heavier aircraft. Sonic booms aren’t allowed over or near land, so this isn’t a likely explanation.

It’s nice to know that pilots retain a sense of humour, but the correct phrases to be spoken over the air are listed in the CAA’s CAP 413 document. First, send a reply envelope (to hold a single A4 sheet) to the Broadstone Editorial Office (not to me!) and ask for the Airband Factsheet. This lists...
suppliers of charts and books (including the CAA). Use this information to obtain the documents you need. CAP 413 doesn't mention airborne witches, Mr. Sayner, but your letter did arrive near to Halloween! Approaches to airports with parallel runways can be confusing. Heathrow currently allocates one runway to arrivals and the other to departures, but they are investigating the possibility that both runways could simultaneously handle any movement in the interest of expediency. Gatwick has a main and standby runway plus a taxiway - all in parallel. Twice, aircraft have landed on the taxiway! To enable the aerodrome controller to have a clearer idea of the runway for which an approaching aircraft is lined up, improved radar is now available. The Approach Monitoring Aid (AMA) will sound an alarm if an aircraft is deviated too far to the side of the i.l.s. localiser. Presumably, controllers will explain that the AMA has alarmed when instructing pilots to go-around.

NDBs
I also recommend the Airband Factsheet (as above) to Aircraft Owners and Pilots Association (AOPA) members. Martyn wants a list of all n.d.b.s but I'm afraid this column isn't big enough to publish it! A decode is included in each section of the RAF En Route Supplement, and again, you'll find contact details for purchasing these in the Factsheet.

Meanwhile, using the decode list, I've looked up the callsigns of the beacons that Martyn asks about and here are their identities. Frequencies are the official allocations in kHz, but when tuned on a receiver there might be a slight error due to both calibration of the receiver and off-setting for best reception.

AB=Alkastreb 381. BGW=Le Bourget 334. BUN=Brussels 341.5. CNE=Cannes 404. EAS=Easleigh 395.1. GLG=Glasgow 350. ING=St. Inglevert 387.5. JEV=Jersey 367 (now withdrawn). KB=Kariba 399 - but it's in the southern hemisphere! LYX=Lydall 397. MAK=Mackiel 360. MLX=Morlais 371. MP=Chebourg 373.

MRV=Merville 403.5. NEW=Newcastle 352. NGY=New Galloway 399. NIK=Nicky 336.5. NL=Noisao 404. NN=Eskilstuna 362. OA=Amsterdam 395. OAN=Orleans 385. ONO=Ostend 399.5. OF=Brussels 402. OY=Belgium 322. PTH=Penth 388. SBH (not SBI)=Sumbarg 351. SHD=Scotsa 383. SSG-Stolling 374.5. TLA=Titalla 363. WLU=Luxembourg 346. WPL=Welshpool 323. I haven't room to print the latitude and longitude of all these, but the Supplements will tell you.

What about TST? Any navigation aid radiating with this callsign is under test, and shouldn't be used. Unfortunately, it means it can't be identified until it goes back into service and its normal identity replaces the TST transmission.

Most beacons consist of duplicate transmitter systems (in case one goes wrong). The change-over is automatic, and most beacons are monitored centrally so that the engineers are alerted to any faults. The callsign of the beacon is suffixed by a letter E (one dot) indicating emergency operation of a standby transmitter or alternative power if the mains supply has failed.

Finally, here are some beacons that I can't identify along with frequencies (kHz) given by Martyn. Who can tell the rest of us where they are? ACD 416. ACT 417. BOU 391. BST 429. FNR 401. GMM 333. LRW 357. MCV 326. ONT 431. SBL 323. SBY 329. WC 357.

The next three deadlines (for topical information) are January 12, February 16 and March 15. Replies always appear in this column and it is regretted that no direct correspondence is possible. Genuinely urgent information/enquiries: 0181-958 5113 (before 2130 local please).
Happy New 1996 to everyone - and I hope that Christmas was good for you, radio equipment wise! I sincerely hope we can keep up the good work we achieved last year and make the column better - I'm open to suggestions and will always try out anything new!

To add some weight to the debate on the 'creeping in' to the magazine of computer related items. No, we should not have a dedicated computer section. Computing is a hobby in itself and it's one that has its own market. However, we cannot afford to ignore the fact that it has ties with radio and that this serves a large audience. Consequently, I endorse quite fully the argument that we need a computer/radio page. Take a look at scanning if you want proof. When it first came out it was viewed as a 'young pretender' and ignored for ages. Now it is a way in for many to the pretender' and ignored for ages.

you want proof. When it first came out it was viewed as a 'young pretender' and ignored for ages. Now it is a way in for many to the Computing is a hobby in itself and that has no more than a 'make do'. The fantastic claims made by many antenna manufacturers - of discones in particular - are so plausible that many people will purchase them believing the claim that the antenna will cover - and quite brilliantly - from 500kHz through to 2GHz. Not! Or, at least, not if it's not backed up by long narrowband antenna. So, is the Air-33 good? In a nutshell, yes. It most certainly is.

