

ShortWaveMagazine

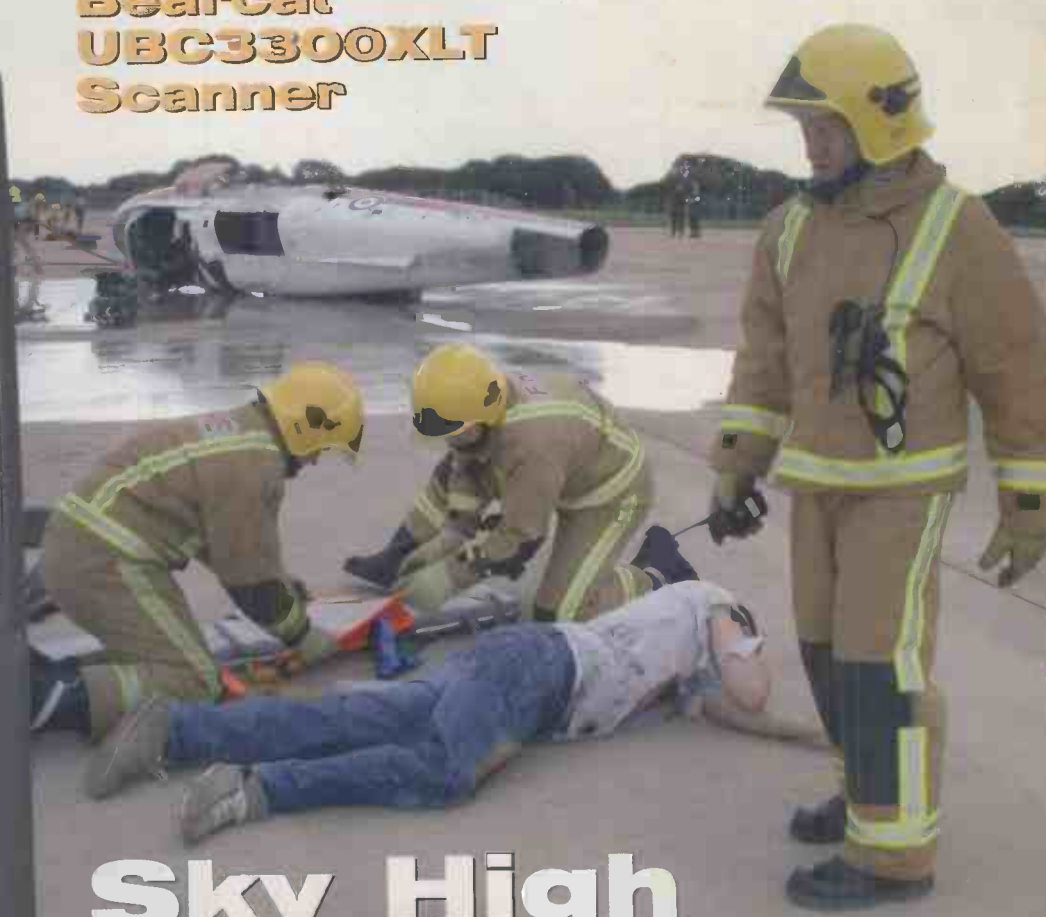
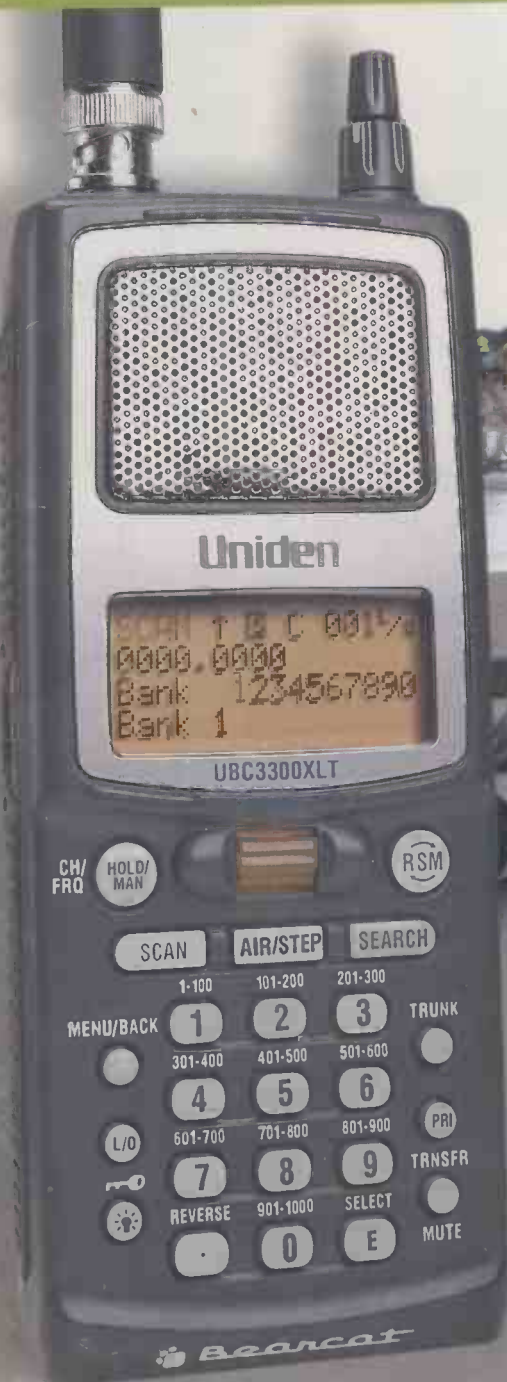
SWMM

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for radio
hobbyists

& Scanning Scene



Reviewed!
Bearcat
UBC3300XLT
Scanner



Sky High Special

SSE Airband Antennas Tested
Discovering Active MilAir Freqs With An SR2000
Tattoo Talk - Inside The Communications At RIAT

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August 2005

On Sale 28 July
Vol.63 No. 08
(September 2005 issue on sale 25 August)

Published by
PW Publishing Limited
Arrowsmith Court
Station Approach
BROADSTONE
Dorset BH18 8PW
Directors: Stephen Hunt & Roger Hall

Editorial Department
☎ 0870 224 7810
Fax: 0870 224 7850

Editor
Kevin Nice G3UNR, BRS957B7
kevin.nice@pwpublishing.ltd.uk

Production Editor
Donna Vincent G7TZB, M3TZB
donna@pwpublishing.ltd.uk

Technical Editor
NG (Tex) Swann G1TEX, M3NGS
tex@pwpublishing.ltd.uk

Art Department
☎ 0870 224 7820
Fax: 0870 224 7850

Art Editor
Stephen Hunt
steve@pwpublishing.ltd.uk

Layouts
Bob Kemp
bob@pwpublishing.ltd.uk

Typesetting
Peter Eldrett
peter@pwpublishing.ltd.uk

Sales Department
Fax: 0870 224 7850

Advertisements
Roger Hall G4TNT
roger@pwpublishing.ltd.uk
☎ 0207 731 6222

Advertisement Administration
Joan Adams
joan@pwpublishing.ltd.uk
☎ 0870 224 7820

Book Orders
Clive Hardy G4SLU
clive@pwpublishing.ltd.uk
☎ 0870 224 7830

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Short Wave Magazine Subscriptions
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Berkhamsted
Hertfordshire HP4 2UR, UK
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☎ 01442 879097
Fax: 01442 872279

Finance Department
☎ 0870 224 7840
Fax: 0870 224 7850

Finance Manager
Alan Burgess
alan@pwpublishing.ltd.uk

Finance Assistant
Margaret Hasted

PW Publishing Website
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Broadcast

- 46** LM&S - Readers' broadcast logs and news.

Features

- 12** **Uniden Bearcat UBC3300XLT Reviewed**
Dave Roberts gets his hands on another new scanner from Uniden - this time its the turn of the Bearcat UBC3300XLT. So, how did it fare...



- 19** **Tattoo Talk!**
Looking after the communications at the Royal International Air Tattoo is no mean feat, as Kevin Nice discovered when he chatted to RIAT's Radio Services Manager Roger Beck, about the challenging task of supplying the radio communications for Europe's largest airshow.

- 40** **G313i Software Update**
Back in December 2004 when Jack Weber reviewed the WinRADIO 313i for SWM he raised a few 'issues' with the way in which the user interface operated - here he checks out the improvements in the latest release of the WR-G313i software.

- 65** **Subscribe On-Line!**
We announce a change to our subscription service, which means that you can now manage, renew and update your subscription via the Internet.

- 66** **SWM International Club Listing**
If you want to get involved with an international radio club, here is a list of a few you might like to try. Regular readers of SWM will note that our usual comprehensive guide to local clubs is not printed this month, this is due to space constraints and will return next month.

SKY HIGH SPECIAL

- 26** **Airband Antennas**
In part 1 of this special Peter Bond looks at what might be one of the best airband antenna solutions currently available on the market.

- 31** **Discrete Frequencies 2005**
Peter Bond continues with his Sky High Special by taking a look at some of the UK's discrete Military frequencies.

- 33** **Sky High**
The column with all your favourite airband news.

- 36** **Hands on Airband Monitoring & AOR's SR2000**
Rounding off the special, Peter discovers that the SR2000 is his answer to searching the MilAir segment of the spectrum.



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contents

Regular Columns

Advertisers' Index	70
Amateur Bands	61
Attention 123!	58
Communiqué	8
Decode	62
DXTV	64
Editorial	6
Info In Orbit	53
LM&S	46
Order Form	70
Propagation Extra	57
Propagation Forecast	56
QSL	7
Rallies	11
Satellite TV News	60
Scanning Scene	25
Sky High	33
SSB Utilities	59
SWM Book Store	42
Trading Post	67



cover subject: Naked feline?
No! Another Uniden hand-held scanner reviewed!

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PO Box 464
Berkhamsted
Hertfordshire HP4 2UR, UK Tel: 01442 879097 Fax: 01442 872279

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see page 42



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SWM Author Info

To provide you with a ready reference here are the contact details of all our regular authors.

Amateur Bands

Clive Hardy G4SLU,
c/o SWM Editorial Offices
E-mail: clive@pwpublishing.ltd.uk

Attention 123!

Enigma, 17-21 Chapel Street, Bradford, West Yorkshire BD1 5DT.
E-mail: enigma@pwpublishing.ltd.uk

Computers & Radio

Jack Weber
c/o SWM Editorial Offices
E-mail: jackweber@pwpublishing.ltd.uk

Decode

Mike Richards G4WNC,
49 Cloughs Road,
Ringwood,
Hampshire BH24 1UU.
E-mail: decode@pwpublishing.ltd.uk

DXTV

Keith Hamer and Garry Smith,
17 Collingham Gardens,
Derby DE2 4FS
E-mail: dxtv@pwpublishing.ltd.uk

Info In Orbit

Lawrence Harris,
55 Richville Road,
Shirley,
Southampton SO16 4GH.
E-mail: info.orbit@pwpublishing.ltd.uk

LM&S

Martin Peters,
11 Filbert Drive,
Reading RG31 5DZ.
E-mail: lms@pwpublishing.ltd.uk

Maritime Beacons

Robert Connolly,
21 Eleaston Park,
Co. Down
N.Ireland BT34 4DA
E-mail: beacons@pwpublishing.ltd.uk

Off The Record

Oscar,
c/o SWM Editorial Offices
E-mail: off.the.record@pwpublishing.ltd.uk

Propagation

Jacques d'Avignon VE3VIA
E-mail: jacques@pwpublishing.ltd.uk

Satellite TV News

Roger Bunney,
35 Grayling Mead,
Fishlake,
Romsey,
Hampshire SO51 7RU.
E-mail: roger.bunney@pwpublishing.ltd.uk

Scanning

Dave Roberts,
c/o SWM Editorial Offices.
E-mail: scanning@pwpublishing.ltd.uk

Sky High

Peter Bond,
c/o SWM Editorial Offices
E-mail: skyhigh@pwpublishing.ltd.uk

SSB Utilities

Ben Hogan,
c/o SWM Editorial Offices.
E-mail: ssbutils@pwpublishing.ltd.uk

Coming Next Month

in September 2005
*contents subject to change

- Decode Special
- Reviewed - The Uniden BC246T Trunk Tracking hand-held scanner
- Bumper Scanning Section
- DRM Update - What's happening in the Digital broadcast arena?
- Keep on top of the world of monitoring with SWM
- and much more...

Don't miss the bumper Scanning Scene section!

SWM Services

Subscriptions

Subscriptions are available at £36 per annum to UK addresses, £44 Europe, £54 Rest of the World. Joint subscriptions to both *Short Wave Magazine* and *Practical Wireless* are available at £62 (UK) £76 (Europe) and £93 Rest of the World.

Components For SWM Projects

In general all components used in constructing SWM projects are available from a variety of component suppliers. Where special, or difficult to obtain, components are specified, a supplier will be quoted in the article.

Photocopies & Back Issues

We have a selection of back issues, covering the past three years of SWM. If you are looking for an article or review that you missed first time around, we can help. If we don't have the whole issue we can always supply a photocopy of the article. Back issues for SWM are £5.00 inc P&P each and photocopies are £3.00 per article inc P&P.

Binders are also available (each binder takes one volume) for £6.50 plus £1.50 P&P for one binder, £2.75 P&P for two or more, UK or overseas. Prices include VAT where appropriate.

A complete review listing for SWM/PW is also available from the Editorial Offices for £2 inc P&P.

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Technical Help

We regret that due to Editorial time scales, replies to technical queries cannot be given over the telephone. Any technical queries by E-mail are very unlikely to receive immediate attention either. So, if you require help with problems relating to topics covered by SWM, then please write to the Editorial Offices, we will do our best to help and reply by mail.

ED's



comments

Jacques d'Avignon

Just recently, our Canadian propagation consultant Jacques has not been too well and this has meant a stay in hospital. His wife has been keeping me up-to-date with his progress and I'm glad to report that things are going well, with Jacques having recently returned home. Jacques is now starting a long convalescence and we hope that he will be back to full fitness in the shortest possible time. Get well soon Jacques, our thoughts are with you.

Subscriptions

It will have been difficult this month, to have missed the fact that we have changed the way in which we administer subscriptions to SWM. Our publishers are keen to improve things and so they have engaged the services of magazine subscription specialists, Webscribe. I'm pleased to say that this will bring benefits such as being able to both check and renew your SWM subscription on-line if you have the facility. If not then previously proven methods remain. I refer of course to telephone and mail. I hope you find the change beneficial. The move to Webscribe means that you no longer deal with Kathy Moore who is leaving us after a long association with the company. I'd like to extend thanks from both myself and all the subscribers and wish you all the best for the future Kathy.

Discovery Launch

Many people around the globe have been patiently awaiting the launch of STS-114, the shuttle mission that represents the return to Flight of the reusable spacecraft. After the tragic loss of the *Columbia*, NASA have been extreme in their caution over launch conditions. There have been several postponements of the launch this year and as I type 'Ed's Comments' the countdown has one day five hours and 35 minutes to lift-off.

Enthusiasts around the globe wait with anticipation, radio enthusiasts are tuned to the frequencies likely to provide launch co-ordination activity. I personally connected my Inmarsat helical antenna and aligned on AOR W at 15°W in the hope to catch some on-air action between 1535 and 1545MHz from Transoceanic Abort Landing (TAL) site. This mission used Istres air base in France as a centre recovery in the event of an aborted take-off. Inmarsat L-Band frequencies have been used during past missions to create a 'big loop' that included most of the mission communications relayed to all involved in the mission. It makes for fascinating listening.

As a listener, it's also useful if you're a member of the DX Tuner network, as there's a handy node located in Miami, which tends to get tuned to the 'right' frequencies. Of course, if you live close to the Kennedy Space Centre (KSC), you can monitor direct, but for European based monitors, the DX Tuner set-up is ideal. I was hoping to hear live, off-air comms on 259.7MHz a.m. as the shuttle climbed into its planned 51.6° orbit in range of the UK with the orbit insertion altitude of 122nm.

Regrettably, this was not to be. All seemed to be going well as the Inmarsat link was located by some of my monitoring colleagues mid afternoon on Wednesday 13 July, the audio was being streamed via my computer into the Editorial offices and we all listened as the crew were briefed. Shortly after the command for the astronauts to 'suit up' was given. NASA TV

was providing updates and background information all the while. I made the journey home wishing I lived closer, but the journey was worth it as I could then get my hands directly on my radios and ditch the Internet induced delay! Once home, I recommenced monitoring and the search for some MilSat activity, the like of which had been used on previous missions.

It seems though, that in the light of recent acts of terrorism, it's likely that these frequencies have moved to the use of high grade encryption. Certainly this mission saw an unprecedented level of security with USAF fighters patrolling and much more!

As the hours leading up to the 1951UTC launch time passed, comms continued to flow. Then came the disappointing comments and subsequent statement. First on the NASA TV circuit, that a fuel valve sensor problem had been discovered.

Shortly afterwards, at 1830, the launch was cancelled. This was echoed via the L-Band (Inmarsat) 'big loop'. Blast-off was off for Wednesday! Disappointment spread around the world. It would appear that although there is a launch window Thursday, there will be much safety checking and I doubt that the launch will go ahead for several days. I'll let you know more next issue. If you are interested in hearing some of the activity you can check www.geckos-haunt.org/STS114/ for some captured audio samples.

Interestingly the STS-114 mission has radio amateurs making up six of the seven crew. They are: Mission Commander - **Eileen Collins KD5EDS**, Mission Specialist - **Wendy Lawrence KC5KII**, Mission Specialist - **Charles Camarda KC5ZSY**, Mission Specialist - **Soichi Noguchi**

KD5TVP, Mission Specialist - **Andrew Thomas KD5CHF/VK5MIR** and Pilot - **James Kelly KC5ZSW**.

RIAT Tickets

Now some good news! We had a good response to the RIAT 2005 caption competition featured in last month's SWM. The draw took place, the ten lucky winners were informed and their tickets sent.

Those winners were: **Geoff Brown**, Haverhill, Suffolk; **Mr RE Kemsley**, Faversham, Kent; **C Team**, Oxford; **Sid Thorpe**, Cleethorpes, Lincolnshire; **David Bould**, Bridlington, East Yorkshire; **Mr J Stacey**, Barnstable, Devon; **Andrew Lake**, Northampton; **Mr G Sellick**, Taunton, Somerset; **John Skinner**, London and **John Corner**, Hayes, Middlesex. Well done everyone!

I'm writing this in the week before the event takes place, but you'll be reading it after RIAT is all done and dusted. I hope the weekend went well for all involved. I'm glad that we've been able to provide the lucky winners with the opportunity of visiting "the largest airshow on earth", as the organisers put it.

Whether you made it or not, I hope you enjoy reading about the massive task of providing on-site communications for RIAT. A task trusted to the very capable Roger Beck, to whom I am most grateful for his assistance in putting together the article on page 19 of this issue.

See you next month

Ed's 73 Kevin

QSL

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 at QSL, Short Wave Magazine, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW.

THE BEST LETTER RECEIVES A £20 VOUCHER TO SPEND ON ANY SWM SERVICE.

Dear Ed

I have just read Dave Roberts' article on TETRA in the July issue of SWM. Something you may wish to know, and comment on, is the effect of TETRA signals on digital TV boxes.

Here, in West Sussex, QTH on the 40m contour just below the south rim of the South Downs and due north of the BBC Mast near the coast at Shoreham, we are suffering from intermittent freezing of the picture. Not the usual one frame freeze and then carry on. This is either the sound going but the picture carrying on, or the picture freezing and one needs to reboot the box, or it's a complete crash of the box.

A mild annoyance when watching, but one can sort it out. Not so mild if it crashes the box when it's been left to record a programme, and there is nothing recorded!

As the interference is intermittent, I think that it cannot be the base stations, which are transmitting all the time. I think it must be the mobile units, vehicle or hand-held.

You, like me, will know that it is not a simple matter to fit a transceiver in a car. You do not just bolt it in, plug it in and switch on. Therein lies a crop of problems for the operator and possibly for any TV or garage door or car electronics that you pass!

I have put the point to Ofcom and the three makers of boxes that we have, but we've not even had an acknowledgement, let alone a reply.

I do, however, have a contact at a senior level in Ofcom who, like me is a member of the IEE and I have dropped the 'ignore the public' problem on his lap.

Meanwhile, until 2011, when analogue TV is switched off and Digital transmissions come up to QRO we suffer.

73
Alan G3XOI
West Sussex

Dear Ed

Channel 5 carried a programme about megalightning on 22 June. Its existence was discovered by observations of lightning thought to be firing up from thunderclouds to

the ionosphere. Now it seems more likely that the flashes originate 85km high and come down through thunderclouds to hit the ground as positive lightning (much nastier than negative lightning, apparently). Meteors have triggered sprites, and a sprite is a possible suspect for causing the *Columbia* crash.

Does anyone know whether DXTV reception is facilitated by the disturbances to the ionosphere that presumably follow a sprite? I guess you have better contacts than the rest of us to find out.

This website is one of many explaining what happens:
http://geology.about.com/cs/sprites_and_more/a/aa121403a.htm

Dennis Pepler
Poynton, Cheshire

Dennis, I've performed some preliminary research and this has shown that there may well be some enhancement of propagation. Although not significant at low v.h.f. frequencies. There will be some very short lived enhancement similar in nature to meteor trails. What does seem evident in that the D layer is enhanced. To quote the site at www.kn4lf.com/kn4lf8.htm

"Sporadic-D (Ds) occurrences have an inter-relationship with brief but intense Sun based and Galactic X-rays and Cosmic Rays, huge positive cloud to ground lightning strokes and interrelated Elves and Sprites. Very large bursts of Gamma Rays have also been observed to occur in conjunction with Sprites.

Sporadic-D (Ds) absorption occurs both at day and night. Much of the night time occurrence of Sporadic-D (Ds) absorption is often masked by lightning QRN, as well as a lack of radio operation during thunderstorm events due to the lightning strike hazard and/or high QRN levels and also due to the operator not being able to recognise the mode due to unfamiliarity with it. It's doubtful that you will read about the Sporadic-D (Ds) phenomena anywhere else other than on this website."

I hope that helps, I think there is an opportunity for some more details of these phenomena within these pages in a future issue. - Ed.

topqsl

Dear Ed

I have just read with interest the points raised by Des Walsh in last month's SWM. Please find my response.

DRM

Whilst I can't say that I'm concerned with DRM QRM, I can say that I wonder why anyone would want to complain about QRM to short wave broadcasts. Lets face it - it's not as if the bands are filled with compelling programming in the first place.

Loss Of BBC World Service

Like above, what has the BBC World Service ever offered to a western or UK listener that makes such fascinating listening? It's not as if we've ever had a lack of news here in 'Blighty'. However, I could understand the argument if I were in the middle of nowhere.

Besides as far as I'm concerned all short wave broadcasting has only ever been propaganda, either overt or 'grey'! Perhaps some listeners have become victims of this practice without realising it and still feed the need for a 'fix' of what they got used to?

Short Wave Pulse Interference

Is Mr Walsh sure this is 'woodpecker' type radar? He doesn't mention the times that it has been heard.

I recently became victim to a woodpecker style QRM from about the same frequency range 7 to 30MHz and it turned out to be a switched mode power supply in my neighbours recently purchased DVD player.

Readers attempting to identify Over the Horizon (OTH) radar sources could download the sound samples available on www.iarums-r1.org along with the text and screenshots of audio waveforms of the same.

It's interesting to note that the most commonly heard OTH system by myself comes from the one in Cyprus and I think we can easily guess who owns that.

Andy Foad
Whitstable
Kent

Restoration Help

The following letter was addressed to the author of the SWM July 1988 article on Eddystone 940 Restoration. Unfortunately, we no longer have up-to-date contact details. Perhaps he'll read this and respond, or maybe a fellow reader who's successfully completed a similar restoration can advise? - Ed.

Dear Sir

I have been trying to restore an old Eddystone 940 with the help of the SWM account (July '88), but have now come unstuck. In part two you suggest the replacement of all the carbon resistors in the front-end with metal film types! All very well, but how the devil do you get at them?

Most of them are right at the bottom (top as it's up-side down of course), of the mass of switches, coils and wire in the depths of the coil pack! It is possible that you describe this in Part 3, which I do not have? I think I may have picked up someone else's failed effort to follow your restoration instructions from the mess the fellow has left me. Mind you, I only paid a fiver for the set, which will probably give an idea of the state of it when I got it! Having said that, I'm not about to let it beat me if I can help it. How ever did they put it together in the first place? Your observations and advice would be most welcome at this time.

Walter S Williams GOXEM
Cornwall

communiqué

DX Downloads

The British DX Club now has available updated versions of Africa on Short Wave surveys, which have been compiled by Tony Rogers. There are two versions available on the BDXC-UK website as follows:

- 1 Country order - this comprehensive list covers all known domestic and external short wave broadcasts from Africa as well as selected opposition/target broadcasts aimed at African countries.
- 2 Frequency order - this lists domestic stations in sub-Saharan Africa as well as most opposition/target broadcasts aimed at Africa. It also includes international broadcasts relayed from transmitters in Africa on the Tropical bands.

These documents can be downloaded in pdf format from the Articles index at:
www.bdx.org.uk

IRRS Shortwave Schedules

With effect from mid-June the IRRS have upgraded part of their of their Saturday broadcast on 15.725MHz to 50kW. Here is the current schedule on 15.725MHz to Europe:

0600-0800 (0800-1000 CET) 15.725MHz - 20kW (Radiosix & Celebrate Radio)

0800-1200 (1000-1400CET) 15.725MHz - 50kW (Radio Mi Amigo)

All other broadcasts on 13.840MHz and 5.725MHz will be at the usual scheduled times.

Reception reports are welcome to reports@nexus.org For the complete frequency and program schedule take a look at: www.nexus.org/NEXUS-IBA/Schedules/ live streaming can be found at [http:// mp3.nexus.org](http://mp3.nexus.org) and www.egradio.org

Venue Change

If you are thinking of joining in with the South Dorset Radio Society activities then make sure you go to the right venue! With effect from 12 July the South Dorset Radio Society has moved to the Chickerell Youth Centre in Chickerell Village, it is not far from the old club site, it's just on the other side of the village. New members are always welcome the club and more information can be found at:
www.g3sds.org.uk



Subscribe On-Line!

As from this issue we are able to offer readers the facilities to manage their SWM subscription via the Internet (this service also applies to *Practical Wireless* and *Radio Active*). We have teamed up with Webscribe, a subscription agency, to enable readers to enjoy the benefits of on-line subscription management.

The new service means that you can now check, update, renew, extend or start a subscription from the comfort of your computer. You can still subscribe via E-mail, telephone, FAX or post.

See page 17 for a full description of the service and page 69 for a full list of subscription prices. You'll also find a form there, which you can use to subscribe by post if you wish. Please note that **cheques must be made payable to PW Publishing Ltd.** and that **cash is NOT** accepted with orders.

Finally, we're sure readers will join the Editorial team in thanking Kathy Moore for managing the subscription services over the years and in wishing her all the best for the future. Thank you Kathy!

Subscription contact details:

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Please note that **all** subscription queries must now be directed to the above with immediate effect.

From Dayton to Kent with D-Star

Icom UK recently connected to Icom America using its digital radio technology D-Star at the Dayton Amateur Radio show. **Bob Stockley** (Sales & Marketing Director), **John Turner G0KFO** (Amateur Dealer Manager) and **Steve Rooker G4UUI** (Technical Specialist) of Icom UK were able to communicate with **Don Turner G4TKR** (General Manager) who was on the Icom America stand at the time.

At the Dayton Radio Amateur show Icom America installed a D-Star repeater and two ID-1 mobile radios to demonstrate the digital capabilities of the system. The repeater was connected to the Internet and this enabled other D-Star systems to be seamlessly connected together. Amazed at the quality of the transmission John Turner G0KFO

said, "When you use Internet connections like Echolink there is a delay and poor audio, but this was superb and almost instantaneous. The clarity of the speech was very impressive".

The D-Star project has been developed in collaboration with the Japan Amateur Radio League (JARL) as an open protocol and is also supported by the Japanese Telecommunications Administration. The D-Star system provides digitally modulated voice/data communication, high-speed data access over the air and has a close affinity with the Internet.

The D-Star system offers digital voice modulation (GMSK). All of the transmissions including data and pictures are digitally encoded. Digitally modulated voice is transmitted at 4.8Kbps and can send simultaneous low speed data. Digital high-speed data is transmitted at 128Kbps (max) from terminal to terminal or via the repeater or from a terminal directly to the Internet or backbone. Furthermore, repeaters can be linked via the Internet or a 10GHz backbone, providing a multi-site repeater system. The transceiver has an Ethernet cable port, which provides direct connection to a PC, router, hub or other network devices.

On his return to Icom UK, Don Turner G4TKR said, "The launch of D-Star will revolutionise the way in which amateurs communicate with each other. The clarity and speed of transfer of information is just amazing. Considering the distance I was from my colleagues it was like I was sitting next to them rather than several thousand kilometres away".

Telford Radio Rally

After five years at the RAF Museum at Cosford, the Telford Rally has had to move, as major re-development is taking place at the previous venue. A great alternative has been booked for **Sunday 4 September**, with all the usual attractions.

The Telford Rally's new home is on the banks of the River Severn in Shrewsbury's West-mid Showground. The site is right next to the Town Centre and the organisers expect the historic town to be popular with families and have spoken to the local Tourist Information Centre who hope to provide Guided Tours of this medieval town for those interested.

A particular feature of this year's Rally will be a Test Equipment Centre, combined with 'rig clinic'.

Various test sets will be available to undertake a range of transmitter and receiver checks. With the support of vendors, it should be possible to check-out a piece of second-hand gear before a firm purchase is made-very useful!



There's something for everyone here - you just have to find it.

Point your browser at www.telfordrally.org.uk for more information, maps etc., or contact **Martyn G3UKV** on **(01952) 255416**. The organisers promise a warm welcome for every visitor.

Last year's Telford Rally free draw prize being drawn by RSGB President Bob Whelan G3PJT.

U2 Makes Sole European Appearance

The U2, legendary USA spy plane, which celebrates its 50th anniversary this year, made its only European appearance of 2005 at the Royal International Air Tattoo, at RAF Fairford in Gloucestershire on July 16-17. This seldom seen strategic reconnaissance aircraft, based at Beale Air Force Base in California, took part in the airshow's operational theme 'Surveillance 05-Eyes In The Sky'.

Since 1955, the U2 has been providing high-altitude, all-weather surveillance and reconnaissance for the CIA, NASA and the US Air Force. The U2 project was initiated in the early 1950s by the CIA, which desperately wanted accurate information on the Soviet Union. It was thought an aircraft that operated at an altitude excess of 70,000ft would be hard to detect and impossible to shoot down.

In its early days, the 'U' designation, normally reserved for an innocuous utility aircraft, was used as part of a campaign to keep the aircraft a mystery from prying eyes. It was not until 1 May 1960 that the world learned the truth about the U2 after one flown by Francis Gary Powers was shot down deep within the Soviet Union. Though



Powers was later returned to the USA in exchange for a Soviet spy, the U2 never entered Soviet airspace again. In 1962 the aircraft proved vital when its pilots discovered the placement of nuclear missile bases in Cuba leading to the Cuban Missile Crisis.

The U2, which is commonly known as the 'Dragon Lady', operated during the Vietnam War, in Iraq during Operation *Desert Storm* (1991) and in Bosnia, during Operation *Deliberate Force* (1995). It is currently believed to be operating in Afghanistan as part of Operation *Enduring Freedom* and in Iraq supporting Operation *Iraqi Freedom*. Air Tattoo Director Tim Prince said: "The fact that the US Air Force displayed a U2 at the Tattoo and nowhere else in

Europe shows just how strong the relationship is between our two nations."

Did you attend RIAT and see the U2 for yourself? If so we'd love to hear from you about that or any other Tattoo experience. If you took photos, monitored frequencies or just want to tell us how you got on - please send them in.

Peter Halpin PHIPH (PEIMHO)

Dick Pascoe G0BPS pays tribute to Peter Halpin PH1PH.

"It is with deep sadness that I have to report the death today of my good friend Peter Halpin. Peter was given a short time to live after being diagnosed with cancer - he defied all the doctors and lived for an active three years longer than was expected.

Those who also knew Peter will no doubt join me in the memory of a guy that loved life even though it had not treated him well. He will best be remembered by his contribution to the software *Ham Radio Delux*, which I am convinced gave him a will to live far longer than expected and his successes on 50MHz."

The staff of SWM send condolences to Peter's family and friends on their sad loss.

