Written By Enthusiasts For Enthusiasts

The SHORT WAVE Magazine SWM

& Scanning Scene

Sample Radio Active Magazine

FREE

Reviewed

Alinco Budget Scanner DJ-X3

John Wilson Examines

Cubic 3030 Twin HF Receiver

WW2

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Desert Shield Remembered

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The SHORT WAVE Magazine

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features

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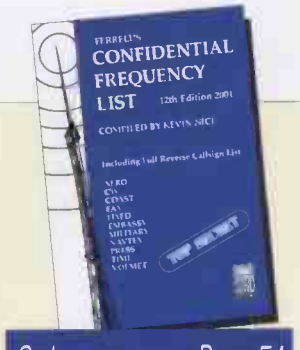
Join in with the on-line action on the *SWM* Readers' E-mail Forum - send an E-mail to **swm_readers-subscribe@yahoogroups.com** to subscribe - don't miss the on-line action!

Turn to page 73 for our special back issues offer!

regular columns



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COMING NEXT MONTH
IN *SWM* SEPTEMBER 2001

* **Decode Special with Mike Richards**
* **Multi-band HF Antennas**
* **Racal RA6790 - in the lab with JW**

*contents subject to change

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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. The printed circuit boards for *SWM* projects are available from the *SWM* PCB Service. **KANGA PRODUCTS, Sandford Works, Cobden Street, Long Eaton, Nottingham NG10 1BL. Tel: 0115 - 967 0918. Fax: 0870 - 056 8608.**

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 £3.25 each and photocopies are £3.25 per article.
Binders are also available (each binder takes one volume) for £6.50 plus £1 P&P for one binder, £2 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 £1 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

At the beginning of the year, we presented the *SWM PROMA & Scanning Scene CD-ROM*. Due in part to the interest that this generated, Paul Wey at PROMA started an E-mail group on the Yahoo Group's Internet list server, similar to our very own *SWM* Readers list (see page 5 for details of how to join).

The PROMA list has replaced the old method of distributing frequencies to members. I have had a message from Paul, because it seems that recently, there has been a flurry of *SWM* readers who have sent cheques as payment for membership. Paul says that any such payments will not be cashed, but instead will be destroyed. The postal distribution and paid membership has been discontinued.

I also understand that Paul has received requests for the *SWM PROMA & Scanning Scene CD-ROM* - please note that this CD is only available from the *SWM* Book Store priced £4.75.
Those of you who wish to find out more about PROMA, please visit **http://groups.yahoo.com/group/scanpromauk** the group has been running in this form since March.

Sky High

This month sees the first example of our new combined airband column, hosted by Peter Bond. Peter is set to captain your voyage though both Civil, and of course his previous charge, Military airbands. Peter takes up the challenge on page 46. Make sure you drop by and see what he has to say. This month he includes a report on his trip to the recent Mildenhall show.

FlightPathUK

Still on an aeronautical theme, I've had a note from Ian Dolye, author of the Desert Shield article also featured this month. Ian says that there has been some further developments with the Flight Path, web-based flight tracking service as detailed by Ian in February 2001 *SWM*.

Apparently, the site **FlightPathUK.com** is planning to go live on-line in the next few months. Though a specific launch date is still not yet available, updated information will be posted on the site so that all interested parties are kept informed of developments.

The monthly subscription fee will be £9.99. This will allow unlimited access to the service. Full payment details will be available on the site.

Ian and other potential users have been waiting patiently since the Farnborough Air Show last year for the site to become active. NATS, the site owners, say that they are committed to "getting it right first time" and providing a quality service from 'day one'. Many legal, commercial and technical considerations have resulted in the process taking somewhat longer than they would have wished. They state that they are confident that the aviation enthusiasts' community will appreciate this in the long run.

If this is of interest to you, then I suggest you keep a close eye on the site.

BBC World Service

The short wave broadcast listening community has been alive with reactions to the recent news that the BBC World Service is to be drastically cut-back, with the short wave service to the USA to be discontinued, in favour of Internet and local v.h.f. relaying. Brian Oddy has more details within 'LM&S'.

Bizarrely, Radio Netherlands, who just recently also made cuts by dropping their *Media Network* programme from air, have announced that they will be using the frequencies vacated by World Service.

RN have announced a schedule that is very similar to the one the BBC has been using, but not identical. The programmes will be broadcast in English. For details of the schedule take a look at the Radio Netherlands web site at **http://www.rnw.nl/realradio/html/schedule.html**

The 'Short Wave of Publicity' initiative started on Sunday, 1 July, this was only five days from when the decision to go ahead was taken. I am personally puzzled as to why RN are performing this stunt.

On reflection, it will most certainly do them nothing but good within the North American s.w.l. community. This in stark contrast to the damage to the BBC in the eyes of those same listeners.

Radio Active

I mentioned late last year that our publishers had acquired fellow radio magazine, *Radio Active*. I'm sure that some of you have seen RA on the news stands. This month we are pleased to be able to provide you all with a complimentary sample issue. If you are reading this now, then you will already have opened the bag that contained it - enjoy.

VY 73 Kevin

Dear Sir

I've read both the Icom IC-R3 review in the June 2001 issue, and subsequently the Yaesu VR-5000 review in the July 2001 issue. I've been lucky enough to have an extensive test of both of these radios, as ever since they were first touted many months ago I've been saving up and waiting in anticipation. I have to agree entirely with your reviewer's comments on these radios - they are very fair reflections of these radios based on my experiences.

The Icom IC-R3 is disappointing because the receiver is so insensitive above 1GHz: this radio could not be used for receiving, for example, pictures from racing cars at Silverstone or as a video baby monitor more than a few feet away unless a low noise, 20dB gain preamplifier is used. It must be said that I've found terrestrial broadcast TV reception and normal v.h.f./u.h.f. reception to be satisfactory, and the quality of the screen is exemplary for such a small unit.

The Yaesu VR-5000, although packed with features, I, like your reviewer, also found it is let down by poor strong signal handling in v.h.f./u.h.f., but also insensitivity in the microwave region. Unlike Yaesu's internal view, from the marketing of this radio I certainly didn't think the VR-5000 is an h.f. receiver with added v.h.f./u.h.f. capability. Indeed, mine's never been below Band II f.m. broadcast! Perhaps I should have twigged when I saw that the antenna input is an SO-239.

I primarily purchased this radio for weak signal portable satellite reception, which I would have liked to hook up to computer controlled doppler correction, until I discovered how lacking the computer interface of the VR-5000 is. I found that as with the IC-R3, up in the microwaves a preamplifier is required to make this radio work satisfactorily, although the VR-5000 did seem somewhat better in this respect.

Perhaps my requirements are slightly esoteric, primarily being in the u.h.f. and microwave region, but I firmly believe that Alan Gardener, your reviewer, was absolutely right to point out the pro's and the con's of these radios as he did. It's to *SWM*'s credibility that you choose to publish such reviews, whether they be good, bad or indifferent. After all, not only can your readers make a more informed judgement on their purchases, we can live in hope that the manufacturers take on board the issues raised and improve their products correspondingly in the future.

Howard Long G6LVB
London

Dear Sir

Might I add a bit to John Wilson's most informative review of the Watkins-Johnson HF-1000 and 8711 receivers in the June issue of *SWM*. I first saw the HF-1000 at Lowe's stand at an RSGB show at the NEC some years ago. My first reaction was uncharitable. It seemed very plasticy, particularly the meter, which has a quality nearer to CB than to Sifam!

The tuning knob was far too wide for easy comfort (for my hand at least) and it was positioned too close to the right hand handle. The other knobs seemed cheap and tacky. For a huge case it was surprisingly light. Looking at the photos in the review it can be seen why - there is hardly anything in it. About 90% fresh air.

Ignoring the tacky aspects, the ergonomics were actually very good and intuitive with one knob per function in the main. I quickly got the hang of it at the exhibition, which is more than can be said of my scanner after two years!

The enormous number of bandwidths are impressive at first glance, but on applying some thought, as John has done, it can be seen this huge number diminishes quickly because many bandwidths are mode related. As he says, can anyone tell the difference between 94 and 100Hz? Was there an element of sales gimmickry in this?

I was surprised that there was no dedicated f.s.k./data mode, since this set would be ideal for such mode, particularly the excellent phase response of the i.f. filters achieved by the d.s.p. Proper professional phase compensated crystal filters designed for fast data cost a fortune.

The expensive preselector seems to be almost useless at reducing the response at an octave off tune. Most fairly cheap offerings from Japan will do far better. My records show the price of the 8711's preselector was about £670 on top of the price of £4,600 for the basic receiver. Not a good buy.

The EMC emissions from both sets is poor and in the case of the HF-1000, completely appalling. I have handled a 'proper' Watkins-Johnson receiver from an earlier generation, the W-J 8888 (known to many as the 'Quad Eight'). It was clearly of the highest quality and built to last a lifetime. I regard the HF-1000 and 8711 as an aberration, an attempt to crash in on the cheap end of the professional market. I would not give shack space to these sets, despite the famous name.

Michael O'Beirne G8MOB
Surrey

TOP QSL

Dear Sir

I'm a long-time (25+ years) reader of *SWM* and I'd like to offer my thoughts on the design of the magazine. Personally, so long as the magazine's name is somewhere on the cover, then I'm not too concerned about its actual appearance - I buy the magazine for its articles and not for its covers. I do not even have to struggle to find *SWM* on the newsagents' shelves because I have a subscription to *SWM* (*PW* and *RA*).

I do understand that magazine covers (and sometimes also the magazine's contents) need re-designing from time to time in order to attract new readers. Personally, I'm happy for you to do a re-design every year if you feel it will make the magazine more attractive. I'm also happy for you to experiment with layouts whenever you wish so long as you do not make the articles harder to read (such as by running a light text on top of a dark background).

Magazine re-design is a fact of publishing life and I see no reason why *SWM* should be exempt. I believe that its sister magazine *Radio Active* re-designed and re-launched successfully a few years ago. In view of the comments from readers about the current logo, why not run a 'design a logo for *SWM*' contest?

I'd also like to comment on the articles published in *SWM*. I aim to read them all, regardless of my immediate interest in the subjects covered, and I've found that I learn a great amount about aspects of the radio hobby that I thought were of little interest to me. The only exception to this is 'LM&S', because I rarely listen to the s.w. broadcast bands. Please do keep covering as wide a subject range as possible and please do keep on running issues which cover topics in depth over several articles in an issue.

Finally, my warmest wishes to you and the other *SWM* team members (full-time staff and columnists) for providing the radio hobbyist with an excellent and well-balanced magazine.

PS. Thanks for the Airband Data card with the July issue. East Midlands will be changing its Approach frequency from 119.65 to 134.175MHz on 12 July - you'll find this detailed at **http://62.232.68.182/filestor/egnx.txt**

Ian Brothwell G4EAN, 9H3YI
Secretary, British Amateur Radio Teledata Group
Nottingham

Communiqué

News and Products

NVCF 2001

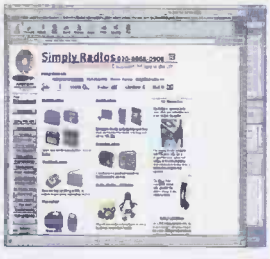
The **National Vintage Communications Fair** is to be held this year on **Sunday 23rd September 2001** in Hall 11 at the NEC in Birmingham. Admission is £5 and doors open from 1030 until 1600.

There will be 300+ stallholders selling vintage radios, crystal sets, gramaphones, horn speakers, old telephones, valves, components, phonographs and much, much more.

For more information and booking forms (stalls only £45), contact NVCF at **Spice House, 13 Belmont Road, Exeter, Devon EX1 2HF, Tel: (01392) 411565** or visit their web site at **http://www.angelfire.com/tx/sunpress/index.html**

New Website

Purley Radio Ltd. has closed its old web site and is now at **www.simplyradios.com** Purley Radio was established in 1947 and still offers traditional service and their new web site includes more than 160 models of domestic radios with independent non-technical reviews.



Pacific Affairs

Interested in what's happening in the Cook Islands or Vanuatu? For the first time, listeners to **World Radio Network** in Europe, Africa and North America can now hear a daily round-up of Pacific affairs.

Korero Pacifica is a 15-minute programme produced by Radio New Zealand International, with a news bulletin covering the Pacific region including Fiji, Tonga, the Cook Islands, Vanuatu, Solomon Islands, Samoa and New Zealand, followed by a short current affairs feature.

As New Zealand is approximately a day ahead of European time, the programme is recorded in Radio New Zealand International's Wellington studios late afternoon ready for transmission on WRN's EuroMax English service across Europe every weekday at 1600UTC, as well as on the WRN 1 Africa, Asia-Pacific and North America networks, also at 1600UTC.

WRN's Australasian content partner Radio New Zealand International came on air in 1990 to cover the Commonwealth Games that year, and now broadcasts throughout the Pacific area and into parts of Asia and the west coast of USA via short wave.

Tattoo Winners

Congratulations to the following 15 readers have won tickets to the Royal International Air Tattoo, which is being held over the weekend 28/29th July 2001. Thanks to *SWM* and RIAT they will be enjoying free entry to the show.

Alan Bulloch, Ayshire.
Mr S. Wilson, N. Ireland.
John Corner, Middlesex.
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Peter Long, W. Sussex.
K.J. Hemsley, Nottingham.
Mr D. Thomas, Hants.
Mr C. Dixon, W. Midlands.
Rob Bridges, Glos.

Two New Publications

The **United Kingdom Hydrographic Office** (UKHO) in Taunton is issuing two new Admiralty Maritime Communications Publications: NP289 and NP290. First published back in May 2001 as *ALRS Small Craft* NP289 covers the UK to Mediterranean including the Azores and Canary Islands. It has been designed to provide the small craft mariner with information on all aspects of maritime radio services and includes communications details for all Ports and Marinas including VTS broadcast channels and a list of s.s.b., m.f. and v.h.f. coast radio stations.

NP289 also contains information on weather services and Marine Safety Broadcasts including NAVTEX and SafetyNet. In addition, the latest information on satellite communications is included, along with GMDSS and DSC procedures and Search & Rescue instructions and listings of beacons transmitting DGPS information.

Following on from NP289, NP290 is a new publication, covering the Caribbean. Including the same comprehensive information for small craft yachtsmen as that found in NP289, NP290 is the definitive guide for mariners cruising the Caribbean.

Fully illustrated with full colour diagrams and photographs, both NP289 and NP290 are easily correctable from monthly Admiralty Notices to Mariners, or from the UKHO web site - see **www.ukho.gov.uk** Both publications are available from appointed Admiralty Distributors at an introductory price of £15 UK RRP.

The Admiralty Maritime Communications series will be republished every two years. A third publication, NP291, covering the Baltic, is due to be published in March 2002. Contact the United Kingdom Hydrographic Office at **Admiralty Way, Taunton, Somerset TA1 2DN** for more information.

RAE Courses

The **Bexley College** are once again planning to deliver the City & Guilds Amateur Radio Course (RAE) from week beginning 10 September 2001, enrolment for which will be on Tuesday 4, Wednesday 5 and Thursday 6th September at the main college site in Tower Road, Belvedere, between 1000 and 2000. The course will run for an academic year, finishing in May 2002, with students able to sit the May 2002 RAE. (Please note that Bexley College no longer offers the examination to external candidates). Morse is taught for the remainder of the academic year, until July 2002, and this tuition will only be offered to students enrolled on the course. Anyone interested should contact the **Guidance & Admissions Centre** on **(01322)** 404000, leaving their name, address and a telephone number. An enrolment form will be posted out during the summer break.

The **Radio Society of Harrow** will be restarting its Novice course on September 17th 2001. The course will be held in Ruislip at the address of **Don G0ACK**. Students interested, should contact Don a.s.a.p. on **0208-845 9575.**

The **Widnes and Runcorn ARC** will be running a RAE and NRAE course and Morse class on Friday nights at The Bunker, Simons Lane, Frodsham, Cheshire, starting at 1900 in early September. For further details call one of the course tutors - **Dave G1PIX** on **(01928) 591401** or **Dave G7OBW** on **(01270) 761608.**

Michael Dixon G4GHJ has been in contact with *SWM* with details of the Amateur Radio C&G 7650 and Morse Code examinations. The course lasts for one year and exams are held in December and May for the 7650 certificate. There are no formal entry requirements, however, students will be encouraged to attend all classes in order to obtain the maximum benefit. Students who successfully complete the C&G 7650 can move onto the Morse Code exam, necessary to obtain a Class 'A' Licence - this may be taken separately. The 12w.p.m. and 5w.p.m. exams are catered for. More information from Michael Dixon at **Tile Hill College, Tile Hill Lane, Coventry CV4 9SU, Tel: 0247-629 3194.**

An RAE course will be held in Orpington at **Newstead Wood Girls School**, commencing Monday 10th September, from 1930 till 2130, leading to the May 2002 exam. Enrolment is at the Bromley Adult Education College, Widmore Centre, Nightingale Lane, Bromley, Kent. Alternatively, 'phone **0208-460 0020**. Please enrol at least two weeks prior to the course. Enquiries to tutor **Alan G0HIQ** on **(01689) 831123.**

The **Newbury College** are again running an RAE course, commencing Thursday 20 September 2001 from 1900 till 2100 (course no 99018A). Further information from Newbury College direct on **(01635) 845215**, E-mail: **ace@newbury-college.ac.uk** or from **Ray Oliver G3NDS** on **(01672) 870892**, E-mail: **ray.oliver@which.net**

The **Sandwell Amateur Radio Club** would like to announce that its usual RAE course will start this year on Thursday September 13th. Enrolment for the course will take place the previous week on Thursday September 6th. The Club is a recognised by the City & Guilds Institute as an authorised Examination Centre for the RAE. Sandwell Amateur Radio Club is situated at The Broadway, Warley, West Midlands - approx. five minutes from junction 2 of the M5 and 15 minutes from the centre of Birmingham. Based in its own premises, facilities include both h.f. and v.h.f./u.h.f. shacks, packet station and RTTY capabilities. For further details of the course, please contact any of the following: **Archie G40JJ** on **0121-532 7039**, **Martin G2BXP** on **0121-552 4902**, **Clive G0TVR** on **0121-429 6061** or **Stuart M0BTO**, E-mail: **stuart@m0bto.freeserve.co.uk**

Maximise With Merlin's Maxcharge

The new Maxcharge alternator charge controller from **Merlin Equipment** is designed to overcome many of the electrical problems found on Specialist Vehicles used in Satellite News Gathering, Service, Data Collection and Survey Applications. Flat batteries, dim lights, extended charging times and batteries that quickly run flat are all symptoms of using a standard automotive alternator in a heavy duty environment. However, the problem doesn't generally lie in the alternator itself, it actually lies with the alternator's own internal regulator.

The alternator regulator is designed to recharge a small engine start battery and run headlamps, heater fan and stereo. It is not designed to charge multiple deep cycle batteries, cope with the huge loads from on-board electronics, invertors and test equipment. Add to this extended cable runs to domestic batteries, temperature variation, relatively short engine run times and voltage drop across blocking diodes and your batteries don't stand a chance of keeping up with the loads.

Maxcharge changes this by tuning your alternator into a three stage smart battery charger. Three Stage Changing is now universally recognised by battery manufacturers as the best way of quickly replenishing battery capacity. As well as achieving a full 100% recharge, batteries are charged quicker (by approx. 30%) and safer.

Maxcharge is already proven by Emergency Organisations and many other specialist users, such as radio amateurs. Priced at just £200, Maxcharge is set to revolutionise the alternator controller market. Available from **Merlin Equipment**, who also supply d.c. to a.c. power invertors, battery chargers, combi charger/invertors, battery monitors, d.c. distribution components and complete electrical sets.

Merlin Equipment Limited can be reached at **Unit 4, Cabot Business Village, Cabot Lane, Poole, Dorset BH17 7BX, Tel: (01202) 697979, FAX: (01202) 691919** or visit their web site at **www.the-merlin-group.com**

65th Anniversary

Radio Prague - the international service of Czech Radio is celebrating its 65th anniversary on 31st August 2001. To mark the occasion Radio Prague have produced a special QSL card which will be sent to listeners to acknowledge reception reports on programmes from 31 August to 9th September in any of the six languages which are broadcast by the station, these are; English, French, German, Spanish, Russian and Czech. The special anniversary QSL cards will doubtlessly be a welcome addition to short wave listeners' collections.

WACRAL Conference

The **World Association of Christian Radio Amateurs & Listeners** (WACRAL) have announced that **Maurice Hateley GM3HAT**, of **Hateley Antenna Technology**, is to be the star lecturer of the WACRAL Conference, which is being held over the weekend of **12-14th October** in Bournemouth. Maurice is to introduce members and guests to the mysteries of his unique Cross Field Loops and Delay Line Radiators.

At this annual event in the WACRAL calendar, conference delegates can look forward to a weekend of amateur radio activities and Christian fellowship. Non-members are welcome to join in their programme. For more information, contact **G4EZU, QTHR** on **(01474) 533686** or at **geoff.peterson@zetnet.co.uk**

Low Cost Oscilloscope

Tecstar Electronics Limited have recently released details of a new 10MHz single channel oscilloscope that is supplied complete with a x1/x10 switchable probe at an ultra low price of only, £156. The CS1010 beside offering a frequency bandwidth of 10MHz has a vertical sensitivity of 5mV/Div to 5V/Div and provides a good level of brightness, a.c., d.c. or ground and triggering selected as auto, normal or TV with a variable trigger level control. An external input allows either +/- or line triggering. X-Y mode is also standard.

A calibration output allows the oscilloscope to be easily set. The CS1010 operates in a conventional way with the control being easily selected and adjusted to suit the wave shape. It is ideally suited for production, audio and education where it is easy to operate, lightweight and portable with excellent triggering.