A word now on mountings. This season will almost certainly down a few antennas - high winds and all that - so did you make sure your mountings were secure? I've never had any trouble with mine as I double up the number of locknuts used and always check on security. I also apply grease to all external parts - Vaseline being as fitting an appliance of science as safe and enjoyable as we can.

Erected another antenna here at Steeple Claydon over the winter. This is mated with my VT-225 that was previously on the Scannmaster Base. The AR2000 is now on this external antenna - with excellent results - so it was decided to mount the VT-225 on the new external and pull in more when backing up the AR2000. This has been achieved by mounting an Air-33 from Haydon Communications to the chimney stack. The signals are tremendous - to say the least! I'm now more than happy with the results and my ranges have increased accordingly.

For those who don't know, the Air-33 is a dedicated antenna - and is civil and military - that is quite small and very sturdily made indeed. Full marks to Haydon for speedy delivery and assistance on the telephone, but I use verticals as the antenna cannot be anything other than a compromise. Some are still advertised as being ideal for stuff like airband when, in fact, they're no more than a 'make do'. The fantastic claims made by many antenna manufacturers - of discones in particular - are so plausible that many people will purchase them believing the claim that the antenna will cover - and quite brilliantly - from 500kHz through to 2GHz. Not! Or, at least, not if it's not backed up by long narrowband antenna. So, is the Air-33 good? In a nutshell, yes. It most certainly is.

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For Joseph Neal, and Mr. Holt I'll mention Paul's address. Also, that The Black Cat Aviation Group can be contacted at: BCAG, 19 Crescent Road, Hunstanton, Norfolk PE36 5BU.

If you're interested in The UK Scanning Report, you can contact Paul for more.

In the words of many of our transatlantic cousins - go for it! I know that Mike Dodds of Charlbury will do! Mike wrote to ask for the address, which was given, and also asks if any VT-225 owners get complete 'white noise' and signal reading of S5 across the scale whilst on 2430MHz? This happens to Mike in the field.

In response to an earlier query by Dave Howarth regarding a Log Periodic antenna for scanning, A reader sends in the following: You need The VHF UHF Manual by G.R. Jessop G&JP - currently unavailable from the SWW Book Store - that covers this area. HOWEVER! A log periodic that is intended to be used for scanning 'broadband' would be massive - requiring a brick outhouse type rotator, a commercial standard mast and a crane to put it up there! As my correspondent so rightly states - as big as a football pitch! He also brings in the question of obtrusiveness. Everyone who knows about radio would know what it was - do you want to attract that sort of attention? If there is any TVI - Television Interference - in your neighbourhood you may well get the blame, meaning a visit from the DTI. The question of legality then would be brought in.... My correspondent also mentions the fact that a broadband scanner would probably suffer tremendously from overload and subsequent crossmodulation - and add to the expense of building and mounting such an antenna. It's horses for courses, obviously, and you do what you want - but think on first. "Arran S2" wrote me with a copy of an airband listing. It looks excellent - but can you write back what you want - but think on first. Courses, obviously, and you do such an antenna. It's horses for courses - but the issue doesn't down the road from Mike - more as an aside. It's a good scanning site.

In the meantime, good scanning and listening. Catch you down the log sometime.

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Short Wave Magazine, January 1996

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A

s many readers realised, a
lot of work went into the
November Special Edition. I
was in touch with each of the
organisations concerned; the
World Meteorological
Organisation and the European
Space Agency to mention but two.
A number of scientists and
administrators were particularly
helpful in finding specific pictures
for me. My thanks for the many
compliments received.

Current WXSATs

No dramatic changes during the
last few weeks; NOAA's 12 and 14
continued routine operations on 137.50 and 137.62MHz
respectively. METEORS 2-21 and
3-5 changed operational duties around November 10. This
date may have been somewhat early for METEOR 3-5 because at
time, it was still rather near the
terminator in the northern
hemisphere, preventing
transmissions from starting until
the spacecraft had
travelled further south and
into sunlight. Consequently,
only southern observers
would be able to monitor it
at that time.

As mentioned
last month, METEOSAT
had a change of operations around
November 14 when EUMETSAT
took over operations. After a
period of silence, METEOSAT-5's
carrier was switched back on at
1354UTC and, shortly after, the
administration message
announced that normal operations
would resume from 1458UTC.
The only immediate difference that I
noticed was the more stark
country outlines that the satellite
data processing team superimpose on the infra-red image
formats. Software written to 'remove' these outlines, has a
fight on its hands!

OKEAN-4/SICH-1

Pictures

One of the most unusual pictures
that I have seen, taken by the
OKEAN or SICH oceanographic
satellite, was Fig. 1 sent by
James Ridout of Devizes. This
image was received by James at
about 0200UTC, though the date is
uncertain. The picture was
recorded by the satellite, and later
re-transmitted to a ground station,
while passing over Britain. The
image has three sections and
shows part of the eastern
coastline of Brazil, and the
number sequence along the frame
edge, that allows its time of origin
to be calculated.

Len Hamilton of Aberdeen
has kindly sent me two more
times received from OKEAN-4
during early autumn, when the
spacecraft had an unprecedented
period of activity. A nearly
complete image of Britain
received on September 3 can be
seen in Fig. 2.