New Editor At RadCom

As from the September issue of *RadCom* (The Radio Society of Great Britain's members' magazine) has a new Editor, **Alex Kearns**. Alex takes over from **Steve Telenius-Lowe G4JVJG**, who has been in the Editor's chair since 2000, is taking early retirement to start a new life in Malaysia with his wife **Eva 2E1FHJ**. Steve is not leaving his radio hobby behind though as he plans to be active as **9M6/G4JVJG** - so listen out for him!

Alex Kearns takes over from Steve as from the September issue coming into the post from editing *European Semiconductor*, the leading journal for the European chip making industry. Alex commented, "It is a great honour to be given the chance to edit *RadCom*, the leading magazine for amateur radio enthusiasts in the world. I am hugely excited about editing this fantastic publication and I hope that this enthusiasm will be evident in upcoming issues of the magazine."

We wish him all the best in his new post.

RAYNET Guard the Way

A guard of honour by fellow radio amateurs greeted the wedding of **Dave G6IFA** and **Audrey M3HWV Hicks** on 18 June at the church of St. Mary's on the Hill, Halton, Cheshire.

David is well known as an RSGB Board and RAYNET Committee of Management member for the North West. We wish David and Audrey all the best for the future.



Forming the guard of honour were: **Dave Ollerhead G4JMF**, **Greg Mossop G0DUB**, **Kath Wilson M1CNY**, **Derrick Sumner M15UM**, **Dave Wilson M0OBW**, **Lisa Mossop M0LSA**, **Alan Hopkinson G8OJQ** and **Mike Hampson G8RXB**.

(Photograph by Simon Taylor G1NTX).

rallies

Cadets on Air

Seven cadets and one adult staff member of the 49F (Greenock) Squadron Air Training Corps have recently passed the Amateur Radio Foundation Examination.

All the successful cadet candidates are currently awaiting issue of their Amateur Callsigns. The Course was run by instructors from the Helensburgh Amateur Radio Club and took place at the request of the cadets who were keen to learn about other aspects of radio communication. Listen out for the 49F Squadron cadets on the Amateur Bands with the special event station callsign

GBOATC on the air

from the former RAF Machrihanish base on the 6-13th August.

The Squadron also teach Cadets how to use the Air Training Corps radio systems working through various skill levels to attain their Communications Badge. The Cadets meet at the Squadron HQ at **26A Ardgowan Street, Greenock** on Monday and Thursday nights from 1930-2200 hours. If you are 13 years or over why not go along, have a chat and see what they have to offer?



July 30: Martin Lynch & Sons' Summer Barbecue & Boot Fair. www.hamradio.co.uk

July 31: Colchester Radio Amateurs are holding their annual rally at St. Helena School, Colchester located next to the A313 by-pass. Talk-in will be provided. There will be a Bring & Buy and a main Essex dealer will be attending, as well as special interest groups. Refreshments will also be available. Contact Garry M0JJH on (01621) 818620, E-mail: m0jjh@despammed.com

August 6: The Rugby Amateur Transmitting Society are holding their Annual Rally at the Stanford Hall, Lutterworth, Leicestershire. Contact T.M. Humphries on (01455) 552519 or E-mail: thumph3426@aol.com for more information.

August 7: Flight Refuelling ARS Hamfest will be held at the Flight Refuelling Sport and Social Club, Merley, near Wimborne, Dorset. Details from Mike on (01202) 883479 or check out the website at www.frars.org.uk

August 7: The Lorn ARS are holding their Radio Rally in Crianlarich Village Hall, junction of A82/A85, 12 miles north of Loch Lomond. There will be the usual stalls and entrance fee is £1. Doors open 1030 for disabled visitors and 1100 for others. Details at www.gm0lra.freeuk.com or contact Shirley at gm0lerv@dsl.pipex.com or John GM8MLH on (01838) 200304.

August 12: The 12th Annual Junk Night of the Cockenzie & Port Seton Amateur Radio Club will take place at the Cockenzie & Port Seton Community Centre, South Seton Park, Port Seton. Entrance fee is just £1 and all proceeds will go to the British Heart Foundation. Tables are available on a first come, first served basis. There will be disabled access and a raffle at approximately 2100. Refreshments will also be available. Contact Bob Glasgow GM4UYZ on (01875) 811723 or E-mail: bob.gm4uyz@btinternet.com for further information.

August 28: The Milton Keynes Amateur Radio Society's Annual Rally is taking place at St. Paul's School, Chaffron Way, Leadenhall, Milton Keynes, starting at 0900. Talk-in on 145.550MHz. The rally location is three miles from J14 of the M1 and 1/4 mile from the local Maplin store. Dave M0BZK on (01908) 647662 or visit www.mkars.org.uk

August 28: The Torbay ARS Communications Fair is to be held at Churston Ferrers Grammar School, Greenway Road, Churston, Nr. Brixham, Devon. Doors open 1000 and the entrance fee is £2. There will be a free car park, trade stands, catering and a raffle. More information from Colin G4FCN on (01803) 812117 or Peter G4VTO on (01803) 864528.

August 29: The Huntingdon Amateur Radio Society are holding their Annual Bank Holiday Monday Rally at the Emulf Community College, St. Neots, Cambridgeshire (near Tesco superstore on A428). Doors open 1000 and admission is £1.50. There will be hot and cold refreshments available. Features hall and car boot on hard standing. Talk-in on S22. Peter Herbert M5ABN on (01480) 457347 (between 1800 and 2200), E-mail: peterherbert@aol.com

Icom Encourages Transatlantic Co-operation

Teams of school children from both sides of the Atlantic have, in conjunction with Icom, produced the third volume of the successful series of Zack & Max comics. The third volume entitled *Mady Goes to England* was produced by a team comprising children from The Priory LSST School in Lincoln and children from the Lake Washington Ham Club KC7OIO at Franklin Elementary School in Kirkland, Washington. Employees from Icom America and Icom UK also contributed.

David Condon K17YP, teacher at Franklin Elementary School who was the leader of this transatlantic project said, "Early on in the project, our inspiration was taken from one of our students, Jannah who was in my fourth grade class at Franklin Elementary. Coming from England, Jannah provided us the basic starting information for the story. She told us about her daily routines and answered questions about life in the UK.

The next piece of good luck came from an advertisement from Ian Lockyer M3INL, Marketing Manager of Icom UK who posted a request on the Internet as well as in *Practical Wireless* and *Radcom*. We were looking for a school in England that wanted to jointly write this

comic book. In response to the advertisement we were put in contact with Mr David Mackinder G4DWP, and his students at The Priory LSST School in Lincoln."

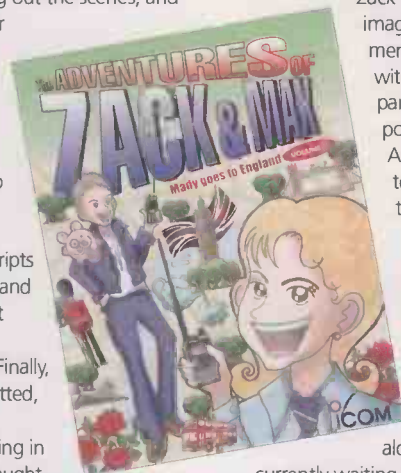
He added, "Each school spent three months writing the story, planning out the scenes, and communicating with their counterparts across the Atlantic. The 9-to-11 year olds worked very hard putting the story together; they gave up break time and came into class before school. They posted their work to computers and passed scripts back and forth from Kirkland to Lincoln. More than just stories were exchanged. Friendships were started. Finally, after the story was submitted, Kayoko Nakajima, a professional cartoonist living in the Seattle area again brought the Zack, Max and Mady characters to life."

David K17YP continued, "at our school we have just graduated 41 students and parents with amateur radio licenses. In our program it is required that the parent take the radio class along with the student (if the student wants a licence). We do that so that the students from the very start get the support they need to have radio gear after they earn their license. The connections the parent and the student make with each other as

they both learn radio is wonderful. I believe David Mackinder at Lincoln is planning the same format for next year."

David Mackinder G4DWP from the Priory LSST School in the UK said, "Over the last school year Zack & Max has really captured the imagination of my radio club members. The school is delighted with the outcome of the comic. In particular, it is the fact that it portrays young people using Amateur Radio to further their technical knowledge coupled with the theme of promoting goodwill between different nationalities. During the time the comic has been in the making we have also been running a Foundation Licence course at the school. On Tuesday last week Mia and Nikiwe, who both appear in the comic, passed their test along with four of the boys. We are currently waiting for callsigns to be issued. My priority is to be able to start a Priory LSST school club net on 2m in the evenings. It might also be possible for us to link-up with schools in the USA via Echolink. I would also like to run 2m Foxhunts at school."

As to the future, David Condon said, "we have plans for volume four. We are just waiting for that 'phone call from Icom America to ask us to start. I might add, if approved by Icom, volume four will have an international flair too".



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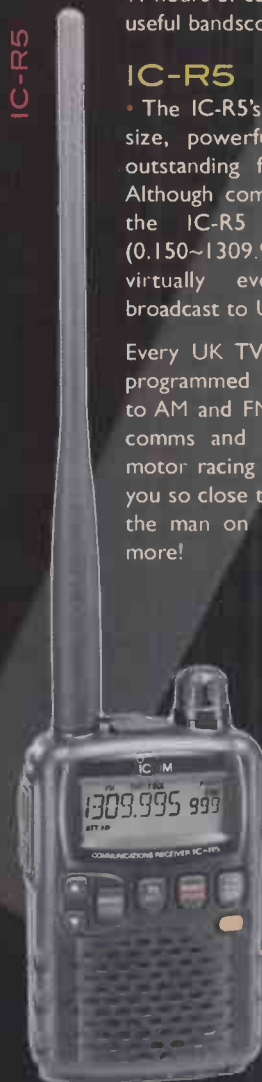
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IC-R5

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Count on us!

Uniden Bearcat UBC3300XLT - Reviewed

Dave Roberts tries another Bearcat hand-held scanner. This month it's the turn of the new UBC3300XLT to suffer the Roberts' scrutiny.

Another day - another scanner. A reviewer's life can't be too bad, can it? The hand-held UBC3300XLT certainly looks impressive with its Bearcat bear paw logo on the bottom of the casing. I was keen to discover more.

Chunky

The UBC3300XLT certainly presents a chunky handful and feels well made. The speaker grille appears to be manufactured from perforated metal and the whole unit imbues the user with confidence as to the toughness of the thing. Like I said, it's a handful, being 65 x 45 x 153mm and weighing in at 350g. Internal power is supplied via a custom made NiMH 4.8V battery pack, so you can't use store bought batteries with this radio if you run out of power at a crucial moment.

The top of the set hosts the volume and squelch controls, the earpiece socket and a BNC socket for attaching the supplied antenna or to enable easy connection to an external antenna with a lead terminating in a BNC plug. This is an important feature to me, because I don't have the eyesight to deal with wiring plugs to interface with the SMA connections that are increasingly popular on hand-held radios these days. Other than the switches on the 'roof', all the controls for the UBC3300 are situated on the front panel below the amber coloured liquid crystal display panel, including an intriguing rotary control clearly designed to be operated by a thumb. Someone has really considered the ergonomics here.

Side mounted sockets are provided on the left for the charger and on the right for computer control or for cloning the settings and frequencies from one UBC3300 to another.

Frequency coverage is from 25 to 512MHz, 806-960MHz and 1240 to 1300MHz. Any mode, a.m., n.b.f.m. or w.b.f.m. can be selected within these ranges, a most useful feature.

Trunk Tracking

On examining the UBC3300 you would be forgiven for asking why is it heavier and larger than its contemporaries? Other receivers that do much the same job are smaller and lighter. Well, it's because the UBC3300XLT is a trunk tracking radio that will efficiently follow and resolve communications that utilise trunking techniques for frequency/channel control. This explains the extra payload compared to other sets that don't perform these functions. The UBC3300XLT will track three types of Motorola systems and four other schemes devised by other companies.

There are only a couple of users in the UK who utilise Motorola systems and one of those, The Metropolitan Police in London, will very soon be moving to the often discussed, encrypted digital Airwave system - see last month's SWM for more details on the Airwave system - Ed. The other users of the Motorola analogue trunking are American forces stationed at a base in England. I am unable to establish users in the UK for the E F Johnson LTR (Logic Trunked Radio) system. A really slick function is that you can track different trunked systems and conventional channels at the same time. I bet that feature cost a fair bit to devise.

The UBC3300 also features a slot in the set's battery compartment to install an APCO-25 digital decode card that, I assume, will be eventually sold by Uniden as an accessory.

APCO-25 is the American digital standard trunking system - again this system is not used in the UK other than by HM Customs & Excise, who encrypt their signals anyway.

The UBC3300 doesn't support the popular MPT1327 system that is in widespread and increasing use in Britain. As such it would be misleading to comment on the trunking features of the radio. I'm sure they are great if you are in the USA, Canada or many other counties but their relevance to the UK is, at best, minimal.





■ The useful thumb wheel - shades of the mobile 'phone' - roller control.

Read The Manual!

To drive this radio you need to read the manual! There's no escaping that fact! Almost the first thing you'll find is that the set has no less than three band plans to choose from. In effect this only means that you can choose which frequency step the radio uses as defaults when in the search and programming modes. When you turn the set on you select the band plan by holding keys one, two or three and simultaneously rotating the off/on volume control. The last band plan selected is remembered when you next switch the set on. In any 'band plan' you are able to vary the search steps by choosing one from either 5, 6.25, 7.5, 10, 12.5, 20, 25, 50 or 100kHz steps. 8.33kHz spacing is available in the civil airband range.

There are 1000 memory channels in ten memory banks in which to store frequencies. One priority channel can be selected in each bank and there's a neat function that allows only priority channels to be scanned.

A handy feature provided by the UBC3300 is its ability to identify the CTCSS tone and DCS code in use - clever stuff. You can also select the CTCSS and/or DCS codes in use and enter them in a channel that you are programming.

The front panel has the usual push button keys for frequency entry and control of the set. The bottom left key is the decimal point for frequency entry and it also doubles as a 'Reverse' key that when depressed automatically selects the 'other half' of two frequency radio systems in certain bands. This feature cannot be changed by the user and unfortunately the frequency splits are not compatible with UK band planning. The feature is useful when monitoring v.h.f. and u.h.f. amateur bands when you wish to discover whether you can hear a station on a repeater input frequency but you'll find that the other channel 'splits' are in use across the pond and not here. The control keys are a sensible size and not too small, I guess that they are in



■ External power and charging socket.



■ Uncluttered and functional, the ear piece plugs in the centre socket.

proportion to the bulk of the radio but it's good to have easily operated buttons.

Apart from the rotary switch (encoder) all the other controls are much the same as you would find on any other scanner with memory transfer, key lock and other functions being available. There is, of course, a control to put the set into trunked mode.

Novel Feature

Now to that rotary control (thumb-wheel). A novel feature that has clearly taken a lot of thought. It is labelled as a v.f.o. switch but spends most of its time controlling the UBC3300's menu functions. When programming the this Bearcat you'll find yourself using the thumb controlled roller quite a bit. Somewhat surprisingly, its use soon becomes second nature and I soon found myself spinning through functions with great confidence.

Cloning from one UBC3300 to another can be accomplished via an accessory lead which is not supplied as standard. There is also a PC control capability and with the software being available for download from the Uniden site - www.uniden.com

After a little practice, I found that I could accomplish channel programming pretty damn quickly. Many of the defaults are sensible and there's no need to run through all the programming functions for each channel. Alpha tagging of memories is also quick and easy. Search parameters and linking search bands is again no problem once you get used

■ Boring but essential!



to it and there is a handy 'auto store' feature that automatically drops frequencies found during search into unused channel allocations. Uniden scanners seem to have a system that alerts you if you are entering a duplicate frequency - an essential tool these days and I was pleased to find it on the UBC3300.

At this point I should let you know how I got on with using the radio. Switching the receiver on returns a "Welcome to UBC3300XLT" message via the l.c.d. also displayed is the 'band plan' in use. The display additionally provides the usual information regarding channel, alphanumeric tags, locked out and priority channels. Details of channel scan and search are there together with mode in use, a handy signal strength indicator and battery state display. The attenuator icon is visible when that function is in use. Trunked radio tracking details are also provided when operating the radio in the trunking modes.

I found that to see the display without effort I needed to turn on the back-light. This also illuminates the control keys, which makes a big difference in poor lighting conditions. I normally try to keep any radio supplied for review in a condition as close to unused as possible, disturbing as little of the protective material fitted by the manufacturers as is possible. But, I just had to remove the film that protects the display and speaker, otherwise I would have had severe difficulty in reading the l.c.d. - not really surprising as the film is not intended to stay once the radio is unpacked so it's not designed to transmit light! In bright light it's pretty hard work to see what's displayed and turning the light on certainly made a difference. On the car dash, at night, it looked spectacular and would impress any technophile!

More Sensitive

I must own up to the fact that this wasn't the first UBC3300 I'd had seen. Nevada provided one a few weeks earlier that had a fault with the rotary (thumb) control. This was returned and replaced with one that worked faultlessly. I guess there are always a small number of products that fail between the factory and the customer, such is the nature of manufacturing complex electronic products. The main thing, is how these problems are resolved, I've certainly no complaints on that front.

As usual with Uniden equipment, this radio is supplied very well packaged indeed. Its box contains the standard



■ The belt clip is very substantial.

items that we have all come to expect from most manufacturers - the radio, a rubberised shrouded antenna, belt clip, charging unit and a 94 page instruction book.

Therefore, my first opinion of the Bearcat was very slightly tainted, but I was prepared to have an attitude change. Just working in my shack with the set scanning away on the desk for a week or two certainly had the effect of impressing me. Using the supplied flexible antenna I found the UBC3300 to be slightly more sensitive than some other hand-held radios of my acquaintance. Plugging the Bearcat into an external discone provided base station performance with acceptable sensitivity, certainly on a par or better than the some of Uniden base station units. Some listeners may find the audio a bit 'thin' but I believe that this is intentional. A sharper audio profile is eminently suited to resolve communications quality transmissions. In this case

■ Typical contemporary construction.



■ Proprietary battery, bear this in mind on long scanning trips away from a power source.

it works and goes some way to compensate for the modest 240mW output to the speaker.

I preferred to use the UBC3300XLT just on the desk with its supplied antenna while I worked and really found that I was happy to leave it scanning away, keeping me company and a charged power pack lasted a surprisingly long time.

And Finally...

The UBC3300XLT is a well made, sturdy and versatile hand-held receiver whose main functionality and

customer base lies clearly within the North American continent where full use will be made of its truly impressive trunk tracking features. This radio will appeal to professional radio users there and no doubt many UBC3300s will find purchasers amongst fire, paramedic and police departments.

Due to the extensive range of features offered, it's not the easiest radio to program and I can tell you that the handbook that was provided can only be described as 'well thumbed' by now. Just under half of the handbook deals with programming trunked radio tracking topics and due to

its extensive coverage I feel that it could really use an comprehensive index.

I'd guess I'd better pack it up...well, I can always charge it up for a few more days use I suppose. My thanks go to Nevada for the loan of the UBC3300XLT and the speed in which they provided a replacement for the original unit. They can be contacted at **Unit 1, Fitzherbert Spur, Farlington, Portsmouth, Hampshire PO6 1TT**, or **Tel: 023-9231 3090**. Their website can be found at www.nevada.co.uk

SWM

Specifications

Memories:	1000 in 10 banks of 100. 10 priority channels, memory lockout and memory backup.
Frequency Coverage:	25-512MHz, 806-960MHz and 1240 1300MHz.
Modes:	a.m., n.b.f.m., n.b.f.m.(N), w.b.f.m. All selectable across tuning range.
Step Size:	5, 6.25, 7.5, 10, 12.5, 20, 25, 50 or 100kHz. Also 8.33kHz spacing in the civil air band range.
Scan Speed:	20 channels per second (estimate)
Search Rate:	About 20 steps per second
Audio Output:	240mW into 8Ω internal speaker. 38mW into 32Ω. Stereo headphone. 9mW into 64Ω mono headphone.
Power Required:	4.8V d.c. from internal power pack or 12V d.c. 500mA from supplied adapter.
Weight:	350g.
Size:	65 x 45 x 153mm (w x d x h).
Price:	£199.95

Scanning Scene

- **Dave Roberts** c/o SWM Editorial Offices, Broadstone
- **E-mail** scanning@pwpublishing.ltd.uk

Ever heard of Qinetiq? This is the name of the company that has absorbed much of the Government's technology research. It is the organisation that was going to send two unfortunate men to the edge of space on a platform suspended beneath a big balloon, wearing second hand Russian spacesuits that I reckon they got off eBay.

The launch was to be from a rather swish big grey ship called *Triton*. I glimpsed this vessel and tried to wheedle myself onboard but was thwarted by the gent on the gangplank. News on that particular project seems to be rather thin on the ground at the moment. In any case I imagine that the two chaps were becoming rather bored at the prospect of yet another appearance on kids TV sat in the same old sweaty space suit. I digress...

Qinetiq have been awarded a Government contract worth half a million pounds to establish an automatic radio spectrum monitoring system. The idea is to check on spectrum occupancy and, of course, locate and identify illegal/illicit radio transmissions. Part of the system has already been installed with remote monitoring stations fitted in existing radio sites and some Government and emergency service buildings. Communications between the receiver locations and the central analysis centre are via landline.

If the company actually installs the system and gets it running for half a million pounds

then I imagine that the powers that be will be pleased that they have secured something of a bargain. The press release specifically refers to CB equipment and illegal broadcast stations.

If a frequency and mode is detected that is not on the database of a given area then it becomes 'flagged' to be looked at in more detail. The sites have direction finding antennas and data from adjacent sites can be plotted in order to establish the location of a transmitter.

I doubt that this will spell the end of pirate activity, as even though the equipment may point to an illegal operation, individual enforcement officers still have to identify the offenders and prove the offence. This is very expensive in manpower terms. It could be a case of technology creating more work, and therefore cost, for the enforcement arm of Ofcom.

Low Band

It's easy to ignore low band. Often scanners can collect extraneous signals at these frequencies and keep stopping on blank carrier signals either generated from within the set, or from adjacent equipment of the broadcast transmitter a few kilometres away. Having said this, low band can generate some interesting monitoring.

There are still some 'official' transmissions in that region and especially at 84MHz. Voice

traffic has recently been monitored on 84MHz from several places around the UK. Some of this has been encrypted and would appear to have been using an older (but effective) type of encryption unit. Even if it is encrypted it's worth sticking with the frequency as on occasions the encryption may be undecipherable at one end of the link.

Hang around on that channel and frustrated operators may come up in the clear just to get the message through. This has been evident several times when surveillance units were using Cougar portable sets. The encryption would give the audio a strange quality that made it hard to understand, especially when the bod with the radio was hiding in a hedge or ditch with the rain belting on his bald pate and misting his glasses.

Over the years very many ex-police radio sets have ended up on the hobby radio market. Traditionally the route was by way of the rally scene with trestle tables groaning under the weight of old Pye Pocketfones, and later, Burndept BE470 sets. Latterly, it has been the PFX radio that is usually on view on the trader's stand.

As on-line auctions have flourished more recently radios of this type are commonly offered for sale via this medium. The customer profile for these items is often less than knowledgeable in such matters. The old police u.h.f. frequencies have been largely abandoned by their original owners in favour of the Airwave scheme. As the old unmodified u.h.f. hand-held sets have hit the marketplace those old channels are enjoying a renaissance as usually the EEPROMs in the sets have not been erased and the radios are fully functional when sold.

In quite a few areas the ancient simplex frequencies can be heard in use with people just shooting the breeze with each other. These folk have simply bought a couple of radios, a pair of chargers and pushed the channel change button until they have found one that they can hear each other on.



A listener in Yorkshire reported hearing such traffic on 450.050 (the old channel 77). I suspect that the only thing that will stop these chaps is the demise of the NiCad batteries that, as they get older, often refuse to hold a charge.

Listen Anywhere

With the range of audio devices available these days a scanner user can listen anywhere with a variety of things stuck in his or her ear without attracting unnecessary attention. There are earpieces designed for music monitoring that can easily be adapted to plug into the receiver and some enterprising people are using Bluetooth adaptors intended for use in vehicles to retransmit the scanner's audio to the earpiece.

I don't like the Bluetooth ear fittings one little bit so, if I need to listen to a scanner on headphones I use a set adapted from a personal stereo. Any suspicion that you are doing anything other than listening to music can be easily dispelled by nodding your head up and down, rhythmically. The problem with many of these audio devices is that they let in too much noise.

Last summer I had to dive into the undergrowth with a strimmer in a vain attempt to clear the long grass in order to be able to look out of the window. Gardening of any kind is probably the most beastly pastime as far as I'm concerned. I wanted to be able to have a scan around while driving the noisy thing.

The solution was a very small pair of iPod type phones stuffed into my ears and over those I applied a pair of normal ear defenders. It enabled me to monitor the radio while excluding the noise from the motor. This year I've paid someone else to deal with the grass!

Holiday Scanning

Many people from the UK choose to holiday in France. It follows that a proportion of these holidaymakers will be scanner owners who take their radios with them. I believe that the French police take a dim view of scanner usage and I recommend that anyone who travels in France with a scanning receiver exercises great care.

May I suggest that you don't deploy any external antennas on your car unless you can be confident that you'll be able to persuade the gendarme that you are an amateur radio operator. They also have strict legislation prohibiting speed radar detectors. Be careful and remember that their 'on the spot fine' policy means just that!

The French have a licence free allocation at 446MHz as does the UK. They only have three channels, 446.950, 446.975 and 446.9875MHz, all of which are n.b.f.m. and are restricted to 500mW as are the UK PMR446 sets.

In Italy there is also a licence free allocation for two-way radio use. (yes really). The Italians are allowed 24 channels between 43.300 and 43.5875MHz. Power is limited to 5W. I'm sure someone over there

Interesting Frequencies to Monitor

Here are a selection of frequencies I think you should have in your scanner's memory banks:

MHz	Mode	Comments
75.300	n.b.f.m.	An interesting one this. It was heard last year in use by some sort of Defence convoy trundling down the M6
86.3125	n.b.f.m.	This can be used for rebroadcasting purposes
121.500	a.m.	This is the civil air distress frequency. 243.000 a.m. Double the above frequency is for military distress
121.750	n.b.f.m.	Soyuz spacecraft downlink
123.100	a.m.	Airband Search and Rescue
123.450	a.m.	Used by commercial air pilots to chatter to each other
130.165	n.b.f.m.	Another <i>ISS/Soyuz</i> frequency
138.700	a.m.	Airband Search and Rescue
143.625	n.b.f.m.	On a lighter note this is the old frequency used by Yuri Gagarin, the first man in space to natter to his mates in Russia
		Believe it or not it is still in occasional use on the <i>International Space Station</i>
145.800	n.b.f.m.	An amateur band channel but it's used by the <i>International Space Station</i> . Usually, you hear AX25 packet data on it from the <i>ISS</i> but they use it a fair bit for amateur contacts
147.350	n.b.f.m.	Rescue Channel 96 Used for linking channels
147.475	n.b.f.m.	Rescue Channel 92/94
147.875	n.b.f.m.	(sometimes a.m.) Police Channel 21. The boys in blue are on Airwave but some of their cars will still have this simplex channel on board
147.9125	n.b.f.m.	(sometimes a.m.). As above. This is just another simplex police channel called 22. All as channel 21
152.850	n.b.f.m.	Rescue Channel 93
155.350	n.b.f.m.	Rescue Channel 91/94
156.000	n.b.f.m.	This is the Coastguard Channel 0. Also used by Coastguard Rescue helicopters
156.125	n.b.f.m.	Rescue Channel 62a
156.175	n.b.f.m.	Rescue Channel 63a
156.225	n.b.f.m.	Rescue Channel 64a
156.800	n.b.f.m.	The marine band calling and distress frequency (Channel 16) people use their marine band sets almost everywhere
157.175	n.b.f.m.	Rescue Channel 83a
157.200	n.b.f.m.	Rescue Channel 24a
157.275	n.b.f.m.	Rescue Channel 85a
158.650	n.b.f.m.	This is rescue channel 53a. In use with air assets so it's well worth allocating a memory to it
160.725	n.b.f.m.	Rescue Channel 62b
160.775	n.b.f.m.	Rescue Channel 63b
160.825	n.b.f.m.	Rescue Channel 64b
161.775	n.b.f.m.	Rescue Channel 83b
161.800	n.b.f.m.	Rescue Channel 24b
161.875	n.b.f.m.	Rescue Channel 85b
259.700	a.m.	This is the frequency that the space shuttle uses in launch when they are headed for orbit and docking with the space station
282.800	a.m.	Military airband rescue!
406.025	n.b.f.m.	Emergency Position Indicating Rescue Beacon (EPIRB) frequency. These beacons also transmit on 121.500 a.m.
410.050	n.b.f.m.	Used by the Royal Air Force when mobile in a convoy
410.200	n.b.f.m.	A shuttle Extra Vehicular Activity (spacewalk to you and me) frequency
414.200	n.b.f.m.	Another EVA frequency
417.100	n.b.f.m.	Another EVA frequency
443.825	n.b.f.m.	MOD Police Convoy frequency
449.400	n.b.f.m.	RAF convoy channel
451.325	n.b.f.m.	Old police u.h.f. simplex channel supposed to still be in sporadic use
452.375	n.b.f.m.	This is the old police channel 75/76. It's channel 75 when in use as a single frequency simplex channel and 76 when it's paired with 466.275 and used with a base station

is selling linear amplifiers for the band so expect to hear them almost anywhere in the northern hemisphere.

As world travel has become cheaper and more available, small transceivers intended for use in specified countries are turning up everywhere and unlicensed use is rife. For example, The *Tour de France* bike race in the past has had some stages held in the UK. Many of the competitors were found to be using small transceivers all, no doubt, legal somewhere on the planet.

One of the race 'stars' was using v.h.f. 2m amateur band equipment to talk with his mates/back-up team. They found v.h.f. to be more reliable it seems. It goes without saying that they didn't hold amateur radio licences. So, it's always worth listening around.

Mobile Control

The Thames Valley Police (TVP) have the responsibility to police the counties of Buckinghamshire, Berkshire and Oxfordshire. A large geographic area with a correspondingly large population. Whereas many police forces are disposing of their 'mobile control' vans that used to be seen at county shows and the like, the TVP have just bought themselves a new one.

Based on a Peugeot van, the vehicle has been equipped with four operator positions with computer terminals allowing access to the Police National Computer (PNC), as well as the force's own Command and Control system. **Tim Wiseman** the TVP Press Officer informed me that the computer equipment consists of four *Windows2000* computer workstations, which have two Falcon Twist USB modems to enable the vehicle to connect to TVP systems using either Orange GPRS or 02 GPRS.

There are also four mobile phones and a FAX, which can also use either Orange or 02 GPRS circuits. Security is provided by using an RSA SecurID fob that enables users to connect to the Thames Valley Police network. The workstations have an automated log-in sequence preventing any user from altering the PC settings.

The vehicle is also equipped with two Airwave radios and one u.h.f. analogue radio. One of the workstations provides mapping facilities and maps can be printed on the vehicle's printer. Workstations are also able to view pictures sent from the force helicopter.

The radio control heads are the popular Clearstone CM9000 units, in use with many forces. The CM9000 is an integrated TETRA and analogue system - no wonder it's well thought of by the police.

A satellite truck will eventually be added to the force's fleet enabling faster data transfer between the Forward Control Unit (FCU) and police headquarters. It looks like a useful communications van and they have certainly made a shrewd move in retaining a u.h.f. radio in the unit.

Airwave Rumours

Although rumours are rife regarding the Airwave system and there are as many opinions on the service as there are police



Analogue 'Phones

Now for a bit of controversy. Under a whole load of Acts of Parliament it's illegal to monitor 'phone conversations on your scanner. Many cordless 'phones that people have in their homes are digital and therefore cannot be overheard but there are still some analogue cordless 'phones about. The older type that had a base output at low frequencies and handset channels at 47MHz are decreasing as their rechargeable battery packs pass away. The more recent analogue versions are still in widespread use and boy, have they got some range. These are the base frequencies:

MHz	Mode
31.0375	n.b.f.m.
31.0625	n.b.f.m.
31.0875	n.b.f.m.
31.1125	n.b.f.m.
31.1375	n.b.f.m.
31.1625	n.b.f.m.
31.1875	n.b.f.m.
31.2125	n.b.f.m.