Further information on the CS1010 is available from Tecstar Eletronics Limited at **1 Nuffield Road, St. Ives, Cambridge PE27 3LX, Tel: (01480) 399499, FAX: (01480) 399503** or E-mail: **sales@tecstar.co.uk**

Still Moving North

Waters and Stanton PLC have announced the extension of their 'shop within a shop' scheme, to Jaycee Electronics at Glenrothes in Fife. Located conveniently between Edinburgh and Glasgow, the shop will trade as **Waters & Stanton@Jaycee**.

Peter Waters explained, "...our Midlands store at Matlock in Derbyshire, which opened in January, had been so well received, it was decided the premises of Jaycee Electronics were ideally placed to offer the same kind of service to Scotland and the border counties. Jaycee Electronics has been run for many years by Bill Hay GM6AOJ and his wife Betty. Now they will have the full range of Waters and Stanton competitively priced products".

Peter Waters emphasised that the shop will still remain under the control of Jaycee Electronics Ltd., but will be stocked and supported by Waters and Stanton PLC with all the pricing and service advantages that go with dealing with one of the UK's largest amateur radio retailer.

Waters and Stanton have for many years enjoyed an enviable reputation with Scottish customers, but have been very mindful that customers like a shop that is within driving distance, so they can examine the equipment prior to buying. **Waters & Stanton@Jaycee** is located at **20 Woodside Way, Glenrothes, Fife KY7 5DF** - only two minutes from the A92 with free parking. They can be contacted on **(01505) 503824**. Waters & Stanton@Jaycee is open for business weekly from Tuesday to Friday, 0900-1700 and Saturday, 0900-1600.

rallies

July 29: The Colchester Radio Amateurs are holding their 33rd Annual Radio & Computer Rally at St. Helena School, Sheepen Road, Colchester, Essex, (follow signs for Colchester Centre and then to Colchester Institute). This large radio, electronics and computer rally will include a large hall for indoor traders (with free tea and coffee), large outside area for a big boot sale (all welcome), refreshments and bar, free parking/disabled access and parking and a Bring & Buy. More details from **Richard G7BIV** on **(01376) 571239** (evenings) or E-mail: **http://www.richard.c.hudson@bt.com**

August 5: Lorn Radio Amateurs, Oban, Argyl Radio Rally. There will be the usual stalls, teas, etc. - make a weekend of it! Details from **Shirley GM0ERV** on **(01631) 566518** or E-mail: **s.mclennan@freeuk.com** or contact **John GM8MLH** on **(01838) 200304**.

August 10: The Cockenzie & Port Seton Amateur Radio Club are holding their 8th Annual Radio Junk Night at 1830-2130 at the Cockenzie & Port Seton Community Centre, South Seton Park, Port Seton, East Lothian. Bring along your own 'junk' and sell it yourself. Tables provided on a first come, first served basis (no charge for the table). Raffle at approximately 2100 and there will be refreshments and disabled access. £1 entrance fee for all persons. All money will be donated to the British Heart Foundation. **Bob Glasgow GM4UYZ** on **(01875) 811723**.

August 12: The Flight Refuelling ARS Hamfest will be taking place at Flight Refuelling Sports Ground, Merley, Wimborne, Dorset. The event will run from 1000 to 1700 hours and will include the usual mix of traders, Bring & Buy, crafts, car boot sale and field events. Overnight camping facilities will be available for Saturday 11th. Talk-in on S22. **Keith Elliott** on **(01202) 577937**.

August 12: The Lorn Radio Amateurs are holding a Village Fun Day at Dalavich, Argyl. More information from **Shirley GM0ERV** on **(01631) 566518** or **s.mclennan@freeuk.com** or contact **John** on **(01838) 200304**.

August 19: The Leeds & District Amateur Radio Society are holding their twice yearly traditional outdoor rally and car boot sale at the Yarnbury Rugby Club, Brownberrie Lane, Horsforth, Leeds. There will be plenty of free parking for buyers. More details from **J. Mortimer M0JAM** on **(01943) 874650**.

August 26: The Milton Keynes Amateur Radio Society are holding their 15th Annual Radio Rally at a new venue - this being St Paul's School, Phoenix Drive, Leadenhall, Milton Keynes, Bucks. Talk-in on S22 and SU22. More information from **Dave G3ZPA** on **(01908) 501310**.

August 26: The Torbay Amateur Radio Society's Mobile Rally will take place at Churston Grammar School, Greenway Road, Churston, Torbay, Devon. More information from **John Head G4VUD** on **(01626) 205514** (answerphone during office hours) or E-mail: **rally@tars.org.uk**

August 27: The Huntingdonshire Amateur Radio Bank Holiday Monday Rally takes place today at Ernulf Community School, St. Neots, Cambridgeshire (near to the Tesco Superstore on A428). Doors Open 1000-1400 and admission is £1.50. Hot and cold refreshments available. Features include selling hall and car boot sale. Talk-in on S22. **Peter Herbert M5ABN** on **(01480) 457347** (between 1800 and 2200).

If you're travelling a long distance to a rally, it could be worth 'phoning the contact number to check all is well, before setting off. The Editorial Staff of *SWM* cannot be held responsible for any information on Rallies, as this is supplied by the organisers and is published in good faith as a service to readers. If you have any queries about a particular event, please contact the organisers direct. Editor.

■ BRIAN ODDY G3FEX, THREE CORNERS, MERRYFIELD WAY, STORRINGTON, WEST SUSSEX RH20 4NS

LM&S

Regular listeners to the s.w. broadcasts from **Radio Canada International** (RCI) will have noticed that changes to their programme schedule were introduced in June. They had to be made due to ongoing budgetary problems. On May 31 the last English and French night programmes were broadcast. Since June 1 their 1100UTC transmission to India in English has been discontinued. The first of a series of fully recorded weekend programmes with no newscasts were aired June 2/3. The production of two English and French daily current affairs magazines commenced on June 4. Those in English are at 1800, 2000C, 0100 & 0200C and in French at 1900, 2200 & 2300C (Times are UTC. C=Current affairs repeat. R=Transmission repeat) From June 11 all foreign language programmes have been limited to half-hour periods - Arabic at 1915, 2100R, 0030C, 0330R. Chinese 1300C, 2300. Spanish 2230, 0030C. Russian 1500, 1600C. Ukrainian 1530, 1600R, 1630C. From October 1 broadcasts in English & French will also be reduced to half-hour periods (two in each language). From 6 October new weekly programmes in English & French will be aired during the weekend and repeated during the week.

The proposals by **Swiss Radio International** (SRI) to discontinue their short wave broadcasts by the end of 2004 and rely instead upon the Internet to convey their programmes to listeners overseas must have been a shock and disappointment for many thousands of people because a high percentage of them do not have the equipment needed to receive them via the Internet - see 'LM&S', *SWM* June 2001.

Perhaps of even greater importance is the announcement by the **BBC World Service** that they intend to discontinue their s.w. broadcasts to listeners in N.America, Australia, New Zealand and the Pacific Islands. Instead, they are expecting listeners in those areas to receive their programmes via the Internet or listen to a limited re-broadcast service from a local v.h.f. (f.m.) station. From July 1 2001 their broadcasts to N.America will cease on 5.965, 5.975, 6.175, 9.515, 9.590, 11.865, 15.220 & 17.840MHz. Those to Australia, New Zealand and the Pacific Islands will no longer be heard on 5.975, 9.580, 9.740 & 11.955MHz.

The BBC commenced s.w. broadcasting on a regular basis to listeners overseas in December 1932. Two ST&C s.w. transmitters, which the BBC referred to as Senders 1 & 2, were housed in a purpose built low profile building at the Daventry site on Borough Hill. The two transmitters and associated beam antennas enabled two hour broadcasts to be sent to Australia & New Zealand; India; E/S.Africa; W.Africa also Canada at chosen times during each day. The 'Empire Service', as it was then called, proved to be very popular. Apart from the entertainment value, it enabled listeners to obtain factual and reliable information about events in the UK and other countries.

Additional high power s.w. transmitters were installed in a new and much larger building at Daventry during the years prior to WW2 and a number of additional beam antennas (reversable/slewable curtain arrays), suspended between masts of 98 or 150m in height, were erected on the 120 acre site. Additional s.w. transmitting stations were constructed in the UK at Skelton (Cumbria), Rampisham (Dorset) and Woofferton (Shropshire). With the post war addition of overseas relay stations the BBC was able to provide a service which could be received virtually anywhere in the world.

Accurate reporting was the basis on which the BBC World Service was founded and their news bulletins are greatly respected by listeners throughout the World. It is ironic that the BBC have decided to discontinue their s.w. broadcasts to Australia, New Zealand and Canada since they were the first countries to receive them during the days of the Empire Service. One can only wonder what the future holds - no doubt it will largely depend upon the reaction of the listeners, so be sure to let the BBC know your views. Address them to: **Mr Mark Byford, Director BBC World Service, Bush House, Strand, LONDON WC2B 4PH, UK.**

Long Wave Chart

Freq (kH)	Station	Country	Power (kW)	Listener
153	Bechar	Algeria	1000	F*,G*,I
153	Donebach DLF	Germany	500	B,C*,D,E,F*,G,H*
153	Bod	Romania	1200	C*,G*
162	Allouis	France	2000	C,D,E,F*,G,H*,I
171	Nador Medi-1	Morocco	2000	B*,G*
171	B'shakovo etc	Russia	1200	D,E*
171	Lvov	Ukraine	500	G*
177	Dranienburg	Germany	500	B*,C*,D,E,F*,G,H*,I
183	Saarlouis	Germany	2000	D,E,F*,G,I
189	Gufuskalar	W.Iceland	150	B*,D*,G*
198	Droitwich BBC	UK	500	C,D*,E,G,I
198	Burghead BBC	UK	50	A
198	WesterglenBBC	UK	50	A,B
207	Munich DLF	Germany	500	B,D,E,F*,G,H*,I*
207	Eidar	E.Iceland	100	B*
207	Azilal	Morocco	800	G*
216	Roumoules RMC	S.France	1400	B,D,E,F*,G,I*
225	Polskie R-1	Poland	?	B*,C*,D,G,I*
234	Beidweiler	Luxembourg	2000	D,E,F*,G*,H*,I
243	Kalundborg	Denmark	300	B,C,D*,E,F*,G,I
252	Tipaza	Algeria	1500	H*
252	Atlantic 252	Eire	500	D*,E,F*,G,I
261	Burg(R.Rose)	Germany	85	B*,G*
261	Taldom Moscow	Russia	2500	B*,D*,G*
270	Topolna	Czech Rep	1500	B*,C*,D*,F*,G,I*
279	Sasnovy	Belarus	500	B* C*,D*,G*,I*

Note: Entries marked * were logged during darkness. All other entries were logged during daylight or at dawn/dusk.

Listeners:-
(A) Bernard Curtis, Stalbridge.
(B) Simon Hockenhull, E.Bristol.
(C) Sheila Hughes, Morden.
(D) Eddie McKeown, Newry.
(E) George Millmore, Wootton, IoW.
(F) Fred Pallant, Storrington.
(G) Ernie Strong, Ramsey, Cambs.
(H) Thomas Williams, Truro.
(I) Fred Wilmshurst, Northampton.

Long Wave Reports

Note: l.w. & m.w. frequencies in kHz; s.w. in MHz; Time in UTC (=GMT). Unless otherwise stated, all logs were compiled during May.

During the early hours of May 11 a broadcast from Rikisutvarpid (RUV) in Reykjavik via their outlets at Gufuskalar, W.Iceland on **189kHz** and Eidar, E.Iceland on **207kHz** was received by **Simon Hockenhull** in E.Bristol. At 0140UTC the transmissions rated SINPO 25442 and 22342 respectively. Good reception from their Gufuskalar outlet was also noted on May 29 by **Ernie Strong** (Ramsey, Cambs.) when their transmission peaked 33343 at 0135UTC.

Commenting upon reception in this band, **Eddie McKeown** (Newry) says "Easy ones like Munich on **207** are almost gone before they've arrived and harder ones like Sasnovy barely arrive in the first place". On the 31st he logged Sasnovy, Belarus on **279** as 25232 at 2156 and Gufuskalar, W.Iceland on **189** as 15211 at 0028UTC.

During daylight on May 10 the Droitwich 500kW transmitter on **198kHz** was 'off air' for maintenance and **Bernard Curtis** (Stalbridge) was able to hear the co-channel outlets in Scotland at Burghhead (50kW) and Westerglen (50kW). He logged their combined transmission as 43334 at 1720UTC.

Medium Wave Reports

There were no reports of broadcasts from m.w. stations in E.Canada and E.USA having reached the UK at night during May. However, some interesting logs were compiled by the listeners who were prepared to search the band after dark for the sky waves from m.w. stations in the Middle East, N.Africa, Europe and Scandinavia - see chart.

Whilst enjoying a holiday in Ballater, Aberdeenshire **Brian Keyte** (Gt.Bookham) spent a few hours, mostly in the mornings between 0630 and 0930UTC, searching the band with his AOR AR7030 receiver for distant local radio stations. He says "I ran a thin wire through trees behind the holiday cottage to a wire fence, making about 167m in all. Running NNW/SSE, this gave good reception from the south". He logged a total of 64 stations - see chart.

Short Wave Reports

Radio France International (RFI) is still taking advantage of the propagation conditions prevailing in the **25MHz (11m)** band. No doubt their daily transmissions to E/C.Africa on **25.820** (Fr 0900-1300) reach their target well. In the UK the reception of them is unreliable. Typical ratings were SINPO 35233 at 0900UTC in Newry; 25323 at 0900 by **Richard Reynolds** in Guildford; 33333 at 0940 by **Thomas Williams** in Truro; 43433 at 0945 by **Vic Prier** in Colyton; 22222 at 0950 by **Robert Hughes** in Liverpool; 35343 at 1222 by **Fred Wilmshurst** in Northampton; 35422 at 1240 in E.Bristol.

Tropical Bands Chart

Freq (MHz)	Station	Country	UTC	DXer
2.310	ABC Alice Springs	Australia	2110	C,J
3.230	SABC Meyerton	S.Africa	1929	G
3.255	BBC via Meyerton	S.Africa	2122	F,G,J,M
3.270	Namibian BC,Windhoek	Namibia	2007	F,G,J
3.300	R.Cultural	Guatemala	0412	K
3.316	SLBS Goderich	Sierra Leone	2006	G
3.320	SABC (RSG) Meyerton	S.Africa	1928	F,G,J,K
3.335	CBS Taipei	Taiwan	2217	J
3.365	GBC R-2	Ghana	1943	D,G,J,K
3.915	BBC via Kranji	Singapore	2100	D,F,J,K,L
3.955	R.Korea via Skelton	England	2010	I
3.955	R.Taipei via Skelton	England	1915	A,E,F,J
3.975	R.Budapest	Hungary	2145	D,E,L
3.975	R.Korea via Skelton	England	2100	A,H,J,L
3.985	Nexus, Milan	Italy	1933	F,J
3.995	OW via Meyerton	S.Africa	2015	F,I
4.005	Vatican R.	Italy	2121	F
4.760	AIR Port Blair	India	2320	J
4.765	Brazzaville	Pep.Rep.Congo	2030	B
4.770	FRCN Kaduna	Nigeria	2016	F,G,J,K
4.775	TWR Manzini	Swaziland	0408	C,K
4.783	RTM Bamako	Mali	2222	D,F,G,J,K
4.800	LNBS Maseru	Lesotho	0409	K
4.820	R.Botswana, Gaberone	Botswana	2250	D,K
4.820	La Voz Evangelica	Honduras	0500	C
4.825	R.Cancao Nova	Brazil	0505	C
4.830	R.Bangkok	Thailand	2200	K
4.835	RTM Bamako	Mali	1948	D,E,F,G,J,K
4.845	ORTM Nouakchott	Mauritania	1955	D,E,F,G,J,K
4.850	R.Yaounde	Cameroon	2127	F
4.860	AIR Delhi	India	1914	G
4.885	R.Clube do Para	Brazil	0424	C,K
4.885	KBC East Sce Nairobi	Kenya	1856	F,G,J
4.890	RFI Paris	via Gabon	0358	C,F,K
4.895	Pakistan BC	Pakistan	2242	F
4.905	Anhanguera	Brazil	0408	C,K
4.915	R.Anhanguera	Brazil	0545	K
4.915	GBC-1, Accra	Ghana	2305	D,F,G,J,K
4.915	KBC Cent Sce Nairobi	Kenya	1856	F,G
4.920	R.Quito, Quito	Ecuador	0431	K
4.927	RRI Jambi	Indonesia	2241	K
4.930	R.Internacional	Honduras	0432	K
4.935	KBC Gen Sce Nairobi	Kenya	2009	C,G
4.945	R.Illimani, La Paz	Bolivia	2355	J
4.950	VOA via Sao Tome	Sao Tome	1900	E,F,G,H,J,L
4.960	VOA via Sao Tome	Sao Tome	0434	K
4.975	R.Uganda, Kampala	Uganda	2014	G,K
4.980	Ecos del Torbes	Venezuela	0144	F,J,K
4.985	R.Brazil Central	Brazil	2330	B,F,J
5.009	R.TV Malagasy	Madagascar	1840	G
5.015	R.Brazil Tropical	Brazil	0515	C
5.020	La V du Sahel,Niamey	Niger	1955	G
5.025	R.Parakou	Benin	2229	K
5.025	R.Rebelde, Habana	Cuba	0400	C,F,K
5.025	R.Uganda, Kampala	Uganda	1912	F,G,K
5.030	AWR Latin America	Costa Rica	0423	K
5.035	R.Bangui	C.Africa	0425	C
5.050	R.Tanzania	Tanzania	1913	E,G,J,K
5.055	Faro del Caribe	Costa Rica	0435	C,K
5.055	RFO Cayenne(Matoury)	French Guiana	0529	K
5.100	R.Liberia, Totota	Liberia	2000	B,G,H

DXers:-
(A) Stan Evans, Herstmonceux.
(B) Bill Griffith, W.London.
(C) David Hall, Morpeth.
(D) Simon Hockenhull, E.Bristol.
(E) Rhoderick Illman, Oxted.
(F) Eddie McKeown, Newry.
(G) Fred Pallant, Storrington.
(H) Clare Pinder, while in Appleby.
(I) Peter Pollard, Rugby.
(J) Vic Prier, Colyton.
(K) Richard Reynolds, Guildford.
(L) Martin Venner, St. Austell.
(M) Thomas Williams, Truro.

The most distant broadcaster to reach the UK in the **21MHz (13m)** band is R.Australia. Their transmissions from Shepparton have been received here quite well most mornings, but solar activity has disrupted reception at times. Their early morning broadcast on **21.725** (Eng 0200-0900) was rated 25542 at 0604 by **David Edwardson** in Wallsend & 34333 at 0807 by **Vera Brindley** in Woodhall Spa. At 0900 they move to **21.820** (Eng to Asia 0900-1400), rated 34333 at 0940 in Truro.

Also mentioned in the reports were HCJB Quito, Ecuador **21.455** (Eng [u.s.b.]), rated 55434 at 0357 in Guildford; R.Finland via Pori **21.670** (Eng to Asia 0630-0700) 55544 at 0640 by **Stan Evans** in Herstmonceux; R.Pakistan **21.465** (Ur, Eng to Eur) 44444 at 0820 in Stalbridge; R.Japan via Yamata, Japan **21.755** (Jap, Eng to Oceania 0800-1100) 43343 at 0930 in Liverpool; UAER, Dubai **21.605** (Eng to Eur 1030-1055) 33322 at 1040 in Newry; DW via Nauen? **21.780** (Eng to Africa 1100-1145) 55555 at 1122 by **Martin Venner** in St.Austell; VOIRI Tehran **21.470** (Eng to Asia 1100-1230) 32332 at 1130 by **Sheila Hughes** in Morden; Channel Africa, Johannesburg **21.725** (Eng to Africa, Eur? 1300-1455) 44444 at 1305 by **David Hall** in Morpeth; UAER, Dubai **21.605** (Eng to Eur 1600-1640) 55544 at 1608 by **Martin Cowin** in Kirkby Stephen; BBC via Ascension Is **21.470** (Eng to E/S.Africa 1300-1900) 34233 at 1755 by **Peter Pollard** in Rugby; Voz Cristiana, Chile **21.500** (Sp to S.America 1100-2100) 34422 at 1805 in Colyton; R.Canada Int via Rampisham, UK **21.570** (Eng to Africa 1800-1859) 35553 at 1855 by **John Parry** in Larnaca, Cyprus; R.For Peace Int [RFPI], Costa Rica **21.815** (Eng [u.s.b.] to C.America?) 35343 at 1905 in Northampton; Voz Cristiana, Chile **21.550** (Sp to N.America 1300-0100) 24332 at 1935 by **Rhoderick Illman** in Oxted; R.Canada Int via Sackville **21.570** (Fr, Eng to Eur 1900-2100) 43334 at 2000 by **Gerald**

Note: Entries marked * were logged during darkness. All other entries were logged during daylight or at dawn/dusk.

Listeners:-
(A) Simon Hockenhull, E.Bristol.
(B) Sheila Hughes, Morden.
(C) Brian Keyte, while in Ballater, Aberdeenshire.
(D) George Millmore, Wootton, IoW.
(E) Ernie Strong, Ramsey, Cambs.
(F) Fred Wilmshurst, Northampton.