METEOSAT Operations

Until December, responsibility for
METEOSAT control was
undertaken by the European
Space Operations Centre (ESOC),
EUMETSAT, the European
Organisation for the Exploitation
of Meteorological Satellites,
assumed responsibility for the
operation of METEOSAT as from
mid-November. They had been
developing their own ground
segment since 1991, and have
done extensive testing using
METEOSAT-4, located at 10° east.
During this testing, people using
small dishies (less than
specification size,) experienced
some interference, but generally
not too much.

From mid-November, the
formal hand-over of control to
EUMETSAT, of the back-up
spacecraft METEOSAT-6, was
phased in. From November 15,
EUMETSAT took over control of
METEOSAT-5. According to the News Bulletin
issued by EUMETSAT during
October, the transition
arrangements should be
transparent to users of
METEOSAT data. Anyone wishing
to contact EUMETSAT before 15
January 1998 should write to:
Mr. Programme Manager,
EUMETSAT, Am
Kavalieriesand 31, D-64295
Darmstadt, Germany.

The contact address for mail
from January 16 is: The
Operations Division, EUMETSAT
(at the above address).

NOAA Satellite Operations

Monitoring the active NOAA
WXSATs on 137.50 and 137.62MHz
can sometimes give a false
impression of what is actually
going on. Here is a summary of
the current activities of the NOAA
constellation during mid-autumn.

NOAA-9 is in 'Semi-Standby'
status, providing data from SBUV
(Solar Backscatter Ultra-violet
sounding spectral radiometer),
SSU (stratospheric sounding unit),
and ERBE (earth radiation budget
experiment). No a.p.t. (image
telemetry) is transmitted, but the
beacon (137.7MHz) can be
monitored occasionally.

NOAA-10 Also In 'Standby'
status. The SOCC (Satellite
Operational Control Centre) takes
one pass per week to monitor
health and safety.

NOAA-11 In 'Standby' status.
The SOCC takes one pass per
week to monitor health and safety.
The Search & Rescue instrument
is on for real-time use.

NOAA-12 Nominal operations
- most, if not all equipment
working normally.

NOAA-14 Nominal operations. Some tests are being
done on the SBUV hardware.

NOAA-K Readiness Tests

The launch of NOAA-K remains
listed for December 31, but my
contacts in NOAA suggest that
Spring 1998 is more likely. Data
pre-processing software has been
transferred to EUMETSAT for
distribution to the UK
Meteorological Office and Meteo-
France.

NOAA-K has three propulsion
system tubes that are suspect, so
pressure testing is underway. The
NOAA-K MIIP (Manipulated Information Rate
Processing unit) exhibits a failure
to process some serial commands
for things such as a.p.t. channel
switching, and a serial-to-parallel
converter in the MIIP is among
the suspect areas.

Beginners' section

WXSATs and computing: We
have looked at antennas, cabling
and receivers in previous
columns. Before looking at
decoders, let us take a brief look at
computer technology - as it affects
monitoring. During recent years,
there has been a rapid change in
the specifications of the
computers used by readers of 'Info', and described in the many
letters received for this column. A
few years ago it was the 286
running between 8 and 15MHz;
then we saw 386s (80386s to be
precise), accompanied by a speed
increase to around 33MHz. I have
used one of these for three years
now, and, fitted with a co-
processor, it still serves me well.

For readers just starting on the
road to WXSAT decoding, who
have written during recent months
for more information, most
WXSAT software can run
satisfactorily on a medium speed
386, if not a fast 286. Alan
Burnett-Provan of Solihull uses
a 386 for running his FAX
software, but was told that it was
too slow for WXSAT decoding.
This could be the case if the
computer is a 386SX, but one
company, TH2 Imaging of
Margate, who market their
WXSAT decoder as a hardcard,
(for insertion into an expansion
slot) have commented to me that
many of their customers use low
specification computers.

My elderly 286 finally broke
down some months ago, due to
motherboard failure - the POST
BIOS chip and the c.m.o.s. battery
failed. I decided to replace the
motherboard with a modern 486-
compatible unit. Replacement was
straight-forward - cable
connections and separators all
completely compatible - so the
whole job was completed in a
morning. The motherboard cost
about £90 (the price has fallen
further since summer), I fitted a
486SX 25MHz processor (it was
the only one the local shop had,
and I was in a hurry). Testing the
latest satellite tracking software
leaves a 25MHz chip out of breath,
so I fitted a 486DX2-66MHz Intel
processor, and the result is
superb.

I know that many computer
users try to avoid PC-compatibles,
but when it comes to WXSAT
software - perhaps they cannot be

beaten. I maintain a collection of software for ‘Info’ readers, all of which is PC-oriented, and occasionally referred to in the column.