If you think any friend of yours is using one of these, then tell them not to, they are less secure than a chocolate piggy bank!

officers, I can only report what I hear from users of the system. I can tell you that the majority of the Airwave users that I speak to are happy with the system. No technology will be 100% reliable but the guys and gals that I talk with are more than pleased with it.

One senior officer was telling me of the psychological boost that it has given to officers working on their own in rural areas. He enthused about the coverage and said that

Licence Free PMR

You will be surprised just what traffic is being passed on the PMR446 frequencies. You have to listen to a lot of dross before locating anything of real interest but for those with patience try these:

MHz	Mode	Channel
446.00625	n.b.f.m.	1
446.01875	n.b.f.m.	2
446.03125	n.b.f.m.	3
446.04375	n.b.f.m.	4
446.05625	n.b.f.m.	5
446.06875	n.b.f.m.	6
446.08125	n.b.f.m.	7
446.09375	n.b.f.m.	8

police in remote places have greater confidence in dealing with incidents due to the fact that they can always summons advice and help.

Legalities

This is probably the time of year to just take a moment to consider what is legal about scanning. The answer is not much. You can listen to amateurs and broadcast stations. Even air band monitoring, although commonplace is, strictly speaking, unlawful.

If you are questioned by the authorities regarding your scanning activities they will want to establish who owns the scanner that you are using, who programmed the frequencies into it and when and it may be liable to seizure for examination. As the police systems become almost totally digitised it follows that their interest in scanning matters will diminish but a complaint from a security guard or similar worker may bring you some attention. Be Careful!

Tattoo Talk!

Looking after Communications at RIAT

Kevin Nice chats with RIAT's Radio Services Manager, Roger Beck, about the challenging task of supplying radio communication for the annual Royal International Air Tattoo, just before this year's event took place. A truly amazing feat accomplished by a dedicated few.

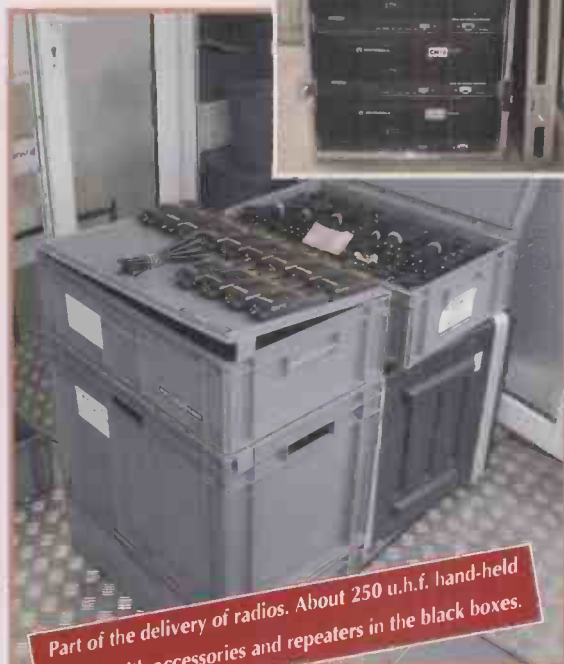
RIAT fit eight hired Follow Me vehicles with Icom A110 air band radios to help park and marshal aircraft on the airfield.

Anyone with more than a passing interest in radio communications will understand that an event on the scale of that of the Royal International Air Tattoo will involve significant usage of radios for on-site co-ordination. Just how many radios get used may well be a surprise, initially it certainly was to me. I spoke briefly to Roger Beck RIAT's Radio Services Manager who is overall responsible for ensuring that the on-site radio "just happens".

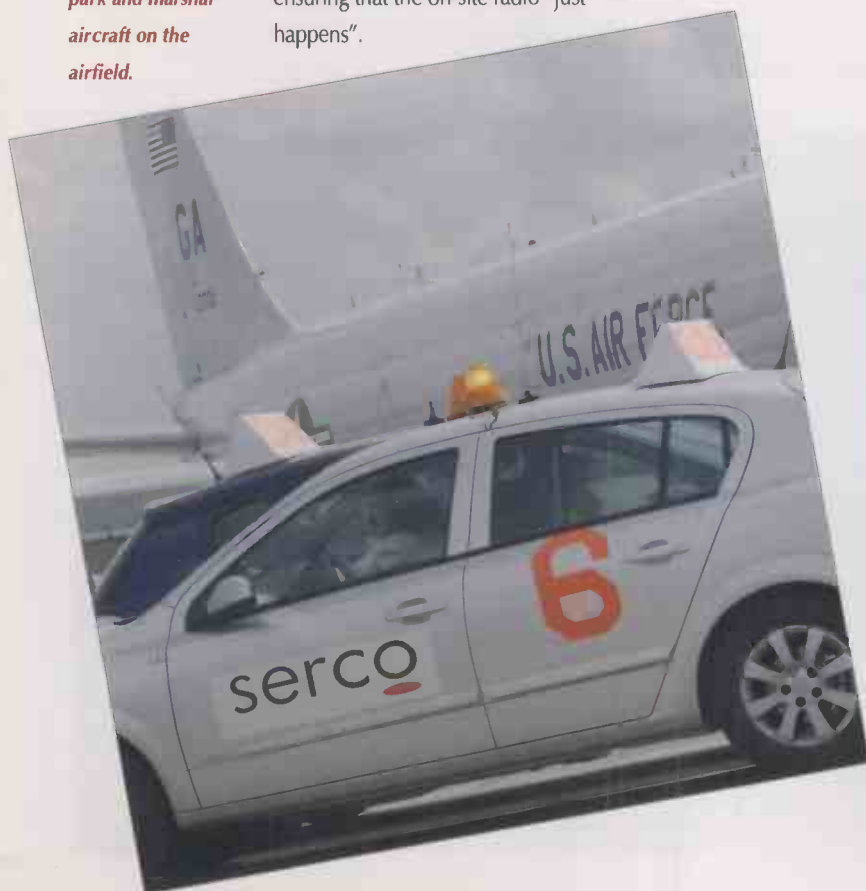
I asked Roger to tell me a little about the radio aspects of the Tattoo.

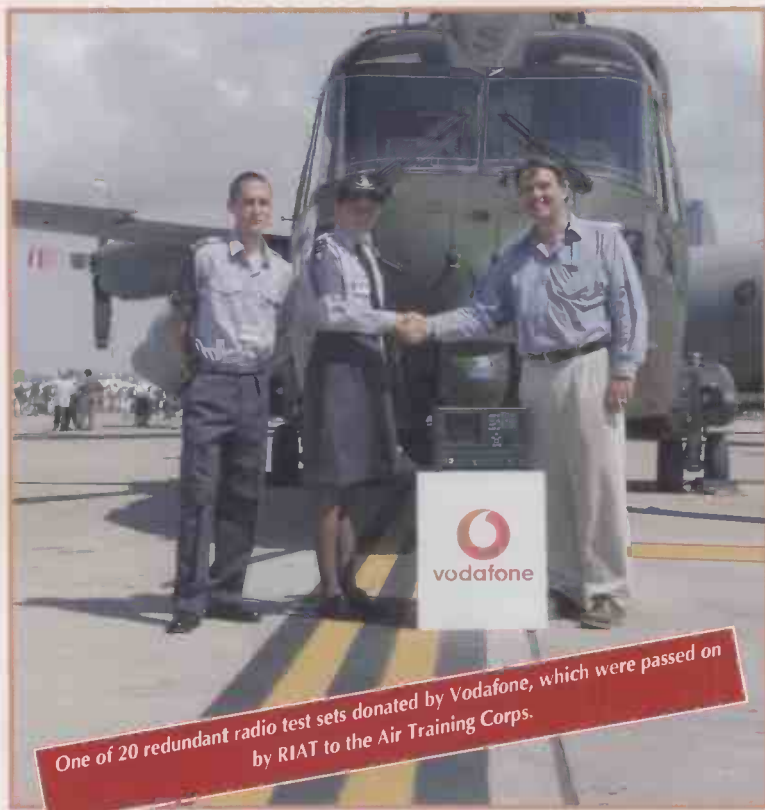
"RIAT runs on radios. In total there are about 1500 radios on the site during the airshow. These are a combination of those brought on-site by County Police, Fire and Ambulance and those issued by RIAT. It's not just the operational users - Security, Firemen, Medics, Aircraft Engineers and Fuellers etc. who require radios. In fact they only account for a third of the radios issued by RIAT. Telephones are few and far between out on the airfield, and it is very expensive to install temporary lines. So any group requiring co-ordination tend to use radios. Therefore around the different radio channels you will find Padres, Environmental Health Inspectors, car park marshals, programme sellers, electricians, site working parties, caterers, cleaners, Aviation Trading - all the way through to guys

Four Motorola MTR 2000 repeaters combined for single antenna working with an Aerial Facilities hybrid combiner and receiver distribution amplifier.



Part of the delivery of radios. About 250 u.h.f. hand-held radios with accessories and repeaters in the black boxes.

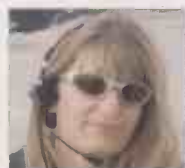




One of 20 redundant radio test sets donated by Vodafone, which were passed on by RIAT to the Air Training Corps.

“We record up to 36 channels of radio traffic on PC based recording systems. The software was written by one team member and most of the receivers used are Simoco and Motorola PMR hand-helds that have been repaired and re-packaged by another team member”.

The receive antenna system comprises of an Icom disccone, u.h.f. folded dipole, v.h.f. high band folded dipole. A u.h.f. collinear, GPS antenna for the PC timing reference and v.h.f. airband Yagi.



A proud user with headset.

emptying loos - controlled by callsign ‘Bog Boss’. These users are grouped by function onto 24 RIAT installed channels”.

“Phew that’s a huge amount of radios and users beyond what I had imagined. Has RIAT always had this level of radio usage?”

“No not at all. Actually, about 15 years ago we thought having 150 radios and two repeaters was a lot. As RIAT has grown and developed there has been a gradual increase in

the number of radios. Along the way we have passed several self-imposed limits of, “we can’t possibly need that quantity of radios!” We now hire 850 hand-held radios, 16 mobile sets and 20+ repeaters - in all we issue about 4500 items out to users. What is more amazing is we get virtually all of it back. We are paranoid about losses of any equipment, and the cost of hire in the first place because the costs come directly off the amount of money raised by RIAT for the Charitable Trust”.

Spot the RIAT radio site! Aerial shot of Western end of the airfield. Note the temporary radio trailer with a Versatower in the middle by the buildings. This contained seven u.h.f. repeaters, four of which were combined into a single antenna.



"That kind of level of hire must cause problems for your average PBR rental outfit, there can't be many who have the stocks of hire radios to cater for your requirements?"

"Absolutely, that's a good point Kevin. As one of the largest radio hire contracts in the UK there are few potential suppliers who have a large enough stock of radios to supply RIAT, particularly in the summer, which is the peak period for outdoor events. Over the years we have dealt with four or five hire suppliers, with widely varying levels of customer service and equipment quality. For the last few years we have used National Radio Bank who provide us entirely with Motorola radios. We have found the newer Motorola Professional Series radios to be very reliable, with about a 1% failure rate during the show period. This compares well with the 10% we have experienced in the past with older generations of equipment".

"Are there any special requirements for an event such as RIAT?"

"Because of the relatively noisy environment on the airfield we use a lot of headsets and earpieces. As well as being practical, we can't help feeling that some users do seem to enjoy posing with their headsets. The down side for the Radio Team is at the end of the show having to sort, count, and re-pack hundreds of headsets, which have occasionally in the past been returned to us looking like a big tangled bundle of spaghetti".

"That must be a total nightmare? I'm glad that I don't have to sort those out. You must have some pretty demanding times, I guess that calls for some very slick radio procedures?"

"Well, radio procedures on a lot of the channels tend to be fairly relaxed. For the teams of volunteers working long hours, often on remote parts of the airfield, their radio is not simply for co-ordination of work and ensuring their Health and Safety. The background chatter is an important morale booster and a way of keeping in touch with what is going on. A lot of users have highly individual radio callsigns, which are often used face-to-face as well as over the radio. It's not uncommon for RIAT volunteers to have worked at the show for many years and only knowing someone as 'Fairy Godmother', 'Village Idiot', 'Mushroom' or 'Shed'!".

"Roger, you mentioned that repeaters are utilised, this comes as no surprise considering the scale of the airfield. Can you tell me a little about the set-up?"

"As those who have walked the lines of static aircraft at RIAT



will tell you - Fairford is big. The runway itself is 4.2km long. It is not possible to provide reliable airfield-wide simplex coverage. You can test simplex (back-to-back) radios when the airfield is empty, v.h.f. or u.h.f., but as soon as the Southern part of the airfield fills up with hundreds of aircraft and thousands of people, range is drastically reduced. Thus, for airfield-wide communications, and penetration into buildings like the metal clad hangers, u.h.f. repeaters are used.

RIAT spread their repeaters across three separate radio sites. This is both to ensure resilience and to split the channels as far as possible into intermodulation free groups to be installed at each site. All sites have UPS/battery back-up with portable generators and fuel ready on standby should a long mains power outage occur".

On the Thursday afternoon before the airshow an Emergency Exercise 'Winged Warrior' is held to practice procedures for the Fire and Medical teams. Photo shows a fireman with a u.h.f. Motorola GP340 radio a Jet Provost wreck and a simulated casualty.



Again spot the radio site. Picture of RAF Red Arrows Hawk with radio towers in background. Large steel tower on the North of the airfield is the main RIAT radio site. Scaffold tower fixed to left hand end of the hanger is to accommodate antennas for the Emergency Control Centre.

*So you thought charging your scanner or 'phone was a chore,
Radio charging on a grand scale!*

"That type of set-up sounds like it's ready to cope with most things. How do you avoid interference between different user groups? It must be quite complicated when you consider the likely number of different services likely to be on site over the event. I imagine there is a considerable amount of radio spectrum in use".

"In addition to running our own radio system, the RIAT Radio Team co-ordinate use of all other radio equipment on site. We require all potential radio users to request permission in advance. Where possible we can then ensure that multiple users do not try to use the same frequencies. In addition for certain safety critical frequencies, such as Air Traffic Control and key locations such as radio sites and the Emergency Control Centre, intermodulation calculations are performed to ensure that all the proposed frequencies are compatible. In 2004 there were 193 frequencies in use over the show weekend".

"There must be a significant number of members of the Radio Services Team, I understand that they are all volunteers?"

"Like most teams within RIAT, the Radio Services Team consists of volunteers who give a large amount of their annual leave to come to Fairford. The 10 members of the team are amongst the first to arrive on site, and stay for up to two weeks. Although we are all well fed during this time, finding beds for the 3500 volunteers who help to run RIAT is no easy task. The Radio Team normally sleep on American Military camp cots set up in unused offices - luxury compared with the large camp site of Army tents".

Many friends and acquaintances assume that volunteering to work at RIAT is for a couple of days a year. Well for the Radio Team it is almost an all year round activity. In order to reduce costs to the Charitable Trust a lot of work and building of equipment is carried out by the Radio Team. A lot of items are obtained from eBay and Radio Rallies around the country, as well as donations of redundant radio equipment".

It all sounds like very hard work, but I guess that working in the Radio Services Team can be fun. What makes you do it?"

"The answer is not straight forward, especially without sounding corny. Yes we are there to raise money for the Charitable Trust - but it is more than that. It's a technical



Twelve Phillips/Simoco PRP76 u.h.f. PMR hand portable radios re-packaged into a rack. Receive distribution built into rack. The box top right contains audio isolation transformers. All audio is brought out onto RJ45 cables, which run to PC soundcards.



Bottom left you can see three Pye MX293s used for airband reception. Bottom right there's a GPS timing reference unit used to synchronise time on the three recording PCs. Above this is a receive distribution amplifier for airband. The centre black box is a car radio used to record on site RSL broadcast station - Wings FM. Top - five re-packaged v.h.f. PMR hand-helds. Right - antenna connection panel for the receive system antennas.

"Good quality headset units for control room operators are very difficult to hire. Thus RIAT have built their own control boxes and headsets, including some, which allow two operators to share the same radio in a control room".



How not to return headsets! Would you want to sort this mess out?



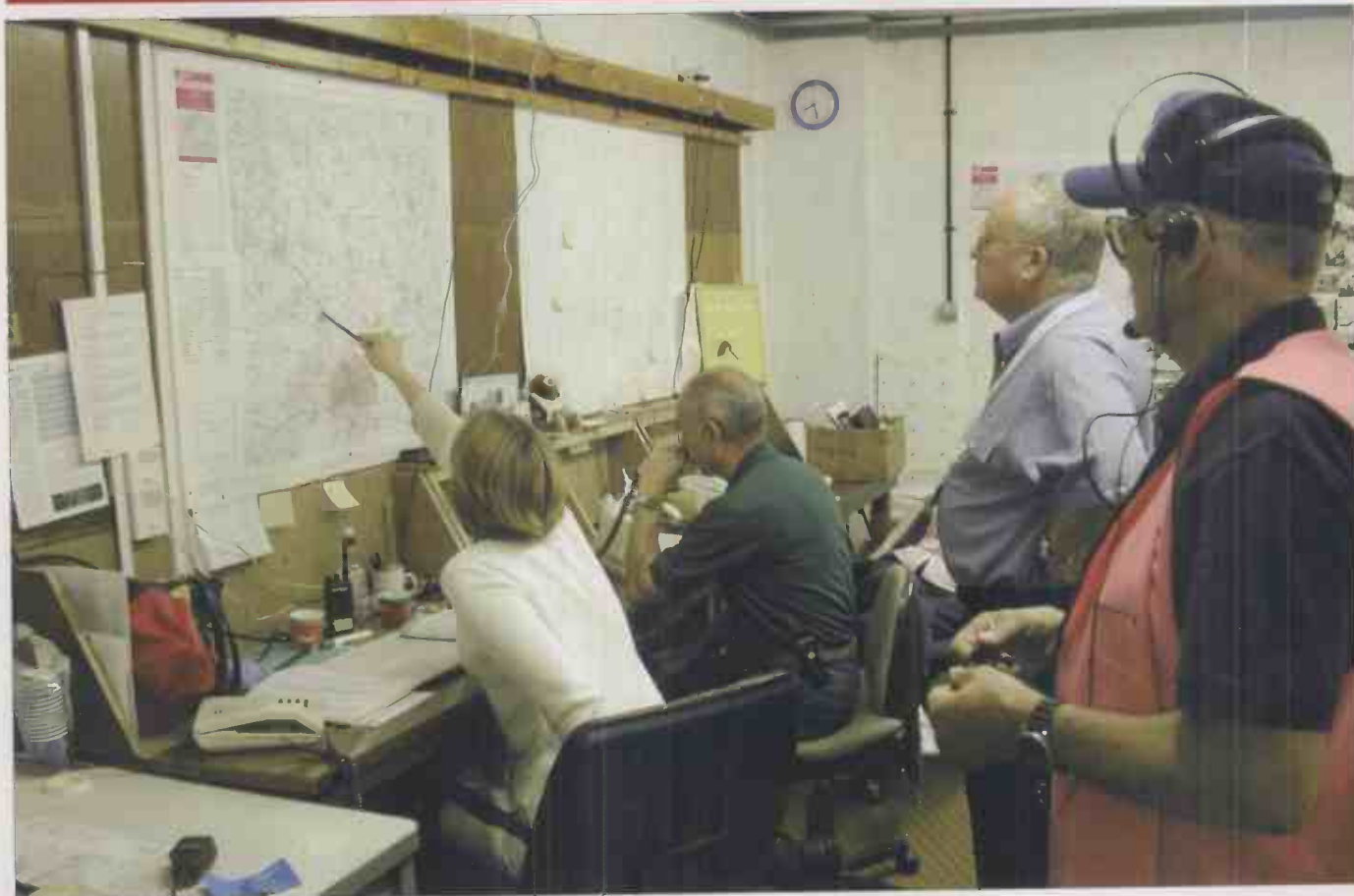
Counting back in. Some of the fixed mobiles with power supplies, used in control rooms. Plus a hybrid combiner and receiver distribution amplifier to allow three u.h.f. repeaters to share a single antenna.

challenge to specify and run a big radio system. It is also fun. There is the good PR on behalf of Great Britain Ltd. with all the visiting foreign Air Forces and visitors. There is raising 'aviation awareness' with young people - and potentially opening their eyes to a career in the Armed Forces. Then again there is the pleasure we see given to both the hardened enthusiasts and those having a family day out. Above all it is about working with the RIAT 'family' of volunteers and their incredible 'can do' attitude".

"Well that sounds like a good enough reason to me. Many thanks for your time Roger. I'm sure that you've helped all the readers Short Wave Magazine to understand the very significant task. Our chat has certainly opened my eyes to the massive undertaking that your team seems to take in its stride. I'd like to wish you all good luck with this year's event!"

SWM

Admissions Control - monitoring the traffic flow on the roads and into the event gates.



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REALISTIC DX-394

Send SAE for review

★ Superb performance SW receiver ★ 0.2-30MHz (all mode) ★ Selectable tuning steps (down to 100Hz) ★ 240 or 12V ★ Digital S-meter ★ Attenuator ★ Key pad entry ★ 160 memories ★ Noise blanker.

OUR BEST SELLING LOW PRICED RECEIVER

OUR PRICE **£199.95** P&P £10
 HD-1010 optional headphones.....£9.99
 Optional DSP including fitting£149.99



AOR AR7030

A superb top of the range HF receiver. This product has certainly proved itself in both the commercial and domestic markets.

WE HAVE 1 PIECE AS NEW
 AR-7030 + version.....£499.00
 Optional DSP including fitting£149.99



YAESU FT-897D 'R'

0.1-56MHz/76-164MHz/420-470MHz. AM/FM/WFM/USB/LSB/CW (all mode). Yaesu's top receiver design team crafted the front end of the FT-897 and added superb extra features. DSP bandpass filter, DSP auto-notch filter, DSP noise reduction, IF shift, IF noise blanker and much more. Although a Top, we've removed the mic for safety so you can listen only.

OUR PRICE **£649.99**
 Optional PSU£49.99



JRC NRD-545 DSP

The ultimate short wave receiver with DSP - for the real perfectionist. Clear, distortion free sound reproduced by digital signal processing. A truly professional receiver built primarily for the commercial markets. Features include: DSP pass-band shift, DSP all-mode detection, DSP notch filter, DSP noise reduction and much more.

Haydon exclusive
 OUR PRICE **£1299.00** Del £10.00
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 ST-3 Matching headphones.....£79.99



SANGIAN QSR-1

Voice activated desktop recorder with quarter speed record. (Sold for more under Roberts name- C-9950). Superb accessory for the radio enthusiast. Optional PSU available (£7.99).

Can be used with any receiver, subject to correct connection leads (some supplied).

SEND SAE FOR DATA SHEET

OUR PRICE **£69.95** Del £10



SANGIAN ATS-505

DUAL CONVERSION
 NEW! Wins Dutch "Automobile" award. Excellent small short wave receiver (digital). 0.15-30MHz (AM, SSB, CW, WFM). 88-108MHz FM stereo. Includes carry case.

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Optional PSU: £9.99
 OUR PRICE **£79.95** (P&P £10)



SANGIAN ATS-909

A superb performance all mode synthesized world receiver with true SSB and 40Hz tuning for ultra clean reception. The same radio is sold under the Roberts name at nearly twice the price. Other features include RDS facility, 306 memories and WFM. Incl's case/earphones/wind-out antenna.

SEND SAE FOR DATA SHEET

240V Power Supply £16.95
£139.95 P&P £10



SONY SW-100E

★ Miniature portable all mode SW receiver ★ Station presets for 50 frequencies ★ Single side band system ★ Synchronous detector ★ Tuning in 100Hz + 1kHz steps ★ Includes compact antenna/stereo earphones/carrying case. Great things can come in small packages. Superb quality receiver with fantastic SSB performance.

240V Power Supply £24.95
 OUR PRICE **£159.95** P&P £10



hf antennas & accessories etc

AT-2000 ANTENNA TUNER

Deluxe SW ATU 0-30MHz. SO239 fittings.

ONLY £89.00 P&P £7.00
 PL-259 to PL-259 patch lead (0.6m).....£5.99
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 BNC - BNC.....£3.95
 BNC - BNC.....£6.99

(Probably the best ATU around)



LOW LOSS PATCH LEADS

Uses 50SSB low loss coax P&P £2.50

Connectors L Price
 PL-259 - PL-259 ...0.6m...£5.99
 PL-250 - PL-259 ...1m...£6.99
 PL-259 - PL-259 ...4m...£9.99
 BNC - BNC.....£3.49
 BNC - BNC.....£6.99



SP-1 TWO WAY COMBINER (PRO)

Very high quality combiner allows two short wave receivers to be connected to one antenna without interaction. 50kHz-30MHz (SO-239 fitting).

SEND SAE FOR DATA SHEET

OUR PRICE **£64.95** P&P £5.00
 PL-259 - PL-259 patch lead£6.99
 BNC socket - PL-259 plug£3.49
 Optional AC adapter£16.99



WA-50 'AMP'

Broadband amplifier for 50kHz-50MHz. Superb low noise amplifier. Ideal for short wave improvement. Requires 12V (150mA).

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O-TEK STEALTH SR-60

Covers 0.2-50MHz. Superb, ready assembled wire antenna system. Not only is this end fed for ease of installation, it is also constructed from extremely high quality components. New 'plyweave' PVC coated wire makes this virtually invisible. Antenna length up to 20m. (Feeder supplied up to 10m).

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OUR PRICE **£69.95** DEL £10.00



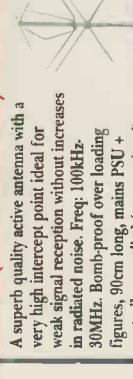
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DX-10 (R.F. SYSTEMS) DX-1 PRO (R.F. SYSTEMS)

A superb quality active antenna with a very high intercept point ideal for weak signal reception without increases in radiated noise. Freq. 100kHz-30MHz. Bomb-proof over loading figures, 90cm long, mains PSU + controller supplied (coax optional).

SEND SAE FOR DATA SHEET

£189.95 DEL £11.00
£359.95 DEL £15.00



you can do some serious listening with these

for more info visit www.haydon.info

AOR AR200MkIII

Never before has one hand-portable offered so much.
 ★ Covers 100kHz-3GHz (all mode)
 ★ Computer control capability ★
 8-33kHz steps for the new airband spacing ★ Includes nicad/charger/antenna and car lead.
 (Case add'l £19.99)

NOW £349.99
 INCL'S FREE RH-770 FLEXIBLE ANTENNA

ICOM IC-R8500

Next generation wideband receiver for the true perfectionist. 0.1-2GHz. (All mode). The IC-R8500 is not simply a scanner, it's a professional quality communications receiver with versatile features from high speed scanning to computer control. (Requires software/lead). Includes free power supply.

OUR PRICE £1095.00 Del £10.00
 Optional filtered speaker.....£119.00

ALINCO DJ-X2000

100kHz-2.15GHz. All mode incl's SSB. "Flash Tune" reads frequency of nearby signal & tunes the handle for you. Amazing features include "Transweeper" which helps locate hidden transmitters that may be used for eavesdropping. 160 seconds of digital audio memory. Includes battery pack and charger unit. Optional case £16.99.

£325.00 Del £10.00

AOR AR8600 MkII

Extremely versatile all mode receiver (100kHz-3GHz). AORs continual strive for perfection gives you this incredibly high performance receiver at a very affordable price. *Now with the new short wave performance.*

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£549.99 Delivery £10.00
 Optional 240V PSU.....£24.99

MVT-7100

Wideband hand-held scanner covers 500kHz-1650MHz. (All mode). Includes nicad/car charger/charger/antenna. Extremely user-friendly hand-held receiver with outstanding performance.

OUR PRICE £189.99
 Optional case.....£19.99

YAESU VR-5000

0.1-2.6GHz all mode receiver with (optional) DSP plus bandscope/world clock and too much more to print. (incl's power supply).

OUR PRICE £479.00 Del £10.00
 voice synthesizer.....£49.99
 Digital recorder.....£49.99
 DSP.....£89.99
Special package price VR-5000 + DSP unit £549.00

YAESU VR-500

Continuous coverage from 100kHz to 1299MHz. All mode (AM/FM + FM wide/USB/LSB/CW). Dual watch memories. Runs on 2AA or rechargeable battery pack (not supplied).

OUR PRICE £159.99
 Optional case.....£10.00

UBC-780XLT

New comprehensive scanner (25-512MHz/806-1300MHz) Alpha Tag, PC cloning control. Smart scanner + trunk track facility. Includes power supply, antenna, cigar lead, mobile mount.

OUR PRICE £219.99
 (works 95/98/ME/NT/XP).....£39.99

ICOM IC-R5

New pocket hand-held scanner (0.1-1310MHz) AM/FM/WFM. Superb high-speed scanner featuring alpha tag and much more. (Optional case £17.99).

OUR PRICE £139.99
 Icom R-20.....Now £299.00

UBC-180XLT

A brand new state-of-the-art scanner with 8.33kHz spacing on airband. Covers 25-960MHz (with gaps). Includes battery and charger. 8.33kHz tuning. Back-light display along with alpha-numeric tagging.

OUR PRICE £89.95
 Optional cigar lighter lead.....£14.99

GRE PSR-225

500 channel, 25-1300MHz. (25-550/760-1300MHz) AM/FM/WFM selectable. Includes power supply. ★ VFO frequency tuning ★ Direct search/limit search ★ "Automatic frequency storing" ★ Attenuator for strong signal overload ★ Includes 240V PSU

OUR PRICE £199.99 Del £10.00

we stock a superb range of scanning antennas, etc

for more info visit www.haydon.info

O-TEK APOLLO 3000

A brilliant new compact indoor antenna that covers 0.1-3GHz and is just 24" when collapsed. Features "horizontal or vertical" adjustable elements. Ideal for table top mounting or by the window. Patch lead with BNC plug fitted. (Frequency range: 0.1-3GHz). PL-259 converter available.....£3.99

£59.95 P&P £7.00

O-TEK SS-2000

Compact - indoor/outdoor scanning antenna. (50MHz-2.6GHz). Superb glass fibre construction. Ideal in areas affected by "noisy neighbour syndrome". This antenna can be put in the loft or outside on the building. SO-259 socket (PL-259 plug needed) 1.3m long (mast clamps supplied).
 50MHz-2.6GHz and under 1.3m long

£29.99 DEL £11.00

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A high performance wideband discone offering superb performance from 0.2-2500MHz. Transmit range- 6m, 2m, 70cm (power handling 200W). Fitted with low loss 'N' type socket. Supplied with mounting brackets. (N-plug & coax not supplied). Features 8 horizontal/8 vertical elements.
 NOW **£59.99** P&P £11.00
 Comments from John Griffiths
Putting the DC-2000 up gave me a tremendous boost to all signals with the ancient AR-2000 coming a little! Signals were well received and I found that I wandered out of airband.

ONLY £89.95 P&P £11.00
 DC-2000 (Discone covering 0.2-2GHz).....Now £39.99

O-TEK INTREPID 2000

An amazing vertical (glass fibre) colinear antenna. Quality construction with incredible performance. For the serious scanner enthusiast.
 Freq range: 0.5-2GHz. PL-259 fitting (not supplied). Length 3m. Mast clamps supplied. (Gain up to 9dB is easily obtained). Reports have shown this to be an excellent performer!