Local Radio Chart

Freq (kHz)	Station	ILR	BBC	e.m.r.p (kW)	Listener
558	Spectrum, London	I		0.80	A,D,E*,F
585	R.Solway		B	2.00	*
603	C.G,Litt'brne	I		0.10	D,E,F
630	R.Bedfordshire(3CR)		B	0.20	A,D,E,F
630	R.Cornwall		B	2.00	D
657	R.Clwyd		B	2.00	C,D,E,F
657	R.Cornwall		B	0.50	D
666	Cl.Gold 666, Exeter	I		0.34	A,D,E,F
666	R.York		B	0.80	C,E
729	BBC Essex		B	0.20	D,E,F
738	Hereford/Worcester		B	0.037	A,D,E,F
756	R.Cumbria		B	1.00	C,E
756	The Magic 756,Powys	I		0.63	D,E,F
765	BBC Essex		B	0.50	C,D,E,F
774	R.Kent		B	0.70	D,E,F
774	R.Leeds		B	0.50	C
774	Cl.Gold 774, Glos	I		0.14	D,F
792	Cl.Gold 792,Bedford	I		0.27	E,F
801	R.Devon		B	2.00	A,C,D,E
828	Cl.Gold 828, Luton	I		0.20	B,E,F
828	2CR Cl.G Bournem'th	I		0.27	D
837	R.Cumbria/Furness		B	1.50	C
837	Asian Netwk Leics		B	0.45	A,D,E,F
855	R.Devon		B	1.00	D
855	R.Lancashire		B	1.50	C,E
855	R.Norfolk, Postwick		B	1.50	C,E
855	Sunshine 855,Ludlow	I		0.15	A,F
873	R.Norfolk, W.Lynn		B	0.30	C,D,E,F
936	Brunel CG, W.Wilts	I		0.18	B,D,E,F
936	Fresh AM, Hawes	I		1.00	C
945	Cl.Gold GEM, Derby	I		0.20	C,E,F
945	Capital G, Bexhill	I		0.75	B,C,D,E
954	Cl.Gold 954 via ?	I		?	E
954	Cl.Gold 954,Torquay	I		0.32	D
954	Cl.Gold 954, H'ford	I		0.16	A,B,C,F
963	Asian Sd, E.Lancs	I		0.80	C
963	Liberty R, Hackney	I		1.00	D,E,F
972	Liberty R, Southall	I		1.00	E,F
990	R.Aberdeen		B	1.00	C
990	R.Devon, E.Devon		B	1.00	A,D
990	Magic AM,Doncaster	I		0.25	C
990	Cl.G, Wolverhampton	I		0.09	E,F
999	C.Gold GEM Nott'ham	I		0.25	E,F
999	Magic 9-99 P'stn	I		0.80	C,E
999	R.Solent		B	1.00	B,D
1017	Cl.G,WABC,Shr'shire	I		0.70	C,E,F
1026	R.Cambridgeshire		B	0.50	E
1026	Downtown R, Belfast	I		1.70	C
1026	R.Jersey		B	1.00	A,D
1035	RTL C'try(Ritz)1035	I		1.00	D,E,F
1035	N.Sound 2, Aberdeen	I		0.78	C
1035	West Sound AM, Ayr	I		0.32	C
1107	Moray Fth,Inverness	I		1.50	C
1116	R.Derby		B	1.20	B,C,E,F
1116	R.Guernsey		B	0.50	B,D,E
1116	Valley R, Ebbw Vale	I		0.50	A,B*,C
1152	Cl.G Amber, Norwich	I		0.83	E
1152	Clyde 2, Glasgow	I		3.06	C
1152	LBC 1152 AM	I		23.50	D,E,F
1152	Cl.G, Birmingham	I		3.00	A,F
1161	R.Bedfordshire(3CR)		B	0.10	E,F
1161	Brunel Cl.G,Swindon	I		0.16	A
1161	Southern Counties R		B	1.00	D
1161	Tay AM, Dundee	I		1.40	C
1170	Cl.G Amber, Ipswich	I		0.28	E
1170	Magic 1170,Stockton	I		0.32	C
1170	Capital G,Portsm'th	I		0.50	D
1170	1170AM,High Wycombe	I		0.25	E,F
1242	Capital G,Maidstone	I		0.32	D
1251	C.G Amber,Bury StEd	I		0.76	C,E
1260	Brunel CG, Bristol	I		1.60	C,D
1260	Marcher G, Wrexham	I		0.64	C
1260	SabrasSnd,Leicester	I		0.29	C,E,F
1260	R.York		B	0.50	C
1296	Radio XL,Birmingham	I		5.00	A,C,D,F
1305	Magic AM,Barnsley	I		0.15	C
1305	Premier via ?	I		0.50	D,E,F
1305	Touch AM, Newport	I		0.20	C,D
1323	Capital G,Southwick	I		0.50	B,C*,D,F
1332	Cl.Gold 1332,Pr'bo	I		0.60	C,E,F
1332	Wiltshire Sound		B	0.30	C,D
1359	Breeze, Chelmsford	I		0.28	B,C
1359	Cl.Gold 1359, C'try	I		0.27	C,E,F
1359	R.Solent,Bournem'th		B	0.85	B,D
1359	Touch AM, Cardiff	I		0.20	C
1368	R.Lincolnshire		B	2.00	C,E,F
1368	Southern Counties R		B	0.50	D
1368	Wiltshire Sound		B	0.10	D
1413	R.Gloucester via ?		B	?	C,E,F
1413	Premier via ?	I		0.50	C,D,E
1413	Fresh AM, Skipton	I		0.10	C,E
1431	Breeze,Southend	I		0.35	C,E
1431	Cl.Gold, Reading	I		0.14	A,B,D,F
1449	R.Peterboro/Cambs		B	0.15	C,E,F
1458	R.Cumbria		B	0.50	C
1458	R.Devon		B	2.00	D
1458	1458 Lite AM Manch*	I		5.00	C
1458	R.Newcastle		B	2.00	C
1458	Sunrise, London	I		50.00	D,E,F
1458	Asian Netwk Langley		B	5.00	E,F
1485	Cl.Gold, Newbury	I		1.00	A,C,E,F
1485	R.Humberside (Hull)		B	1.00	C,E
1485	R.Merseyside		B	1.20	D
1485	Southern Counties R		B	1.00	D
1503	R.Stoke-on-Trent		B	1.00	A*,B*,C,D*,E,F
1521	Breeze, Reigate	I		0.64	A*,B,C,D,E,F
1530	R.Essex, Southend		B	0.15	E
1530	Cl.Gold W.Yorks	I		0.74	C
1530	Cl.Gold Worcester	I		0.52	A,C,D,F
1548	R.Bristol		B	5.00	D
1548	Capital G, London	I		97.50	D,E
1548	Forth AM, Edinburgh	I		2.20	C
1557	R.Lancashire		B	0.25	C
1557	Cl.Gold 1557,N.hant	I		0.76	C,E,F
1557	Capital G, So'ton	I		0.50	D
1566	CountySnd,Guildford	I		0.50	C,D
1584	London Turkish R	I		0.20	B*
1584	R.Nottingham		B	1.00	B*,E,F
1584	Tay, Perth	I		0.21	B*,C
1602	R.Kent		B	0.25	C,D

Guest in Dudley; R.Nederlands via Bonaire, Ned.Antilles **21.590** (Eng to C/W.Africa 1830-2025) 45544 at 2010 in E.Bristol.

The occupants of the narrow **18MHz (15m)** band include R.Sweden **18.960** (Eng, Sw to N.America, Lat.America 1130-1430), rated 55444 at 1155 in Herstmonceux, 55444 at 1244 in Newry & 55545 at 1415 in E.Bristol; R.Norway Int **18.950** (Norw to N.America 1200-1229) 35343 at 1210 in Northampton; Christian Science BC via WSHB Cypress Creek **18.910** (Fr, Eng to E/C.Africa 1600-2200?) 32222 at 1630 in Truro; WYFR Okeechobee, USA **18.980** (Eng to Africa, Eur 1600-2200?) 45434 at 1750 in Colyton, 44444 at 1848 in Woodhall Spa & 44333 at 2020 in Morden.

Many broadcasters are using the **17MHz (16m)** band to beam their programmes to listeners in selected areas. Some of their broadcasts have been received clearly in the UK but the effects of solar activity have disrupted reception at times. Noted before noon were R.Australia via Shepparton **17.750** (Eng to Asia 0000-0500, 0600-1100), rated 34433 at 0605 in Morpeth & 34333 at 0748 in Woodhall Spa; R.France Int **17.800** (Eng to E.Africa 0500-0530, 0600-0630) 35553 at 0611 in Wallsend; Voice of Russia **17.495** (Eng to Australia 0500-0900) 44222 at 0810 in Morden; Africa No.1, Gabon **17.630** (Fr to W.Africa 0700-1600) 23432 at 0856 in Oxted; Israel R, Jerusalem **17.535** (Heb [Home svce relay] to W.Eur, N.America) 33333 at 0935 in Truro; RAI Rome **17.710** (It to E.Africa 0600?-1300) 54444 at 0955 in Liverpool; AIR via Delhi? **17.895** (Eng to Pacific areas 1000-1100) 35433 at 1005 in Northampton. Whilst visiting Penang, Malaysia **Robert Hughes** (Liverpool) picked up HCJB Quito, Ecuador on **17.660** (Eng to Asia), which he logged as SIO 544 at 0800.

After mid-day, R.Finland via Pori **17.670** (Eng to W.Eur, N.America 1230-1300) was 44433 at 1240 in Herstmonceux; R.France Int **17.620** (Eng to M.East, India 1400-1500) 24433 at 1425 in E.Bristol; WHRI via Maine, USA **17.650** (Eng to Eur, M.East, Africa 1600?-2200?) 33233 at 1617 in St.Austell; VOA via Morocco **17.895** (Eng to Africa 1600-1900) 44444 at 1700 in Dudley; Channel Africa via Meyerton **17.860** (Eng to W.Africa 1700-1730) 34423 at 1712 in Colyton; R.Canada Int via Sackville? **17.820** (Eng to Eur, Africa 1800-1900?) 44344 at 1800 by **Clare Pinder** in Appleby; Channel Africa via Meyerton **17.870** (Eng to W.Africa 1800-1830) 35343 at 1800 in Newry; BBC via Ascension Is **17.830** (Eng to W.Africa 0800-2100) 44344 at 1802 in Rugby; HCJB Quito, Ecuador **17.660** (Eng to Eur 1900-2200) 44434 at 1940 by **Tony Hall** in Freshwater Bay, IoW; Voz Cristiana, Chile **17.680** (Sp to Caribbean, S.America) 54444 at 2220 in Stalbridge.

In the **15MHz (19m)** band R.Australia has been reaching the UK on three frequencies from Shepparton: **15.515** (Eng to N.America, Pacific 0100-0700), rated 44433 at 0635 in Herstmonceux; **15.240** (Eng to Pacific, E.Asia 0000-1000) 33333 at 0800 by **Bill Griffith** in W.London; also **15.415** (Eng to E/SE.Asia 0600-0900) 34333 at 0859 in Oxted.

Also received during the morning were R.Kuwait on **15.110** (Eng, Ar to SE.Asia 0500-0930), logged as 54544 at 0530 in Guildford; Channel Africa via Meyerton, S.Africa **15.215** (Eng to Africa 0600-0630) 32332 at 0600 in Morden; R.For Peace Int, Costa Rica **15.050** (Eng to N.America 0000-0630) 43343 at 0620 in Liverpool; HCJB Quito, Ecuador **15.115** (Eng to ? ?-0700) 44334 at 0650 in Stalbridge; BBC via Singapore **15.360** (Eng to E.Asia 0000-0330, 0500-1030) SIO 444 at 0905 in Penang, Malaysia; V of Greece, Athens **15.630** (Gr, Eng to Eur, Australia? 0900-1000) 44444 at 0930 in Truro; Swiss R.Int via Julich, Germany **15.315** (Eng, Ger, Fr, It, Eng to

Note: Entries marked * were logged during darkness. All other entries were logged during daylight or at dawn/dusk.

Listeners:-
(A) Simon Hockenhull, E.Bristol.
(B) Sheila Hughes, Morden.
(C) Brian Keyte, while in Ballater, Aberdeenshire.
(D) Eddie McKeown, Newry.
(E) George Millmore, Wootton IoW.
(F) Clare Pinder, while in Appleby.
(G) Fred Wilmshurst, Northampton.

Medium Wave Chart

Freq (kHz)	Station	Country	Power (kW)	Listener
531	Torshavn	Faeroe Is.	100	C
531	Berg	Germany	20	D*
531	RNE5 via ?	Spain	?	E
531	Beromunster	Switzerland	500	G
540	Wavre	Belgium	150/50	D*,E,G
540	Sidi Bennour	Morocco	600	D*
549	Thurnau (DLF)	Germany	200	E,G
558	Espoo	Finland	50	D*
558	RNE5 via ?	Spain	?	D*
567	Tullamore(RTE1)	Eire	500	A,C,D*,E,G
576	Muhlacker(SDR)	Germany	500	D*,G*
585	Paris(FIP)	France	8	E
585	Madrid(RNE1)	Spain	200	D*,G*
585	Dumfries(BBCScot)	UK	2	C,D*
594	Frankfurt(HR)	Germany	1000/400	D*
603	Lyon	France	300	D*,E
603	Newcastle(BBC)	UK	2	C,D*
612	Athlone(RTE2)	Eire	100	A,C,D*,E
621	Wavre	Belgium	80	B*,D*,E,G
621	Barcelona(OCR)	Spain	50	D*
630	Vigra	Norway	100	D*
630	Tunis-Djedeida	Tunisia	600	A*,D*
639	Praha(Liblice)	Czech	1500	D*
639	RNE1 via ?	Spain	?	A*,D*
648	Drfordness(BBC)	UK	500	C,D*,E,G
657	Madrid(RNE5)	Spain	20	D*
657	Wrexham(BBCWales)	UK	2	C,D*,G
666	MesskirchRohrd(SWF)	Germany	150	D*,G*
675	R10 FM	Holland	120	A,D*,E,G*
684	Sevilla(RNE1)	Spain	500	A*,D*
684	Avala(Beograd-1)	Yugoslavia	2000	D*
693	Droitwich(BBC)	UK	150	B,E,G
702	TWR via Monte Carlo	Monaco	300	D*
711	Rennes 1	France	300	A,D*,E,G
720	Lisnagarvey(BBC4)	N.Ireland	10	C
720	Lots Rd,Ldn(BBC4)	UK	0.5	E,G
729	Cork(RTE1)	Eire	10	C,D*,E
729	RNE1 via ?	Spain	?	D*,G*
738	Paris	France	4	D*,E
738	Barcelona(RNE1)	Spain	500	D*
747	Flevo(Hilv2)	Holland	400	A,B,D*,E,G
756	Braunschweig(DLF)	Germany	800/200	D*,G*
765	Sottens	Switzerland	500	D*
774	Enniskillen(BBC)	N.Ireland	1	D*
774	RNE1 via ?	Spain	?	D*,G*
783	Leipzig(MDR)	Germany	100	D*
783	Miramar(R.Porto)	Portugal	100	D*
792	Limoges	France	300	A,D*
792	Lingen(NDR)	Germany	5	D*
801	Munchen-Ismaning	Germany	300	A,D*
810	Westerglen(BBCScot)	UK	100	A*,C,D*
819	Batra	Egypt	450	D*
819	S.Sebastian(EI)	Spain	5	B*
828	Rotterdam	Holland	20	D*
837	Nancy	France	200	D*
846	Rome	Italy	1200	A*,D*
855	RNE1 via ?	Spain	?	D*
864	Paris	France	300	D*
873	Zaragoza(SER)	Spain	20	D*
873	Enniskillen(R.UI)	UK	1	D*
882	COPE via ?	Spain	?	D*
882	Washford(BBCWales)	UK	100	C,D*,E,F*
891	Algiers	Algeria	600/300	B*,D*
891	Hulsberg	Netherlands	20	D*
900	Brno(CRo2)	Czech Rep	25	D*
900	Milan	Italy	600	A*
909	B'mans Pk(BBC5)	UK	140	E
918	Domzale	Slovenia	600/100	D*
927	Wolvertem	Belgium	300	D*,E
936	Bremen	Germany	100	D*
945	Toulouse	France	300	A*,D*
954	Madrid(CI)	Spain	20	D*
963	Pori	Finland	600	A*,D*
972	Hamburg(NDR)	Germany	300	D*
981	Alger	Algeria	600/300	B*
990	Berlin	Germany	300	D*
990	Tywyn(BBC)	UK	1	C,D*
999	Schwerin (RIAS)	Germany	20	D*
999	Madrid(CDPE)	Spain	50	D*
1008	SER via ?	Canaries/Spain	?	D*
1008	Flevo(Hilv-5)	Holland	400	D*,E
1017	Rheinsender(SWF)	Germany	600	D*
1035	Lisbon	Portugal	120	D*
1044	Dresden(MDR)	Germany	20	D*
1044	S.Sebastian(SER)	Spain	10	D*
1053	Talk Sport via ?	UK	?	D*,E,G
1062	Kalundborg	Denmark	250	A,D*
1062	R.Uno via ?	Italy	?	D*
1071	Riga	Latvia	50	D*
1071	Bilbao(EI)	Spain	5	A*
1071	Talk Sport via ?	UK	?	D*,G
1080	SER via ?	Spain	?	D*
1089	Talk Sport via ?	UK	?	D*,E,G
1098	Nitra(Jarok)	Slovakia	1500	D*
1098	RNE5 via ?	Spain	?	D*
1107	AFN via ?	Germany	10	A,D*
1107	Talk Sport via ?	UK	?	D*,G
1116	Pontevedra(SER)	Spain	5	B*,D*
1125	La Louviere	Belgium	20	D*,E
1125	Llandrindod Wells	UK	1	C
1134	Zadar(Croatian R)	Croatia	600/1200	D*
1143	AFN via ?	Germany	1	D*
1179	SER via ?	Spain	?	A*
1179	Solvesborg	Sweden	600	A*,D*,F*,G*
1188	Kuume	Belgium	5	D*,G
1188	Szolnok	Hungary	135	D*
1197	Munich(VOA)	Germany	300	D*
1197	Vitoria(EI)	Spain	5	A*
1197	Virgin via ?	UK	?	A,D*,E,G
1206	Bordeaux	France	100	A,D*
1215	Virgin via ?	UK	?	D*,G
1224	Lelystad	Holland	50	D*
1233	Nitra	Slovakia	40	D*
1233	Virgin via ?	UK	?	A,G
1242	Marseille	France	150	A*,D*
1242	Virgin via ?	UK	?	D*
1251	Marcali	Hungary	500	D*
1251	Huisberg	Netherlands	10	D*
1260	SER via ?	Spain	?	D*
1269	Neumunster(DLF)	Germany	600	D*,G
1278	Dublin/Cork(RTE2)	Eire	10	B*,C,D*,G
1287	RFE via ?	Czech Rep.	?	D*
1296	Orfordness(BBC)	UK	500	C,D*
1305	RNE5 via ?	Spain	?	D*
1314	Kvitsoy	Norway	1200	A*,D*,G
1323	W'brunn (V.Russia)	Germany	1000/150	D*,G
1332	Rome	Italy	300	D*
1341	Lisnagarvey(BBC)	N.Ireland	100	A*,B*,C,F*,G
1350	Cesvaine/Kuldiga	Latvia	50	D*
1359	Madrid(RNE-FS)	Spain	600	D*
1368	Foxdale(Manx R)	Is of Man	20	C,F
1377	Lille	France	300	A,B,D*,E,G
1386	Bolshakovo	Russia	2500	A*,D*,G
1395	TWR via Fllake	Albania	500	D*
1404	Brest	France	20	A*,D*,E,G
1413	RNE5 via ?	Spain	?	D*
1422	Heusweiler(DLF)	Germany	1200/600	D*,G
1440	Marnach(RTL)	Luxembourg	1200	D,E,G
1440	Damman	Saudi Arabia	1600	D*
1449	Squinzano (RAI)	Italy	50	D*
1449	Redmoss(BBC)	UK	2	C,D*
1467	Monte Carlo(TWR)	Monaco	1000/400	B*,D,G
1476	Wien-Bisamberg	Austria	600	A*,D
1485	Carlisle(BBC)	UK	1	C
1494	Clermont-Ferrand	France	20	D*,G
1494	St.Petersburg	Russia	1200	D*
1512	Wolvertem	Belgium	300	B*,D*,E,G
1521	Kosice(Cizatice)	Slovakia	600	D*,G*
1530	Vatican R	Italy	150/450	D*,G*
1539	Mainflingen(ERF)	Germany	350(700)	D*,G*
1557	Nice	France	300	A
1575	Genova	Italy	50	D*,G*
1575	SER via ?	Spain	5	D*,G*
1602	Vitoria(EI)	Spain	10	D*,G*
1611	Vatican R	Italy	15	G*

Eur 1000-1230) 55555 at 1001 in St.Austell; BBC via Antigua **15.220** (Eng to USA, Caribbean, S.America 1100-1400) 44434 at 1103 in Freshwater Bay, IoW; R.Bulgaria **15.700** (Eng to W.Eur 1100-1200) 45544 at 1138 in Northampton.