New Products

The section on receivers covered standard hardware designs such as synthesised and crystal frequency receivers. I must mention the latest - the MRS90 - from the Martelec Communication Systems stable, that breaks away from traditional products and is what the writer describes as a virtual receiver. A full review should be available shortly, but it is worth summarising here. The receiver is a computer-controlled, utilising a screen image for setting up and frequency selection. Connection to the computer is via the parallel port; this frees the serial connection to allow the input of a demodulated signal from a suitable decoder - which Martelec also manufacture. Provision is also made to run this receiver via an existing computer, in the hope to have completed my examination of this new model shortly.

Letters

An interesting question was raised by Brian Turnbull of Richmond. He decodes WXSAT images using Pixel-Plus software, and needed a screen capture program to save the pictures. Brian was using ‘Screen Thief’ but apparently the resulting quality was not as good as his original pictures. Brian recently obtained a copy of IMDISP that can read the files and convert them to GIF.

Current software, such as JVFAX version 7 and PGOES/WFAX, includes a ‘save’ option, the use of which produces an image file in one of the standard formats - TIF, PCX, GIF. For Windows users, the program Paint Shop Pro (v3) includes a screen capture program and extensive help pages describing how to use it. DOS users who do not have built-in image file conversion can try IMDISP; I have a copy for anyone having problems obtaining it.

WXSATs and the Law

Andrew Morley asked about the legality of recording WXSAT signals. Most readers are aware that certain frequencies are exclusively monitored and therefore recording. Some notorious cases have been publicised in recent years, and unfortunately this would appear to blight the genuine, perfectly innocent monitoring of utility frequencies. It is illegal to monitor and record the WXSAT signals, but it is very unlikely that anyone will take any action against the hobby monitoring of these signals. However on no account should WXSAT images be sold to commercial (or other) interests. SWM is able to publish images because they are not current.

Hurricane Luis

Alan Jarvis of Cardiff sent two disks containing images from his collection. He monitored Transmissions from METEOSAT-5 that originate from GOES-E (currently GOES-8). Fig. 3 is a sequence of images of the LV format infrarod of North America, including the northern part of south America. The image sequence starts at 0800UTC on September 4 and shows the movements of the spectacular hurricane, which passed near the Caribbean islands on September 10. Alan modified the images by adding artificial colour.

Bulletin Boards (BBS)

Within the UK there are two BBSs that I can recommend for obtaining Kepler elements and other satellite data.

RIG - The Remote Imaging Group operates a BBS (01945) 440666 (use 8 bit, 0 parity, 1 stop bit for connection). It provides current elements for WXSATs and larger files including the amateur radio satellites. The BBS also contains a selection of image processing and display software, and a summary of the current WXSAT operational status. RIG is a voluntary body publishing a high quality, quarterly magazine that carries features on weather satellites. Membership secretary is Ray Godden G4GCE who can be contacted on 01923 720174.

Dartcom BBS is available on Tel: 0171-703 3593 and Tel: 0171-701 6914 (connection protocol as before). This specialises in astronomy and space. It carries three sets of Kepler elements, from a small file to one containing some thousands of satellites of all descriptions. There are messagings areas covering a variety of topics, including computing. Subscribers have additional privileges, but access is free for many files and programs.

Dartcom BBS is available on Tel: (01822) 88249 (protocol as above) but is mostly for use by their customers, and unfortunately, often contains little of real interest - Kepler elements can be ancient!

Monitoring Shuttle Transmissions

Chris Brown of Ashford has an AOR AR-2800 receiver amongst his scanners, fed with a long wire, to which a Haves a.t.u. is attached. He is very interested in tuning into Shuttle re-transmissions and would like to know what frequencies readers have found to be most reliable. I welcome any reports concerning Shuttle monitoring for inclusion here. My postbag indicates a huge interest in this topic. For frequency listings, Chris mentions the book Monitoring NASA Communications by Tiare Publications. I believe that most, if not all of these frequencies are actually listed in the Shuttle pack that I update for issue to readers. (You can also find Shuttle comms frequencies in October ’94 SWM - back issues are still available - KNU)

Monitoring MIR Transmissions

Steven Manning is one of our younger readers, and has used his Steeple Tone MB7-7 receiver to monitor MIR transmissions on 146.60MHz. One of Steven’s queries concerned the availability of schematic or circuit diagrams of decoders for WXSAT pictures. The easiest freely available source is probably the graphs, using program JVFAX version 7, that includes suggested circuits for interfaces that take the audio output from a dedicated WXSAT receiver and conditions it for input to a PC, in which the picture information can then be extracted from the modulated signal.

Kepler Elements, MIR & Shuttle Pack

Many of the letters for this column describe problems experienced by beginners who have acquired satellite tracking programs but have been unable to make sense of the results. The problem often turns out to be the use of ancient Kepler elements, which are several weeks, or even months old. Peter Tanner of Weston-super-Mare told me how he entered some data into his program, then realised it was six years old! Peter made his own crossed-dipole and was able to detect WXSAT signals on his scanner. For serious monitoring, Peter is planning to obtain an interface, and have one of his receivers modified for the WXSAT band.