ONLY £279.00 P&P £11

DX-500

It's unobtrusive and can be mounted almost anywhere!
 ★ High intercept point, low noise
 ★ Stainless steel construction
 ★ Static discharge protection (when earthed)
 ★ Includes in-line low noise amplifier (240V) + 12m coax (can be extended)
 ★ Connectors supplied - PL-259 termination
 ★ Ideal for modern buildings & covert installation

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SUPER-GAINER RH-9000 (BNC)

BNC 40cm flexible whip for the ultimate in gain. (Rx- 25MHz-2.9GHz).
OUR PRICE £21.95 P&P £3.00

REGULAR GAINER RH-770 SP-3 (PROFESSIONAL)

Two way combiner. one antenna feeds two scanners (without mismatch).
£64.95 P&P £5.00
 BNC - BNC patch lead 1m.....£6.99
 BNC plug - SO-239 socket.....£3.99
 BNC socket - PL-259 plug.....£3.49
 Optional battery.....£3.99

M-75 SCANNER PRE-AMP

Superb BNC in-line amplifier to boost signals! Fits on top of your scanner and away you go. (Powered by PP-3 battery - not supplied). Freq: 24MHz - 2GHz. Gain (-10dB to (+) 20dB fully adjustable.
£69.95 P&P £6.00

ICOM HP-4

lightweight "mono" communications headphonses.
 Ideal for short wave or scanners (3.5mm plug fitted, 0.25" adapter available, 50Ω impedance).
£24.99 P&P £5.00

EVOKE-E-1

Using the latest third-generation D.A.B. technology, Evoke-E delivers outstanding digital sound quality at an affordable price. RRP-£99.99.
 ST-1 optional extension spkr.....£19.99

SPECIAL BUY

SUPER-GAINER RH-9090 (SMA)

(Rx- 25MHz-2.9GHz) SMA fitting
 Ideal for airband
OUR PRICE £26.95 P&P £3.00

DB-2000

A superb "BNC" black telescopic whip. Ideal for scanners. Folds neatly away. (0.1-2GHz).
OUR PRICE £14.99 P&P £3.00

SEND SAE FOR DATA SHEET

10-2500MHz. High isolation (BNC sockets).
£64.95 P&P £5.00

ICOM HP-4

lightweight "mono" communications headphonses.
 Ideal for short wave or scanners (3.5mm plug fitted, 0.25" adapter available, 50Ω impedance).
£24.99 P&P £5.00

EVOKE-E-1

Using the latest third-generation D.A.B. technology, Evoke-E delivers outstanding digital sound quality at an affordable price. RRP-£99.99.
 ST-1 optional extension spkr.....£19.99

SPECIAL BUY

airband antennas



The two active elements of the SSE system. The antennas are end-fed half waves shrouded in waterproof sleeves. The shorter grey element is the u.h.f. unit and the white one is used for v.h.f.

We kick off this year's Sky High special with Peter Bond looking at what might be one of the best airband antenna solutions on the market. Peter endured difficulties in arranging to get the system fixed to his house, needing to arrange some custom mounting hardware. The question remains, was it worth it? Peter presents his findings here. In part 2 of the special the current allocations for Military Discrete frequencies are examined. Then in part 3, Peter investigates the virtues of the new SR2000 by AOR, from an airband monitoring point of view.

The origin of this review in this years Airband Special stemmed from an E-mail from a SkyHigh regular reader back in early March. Kevin from Norwich felt that the antennas fitted to his two hand-held radios the Yaesu VR-120D and the Icom IC-R5 could be improved on and asked if I had any suggestions for a replacement. Well as I use the VR-120D myself it was an interesting question and one that I set out to answer. My VR-120D travels with me in the camera bag and is usually only used for local airband listening at airfields or airshows and is not really used for long distance monitoring. I had found it to be perfectly capable for this task and so I had not really considered a change of antenna. Anyway, the search was on.

A v.h.f. antenna called the PRO-128A seemed to be popular and a search of the Internet soon found the source of this particular antenna to be Solid State Electronics of Southampton (SSE). Having looked around their website, www.ssejim.co.uk, it was soon obvious that they supply a range of items for the airband enthusiast, including two base antennas dedicated to the v.h.f. and u.h.f. airbands.

Consequently, a quick word with the Editor and subsequently Jim Finch at SSE sent several items for review. My findings on the hand-held antenna will appear in 'Sky High' in the future. If you have any comments on replacement antennas for hand-held radios, please drop me a line.

Several things were apparent when the packages arrived. Firstly, they were very well packed in a secure manner and

secondly that as they were unwrapped, the antennas and other equipment all looked solid and well manufactured. Last but not least, they came equipped with just about everything you needed for the installation. Stainless steel brackets, cable ties, insulating tape, self amalgamating tape, leads, screws, washers. You name it, it was included. Very comprehensive and very professional - I was impressed. How many times do you open a package and then have to go searching for bits and pieces to complete the installation?

The two antennas are custom designed professional base units designed specifically to work on the v.h.f. and u.h.f. airbands. They were both designed and built in Sweden by VHF Teknik, who are a leading antenna manufacturer in that country. The antennas are aimed at the commercial market. Their customers include the Military, NATO, Police, Marine, etc. Apart from the actual antennas themselves, most of the rest of the items supplied are manufactured by SSE in the UK, a rarity these days!

Fixing In Place

The civil band antenna is the VHF BASE 128S), it is a slim design, 20mm in diameter and 1.42m long, the u.h.f. antenna is the BASE 125S) this is 40mm in diameter and just 700mm in length. These compact designs, especially the u.h.f. item, are good in terms of security. Whereas a large stainless discone does rather advertise to any potential crook that there is likely to be a nice radio on the other end of the cable, the grey u.h.f. antenna tube is fairly anonymous by comparison.

Initially, the antennas were set up temporarily in my loft using low-loss 10.5mm diameter coaxial cable to transport the signal to my receiver. The plan was to move them to an outside location as soon as possible. Unfortunately, due to overhanging tiles I could not flush mount the stainless



brackets on the fascia board and had to get two steel brackets made up. So two weeks and a couple of coats of Hammerite later, I was ready to go and the antennas were moved from the loft.

Now you know how it is when you start a job, which looks simple on the face of it and there's usually a comment like, "this will only take half an hour". Well, three hours later and with the help of two others and a very long ladder the installation was complete, but not quite as I intended. The problem was nothing to do with the antennas, the steel bracket I had made up was slightly thicker than the original stainless bracket and so there was not enough thread left to fully tighten the N-type plug on the u.h.f. element. A wooden insert was the answer, not pretty but perfectly serviceable.

The two antennas are set up 2.5m apart to prevent interaction - the distance doesn't have to be exact - they are both fed into a waterproof diplexer using 1.5m long cables,

The sturdy stainless steel mounting brackets.

Some of the provided mounting and interconnecting hardware.



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LOWE OPEN DAY

Saturday 10th September



Stalls from Icom, Kenwood, Yaesu, the RSGB FunBus, and a Boot Sale too! Starts at 10am

Two Great New Scanners with 8.33kHz Airband AC power Adaptor and Ni-MH batteries!

UBC-72XLT

£89.95



Uniden-Bearcat of Japan

These scanners offer amazing value and cover 25 - 174MHz and 406 - 512MHz. You get FM reception plus AM on the airband channels. With 200 memory storage (100 on UBC72) and 10 banks, you have bags of scope for storage and scanning. Direct digital entry makes for fast monitoring and the back-lighted LCD readout is a delight to use. Top controls comprise volume and squelch and there is a key-lock and channel lockout function. Supplied with Flexible antenna. AC adaptor, belt clip and Ni-MH cells

UBC-92XLT

£129.95



Panasonic RF-D1 DAB / FM Radio

Exclusive Offer!

This is a current model and normally sells for £99.95.

This item is only available from Hockley store



We have purchased Panasonic UK's entire "B" stock inventory and are offering them at a really crazy price. Includes all accessories and Panasonic UK's 12-month warranty

£69.95

SAVE £30!!

Carriage £6.00

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ALL FINANCE SUBJECT TO STATUS WRITTEN QUOTATION ON REQUEST.

Ainco Scanners

ALINCO DJ-X3

Many extra features make this a top-selling budget scanner.

- *100kHz-1300MHz
- *AM, FM, WFM
- *700 Memories / 8.33kHz
- *Stereo FM (with headphones)
- *Audio Descrambler
- *Bug Detector
- *3xAA dry cell battery case



£109 B

DJ-X2000E £334 B

100kHz - 2.15GHz all modes, 2000 memories

DJ-X10E £209 B

Covers 100kHz to 2GHz all modes, 1200 memories

AOR Scanners

AR-8600 MKII

- *530kHz-2040MHz
- *FM, AM, SSB, CW
- *1000 memories
- *Tuning steps programmable
- *8.33kHz airband spacing
- *RS232 PC interface fitted
- *Power 10.8-16V DC
- *Telescopic antenna
- *Optional slot card sockets



£599 C

AR-8200 MKIII £359 B

All mode handheld scanner, 530kHz-3000MHz

GRE Scanners

GRE PSR-282

- *66-88/118-137/137-174/380-512MHz
- *Modes AM, FM
- *Memories 200 (10x20)
- *Search speed 50 steps/sec
- *Scan speed 25Ch/sec
- *4xOne-touch search banks
- *8.33kHz steps in airband
- *Audio 180mW into 8 Ohms int. spkr
- *4xAA (not included) ext. power 9V DC



£89.95 B

PSR-255 £69.95 B

26-54/68-88/137-174/380-512MHz, 50 memories

PSR-295 £139.95 B

25-88/118-174/216-512/806-1300MHz

Icom Scanners

ICOM IC-R5

- *150kHz-1310MHz
- *AM, FM, WFM
- *1250 Memories
- *Name Tagging
- *AM Ferrite antenna
- *Civil & Military
- *Emergency Services
- *2xAA cells (extra)



£159 B

IC-R20 £349 B

150kHz-3304.999MHz, 1,250 memories

IC-R3 £339 B

0.495-2450.095MHz, 450 mems, TFT colour display

Yupiteru Scanners

YUPITERU MVT-9000 MKII

- *530kHz - 2039MHz
- *NFB, WFM, NAM, WAM, USB, LSB, CW
- *1000 memories
- *500 Pass channels
- *25 tuning steps
- *Voice-reversed scrambled decoder
- *4xAA Ni-Cds
- *12V DC/230V AC mains
- *Telescopic Antenna



£349 B

MVT-7300 £239 B

531kHz - 1320MHz all modes, 1000 memories

MVT-7100 £199 B

Covers 530kHz to 1650MHz all modes, 1000 memories

MVT-3300 £129 B

66-88/108-170/300-470/806-1000MHz, 200 memories

Yaesu Scanners

YAESU VR-500

- *100kHz-1300MHz
- *NFM, WFM, AM, USB, LSB, CW
- *1000 Memories
- *100 Skip channels
- *Smart search feature
- *8 char. alphanumeric display
- *Band scope
- *PC programmable



£199 B

VR-5000 £489 B

100kHz-2599.99MHz all modes base scanner

VR-120D £139 B

100kHz-1300MHz, 64 memories

Uniden-Bearcat Scanners

UBC-3300XLT

- *25 - 1300MHz with gaps
- *NFM, WFM, AM
- *1000 Ch/10 Banks Memory system
- *10 Priority channels
- *Turbo Search 300chs per sec
- *6V 600mAh Ni-Cd pack + AC charger
- *LCD with back light
- *BNC antenna socket
- *Ni-MH Rechargeable battery (5hrs)



£179 B

UBC-780XLT £279 C

25-956MHz & 1240-1300MHz, 500 mems, base scanner

UBC-280XLT £159 B

25-88/108-512/806-956MHz, 200 memoreis

UBC-180XLT £129 B

25-960MHz with gaps, 100 memories

UBC-120XLT £99 B

66-512MHz with gaps, 100 memories

UBC-105XLT £99 B

25-87/108-174/406-512/806-960MHz 8.33MHz steps

UBC-72XLT £89 B

25-512MHz + Airband, 100 memories

UBC-60XLT £69 B

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Carriage Charges: A=£2.75, B=£6, C=£10

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AOR Receivers

AOR AR-5000A/AR-5000A+

The new AR-5000A now offers a frequency coverage of the entire radio spectrum that is practical to cover. The +3 version offers even more with synchronous AM (USB/LSB/DSB) AFC & Noise Blanker.



AR-5000A **£1599 C**
AR-5000A+ **£1799 C**

AR-ONE **£3195 C**

10kHz-3300MHz, 1000 memories

AR-8600 MKII **£599 C**

100kHz-3000MHz, 1000 memories

AR-7030 **£699 C**

0-32MHz, 100 memories

Icom Receivers

ICOM IC-R75E

The IC-R75 communications receiver covers a frequency range that's wider than most other HF receivers - from 300kHz to 60MHz. Using the latest wide band technology it provides a highly stable platform over the entire receive frequency range.



£599 C
IC-PCR-1000IS **£299 B**

Computer controlled receiver, 100kHz-1300MHz

JRC Receivers

JRC NRD-545G

*100kHz - 29.99MHz
*LSB USB
*CW RTTY
*AM FM
*1000 Memories *Bandwidths 10Hz - 9.9kHz
*Multi-function display *Tuning steps 1Hz to 100kHz *32 programmable features
*Built-in PSU or 12V Ext. **£1395 C**



NVA-319 **£199.95 C**

Ext. Speaker 8 Ohms

ST-3 **£79.95 B**

Communication Headphones

CGD-197 **£89.95 B**

TCXO High Stability Crystal

CHE-199W **£299.95 B**

VHF/UHF Converter adds FM

Yaesu Receivers

YAESU VR-5000

*100kHz - 2599MHz
*FM, AM, SSB, CW
*Large digital display
*Real-time band scope
*DSP Noise & notch filters (Opt)
*Super HF performance
*Automatic Tape recorder option **£489 C**



Sony Receivers

SONY ICF-SW-7600

*150kHz-30MHz (LW/MW/SW)
*76-108MHz (FM)
*AM, SSB, CW (FM)
*100 memory presets
*Audio output 380mW
*Supply: 4 x AA
*Size 190 x 118.8 x 35.3mm
*Weight 608g **£119 B**



Mizuho Active Loop Antenna

UZ-77 Ultra Loop

*530kHz - 1600kHz
*DX & Local switch
*Front-panel tune control
*Size 115 x 35 x 110mm
*Weight 400g with batts
*Loop 200 x 210mm
*Loop weight 200g **£89.95 B**

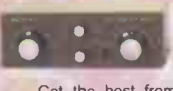


Works great on scanners that cover the medium wave band. We received European stations during daylight. Rotate for best reception or to null out signals.

Global Receiver ATU

GLOBAL AT-2000

*150kHz - 30MHz
*Low pass filter
*SO-239 socket
*Size: 150 x 67 x 146mm
*Weight 300g



Get the best from your receiver, match your antenna to the antenna socket impedance of the receiver. The AT-2000 has a 'Q' switch which adjusts the front-end selectivity to match the band and QRM conditions. As the unit is passive, no power supply is necessary. Matches long wires, and coax systems. **£89.95 B**

Power Stations

FD-7021

Self-contained power station output 12V at up to 12 Amps plus 1A outputs for 3 / 6 / 9V. Built in lamp. Includes AC & DC charger. **£24.95 B**



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Power station with built-in 150W inverter. *12V out up to 15A *230V out up to 150W *200K candle power spot *Dual fluorescent lantern *Cigar socket *Blinking warning light *Cartridge fuse *AC wall charger.



Watson Dipole Antenna

WDP-30

*1 - 30MHz
*8.5m long
*10m feeder with PL259's
*Impedance 50 Ohms
*Balanced, Low noise



Especially for use with receivers. Comes with balun, wire, insulators and 10m feeder with PL259's for Balun to receiver connection. Easy to put up, either straight or inverted V. Ideal for small gardens. **£49.95 B**

Optoelectronics Frequency Counters

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A fully featured nearfield receiver that displays analogue signals in spectrum format.
*30MHz-3GHz
*FM Analogue
*64x128 graphical display
*2000 Memories
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*Pwr: 8xAA alkaline or AC adaptor (optional) 12V DC 350mA
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£1399.95 C



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Nearfield Test Receiver, 30MHz-2GHz, LCD display

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Digital Frequency Recorder, 60MHz-2.6GHz

SCOUT **£299.95 B**

Frequency Recorder, 10MHz-1.4GHz, LCD display

CUB **£129.95 B**

Mini Counter, 1MHz-2.8GHz, LCD display

Watson Frequency Counters

WATSON FC-130

*Off-air Frequency Counter *10MHz - 3GHz range *4 Switched Gate Spreads *Hold Display Button *2 Switched ranges *Internal Ni-Cad battery *Whip Antenna *AC Charger **£59.95 B**



HUNTER **£49.95 B**

10MHz-3GHz, 8 digit display, Imped. 50 Ohms

SUPER HUNTER **£149.95 B**

10Hz-3GHz, 10 digit readout, Imped. 50 Ohms

bhi DSP Equipment

bhi NES 10-2 MKII

NES10-2 Combined speaker and programmable DSP unit, now with On/Off bypass switch. Offers dramatic noise reduction, even reduces annoying hetrodynes. 8 Ohms, 8 filter settings, 3.5mm plug, 12-24V DC **£99.95 B**



Watson Audio Equipment

WATSON SP-2B

*Tailored response for speech
*Cast alloy construction
*Extremely Rugged
*Matches modern radios
*Includes patch lead
*Size 12W x 18H x 11D cm.
*Weight 0.85kg **£29.95 B**



HP-200 **£22.95 B**

Headphones with padded earpieces, 8 Ohms 200Hz-10kHz

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Lightweight Headphones, 8 Ohms 200Hz-9kHz

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* Works with any receiver
* Plugs directly into 3.5mm socket
* Requires 12V DC 500mA



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This is the most amazing indoor antenna we have seen in years. For optimum results take a wire around 1/5th wave long, and make a square loop (14ft for 20m = 3.5ft square). Then attach to MFJ-935B to get ultra low indoor noise and real DX reception. Works on any band from 40m - 10m. You make the loop, the tuner does the rest! The loop will also tune up to 0.75 of lowest frequency. **£179.95 B**



Watson Handheld Antennas

W-901

WSMA-450 **£12.95 A**

SMA 2m/70cm Rubber Duck 4.5cm long

WDB-32 **£12.95 A**

BNC 2m/0cm Rubber Duck 4.5cm long

WSMA-7000 **£14.95 A**

SMA 2m/70cm Rubber Duck 17.7cm long

WHX-7000 **£14.95 A**

BNC 2m/70cm Rubber Duck 20cm long

WHSM-270 **£19.95 A**

SMA 2m/70cm Rubber Duck 40cm long

WHXX-270 **£19.95 A**

BNC 2m/70cm Rubber Duck 40cm long

WSMA-801 **£12.95 A**

SMA Reg/Gain 25-1900MHz 21cm long

W-801 **£12.95 A**

BNC Reg/Gain 25-1900MHz 21cm long

WSMA-881 **£19.95 A**

SMA Super-Gainer 25-1900MHz 40cm long

W-881 **£19.95 A**

BNC Super-Gainer 25-1900MHz 40cm long

W-901 **£19.95 A**

VHF/UHF airband flexi 10cm long BNC

ANT-60 **£9.95 A**

Portable SW antenna 7m long 3.5mm jack

The W&S 2005 Equipment Guide

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Carriage Charges: A=£2.75, B=£6, C=£10

all using N-Type connectors. Very simply, the diplexer combines and the signals from the two antennas so that they both perform at their best with just a single feeder cable from the diplexer to the radio. SSE also produce an indoor non-waterproof diplexer.

Apart from my bracket problem, the installation was simple and went as follows. First measure, then screw the three units to the surface, tighten the two connecting patch cables and the down cable, seal with tape to make the plugs waterproof and you're ready to go. Incidentally, if you buy both antennas from SSE, the patch cables to the diplexer, including N-type plugs are supplied free of charge. The antennas can also be mounted on poles and suitable brackets are supplied. Note that because of the weight, it is essential for safety purposes, that the original mount is very secure.

In Action

The complete system was put into action using my two Icom IC-R8500s and the loaned AOR SR2000. The SSE supplied antennas were compared to my stainless steel double discone, a Racal ex-military dedicated u.h.f.

airband antennas and an Icom AH-7000 wideband antenna. To give a fair evaluation, numerous permutations of antenna and radio were made to get an unbiased comparison.

In use the new antennas proved to be very effective. Whilst in the loft they both outperformed my double discone and

the improvement on the u.h.f. airband was noticeable, although I had expected a slightly better increase in performance on v.h.f.

I must state that in my opinion, the double discone is one of the best on the market, so it was going to be a good test for these two airband antennas.

Once moved to their new outside location they then started to show what they could do and I was surprised that the short move from the loft, did make a slight but noticeable difference. I first set up comparisons against constant signals such as ATIS weather broadcasts and then moved on to some spot frequencies throughout both airbands. The v.h.f. antenna really came into its own in its new location pulling in the local ATIS with a slightly stronger and much clearer signal than my other antennas. Using the loaned AOR SR2000 and my SDU5600, I identified weak but regular signals in the civil airband and used them as test frequencies. A good example was the Dunkeswell Tower controller on 123.475, (67km away), that broke the squelch and was audible with the BASE 128SJ but was just a faint signal with the squelch open on either of the discones, using the same radio. I could easily list a number of other examples but the result was nearly always the same and generally there was a modest but distinct improvement across the whole v.h.f. airband. On most occasions the 'S' meter would have a signal reading of between 0.5 and 1.5 points higher using the dedicated antenna whilst operating the same radio.

Performed Well

I also found that the u.h.f. antenna performed well outside and was subjected to similar testing on weak signals identified by the SDU5600 or SR2000. Once again to quote an example, aircraft descending with Lyneham Approach on 359.5, some 160km away, would often break the squelch using the SSE antenna but not when using the discones. Again the performance across the band was good with higher 'S' meter readings across the most of the u.h.f. airband. Compared with my ex-RAF Racal u.h.f. antenna, it was a much closer contest. Not surprising as the Racal unit was designed for the band. It was a close run thing with each of the antennas performing slightly better on different parts of the u.h.f. airband. The age of my Racal is uncertain but is thought to be between 15 and 20 years old, but it still gave a good performance up against the modern BASE 125SJ, I doubt if the construction is very much different. After several weeks of comparisons the 125SJ won the race by a short head. Especially linked with FFT Search on the SR2000. The u.h.f. antenna was definitely allowing me to identify weak signals when the discones would not. For example, I managed to re-confirm several Culdrose Operations frequencies, some of which I had not heard for some considerable time. Picking up helicopters operating at two or three thousand feet, 100+km away is not easy.

Another point worth noting is that at just 700mm tall there is no reason why the BASE 125SJ could not go mobile with you. Although, I would not recommend an installation on the car roof! Before it was permanently sited, it was a simple matter to attach the antenna to a 2m long wooden post, using an existing 3m lead I took the set-up with the SR2000 to a headland 100m above sea level. Monitoring a busy 'Thursday War' here in the Southwest proved very enlightening and engaging listening but that is a story for a future 'SkyHigh' column.

Don't Expect Miracles!

Finally, don't expect miraculous results from these antennas they are still constrained by the 'line of sight' principle with normal (flat) propagation conditions. But in my opinion, if you are a dedicated airband listener whether it be v.h.f., u.h.f. or both, I am certain that you will notice marked improvement in reception.

The bottom line is that both of the SSE antennas are very well constructed, they perform very well and come well equipped with just about everything you need for a complete installation. The total price for the set-up that I've had under test, i.e. the two antennas and the diplexer is £138 this includes the two free patch cables. This may seem expensive, but I feel it is good value for money considering these are commercial grade items that are built to last. In the end, you get what you pay for and let's not forget that a radio system is only as good as the antenna to which it is connected.

Prices for individual items are as follows: VHF BASE 128SJ £60 plus £8.50 P&P, UHF BASE 125SJ £60 plus £8.50 P&P, outdoor waterproof Diplexer £38 plus £5 P&P.

With my thanks to Jim at SSE. They can be reached at:

**Solid State Electronics,
6 The Orchard,
Basset Green Village,
Southampton, Hampshire SO16 3NA.**

Tel: 023-8076 9598.

Web: www.ssejim.co.uk

E-mail: solidstate@ssejim.co.uk



The SSE diplexer, which allows the use of a single feeder between the receiver and the antennas.

discrete frequencies 2005

It has been three or four years since I used part of the Airband Special to take a detailed look at some of the UK Military discrete frequencies. This seemed like the appropriate time to approach this subject with the recent changes to London Military.

Historically, London Military zone was split into London Military East, (Eastern Radar) and the Western area, which was split into London Military North and South, this area later evolved to become London Military West. It should be remembered that it's not that long ago when the perceived threat was from the countries behind the former Iron Curtain. Consequently, for security reasons large changes to the London Military frequencies took place, usually every five years during the seventies and eighties.

Last Big Change

These mass changes continued into the early 1990s, but fortunately do not take place anymore. The last big change of frequencies was in May 1992 when it was not so much a matter of security but the opportunity was taken to introduce many more u.h.f. frequencies utilising 3 decimal places rather than 2. This brought in the extensive use of 25kHz spacing rather than 50kHz. When similar changes were made to the civil ATC sectors in the late 1980s, it caused a few problems. At the time, some Canadian Air Force C-130s, which made regular trips from Gatwick to Germany were only equipped with radios with 50kHz spacing, (i.e. 2 decimal places). One of the Dover Sector frequencies was changed to a frequency utilising 25kHz spacing (three decimal places), and so the C-130s could not select it. If memory serves me correctly, Dover was 134.9, which it still is, and 127.425 was added, this is now a London Upper frequency. Needless to say, it caused the Sector a few headaches.

So following on from last month's initial information in my 'Sky High' column here is some more detail. In May of this year, London Military West moved from West Drayton to Swanwick and now uses the callsign SWANWICK MIL. The second 'w' is silent and so it is pronounced SWANICK. Some frequencies were transferred to the London Joint Area Organisation (LJAO) and further Initial Contact Frequencies (ICFs), were established. Perhaps the most notable is 257.275, which became the Litchfield Corridor ICF. When the changes were published there was no mention of the LJAO frequencies 233.8, 291.075 and 299.8, but also there was no indication that they had been withdrawn. Since that date, all three have been noted in use.

Other Changes

Also noticeable where I live in the Southwest, is that 135.15 is now being used as a Lower Airspace Radar Service (LARS). For example, aircraft climbing out of Exeter to join controlled airspace, now go to Swanwick Mil on 135.15 before being transferred to 126.075 on the Berry Head Sector. The transmitter power on 135.15 also seems to have been increased as I can now hear the controller from the Davidstow Moor transmitter, something I previously couldn't do. Has anyone else noted any other changes like this?

A month has passed since the changes and listed below is what I believe to be the current London or Swanwick Mil situation.

For the first time I have dated the reports so that the reader can get a better overall picture. Those marked May or Jun have all been noted by me since the May changes. If they have a * by them, then they have not yet been noted by me but have come from a correspondent. As can be seen from the list, some frequencies have not been reported for some time. As usual, if you can add to or correct this information, please get in touch. With thanks to Mike P, Kevin, Andy L, Ron and Photavia Press.

London Military East (Callsign London Mil)

131.225	ATC Secondary	Jun 2005
133.325	ATC Secondary	Last Noted Dec 2004
135.075	ATC North Primary	Jun 2005
135.275	Eastern UK ICF	Jun 2005
135.625	ATC Primary, Standby	Jun 2005
135.925	ATC Primary, Standby	Jun 2005
232.025	ATC Primary	Jun 2005
248.775	ATC, Rarely Heard Standby	Noted Twice in 2005
254.825	ATC Primary	*May 2005
263.075	ATC, CAC Standby	Last Noted Jul 2004
275.675	ATC Primary, AAAR	Jun 2005
276.775	ATC	*May 2005
277.775	ATC Primary	*May 2005
279.3	ATC Primary	Jun 2005
280.575	Special Tasks Cell / Discrete	Jun 2005
284.3	Discrete, Standby	Jun 2005
290.6	Discrete, Standby	*May 2005
290.7	ATC, Rarely Heard Standby	*Jun 2005
291.775	ATC, Standby	Jun 2005
292.6	ATC Discrete	*May 2005
293.475	ATC Primary	Jun 2005
299.975	Eastern UK ICF	Jun 2005
313.0	Discrete, Standby	Jun 2005

Swanwick Mil (Formally London Military West)

128.25	South Standby	*May 2005
133.3	ATC Primary	Jun 2005

244.375	Special Tasks Cell, Berry Head	*May 2005
245.0	Rarely Heard Standby	Jun 2005
245.1	Practice Emergency Test Freq	*May 2005
247.275	ATC And Sometimes GCI	*May 2005
255.925	ATC, Rarely Heard Standby	*Apr 2004
261.025	Special Tasks Cell /Rarely Used	Jun 2005
262.975	South, ATC PRI - SEC	Not Since May
268.975	Special Tasks / Rarely Heard	Last Noted Dec 2004
278.025	South, West	Jun 2005
278.075	South, West ATC Primary	*May 2005
283.525	South, West ATC Primary	*May 2005
290.575	South, STC / Rarely Used	Last Noted Oct 2004
340.25	North, Warton STC	Jun 2005

275.475	Southwest, ICF	Jun 2005
291.075	Southeast	*May 2005
299.8	Southeast	*May 2005

Swanwick Mil LJAO (London Joint Area Organisation)

127.45	Northwest, ICF	Jun 2005
128.7	West, ICF	Jun 2005
133.9	Central	Jun 2005
135.15	Southwest, ICF	Jun 2005
233.8	Southeast	*Jun 2005
245.175	West, ICF	Jun 2005
245.25	Northwest, Special Tasks Cell	*May 2005
251.225	Southeast, ICF	*Jun 2005
254.275	NorthWest, ICF	Jun 2005
257.275	Litchfield Corridor, ICF	Jun 2005
264.825	North, Special Tasks Cell	Jun 2005
270.0	Central Secondary	Jun 2005
275.35	Central, ICF	Jun 2005

UK Tactical Air Designators (TADS)

During 2004 and 2005, there were a number of changes to the structure, TADS and frequencies of the UK ASACS. Neatishead Control and Reporting Centre (CRC), is due to move to Scampton by the Summer or Autumn of 2005. Buchan CRC has been downgraded and is now a remotely controlled, Control and Reporting Point, the site at RAF Buchan is currently up for sale. Boulmer is now acting as a temporary CRC and is also expected to eventually move to Scampton by 2009. Several sources have commented that several of the ASACS agencies, especially the former stations at Buchan and Neatishead, may have pooled their resources under Air Defence Radar (ADR) in general and consequently share some specific TADS and frequencies. Apart from a couple of isolated reports probably made in error, the callsigns Buchan and Neatishead appear to have been withdrawn. The callsign Boulmer is still heard regularly, it was also suggested that the Boulmer callsign CROWBAR had been withdrawn but it is still in regular use. I have listed most of these frequencies under Air Defence Radar North and South under the direct control of Combined Air Operations Centre 9, (CAOC9).

A number of changes to the TADs and their frequencies were made in the first few months of 2004. The main block of UK TADS was extended from TAD144 to TAD158, and there were about 30 frequency changes. A new block of UK TADS (151 - 158), were allocated to the eight redesigned Operational Training Areas (OTAs). It should be noted that

The 148 Frequency TAD list.