Later, the BBC via Seychelles **15.420** (Swah to E/S.Africa 1530-1615) was heard at 1530 by **David Payne** in Hornchurch; R.Romania Int **15.380** (Fr to Africa?) 45554 at 1534 in Wallsend; BBC via Skelton, UK **15.485** (Eng to W/SW.Eur, N.Africa 0600-1800) 43333 at 1652 in Kirkby Stephen; WEWN via Vandiver, USA **15.745** (Eng to E.USA, Eur 1100-2100) 33323 at 1700 in Colyton; R.Philipinas, Philippines **15.190** (Eng 1830-1930) 44444 at 1838 in Woodhall Spa & 44554 at 1912 in Cyprus; R.Canada Int via Sackville? **15.325** (Eng, Fr to Eur 2000-2200) 55555 at 2000 in Dudley; R.Korea Int. **15.575** (Eng to Eur 2100-2200) 44343 at 2130 in Newry; VOA via Philippines **15.290** (Eng to E.Asia 2200-0100?) 45433 at 2200 in E.Bristol; R.Taipei Int via WYFR **15.600** (Eng to Eur 2200-2300) 33233 at 2200 in Appleby.

Good reception from some areas has been noted in the **13MHz (22m)** band. The occupants include Vatican R, Italy **13.765** (Eng to Eur, Africa 0630-0645), rated 44333 at 0630 in Morden; Christian Science SWB via WSHB Cyprus Creek, USA **13.650** (Eng to Africa 0700-0800, Tues & Thurs only) 45554 at 0655 in Larnaca, Cyprus; VOA via Tinian Is, Pacific **13.610** (Eng to E.Asia 0800-1000) SIO 544 at 0910 in Penang, Malaysia; Croatian R, Zargreb **13.830** (Cr, Eng to Eur, Africa) 23122 at 1005 in Liverpool; R.Prague, Czech Rep. **13.580** (Eng, Cz to Eur, Asia 1300-1357) 55555 at 1315 in Herstmonceux; R.Austria Int via Moosbrunn **13.730** (Various to Eur, Africa) 33333 at 1330 in Truro; WWCR Nashville, USA **13.845** (Eng to Africa 1300-0100) 33333 at 1345 in Stalbridge; RCI via Skelton, UK **13.690** (Eng to Eur, Africa 1800-1900) 44444 at 1800 in Appleby; AIR via Bangalore **13.620** (Ar to Near East, Africa 1730-1945) 32222 at 1900 in Colyton; Swiss R.Int via Sottens **13.770** (It, Ar, Eng, Ger, Fr to Near East, Africa 1830-2130) 44444 at 2030 in Freshwater Bay, IoW: Vietnam, Hanoi **13.740** (Eng, Fr to Eur 2030-2130, Sun) 44444 at 2037 in St.Austell; WYFR Okeechobee, USA **13.855** (Eng to Eur? 2000?-2200) 34343 at 2140 in Northampton; WINB Red Lion, USA **13.570** (Eng to Eur, Africa 1700?-2300?) 24122 at 2235 in Newry.

Listeners in the UK have been hearing R.New Zealand in the **11MHz (25m)** band during some mornings. Their transmission from Rangitaiki, N.Island is now on **11.720** (Eng 0500-0700). It was rated 44334 at 0620 in Stalbridge. They then move to the 31m band - see later. At 1100 they return to this band on **11.675** for a broadcast to troops in E.Timor (Eng 1100-1300). R.Australia has also been reaching the UK in this band. Their broadcast to Asia via Shepparton on **11.880** (Eng 0900-1100) was rated 34222 at 0930 in Truro. Later their transmission on **11.660** (Eng to Asia 1430-1700) was 33323 at 1551 in St.Austell.

Also mentioned in the reports were R.Canada Int via Skelton? **11.710** (Eng to Eur, Africa 0500?-0530?), rated 44444 at 0500 in Morpeth; HCJB in Quito via ? **11.680** (Eng to Eur? 0600-0800) 55444 at 0720 in Northampton; R.Jordan via Al Karanah **11.690** (Eng to W.Eur, E.USA 1400-1730?) 43433 at 1400 in Herstmonceux; R.France Int via ? **11.615** (Eng to Africa 1600-1730) 44444 at 1655 in Woodhall Spa; WWCR Nashville, USA **12.160** (Eng to N.America, Eur 1300?-2200) 34322 at 1745 in Colyton; Voice of Indonesia, Jakarta **11.785** (Ger, Ind, Eng to Eur 1800-2100) 53343 at 1820 in Liverpool; R.Kuwait via Kabd **11.990** (Eng to Eur, N.America 1800-2100) 54444 at 1830 in Freshwater Bay, IoW; V of Mediterranean, Malta via Russia? **12.060** (Eng to Eur, N.Africa 1900-2000) 43344 at 1900 in Dudley; R.Ukraine Int **12.040** (Eng to Eur, N.America 2100-2200) 44333 at 2100 in Appleby; Voice of Turkey **11.845** (Eng to Eur, USA 2200-2250) 45554 at 2203 in Newry; R.Taipei Int via WYFR? **11.565** (Eng to Eur 2200-2300) 44444 at 2230 in Morden; R.Yugoslavia **11.870** (Eng to N.America 0000-0030) 44534 at 0015 in E.Bristol.

R.New Zealand is now using the **9MHz (31m)** band for their morning broadcasts. Their transmission on **9.885** (Eng 0700-1100) has been received by some listeners in the UK. It was rated 43333 at 0755 in Stalbridge. At 1100 they return to the 25m band, as detailed above.

Also heard here during the morning were R.Norway **9.590** (Nor to Eur 0700-0730), rated 55555 at 0710 in Wallsend; Christian Science BC via WSHB Cypress Creek, USA **9.860** (Sp, Eng to Eur 0800-1000) 44444 at 0855 in Truro; R.Vilnius, Lithuania **9.710** (Eng to Eur 0930-1000) 55533 at 0940 in Herstmonceux; R.Vlaanderen Int via Wavre, Belgium **9.925** (Eng to Eur 1130-1200) 44444 at 1130 in Newry; R.Nederlands via Wertachtal **9.860** (Eng to Eur 1030-1225) SIO 333 at 1158 by **Francis Hearne** in N.Bristol.

Later, VOIRI Tehran, Iran **9.022** (Ger to C.Eur 1730-1830, Eng to W.Eur 1930-2030) was 44333 at 1730 in Colyton; R.Australia via Shepparton **9.475** (Eng to Asia 1330-1858) 34433 at 1745 in E.Bristol; BBC via Kranji, Singapore **9.740** (Eng to Australia, New Zealand, Pacific 1800-2200) 43444 at 1830 in Liverpool; BBC via Cyprus **9.410** (Eng to Eur, N.Africa 1600-2200) 54444 at 2106 in Freshwater Bay, IoW; R.Ext.Espana **9.595** (Eng to Eur 2100-2200, Sun) 44444 at 2130 in Appleby; VOA via Woofferton, UK **9.760** (Eng to N.Africa, M.East 1800?-2200) 33333 at 2120 in Woodhall Spa; R.Cairo, Egypt **9.990** (Eng to Eur 2115-2245) 55444 at 2210 in Northampton; R.Rio Mar, Manaus, Brazil **9.695** (Port 0900?-0000?) 55534 at 2252 in Guildford; R.Cairo, Egypt **9.900** (Eng to America 2300-0030) 43333 at 2310 in Morden; Swiss R.Int [SRI]) via Sottens **9.885** (Ger, Fr, Eng, It to N/C.America 0030-0545) 33333 at 0247 in St.Austell.

Some of the broadcasts in the **7MHz (41m)** band are intended for listeners in Europe. Among those noted were R.Japan via Woofferton, UK **7.230** (Eng, Jap 0500-0700), rated 45554 at 0615 in Wallsend; WYFR via Okeechobee, USA **7.355** (Eng 0600-0800, also to Africa) 45544 at 0720 in Northampton; TWR Monte Carlo, Monaco **7.160** (Ger 0830-0845) 34333 at 0844 in Oxted; R.Polonia (Polish R), Warsaw **7.270** (Eng 1200-1257) 34232 at 1236 in Newry; AIR via Bangalore **7.410** (Hi, Eng 1745-2230) 54434 at 1805 in Stalbridge; R.Slovakia Int **7.345** (Eng 1830-1857) 55555 at 1840 in Liverpool; Voice of Turkey **7.190** (Eng 2200-2300?) 44444 at 2218 in St.Austell.

Quite a few are beamed to other areas. Mentioned in the reports were the BBC via Ascension Is **7.160** (Eng to W.Africa 0300-0700), logged as 44333 at 0600 in Morpeth; VOA via Morocco **7.195** (Eng to Africa 0500-0630) 43333 at 0600 in Morden; R.Nederlands via Madagascar **7.120** (Eng to Africa 1730-2025) 33222 at 1745 in Colyton; World Harvest Radio (WHRI) via Maine, USA **7.580** (Eng to N.America) 54344 at 2201 in Kirkby Stephen; Voice of Nigeria, Ikorodu **7.255** (Eng to W.Africa) 55534 at 2230 in Guildford.

The **6MHz (49m)** band carries many more broadcasts for listeners in Europe. Some originate from the Voice of the Mediterranean, Malta via Russia? **6.110** (Eng 0600-?), rated 45344 at 0600 in Newry; R.Vlaanderen Int via Julich, Germany **5.985** (Eng 0700-0730) 55555 at 0710 in Herstmonceux; TWR Monte Carlo, Monaco **6.045** (Eng 0700?-?) 55544 at 0725 in Northampton; R.Nederlands via Julich, Germany **6.045** (Eng 1030-1225) SIO 333 at 1202 in N.Bristol; R.Prague, Czech Rep. **5.930** (Eng, Cz 1700-1758) 45444 at 1710 in Colyton; R.Polonia [Polish R] Warsaw **5.995** Eng 1700-1800) 33223 at 1720 in Stalbridge; R.Budapest, Hungary **6.025** (Eng 1900-1930) 43333 at 1900 in Appleby; BBC via Rampisham, UK **6.195** (Eng 0400-0700, 1900-2300) 55454 at 1911 in Kirkby Stephen; RAI Rome **5.970** (Eng 1935-1955) 44444 at 1939 in St.Austell; R.Canada Int via Skelton, UK **5.995** (Eng 2000-2100) 55555 at 2000 in Dudley; Vatican R, Italy **5.885** (Various [It heard]) 34333 at 2021 in Oxted; R.Yugoslavia, Belgrade **6.100** (Fr, Eng 2030-2130) 33333 at 2059 in Rugby; R.Ukraine Int **5.905** (Eng 2100-2200) 43333 at 2115 in Morden; R.Austria Int, via Moosbrunn? **5.945** (Eng 2130-2200?) 33333 at 2130 in Truro.

Also mentioned in the reports were the BBC via Antigua, W.Indies **5.975** (Eng to Caribbean, C/S.America 2100-0400) logged as 34433 at 2255 in E.Bristol; WHRI South Bend, USA **5.745** (Eng to N.America 2100?-1000) 54444 at 0400 in Morpeth; ORTM Bamako, Mali **5.995** (Fr 0555-0748, 1757-0000) 55434 at 0557 in Guildford.

The SINPO code is used for broadcast station reports, here is an explanation of the code.

Signal Strength
5 excellent
4 good
3 fair
2 poor
1 barely audible

Interference
5 nil
4 slight
3 moderate
2 severe
1 extreme

Noise
5 nil
4 slight
3 moderate
2 severe
1 extreme

Propagation Disturbance
5 nil
4 slight
3 moderate
2 severe
1 extreme

Overall Merit
5 excellent
4 good
3 fair
2 poor
1 unusable

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* Vertical Load-45Kg
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It will receive all frequencies at all levels unlike a mono band antenna. It has 4 capacitor loaded coils inside the vertical element to give maximum sensitivity to even the weakest of signals. *(Ideal for the New Beginner and the Experienced Listener alike.)*

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SUPER SCAN STICK II
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This is designed for external use. It will receive all frequencies. at all levels unlike a mono band antenna. It has 8 capacitor loaded coils inside the vertical element to give maximum sensitivity to even the weakest of signals plus there is an extra 3db gain over the standard super scan stick. *(For the expert who wants that extra sensitivity)*

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MULTISCAN STICK
Freq. Range Receive - 0-2000 MHz. Transmit 144 - 146 MHz gain 2.5 DBd 420 - 430 MHz gain 4.5 DBd Length 1000 mm.
Although marginally compromising sensitivity the multi scan stick has within its transmitting capabilities plus gain makes it an excellent antenna for the amateur and expert alike.
Comes complete with mounting hardware and brackets.
(Ideal for the amateurs ham radio - user).

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Freq. Range Receive (0-2000MHz) Transmit (144-146 MHz) Gain 4.00Dbd (420-430 MHz) Gain 6.00Dbd Length 1500mm
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SWP 2000 FREQ. 25 - 2000 MHz. Length 515mm.
Multiband good sensitivity for its small size. Fitted with two suction cups for ease of fitting to any smooth surface (i.e. inside of car window) comes with 5 metres of mini coax and BNC connector. *(Good for the car user who doesn't want an external antenna.)*

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SWP HF30
Freq. Range 0.05-30MHz Length 770mm
Although small, surprisingly sensitive for the H.F. user. Fitted with two suction cups for ease of fitting to any smooth surface (i.e. inside of car window) comes with 5 metres of mini coax and BNC connector. *(Good for the car user who doesn't want an external antenna.)*

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HF DISCONE
Freq. Range 0.05-2000MHz Length 1840mm
Internal or External use (A Tri-Plane Antenna). Same as the Super Discone but with enhanced HF capabilities, comes complete with mounting hardware and brackets. *(Ideal for the Short Wave H.F. Listener.)*

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PL259/6..... 0.75 each
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BNC (Screw Type) 8 1.00 each
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N TYPE for N58 .....2.50 each
N TYPE for RF213 ..2.50 each
SO239 to BNC .....1.50 each
PL259 to BNC .....2.00 each
N TYPE to SO239 ..3.00 each

CABLE
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MINI RF8 ..... 0.85 per mtr.
RG58 STANDARD 0.35 per mtr.
RG58 MILITARY 0.60 per mtr.

TRI SCAN III
Freq. Range 25-2000MHz Length 720mm
Desk Top Antenna for indoor use with triple vertical loaded coils. The tri-pod legs are helically wound so as to give it its own unique ground plane. Complete with 5mts of low loss coax and BNC plug. *(Ideal for Desk Top Use.)*

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Connector-N TYPE The Ultimate Discone Design.
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Bandscan USA

BROADCAST

Bandscan America

North American short wave listeners are having a hefty snit over the cancellation of the BBC's short wave service to this part of the world. Many have been regular - read 'daily' - listeners for many years and are hurt and upset that the BBC seems to no longer feel they are worth any attention. That especially fits those who, for whatever reason, can't avail themselves of cable, f.m., Internet or satellite access. Others see the move as another step in the decline of Western Civilisation! In any event, if a vote for the most popular short wave station were taken now, the BBC would probably come in behind North Korea's Radio Pyongyang! (Now the Voice of Korea).

With so many stations in Latin America inactive or just plain deceased, there's one that seems determined never to give up. The here today, gone tomorrow, back-again-the-next-day XERMX in Mexico City has been plugging away, working to make things happen for itself down on 60m for three or four years now. Originally it was to be a 24/7 multi-lingual operation on 4.800. Never one to pin the meter, the station returned earlier this year to play highly distorted games around 4.810, then vanished again. Now it is back, operating on 4.870, again with modulation, which sounds as if it had been transmitted by an electric guitar with its control set at 'full fuzz'. It isn't pretty, but at least it's on!

Station News

High Adventure Ministries' station in Palau, in the Western Pacific Ocean, has a new lease on life. The future of the station seems to have been in some doubt last year. It's using 50W on 9.985 from 1100-1200 daily, identifying as the 'High Adventure Radio Network' and inviting reception reports to **PO Box 66, Koror, Palau, 96940.**

It seems the US Federal Communications Commission didn't have to go after the unlicensed United Patriot Radio after all. The station, which was heard with a strong signal nightly on 3.290, tossed in the towel back in June, complaining of lack of support from other militia groups. Many considered this Kentucky broadcaster to be a 'clandestine' since the content of the broadcasts were anti-government. Others thought it sounded more like a pirate operation. Operator Steve Anderson at one point said that 3.290 would be closed down in favour of a 24-hour operation on 6.900, so perhaps the closure was pre-planned, though we've seen no indication of any activity on 6.900 so far.

WRNO in New Orleans, the station whose licensing by the FCC began the rush to short wave by commercial religion broadcasters a decade or two back, found itself in rough waters after the death of owner Joe Costello a couple of years ago. Indeed, the station almost qualified as a DX catch within the continental United States. Now it has been sold. But don't expect to hear live sports or the weeks top 1,000 rock Countdown. The new owner is another religious broadcaster - Good News World Outreach, based in Ft. Worth, Texas.

Private Canadian shortwaver CHNX in Halifax, Nova Scotia, has returned, using a whopping 50W on 6.130. It relays local medium wave CHNS. The station is celebrating its 75th anniversary this year, which must make it one of Canada's first broadcasters.

Radio Litoral, 4.832 in La Ceiba, Honduras, is being heard quite widely lately, running to sign off just prior to 0400. It is now carrying some religious programming in English. Costa Rica's Radio Reloj once occupied 4.832, but this station has not been noted in quite some time.

Recently Reactivated

Another recently reactivated Honduran is HRMI (Radio Mi) La Voz de Misiones Internacionales in Comayaguela, which has been using 5.010, suppressed carrier upper sideband. It is running as late as 0430, with the last portion of the broadcast an English religious program from San Bernadino, California, where the station's owner - IMF World Missions, is based. Signals are pretty good, but suffer from some interference and distortion.

Unfortunately, reactivation is not in the cards for HRET in Puerto Limpera. That one is departed. Dead. Kaput. A Goner. Another reminder that serious DXers should never pass up logging something if you haven't heard it before. And don't 'wait until next time' to send the reception report, either.

A new Colombian station, Colombia Estereo, located at Army Base Melgar, in Tolima, is active on 4.895 with a heavy schedule of music. Perhaps this is on the air as a service to military personnel chasing narco-guerrillas?

Radio Diez is a new addition to the stations unpredictably relayed by Argentina's utility communications station. It showed up on 29.810, lower sideband around 2000.

Ecuador's venerable HCJB has virtually gotten the go-ahead to build its station in Australia and could be on the air with a 100kW transmitter before the end of the year. The site is near Kununurra. The broadcasts will be beamed to South Asia as well as the South Pacific.

Government Funding

Meantime, Radio Australia has picked up some government funding so it is now able to buy some time on the transmitters it once owned, but lost due to bureaucratic cutbacks. It's on the Darwin site as follows: 2130-2330 on 9.865 in Indonesian; 2200-0000 on 13.620 in English; 0000-0030 on 21.680 (Indonesian), 0000-0130 on 17.775 (English); 0400-0430 on 21.680 (Indonesian) and 0500-0530 on 21.680 (Indonesian). Broadcasts are aimed at Indonesia and Southeast Asia.

With Christian Voice now using Darwin to program to these areas where religious conflicts can flare at the drop of a an inflammatory word or two, the folks in Canberra apparently decided it would be a good idea to have their voice represented as well. Hello?

Those of us who live in the Midwestern part of the United States are always a bit in awe of some of the receptions made by our friends in the Eastern part of the country, where the lower bands open up much earlier than they do in such places as Iowa, Nebraska, Wisconsin, Minnesota and such. A case in point is DXer Robert Montgomery of Pennsylvania who snagged Zimbabwe on 6.045 at 2355 - not even quite dinnertime where we are. Bob heard the Zimbabwe Broadcasting Corporation's ZBC-1 service in an unidentified language, and found the weak and QRMed signal not to be a problem in identifying the source. Solution? Go to their web site and match the feed you find there!

Bob has also been fortunate enough to bag some European pirate broadcasters - again, a near impossibility here in the Midwest. He's recently heard Alfa Lima from Holland on 15.070 at 0220 and Radio London on 5.805 around 0320.

No Antenna

We had an E-mail from a reader who wanted to know the best way to receive the US Armed Forces broadcasts on simple equipment without an outside antenna. That's a difficult question to answer and tag any kind of guarantee to. But we'd say your best bet is probably the transmitter based near Key West, Florida, which uses 12.6895 upper sideband, listed for 24 hour per day operation with 8kW. That higher frequency should propagate fairly well and the 'round the clock' schedule allows it to be sought after at the most likely times for your location. Good luck!

That takes care of things for this time. As always, we very much appreciate your interest and we'll see you in three months!

Always appreciative of its listeners, Adventist World Radio has instituted three new sets of QSL cards.

As Castro seems to be wearing out, Radio Havana Cuba celebrates its 40th anniversary this year.

■ ANDY CADIER, 28 ROMNEY AVENUE, FOLKESTONE, KENT CT20 3QJ
■ E-MAIL: off.the.record@pwpublishing.ltd.uk

Off The Record

It is hard not to be just a little nostalgic as I dredge through my collection of vintage copies of *Short Wave Magazine* and suddenly realise this page has now been published by *SWM* for just over 10 years. It was Dick Ganderton, the previous Editor, who decided to incorporate pirate radio listening into the magazine's format. A decision I suspect that may not have been all that welcome among some of the more established and formal radio hobbyists. The initial agreement was to run the column for a trial period that appears to have not only survived a certain amount of criticism from the authorities, but a change in editorship too.

Previous to me writing 'Off The Record', I had been a short wave listener for several years, which in a roundabout way led me to becoming a disc jockey on some of the offshore stations during the 1960s. As my family grew up I rediscovered short wave and bought copies of *SWM* and eventually became a contributor to Brian Oddy's 'LM&S' feature.

A few years ago I took an amateur radio novice course at Dover Radio Club (which I passed 2E1GTI) and found several of their members did the engineering for Folkestone Hospital Radio. Before I could turn around twice I found myself doing the Breakfast Show on a sponsored RSL hospital station, Silver 2000, broadcasting on 95.1FM to the local area.