Several years ago, before the Internet and public sources (BBS) of Kepler elements had arrived, I had great difficulty in getting elements more frequently than three monthly intervals. Consequently, it was very difficult to do research on satellite projects, when there was such an uncertainty over the time of a passage of a satellite over the UK. I now retrieve elements for over 4000 satellites on a weekly basis, and this is the file referred to in the end section of the column each month. Anyone doing their own satellite project can obtain this file, and other data for MIR and the Shuttle are also available. Costs change occasionally to reflect the expense of data retrieval and dissemination.

The latest Kepler elements for the WXSATs, MIR and Shuttle are available as follows:

1) For a print-out of the latest WXSAT elements, the Shuttle and MIR, send a s.a.e and 20p coin or separate, extra index cards.

2) The latest Kepler prints out to many people. To join the list please send a subscription of £1 (plus four self-addressed, stamped envelopes) for four editions.

3) You can have a computer disk file containing recent elements for the WXSATs, and a large ASCII file of elements for thousands of satellites. A print-out is included, identifying NASA catalogue numbers (for the WXSATs, Amateur Radio satellites, and others), ideal for computer searches, or automatic updating of your tracking software. Please enclose £1 with your PC-formatted disk and stamped envelope.

The Shuttle Pack is a four-page A4 'booklet', updated regularly and listing all scheduled launches up to the year 2003, together with frequency listings, and a FAQ (frequently asked questions) about reception. Please enclose a s.a.e and 50p.

Special Edition

Some ‘Info’ readers may have seen the unpleasant allegation about the Special WXSAT edition, that appeared on a British Bulletin Board. The writer alleged that some of the information published in the Edition was wrong. Every item was verified by the organisations concerned - so had the writer chosen to contact me personally, he could have heard this for himself. I had previously written to the firm, commenting on their lack of communication and unwillingness to respond to faxes and requests for software fixes. They refused to apologise for a previous false claim about me on their BBS. Readers can draw their own conclusions.

Frequencies

NOAA 14 a.p.t. on 137.62MHz; NOAA 12 a.p.t. on 137.50MHz; NOAA 10 a.p.t. on 137.77MHz; METEORS currently use 137.86MHz; OKEAN-4 and SICHR-1 use 137.40MHz; occasionally and METEOSAT-5 uses 1691 & 1694.5MHz.

Seasonal greetings to all readers of ‘Info’. I continue to welcome comments from old and new readers, and pictures and any comments or suggestions for the column.
**Timestep**

**PROSat II** is used by most leading Weather Satellite enthusiasts. They have come to rely on the vastly superior features of **PROSat II**. Features such as 1,000 frame full screen full colour animate, 3D, direct temperature readout, latitude-longitude overlays and country outlines from NOAA, and Windows export make Timestep products preferred by most serious users. All satellites are catered for including the awkward Japanese Okean and the very infrequent Soviet Okean series. All current SVGA cards are supported. NOAA images contain full resolution visible and infrared data in a stunning 2.4Mb file!

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**Short Wave Magazine, January 1996**

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ARQ Explained

In response to questions from several readers, this month I'm going to dedicate some space to the basic ARQ modes. So what are the ARQ modes? Well, ARQ is an acronym for Automatic Repeat reQuest and effectively describes one of the key properties of this type of transmission.

If you've already spent some time monitoring standard RTTY signals you will no doubt have been frustrated by the large number of errors and is especially problematic when dealing with weak signals or those suffering interference. RTTY is particularly poor because of its use of a shift character to switch between the letter and numeric character sets. If the use of a shift character is lost in noise or interference, the signal can be received by any station. The SITOR link can only exist in one of two states that are known as mark and space. In digital terms this represents a simple pattern that's used to test the received signal. The SITOR decoder simply looks at each received character and only accepts those that have the right combination of ones and zeros. Although this system is a great improvement over basic RTTY, it's clearly not foolproof. If a signal suffers interference but the received characters still have the three to four ratio the error will go unnoticed. Despite this weakness, the practical results are extremely good with very low error rates.

At this point you're probably wondering how on earth a simple radio link can know whether or not the received signal has been corrupted by interference. The answer is surprisingly simple and lies in the SITOR alphabet. If you examine the binary numbers in the alphabet carefully you will note that each number contains three ones and four zeros. It's this simple pattern that's used to test for errors in the received signal.

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In response to questions from several readers, this month I'm going to dedicate some space to the basic ARQ modes. So what are the ARQ modes? Well, ARQ is an acronym for Automatic Repeat reQuest and effectively describes one of the key properties of this type of transmission.
Digital Selective Calling

How many of you have noticed the bursts of packet like data currently to be found on many of the h.f. maritime frequencies? The data packets are from the new digital selective calling (DSC) system that is being implemented on a global scale.

DSC provides an automated messaging system that will ultimately negate the need for manual distress monitoring. It also provides a very neat way to set up ship-to-shore contacts. The system forms a vital part of the Global Maritime Distress and Safety System (GMDSS) and is being implemented through the Safety Of Life At Sea (SOLAS) Convention. This body has produced a treaty document that requires all passenger ships and most other ships over 300 Tons to DSC equipped radios from 1 February 1999.

After that date ships will be allowed to turn off their v.h.f. channel 6 and 1626kHz radio guard equipment. To help speed progress to full implementation, the US FCC have ruled that all marine radios sold or built after 1997 must have DSC capability.