121.5	VHF DISTRESS	269.8	SHIP, SHORE	300.1	AARA	362.3	NATO APPROACH
122.1	NATO TOWER	270.025	ADR NORTH	300.55	Ex OTA, Withdrawn?	362.375	OTA C
123.1	NATO VHF SAR	275.575	UK AIR, AIR	300.7	ADR NORTH, SOUTH	362.475	ADR NORTH
123.3	NATO RADAR	275.7	UK AIR, AIR	301.075	ADR SOUTH	362.55	OTA D
233.125	ADR SOUTH	275.75	ADR SOUTH	310.125	ADR SOUTH	363.025	ADR NORTH
240.3	ADR NORTH	275.95	ADR NORTH?	311.5	VALLEY ADR	363.675	ADR SOUTH
241.275	BOULMER	276.025	CROWBAR	311.75	ADR NORTH	364.2	MAGIC, AWACS ICF
242.275	ADR SOUTH	276.175	ADR NORTH	311.925	CROWBAR	364.275	ADR NORTH
243.0	UHF DISTRESS	276.225	OTA F	312.05	ADR SOUTH	364.45	ADR SOUTH
244.325	ADR NORTH	276.975	CROWBAR	312.125	OTA H	364.9	ADR NORTH
244.925	ADR SOUTH	277.2	ADR SOUTH	312.825	ADR NORTH	367.25	ADR SOUTH
247.1	DROPZONE	277.75	ADR SOUTH	314.025	ADR SOUTH	367.325	ADR NORTH
250.125	ADR NORTH	278.125	VALLEY ADR	314.325	ADR SOUTH	367.35	AARA
250.175	ADR SOUTH	279.225	ADR NORTH	314.575	ADR SOUTH	368.0	MAGIC?
251.175	ADR SOUTH	279.4	NATO COMBAT	315.275	ADR NORTH	368.425	ADR NORTH
251.375	ADR SOUTH?	279.525	ADR NORTH	315.3	AOR NORTH	369.0	ADR SOUTH?
251.65	ADR SOUTH	279.725	ADR SOUTH	316.725	ADR NORTH	369.125	ADR SOUTH
251.75	ADR SOUTH	281.1	ADR SOUTH	317.5	NAV FIXER	370.9	ADR NORTH
252.0	ADR SOUTH	281.175	AOR SOUTH	317.55	ADR, ACMI 4	371.6	ADR NORTH
252.4	ADR NORTH	282.075	CROWBAR	318.05	ADR SOUTH	372.25	ADR NORTH, MAGIC
252.8	NATO SEARCH & RESCUE	282.2	AOR NORTH	336.2	ADR NORTH	373.1	ADR, ex ACMI 1?
254.425	ADR NORTH	282.8	NATO UHF SAR	337.85	Ex OTA FREQUENCY	373.35	ADR NORTH
255.775	OTA E	282.975	ADR NORTH	338.2	AWACS, LINK 11	374.4	ADR SOUTH, NORTH?
255.825	SPARE?	283.65	ADR NORTH	340.4	UK AIR, AIR	374.75	ADR SOUTH
257.8	NATO TOWER	284.975	ADR SOUTH	340.9	ADR NORTH	375.275	ADR NORTH
258.95	ADR NORTH	285.0	ADR NORTH	341.425	ADR SOUTH	375.55	MAGIC PRIMARY
259.675	AARA	290.675	ADR NORTH	341.975	ADR NORTH	376.075	ADR SOUTH
260.15	ADR SOUTH	292.45	ADR NORTH	344.0	NATO RADAR	378.675	ADR, ex ACMI 3?
260.275	ADR SOUTH	292.55	ADR NORTH	344.85	VALLEY ADR, Withdrawn?	379.9	MAGIC
262.625	OTA A	293.0	ADR SOUTH	355.725	ADR NORTH	385.4	NATO RAOAR
263.175	CROWBAR PRIMARY	293.7 **	UK AIR, AIR	356.175	ADR NORTH	387.125	ADR SOUTH
264.325	ADR SOUTH	294.7	ADR NORTH	356.425	OTA B	388.725	SPARE?
265.9	ADR, was ACMI 2?	296.775	AARA	357.7	ADR SOUTH	388.775	ADR SOUTH
267.475	BOULMER	296.825	AARA	359.625	CROWBAR	389.875	ADR SOUTH, AWACS
268.5	ADR NORTH	298.65	ADR SOUTH	359.8	AIR, AIR	396.475	OTA G
268.6	ADR NORTH	299.5	ADR NORTH, AARA BOOM	361.825	CROWBAR	399.1	ADR SOUTH
268.95	ADR NORTH	299.925	VALLEY ADR	362.1	CROWBAR		

some frequencies associated with the TADs are heard regularly, whilst others are rarely noted and in a few cases, never. Consequently, the frequency listing is colour coded. If it is coded **blue** both the TAD and the frequency have been reported in use since 1 April 2004. If is coded **red** then only the frequency has been reported in use. It can be seen that quite a few have not been reported at all. The listing is in frequency order, in keeping with tradition the actual TAD numbers are not included - Sorry. There are only 148 frequencies in the list, as far as we are aware there are currently 10 TADS with no frequency allocation. It may not be the definitive listing but it was compiled from a number of reliable sources including what appeared to be an official listing from May 2004. If anyone can help to add or correct

any of the information we would very much like to hear from them. There are a few queries and comments as follows:

- 1) 268.6 is also 6 Squadron Operations (Can opener) at Coltishall.
- 2) 279.225 used to be 800 Squadron Operations frequency at Yeovilton before they disbanded.
- 3) 292.45 is also a current Coltishall Air-to-Air, (noted May 2005).
- 4) 300.55 was an old OTA frequency and may have been withdrawn, it is also a Culdrose Ops frequency.
- 5) 314.575 is an old Lakenheath Operations frequency.
- 6) 344.85 is, was a Valley ADR school frequency, I have not seen it reported since 2003, so it may be withdrawn.

- **Peter Bond** c/o Editorial Offices, Broadstone
- **E-mail** skyhigh@pwpublishing.ltd.uk

SKY High

I've brought you a much shorter column this month so that the Special could be expanded.

Hanoi Taxi (Not)

Well it had to happen. After my comments in last month's column, a few days after the July SWM went to press and after all the pre - RIAT advertising the C-141 Hanoi Taxi was removed from the participation list for this years show. I spoke to the RIAT and at the time of my call they had not had a reason for the cancellation from the US military. It just goes to show that participation lists are only a guide and until you see an aircraft touch down you can never be certain that it will take part. As I write this with a month to go to RIAT 2005 there is only around 180 military aircraft on the list plus 19 from two aerobatic teams and around 40 visitors, not quite the heady days of 450 plus aircraft. By the time you read this RIAT 2005 will have come and gone, so if copy deadlines allow I will try to get a Fairford report in next months column.

Queens Birthday Flypast

I spent an hour and a half watching the trooping of the colour with the aircraft flypast to look forward to afterwards. All those stirring marches,

pageantry and the Thirr Red Line, in other words all the things that the British do better than anyone else and the Americans are extremely envious of. It was therefore with some disbelief that I stood open mouthed as the BBC ended their coverage with about 25 minutes to go before the flypast so that they could show a brief news broadcast and the 75th repeat of an ancient sitcom. Come on BBC get your act together! I understand that it was apparently shown later in the day but I missed it.

With thanks to **Mike H, Kev and Ron L** in Thetford, I can pass on a report of the Queen's Birthday Flypast on 11 June. Whilst London was bathed in sunshine, low cloud and poor visibility in the holding area meant that there were problems getting the formation together, also not helped by the fact that the Typhoons apparently turned up late! I understand that the planned holding area had to be moved at short notice due to the weather conditions. Apart from London and Swanwick Mil, frequencies reported in use were 300.1, TAD 041 which was used for Air-to-Air, 282.975, TAD 128 and 375.55, TAD 080.

The flypast was a lead C-17 plus four flights of aircraft with the fighter elements of the flypast having an 'airspace' aircraft, the airspare did not take part in the flypast. The aircraft were as follows:

Callsign	A/C	SQN	Comments
WINDSOR LEAD	Globemaster III	99 Squadron	
FAGIN	Tristar K.1	216 Squadron	
TRIPLEX 1	Typhoon T.1	29 (R) Sqn	
TRIPLEX 2	Typhoon T.1	29 (R) Sqn	
TRIPLEX 3	Typhoon T.1	29 (R) Sqn	Air-spare
SENTRY	Sentry AEW.1	8 Sqn	
WARLORD 1	Tornado F.3	56 (R) Sqn	
WARLORD 2	Tornado F.3	56 (R) Sqn	
WARLORD 3	Tornado F.3	56 (R) Sqn	Air-spare
MADRAS	VC-10 K.3	101 Sqn	
BOXER 1	Jaguar GR.3A	6 Sqn	
BOXER 2	Jaguar GR.3A	41 Sqn	
BOXER 3	Jaguar GR.3A	6 Sqn?	Air-Spare
NIMROD	Nimrod MR.2	42 Sqn NMW	Used the callsign NIMROD 42 to and from Kinloss
ROCKET 1	Tornado GR.4	13 Sqn	In special 13 Sqn Anniversary markings
ROCKET 2	Tornado GR.4	15 (R) Sqn	
ROCKET 3	Tornado GR.4	617 Sqn	Air-spare

Not in the flypast, but also noted, were two 100 Sqn Hawk T.1s callsigns WHIP 1 and 2. WHIP 2 was also reported as calling HAWK 2 and one or both of them also used the callsign WINDSOR WHIP. Also involved were a BAe 125 CC.3 from 32 Royal Sqn at Northolt who gave weather reports using the callsign, WINDSOR WEATHER CHECK. There was also a Helicopter which is thought to be a Twin Squirrel also from the same Squadron that used the callsign WINDSOR PHOTO.

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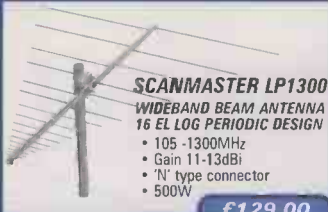
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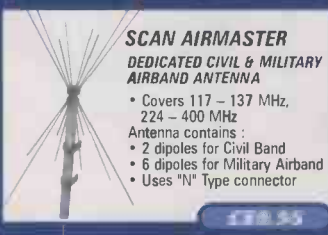
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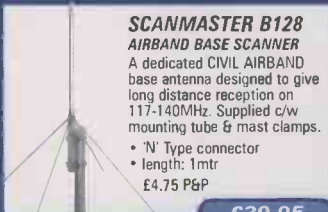


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hands on airband monitoring & AOR's SR2000



Last month Jack Weber provided us with a technical review of the revolutionary new step forward in high-end hobby radio from AOR. Peter Bond, ever hungry for ways to search the airwaves and specifically the MilAir spectrum quickly realised the SR2000 was the answer to his quest.



It is rather unusual for me to report on a new item so soon after *Short Wave Magazine* has included a comprehensive review. But having had the mouth-watering possibilities of the FFT Search facility explained to me, I make no apologies for including it so soon afterwards. Consequently, with thanks to AOR UK, I was fortunate to get my hands on a pre-production SR2000 at relatively short notice. It is not my primary intention to go over the same ground as in the original review, but to a certain point this will inevitably happen. What I really want to emphasise to the airband listener is how technology is marching on and what a massive step forward this small box makes in seeking out active airband or other frequencies. As is usual for me, my review of the SR2000 very much takes the form of a 'hands on' look, specifically relating to airband listening.

Feels Familiar

I have been using AOR's SDU5600 FFT Spectrum Display Unit for just under a year and so the operation of the SR2000 had a familiar feel to it even though some of the button functions have been changed. Basically, the SR2000 is an SDU5600 with a radio module added, plus of course the all important FFT Search facility. I do not profess to be a

engineer, scientist or mathematician but I should briefly attempt to explain FFT or Fast Fourier Transforms. These are discrete mathematical algorithms, which by using a different approach, dramatically reduce the number of computations

needed to reach a result. In other words they can make a search of the airband much more quickly than by using a conventional progressive search. If you have Internet access, then try a search on Google for +FFT and try and understand the results! When I got to the third line, which said "aliasing, can be reduced by apodisation using a tapering function", I threw in the towel. It's 30 years since I did A-level Maths and it shows!

Both the SDU5600 and the SR2000 give the listener the opportunity to visually monitor a selected portion of the airwaves up to 10MHz wide in almost real time - 8MHz if you want to retain 25kHz channel spacing. This means that a search of just under half of the v.h.f. airband can be completed in less than a second, but it still means a lot of searches to cover the Military airband. Nevertheless, with the introduction of FFT technology it is a great step forward in fast searching. In addition to all the features of the SDU5600, the SR2000 has FFT Search.

So, let's put this facility into perspective. If you take the v.h.f. airband from 118 to 137MHz, it covers a span of 19MHz. Therefore using a radio that can run a standard search at say forty 25kHz increments per second, like my IC-R8500, this means that your search will be 1MHz per second (40 x 25kHz). Or 19 seconds in total, to search the whole v.h.f. airband.

Now the u.h.f. airband is a different matter as it is much larger. Whilst the full range is from 225 to 400MHz, the first 5MHz up to 230MHz is not used and there are few allocations in the 380 to 400MHz band as much of this is now being handed over to the Police for the Tetra Airwave system. Locally, 391 to 394MHz is full of Airwave signals so a search beyond 391MHz is all but impossible without loads of hits. Consequently, a realistic search range would be from 230 to 380MHz, this still represents a span of 150MHz, almost eight times the size of the v.h.f. airband. For a normal search using the calculation mentioned above, a full search of the u.h.f. airband would take a total of 150 seconds or two minutes 30 seconds.

Seamless Stitching

Enter the SR2000 and the FFT search. Using these high speed algorithms, each 10MHz of the airband is searched in just 0.85 of a second, the same as the SDU5600. But, and it's a **big but** the SR2000 can seamlessly stitch these 10MHz segments together and search continuously through them. Once the search reaches the end of the set limit it restarts at the beginning. Consequently, the 19MHz v.h.f. airband can be searched in just 1.6 seconds and the 150MHz of the military airband can be searched in just over 12 seconds. Somewhat different to the two minutes 30 seconds for a standard u.h.f. search. If you want to extend the search up to 400MHz it still only takes 14.5 seconds. With a 12 second sweep it is still possible to miss short transmission unless the



frequency is busy, so I also split the search into two segments of 230-305MHz and 305-380MHz. This reduces the search time with a sweep of just 6.3 seconds and cut down the chances of missing anything. I am certain that any regular listener to the Military Airbands will not need me to explain the implications of a search at this speed! By now, I am sure that you will have been getting the impression that I like this FFT Search facility - lots!

Unlike the SDU5600, which shows you the active frequencies as a graphic display that you can select via a cursor, which of course the SR2000 can do as well, in FFT Search the SR2000 takes another step towards user friendliness. The active frequencies are displayed as a numeric frequency so that you have instant access to the information. I used it alongside my computer with the frequency database running and with my R8500s all ready to punch in active frequencies and this gave me great flexibility. You can of course select the active frequency on the SR2000 by moving a cursor arrow to the selected frequency and then pressing SET FREQ, but I much prefer to leave the FFT Search running and then use my other radios to check the frequency hits.

Unlike a sequential search on a conventional radio, which will give you audio as it stops on active frequencies, with FFT search there is no audio. As part of the set-up for FFT Search you must set the threshold level above, which signals are recorded. This cuts out some of the spurious signals being received. This is done visually using the spectrum screen and by moving the cursor above any background noise at the bottom of the trace. The minimum level is -100dB, so for the u.h.f. airband I used varying settings between -90 and -96dB for effective results. At -94dB weak airband signals would still be identified but there were still a number of spurious signals being registered.

Minor Drawbacks

Having enthused about the capabilities of FFT search there are a couple of minor drawbacks. Unfortunately, unlike a standard search, on FFT Search there is no facility to lock-out spurious or unwanted constant signals (such as ATIS broadcasts). Consequently, on the u.h.f. Airband if you are close to an airfield ATIS you will take a hit once every 12 seconds on a 150MHz search. This is not too much of a problem on the u.h.f. airband as you would have to be fairly close to the transmission to take a hit, but it can be troublesome on smaller bands. When detected, the active frequencies are presented in four columns of 10, so you can see the 40 most recent active frequencies. If a frequency is very busy then multiple hits will be recorded. Also as an aid to signal analysis the identified frequencies shown on the screen are colour coded linked to their signal strength above the set threshold. Dark blue for the weakest signal, moving through various colours such as light blue, green, orange and red for the strongest.

On small segments of very active bands such as say 5MHz of the v.h.f. airband. The identified active frequencies will cycle through very quickly and the SR2000 will rattle through the results at a rate of knots with hits being made at several per second and the units 40 memories will be filled very quickly. Once the 40 are used then the radio reuses them from the beginning and over-writes the first frequencies identified. There are no Page Up, Page Down, Pause or memory facilities, so once it is over-written the frequency detail is gone.

This is not so much of a problem with the u.h.f. airband as this band generally quieter, but not always! To combat these problems, AOR are already developing logging software, which seems as though it will make the FFT Search

a very powerful tool, it will also hopefully include a frequency lock-out facility.

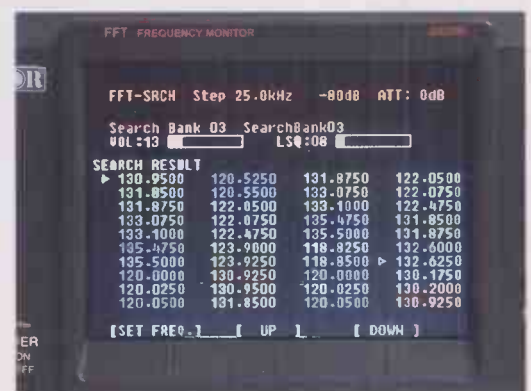
Well it all looks great in theory, but how did it work when used 'hands-on' in the field? After a couple of days familiarisation the first time I tried the SR2000 in anger, coincided nicely with quite a busy 'Thursday War' down here in the south west of England. Once I'd got the hang of setting the threshold level to stop most of the spurious signals, I was quickly off and running. Between 0900 and 1200 I had hits on 25 u.h.f. frequencies including, London (Swanwick) Mil, FOST and Fighter Control TADS at Plymouth. Plus Operations, Radar and air-to-air at Boscombe, Yeovilton and Culdrose. Even Lyneham Approach popped up on 359.9 plus 283.6, which is a 815 Sqn discrete helicopter air-to-air at Yeovilton. Another good hit was 25 Squadron Tornado's air-to-air 244.825 whilst working in the Welsh MTA. A new, to me, air-to-air frequency was found on 231.3 with both RAF and what sounded like Dutch Helicopters on the frequency, any ideas? Excluding Plymouth, my nearest military airfield is Yeovilton 110km away, so the results were very impressive but imagine what you could do with this box of tricks if you were in East Anglia or Lincolnshire where you are surrounded by an assortment of military airfields. I sense a trip coming up as soon as possible!

Key Presses!

I have a couple of moans, the first of which were mentioned by Jack in his review last month. I refer to a common trait of some recent AOR radios, the number of key presses needed to achieve a specific function. For example, if you want to use FFT Search and select a new search band, it actually takes six key presses to get from the v.f.o. screen to running the search. Yes you get used to it, but it is annoying.

The second moan is regarding the dual module system.

With the radio receiver components added to an SDU5600, you would have thought that internal connections would have been used. But, before you can operate the unit, three short interconnecting leads have to be plugged in to the rear of the SR2000 to connect the two modules. It doesn't affect how the radio works in any way, but I just find it untidy. I was also rather surprised to find that there was no internal speaker, so an external speaker is needed as an extra. These comments should perhaps be taken into context in that the SR2000 was almost certainly developed from a commercial requirement rather than for an enthusiasts market. So the lack of refinements were most likely specification driven, rather than with a mind on ergonomics. Even so, if you are paying out almost £1600,



you would have expected the radio to have a speaker!

Another minor moan and that is AOR's propensity to use banks of 100 memories. A total of a 1000 memories is fine but why not 20 Banks of 50 or even 40 Banks of 25. It's very much my personal opinion, but banks of 100 is much too restrictive, especially for airband scanning. Worse still, there is no ability to link the banks together so if you want to scan banks 1, 3 and 7 - You can't. Come on AOR, with all this 21st Century FFT technology available, surely we can have more flexible memory scanning? You could do it with the AR8600! If a Realistic PRO-43 could have 10 Banks of 20 memories which could all be linked on a modestly priced hand-held 15 years ago, surely the development technicians at AOR Japan could give us the same!

One Anomaly

The SR2000, which I was kindly loaned, is a pre-production model, (on Beta Testing if you like) and so it was likely that a couple of glitches might be encountered. There were a few problems, which I am sure will be sorted out on the full production machines. Having enthused about the concept and operations of the FFT Search, one anomaly did occur that I am duty bound to report. I discovered a problem with the FFT search that appears to have been missed until I went 'hands on' with the SR2000 on the airbands. As previously explained the FFT Search can only take 40 hits on the screen before over-writing starts to take place. As it was the airbands, I was set to 25kHz spacing and with that in mind I started to notice a curious pattern with the hits on the screen. On about 90% of hits on an active frequency, a spurious second hit would be recorded 25kHz above the

live hit. The more I tried different searches, the more I realised that this was happening all the time. The consequence is that the limit of 40 hits on the screen is reduced almost by half due to

the addition of these spurious hits. This rather restricts the interrogation powers of the FFT Search. Having satisfied myself that it was not just me imagining things, I reported the anomaly back to AOR UK. Remember that this is a pre-production machine. The problem was repeated in AOR UK's workshop and as I type it's in the hands of the technicians at AOR Japan, I am certain that it will be resolved quickly.

I've Got to Have One!

Now to the bottom line. I have told the tale before in *SWM* of the time I was in Pollards Lane adjacent to the Runway 11 Approach at Mildenhall in March 1984. The chap in the car next to me had a radio that was getting two-way on the Tower on u.h.f. and I had to investigate. I was using a Signal 517 v.h.f. hand-held with plug-in crystals! He was reluctant to show it to me at first but eventually I got my first sight of an AOR AR2001, not only did it have a digital readout, a rarity then on airband radios, but it could receive u.h.f. airband, a facility that at the time that many thought would never become available to enthusiasts. It was one of the very



few times in my monitoring career that I got a funny feeling in the pit of my stomach that told me that this was something very innovative. And all logic went out of the window as that, 'I've got to have one' feeling took over. After a period of operating the SR2000 and FFT Search that funny feeling in the pit of my stomach has returned!

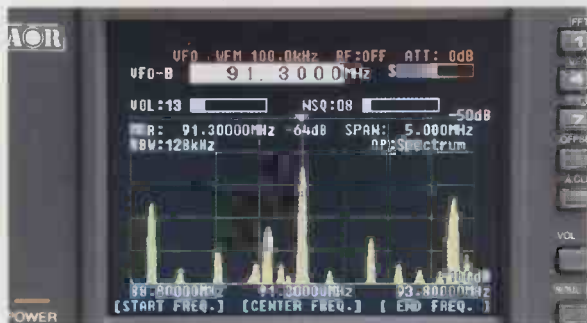
Without the FFT search, the SR2000 would be a radio with good performance and a very effective spectrum display unit, but with the FFT facility, the unit becomes a completely different beast. If you are into searching the spectrum and discovering new or active frequencies then this is the radio for you. When it comes to FFT Search, all I can say is - wow! Just on the basis of being able to reduce a search of the u.h.f. airband from 150 seconds to just 12. In my opinion, FFT Search is one of the biggest advances in airband monitoring since the AR2001 first appeared 21 years ago - I just wonder what this technology will be doing in 5 or 10 years time? Despite the odd problem, I enjoyed using it so much that it was hard to drag myself away to type this report and it will also explain to the Editor why my airband special was late - as usual!

Priced at almost £1600, the SR2000 costs a lot of money, but you do get a good scanner, a spectrum display unit, plus of course, the FFT Search. So the price is not quite so painful if you think of it in that context. When the production units arrive, I wonder if my wife will let me re-mortgage the house?

SR2000 Software

Finally, having had problems with the original SR2000, a second pre-production unit was sent to me, but with my deadline already passed and the Editor chasing me for copy, sadly I ran out of time. I therefore propose to keep this account open ended with a follow up to appear in my 'Sky High' column in the next couple of months. It is unfair to pass a final judgement on a pre-production unit so I hope to get my hands on a production unit before completing my review. Also included with the second SR2000 was an early Beta copy of the new logging software. This program is able to log and stream the active frequencies in memory, plus list the number of hits on each frequency, the signal strength and time scale, etc. When the software is finished in a month or so the possibilities for analysing the airbands or for that fact any other parts of the spectrum is tremendous. In theory, there is no reason why this new software should not be made to link with your own frequency database, so that when a hit is made the software accesses the database and identifies the frequency and can add a tag to the other information on the computer screen, for example, '262.925 Yeovilton Radar'. I will report on the software as soon as possible.

Once again, I apologise for following last month's review so quickly and repeating some of the information but this new FFT Search just blew me away, if only it had been available 15 or 20 years ago! For an extensive review of the SR2000 see last month's *SWM*. I'd like to express my thanks to Richard Hillier at AOR UK for the chance to become so well acquainted with the SR2000 - life changing! **SWM**





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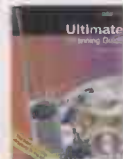
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G313i Software

Back in December 2004 when Jack Weber reviewed the WinRADIO 313i for SWM he raised a few 'issues' with the way in which the user interface operated - here he checks out the latest release of the WR-G313i software.

One of the big advantages of any computer-based radio is that significant upgrades can be made available quickly and easily via the Internet. The benefits of this approach have been clearly visible in the WinRADIO G313i. When I originally reviewed it in the December 2004 issue of SWM I was very impressed by the receiver's performance, but noted various examples of odd behaviour and a few straightforward bugs in the software. Sure enough, a software upgrade appeared a couple of months later addressing several of the more serious problems and

omissions. In particular, it sorted out the i.f. shift function so that it could be offset relative to the tuned frequency in order to improve the readability of s.s.b. signals. Since then additional tweaks have been made and the latest release (version 1.57) carries on the good work with some very welcome improvements and new features to extend the receiver's uses.

Obvious Improvements

One of the most obvious improvements is that the receiver's four v.f.o.s now retain their mode and bandwidth settings whereas previously they stored just the frequency. This makes it much easier to use the v.f.o.s if you want to keep an eye on several stations and switch frequently between them. If this involves switching between different kinds of band, you could set up the Autostep function to suit the bandplan in each one and that way you could use the v.f.o.s to switch with a single click between, say, u.s.b. with 3kHz channels for an h.f. maritime band and c.w. with no fixed spacing for an amateur band.

Notch Filter

The notch filter has always been one of the G313's strong

Fig.1: The bandscope now shows the plot before (dark red) and after (white) the i.f. notch filter.



Update

points. It's very effective and can easily be moved about just by dragging it with the mouse onto the offending carrier. However, it wasn't always easy to tell when the centre of the notch was exactly on the carrier because, of course, the signal was severely attenuated within the stopband. This has now been changed by giving the bandscope a second trace in dark red, which

reveals the original pre-filter signal, allowing you to see exactly where the notch should be placed (Fig. 1). This is a simple and beautifully effective improvement.

Also changed is the way that the notch operates when you're making i.f. recordings. In general, an i.f. recording should capture a chunk of spectrum without any processing applied so that you can then re-receive any signal within it using whatever mode, filter and other settings are appropriate. In its original form, the G313 didn't quite do this because the notch filter was always captured if it was active during recording. This has now been put right so that the i.f. recording is taken prior to any filters. When you play it back, you can of course apply the notch or any other processing as required.

Core Aspect

While i.f. filtering is always recognised as a core aspect of receiver performance, audio facilities often get neglected. This is one area where software-based radios have great potential because DSP can achieve much more than comparably priced analogue circuitry. Also, the screen-based interface is ideal for displaying and controlling audio facilities. So I'm pleased that the new G313 software provides audio low-pass and band-pass filters, as well as a de-emphasis option that cuts back the response at higher frequencies (Fig. 2). All these can be adjusted graphically or by the familiar edit boxes, arrows and sliders that are used everywhere else in the G313. Low-pass and band-pass filters have always been available within the WinRADIO



Advanced Digital Suite, but that's an additional expense so it's very good to now have them integrated into the main receiver.

One frustrating aspect of the original software was that, even though you could define an unlimited number of frequency ranges for scanning, you couldn't select which of them to use. The receiver had to scan all or none, which was pretty unhelpful. Now you can select individual or multiple ranges from the list, which makes this scanning mode really useful at last.

Special Software

There are some other developments, such as the ability to work with special software for controlling multiple receivers in monitoring banks. That's obviously of interest only to professional (or very wealthy) users. However, one feature of the multi-channel system that's worth mentioning is that audio recordings made by the receivers can have date, time, frequency and other metadata embedded. I really hope that this ability will migrate to the single-receiver software as it would be extremely useful to see all that information when you play back a recording.

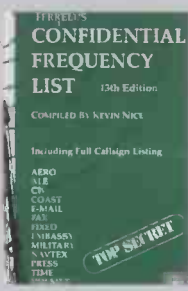
If you have a G313 and haven't upgraded the software, I'd strongly recommend doing so right now. The cumulative effect of all the changes that have been made since the receiver first appeared is significant and well worth having. Best of all, the upgrades are free and are easy to download and install from WinRADIO's website at www.winradio.co.uk

Fig. 2: The new audio filter appears in the Demodulator Set-up window. The red line shows the ideal filter pass-band, the blue line is the filter's actual response.

SWM

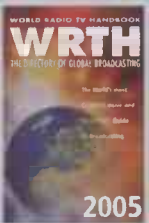
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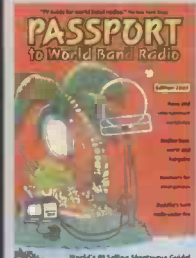


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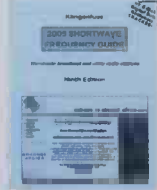
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Airband

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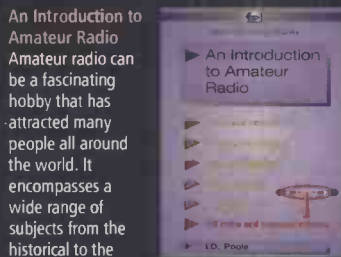
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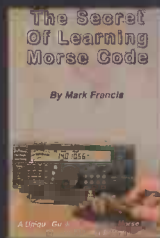


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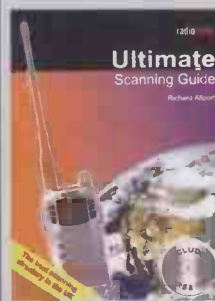
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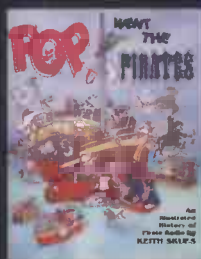
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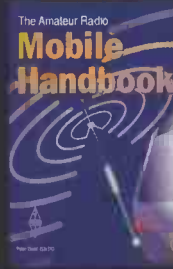
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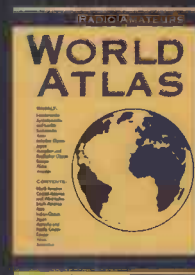
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There's been an impressive number of extended logs for May - thanks very much! A double helping from **Simon Hockenull** this month. One from his usual Bristol haunt and another from just outside St. Austell in Cornwall, where the Hockenull entourage spent a week's holiday.

Despite being in the middle of nowhere, Simon noted that the noise levels on medium wave were surprisingly high - is there no escape?! To compound the problem, the ground conductivity in the area is quite poor, limiting the number of stations heard during the day.

Interestingly, Simon observed a weak blank carrier on 279kHz and wonders if this may have been tests from the Isle of Man, or from Luxembourg. Both are highly unlikely, and I've seen no other reports of new activity on this channel but get in touch if you know otherwise.

Simon has logged Big L Radio London beaming out of Trintlehaven in Holland. Signals are weak during the day and completely obliterated by Radio Tirana in the evenings. However, following Tirana's close down, Big L comes in quite well; a report echoed by **Bernard Curtis** in Stalbridge. It reminded Bernard of his pre-war reception of Radio Normandy from northern France, who produced English-language programmes for eleven hours a day.

A final word from Simon, who hopes our honorary member, Sheila Hughes, is on the way to recovery. He wants to pass on best wishes from all of us in the DX community here at 'LM&S'.

David Moray hails from Aberdeen and kindly put pen to paper in order to send in what I hope is the first of many reports.

David has recently returned to these shores and is getting back into the swing of radio listening from the frozen north, using his Sony ST J250L and associated 'WaveCatcher' (cheesy, eh?) antenna.

From what David hints in his letter, his previous receiver (a Grundig Yachtboy) somehow fell victim to a passing camel - in the Sahara, not Aberdeen - and is no more. Don't fail to miss next month's exciting instalment. Thanks, David. Keep in touch.

Quick Work

Hello too, to Dave Reynolds. Dave submits his first set of logs to 'LM&S'; quick work, as Dave only just started listening earlier in the year. A scanner for Christmas awakened Dave's interest in radio, and the subsequent purchase of a Realistic DX-394 receiver has enabled him to join in the fun on the broadcast bands from his home in Southampton. Dave is getting to grips with the various aspects of the hobby, and what with his new-found membership of the World DX Club, not to mention his monthly intake of SWM and Radio Active he no doubt building up his knowledge.

At the time of his writing, Dave had yet to net any tropical band stations. These stations are primarily domestic broadcasts, intended for reception in the country of origin. With their low power transmitters and antennas designed for nearby reception, monitoring them can be somewhat of a challenge.

Use the tropical band listings in SWM as a springboard. You'll only monitor broadcasts during hours of darkness or for longer in the depths of winter.

Many of the transmitters used on the tropical bands are in dire need of maintenance but this in itself can act as an aid to identification. Stations are sometimes off frequency for years, or maybe contain peculiarities in the audio which are an instant giveaway to the trained ear.

To answer your question, Dave; yes, an outside antenna would definitely improve your chances of hearing these, and the amateur radio transmissions you mentioned.

As for the DX Listening Digest; this is an on-line news service compiled and published roughly every other day by one Mr. Glenn Hauser - www.worldofradio.com for more. Glenn also produces the *World of Radio DX* programme, which goes out over a number of short wave outlets as well as on the Internet.

Finally, Dave E-mailed the Voice of Russia Radio with a reception report and they've promised to send a QSL card in reply. Say goodbye to your wife and children now, Dave. Sounds like you're well and truly hooked! Welcome aboard.