If you are interested in hospital radio, there is a feature about the Folkestone station in the May edition of *Practical Wireless*, written by colleague Dick Pascoe. In short, you can never quite tell which direction your hobby may take you, it can be interesting, exciting and even rewarding.

Caroline Goes Digital

Radio Caroline has completed the move from analogue to their new digital platform on *Astra* 19.2°E, 11.876GHz. Unfortunately, this is not on the normal UK Sky package, but offers good coverage of mainland Europe and also in the UK if you have the right equipment. Caroline is also available on an f.m. relay provided by The Breeze 88.4MHz on the French and Italian Riviera and identifying as Caroline South, reception extends from St. Tropez to San Remo.

Current presenters include Bob Lawrence, Tom Anderson, Mark Stafford and Mark Dezzani. Jerry Wright recently ended a show by commenting that he may not return to Caroline, after concern over format changes and the introduction of a new computerised music system. Because of the extended broadcasting hours, station manager **Peter Moore** is seeking some suitably talented voluntary 'deejays' with knowledge of adult orientated rock music to present programmes at their Maidstone studio. They are also seeking sponsorship for many of their programmes and specialist shows.

Non returnable demonstration recordings may be sent to **Radio Caroline, 426 Archway Road, London N6 4JH**. Although Radio Caroline started life as a marine pirate station in 1964 and they still own their vessel the *Ross Revenge*, they are in fact operating within the law. Future plans include the possibility of them being available on a national cable network. Also a short term RSL broadcast from their ship at Queenborough, Isle of Sheppey, Kent, is planned from July 28th to August 24th. No frequency has been officially announced, but it is usually 1503kHz.

Hard Luck Stories

Test broadcasts have been taking place on 5.805MHz during the weekends - this is the frequency vacated by Radio Free London that closed down about five months ago. The tests have been widely heard in the UK, across Europe as far as Greece, however early in May the modulation transformer packed up and the transmitter was removed from their site for repair.

It was during this period that the operators discovered that the antenna, earth spikes and loading coil had all been removed and the transmitter hut destroyed. It is uncertain who was responsible as this location was in a quiet but public place. By now RFL may have accomplished a re-launch from another site, but on the same frequency.

During April, Ashford Hospital Broadcasting Service, located at the William Harvey Hospital in Kent, were forced to cease broadcasting their normal service for several weeks after a large truck delivering oxygen supplies collided with their studio making the building unsafe. A temporary service using a computer is being used while repairs are carried out.

Also during April the national press carried a story about Birmingham based DJ Graham Mack of BRMB arguing via an on air 'phone link with his programme controller Adam Bridge. It was reported that he ultimately walked out of the studio leaving an open microphone and slamming the door. Rod Chayter of the Daily Mirror admitted to me that he too thought that in the light of the silly circumstances it was very probably a publicity stunt.

The project to revive the English service of Radio Luxembourg on 1440kHz will not happen due to doubts over the viability of the operation. It was only fairly recently that Radio LBH gave up using a high power m.w. Russian transmitter on 1386kHz due to poor ratings on m.w. evening ratings.

Radio Buxton, an RSL station, ran a music competition in which the winner was to receive a new Renault Cleo car. However, when Cathy McGowan won, she was presented with her prize consisting of a toy car. She told the court that when informed of the prize she had expected a real car, as there had been no mention of the prize being a toy. Derby Crown Court ruled that the station should pay Cathy £8000 compensation, the price of a real car!

The BBC Experience exhibition at Broadcasting House in London closed on 31st July, the attraction only received 100,000 visitors each year, this is only half the number they needed to break even. An estimated £500,000 will be saved and ploughed back into programmes. Also at the BBC, many American s.w. listeners are protesting about the recent closure of the BBC World Service broadcasts on short wave to the USA, Canada and Australia. The fact that the Voice of America and Radio Canada International have virtually ceased broadcasting radio programmes to Britain on s.w. seems to have been overlooked.

Radio Gossip

Another Radio London 'Big L' revival takes place this month from Clacton Pier in Essex from 3rd August to the 30th. Programmes will come from a temporary building on the pier and be broadcast in 1134kHz. The reception field should be fairly similar to the Radio Mi Amigo and Radio North Sea recreations that broadcast earlier this year on 1503kHz.

The new BBC studio complex in Tunbridge Wells houses a TV studio and is also the base of BBC Radio Kent. On the ground floor there is a BBC shop and also large observation windows so that the public may view the presentation of Radio Kent programmes. As broadcasting has moved away from the era of levers, buttons and machines and everything is now on computer, the view is about as interesting as local income tax office. Having said that, BBC Radio Kent is by far the most listened to radio station in Kent.

Do you fancy listening to a web radio station dedicated to radio DX and TV monitoring? **Mike Barraclough** of the British DX Club has pointed out a website that carries this new service that commenced on 15th May. Skywaves Radio are available 24 hours a day via **Live365.com** - present play list includes programmes from the British FM and TV Circle, the British DX Club and The FM and TVDX Association. This is soon to be joined by The Worldwide Harmonics Group. The easiest route to receive this is via **www.skywaves.co.uk** where you also get details about the station. I tuned in and heard DX information and a comment from the globe trotting DX reporter **Shaun Geraghty**.

Radio Caroline are holding preliminary talks with WorldSpace in the hope that may a get a channel on the European beam of their satellite. The attraction is that this medium offers portability that is not available at present on TV satellites or the Internet. The slight drawback is that everyone would be required to obtain a new radio, however as more of these radios were sold, WorldSpace would be likely to increase their charges. So Caroline could ultimately be financially penalised if they caused an increase in radio set sales. It is not a foregone conclusion that the increase in listeners would automatically create an improvement in income, as the station is primarily financed by subscription rather than advertising.

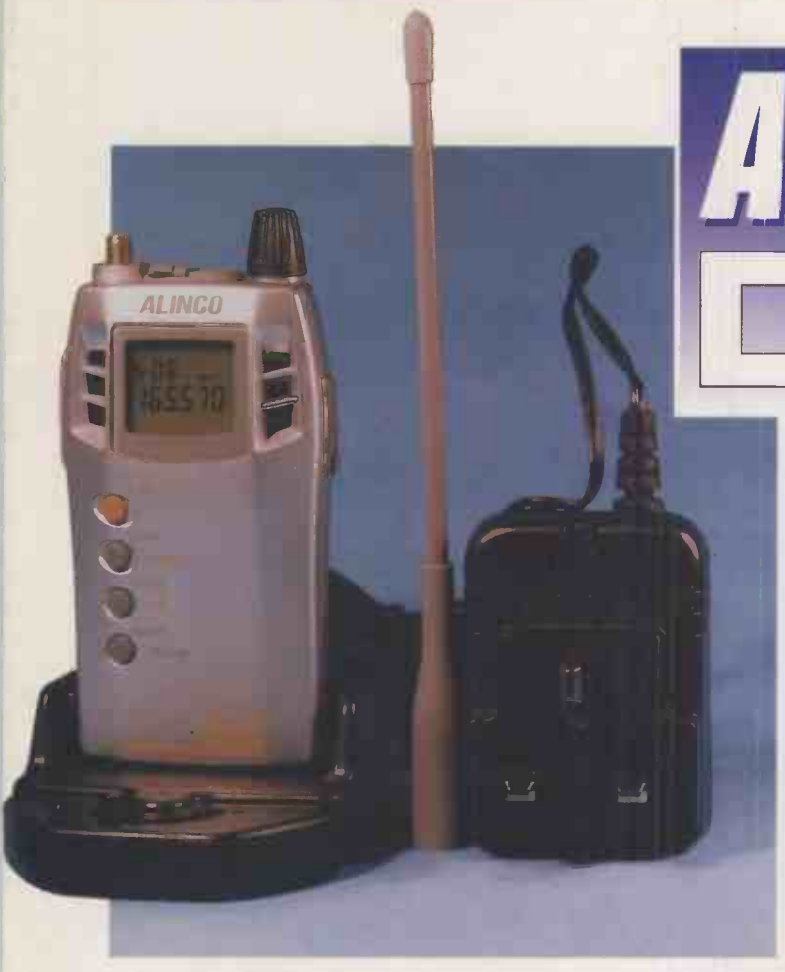
Land Based Pirates

Alan Mackenzie wrote with details of **Spaceman Radio, PO Box 73, 7160AB Neede, Holland**. He says they can be heard on 1636kHz where they broadcast as Radio Barones. **Tom Read** writing for the British DX Club says their E-mail address is **komopdnban@hotmail.com** and lists the alternative frequencies as 6.306 and 6.312MHz.

Other foreign pirates include Radio Marabunta from Santiago in Chile, who are conducting tests via the Dutch SW Relay Service on 6.306 or 15.070MHz. I can only presume that programmes may be in Spanish. Here is one in English if you manage to hear it! Radio Eureka International on 6.229 and 6.235MHz from 0700 to 1900UTC, from **PO Box 3103, Onekawa, Napier, New Zealand**.

In Kentucky USA the FCC are investigating United Patriot Radio that allegedly broadcasts extremist political views on 6.880 or 6.900MHz. The penalties in the US for illegal broadcasting can include fines up to $11,000 for a first offence and can reach $100,000 and a year's prison sentence for repeat offences.

In London Radio Free London has not returned to their 819 m.w. frequency, however Radio Argus continues to be heard on 783kHz.



Alinco DJ-X3

Dave Roberts looks at the alternative to a good night out - Alinco's 'nifty' hand-held scanner.

What can you do with £129? A meal for two with wine at a fancy restaurant. A night in a good hotel with dinner. A few pairs of jeans... perhaps fill both tanks on the Daimler with super unleaded. Or, you could buy a DJ-X3 scanner from Alinco.

The first thing that I noticed about the DJ-X3 was it's slightly unconventional look. The radio clearly follows Alinco's sensible idea of building differing radios within the same case moulding. The DJG-5EY transceiver, the X10 and X2000 scanners are all clothed in the same frame. Similarly, looking at the DJ-X3 it's apparent that the stylish case is built to also hold a transceiver, even to the microphone aperture at the lower front edge. At the top of the radio is a grommet which refused to stay seated on the review radio, (*Dave was looking at a well worn pre-production sample, which was rushed to us ahead of the main shipment - the grommet problem has been resolved - **Ed.***), revealing not only the earphone socket, but also a gap which would house a microphone socket on another model. The audio issues forth from the two vents either side of the display screen. The DJ-X3, at about 150 by 75mm and with a depth of about 25mm with the small battery pack installed, fits just fine in a shirt pocket, although the 170mm long rubber antenna could get in the way. The DJ-X3 has a plastic case which is surprisingly sturdy and unlike some other hand held sets the battery pack is a very secure fit.

The first thing to do is to get some power in the little beast and to this effect I consulted the handbook. At this stage it must be said that the unit supplied for review is clearly an early production unit and the handbook is purely in a draft stage. Ten hours charge says the book of words and accordingly I hauled the charger from the bubble wrap. This item is a plug top charger type with a holding base for the set and/or a battery to sit in while on charge. As such, I was unable to check the fuse as the charger is a moulded single plugtop item. The base unit is adjustable to fit differing physical sizes of battery and the Nickel Metal-Hydride battery sat snugly in the charger. I timed the charge for exactly ten hours, as it does not appear that the charging l.e.d. changes to green to show a charged state from the red indication and so over charging the battery remains a possibility without careful monitoring of the cooking time. The DJ-X3 features a socket for an external power supply from between 4.5 and 16V d.c., I didn't try this.

Charged Up - Raring To Go

Ten hours later and I returned to the handbook. The DJ-X3 is equiped to receive a.m., n.b.f.m. and w.b.f.m. between 100kHz and 1299.995MHz. The antenna arrangement is interesting. The menu driven controls allow no less than four antenna options. Firstly there is the straightforward whip mounted on the radio. Secondly there is an internal antenna which can operate on long and medium wave bands and also for transmissions in the lower frequencies. These two options are listed in the menu as 'AbAr' and 'SbAr' respectively and both have on or off options. Finally, a menu option allows any earpiece wire to be used as an antenna, providing that its operation is enabled using the appropriate menu switch. From the look of the radio it's clear that a menu driven control system is employed with this set. Some folks that I know believe that keypad entry on a scanner is a must and that for quick and efficient frequency input a keypad cannot be bettered. I admit I used to support that tendency myself, however, more recently I have come to my senses and have found that once I have found my way around a particular piece of equipment, the lack of a keypad is not a handicap. In the case of this little Alinco set, I could change frequency very quickly using it's few controls and tuning became second nature. Working through the many functions, the menu starts with an attenuator option, followed by the three controls regarding antenna selection. Then there is the mode option control which selects either of the three reception modes available or an automatic option

"In the case of this little Alinco set, I could change frequency very quickly using it's few controls and tuning became second nature"

which allows the DJ-X3 to switch the mode depending on which frequency is in use (a.m. for airband, etc.). This option only allows a.m. on the lowest frequencies in the range. The next option is a stereo/mono switch. Allow me to explain. The radio has a stereo receiver which only comes into its own when stereo headphones are plugged into the earphone socket. The appearance of the

set could fool you that those two vents either side of the display are in fact two speakers that belt forth stereo sound when the earphones are not utilised, but I doubt it. It seems therefore that the stereo/mono option is a tad unnecessary, but I guess that it was all part of the control chip that Alinco decided to use in the DJ-X3 so there was no point in disabling it. The same goes for the next option which is labelled as a bug detector. This option assumes that you know pretty much everything about any surreptitiously placed surveillance transmitter, everything except under which end of the carpet it's been hidden. Please don't bother with it.

Getting To Grips

Memory management on this radio allows ten banks of seventy pre programmed frequencies to be scanned. A maximum of 700 channels are available. There are numerous memory scanning options. You can scan individual banks or link up to five banks of seventy channels for scanning, or you can scan the lot! It's the same with searching. Pre-programme the search limits and away you go. Like most modern receivers there are more memory options than you can shake a stick at. On this little set they are sensible and easy to operate. Skipping a memory by switching it out is very simple and it's just as easy to restore it to the scan again.

The rest of the menu switches are the usual controls dealing with priority scanning, lamp function, memory protection, switch options and the like. The DJ-X3 also has the ability to decode audio inverted transmissions and I tried this on the PMR446 frequencies and it works fine. It's not going to crack the National Crime Squad's gear for you, but for simple stuff it operates adequately. There is a variable frequency step option which can be set at various spacings between 5 and 100kHz including 8.33. If any frequency is tuned below 1620kHz the tuning step and modulation type are fixed to 9kHz and a.m. respectively (just out of interest under 153kHz you can tune in 1kHz steps). Finally, should you buy two of these sets, and some people will, one can be cloned from the other with a cable link.

"It's not going to crack the National Crime Squad's gear for you, but for simple stuff it operates adequately"

So what's it like on air? The DJ-X3 has been well designed so that the radio feels like a sturdy little unit and fits into the hand readily. The first thing that I did was to load up seventy of the most used frequencies in my area. These are all v.h.f. and u.h.f. and include a.m. and f.m. channels. Then I just let the Alinco roll on, simply scanning that one bank for signals. At these frequencies let me tell you that this set is sensitive. It received distant signals on its supplied whip antenna. Signals which other hand-held scanners that I have, were just not hearing. Marine v.h.f. just romped in and the received signal compared very favourably with my two other hand-held scanners tuned to identical frequencies using their supplied antennas. Military airband is a delight with the DJ-X3. I don't know what anyone else thinks, but the audio that issues forth from a military pilot when he's strapped into a small space, breathing through a foul smelling oxygen mask, pulling three Gs and wishing he'd missed out the Allbran at breakfast, is not of BBC quality. On most scanners I am able to confirm that the chap is speaking, but I don't have a clue as to what he's saying. The DJ-X3 has a high audio tone which is first class for communications quality and those pilots boom into the speaker with alarming clarity.

Big Audio Dynamite

Like I said the audio is a big surprise. The quarter watt or so from the speaker was clear and produced a good tone as well as adequate volume. It may not be loud enough to overcome a mixture of road and engine noise, but you won't get much better from a hand-held set. The clarity of recovered audio was particularly impressive but having said that, Alinco sets normally perform well in that respect which, let's get it right, is what radio reception should be about. Going down to the lower frequencies is a tad disappointing. Coverage starts well down the frequency bands and I thought that I'd see how I got on down there. I never expect much at all from the whip antenna mounted on all band scanners when it comes to the bottom end of the spectrum and so after giving it a go, and hearing nothing, I thought that I would try using the earphone and lead option. After diving into the menu functions and switched the setting to EAr from wHIP (capitalisation is a trifle odd due to the constraints of the l.c.d. used), I unravelled an earpiece, wedged it it my lug and tuned around. This is where a small difficulty regarding tuning steps arises. The smallest step that the DJ-X3 will accept is 5kHz which does not allow enough precise tuning. However, that makes no difference as with the antenna set to EAr I couldn't hear anything anyhow. So I turned that function back to wHIP, removed the earpiece and moved up through the menu to the AbAr function, which means a.m. bar antenna. I couldn't get a peep out of that either. The same went for the AbAr - short wave Bar antenna. No, nothing there either. I was now determined to get something from the lower frequencies to work and so I hooked up the SMA socket to which the whip antenna normally connects, to a dipole antenna. Signals came romping in but with a minimum tuning step of 5kHz,

continued on page 22

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Comments from John Griffiths

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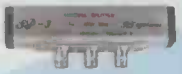

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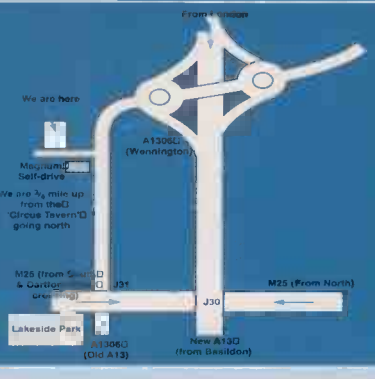

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Alinco DJ-X3

it was a hit or miss affair. Overloading was going to be a problem and I turned on the attenuator. Sadly this only made a small amount of difference and although short wave broadcast stations were audible it did not make for particularly easy listening. Running the scanner at the low frequencies during the later hours of the day did result in short wave broadcast stations being heard on the whip antenna, but it was still a hit or miss affair with the 5kHz tuning steps.

Higher in frequency the Alinco becomes really useful and really this is what a portable scanner is about. It's not really fair to expect a tiny radio which is firmly at the budget end of the market to perform too well all over the spectrum. Frankly, I'm surprised that the DJ-X3 performed as well as it does at the low frequencies. By the time the set is in the upper 20MHz range it has come into its own. It really works very well throughout low v.h.f. and for the rest of its coverage. The DJ-X3's 700 channel memory capacity means that you can load up some CB channels and work your way through the spectrum adding council frequencies, some emergency service stuff, v.h.f. amateur channels and onwards and upwards, loading the mode in use and in practice not run out of space. You can even save a bank for f.m. broadcast stations and listen to 'The Morning Concert' in stereo with your 'phones on. The scanning speed is certainly not the fastest that I have ever encountered and is nothing like the speed of some other models of scanner, but this set doesn't cost as much as other scanners either. It certainly doesn't weigh as much and is nothing like the size of most hand-held units.

Result

Searches are efficiently performed by the DJ-X3 and saving frequencies of interest is straightforward. Volume settings run on a scale from 1 to 30 and squelch settings from 1 to 10. I found that squelch setting '1' was about right for me at v.h.f. and u.h.f. with a higher setting being required as you move lower in frequency.

One thing that intrigued me about the radio was when executing some functions I could hear a creaking from inside it. I reckon that it has something to do with a microchip operation. I have only ever heard this once before and it was when I was using a Sharp 'Pocket Computer' about fifteen years ago. Don't get me wrong this didn't effect operation of the DJ-X3 one little bit. It just interested me.

I discovered that a charged battery will last between six and eight hours depending on volume control setting and the time with the squelch open. When the power pack is on the wane, the handbook says that an icon, showing a battery, is displayed. It is, but only for about half a second before the radio switches itself off but obviously this is not a problem.

I can't think of too many accessories that I would want to accompany the radio. It doesn't have CTCSS facilities, but I never use that when scanning anyhow. I guess that I would probably want to buy a spare battery and a carry case is always useful, but that's about it. I am unsure what options Alinco will be offering for sale with the DJ-X3 but really not many are needed as it comes supplied with a battery and charger just ready to go.

"I can't think of too many accessories that I would want to accompany the radio"

You may have guessed, I like this set. Firstly it's size lends it to being able to be stuffed in a pocket and although it's a simple point I believe it to be important in a portable radio. If you are reluctant to take the set with you then you're not going to have it with you when you want to hear something. It is also a light piece of gear. By no means fragile, despite it's plastic construction, it can take daily wear and tear in its stride. The sensitivity is really good and it seems very well matched to the supplied rubber whip antenna at frequencies from low v.h.f. right to the top of the tree where the DJ-X3 also performed very well at frequencies of over 1GHz.

In Brief

100kHz - 1300MHz
a.m./n.b.f.m./w.b.f.m.
700 memories
8.33kHz step capability
56 x 102 x 23mm (w x h x d)
14.5g (plus batteries)
£129.95

My Advice

Who's going to buy it then? For a start, it's a great radio for someone who perhaps has no particular interest in radio or scanning but is interested in what goes on at his local airfield or fire station or other facility and it would be ideal for monitoring special events. Anyone who goes to work in an office or site where they would be able to use a radio will be likely to take this Alinco with them loaded with favourite frequencies to make sure that they don't miss out on anything of interest when away from the main station. It's small size, exceptional sensitivity and fine audio mean that it will be an effective companion pretty much anywhere.

The problem is that the sooner I stop writing about it, the sooner I have to send it back!