Let's now take a closer look at the format of the signal. The transmission comprises a 6-7 second burst of data at 100 baud with a shift of 170Hz. The information is transmitted with forward error correction rather like FEC, but also includes a checksum to confirm data integrity. Within each packet are a format specifier, called party identity, category, originator identity, telecommand and other information such as ship's position, transmit and receive frequencies. A typical message would look like this:

```
FORMAT SPECIFIER: SELCALL
INDIVIDUAL CALLED PARTY ADDRESS: 233 - 290000
CATEGORY ROUTINE
SELF IDENTIFICATION: 233 - 290000
TELECOMMAND: J3E telephone
SHIPS POSITION COORDINATES: SW LATITUDE 25 deg 40 min SOUTH
LONGITUDE 48 deg 16 min WEST RO
CHECK SUM OK
```

When used for distress signals the decoder at the coast guard station will automatically recognise the distress signal and download the ships position data. The message will also alert any other ships within range of the transmission. So you can see this is much more powerful than the more conventional distress monitoring system. A second and more common use of DSC is to establish ship-shore communications. To do this the ship or shore station will send out a DSC packet with the required ID and a suggested mode and frequency for the working link. As with the distress signal, the data can be automatically extracted and ships radio gear set to the appropriate mode and frequency. Because the system is relatively new there are few decoders available on the amateur market. The only ones I'm aware of are the Hoka Code 3 and Code 30 units where DSC is available as an option. As the data format is so similar to FEC it ought to be relatively easy for software authors to adapt existing software to receive DSC. A particularly attractive option would be a simple stand-alone unit like the ERA Microreader set-up to display decoded DSC messages. Let's hope the authors read this column!

If you have some programming skills and would like to have a go at writing your own software, take a look at the source code that is supplied with PKT-MON12 on my Disk 1. This contains the full Turbo Pascal source code so has many of the key routines already sorted. If you want more info on DSC use your Internet connection to Telnet to FedWorld (IP192.239.92.3 port 23). After you've completed the new user log-on, type UDP64 to connect to the US Coastguard system. You can now browse through and download a wide range of fascinating files - and its all completely legal!

Readers Special Offers

Here's the latest list of reader special offers. Whilst I do my best to return orders promptly, please allow up to two weeks for delivery.

IBM PC Software (1.44MB disks):
- Disk 1 (Order Code DK1) - JVFAX 7.0, HAMCOMM 3.0 and WEFAX 3.0
- Disk 2 (Order Code DK2) - DSP Starter plus Texas device selection software.
- Disk 3 (Order Code DK3) - Ultrapak 2.1
- Disk 4 (Order Code DK4) - Mscan 1.3 and 2.0

Printed Literature:
- Beginners Utility Frequency List (Order Code BL)
- Complex Signals Utility Frequency List (Order Code AL)
- Decode Utility Frequency List (Order Code DL)

FactPack 1: Solving Computer Interference Problems (Order Code FP1)
FactPack 2: Decoding Accessories (Order Code FP2)
FactPack 3: Starting Utility Decoding (Order Code FP3)
FactPack 4: JVFAK and HAMCOMM Primer (Order Code FP4)
FactPack 5: On the Air with JVFAK and HAMCOMM (Order Code FP5)
FactPack 6: Internet Starter (Order Code FP6)

For the printed literature just send a self addressed sticky label plus 50p per item (£1.50 for four, £2.50 for 7 and £3.00 for 9). For software send £1.00 per disk (£1.75 for 2, £2.50 for 3 or £3.00 for all 4) and a self addressed sticky label (don't forget I provide the disk!).

Frequency List

Before I give you the frequencies for this month, may I wish all readers a Happy Christmas and Peaceful New Year. Special thanks go to those reliable contributors who send information in (even when I don't thank them as often as I should!). Your work is very much appreciated.

This month's selection of readers frequencies comes thanks to many listeners including: Danny Goodrum, lan Taylor, Martin King, Les Crossan and Day Watson.

<table>
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<th>Mode</th>
<th>Speed</th>
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<th>Call</th>
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  - PCB SERVICE: Printed circuit boards for SWM constructional projects are available from the SWM PCB Service. The boards are made in 1.5mm glass-fibre and are fully tinned and drilled. For a list of boards see May issue of Short Wave Magazine (p.48).

Please allow 28 days for delivery.
Only the p.c.b.s listed are available.

Orders and remittances should be sent to: Badger Boards, 80 Clarence Road, Erdington, Birmingham B23 6AR. Tel: 021-384 2473, marking your envelope SWM PCB Service. Cheques should be crossed and made payable to Badger Boards. When ordering please state the Article Title as well as the Board Number. Please print your name and address clearly on your order.

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Tel: 01787 883138 Fax: 01787 883139
E-mail Address: skyview@aladin.co.uk
Pirate Press

Several interesting stories have emerged in recently. Offshore Echo reports that former Radio Caroline presenter Steve Conway has received a warning letter from the Radiocommunications Agency. His alleged offence was to include pirate radio details on his premium rate telephone information line. The RA are reported to have monitored his telephone service and threatened to prosecute anyone that publicised pirate radio stations with matters that promote unlicensed broadcasts directly or indirectly.