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Tropical Band Table

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3.185	0229	WWRB, Manchester TN	USA	D
3.210	0400	WWCR, Nashville	USA	A, D
3.255	2120	BBC World Service	G/AFS	A, H
3.345	2135	Chanel Africa	AFS	A, H
3.350	0410	R. Exterior Espana	E/CTR	A
3.910	2220	Reflections Europe	IRL	D, E, F
3.915	2125	BBC World Service	G/SNG	A, B, D, E, G
3.940	0137	R. Free London		F
3.955	1815	WYFR	USA/G	C, D
3.955	2015	KBS World	KOR/G	A, B, D, E
3.965	1800	R. Taiwan	TWN/F	C, D, E, F
3.975	2130	R. Budapest	HNG	A, D, E, F, H
3.985	1932	V of Islamic Rep of Iran	IRN	H
4.005	2130	Vatican Radio	CVA	A, B, D, E
4.025	2145	Laser Hot Hits		E, F
4.635	2217	R. Tajikistan	TJK	E
4.780	1925	RTD, Djibouti	DJI	G
4.783	2352	RTM Bamoko	MLI	D
4.785	2143	R. Brasil, Campinas	B	G
4.800	2119	CPBS 2 Beijing	CHN	E
4.800	2130	CNR1 Shijiazhuang	CHN	D
4.810	1839	Voice of Armenia	ARM	F, G
4.820	2129	Xizang Lhasa	CHN	D, E
4.825	0115	R. Cancao Nova	B	D
4.830	2119	All India Radio, Jammu	IND	E
4.845	2130	ORTM Nouakchott	MTN	A, E
4.880	2120	All India Radio, Lucknow	IND	E
4.885	2320	R. Clube do Para, Belem	B	D, F
4.905	2125	Xizang Lhasa	CHN	A, D, E
4.910	0345	ZNBC Radio 1	ZMB	A, D, E, G
4.915	0110	R. Difusora Macapa, Amapa	B	D, F
4.915	0335	R. Anhanguera	B	E
4.915	2221	GBC 1 Accra	GHA	E, G
4.920	2140	Xizang Lhasa	CHN	A, D, E
4.930	0340	Voice of America	USA/STP	A, D, E
4.930	2146	Turkmen Radio	TKM	F
4.940	2055	Voice of America	USA/STP	D
4.945	2320	R. Difusora Pocos de Caldas	B	G
4.960	0402	Voice of America	USA/STP	D
4.962	2320	Christian Voice	ZMB	F
4.976	0330	R. Uganda Red Cr., Kampala	UGA	A, D, G
4.985	2220	R. Brasil Central	B	G
5.005	2036	R. Nacional De Guinea Ecuatorial	GNE	D, G
5.015	2135	R. Pioneira, Teresina	B	G
5.015	2227	Turkmen Radio	TKM	E
5.025	0525	R. Rebelde	CUB	A, D, E, F, I
5.025	2042	R. Tashkent	UZB	D, E, F
5.025	2228	R. Benin	BEN	G
5.030	0216	University Network	USA/CTR	D, E, F
5.030	2230	R. Burkina	BFA	D, G
5.050	0221	WWRB, Manchester TN	USA	D
5.060	2309	Xizang Urumqi	CHN	D
5.070	0223	WWCR, Nashville	USA	D, E, F
5.085	0339	WWRB, Manchester TN	USA	D, E
5.240	2125	Xizang Lhasa	CHN	D, E

Long Wave Table

kHz	Service	TX Location	Country	Power (kW)	Listener
153	Deutschlandfunk	Donebach	D	500/250	A, B, C, E, F, G, H
162	France Inter	Allouis	F	2000/1000	A, B, C, E, F, H
171	Medi 1	Nador	MAR	2000	G*
171	Radio Rossi	Bolsakovo	RUS	600	C, E, G
177	Deutschlandradio Berlin	Zehlendorf	D	500	B, C, E, F, G
183	Europe 1	Saarlouis	D	2000	A, B, C, D, E, F, H
198	BBC Radio 4	Droitwich	G	500	B, C, D, E, F, H
207	Deutschlandfunk	Aholming	D	500	A, B, C, E, F, G, H*
207	RTM A	Azizal	MRC	400	E*, H*
216	Radio Monte Carlo	Roumoules	F	1400	A, B, C, E, F, G, H
225	Polish Radio 1	Solec Kujawski	POL	1000	B, E, F, G
234	RTL	Beidweiler	LUX	2000	A, B, C, D, E, F, H
243	Denmark Radio 1	Kalundborg	DNK	300	B, C, E, F, G, H
252	RTE Radio 1	Clarksdown	IRL	500/150	A, B, C, D, E, F, G, H
252	Algiers Radio 3	Tipaza	ALG	1500/750	H*
261	Radio Rossi	Taldom	RUS	2500	E*, G*
270	Czech Radio 1	Uherske Hradiste	CZE	650	B, C, E, F, G
279	Belarussian Radio 1	Sasnovy	BLR	500	B, G*

* = dark

- Listeners:-
 A Thomas Williams, Truro
 B Eddie McKeown, Newry

- C Phil Townsend, London
 D Mike Casey, Manchester
 E Dave Peters, Cheltenham

- F David Bullock
 G Simon Hockenull, Bristol
 H Simon Hockenull, Poigooth

It's welcome (back) to **Tim Allison** near Middlesbrough; returned after a break. Tim makes good use of the BDXC's *Times & Frequencies of English Language Broadcasts*, which he describes as an excellent guide. He laments the demise of traditional short wave broadcasting, with many an 'old friend' fallen by the wayside in recent times.

Our final new contributor is **L Jesson**, who writes from "36km due west of Aberdeen". Although an Icom R-75 was used when compiling the logs, Mr Jesson owns an array of equipment, including a Yaesu FRG-7 and FT-817, a DX160, a Fairhaven and a PRO-2042, amongst others. Thanks for the logs, perfectly set out. Keep 'em coming.

Mike Casey in Manchester recently upgraded from his Roberts portable to an Icom IC-703 amateur radio transmitter and a multi-band crossed dipole. He says he's "stunned by the improvement in reception" and hopes his future logs will be positively bulging, despite the deplorable conditions on short wave of late. Mike has an Amateur Radio licence but remains addicted to the listening aspect of the hobby.

Harry Richards forwarded a couple of newspaper clippings including graphic photographs portraying the execution of political protesters in China. Harry's point? Should the World Radio Network, RTL in Luxembourg and London's Spectrum Radio be allowing China Radio International to broadcast over their airwaves?

Quite apart from the reported repression, it is well-known that the Chinese censor selected media coming into their country, be it over the radio or on the Internet. Of course, attempting to bar CRI carriage over UK outlets is a form of censorship in itself. As free-thinking westerners, at least we have the luxury of tuning into some alternative or the option of switching off.

SW Radio Africa, recently threatened with closure due to financial constraints, lives to see another day. The station, which broadcasts into Zimbabwe, recently announced that they had been 'saved'.

Station manager Gerry Jackson offered a brief statement in which he confirmed that SW Radio Africa would continue to broadcast on 1197kHz from 0500 to 0700 (local time) every morning. He went on to voice his regret that

due to the "relentless jamming of our short wave signal by the [Zimbabwe] government, we are unable to provide this service at the moment".

It is not clear where the eleventh-hour rescue package had come from, but it appears that the station is secure for another year.

Finally, an unsigned E-mail reminds us that RAF Lyneham has its own low power a.m. radio station broadcasting on 1449kHz. Service area is said to be around 10km radius but no doubt the signal carries much further, co-channel interference permitting. That's it for now. Thanks for all your contributions. Keep up the good work - your submissions by the 10th of the month, please.

Continued on page 51

Medium Wave Table

kHz	Service	Location	Country	kW	Listener
531	Utvarp Foroya	Akraberg	FRO	200/100	A* E*
531	RNE 5	Many	E	10-25	B* J*
531	Swiss Radio (German)	Beromunster	SUI	600	B* E* F* J*
540	Kossuth	Solt	HNG	2000/1000	B*
540	Radio Twee	Wavre	BEL	150	A* C E* F* J
549	Radio Lebanon?	Telzoub	LBN	100	E*
549	Deutschlandfunk (DLF)	Nordkirchen/Thumau	D	100	C J
549	UCB Europe	Dundalk	IRL	70	A* B* E* J
558	RNE 5	Many	E	5-50	E* J*
558	YLE Radio	Helsinki	FIN	50	B*
567	RTE 1	Tullamore	IRL	500	A* B* C E* F* J
576	Sudwestrundfunk (SWR)	Mulacker	D	100	B* F* J*
576	RNE 5	Barcelona	E	100	F* J*
585	RNE 1	Madrid	E	600	E* J*
585	FIP	Paris	F	8	B* C J
585	BBC Radio Scotland	Dumfries	G	2	B
594	HR Skyline	Frankfurt	D	250	B* E* F* J*
594	RTM A	Dujda	MRC	100	J*
603	France Info	Lyon	F	300	A* B* E* F* J
603	BBC Radio 4	Newcastle upon Tyne	G	2	B
612	RTM A	Sebas-Aiou	MRC	300	E* J*
612	RNE 1	Vitoria	E	10	B* E* J*
621	RTBF 1	Wavre	BEL	300	A* B* C E* F* J
621	RNE 1	Many	E	10	J*
630	Tunis Radio	Djedaida	TUN	500	B* J*
630	NRK Europakanalen	Vigra	NOR	100	B*
639	RNE 1	Many	E	10-300	B* E* F* J*
639	Czech Radio 2	Prague	TCH	1500	B* G* J*
648	BBC World Service	Orfordness	G	500	B* C E* F* J
648	RNE 1	Badajoz	E	10	B*
657	RNE 5	Madrid	E	50	E*
657	BBC Radio Wales	Wrexham	G	2	B C E F J
666	Sudwestrundfunk (SWR)	Rohrdorf	D	150	B* E* J*
675	Arrow Classic Rock	Lopik	HOL	120	A* B* C E* F* G* J
684	RNE 1	Seville	E	600	B* E* F* J*
693	BBC Radio 5 Live	Many	G	1-150	C E F G* K
702	NDR 4	Flensburg	D	5	B* J*
711	Radio Bleu/France Info	Rennes	F	300	B* C E* F* G* J K
720	BBC Radio 4	Lisnagarvey	G	10	C
720	BBC Radio 4	London	G	0.75	J*
729	RNE 1	Many	E	10-100	B* E* F*
729	RTE Radio 1	Cork	IRL	10	B* E* J K
738	RNE 1	Barcelona	E	500	B* F* G* J*
738	Radio France International	Paris	F	5	A* F*
747	Radio 747	Flevoland	HOL	400	A* B* C E* G* J K
756	Deutschlandfunk (DLF)	Many	D	100-200	A* B* E* F* G* J*
756	BBC Radio 4	Reduth	G	2	J* K
761	Option Musique	Sotters	SUI	600	A* B* E* F* G* J* K*
774	RNE 1	Many	E	20-100	A* B* F*
774	BBC Radio 4	Plymouth	G	1	K
783	MDR Info	Leipzig	D	100	A* B* F* J*
783	Radio Miramar	Barcelona	E	50	B*
792	France Info	Limoges	F	300	B* E* F* G* J* K
801	RNE 1	Many	E	10-20	J*
801	Bavaria	Munich	D	100	B* E* J*
810	BBC Radio Scotland	Westerglen	G	100	A* B* E* F* G* J* K*
810	Radio Madrid	Madrid	E	50	E*
819	Sud Radio	Toulouse	F	20	B*
819	RAI Uno	Trieste	I	20	J*
819	Radio Euskadi	San Sebastian	E	10	J*
828	NDR	Hanover	D	20/5	B* J*
837	France Info	Nancy	F	200	A* B* E* F* G* K*
846	RAI Due	Rome	I	60	B*
855	RNE 1	Murcia	E	300	A* B* F* G*
864	La City Radio	Paris	F	300	B* C E* F* G* J* K
873	SER	Many	E	10-25	F* G*
873	American Forces Network	Frankfurt	D	150	B* E* G* J
873	BBC Radio Ulster	Enniskillen	G	1	B F
882	BBC Radio Wales	Washford	G	100	A* B* C F* G* K
891	RTA 1	Algiers	ALG	600/300	G*
891	Radio 538	Hulsberg	HOL	20	B* E* G* J*
900	RAI Uno	Milan	I	600	A* B* E* G*
909	BBC Radio 5 Live	Many	G	0.25-200	E F G* K
918	Radio Slovenia	Domzale	SVN	600/100	B* E* F* G* J* K*
927	Radio Een/927 Live	Wolvertem	BEL	300	C E*
936	Bremen 1	Bremen	D	50/10	B* G*
936	RNE 5	Many	E	10-20	K*
945	France Blue	Toulouse	F	300	A* B* E* F* G* J* K*
954	Czech Radio 2	Brno	CZE	200	B*
954	Onda Cera Radio	Madrid	E	20	F* G* J* K*
962	YLE Radio	Pori	FIN	600	B* F*
973	Nord Deutscher Rundfunk (NDR)	Hamburg	D	100A* B* G* J*	
981	RTA 2	Algiers	ALG	600/300	E* J*
990	Deutschlandfunk (DLF)	Berlin	D	100	B* E* F* J* K*
990	BBC Scotland/Nan Gaidheal	Aberdeen	G	1	G*
999	COPE	Madrid	E	50	B* E* F* J*
1008	Radio 10 Gold	Flevoland	HOL	400	A* B* E* F* G* J* K*
1017	Sudwestrundfunk (SWR)	Wolfsheim	D	100	A* B* E* F* J* K*
1017	RNE 5	Many	E	10	J
1026	SER	Many	E	5-10	F*
1035	Radio Nacional	Porto Alto	POR	100	B* F* J*

kHz	Service	Location	Country	kW	Listener
1044	MDR Info	Dresden	D	20	B* E* J*
1044	Radio San Sebastian	San Sebastian	E	10	B* F* J* K*
1053	Talksport	Droitwich	G	500	A* B* E* F* G* K
1062	Denmark Radio P3	Kalunborg	DNK	250	B* E* F* G* J* K*
1071	Euskadi Irratia	Bilbao	E	50	E* G* J*
1071	Talksport	Clipstone	G	1	B* E F
1080	SER	Many	E	5-10	B* F* J*
1080	Onda Cera Radio	Toledo	E	10	J*
1089	Talksport	Brookmans Park	G	400	A* B* E* F* G* K
1098	RNE5	Almaria	E	10-25	F* J*
1098	Radio Slovenko	Nitra	SVK	50	B*
1107	American Forces Network	Bavaria	USA/D	10	A* B* E* F*
1107	Talksport	Many	G	2	B E F*
1116	Radio Pontevedra	Pontevedra	E	5	B* F* G*
1125	RNE 5	Many	E	5-10	G*
1125	Croatian Radio HR1	Deanovac	HRV	100	J* K*
1125	Traffic Radio	Houdeng	BEL	10	B* C E* F* J*
1125	BBC Radio Wales	Llandrindod Wells	G	1	J
1134	Croatian Radio HR1	Zadar	HRV	600	A* B* E* F* G* J* K*
1143	American Forces Network	USA/D	0.3-10	B* E* G*	
1143	COPE	Many	E	2-5	F*
1152	RNE 5	Many	E	10-20	F*
1170	Radio Slovenia	Beli Kriz	SVN	300	G*
1179	Swedish Radio	Solvestborg	S	600/300	B* E* F* G* H* J* K*
1179	Radio Nederland	Solvestborg	HOL/S	600/300	H* J*
1179	Radio Canada International	Solvestborg	CAN/S	600/300	J*
1188	VOA/RFE	Marcali	USA/HNG	500	G*
1188	Radio Twee	Kuurne	BEL	5	B* C E* F* K*
1197	Virgin Radio	Many	G	0.2-2	B E F G* K
1206	France Info	Bordeaux	F	300	B* E* F* G* J* K*
1215	Virgin Radio	Many	E	0.32-200	A* B* E* F* G* K
1224	Radio Popular	San Sebastian	E	10	B* E* F* J*
1233	Virgin Radio	Many	G	0.1-0.5	B* E F
1233	Radio Monte Carlo	Cyprus	F/CYP	J*	
1242	Virgin Radio	Many	G	0.5-2	B* E F* G*
1242	France Info	Marseille	F	150	B* J*
1251	Radio 747	Hulsberg	HOL	10	B* E* F* J*
1260	Virgin Radio	Lydd	G	1	C
1260	SER	Many	E	5	B*
1269	RNE 1	Many	E	5-10	J*
1259	Deutschlandfunk (DLF)	Neumunster	D	300	B* E* F* G* J* K*
1278	France Bleu	Strasbourg	F	300	A* K*
1278	RTE Radio 2	Dublin/Cork	IRL	10	B*
1287	RNE 1	Many	E	5-10	B* E*
1287	Radio Lieida	Lieida	E	10	F*
1305	RNE 5	Many	E	10-25	A* B* F*
1314	NRK Europakanalen	Kvitsoy	NOR	1200	B* E* F* G* J* K*
1314	RNE 5	Many	E	5-10	J*
1323	Voice of Russia	Wachenbrunn	RUS/D	900/150	B* E*
1323	Radio Santez	Wachenbrunn	D	900/150	F*
1332	RAI Uno	Rome	I	300	B*
1341	BBC Radio Ulster	Lisnagarvey	G	100	F* G* J* K*
1350	Nancy	Nancy	LBN/F	300	B* E* F* J* K*
1359	RNE 3	Madrid	E	600	F* K
1368	Manx Radio	Douglas, IOM	F	20	B* E* F* G* J* K*
1377	France Info	Lille	F	300	B* C E* F* G* J* K*
1386	China Radio Int'l	Sitkuna	CHN/TU	750	E*
1395	Radio Tirana	Flake	ALB	500	J*
1395	Big L Radio London	Trintelhaven	HOL	120	B* D* J* K*
1395	Radio Rossi	Buguruslan	RUS	5	F*
1404	France Info	Brest	E	20	A* B* E* F* J* K
1413	RNE 5	Many	E	5-10	B* E*
1422	Deutschlandfunk (DLF)	Heusweiler	D	1200/600	B* E* F* G* J* K*
1440	China Radio International	Mamach	CHN/LUX	1200/300	A* B* E* H* J* K*
1440	RTL	Mamach	LUX	1200/300	F*
1449	RAI Due	Squinzano	I	90	K*
1449	Libyan Radio	Misurata	LYB	20	B*
1449	BBC Radio 4	Redmoss	G	2	B* F
1467	Trans World Radio	Romoules	MCO/F	1000	B* J
1476	Radio 1476	Vienna	AUT	60	A* B* J* K*
1485	SER	Many	E	2-5	F*
1494	Voice of Russia	Krasnyy Bor	RUS	600	B* J*
1494	France Info	Clermont-Ferrand	F	20	B* J*
1503	Radio Saraysre	Bushehr	IRN	500	B*
1512	Radio Vlaanderen/Radio Een	Wolvertem	BEL	300/25	A* B* E*
1512	Radio Nederland	Jeddah	BEL/IOL	300/25	F* J*
1512	BSKA	Wolvertem	ARS	1000	J*
1521	Saudi Radio	Duba	ARS	2000	K*
1539	Evangeliums Rundfunk	Mainflingen	D	700/120	B* E* J
1557	France Info	Nice	F	300	E* F* J* K*
1575	RAI Uno	Genova	I	50	B*
1575	SER	Many	E	5	F* J*
1575	Radio Nouveaux Talents	Paris	F	5	J*
1593	Voice of America	Kuwait	USA/KWI	150	B*
1602	Radio Vitoria	Vitoria	E	25	B* F* J*
1611	Vatican Radio	Vatican City	CVA	100	G* J

* = dark

Listeners:	F	David Bullock
A	L Jeesson	G David Moray, Aberdeen
B	Eddie McKeown, Newry	H Tim Allison
C	Phil Townsend, London	I Dave Reynolds, Southampton
D	Mike Casey, Manchester	J Simon Hockenhill, Bristol
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Connector to Rx	PL type delivered as standard. Other standards can be fitted on request
Gain	10dB +/-0.2dBs
Intercept Point	+50dBm IP 3rd order (10MHz/12V)
DC power supply	11.5-13 volt DC at 80mA typ. (230V/12V DC stabilised mains adaptor is supplied with the antenna)
Mast diameter	30-50mm can be fitted
Dimensions	115cm total length. Antenna tube 50mm x 160mm



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TECHNICAL PERFORMANCE

Frequency range	50-2100MHz
Output impedance	50-75 ohms coaxial
Gain	10dB -1000MHz 2-3dB -1500MHz 6dB -2100MHz
Noise figure	1.5-2dB -1000MHz 1.8-2.5dB -1500MHz 2.5-4dB -2000MHz +38dBm typical
3rd order IP	10dB = +22dBm
Output impedance	50-75 ohms coaxial
Connector standards	N type connector at the antenna. BNC male connector to the receiver
Power supply	12V DC at 160mA DC. Power supply for 230V AC is delivered comes with the antenna
Dimensions	Length 450mm. Diameter 90mm
Weight	2kg
Accessories	Mains wall plug adaptor (230V A/12V DC). Interface unit (remote supply unit) 12m coaxial cable and mast mounting clamps



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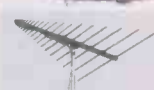
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Local Radio Table

kHz	Service	Svc area/TX site	kW	SWL
558	Spectrum	Crystal Palace	1	B C D F
603	Capital Gold	Littlebourne	0.1	B C D F* G*
630	BBC Radio Cornwall	Redruth	2	F* G
630	BBC 3CR	Luton	0.2	B C D E F
657	BBC Radio Cornwall	Bodmin	2	F* G
666	BBC Radio York	York	0.5	E*
666	Classic Gold	Exeter	0.34	D F G
729	BBC Essex	Manningtree	0.2	B C
738	BBC Hereford & Worcester	Worcester	0.037	B C D F
756	Magic Maldwyn	Newtown	0.63	B F
765	BBC Essex	Chelmsford	0.5	B C F
774	BBC Radio Kent	Littlebourne	0.7	C
774	Classic Gold	Gloucester	0.14	B D
792	Classic Gold	Bedford	0.275	B C
801	BBC Radio Devon	Barnstaple	2	B D F G
828	Classic Gold	Bournemouth	0.27	F
828	BBC Asian Network	Wolverhampton	0.2	D E* F
828	Classic Gold	Luton	0.2	B C F
837	BBC Asian Network	Leicester	0.5	B C D E F
855	BBC Radio Norfolk	Norwich	1.5	C
855	BBC Radio Devon	Plymouth	1	F G
855	Sunshine 855	Ludlow	0.15	B D F
873	BBC Radio Norfolk	West Lynn	0.3	B C
936	Classic Gold	West Wiltshire	0.18	B D
945	Capital Gold	Bexhill	0.7	C F
945	Classic Gold	Derby	0.2	B D E
954	Classic Gold	Torbay	0.4	F G
954	Classic Hits	Hereford	0.16	B D F
963	Asian Club	Hackney	0.95	B C F
972	Asian Club	Southall	1	B C D F
990	BBC Radio Devon	Exeter	1	F G
990	Classic Gold	Wolverhampton	0.09	B D F
999	BBC Radio Solent	Fareham	1	C F
999	Valleys Radio	Ebbw Vale	0.3	F
999	Classic Gold GEM	Nottingham	0.25	B E*
1017	Classic Gold	Shropshire	0.63	B C F
1026	BBC Radio Jersey	Trinity	1	F
1026	BBC Radio Cambridgeshire	Cambridge	0.5	B C E* F
1035	Kismet Radio	Crystal Palace	1	B C F
1116	Valleys Radio	Ebbw Vale	1	D F
1116	BBC Radio Derby	Derby	1	B D
1116	BBC Radio Guernsey	Rohais	0.5	C
1134	Cool AM	London	23.5	B E
1152	LBC	London	3	B D F
1152	Capital Gold	Birmingham	3	B D F
1152	Classic Gold	Plymouth	0.32	G
1161	Classic Gold	Swindon	0.16	D
1161	BBC 3CR	Bedford	0.1	B C E*
1170	Swansea Sound	Swansea	0.58	F
1170	Classic Gold Amber	Ipswich	0.28	C
1170	Signal's Big AM	Stoke on Trent	0.2	B D

kHz	Service	Svc area/TX site	kW	SWL	
1242	Capital Gold	Maidstone	0.32	C F*	
1251	Classic Gold Amber	Bury St. Edmunds	0.76	C F*	
1260	Classic Gold	Bristol	1.6	D G*	
1260	Sabras Sound	Leicester	0.29	B F	
1278	Classic Gold	Bradford	0.43	F*	
1278	Palace Radio	South London	0.001	C	
1296	Radio XL	Birmingham	10	B D E F	
1305	Premier	London	0.5	B	
1305	Capital Gold	Newport	0.2	D	
1323	Capital Gold	Brighton	0.5	C D F* G*	
1332	Premier	London	1	G*	
1332	Classic Gold	Peterborough	0.6	B E	
1332	BBC Radio Wiltshire	Lacock	0.28	D G*	
1359	Classic Gold Breeze	Chelmsford	0.28	C	
1359	Classic Gold	Coventry	0.27	B	
1359	Capital Gold	S. Wales	0.2	D	
1368	BBC Radio Lincolnshire	Lincoln	2	B	
1368	BBC Southern Counties Radio	Duxhurst	0.5	C G	
1368	BBC Radio Wiltshire	Swindon	0.1	D G*	
1413	BBC Radio Gloucester	Bourton/Berkeley Heath	0.5	B D G*	
1431	Classic Gold Breeze	Southend on Sea	0.35	F*	
1431	Classic Gold	Reading	0.14	B C F	
1449	BBC Asian Network	Peterborough	0.15	B G*	
1458	Sunrise	London	125	B C F	
1458	BBC Asian Network	Birmingham	5	B D F	
1458	BBC Radio Devon	Torbay	2	F G	
1458	BBC Newcastle	Newcastle	2	A*	
1485	BBC Southern Counties Radio	Brighton	1	C	
1485	Classic Gold	Newbury	1	B D F	
1503	Sound Radio	Hackney	?	C	
1503	BBC Radio Stoke	Staffordshire	1	A* B E F G*	
1503	Forest of Dean Community Radio	Coleford	0.1	D	
1521	Classic Gold	Reigate	0.64	C F*	
1521	Forest of Dean Community Radio	Coleford	0.1	D F	
1530	Classic Gold	Worcester	0.52	B D F* F	
1530	BBC Radio Essex	Southend	0.15	C	
1548	Capital Gold	London	97.5	D	
1548	BBC Radio Bristol	Bristol	5	D G*	
1548	Forth AM	Edinburgh	2.2	A*	
1557	Classic Gold	Northampton	0.76	B D	
1566	County Sound	Guildford	0.8	C D* F* G*	
1566	BBC Somerset Sound	Taunton	0.6	A* D F G	
1575	Stoke Mandeville Hospital RSL	Aylesbury	1	0.001	B
1584	BBC Radio Nottingham	Nottingham	1	E	
1584	BBC Hereford & Worcester	Woolferton	1.3	F	
1584	Tay AM	Perth	0.21	F	
1584	London Turkish Radio	London	0.2	C F*	
1602	BBC Radio Kent	Rustall	0.25	C D* F	
1602	Desi Radio	Southall	0.07	B C D* F	

* = dark

Listeners-	D	E	F	G
A	L Jeeson	Dave Peters, Cheltenham		
B	Fred Wilmschurst, Northampton	David Bullock		
C	Phil Townsend, London	Simon Hockenhill, Bristol		
		Simon Hockenhill, Poigouh		

Short Wave Table

MHz	UTC	Service	Country	Lang	SINPO	SWL	MHz	UTC	Service	Country	Lang	SINPO	SWL
8.820	0317	R. Havana Cuba	CUB	Eng	MC		9.890	1802	Voice of Russia	RUS	Eng	42332	TA
8.825	0044	Deutsche Welle	D	Eng	42322	TA	9.895	1832	R. Nederland	HOL	Eng	45243	EM
8.845	0103	R. Nederland	HOL	Eng	44433	TA	9.950	1845	All India Radio	IND	Eng	54434	VP
9.870	0043	ORF Radio Austria	AUT	Eng	43443	TA	11.510	1856	Voice of Russia	RUS	Eng	35433	SH
10.330	0020	All India Radio	IND	Hin	MC		11.570	1815	R. Pakistan	PAK	Eng	42732	VP
11.625	0524	Vatican Radio	VAT	Eng	55455	DB	11.620	1845	All India Radio	IND	Eng	43333	VP
11.675	0275	R. Kuwait	KWT	Ar	34333	DB	11.630	1825	Voice of Russia	RUS	Eng	43333	BC
11.690	0030	R. Vilnius	LTU	Eng	34333	TA	11.655	1806	R. Nederland	HOL	Eng	43342	TA
11.695	0119	R. Free Asia	USA/IAE	Tib	MC		11.675	1803	Voice of Russia	RUS	Eng	43433	TA
11.705	0104	Voice of America	USA	Eng	34333	TA	11.720	1816	R. Philippines	PHL	Eng	MC	
11.715	0132	All India Radio	IND	Nep	MC		11.830	1816	R. Romania International	ROU	Eng	43443	FM
11.755	0527	YLE Radio Finland	FIN	Fin	55555	DB	11.880	1800	R. Cairo	EGY	Eng	43443	EM
11.805	0529	Voice of America	USA	Eng	55444	DB	11.940	1851	China Radio International	CHN	Eng	44444	TA
11.825	0530	R. Exterior de Espana	E	Spa	44344	DB	11.945	1830	China Radio International	CHN	Eng	44344	PP
11.865	0100	Deutsche Welle	D	Ger	34322	TA	12.045	1854	BBC World Service	G/THA	Eng	22522	SH
11.875	0204	Voice of Justice	IRN	Eng	43433	TA	12.095	1825	BBC World Service	G	Eng	24212	FM
11.970	0533	R. Japan	JAP	Eng	55555	DB	12.105	1845	Voice of Greece	GRC	Eng	43233	PP
11.990	0025	R. Canada International	CAN	Eng	34322	TA	12.160	1833	WWCR	USA	Eng	34333	PP
12.080	0535	Trans World Radio	USA	Eng	34343	DB	13.605	1845	All India Radio	IND	Eng	44423	VP
13.645	0501	Voice of America	USA	Eng	44344	DB	13.730	1857	R. Canada International	CAN	Eng	34432	TA
13.710	0026	R. Canada International	CAN	Eng	24231	TA	13.760	1852	China Radio International	CHN	Eng	44444	TA
13.785	0502	Vatican Radio	VAT	Eng	55455	DB	13.830	1805	Croatian Radio	HRV	Eng	44433	TA
15.185	0509	R. Farda	IRN	Eng	54444	DB	15.120	1827	Voice of Nigeria	NG	Eng	MC	
15.245	0510	China Radio International	CHN	Eng	55444	DB	15.155	1807	All India Radio	IND	Eng	MC	
15.290	0511	R. Farda	IRN	Eng	54444	DB	15.190	1819	R. Philippines	PHL	Eng	MC	
15.385	0008	R. Exterior de Espana	E	Eng	33322	TA	15.255	1858	BBC World Service	G/ASC	Eng	34432	TA
15.410	0514	Deutsche Welle	D	Eng	34343	DB	15.400	1801	BBC World Service	G/ASC	Eng	45344	MC
15.565	0515	BBC World Service	G	Eng	55455	DB	15.410	1801	Voice of America	USA/ASC	Eng	55445	VP
17.520	0518	Voice of Greece	GRC	Eng	55455	DB	15.420	1848	R. Canada International	CAN/GRC	Eng	24432	SH
17.535	0515	Kol Israel	ISR	Heb	54455	DB	16.640	1845	WHRA	USA	Eng	44444	PP
17.680	0045	Voz Cristiana	CHI	Spa	25332	MC	17.670	1858	All India Radio	IND	Eng	25522	SH
17.720	0520	China Radio International	CHN	Ger	55444	DB	17.800	1859	BBC World Service	G	Eng	55233	PP
18.000-19.000							17.800	1826	BBC World Service	G	Eng	25112	EM
5.920	1953	R. Slovakia International	SVK	Eng	45534	SH	17.895	1800	Voice of America	USA/MRC	Eng	43233	VP
6.015	1828	Bible Voice	ENG	Eng	54253	EM	18.930	1802	R. Taiwan International	TWN/USA	Fre	35343	MC
6.055	1847	R. Slovakia International	SVK	Eng	34232	EM	18.930	1840	WYFR	USA	Fre	55334	BC
6.100	1846	Int'l R. of Serbia & Mont	SCG/BH	Eng	24222	EM	18.980	1839	WYFR	USA	Eng	43343	FM
6.115	1855	R. Tirana	ALB	Eng	43343	FM	21.455	1810	WYFR	USA	Ger	55434	BC
6.165	1806	Croatian Radio	HRV	Eng	43433	TA	21.470	1854	BBC World Service	G/ASC	Eng	15532	SH
6.165	1810	Voice of Croatia	HRV	Eng	44444	FM							
6.195	1830	BBC World Service	G	Eng	55455	VP	5.800	1915	R. Bulgaria	BUL	Ger	55555	SH
6.205	1857	V. of Islamic Rep of Iran	IRN	Ara	44334	FM	5.840	1940	R. Sweden	S	Swe	44434	VP
7.105	1808	R. Farda	USA/GRC	Fre	55534	VP	5.850	1950	R. Canada International	CAN/S	Fre	55555	RH
7.150	1815	China Radio International	CHN	Fre	43333	PP	5.885	1952	Vatican Radio	VAT	Fre	54445	DR
7.180	1802	China Radio International	CHN	Fre	55445	PP	5.920	1950	R. Slovakia International	SVK	Fre	55555	RH
7.210	1849	R. Tirana	ALB	Eng	34333	EM	5.930	1915	R. Prague	CZE	Spa	55534	VP
7.235	1823	R. Exterior de Espana	E	Spa	43333	PP	5.945	1945	ORF Radio Austria	AUT	Ger	54454	RH
7.280	1801	Voice of Vietnam	VN	Eng	41111	TA	5.955	1940	Deutsche Welle	D	Rus	55555	PH
7.360	1825	Vatican Radio	VAT	Eng	54545	PP	5.960	1955	RAI	I	Eng	44333	PP
7.410	1810	All India Radio	IND	Eng	54444	BC	5.970	1940	China Radio International	CHN	Fre	55555	RH
7.420	1845	R. Ukraine International	UKR	Eng	45334	VP	6.005	1935	Deutsche Welle	D	Ger	55555	PH
9.430	1840	BBC World Service	G/CYP	Eng	35434	SH	6.020	1935	China Radio International	CHN	Eng	54444	RH
9.420	1840	Voice of Greece	GRC	Gre	34333	PP	6.025	1925	R. Budapest	HNG	Eng	55555	RH
9.430	1829	Bible Voice	G/D	Eng	MC		6.040	1925	Voice of America	USA/GRC	Eng	43343	RH
9.450	1845	R. Rossi	RUS	Rus	53444	VP	6.045	1925	R. Taiwan International	TWN/G	Fre	43333	RH
9.475	1805	R. Australia	AUS	Eng	43333	BC	6.055	1920	R. Slovakia International	SVK	Sto?	54555	RH
9.475	1848	ORF Radio Austria	AUT	Eng	33332	TA	6.065	1954	R. Sweden	S	Eng	44444	PH
9.475	1852	R. Australia	AUS	Eng	32432	SH	6.075	1915	Deutsche Welle	D	Ger	55555	RH
9.480	1846	Voice of Russia	RUS	Eng	43433	SH	6.120	1915	YLE Radio Finland	FIN	Fin	43444	RH
9.510	1819	BBC World Service	G	Eng	43443	TA	6.165	1905	Croatian Radio	HRV	Cro?	54444	RH
9.530	1824	R. Canada International	CAN	Eng	45243	EM	6.185	1900	R. Taiwan International	TWN/G	Eng	41233	RH
9.530	1829	Bible Voice	G	Eng	24232	EM	6.190	1900	Deutsche Welle	D	Ger	42233	RH
9.635	1840	R. Romania International	ROU	Eng	45222	SH	6.210	1912	Laser Hot Hits	G	Eng	33333	FM
9.730	1802	Voice of Vietnam	VN	Eng	43322	TA	6.220	1915	Laser Hot Hits	G	Eng	33333	FM
9.775	1825	Voice of Armenia	ARM	Eng	54454	EM	6.295	1951	Reflections Europe	IR			

Infoⁱⁿ Orbit

● **Lawrence Harris** 55 Richville Road, Shirley, Southampton SO16 4GH
● **E-mail** info.orbit@pwpublishing.ltd.uk **Website** www.astronomer.plus.com

NOAA-18 - the first image

The National Oceanic and Atmospheric Administration (NOAA) activated image telemetry (h.r.p.t. and a.p.t.) on their new weather satellite at 1511 on 20 May during the satellite's north-bound pass over the ground station - see Fig. 1. It resulted in the first UK passes being in the early hours - and therefore mostly dark. The long northern twilight enabled some stations to get worthwhile images. Later that day we received full sunlight passes carrying the three 'visible-light' channels (1, 2 and 3). During the first few weeks of orbit, the absorbed gases and volatiles within the equipment were allowed to dissipate into space before the cooling equipment was switched on in early June to activate the infra-red scanner.