My advice would be to take your girlfriend to the burger joint, borrow a tent from a friend, get your clothes from the market and walk to the shops. Save the £129.95 that you could have spent on restaurants, hotels, clothes and petrol and get yourself an Alinco DJ-X3.

Thanks go to Nevada for the loan of the review radio. ***SWM***

Nevada, Unit 1, Fitzherbert Street, Farlington, Portsmouth PO6 1TT.
Tel: 023-9231-3095
Web: www.nevada.co.uk

OPERATION DESERT SHIELD

Additional research material by Mike Ridley and John Carlyle. All photos by Ian Doyle

Following the 10th anniversary of Operation Desert Shield, Ian Doyle takes us on a nostalgic trip covering one of the most exciting events, from the perspective of the Military Airband u.h.f./h.f. monitor, of the last century. Many of the aircraft that featured in Operation Desert Shield will be seen by visitors to RIAT 2001 at RAF Cottesmore, Leicestershire, over the weekend of 28/29 July 2001.

August 2nd 1990

"Iraqi Tanks cross the border into Kuwait and take control of the capital Kuwait City".
Like many others, I feel sure that the sheer enormity of what this headline meant took sometime to sink in. Initial shock gave way to grave concern as Western leaders considered the response. The previous ten years had seen Iraq fighting what turned out to be a war of attrition with Iran, despite the carnage on both sides of this divide the rest of the world was less than concerned. The generally accepted view was that as long as both countries were fighting each other, neither party would be aiming missiles toward the west.

News of Iraqi tanks massing on the Kuwait border had been mentioned briefly on various domestic news bulletins in the previous days, these reports had however, for the most part appeared at the end of the bulletin. In truth it appeared that nobody really expected that initial military posturing, would give way to a full scale invasion. Iraq had been openly displaying hostility to Kuwait for many years claiming territorial rights to a number of oil fields within Kuwaiti territory, it appeared that nobody, not even at the Pentagon, quite expected events to unfold in the way that they did.

Without wishing to trivialise events, it has to be said that in some quarters there was an enormous feeling of what might in retrospect be described as misplaced excitement. A major confrontation with the 'West' was obviously in the offing, but nobody could really foresee how things would unfold in the coming weeks. In the 'MilAir' and aviation fraternity, speculation was rife in terms of how the United States and its allies would react. In the UK there were a number of major United States Air Force bases in southern England, Mildenhall, Lakenheath, Alconbury, Bentwaters, Woodbridge, Sculthorpe and Upper Heyford, together with the communications post at Croughton, most would play a major part in the events of the coming months.

Later That Day

In the evening following the day of invasion, most observers spent their time attentively following extended news reports both on TV and radio, as numerous military and political observers began to speculate that the USA was about to deploy vast numbers of men and machinery to the area in order to defend Saudi Arabia. Speculation was now rife that the USA and its allies were about to respond with considerable might. My next evening was spent speculating over the odd beer or three, about the type of activity that might occur and of course any possible navigational routings.

In those days, the immediacy of the Internet simply was not available to most, so being informed meant monitoring every news bulletin and relying on monitoring real-time action. In anticipation, I quickly dusted down my h.f. radio, the incomparable Sony 2001. As an antenna, I had a simple long-wire strung down the garden. This was quickly bolstered by the addition of various wires which were then strung in all directions. It was a rather hasty set-up but proved to be up to the job. My Sony 2001, a battery powered portable, could be utilised should a trip to Mildenhall in East Anglia be required! Mildenhall is one of three main USAF bases in Europe and as the main base for the USAF's European Tanker Task Force, would almost certainly be used at some stage as the conflict escalated.

An older model KC135 Tanker doing its bit for the environment on take off to Lajes.

The two scanners for I used for u.h.f. were a trusty 100 channel hand-held Yupiteru MVT-500 and a Tandy-Realistic 2001, 400 channel base station, not exactly state-of-the-art compared to today's models, but they proved adequate for general monitoring over the UK.

Diplomacy

The next 48 hours carried repeated broadcasts showing the various diplomatic comings and goings in Western Capitals, and of course eye witness reports of gun toting elements of the Iraqi Army wrecking Kuwait City. Missing any bulletin could be crucial as events were moving quickly. The evening of 4 August however proved unforgettable. The national bulletins at 2200 announced that the USA President had announced that it had mobilised various units and was sending defensive forces to the region immediately in order to prepare for intervention and offer protection to the kingdom of Saudi Arabia, whose huge oil fields lay just south of Kuwait. The airborne element would consist initially of air defence units from bases in the South Eastern United States.

The announcement indicated that forces were already on their way, the *Newsnight* programme on BBC2 was showing supposedly live footage of multiple McDonnell Douglas
F-15 Eagles departures from Langley Air Force Base, Virginia. Although in reality, these may have been for propaganda purposes as subsequent reports did not report their departure until the following day. I cranked up the Sony on the off chance that the odd

'Macco' might already be in the air, 'Macco' was a euphemistic term for a USAF Military Air Command transport aircraft notably the Lockheed C-141 Starlifter or C-5 Galaxy, the true callsign being MAC, latterly replaced by REACH. If the deployment was already underway, there would have to be an advance party of forces and logistical support on the ground to support the F15s. I had previously tapped in some potential frequencies notably 11.175 the main USAF hailing frequency at the time and the civilian frequencies of 5.598, 8.825 and 11.306. These frequencies provided coverage by New York, Gander, Shanwick and Santa Maria of the Mid to South Atlantic, anything routing from an area between Florida and Spain would almost certainly be 'hooked'. These particular frequencies remain unchanged even to this day.

The KC135 operated day and night throughout Desert Shield. Here seen returning from the azorea area where it had been heard three hours earlier 'Gold 21' heads for Runway 29 at Mildenhall.

Sprang Into Life

I fired the Sony up and it immediately sprang into life "Croughton, Croughton this is MAC 70002".
"002 this is Andrews go ahead", it was not unusual for an aircraft to make a call to one station only to be hailed by another. "Roger MAC 70002 is a heavy C5 en-route Lajes, request the weather for 0300 local", I furiously grabbed my pen and paper. Lajes was a major stopping off point for flights transiting between the USA and bases in the Mediterranean, the time was now 2245. Before the ground based controller could answer, another MAC flight called up, followed by another and then another, the pace was frenetic, each aircraft would request weather for either Lajes in the Azores or the next transit point, Moron in Spain. I moved the dial down to 8.825, New York and Santa Maria were already handling similar volumes and types of traffic, as numerous other USAF transport flights checked in at various points across the Atlantic.

Without wishing to devalue the seriousness of the situation, this was truly amazing. I topped up with a can of beer followed by endless cups of coffee, this looked as though it would be a long night, and so it proved to be.

Various civilian airline company frequencies were also active, particularly British Airways on 8.933 and 10.072 where aircraft heading toward the Middle East were now being advised of re-routings vectored around all the Gulf States.

That first evening of what was later to become exercise Desert Shield I fell into bed at 0400 having logged 28 different US 'heavy' transports, it had been a remarkable evening.

The next morning I scrambled once again for the Sony and switched on not really expecting to hear a great deal at it was still midnight off the East Coast USA, suffice to say, it was as busy as ever. I tuned down to the lower frequencies that were now in use - 5.598 was exceptionally busy, aircraft first noted leaving the USA in the early hours of the previous evening were now checking in at various Oceanic exit points on this side of the Atlantic, they were now turning for bases in the Gulf. I debated whether to telephone work, feigning a short, sharp bilious attack, but thought better of it in case I needed to use up this type of excuse further down the line!

Anxiously Waiting

I got through that first day anxiously waiting to get back to a radio. That evening another trip was made to the local hostelry, where a hastily arranged meeting was convened with fellow listeners, to discuss the previous evenings movements and exchange notes and anticipate what the next few weeks might bring before retiring back to the radio once again. Events followed a similar pattern to the day before, if anything, the level of activity was of even higher intensity, the callsigns which initially consisted of tail serial numbers became more disciplined with a suffix of 'Seirra Kilo' being applied to a three digit numeric serial.

At 2100 the radio burst into life again, "New York, this is Gold 11 flight". As Keith Elgin recently explained in his AAR article in *SWM* March 2001, Gold is the tactical callsign for a KC135 or KC10 tanker aircraft and is still used to this day. These were almost certainly the first of a batch of Langley Air base F-15 Eagles, based in Virginia, the operator noted the position reports which confirmed that both the tanker and four 'receiver' fighters callsign RETRO were just passing the Florida coast at their oceanic entry point. They were followed in quick succession by additional 'Gold flights'. To anybody bearing witness to these events, this was truly incredible and almost unbelievable! Military traffic was now outnumbering civil traffic on a scale of three toone on every frequency, a vast armada of military heavy metal heading East across the Southern Atlantic to the Middle East.

Diplomatic efforts saw this E4B staging through Mildenhall with the USA President "in the vicinity".

'Gold 41' one of a package about to rotate in order to pick its receivers.

The C130 Hercules proved as reliable as ever, numerous flights ploughed back and forth across the Atlantic.

Over the following weeks the pace was unrelenting. It was then, and still is, difficult to comprehend the sheer enormity of what had taken place. This really had been history in the making. Monitoring MAC flights became something of an easy catch, 11.175 could be switched on at anytime 24 hours a day and two or three aircraft would already be queued awaiting phone patch to 'Hilda East' this being Military Aircraft Command and Control Headquarters who were coordinating events. Many conversations were unlike the fairly routine messages that can be heard on 11.175 today. Such

The US Navy callsigns were usually of more interest to the 'listening community'.

was the pace of action, numerous aircraft were suffering ATC delays en-route, ramp saturation at destination airports and missing diplomatic clearances that prevented them from actually entering the airspace at certain Gulf States, some discussions would take in excess of an hour as the logistics were worked out. The volume of traffic continued to increase to the extent that additional frequencies were called in. By week six Santa Maria was handling so much traffic that the time delay in trying to respond to position reports was in some cases becoming critical as aircraft jostled over the band as they tried in vain to make contact.

Dramatic Change

The UK's main USAF base at Mildenhall initially did not figure in the opening phase of *Desert Shield* in the way perhaps most UK enthusiasts had hoped, although this was to change dramatically as the campaign developed. Initially aircraft were flying direct to the theatre of operation, depositing their cargo and then having to fly back to a base in Europe, this would prevent ramp saturation at the Gulf bases and indeed at Lajes and Moron in Spain. Again 11.175 buzzed with aircraft that were now transiting back via other bases around the Mediterranean, notably Souda Bay, Greece and Incirlik in Turkey. As these bases became congested, more and more aircraft were re-routed on more Northerly tracks in order to keep away from the Eastbound Southerly routes. As a consequence flights began to route via Frankfurt-Main Air Base and Ramstein in Germany and then subsequently Mildenhall. Crews were worked exceptionally hard, as more and more aircraft were requisitioned aircrew frequently found themselves flying non-stop from bases such as Travis, California down to Bahrain and then back to Northern Europe, all in one 36 hour leg. These missions were possible due to Tanker aircraft being positioned at various points along the route to provide in-flight refuelling.

In addition to handling transiting transport aircraft, Mildenhall in Suffolk, was now beginning to handle a significant number of additional tanker movements, which culminated in a record number of movements on the 25th August 1990 when between dawn and dusk the base handled 52 KC135s and six KC10s, on average an aircraft either arrived or departed every 15 minutes! The local u.h.f. frequencies buzzed with KC135 activity, the callsigns 'Super', 'Exon', 'Mobil', 'Caddo', 'Mash' and 'Raid', were much in evidence. The local 'Command Post' frequencies proved of additional interest as again more co-ordination took place as aircraft were vectored to refuelling targets throughout Europe and the Mediterranean and provided with 'receiver' callsigns. At the time all transport, tanker and bomber assets were a part of a single command structure, Strategic Air Command. As a consequence, one frequency could be relied on to monitor all movements, 307.8 was a particularly interesting frequency, this was latterly replaced by both 312.45 and 370.95.

As the campaign wore on, more interesting traffic continued to appear on the h.f. frequencies. The callsign 'Otis' representing US Marine C130s Hercules became regular movements, but the more interesting callsigns appeared in the shape of US Navy traffic. The US Navy tends to deploy and assign 'Air Wings' on a rotational basis to specific Aircraft Carriers, these codes could be tied to a particular aircraft or unit. Anything calling 'Alpha-Bravo' ,'Alpha-Charlie' etc. followed by a three digit numeric was particularly worthy of note and might represent a rare catch. Many of these movements were E2 Hawkeye aircraft on flight test missions to and from their respective carriers.

The initial surge was completed by early November although traffic levels did increase again in December as it became evident that additional assets would be required to follow up *Desert Shield* with the invasion force of *Desert Storm*. *Desert Shield* would however, represent a halcyon period in Military Air listening, the like of which we are not likely to see again.

A typical rearward antenna array on this EC130 Hercules from Sembach Germany, now sadly closed.

SWM

Fact File

At the height of Desert Shield, Dhahran was reputed to be handing an arriving or departing transport every seven minutes.

The USAF alone committed 1550 aircraft to both operation Desert Shield and Desert Storm. The USAF in Europe committed aircraft from Zweibruken, Hahn, Bitburg, Soesterburg, Sembach, Upper Heyford, Torrejon and Alconbury. Ironically, all are now closed!

RIAT 2001

View the action at the Royal International Air Tatoo, this will be taking palce at RAF Cottesmore 28/29 July. Over 300 aircrafft will be in evidence. In addition, arrivals can be views in the 'Park and View' facilities on 26 and 27 July. For more info visit: ***www.airtattoo.com***

AN INTRODUCTION TO WORLD

Tony Martin gives us an insight of the early British Infantry portable radios of the Second World War.

World War Two was essentially the first war in which the infantry soldier had been able to use a portable, close-range radio. An interest in collecting such sets has gradually developed, and from being commonplace and almost worthless some forty years ago, these sets now command good prices. The aim of this article is to give an outline of the early British infantry portable radios of World War Two, and of the way in which they were used, for those radio enthusiasts who know little about them.

Beginnings

Even before the First World War, the Marconi Company had developed a military radio for portable use, but these early sets required special transport arrangements and a team to erect a guyed mast. In terms of backpack equipment, the Americans were first, their US Army Signal Corps producing a R/T pack-set in 1933; in Britain, the Royal Signals demonstrated a pack-set in 1937. About the same time as this test in Britain, some experiments had been made in India using early Marconi backpack H9A v.h.f. sets.

Requirements

In order to see how the portable radios were used, we must first understand how the infantry was organised, especially at the lower unit levels. The basic unit was a section consisting of between eight and ten soldiers, the next level, a platoon, consisted of three sections, three platoons then making up a company. Four infantry companies, identified as A, B, C and D were assigned to a battalion, which also had a support and a headquarter company attached. Battalions were grouped into Brigades and Brigades into a Division.

As World War Two progressed, the exact strength and arrangement of the lower level units changed, as did their allocation of radio equipment. Thus in the first years of the war, scarcity of radio sets meant that originally battalion headquarters were the lowest level to be so equipped, then, company commanders were allocated a radio and an assigned infantry soldier to operate it.

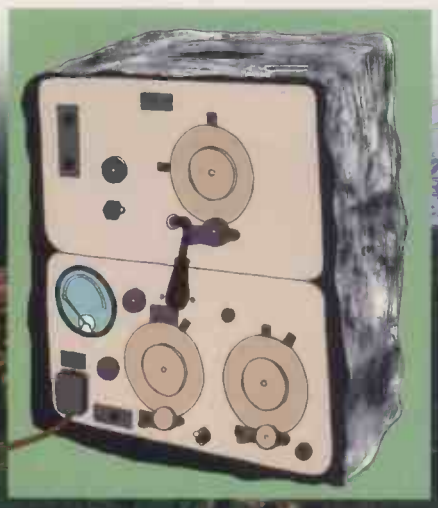
Eventually, platoons would also include an infantry soldier who carried a radio set. Operators were given training, but not to levels required by the specialist personnel of the Royal Signals, who were generally attached to formations to handle communications at Battalion and higher levels. For instance, specially equipped wireless vans were sometimes used to handle the communications from Battalion back to Brigade headquarters.

The essential point to note is that the infantry was organised in a hierarchical command structure, so that radio normally had to provide communications between adjacent levels in the common structure. Thus an intermediate headquarters on the battlefield would need to be provided with what were referred to as forward and rear links.

WS 18 on display at the Royal Signals Museum, Blandford, Dorset. *Photo: Kevin Nice.*

Tactical Problems In The Battle Of France 1940

Two problems had existed with radio communications, first a scarcity of radio



Wireless Set No. 18.

Wireless Set No. 48.

Wireless Set No. 38

WAR TWO INFANTRY RADIOS

WS 68 on display at the Royal Signals Museum, Blandford, Dorset. *Photo: Kevin Nice.*

equipment, which meant that the lower units had depended on wire communications. Secondly, a strict wireless silence was imposed before the battle began in May 1940, so that hardly any operational experience was gained beforehand. Both of these factors contributed to the problems of the British Expeditionary Force in its fighting retreat to Dunkirk.

In fact, in 1939, the British had realised that there was a communications problem, and so had created a special mobile liaison force, code named 'Phantom' whose original object was to find out what was happening on the battlefront and report it to the Allied Airforce Intelligence bureau. Later, this was changed to include reporting back to Army field HQ as well.

The Infantry Backpack Assumes A Key Role After 1940

Almost two thousand field radio sets had been left behind in France, which meant that the British Army had to be re-equipped. The importance of the portable pack radio in the new style of fighting was recognised, resulting in a range of pack sets being produced. These sets followed a type identification system, in which each set type was allocated a number, depending on its intended role.

Wireless Set No. 18

This was basically intended for a company commander to use within a battalion, i.e. for messages between company commanders and also back to battalion headquarters.

The WS No.18 set covered the frequency range from 6 to 9MHz. It was normally used as an amplitude modulated R/T set, with an output power of 0.25W. Later versions of the set enabled Morse code working. The set was housed in a steel case attached to a frame, allowing it to be carried on a soldier's back, with the set controls being operated by someone else, unless it was detached.

The receiver was mounted at the top, underneath was the transmitter, with two dry batteries at the bottom. A rod antenna, made up of short interlocking tubular sections could be used. Separate headphones and a microphone were used. With spares, the set weighted about 15kg.

Wireless Set No. 48

This set was an American built equivalent to the WS No. 18 set. Although it had the same overall function as the WS 18, it differed in design detail, and to some extent it was a better set. It can be seen that the front panel controls on the receiver (top) and transmitter were arranged differently to the WS 18.

The operation of the WS 48 was almost identical to the 18 set, except that the receiver had a separate b.f.o. stage and the transmitter had a 1MHz crystal calibrator included. The receiver had more stages than the 18 set receiver, because of the use of multi-element valves. The transmitter also had more valves than that of the 18 set. The weights of the two sets were identical.

Wireless Set No. 68

This set was almost identical to the WS 18 set, except in the provision for crystal control of the transmitter if required and a different operational frequency range. One version of the set covered from 3 to 5.2MHz (68R), whilst the 68P version covered from 1.7 to 2.9MHz.

The lower operating

Wireless Set No. 46

Throat microphones - oddly called 'laryngoscopes' or 'laryngaphones' - this picture shows how the two transducer units were strapped around the neck to contact the larynx.

The WS 18, 48 and 68 sets were backpack radios, normally carried by one soldier and operated by another or by the company commander.

Two sets were produced which were lighter and smaller than the WS 18 type of backpack sets - these were designed to be carried and operated by one soldier.

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Connect this up to your PC and enjoy high quality reception with an amazing station data base and memory log. Can be used remotely from PC. Requires PC (not included)

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BEARCAT UBC - 120XLT HANDHELD SCANNER

The Uniden UBC120XLT Handheld Scanner is ideal for the listener who does not want to have the expense of one of the more complex scanners. It covers with some gaps from 66 to 512MHz, AM and NFM preselected for the band in use.

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ICOM IC-R10E

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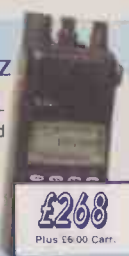

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USB, LSB, CW, AM, FM, WFM * 1,000 Memories * Bandscope * Noise Blanker * Wide range of tuning steps * alphanumeric Display * Real Time Band Scope * Voice scan feature * Data output port * Programmable scanning * Ni-cad pack, AC charger and helical antenna.

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YAESU VR-500

This lovely little scanner from Yaesu offers superb performance.

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* 100 Skip channels 10 Search bands
* 8 Character alphanumeric display
* Band scope Priority monitoring
* PC programmable
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frequencies would have meant an improved performance in range, for the same transmitter power, as ground wave propagation improved at the lower frequencies compared to those of the WS 18 set. This improved range would have been useful for troops arriving as part of air-borne or sea-borne forces where equipment was limited.

In particular, the WS 68 set was often used by landing parties for the direction of offshore naval gunnery, onto targets inland. In this role, in the hands of skilled naval telegraphists, ranges of between 29 to 48km were obtained.

WS 38. *Courtesy Royal Signals Museum.*

Wireless Set No. 38

This set was produced in several versions as improvements in design were incorporated. It was significantly different to the backpack sets, which were transmitter/receivers, the WS 38 set being more accurately described as a transceiver in its circuit configuration.

The WS No. 38 set covered the frequency range from 7.4 to 9MHz as an amplitude modulated R/T set with an output power of 0.2W. With spares, the set weighed about 12kg. The design was quite ambitious in the way it provided transmit and receive functions via a single tuning control, and it was this which, probably through misalignment of the transmit and receive frequencies under operational conditions, caused it to acquire a reputation for poor performance.