A slightly related article appears in Horizon on the subject of computer users obtaining worldwide pirate radio information using the Internet. The writer asks if accessing this information is illegal in the UK? The doubt arises as the Internet is a new medium that did not exist when the Broadcasting Act was passed in 1990. It could be argued that the information is being broadcast, but it is stored on a computer in the USA that is outside British jurisdiction. It would of course be possible for the authorities to monitor the telephone circuits and identify British users of the system and to intercept downloaded data. They wouldn’t...would they?

FRS Goes DX says that Dave Miller is producing recordings of extracts of world-wide s.w. pirates, that will be available on CD or cassette. He can be contacted at 55 Falcon Street, Dunedin, New Zealand.

Newsbeat reports that another filming opportunity has been lost by the radio ship Ross Revenge. Yorkshire TV who produce the 60s programme Heartbeat wanted a pirate radio vessel for one of their episodes. The fact that Radio Caroline’s Ross Revenge is still without proper steering capability caused the TV company to use a suitably disguised hired coaster for the part. The report says that Caroline could have earned £1000 per day for up to eight days filming.

Requests

George Tuck of Gateshead has written in response to last quarter’s comment on Radio North Sea International and the alleged spying activities. He says, ‘What can you spy upon from a radio ship that cannot be done on land?’ George has to rank highly among anoraks. His amateur radio callsign, which he insists is genuine, is G4RNI.

Next is a letter from a independent television producer from Leeds, David asks for the address of ENIGMA (European Numbers Information Group and Monitoring Association). It is c/o BRC, 17-21 Chapel Street, Bradford, West Yorkshire BD1 7BD. It seems the idea of radio piracy, mentioned last quarter, and international espionage caught David’s eye, or was it his imagination.

Many interesting facts about Radio Northeast International are featured in Pop Went The Pirates available from the ‘SWM Book Store’. Some incidents include the attempted hi-jack of the radio ship, a suit case full of foreign bank notes, a bomb attack on the boat, its arrest by the Dutch police and the vessel being used for military target practice and sunk!

Data on CB?

The Radiocommunications Agency have sent licensed Citizens Band radio users a questionnaire. Subjects referred to include the use of some existing UK channels for data use rather than speech and the use of a.m./s.s.b. sharing what is now the CEPT f.m. frequencies.

Other topics for future discussion include the recent change in antenna regulations, 80 channel rigs, new equipment standards and the development of CBOS. These initials stand for Citizen’s Band Observation Service, an organisation of volunteers throughout the UK who coordinate information provided by the RA’s local district offices. Further details may be obtained from Mrs Karen Scott, Amateur and Citizen’s Band Unit, Radiocommunications Agency, 189 Marsh Wall, Docklands, London E14 9SX or the controller of CBOS Mr David Daniel, The Old Forge, Broad Well, Market Lavington, Devizes, Wiltshire SN10 4DZ.

Jolly Roger QSL card.

Jolly Roger started on a world-wide basis people could make available to other users, or at least ease the congestion.

The key to the problem could well be in the hands of listeners. If on a world-wide basis people refused to listen to the external stations of countries that jam foreign broadcasts, it could place extreme pressures on their own stations. There is nothing more demoralising to a broadcaster than something about the illegal jamming that effects our hobby, or should we leave it to those that manage the h.f. radio spectrum? Drop me a line and put your opinion on/Off The Record.

Jolly Roger Radio

This is one of the most regularly reported stations on this page, Jolly Roger is well known for its country music and its relays of other stations. JRR is known to use between 60 and 150W in the 48 metre band and has received reports from the America’s and the Middle and Far East. I am also informed that they have their programmes relayed by a m.w. station in Tamariu, New Zealand.

Regular correspondents to JRR are able to collect the complete set of 22 brightly coloured QSL cards.

Jolly Roger started broadcasting seven years ago, future plans include the use of an extra transmitter for relays and the possible introduction of FM. For details of Irish Free Radio you can write to PO Box 39, Waterford, Ireland.
Long Wave Reports

Note: lw. & m.w. frequencies in kHz; s.w.Km; t.m.in UTG (+CMT). Unless otherwise stated, all logs were compiled during October. During several evenings towards the end of October Fred Pallant (Storrington) detected a weak carrier on 19300 kHz, but was unable to establish its origin until the 20th when it became apparent that it was a broadcast in Italian from Radio televisione Italiana (RAI) via their 10kW outlet at Caltanissetta, Italy. At 2200UTC he logged it as SINPO 13341.

Medium Wave Reports

Favourable conditions for the reception of m.w. transmissions over transatlantic paths existed during some nights in October. At 0630 on the 17th John Slater (Scalloway, (Shetland) picked up a broadcast from CJYQ in Barton-on-Humber until the 28th, when he heard them again the next night, but the band seemed to be dominated by Spanish stations. After sunrise on October 26 usual conditions were observed by Sheila Hughes in Morden. Much to her surprise the broadcasts from several stations in Spain were booming in around 0700. At 0730 the transmission from the RAJ 15000W outlet at Barri, Italy on 1116 was rated 43333.