Fig 1: NOAA-18 First image from NOAA after activation - Courtesy NOAA.

receiver hardware and software to process the new telemetry format. At that time, it might also be feasible to revert to the scheduled frequencies, if considered essential.

Darrell kindly responded: "NOAA is well aware of the potential for European pager interference with NOAA APT direct broadcast service and I have presented those concerns to our management who have decided to continue with our tradition of using a higher frequency for our afternoon satellites to avoid conflict with our own systems and to be consistent with our agreement with EUMETSAT that we will use the higher frequency and they will use the lower one".

"However, NOAA is listening to its user community, who have driven changes to our operations in the past, (i.e. NOAA-12 a.p.t.



Fig 2: NOAA-18 a.p.t. 21 May 1305 from David Taylor.

NOAA-18 & UK Pagers

The new a.p.t. frequencies for NOAA-18 and subsequent satellites have been known in advance for a long time. We therefore anticipated that any areas of Britain that had pager problems would probably experience difficult reception conditions with NOAA-18. Thus it came to pass!

Once the reports of NOAA-18 a.p.t. reception started coming in, together with images of varying quality, I E-mailed **Darrell Robertson** of NOAA, to explain about UK amateur concerns and to ask whether NOAA might consider opting for the lower frequency now. My point was that in principle, such a change should not negatively affect any person or organisation. EUMETSAT plan to use the lower frequency for METOP-1, but reception of the METOP-1 signal is likely to be limited to professionals for a long time because few others will have the necessary

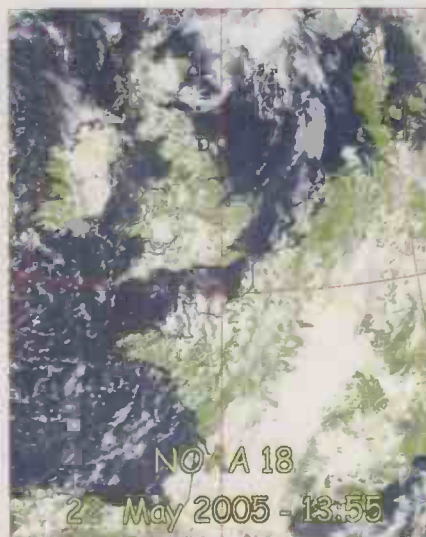


Fig 3: NOAA-18 a.p.t. 1355 22 May from George Newport.

favoured over NOAA-15 a.p.t. during conflicts) and if mounting evidence points to a change we should make to better serve the greater user community, I am confident my organisation will seriously consider and likely make the appropriate change. Please keep me informed on any widespread impacts to help build a case for change as appropriate. In the mean time, you may want to look at filters or other techniques being tried by RIG and GEO members. Of course, you could also upgrade to a h.r.p.t. system. In any event, I hope you will enjoy our new satellite!"

Following receipt of Darrell's reply, I passed the response to GEO, RIG and Timestep because they represent the user community. My understanding is that representatives of the three organisations are pursuing this matter. I shall keep readers in touch with any progress.

Interference

To obtain a sample of the numbers of UK monitors having problems with interference, I arranged with Nick Hewgill for a website survey to collect data from users.

Survey summary: total UK entries - 105; entries experiencing no interference - 18; entries experiencing mild interference - 19; moderate or severe interference - 68.

My personal view is that responsibility for the levels of interference of this UK problem, lies with Ofcom, whose predecessor the Radio Communications Agency sold off frequencies in the 137MHz meteorological band to the commercial interests of the radio pager companies. I shall invite them to comment.

Meanwhile, several people provided me with their images and experiences of the pager interference. One report from Coventry described the NOAA-18 frequency as "totally useless. The signal strength of the pager is high at that frequency, and is spreading 50kHz on both sides of 137.9125MHz and so NOAA-18 has no chance". **David Taylor's** image from 21 May - Fig. 2 - was one of the earliest from NOAA-18, and seems typical of what is being widely experienced throughout the UK.

George Newport obtained an image - Fig. 3 - after borrowing an RX2 receiver from a friend.

Jean-Louis Quertor received this NOAA-18 picture - Fig. 4 - from his home in Spain (the yellow cross on the picture). It shows a depression over Spain and part of Mediterranean Sea. He used WXTolmg with vegetation enhancement.

Thomas Findlay received NOAA-18 on 137.9125MHz using his RX2 receiver in Scotland - see Fig. 5. He lives near an airport and seems to have minimal interference at his location.

To illustrate the different levels of pager interference received at nearby locations, I was very interested to receive Fig. 6 from **John Travis** of Hamble, Southampton. He lives just a few km away from me, yet received a reasonably clear image for much of the pass.

Craig Anderson used his WXTolmg program to produce Fig. 7, a vegetation



Fig 4: NOAA-18 a.p.t. 1301 31 May from Jean-Louis Quertor in Spain.

enhancement composite image from two NOAA-18 passes on 3 June. Craig commented "I couldn't actually create composite images that looked OK until I added illumination compensation support, which was missing from the vegetation enhancement, to adjust for the huge differences in brightness across the image due to the solar elevation. The noise at the bottom right is a result of the large gain applied to brighten up the almost completely black image."

My first h.r.p.t. image was the 0135 pass on 21 May, but this was via the early-use transponder that is left-circularly polarised, so - ironically - it suffered from interference! The earliest good quality pass that I received was the 1253 pass on 22 May - published last month. Finally, Fig. 8 shows my latest pass processed with *ReadHRPT* using channels 1, 2 and 4.

Paul Nicholson maintains an active website updated with daily a.p.t. images from all the NOAA WXSATS. Interesting to note that Paul's NOAA-18 reception seems good. <http://paulnic.hostweather.com/weather/noaa.htm>

The LRIT Controversy

Low resolution imagery - called WEFAX - from the geostationary WXSATS, has been available for decades. There was a large increase in the numbers of people who set up WEFAX stations during the 1980s for receiving the nominally 1691MHz signal, and conversion to images using computers. Previously, the decoding process was done solely by hardware - the ubiquitous framestore. Due to the expense, or the time required for its home construction, amateur

users of WEFAX were relatively few before the mid-1980s.

METEOSAT-8 unexpectedly gave amateurs (and indeed many semi-professionals) a doorway to the future at low cost. Instead of us having to anticipate the demise of WEFAX and consider whether we could afford to fund the considerably higher cost of LRIT - the upgraded replacement for WEFAX - *METEOSAT-8* users can set up EUMETCast systems at nominal cost. Not so for the users of the American GOES WXSATS. NOAA has formally announced that GOES-

handful (about 50) can receive it. This isn't progress at all. GVAR is better all round than LRIT, and the same price, so that explains the almost total lack of uptake of LRIT. The 1691MHz transponder is still free, so why not put WEFAX back on? I can't see any argument why not, and 5000 users would be happy once again!"

He adds; "There is nothing wrong with putting GVAR on NOAAPORT, but beware that the European experience is not what one might expect. Of the acknowledged 10000 users of WEFAX, only a few hundred have moved to DVB. OK so WEFAX is still on, and there might be a late upsurge. For amateurs, private individual users and non-commercial users, the problems are many. The news groups are littered with continuous problems of poor or non-reception, day after day. For those who are very computer literate and with the time and patience it's OK, but for most people it's almost insurmountable, and this is putting off the vast majority. There will be some that disagree, those that have it working, and those who sell software, but the fact remains that 95% of users of WEFAX are not using DVB. WEFAX is cheap, we all have it!"

David Taylor commented

"I think this paints a worse picture of EUMETCast than is justified. Yes, of course there are people who have problems, whether it be with the dish moving in the wind, with their computer configuration, or whatever, but by far the great majority get very good results with 100% reception day after day. There are hundreds of such satisfied users. Many of the WEFAX users may now have good enough Internet access that their data needs can be satisfied that way. Some people are more interested in the data content than the reception method."

"It is unfortunate that LRIT equipment is currently expensive, but I would imagine that WEFAX equipment was as expensive when it first came out. I would welcome parallel transmission of WEFAX and LRIT to extend the overlap period, if this is possible with the present satellites, but I would also welcome an extension



Fig 5: NOAA-18 a.p.t. 1 June 1255 from Thomas Findlay in Scotland.

west will end WEFAX transmissions on 1 October; GOES-east already terminated WEFAX on 1 March this year.

Given that LRIT receivers are currently very expensive, as recently revealed by at least two American suppliers, I believe that the take-up by amateurs is currently very limited. This has led to discussion via the Internet regarding the changes.

Dave Cawley of *Timestep* notes that; "5000 users once relied on GOES WEFAX for quick and easy forecasting; now only a

of NOAAPORT to make low-cost digital reception more readily accessible to all, with small dishes and low cost PC cards. The software is already available from existing NOAAPORT sources. It doesn't have to be GVAR on NOAAPORT - the data currently sent over LRIT would be another possibility."

Douglas Deans suggested: "Amateurs want to move on as well, especially those whose interest is more meteorology based as opposed to the technical challenges aspect. Once you have tasted high resolution digital (images), a.p.t. and WEFAX are frankly poor. If you can resolve the cost aspect of digital then you are on a winner, and DVB has". My thanks for permission to quote their posts.

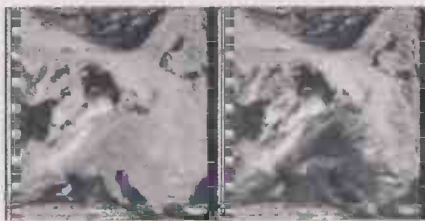


Fig 6: NOAA-18 a.p.t. 3 June 1333 from John Travis.

1985

I would add that I very much remember the situation of setting up WEFAX equipment for the first time in 1985. It was not a plug-in-and-go situation. Unknown to me at that time, on my channel switching (METEOSAT A1 and A2) decoder, the A2 channel crystal was not working. For almost a year I assumed that data was not available from that channel. When I discovered from other WEFAX users, that the channel was operational, I contacted the supplier and they sent me a replacement unit. I also had problems making suitable cable connections because the advice that I received at that time, was - frankly - bad. I bought WEFAX software, only to find that it was full of bugs - such as only decoding up to two consecutive images before crashing! The firm acknowledged the bug and told me that they would not be fixing it! Believe me, there were many other problems for me to solve, and I had just left a career in space research and computing!

My conclusions are that problems setting up new technology are almost inevitable, so everyone should expect to spend some time getting it fully operational. Secondly, I still see ourselves as amateurs that are able - if we have the resources - to drop-in on the professionals' world without actually having any responsibility for data applications. Nice if NOAA can continue to transmit WEFAX, but such transmissions are (I assume) costly, and not required by the professionals when LRIT is up and running. Tax pounds and dollars are hard for them to fight for. In the longer term, amateur expertise and inflation will surely reduce the cost of LRIT reception just as it did for WEFAX. These are just my thoughts - others can disagree!

Remote Imaging Group (RIG)

Some news from RIG, Dave Cawley writes: "The long delayed *RIG Journal* went to the printers at the end of May". My understanding is that there will be some time required due to the need for proof reading. "The RX2 PIC is now out and finished, and on the RIG website. This is for the very popular RX2 a.p.t. receiver. The RX2 has some component identification issues but the sub-contractors have made a start; most things are on order and some already delivered. We are sufficiently confident that it too is in the RIG Shop on the website. The initial stock will be 50 closely followed by another 50. The RIG Shop now has the full line of MSG equipment and is on the website www.rig.org.uk/shop.htm"

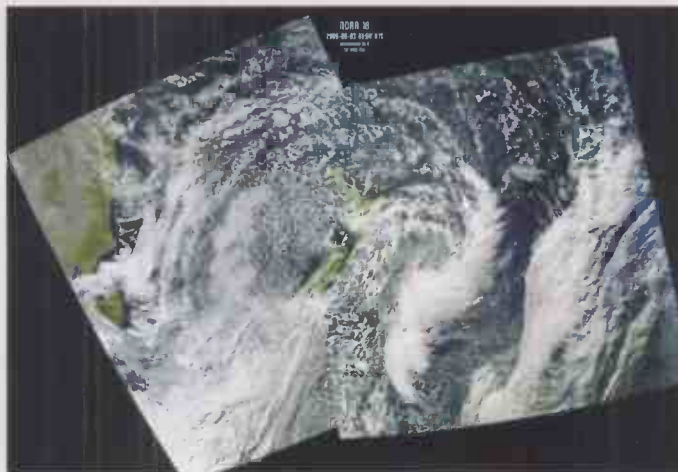


Fig 7: NOAA-18 a.p.t. 3 June 0154/0336 composite from Craig Anderson in New Zealand.

Group for Earth Observation

Clive Finnis sends this update: "Following the overwhelming success of the GEO PIC 1.0 to enable the RX2 receiver to receive NOAA-18 on 137.9125MHz, the GEO shop is now working on a replacement EPROM for the Dartcom Series-2 a.p.t. receiver to amend the frequency coverage. We are working in conjunction with Dave Wright of Dartcom, so this will be an approved upgrade. The GEO shop is also preparing to stock prepared cables to make it much easier for enthusiasts to connect up their MSG system from the components that they have received from the GEO shop which can be found at www.geo-web.org.uk/shop.html"

GEO are attending the 2005 AMSAT-UK Colloquium to be held at Surrey University in Guildford between 29 - 31 July. They will be demonstrating live EUMETCast reception and offering help and advice in setting up a EUMETCast station.

David Painter is the education co-ordinator of GEO and writes: "GEO would

like to increase the use of earth sensing technologies in schools and colleges, and to encourage anyone to contact their local school or college directly to make them aware of their possible access to the EUMETSAT system. We are actively assisting several schools and colleges to get started, and can provide information regarding funding and other educational information that is currently available and of use to teaching the subject". For more info contact education@geo-web.org.uk



Fig 8: NOAA-18 1241 15 June h.r.p.t. image from Southampton Online a.p.t. imagery.

Frequencies

a.p.t. MHz	WXSAT
137.50	NOAA-12
137.50	NOAA-15
137.62	NOAA-17
137.9125	NOAA-18

During overlap periods with NOAA-15, NOAA-12's a.p.t. may be switched off.

h.r.p.t. GHz	WXSAT	
1.6980	NOAA-12	
1.6980	NOAA-16	
1.707	NOAA-14	Faulty - no image content
1.7025	NOAA-15	
1.707	NOAA-17	
1.698	NOAA-18	Should be transmitting on either or
1.707	NOAA-18	
1.7005	FENGYUN-1D	

WEFAX

METEOSAT-7 (geostationary) transmits WEFAX on 1.691 and 1.6945GHz, and Primary Data on 1.691GHz until the end of 2005.

METEOSAT-8 HRIT, HRIT and other formats transmitted via HotBird-6 at 13°E on transponder 117 - 10.85344GHz as EUMETCast data.

Propagation

Forecasts

- Jacques D'Avignon VE3VSA
- E-mail: Jacques@pwpublishing.ltd.uk

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.

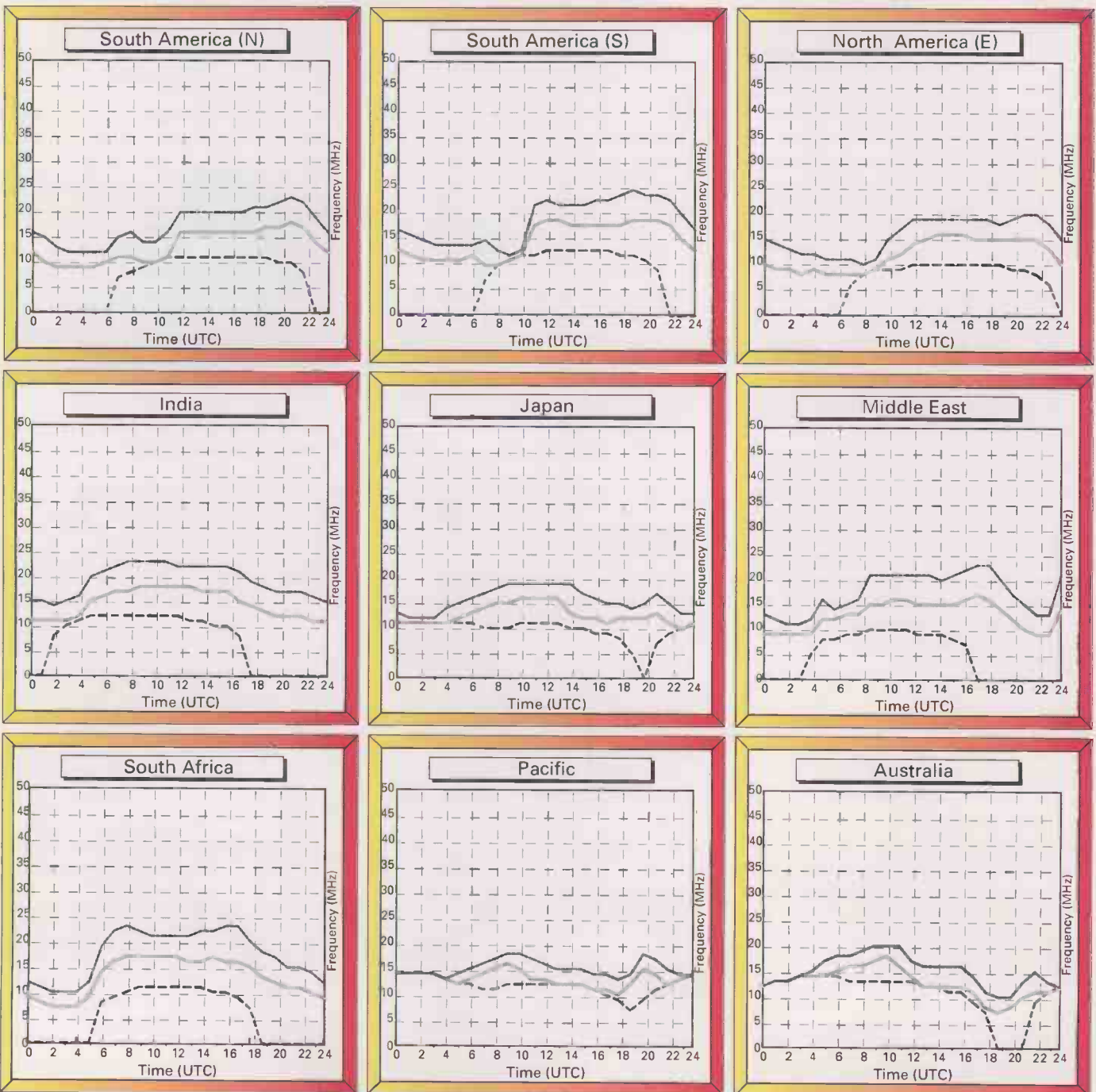
The middle line indicates the optimum working frequency (OWF) with a 90% probability of success for the particular path and time.

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.

August 2005
Circuits to London



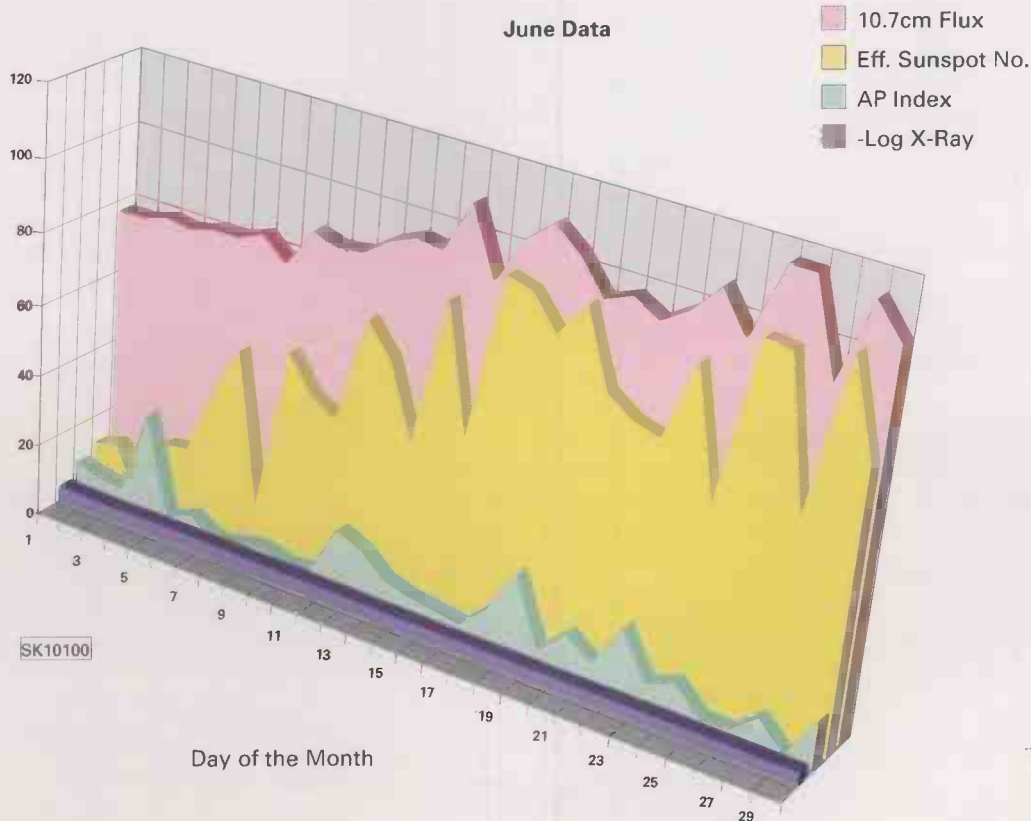
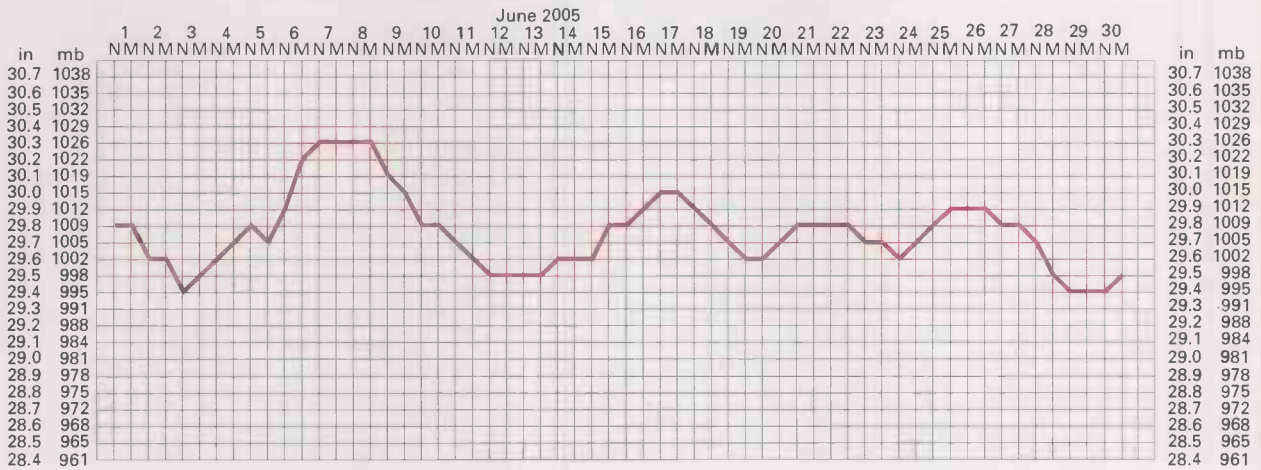
SK10099

Propagation

Extra

- **Kevin Nice** G3UNR, BR595787
SWM Editorial Offices, Broadstone
- **E-mail** kevin.nice@pwpublishing.ltd.uk

Ron Ham's barometric pressure chart, taken at Storrington, W. Sussex, June 2005.



guide to the chart

The 10.7cm solar radio flux is used as an indicator of the general level of solar activity.

The K and AP indices are measures of geomagnetic activity.

The K index ranges from zero (very quiet) to nine (severely disturbed).

K values of five or greater correspond to geomagnetic storm conditions that can relate to poor propagation conditions.

The AP index ranges from 0 to 400. An AP of 30 is the threshold for geomagnetic storm conditions.

Attn' 123

● **Enigma** 17-21 Chapel Street, Bradford, West Yorkshire BD1 5DT **Jax** (01274) 77004

● **E-mail** enigma@pwpublishing.ltd.uk

We have recently received a most interesting letter from someone using the name 'Alteo' claiming to have once worked for the Diplomatic Wireless Service (DWS) that provided radio services for embassies and MI6. This letter describes in some detail the radio communications methods used by MI6 agents in the 1970s and 1980s. Surprisingly, no direct mention is made of the E3 (Lincolnshire Poacher) transmissions.

Apparently, the same standard h.f. equipment had been used by MI6 agents for 27 years, from 1958 to 1985 - the transmitter/receiver Mark 123 - a most appropriate number for this column! This was a small grey 'attaché case' set containing seven sub-miniature wire-ended valves in the tuneable receiver and two valves in the crystal-controlled transmitter, the PA being a 5B254/M (B8B-based version of the famous 807) operating at around 30W input over the range 2.5-20MHz. It received Morse and voice, and transmitted c.w. Morse only, either using its own built-in key or an external high-speed autokeyer. This set was designed at DWS Hanslope in 1958 for use by the DWS, SIS (MI6) and SAS special forces. The DWS also installed these sets in every British embassy until 1985 as emergency back-ups in the event of power failure or the cutting off of communications. As well as having one in each embassy a second set was always held in the nearby home of an embassy official with diplomatic rank - so that, if 'discovered' the official would have diplomatic immunity. On a certain date of each month the embassy set was tested, and the two sets were swapped at intervals, thus ensuring that they were both working at all times.

The main UK receiving station was known as the Central Receiving Station (CRS) and was based at Hanslope Park (Bucks) - today's HM Government Communications Centre. Other stations, such as Ascension Island, Hong Kong, Poundon, Montreatmont Moor (Fife), etc. relayed on to Hanslope. Agents or embassies could send messages from their Mark 123 sets at any time of day or night according to a certain pre-arranged schedule - known as the Area Control System (ACS). (This system, which developed from SOE World War Two procedures, was also used by the DWS until the advent of Piccolo, after which the Morse calling system was reduced to once monthly). Using the ACS, each hour was divided into six ten-minute segments, each with its own allocated transmission frequency, as follows (where xx represents any particular hour of the day - see above.)

The above frequencies were actually reserved for embassies, although MI6 used exactly the same system but with many more sets of

Time Slot	Code	MHz
xx00 - xx09	ZP15	4.365
xx10 - xx19	ZP15/3	13.095 (4.635 trebled)
xx20 - xx29	WP4	6.35475
xx30 - xx39	WP4/3	19.06425 (6.35475 trebled)
xx40 - xx49	MP5	8.355
xx50 - xx59	MP5/2	16.710 (8.355 doubled)

frequencies. Therefore, each 'Morse Bay' at Hanslope monitored six different frequencies every hour for incoming transmissions. Only three crystals were used at the embassies, changed on the hour and at 20 and 40 minutes past the hour, the transmitter being tuned to harmonics where necessary. Frequencies were always referred to by codes such as those given above.

Hanslope used schedule tables of three types:

1. A list of calling frequencies and their codes to be used by agents for any time of day or month of the year (generally only two or three frequencies per agent would be allocated).
2. A list of callsigns to be used by the agent.
3. A list of different callsigns to be used after having changed frequency. The agent would usually receive instructions to contact MI6 HQ via a broadcast message from transmitters at Gawcott, Creslow, Ascension, Akrotiri, etc. (e.g. via Lincolnshire Poacher or disguised within a BBC transmission - such as a certain piece of music). The agent would then send several quick hand-keyed calls during the first hour after receipt - intermittently within a scheduled 10-minute segment of the hour. If no reply followed, then the agent would call on the second frequency for the next ten minutes - still irregularly. If contact still failed, this procedure was repeated during the same 10-minute segments of the next hour. Agents needing to communicate with their MI6 Station at their local embassy, would receive on the six frequencies listed above.