Wireless Set No. 46

This set was designed specially for use in Combined Operations. It was also a transceiver in its circuit configuration. The WS No. 46 set provided switched selection of three crystal-controlled channels in one of four frequency ranges. The frequency range was set up for each set by installing the appropriate coil unit from the four ranges, which covered the range of 3.6 to 9.1MHz, with small gaps.

The designers had given some attention to the problems, which had been recognised with the other types of set. The features of crystal control and waterproofing, combined with an increased power output of about 1W, meant that the WS 46 set was more likely to be able to maintain communications under difficult operational conditions.

The press-to-send switch on the top of the panel could be used to send MCW (audio tone Morse code). Attention had been directed in the design to ensure that the best use was made of the limited antennas that such sets had to use. Thus a panel mounted trimmer allowed the antenna to be optimised for the frequency range in use, and a panel mounted 'dummy antenna' could be plugged into the antenna socket, with a lamp showing that transmitter output power was present. The set weighed about 11kg.

Technical Overview

It is now forgotten, perhaps because it was overshadowed by the developments in radar, that in the early years of World War Two, infantry radio sets underwent a transformation in their capability and portability. The limiting factor in the success of the early British infantry radios was really the frequency bands in use.

In the range 2 to 10MHz, the ground wave propagation is poor and this would have been further reduced by the use of short rod antennas - especially when on the move, where no earth was available. Although only a short range was normally required with these radios, the poor propagation meant that even quite short ranges were not attainable in wooded or obstructed terrain.

One or two features of the design deserve a special mention. In the backpack sets, such as the 18, 48 and 68 sets, the antenna was connected directly to the tank circuit of the transmitter and matched by switching between taps on the coil, and with adjustment to the tuning capacitor of the tank circuit. In the 'chest type' 38 and 46 sets, the antenna was connected to the 'hot end' of the tank coil via a series capacitor.

In the backpack sets, the separate receiver and transmitter had to be netted on the same frequency (split frequency working was not envisaged in the operating procedures of the time). Netting was a problem, because the friction edge tuning dials were fairly crude mechanisms and could develop a 'lumpy' feel after some use.

The master oscillators in these backpack transmitters, and the local oscillators in the receivers were, of course, not stabilised against drift caused by temperature and voltage variations. The mitigating factor in this was that the receiver selectivity curves were rather wide by modern standards, but even so, netting was one of the weak points in the operation of the backpack sets.

A problem with all of the sets of those days was the size and weight of the batteries required. These had to supply a low voltage (l.t.), usually 3V, for the valve heaters and a high voltage (h.t.), usually 160V, for the remainder of the circuits. The backpack sets and the 46 set had a useful operating life of between eight and twelve hours, depending on exactly how they were used.

The 38 set, when fitted with special batteries, could have a working life up to 35 hours. All the sets could be operated from larger battery packs when used from fixed locations. The 38 set could, when the need arose, be used with a power supply unit No. 5, which incorporated a 6V accumulator vibrator circuit to provide h.t. voltage and a hand generator, all in one small case.

An interesting development was introduced on the chest type sets, these were provided with throat microphones, rather oddly called 'laryngoscopes' or 'laryngaphones' in some descriptions. The illustration, **Fig. 5**, shows how the two transducer units were strapped around the neck to contact the larynx.

Operational Use

Although all of the infantry backpack sets were of low power and normally used with short rod antennas, there was still the possibility of interception. During mid 1941, a general warning was sent to all units in Britain that messages sent over infantry backpack radios during training or redeployment were capable of interception by enemy listening posts on the continent. Continuing concern over this aspect led to the use of new operating procedures in mid 1942, which made it more

difficult for the enemy to discover the identity and composition of the allied land forces in Britain by such means.

There seems to have always been a certain amount of controversy about dissatisfaction with British Army field radios, even up to the present day. During World War Two, the British sets were often unfavourably compared with American equipment. It has to be remembered that after 1940, the British Army needed replacement equipment immediately. The US Signal Corps however had a breathing space, during which they were better able to assess technical and operational factors, benefit from British experience and thus to produce lightweight v.h.f. crystal controlled sets.

In particular, infantry soldiers of World War Two have often reported in their memoirs that the WS 38 set was ineffective, with contact either never being made or being lost after about a few hundred metres separation.

First use of the WS 38 was in the commando raid on St. Nazairne in early 1942, for which the commandos were warned that the new sets should on no account fall into enemy hands. On this raid, the WS 38 sets were to be used to allow commandos to contact the naval vessels waiting offshore to evacuate them. Despite the very short ranges involved, there were virtually no useful contacts made over these sets during the raid.

WS 46. *Courtesy Royal Signals Museum.*

The officer in charge of a mortar platoon during the Normandy Campaign remembered being so dissatisfied with his 38 sets that he finally arranged his own tests of their effective range, finding that none of his sets worked beyond the specified minimum range of 900m, even under ideal conditions.

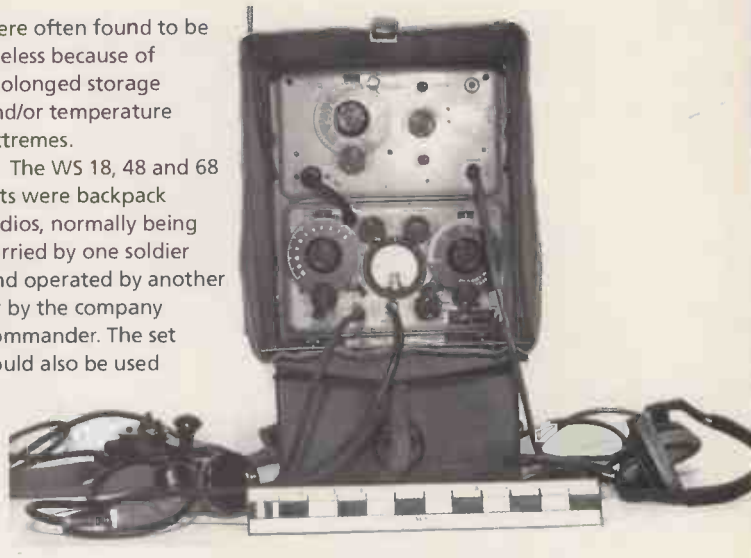
The Dieppe raid in the summer of 1942 demonstrated the particular hazard of being an infantry radio operator, for the rod antennas attracted special attention from snipers and mortar fire, to such an extent that communication back to the landing ships from the beach parties was almost cut off. The operating instructions for the 38 set eventually acknowledged this problem, and recommended that when in close contact with the enemy, an insulated wire thrown out along the ground (termed a ground antenna) should be used. First hand accounts of the Dieppe raid suggest that direction finding was also thought to have been used to direct mortar fire onto operators' positions.

A significant operational problem with these sets was their frequent failure after being landed on a beachhead. Despite the use of waterproof transit cases for the WS 18 sets and waterproofing construction used in the WS 46 sets, there were still frequent failures because of this problem (which also occurred as late as in the Falklands Campaign).

Perhaps the oddest and unluckiest failure of all, in terms of waterproofing, was reported during a raid in the Mediterranean in 1942, when, still alongside the ship for loading, an 18 set in a small boat was put out of action by a water discharge from the ship itself. In this type of action, the 18 set was regarded as insufficiently robust and of too low a power for maintaining contact with ships, once troops have moved inland.

Apart from these problems, there was a more widespread problem affecting all designs of infantry pack radios: this was that the dry batteries issued were often found to be useless because of prolonged storage and/or temperature extremes.

The WS 18, 48 and 68 sets were backpack radios, normally being carried by one soldier and operated by another or by the company commander. The set could also be used on the move by the soldier carrying it, provided that previously it had been adjusted and tested while stood on the ground, so that subsequent operation only needed control of transmit/ receiver via a microphone switch. The rod antenna could be swivelled so that it remained vertical if the soldier carrying it had to lie prone on the ground (though one wonders, after the experiences of the Dieppe raid, whether soldiers actually did this).



WS 48. *Courtesy Royal Signals Museum.*

Bear in mind, that the soldier carrying this radio set would probably still have to carry his own weapon, with a rifle weighing about 4.5kg and that commandos were trained in assault techniques of scaling near vertical cliff faces, carrying such equipment.

In spite of their low power, the WS 18, 48 and 68 sets were capable of good results, but only in skilled hands and with a good antenna in use. Their weight and bulk was however a problem, so that different equipment would be needed if radio was to be provided down to platoon and section levels.

Two sets were produced which were lighter and small than the WS 18 type of backpack sets. Both of these sets were designed to be carried and operated by one soldier, with operating controls simplified, so that hardly any special training would be required for their use.

The WS 38 set was for use by normal infantry soldiers, and a version was produced which was intended for liaison use with accompanying tank forces. The WS 46 sets were designed for Combined Operations, which in World War Two often involved commando raids by beach landings.

Both sets were carried on the operator's chest, with a sectional rod antenna of between about one and two metres in length. A distinctive feature of both sets was the use of a throat microphone, allowing the operator more freedom of movement.

SWM

Comparative Performance Table

Type of set	Range (km) with short rod	Weight (kg)	Size (mm)
No. 18	3-8km	15kg	200 x 250 x 430
No. 38	Less than 1km	12kg	100 x 230 x 160
No. 46	Greater than 3km	11kg	320 x 190 x 110

* Note that the operator of these sets also carried an additional pack for batteries/equipment.

The Other Man's Shack

The Ultimate Collector?

With the long awaited return of this previous *SWM* series, Kevin Nice pays tribute to the late Allan Langer and the radio collection that formed a huge part of his life.

Allan pondering as to just where he can put this stack of receivers. Behind is the door to the garage, but there is no space free in there as it's already full of sets that won't fit in the radio room.

Allan Langer was one of those special people that you occasionally meet in the radio hobby and for that matter, life in general. Sadly he is no longer with us, he passed away earlier this year, but his memory and the results of his friendliness, enthusiasm and expertise live on.

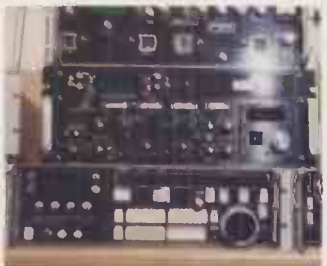
I never met Allan, but I was aware of his collection and commitment to the Racal (amongst others) receivers he has acquired over the years. Such was his dedication to this and other marques that he was laid to rest clothed in his prized Racal fleece. Latterly, Allan had added to his substantial collection of Racal sets those of Watkins-Johnson and Collins origin.

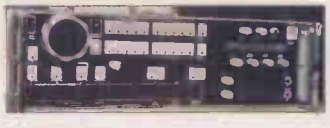
Living and working in Warrington, Allan was very well known in the surrounding area for being the local expert. Though some who achieve this status are somewhat unapproachable, this was far from the case with Allan. He generously shared his skills and specialised knowledge within the radio community.

Allan, one of seven children, developed an interest in radio from an early age. He soon headed off down a path, familiar I'm sure to many reading this piece, of discovery and excitement as he learned much about the fascinating world of radio. He, like many of us, forged friendships with local radio enthusiasts and amateur operators. Gleaning from them the very knowledge that carried him forward into his professional career in the world of electronics and technology.

This early experience was later to be repeated many times over, but this time with Alan being the knowledgeable guide.

Upon embarking on his professional career, Allan joined the signalling section of British Rail, rising to post of Maintenance Safety Manager. This division, was in the course of time, acquired by the Racal company. For Allan this was a dream come true. Such was Allan Langer's enthusiasm for Racal receivers he almost managed to get arrested for taking photographs at one of their training centres, so to

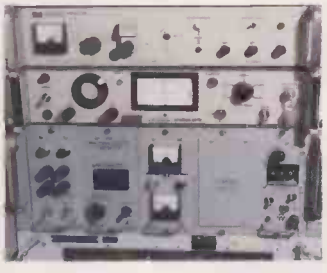




W-J8617B

If that lot should have proved unreliable there was always the standby rack!

Part of the Collins Cedar Rapids factory! This brick was sent to Allan by an ex Collins Radio employee with whom he was in constant correspondence.



Tracor VLF Tracking Receiver 599 took car of the low end of the spectrum, seen here in a rack with HP 105B Quartz Oscillator, Racal 527A Frequency Difference Meter and a Racal MA 259 Standard.

W-J 8700 Dual Receiver, Raven Research 16-way coupler, W-J 8711, W-J 373/10, W-J 9028.

continued on page 36

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- Supplied complete with earphone, case, belt clip, charger and rubber duck antenna

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- TURBO SEARCH 300 St/Second
- Data Skip facility
- 10 Priority Channels
- Memory Backup
- Supplied c/w earphone, belt clip, charger and rubber duck antenna

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CHEQUE SPREAD

- 66 - 512 MHz (with gaps)
- AM/FM/WFM
- 100 memory channels
- TURBO SCAN 100 Channel/Second
- TURBO SEARCH 300 St/Second
- Data Skip facility
- 10 Priority Channels
- Programmable Search
- Channel Lockout Key

NEVADA PRICE- £129.95

UBC 60XLT

A brand new low cost scanner that covers MARINE, LAND MOBILE and more!

- 66 - 512 MHz (with gaps)
- 30 memories
- Channel or Freq display
- Priority Channel
- Channel Lockout
- Scan Delay

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- 100kHz - 1299.995MHz
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- 640 Memory channels
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- Welght 220g
- Comes complete with Antenna, carrystrap, Belt clip
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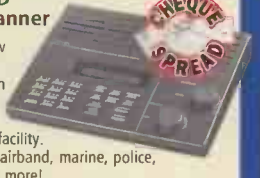
Optional Accessories

- FNB-59 NiCad battery pk
- NC-60 AC adaptor
- CSC-72 Soft case
- EDC-5B DC cable with cigar lighter plug
- EDC-6 DC cable
- CT-35 Cloning cable

NEVADA PRICE- ~~£244~~ £199

Bearcat UBC 860XLT

AIRBAND Base Scanner



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- 66-88, 108-174, 406-512, 806-956MHz
- 100 mems • Turbo Scan - 300 steps/sec

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UBC 9000XLT

- 25 - 1300 MHz (with Gaps)
- 500 memory channels I VFO Control
- Selectable Attenuator I Selectable Delay
- Selectable Mode AM/WFM/NFM
- TURBO SCAN 100 Ch/Sec
- TURBO SEARCH 300 St/Second
- Alpha Numeric Display
- Automatic Store I Frequency Transfer
- Auto Tape Record I Data Skip facility
- Programmable Search

NEVADA PRICE- £269

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- Alpha tagging
- CTCSS with tone scan
- 2" colour TFT display
- Video audio output

SUPPLIED C/W

- *telescopic antenna*
- *belt clip*
- *charger*
- *LI/ION battery pack*

NEVADA PRICE- £449

ICOM IC-R2

SPECIAL!

PRICE MATCH

One of the smallest radios we have ever seen, Palm size wide band size is not everything. Packed in this receiver's small package are some pretty big features.

- 500kHz -1310MHz
- AM/FM/WFM
- 400 memories plus 25 band edge memories for easy scanning between specified frequency

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Mains Charger £8.95 £2.75 p&p

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YUPITERU MVT 3300

- 66 - 88MHz, 108 -170MHz 300 - 470MHz, 806 - 1000MHz
- MODES: AM/NFM
- STEPS: 5, 6.25, 10, 12.5, 25kHz
- MEMORIES: 200
- BAND MEMORIES: 10 (user re-programmable)
- PRIORITY CHANNELS: 10
- SCAN/SEARCH SPEED: 30/ second
- Requires 4 x AA batteries
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Probably the most popular high end Scanner. It's easy to use and can receive just about anything!

- 530kHz-1650MHz
- AM/FM/WFM/SSB/CW
- 1000 memories
- Steps 50Hz, 100Hz for tuning LSB & USB
- 155H x 64.4W x 32Dmm
- Weight - 320g
- Supplied with NiCads, mains charger, 12VDC cigar lead, belt clip, carry strap

NEVADA PRICE- ~~£244~~ 229

YUPITERU MVT 7300

- 520kHz -1.32GHz
- 1000 Memories
- 8.83kHz Airband
- Duplex reception
- Descramble function
- Clock timer
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- Auto memory write
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NEVADA PRICE- £289

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- 118-137MHz for Aircraft Band

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- AM mode only for 118-137MHz
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Tuning:
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PRICE - £149.95

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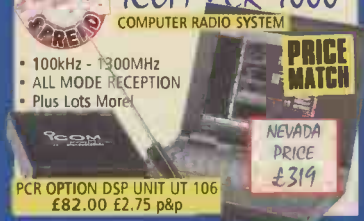

- 100kHz - 1300MHz
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YAESU FRG-100

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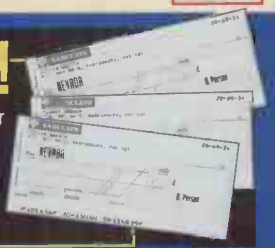
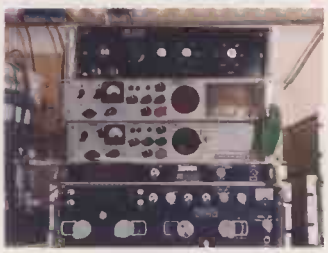


continued from page 33

W-J 8700 Dual Receiver.

Racal MA2317 and Rediffusion R500.

W-J 8615D-1, W-J 8615(S1) and W-J 9206 Signal Monitor.



W-J CP-102-2 Control panel, Aviotel SIM-81 (2off), W-J DRO330A and WJ- RS-111-1B-39.

To control and distribute incoming signals from Allan's vertical antenna and extensive ground plane array to the many receivers in the Radio Room, the following equipment was utilised. Racal MA2452, MA 2306, MA2313, RA 2309B, RA2303 and Tuning Heads RA2296+95.

become an employee of the company he so admired was sweet irony indeed.

Those who knew Allan, will remember him for his professionalism, fastidious attention to detail, immense knowledge, generous spirit and his dedication to Radio, Allan leaves behind many close friends who most certainly miss his many endearing qualities.

Presented on the these pages is a pictorial tribute to Allan's dedication and skill as probably the foremost collector of professional radio in the UK. It is with sadness that we commemorate the loss of such a outstanding figure from our ranks. As you can see, Allan amassed a very extensive collection of radios. The family home was especially chosen based on it's ability to accommodate the growing collection. The room above the garage was to become the radio room and workshop. The floor of which underwent extensive engineering work to strengthen it sufficiently to support the load of the dedicated facility above.

The whole room was designed

Most of one side of Allan's 'Shack'. The cupboards below the radios contain, manuals and spares.

A substantial radio test set-up consisting of HP 8620 Sweep Oscillator, Escort ECG-3230 Sweep Function Generator, Marconi Audio Power Meter 893B, HP RMS Voltmeter 3400A, HP 8640A Signal Generator, Racal Instruments Rubidium Frequency Standard 9475, Racal Dana 9478 Frequency Display Unit, Marconi Instruments 2030 10kHz to 1.35GHz Signal Generator, Tektronics 2232 100MHz Digital Storage Oscilloscope, Farnell True RMS Sampling RF Voltmeter TM8 and Racal Dana 1992 Universal Counter.

More antenna distribution capability, this time courtesy of Rediffusion.

The tools for the job. One of the many sets of tools Allan employed to maintain and repair his amazing collection.

Racal RA1792, RA1779, Liniplex and W-J 8716.

The Collins corner. Comprising a 51S-1, 390A, 312B-5, 55G-1, KWM 2A, 390/URR and 389/URR.

More from the garage! Racal Antenna switching unit, Racal MA1107 and MA1105, search unit and Bargraph. Plus a Redifon DU500 Transmitter.

Part of the archived collection, stored under the radio room in the garage. Racal 1792, W-J 9028DU display unit (x2), W-J 390-6 and W-J 9028RU.

Another of Allan's passions was flyin... Pictured here is a prized commemoration of his Robinson R22 flight.

Allan wasn't short of spares to keep his fantastic collection in the peak of health.

Part of the extensive collection of manuals that Allan collected.

down to the last detail with dedicated space for test equipment, test and repair bench, spares, a massive library of technical and service manuals for the collection and more. It is fair to say that Allan had not only brought together one of the largest private collections of professional radio in the world, but also a stunning technical library too.

I wish to extend both my deepest sympathy and my sincere thanks to Allan's widow Jean, without who's kind help, this article would not have been possible. The magnificent collection featured here is regrettably being sold on behalf of Jean, by a long-term friend and fellow enthusiast, who was one of those people encouraged early on by Allan's tuition and generous spirit. He can be contacted by e-mail: **langercollection@talk21.com**

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Cubic by Name, Not by Nature!

John Wilson slips, or rather almost drops, another excellent ex-military h.f. receiver on the test bench to get to grips with its pedigree.

It may be called Cubic, but it's long, thin and very heavy. As an antidote to the almost totally empty box of the HF-1000, the Cubic 3030 was something else. A warning notice on the case says "Do not support this receiver by the front panel" and when you have tried to lift it you know why that notice is there. To be fair, the rack does contain not one but two identical receivers and boy are they built like the proverbial battleship, not the *Bismarck* this time, but more the USS *Missouri*.

Exotic Receiver

The Cubic 3030A is another of those exotic military receivers which the cognoscenti talk about, but which few of us mortals have ever seen. Designed to the same generic specification as many of this type of receiver, it covers the frequency range from 5kHz to 30MHz in 10Hz steps, has a presentable performance and the usual stack of operating modes and bandwidths, although these are provided by good old traditional filters rather than d.s.p.

Taking a peek under the lid reveals two identical rows of steel coffins, each coffin containing a different section of the receiver. During the testing, one coffin actually contained a dead body as the switched mode power supply inside it died a sudden death. One other coffin contained a partially dead body in the form of a preselector (yes, a preselector) which had one band effectively open circuit. Moving the bodies around didn't need an undertaker since the coffins are held in place by two quarter turn Dzus fasteners, and all connections are by 'D' type connectors on the bottom, so by moving and matching I produced a good receiver to test.