Over the island of Wight George Mullin in Wroxton (Worcestershire) found radio signals from the M.East rather erratic. The best signal came from BSKSA via Dammam on 783, which peaked during variations the 2200 to 0100 period. Reception from some stations in N.Africa proved to be quite good, but the band seemed to be dominated by Spanish stations.

Short Wave Reports

Due to the solar sunspot minimum period just now, international broadcasters are forced to use the lower frequencies to provide a reliable service. Some are making more extensive use of relay stations. Schedule changes may be introduced short notice.

Because the propagation conditions in the 25MHz (11m) band are so unpredictable it is no longer used.

The conditions in the 21MHz (13m) band are generally unstable. The number of broadcasters that can be received has been a steady 33222 at 0115 and heard in Rugby. During the morning the band Harry believes he heard the callsign WBFR amongst all the din, but he says "I would have taken 'voice enhancement' in a laboratory to have four out!"

The sky waves from some stations in the Middle East and N.Africa also reached the UK after dark. Those from the Indian subcontinent to the west of India and Iran on 1386 were received by Paul Bowery in Burnham-on-Crouch at 0330. The condition was described by Peter Pollard (McKeown (Newry) as "quite excellent" - he logged it as 45244 at 2257.

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Long Wave Chart

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<th>Station</th>
<th>Country</th>
<th>Power (kW)</th>
<th>Listener</th>
</tr>
</thead>
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</tr>
<tr>
<td>RAI</td>
<td>Italy</td>
<td>5000</td>
<td>Sheila Hughes, Morden, (Shetland) picked up a weak carrier on 19300 kHz, but was unable to establish its origin until the 20th when it became apparent that it was a broadcast in Italian from Radiotelevisione Italiana (RAI) via their 10kW outlet at Caltanissetta, Italy. At 2200UTC he logged it as SINPO 13341.</td>
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<tr>
<td>RFI</td>
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</tr>
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<td>RAI</td>
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Europe, W. Africa 1100-7000 kV3333 at 1344 in Gr. Ymouset; VOA via Kavala? 15.205 (Eng to M.East 1420-1800) SI4444 at 1420 by Tom Smyth in Co.Fermanagh; RNE via Nobilis 15.110 (Sp to M.East, C.Africa 0900-1700) 54545 at 1452 in Penmaenmawr; R.Netherlands via Talita Voleon, Macao 15.150 (Eng to Asia) 24222 at 1533 in Newry; Africa No. 1, Gabon 15.457 (Fr to W.Africa 1600-1900) 44544 at 1600 in Shannon; Channel Area via Merton 15.240 (Eng to C.W.Africa 1600-1700) SI433 at 1617 in Doncaster.

Later, the BBC via Ascension is 15.400 (Eng to 1430-1930) was 44444 at 1715 in Kilkeel, HCB Quito 14.500 (Eng to Europe 1700-2000) 54333 at 1730 in Ross-on-Wye; WEWN Birmingham, USA 15.340 (Eng to Europe 1600-1800) SI3333 at 1734 by Thomas Williams in Truro; R.Netherlands via Bonnieo 15.315 (Eng to S/E.Africa 1830-2025) 43434 at 1942 in Oxford; WRNO New Orleans, USA 15.420 (Eng to E.LUSA, Europe 1500-2000) 23444 at 1945 in Australi; Ashley Heath; RA Buenos Aires, Argentina 15.345 (Sp, Eng, It, Fr, Ger to Europe 1600-2300) 34323 at 2125 in Rugby.

The occupants of the 13MHz (22m) band before moon include S IRA via Sudan 13.650 at 1600 (Eng, Fr, Ger, to Africa 0600-0800), rated 34343 at 1712 in Woking; R.London/BNR 13.500 (Ga to 0800-1200) 44444 at 0830 in Scalloway; R.Netherlands via Irklus 13.700 (Eng to Pacific 0830-0925) 34333 at 0935 in Mounts Bay, R.Australia via Darwin on 15600, Eng, Chin to Asia 0900-1200) 11111 at 0918 in Tifl; SIR via Sottens 13.685 (It, Fr, Ger, to Port, Australia, S.Pacific 0630-1100) 45454 at 0921 in Middlebrough; R.Malta/Manchester 15.300 (Ga to Mi via Moscow 0400-0600) tail 15.325 at 0420 to Europe 0400-1800) 45444 at 1020 in Bridgwater.
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<th>Call Sign</th>
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Note: Further entries * were logged during darkness. All other entries were logged during daylight or dusk.
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**Tropical Bands Chart**

4.470 4.035 3.985 China R via SRI
3.970 3.950 3.377 3.335 3.305 3.268 3.220 CPBS 1, Beijing

4.845 4.835 4.815 R.Pakistan Karachi
3.330 3.305 3.268 3.220 AIR Bombay


4.845 4.835 4.815 R.Pakistan Karachi
3.330 3.305 3.268 3.220 AIR Bombay

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