Coded Message

Once contact had been established, the agent sent a coded message giving his schedule times. If contact was lost again, for whatever reason, then the whole calling procedure would begin again. Standard Q-codes are used during such calling and contacting procedures. Whenever either home station or outstation changed frequency, the callsign was also changed, in accordance with the pre-arranged callsign list. All messages sent by the agent began with a two-figure Telegram (or Message) Number and the Group Count. The first message sent uses any Message Number between 01 and 99, chosen at random. On any one frequency the Message Numbers are consecutive, i.e. a second message

would use a Message Number one higher than the first, and so on. However, after a frequency change a newly-chosen random Message Number would be used, and so on. (The French MS1 uses the same technique). The changing of callsigns and Message Numbers with every frequency change prevents enemy monitors from easily 'following' an agent's transmissions.

Agent 'Alteo' ends by saying: "Morse test calls sent from embassies were monitored in the 'Morse bays' at CRS, but these eventually ended in 1985, when a new CRS building was commissioned, and a Morse room, although planned, was never fitted out, so from that time on, the Mark 123 sets were no longer of any use".

Or were they? As E3 and E3a still continue unabated, how are agents now passing their messages back? I doubt whether they all have access to the Internet and suspect that small h.f. transmitters are still in use for certain operations. We can now have a good guess as to the purpose of all those short hand-keyed exchanges heard in the 'fixed' allocations of the h.f. spectrum using strange callsigns and Q-codes. Often reported by ENIGMA 2000 as 'unidentified', they are probably agents setting up communications links with their controllers in their home countries or embassies. Despite the demise of the DWS and the transfer of British diplomatic communications away from h.f., there will always be a need for h.f. in emergencies and for certain agents in the field.

M10 S10d & S17c Schedules

Paul Beaumont of ENIGMA 2000 has kindly sent us their latest schedules for this very busy group of Czech stations. The frequencies currently in use are (1 May to 31 August): **S10d** on 3.564, 7.475, 8.175, 8.190, 9.986 and 13.405MHz with **M10** using 3.810, 4.030, 4.485, 4.782, 4.836, 5.077, 5.093, 5.945, 6.758, 6.782, 7.380, 7.745, 8.143, 8.190, 9.369, 9.385, 9.385, 10.125, 13.405, 14.565 and 14.978MHz. Note that most, if not all, transmissions operate on two parallel frequencies. For a copy of the full schedule, giving times, days and IDs, please write to us enclosing an SSAE.

An **M10** transmission at 0340 on 5.078MHz appears to be heard on 2nd and 4th Wednesdays of the month only. If that schedule continues, the frequency will change in August. Only its Wednesday transmission has been found so far. It probably has a second one on Monday or Friday (with a slight possibility of Sat/Sun). Could anybody (who's up at that unearthly time?) please look out for this transmission (and also any parallel frequency) on these days? Please send your results either to us or to g7vak@yahoo.co.uk - this schedule uses a two-message format, easy to hear and recognise. ENIGMA 2000 also draws our attention to an error, which appeared in our last column. **S17c** will not appear on 5.301/8.190 until 1 September. At present it can be found on 6.758MHz, daily as always at 1250, QRM permitting.

That's all for now. Good listening!

- Ben Hogan, *co SWM Editorial Offices*
- E-mail ssb.utilis@pwwpublishing.ltd.uk

As I put this column together in early June I realise that during the last few weeks the h.f. bands that I monitor have been in rather poor shape.

This, of course, is a seasonal difficulty.

Nevertheless, I soldier on, tuning through frequencies and fighting with the noise and interference, to say nothing of the weak signals. Not too much chance of me hearing the Falkland Islands then!

The British Garrison 'down south' has been increased by several thousand troops. This appears to be an intelligence lead in response to the domestic difficulties that are currently troubling the Argentinian government.

In 1982 when they had a spot of bother they decided to invade the Islands in order to divert the public's attention from their own problems at home and invoke some patriotism. It follows therefore that the British reaction has been entirely sensible.

During the eighties, when the Falklands were recovering from the assault it seems that the inhabitants of FI were using Amateur Band 2m transceivers in order to keep in touch with each other. Of course the v.h.f. radios did not have the range to cover the outlying stations and islands in the group.

I asked a friend who was stationed there at the time to find out what sort of radio gear those in the more remote areas were using. As he knew nothing about radio at all, I was surprised when I received a letter with a list of frequencies.

He told me that the locals called it the 'Farmyard Net' and detailed the frequencies as follows:

Channel	MHz
1	2.000
2	4.500 (calling and emergency)
3	2.835
4	4.030
4b	4.060

I have no idea as to mode that was in use. Does anyone have any knowledge of this?

The frequencies are used by other services, for instance the United States 'Commando Solo' EC-130E aircraft have used 4.5MHz in connection with psychological warfare operations. The aircraft carries a mass of transmitting and

receiving equipment and will operate against the communications equipment of opposing forces or, more famously, transmit propaganda to the public in the target area. As they usually operate in regions where there is no f.m. broadcast infrastructure, their transmitters are often operated on the short wave bands.

The frequency 4.50MHz has been preferred by Commando Solo operations during conflicts. The 4.06MHz frequency is another channel used by short wave broadcasters and is also a favourite of the Royal Hong Kong Yacht Club, while 4.030MHz is also used by a 'numbers station'.

Perhaps everyone in the Falklands has a cellphone now?

The Mitre Corporation

In the USA there is a major commercial entity called the Mitre Corporation. They are in very much the same line of business as Britain's Qinetiq, in that they devise and implement new technologies. As such they are involved with radio communications.

The Mitre Corporation have two frequencies allocated to them on a USA wide basis, these are 4.952 and 12.165MHz. You can bet that most of the time they are using data modes on these frequencies but on occasions voice may be used when things don't go quite right.

United Nations Use

The United Nations are also extensive users of the h.f. spectrum. Most of their traffic is sent utilising digital modes such as Pactor and RTTY but again should your receiver happen by any of these frequencies you may also hear some voice.

Most of the UN and UNHCR operations take place in Africa or the Asian continents and therefore may be rather difficult to receive especially by monitors who are limited, by local statute or space, as to the types of antenna that can be erected.

In 2001 the Russian authorities gave permission for the United Nations to operate on the following

frequencies from a number of locations in Russia including Moscow, St. Petersburg, Krasnodar and some other far-flung places.

The frequencies permitted are: 6.260, 10.175 (also used by UN and UNHCR in Geneva), 17.575, 19.3096 (also in use by UN Geneva), 19.3736 and 20.7306MHz.

If using s.s.b. the mode will definitely be upper and transmissions may not be in English. I suspect that they will be using French or Russian.

Red Sea Net

If you are an early riser and have the time to attend to the radio at a fairly early hour why not try and hear the cruisers 'Red Sea' net at 0500UTC on 8.173 u.s.b. This one gets a little more exiting from time-to-time as the small craft may recount their adventures in combating the pirates that infest the region.

The problem of piracy in the region has been ongoing for some time with groups of small boats attacking yachts in the southern Red Sea, in particular off the coast of Yemen. Many craft have been fired on and boarded, the crews robbed and assaulted and anything of value has been looted.

The pirates particularly like to steal all the radios. The 8.173MHz Net, established to provide weather information, is now monitored by nearly all yacht crews in the region. It 's also monitored by the pirates (as are the marine v.h.f. channels) and this is why you may not hear vessels giving their exact positions. Craft tend to form convoys and travel in groups through this dangerous region.

Thankfully, there are several western navies operating in the area and many sailing crews have been saved by the actions of US, British and German naval ships.

Speaking of maritime matters, it appears that some British military are operating in the Bahamian region and could well be using 4.0815 and 11.230MHz for voice communications. The 11MHz frequency is used by several services including the French on occasions but you should be able to discern British accents.

Similarly, in the Persian Gulf there are two information Nets for mariners in areas where pirates may operate. Try 15.500MHz between 1400 and 1900 daily and from 0300 to 0800 a similar net operates on 6.125MHz u.s.b. Like I said-you have to get up early!



Satellite

TV News

- Roger Bunney 35 Grayling Mead, Fishlake, Romsey, Hants SO51 7RU
- E-mail rogerbunney@pwpublishing.ltd.uk

Half a century ago in June 1955, the Russians were well advanced with construction of the Baikonur Cosmodrome in deepest Kazakhstan and two years later (1957) the World witnessed the first man-made satellite orbiting the earth - *Sputnik 1* - with its bleeping tones audible at about 19.995MHz on each circuit slowly falling in audible frequency (due to the Doppler effect) as the satellite moved across the sky. Fifty years on and we have HDTV round the corner, hundreds of digital TV channels received on 450mm domestic dishes and use of frequencies at 12GHz and soon 16GHz is just matter of fact. Both Presidents Putin and Kazakh's Nazarbayev attended the official ceremonies at the Cosmodrome over the 1-4 June period.

The potential of satellite TV is awesome. As readers may be aware I have an involvement with TVDX and on 30 May I received an Arabic station on ch.E3, the pictures included an RH top corner circular logo, certainly not Jordan nor IRIB, Iran. So I checked the TV channels on the 26°E ArabSat downlinks - apart from Israel and Iran, I think all of the Middle East broadcasters have a presence from this slot. Conducting a vertical scan between 11.750-12.350GHz found 37 TV and 34 radio channels across five transponders with only a few encrypted channels, a horizontal scan found 52 TV and 35 radio channels across five transponders. Apart from Bahrain TV and the Orbit PAY-TV sampler channel all were subscription channels. My mystery TVDX ch.E3 signal was not there!

I spend much time monitoring *Eutelsat W2*, 16°E as it offers a rich variety of news feeds. CBS News often transmit packaged video content out of Baghdad into New York and 17 May provided such an interesting news report covering the daily life of your average GI tramping the streets, the sands of Iraq or driving Humvees. Life is dangerous as convoys drive very slowly through crowded streets at walking speed, market stalls lining the road and teaming with life, so it's easy to become victims of a suicide bomber or a rocket propelled grenade (RPG). In a convoy with other Humvees and tracked vehicles, there's no escape.

'Sky News Ireland' often use 16°E to transmit news content back to Isleworth, Sky's HQ and the 23rd provided the sad images relating to the school coach crash in the Republic killing several school children - 12.554GHz-H - all the above 16°E transmissions used SR5632+FEC3/4. The evening of 6 June over W2 revealed a major traffic accident or other incident that had closed a road, firemen, ambulances and lorries were stopped, another ambulance passes from the road back of shot, an interview with a lorry driver, there is smoke and people running away from 'something'. The interview suggested a Balkans location but nothing in the news, certainly not the fire in the French Alps tunnel to Italy two days earlier. The mystery news drama unfolded over 12.518GHz-H (5632+3/4) and carried over the 'ENEX-B' distributor.

Apart from hard news, W2 carries a high number of sports feeds and late May came the exciting UEFA Champions League cup game from Istanbul between Liverpool and AC Milan. A pre-match report from 'NTV ISTANBUL' showed how the Turkish police dealt with hooligans - very quickly! A youth in conflict with an older man was instantly 'subdued' by three policemen and dragged to their car and driven away - NTV carried pictures of the fans boarding coaches since the stadium is some kilometres out of town - 12.525GHz-H. 'Sky Sports' also transmitted their feed in the clear over 16°E - 11.128GHz-H - via 'AA DSNG' - both feeds used 5632+3/4. Meanwhile the ITV feeders of this match were carried over *Eutelsat W1*, 10°E with the 'ITV MAIN BT' feed - 11.105GHz-V (133328+7/8) and the 'ITV VTR BT' circuit - 11.0922GHz-V (6665+7/8) - the latter for action

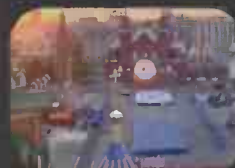
replays. More football action was also carried over the Turkish news agency 10°E slot of IHLAS - 11.064GHz-V (6600+3/4).

Moving further west and just before my dish points into fast growing housing estate 'open space' landscaping foliage is *Intelsat 801* @ 31.5°W. On 5 June a very large pop concert was held in Germany, covered for 'MTV SPIN' by 'DSNG2 A-MEDIA' @ 10.992GHz-V (6109+3/4). Most activity, although there's not much, is generally found at the lower vertical end of Ku band low on this satellite. From time to time UK regional football use this satellite as does the TF1 French TV network for their regional links. An encouragement for me to cut down 'open space' foliage is the report of a new satellite being received into the UK from the West, that of 'AMAZONIAS' slotted at 61°W. Roy Carman found a good signal near Dorking on his 1m Triax dish (0.3dB noise LNB) with two channels at 12.562GHz-V (27500+3/4).

Alan Richards (nr. Skegness) notes that over on *Hot Bird*, 13°E he has seen the 'University TV Somalia' @ 11.727GHz-V (27500+3/4). Of interest to readers however, particularly those that have awkward neighbours, is Alan's glass dish. This is a 900mm offset dish which on test performs as well as his earlier 850mm full metal offset - but the important point is that against the coloured metal side of his park home the dish largely disappears, if the black LNB and support arm were coloured the same as the metal structure it would all but disappear - other than the shadow. Against dark green bushes the dish and shadow would disappear - something to consider if you have problem neighbours or you live in an area where council planners stalk the streets.

USA President Bush, on another World Tour, visited with his counterpart President Putin in Moscow and the Baltic States during May. The press entourage preceded the Bush arrival and arranged for 2 x NTSC satellite feeds over the *Eutelsat SESAT* bird @ 36°E - 11.104 and 11.109GHz-H (SR 2963+3/4). Over the same period Moscow celebrated the 60th anniversary the defeat of Hitler and the end of World War 2. The Red Square is no stranger to large marches and military events as witness the *May Day* celebration each year, now with flags and banners the military might of the Russian forces were seen marching as victors marking the end of Nazism and the occupation of their country - though the following years with Stalin and his cohorts running the show were also hard and unrelenting years. And so the well rehearsed Russian troops march across Red Square, flags waving with the looming Kremlin as a backdrop. *Sirius* @ 5°E carried the 'celebrations' in full HD widescreen pictures on 12.695GHz-H (13380+3/4) identifying as 'EURO 1080'.

The main live material received over APTN's *UP4* European distributor in recent weeks has been scenes outside the Californian courthouse with live reports concerning the Michael Jackson trial. That was until the evening of 7 June. Live pictures from the 'Sky-9' heli-cam, a major incident was breaking news into the American networks. A major freeway is blocked and cleared of all traffic, an armed crook is inside a people carrier with SWAT teams in armoured vans having trapped the getaway vehicle. Meanwhile 100m back down the highway are nine squad cars, further back the sheriff's helicopter sits on the road, more black and whites are further back still with the fire brigade on a nearby slip road. Eventually, a tear gas grenade was pushed into the vehicle then a police dog dragged the villain out. The SWAT team move in, then he's finally stretchered away - the stand-off is over *UP4* downlinks @ 10.972GHz-V (4167+5/6).



Russians celebrate the 60th anniversary of the Nazi defeat.



A rural TV channel from South East Asia.



Satellite TV provides international medical training.



SWAT move in on an American freeway (Via 'Sky-9' on W1).



American roadside bomb 'destroyer' (via W2).



A GI controls the hydraulic arm on the Iraq desert highway.



Sky News awaits the Hull election count announcement (W2)



Alan Richards' glass satellite dish 'disappears' at his park home.

Amateur

Bands

- **Clive Hardy** SWM, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW
- **E-mail** clive@pwpublishing.ltd.uk

As part of Ofcom's consultation on amateur radio licensing, it commissioned MORI to conduct a postal survey of a selection of amateur radio licence holders.

Consisting of 21 questions, the questionnaire seeks views on the four options being considered for the reform of amateur radio licensing. Information is supplied on the options, and in many ways it's like a multiple choice question paper. Although there are no right or wrong answers as such, the impression given is that there are two options, which are obviously out of play, and a couple, which could be right. The choices presented in the survey were:

Option 1 - Status quo. Licence renewed annually for a fee.

Option 2 - Licence for Life. Electronic version free - postal version subject to a fee.

Option 3 - Licence for more years than at present - renewable for a fee.

Option 4 - No licence. No fees.

All the options require the same qualifications to operate on the amateur bands, but with Option 4 an exam pass certificate would only entitle a radio amateur radio to a callsign issued by Ofcom, but not a physical licence form. That would mean there would be nothing to produce to enable UK amateurs to operate abroad, and Ofcom wouldn't keep a database of licence holders.

The information supplied with the survey about Option 4 concerning the lack of a database is that its effect would be 'potentially hindering [to] investigations of radio interference'. I can't see UK amateurs being keen on not being able to operate abroad, a major consequence of Option 4, or Ofcom being over enthusiastic over the other implications for investigating interference, so it looks like it's one of the wrong answers.

As the existence of the consultation, in itself, indicates that the status quo position of Option 1 is also wrong, that leaves the choice between Options 2 and 3. Within those options, apart from changing the time scale of the licence term, all other conditions remain much as they are now.

As it's the most economically advantageous, I'd guess that Option 2 is the answer that most people will select. I did. By the time you're reading this, the results may have been published.

DXpeditions

The DXpeditions to listen out for this month include: From 23 July-4 August Carapacho Lighthouse, Graciosa Island in the Azores. A 50MHz beacon will operate throughout the event on 50.112MHz and other activity on that band will be by **HB9CRV** using the call **CU4/CT3FN**.

Listen out for **CU4T**, which is the call being used for the lighthouse activity, on all h.f. bands, and on all the usual modes. Quite a few amateurs from four different countries, including **G3KHZ** from the UK, will be operating several stations simultaneously.

From 25 July-10 August on Fehmarn Island, which is connected by a bridge to the German mainland and is apparently one of the country's sunniest places, listen out for **Gerold DH9GD**.



Situated close to Denmark, Fehmarn Island is a popular holiday destination with many sandy beaches. So, it shouldn't be too onerous a task to operate from there for **DH9GD** who'll be using his own call /P.

From 1-14 August Fernando de Noronha Island, Brazil. Operators **Marq CT1BWW** from Portugal and Spaniard **Juan EA2RC**. Callsign will be PY0/ own call.

Other DXpeditions taking place in August include: 14-20 Pag Island in the Adriatic close to Croatia's coast. Operator **Marco IK1ACX**. Prefix 9A. 20-21 International Lighthouse & Lightship Weekend activity from Gran Canaria off the north west African coast. The Canary Islands DX Society will operate as **EF8OAL** from the old lighthouse at Punta de

Arinaga, and as **EF8NAL** from its new lighthouse.

20-23 Dirk Hartog Island, just off the western coast of Australia. Named after a 17th century Dutch sea farer, it is one of the southern continent's premier eco-tourism destinations. The station's call will be **VK6DHI**.

Finally, 31 August-perhaps? Sarawak. Postponed from early June and still looking for operators to join the team. To make life interesting the location for the DXpedition is a mountain village called Jagoi Gunung, which is inaccessible by vehicle. A special callsign-prefix 9M8 - has been requested but not yet announced.

Long Distance UHF

Richard Gosnell G4MUF has drawn my attention to the propagation mode of tropospheric ducting which gave him a 800km contact on 430MHz, a band more associated with contacts over distances not usually greater than a few tens of kilometres.

So what is tropospheric ducting? For a start, we all live in the troposphere. It's that part of the atmosphere closest to the earth's surface, the air that we breathe. The density of the air, which depends on temperature and humidity, affects the speed of radio waves.

If there are layers of air of different densities within the troposphere, particularly when there is hot air above cold air (the temperature usually decreases with height) then radio waves can become trapped in the colder layer in a similar way to that which light waves are contained within a fibre optic cable. The effect is to bend the waves around the earth, which, when combined with the reduced vertical diffusion brought about by the wave being constrained within an air layer, can produce field strengths that are much greater at a given distance from a transmitter than are found under normal conditions. The result is much increased communication distances on the frequencies affected.

A common manifestation of the effects of tropospheric ducting is interference on terrestrial television pictures from distant stations. The event that Graham observed occurred on the nights of 9 and 10 December 2004 when the Hamburg repeater **DB0HHH** on 439.250MHz was heard by Richard at his Wiltshire home.

The signal strength varied cyclically over a five minute period, fading out completely before returning to S9. Richard could easily access the repeater during the stronger intervals using 2W to a log periodic, and the Germans using the repeater were pleased to hear a station from so far afield. They reported that Norwegian and Ukraine stations had also accessed the repeater, which is in Rosengarten, a few kilometres south west of Hamburg.

Richard pointed out that 'tropo' openings as good as this tend to be separated by several years, but he'd experienced a similar one only three months earlier on 7 September 2004. Perhaps this is an effect of climate change?

the opportunity to make sure your receiver and soundcard are connected and very importantly you can adjust the audio level. This is a vital part of the setup process and time spent here will pay dividends later.

Failing to adjust the audio properly is one of the most common causes of disappointment for new listeners, so you need to make sure you get this right. The first step of course, is to make sure your receiver is connected to your soundcard and tuned-in to an active Packet frequency. The most active frequencies are 144.800MHz for v.h.f. and 14.105MHz for h.f. If all is well you should see signs of life on the oscilloscope-like display on this section of the set-up.

If you don't see any activity, check your radio to soundcard connections. Assuming the display is showing a signal, you need to adjust the levels to avoid limiting. There are two ways to do this, the first being to press the Auto Configure button! However, you can also adjust manually using the slider or the appropriate record volume on the *Mixer* windows. The vital point is to make sure the signal does not have any flat-tops - a sure sign of limiting.

Virtually Complete

The set-up is now virtually complete, other than giving the connection you've just created a friendly name! Before you can make use of your new software TNC you need to restart the *AGWPE* program, when you should be in business with a working packet TNC. To check everything is ok you need to tune to a suitably active Packet channel and see what you can hear. Where you tune will depend on the type of modem you've created.

If you've created a 1200baud v.h.f modem then you will need to tune to 144.800MHz (narrow-band f.m.) where should find an active packet station or two plus a few repeaters. If h.f. is your interest then a good place to start is around 14.100MHz as there's usually lots of activity between 14.100 and 14.105. Other h.f. frequencies to try are

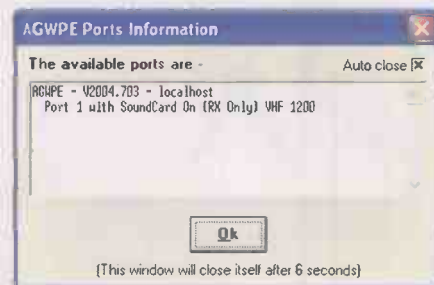
7.036MHz and 10.1476kHz. Because the *AGWPE* packet engine runs in the background you need to activate one of the viewing aids in order to see what's going on. There are two options: 1. Use the 'Stations Heard' option from the View menu or, 2. the Monitor option, also from the view menu. This latter option provides a display of the signals received from all the active radio ports so is probably the best to use this to check activity. Once you are confident that the packet engine is working, it's time to move on the APRS display software.

UI-View Setup

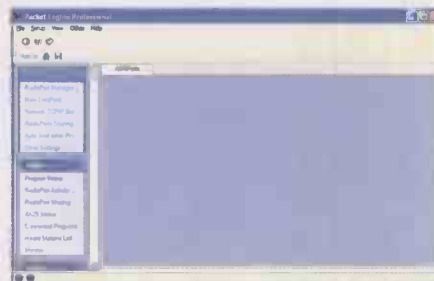
You'll be pleased to know that you've now completed the hardest part of the setup and the rest should be plain sailing! When you start *UI-View* you're presented with a UK map and a standard menu system at the top of the screen. You may also get a prompt directing you to the Setup routine. The important first step is to choose the Setup menu followed by the 'Comms Setup' from the secondary menu. The 'Comms Setup' contains a fairly busy box with lots of unfamiliar settings - don't panic! The box you need is at the lower left of the setup panel and is titled Host Mode. Just click the arrow on the right of the selection box and scroll down to the *AGWPE* entry and click.

All the other complex options will grey-out and you'll be left with just two options. For our purposes make sure the 'RX only' box is ticked. At this point you may find an error box appears - this usually only occurs if you run *UI-View* before you've started the *AGWPE* packet engine. In order to run the system properly you first need to start *AGWPE*, then run *UI-View*. When *UI-View* starts you should get a status box appearing briefly to confirm the available ports. To start local APRS monitoring that's really all you need to do. If you want to supplement local reception and you have an Internet connection you can connect to an APRS server and get stacks of other information.

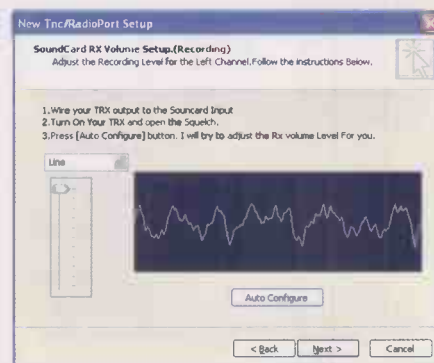
Connection to a *UI-View* server is dead



Setting the *AGWPE* Port Confirmation Box.



The main screen to be seen on running *AGWPE*.



Adjusting the sound level input - the *AGWPE* level setup panel.

easy as *UI-View* comes pre-configured. All you have to do is select 'Connect to APRS Server' via the Actions menu. When asked if you want to log on, click yes. If all is well you should find huge amounts of APRS data start streaming down to your PC. If the preset APRS server is not active you just need to select another server using the APRS Server Setup from the main setup menu.

Well that's it for this session - happy monitoring, I'll see you next time!

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After a sluggish start, Sporadic-E openings began to materialise in quite a dramatic way as mid-May approached. Activity on the 19th spanned almost six hours with the maximum useable frequency (m.u.f.) extending well into the f.m. band. Intense openings followed on the 21 and 22, producing some interesting catches, especially from the Middle East.

Reception Reports

The most productive days for DXers in the UK were May 21 and 22. Our thanks to the following enthusiasts for submitting reception reports: **Stephen Michie** (Bristol), **Peter Barber** (Coventry), **Peter Barclay** (Sunderland), **Tom Crane** (Hawkwell), **Simon Hockenhill** (Bristol) and **Paul Foley** (Newhaven). The collective log is as follows:-

21 May

Iran (IRIB) Channel E2; Syria (ORTAS) E2; Moldova Channels R2 and R3; Belarus (BT) R2; Hungary (MTV-1) R1; Ukraine (1+1) R4; Sweden (SVT-1) E2 and E3; Rumania (TVR-1) R2 and R3, TVR-2 R2; Corsica (Canal Plus) L2; Norway (NRK-1) E2 and E3; Lithuania (L1) R2; Croatia (HRT-1) E4; Hungary (RTL KLUB) R2; Italy (RAI UNO) Channel A, Italy (TVA private station) A, Italy (Tele A+ private station) E2; Slovenia (SLO-1) E3.

22 May

Italy A and B, TVA (private station) A; Rumania (TVR-2) R2; Hungary (RTL KLUB) R2; Slovenia E3; Germany (ARD) E2; Switzerland (SF-1) E2; Croatia E4; Czech Republic (NOVA) R2; Corsica L2; Norway E2 and E3; Spain (TVE-1) E2; Portugal (RTP-1) E3.

Exotic Reception

The most dramatic reception was the detection of multiple TV carriers in Northern Ireland corresponding to American Channels A2, A3

and A4, during a 50MHz opening to the Caribbean region on May 16.

Strong Arabic signals on Channel E2 were captured by Paul Foley at 0810 on the 21st, which consisted of a studio programme with signing in the lower-left of the picture. This station was subsequently identified as Iran with co-channelling from the Syrian Homs outlet. Iran reappeared at 1606 with a news bulletin and Farsi text scrolling along the bottom of the picture. Tom Crane resolved strong Arabic audio at 1640 as the opening intensified. On the following day, Arabic speech was heard with occasional musical accompaniment on E2 at 1500.

Rana Roy (Northern India) reports Channel E2 reception from Thailand (TV3) and Dubai on the 9th. The following day, a Russian station occupied R2 bearing a '5' logo inside a square with the top-left corner sliced off. On the 12th, between 0615 and 0715 on R1, a Russian test pattern with 'KVIE' identification was visible. Chinese TV was logged on R1 towards the end of the month with strong signals from Pakistan on E4 overriding Delhi programmes at times.

FM Reception

Many long-haul f.m. signals were encountered via Sporadic-E, some of these from well inside the North African region. RDS is a 'must' when trying to accurately identify such exotics as there are African and Arabic-speaking stations closer to home operating in and around the larger French cities. **George Garden** (Edinburgh) heard erratic signals from BBC Radio Cymru on 104.3MHz from the elusive 15.6kW Llanguollen outlet in North Wales around 1342 on May 8. Short-skip Sporadic-E was the most likely mode of propagation.

Logo Changes

Paul Foley advises that Moldova has ditched the 'M1' logo in favour of the name 'moldova' inside an oval. Lithuania is still using its 'L1' symbol, which resembles a box but Peter

Barber (Coventry) has noticed an additional identification 'N-7' in the lower-right of the picture.

Weather Charts

Stephen Michie (Bristol) dislikes intensely the new 'improved' BBC weather charts. Isobars are missing from most bulletins depriving DXers of the chance to check for potential tropospheric enhancement. The BBC Weather Service has certainly been "dumbed down" (to use an awful, but apt, American expression) and, despite the new hi-tech flying graphics, the information given to viewers is now actually less than it was when the BBC weather forecasts were first televised way back on 29 July 1949!

The BBC also received many complaints about the tilt of the map, which favoured the size of England at the expense of Scotland. The forecasts in 1949 were simple and concise, unlike today with BBC 'presenters' screeching and bellowing loudly and excitedly at viewers, despite the very sensitive microphones positioned only millimetres from the forecasters' mouths!

Service Information

Italy: Shopping channel Tele A+ (located just below E2) now operates a second Band I outlet just below Channel A.

Iraq: According to the Al-Iraqiya TV website, a relay at Sullaimanya is operating on E4. Its e.r.p. is not given.

Finland: **Pertti Salonen** (Finland) advises that HDTV test broadcasts, using 1080 lines, are taking place via the Helsinki cable network. There are no further plans for DAB. YLE have stopped DAB broadcasts and the commercial broadcasters are not interested in backing the system.

Germany: **Niels and Gösta van der Linden** (Netherlands) have supplied a list of German analogue transmitters remaining on-air during the digital switchover from June 2005.

Fortunately, most Band I outlets are still operating, although Kreuzburg (BR-1) E3 does not appear on the list, even though Peter Barclay logged it on the 30th at 1006 co-channelling with TVE-1.

The Flensburg (NDR-1) E4 outlet closed some time ago. The following Band I transmitters are listed:

Transmitter	Network	Channel	ERP
Göttelborner Höhe	SR-1	E2	100kW
Biedenkopf	HR-1	E2	100kW
Grünten	BR-1	E2	100kW
Ochsenkopf	BR-1	E4V	100kW
Raichberg	SWR-1	E4	100kW

Fig. 1: The TV Skopje
PM5544 test card as used in former Yugoslavia.

Note the dark background.
Photo by Aleks Radulovic (Germany).

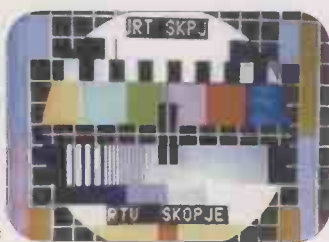
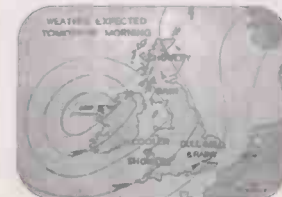


Fig. 2: The TV Beograd
PM5544 test card without the centre cross (circa 1996). Photo by Aleks Radulovic (Germany).



Fig. 3: From the authors' archives: the very first BBC Weather Chart transmitted on 29 July 1949 - complete with isobars, wind directions, pressure, weather indications and a map that didn't distort the size of Scotland!



Keep On Writing!

Please send your DXTV, slow-scan TV and f.m. reception reports, news, off-screen photographs and information to arrive by the first of the month to: **Garry Smith, 17 Collingham Gardens, Derby DE22 4FS**. We can also use off-air pictures stored as lossless JPG files on PC discs, good-quality VHS video and 'low-speed' (x4 maximum) DVD recordings.

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bhi.....68	Nevada.....2, 3, 34, 35	Telford Rally.....63
Celebrity Communications.....50	Photavia Press.....68	The Shortwave Shop.....50
Electrovalue.....68	Practical Wireless.....66	Waters & Stanton.....28, 29
Haydon Communications.....24, 25	QSL Communications.....50	Winradio.....68
Icom (UK) Ltd.....11	Radio Active.....66	
John's Radio.....68	Radioworld.....48, 49	

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