Simple Layout

Having two identical receivers side by side on one panel means that the area allocated to each set of controls is somewhat limited and the layout looks quite simple compared to something like the Watkins-Johnson HF-1000. We have a large display, a power on/off switch, a headphone jack, a volume control, a local/remote switch and a keypad. It goes without saying that both display and keypad have to be quite comprehensive in their facilities in order to provide the operator with all the functions needed to drive the receiver.

The only other control is the all-important (at least for single operator use) tuning knob. This is a nice size, well weighted, and easy to use on the left hand receiver, but nearly impossible on the right hand receiver since the knob edge is underneath the right hand rack handle. In the same way, you can tell a Collins R-390 owner by the over developed right wrist muscles from turning the heavy drive, you must be able to spot the Cubic 3030A owner by the bruised knuckles resulting from constant contact with a chunky rack handle.

Main Display

The main display is arranged in two rows, the upper showing memory channel number (00 to 99), frequency reading down to 10Hz, mode in use, i.f. bandwidth and a.g.c. delay time in seconds. The digits are all bright yellow/green and extremely easy to read, even at some distance.

The lower row shows signal strength on a bar graph (no nice analogue meters here), indicators to show whether the bar graph is reading audio output level or r.f. signal level or a useful third function in which the bar graph shows accuracy of tuning to an incoming carrier, a status indicator showing if the receiver is under remote control, has a fault condition, or is under keypad control, and finally an indicator showing if a memory channel is selected to be skipped over during scanning. The entire display is simple and informative, giving the user a complete view of the receiver status at a single glance. The keypad is something else.

Cubic have used a membrane keypad in the 3030A and I have to say I don't like the feel of any membrane keys I have ever encountered. These particular keys take a very firm push in a 'straight-on' direction to operate, and although there is a 'click' action, they never feel as nice as a more traditional separate keytop, as for example you will have on a PC keyboard.

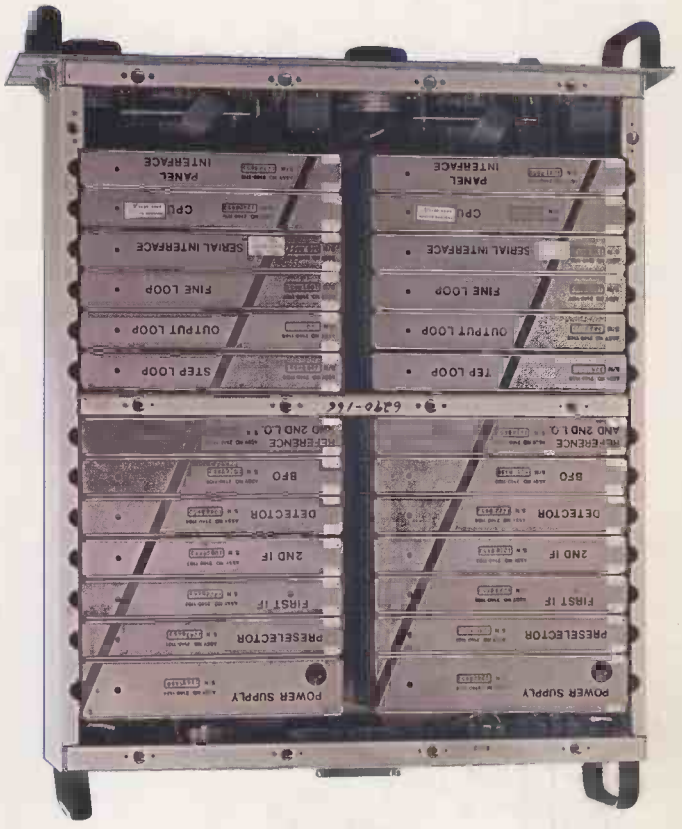
I also worry about ultimate life of membranes. If any of the keys fail, it means complete membrane replacement, and there is no doubt that the keypad on the 3030A will get a lot of use in non-remote control applications.

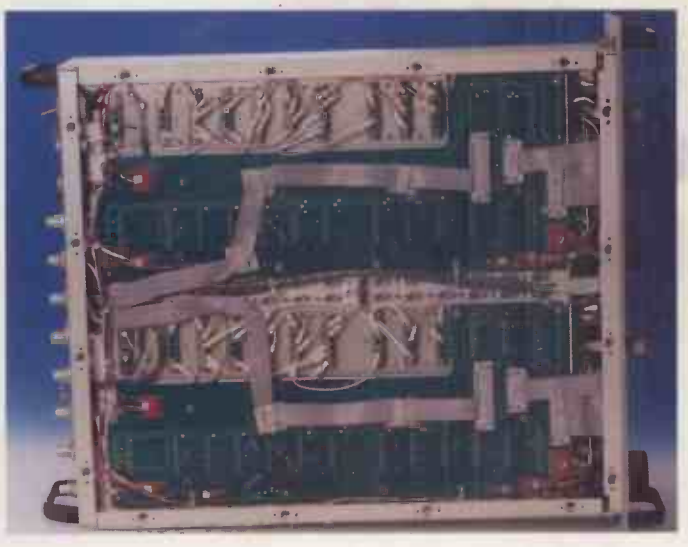
The number keys 1 to 9 all have a second function covering respectively frequency, b.f.o. offset, i.f. shift, r.f. manual gain, Squelch level, Scan dwell time, receive mode, i.f. bandwidth and a.g.c. delay time. Like the main display, this is all very comprehensive and surprisingly simple to use after a few minutes, but the amount of pushing each key takes during a listening session is quite substantial. The remaining keys on the keypad are concerned with entering sweep steps and scan and sweep functions.

Limited Flexibility

As with the Watkins-Johnson receivers, the i.f. shift and b.f.o. offset facilities are only available in c.w. mode which makes the 3030A a nice receiver for data modes, but limits the flexibility in other modes, particularly s.s.b. where i.f. shift can be used to great effect when it is provided. I am finding when listening to Shanwick on 8.864MHz that there is sometimes a pirate conversation taking place on 8.865MHz, often between foul-mouthed barely literate individuals, and I really need i.f. shift to minimise the interference.

At least the i.f. filtering in the 3030A has a good ultimate stop band rejection because of the use of high quality analogue filters and I wondered how a d.s.p. i.f. would fare under these conditions? Since I fortunately still had the Watkins-Johnson 8711 waiting to go back to its owner, I decided to do a side-by-side test.





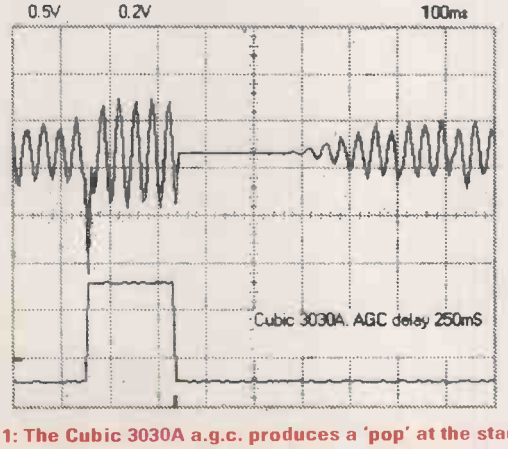


Fig. 1: The Cubic 3030A a.g.c. produces a 'pop' at the start of an s.s.b. signal, then a 250ms hang time followed by the nice gentle recovery of audio.

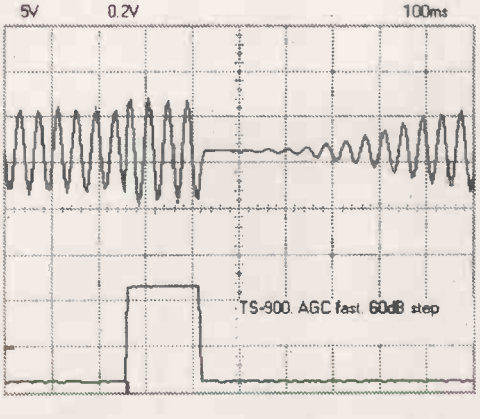


Fig. 2: No 'popping' with the dear old TS-900.

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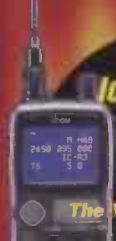

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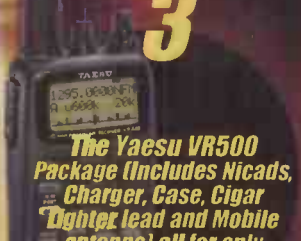

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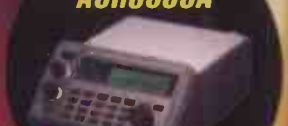
AOR3000A



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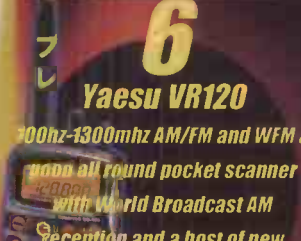
6

Yaesu VR120



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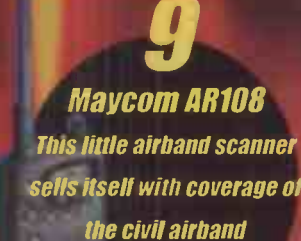

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Cubic by Name, Not by Nature!

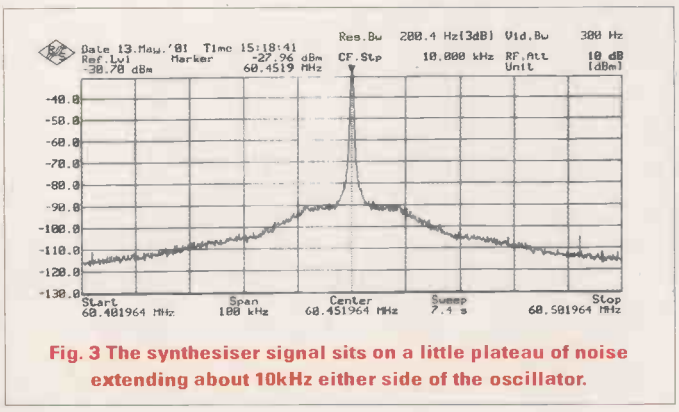

Fig. 3 The synthesiser signal sits on a little plateau of noise extending about 10kHz either side of the oscillator.

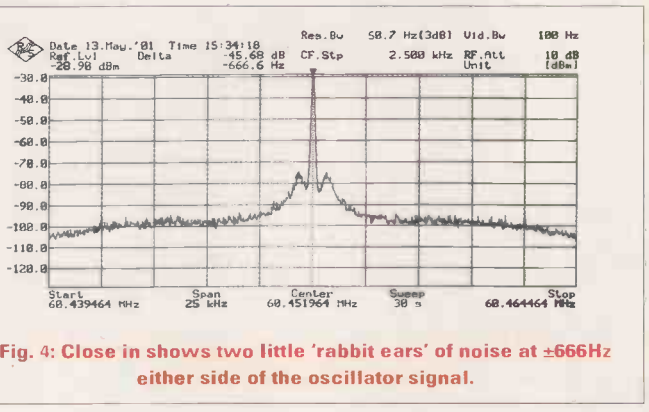

Fig. 4: Close in shows two little 'rabbit ears' of noise at ±666Hz either side of the oscillator signal.

I set up a test signal on 909kHz amplitude modulated at 60% with 1kHz and fed it to both receivers via a signal splitter. I then set both receivers to 900kHz using 6kHz bandwidth and adjusted the input signal level at 909kHz until the audio output of each receiver showed a 3dB increase in noise floor as measured on a HP 3400A true r.m.s. meter.

Test Results

The results showed that the traditional analogue filters in the Cubic 3030A had an 11dB better stop band rejection than the d.s.p. filtering in the 8711, and what is more, the lift in the noise floor of the 8711 remained there until I tuned the receiver far enough away from 909kHz to allow the first i.f. roofing filter to take effect at ±15kHz, at which point the noise floor dropped back to no-signal levels. The effects were even more noticeable when I connected an antenna and did my 900/909/918kHz listening test.'

Filters provided in the 3030A under test had bandwidths of 500Hz, 1, 3.2 and 6kHz, all of which were available in a.m., f.m. and c.w. modes, but not in u.s.b. or l.s.b. which were restricted to the 3.2kHz filter alone. Provision is made for a total of five i.f. filters to be fitted, with a maximum bandwidth of 8kHz. I could find no mention in the handbook of a method to enable filters other than the 3.2kHz unit for use in s.s.b., but at least when receiving a good signal strength the 3.2kHz filter provided excellent audio. All the other modes also gave a good account of themselves using an external monitor quality loudspeaker, although nothing so far has equalled the amazing a.m. audio from the Rohde & Schwarz EK-07.

The a.g.c. system in the 3030A is a true 'hang' design with a selectable delay time before the audio restores. This takes some getting used to in the longest (three seconds) delay, as it did in the RA1792, but on the 50ms and 250ms settings it works well, recovering smoothly without the sudden heart stopping full signal recovery as found in some other receivers I have tested for you.

There is a 'pop' at the start of an s.s.b. signal as you will see in **Fig. 1**, where you will also see the 250ms hang time followed by the nice gentle recovery of audio, but compare that with the dear old TS-900 transceiver as shown in **Fig. 2**. No 'popping' in this receiver, so it is possible to find a near perfect a.g.c. system if you look at enough equipment.

Easy Tuning

Tuning around with the 3030A is easy and trouble free, and the tuning knob does not have automatic speed-up, a design decision with which I fully concur. Normal tuning increments are 10Hz, but 100Hz and 1kHz rates are keypad selectable if required. There are (or appear to be) 180 tuning steps per knob revolution, giving a tuning rate of 1.8kHz per turn in the finest setting, increasing pro rata with the selection of tuning step.

Direct frequency entry from the keypad is tiresome since you have to remember the leading zeros. Frequency data enters at the right hand side of the frequency display, stepping to the left as you continue to enter the numbers and you have to remember when to terminate the data string with a poke at the 'ENT' key.

I found myself on 561.6kHz more than once when trying to get to 5.616MHz and poking the 'ENT' button one digit too soon. The Watkins Johnson keypad was much better since you could terminate the data with a 'kHz' button or a 'MHz' button. No ambiguity at all. Entering '5616kHz' puts you on to that frequency without error, whilst '5.616MHz' does the same.

Not As Convenient

Using the keypad to select functions is not as convenient as having a control for each function and it took a little getting used to before I felt completely comfortable with the system. There were quite a few naughty words when I poked the 'mode' key and found that I had inadvertently started to enter a new frequency, having forgotten to hit the 'clear' key first. But it becomes easier with practice, as someone said to the Bishop!

Bandwidth and a.g.c. changes from the keypad are carried out in a 'carousel' fashion so if you miss the bandwidth you wanted, you have to go round again. 100 memory channels are provided in the 3030A, each channel storing frequency, mode, bandwidth, b.f.o. offset, i.f. shift, a.g.c. hold time, manual gain setting, channel skip, scan threshold, step size and scan dwell time, in other words a

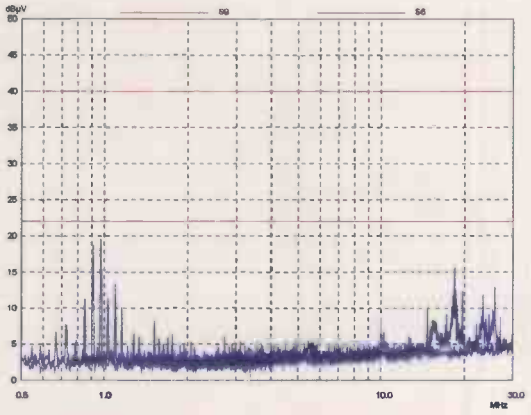

Fig. 5: Radiated emissions from the Cubic 3030A alone.

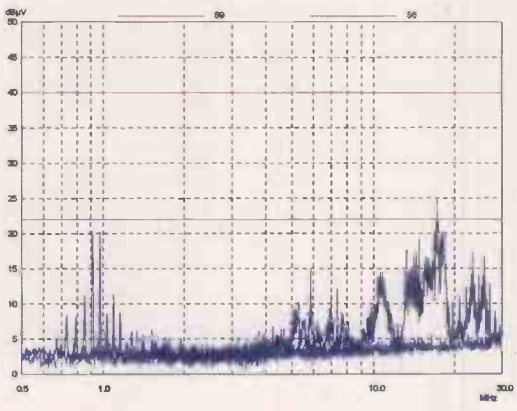

Fig. 6: The effect on emmisions by placing an operator's hand on the main tuning knob.

complete receiver set-up in each channel.

Storing and recalling memory contents is easy, and the scanning arrangements are excellent, as is the facility to carry out a frequency sweep between any two memory channels, using a tuning increment specified by the operator. It's rather like having a spectrum analyser under your control without having a display screen, and by selecting the tuning increments wisely you can scan across broadcast bands with the receiver automatically stepping on to each station in turn. It's a nice feature to have if you want to monitor activity whilst leaving you free to do something else - such as write an article for a magazine!

Fail Safe System

Circuit architecture starts out with front-end protection provided by an r.f. operated relay which disconnects the antenna input and grounds the receiver front-end should too much r.f. be detected. The system is designed to be fail safe, so if you ever find a 3030 with a deaf front-end, it may just be the protection system itself which has failed.

In addition to disconnection, Cubic have wired a 75V gas discharge tube straight across the receiver input. A bank of ten front-end filters are next, selected by PIN diodes for high frequency bands and relays for lower bands, and although the manual gives an idea of the passband of each filter, it doesn't actually give any attenuation figures so I can't tell you if they are better than those found in other receivers.

The construction of the 3030A also prevented me from taking a plot of the response of the filters, so I can't show you that either. At frequencies higher than 1.6MHz a grounded gate r.f. amplifier is used before the input signal goes to the first mixer.

Constant Drive

The mixer is a double balanced diode type, driven by a local oscillator at +27dBm derived from the main synthesiser. A levelling system operates around the local oscillator amplifier system to ensure constant drive to the mixer.

The synthesiser tunes a range of 40.455 to 70.455MHz, converting the 0 to 30MHz input from the antenna to a first i.f. of 40.455MHz which is amplified in an a.g.c. controlled dual grounded gate amplifier with the a.g.c. being used to control a PIN diode attenuator between the two gain stages. A 10kHz bandwidth roofing filter is fitted in this section of the receiver before the i.f. is mixed down to 455kHz in the second mixer, also a double balanced diode type, using a 40MHz oscillator drive at +17dBm.

The main receiver filtering is carried out at 455kHz by a bank of up to six filters selected by f.e.t. and bipolar switches driven from the main data bus. A single MC1350 is used as an a.g.c. controlled 455kHz amplifier stage feeding an emitter follower which drives the various detectors.

Demodulation by a.m. is handled by a semiconductor version of the good old infinite impedance detector, which after averaging, also provides a.g.c. control voltage in a.m. mode. The peak audio output of the detector is used for a.g.c. in s.s.b. or c.w. and a one shot monostable determines the hang time in these modes - s.s.b. and c.w. demodulation are handled by a fairly conventional product detector, whilst f.m. is a bit different in

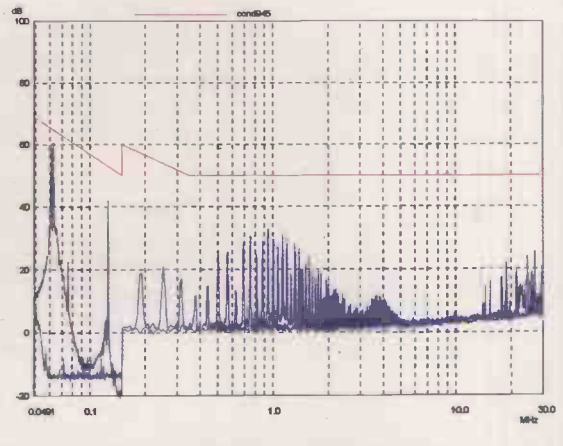

Fig. 7: Plot of conducted emissions on the mains lead of the 3030A using the set-up and limits for the marine radio test standard.

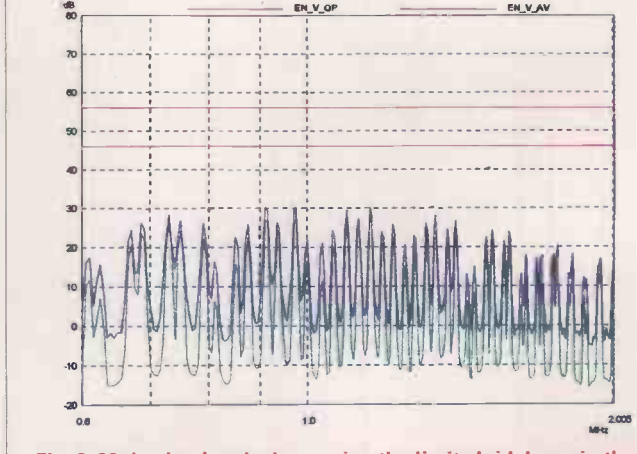

Fig. 8: Mains lead emissions using the limits laid down in the harmonised European standard for CE marking for domestic equipment.

Cubic by Name, Not by Nature!

that the 455kHz i.f. is converted in a double balance mixer down to 45kHz using a 500kHz carrier and then fed to a type of pulse counting discriminator.

Results on f.m. are excellent, and the provision of the front panel centre frequency metering is a useful feature. Audio output in all modes, using an external speaker was very good, and easy on the ear.

The r.f. performance was measured in my usual fashion, with sensitivity for 12dB SINAD figures shown in the table below.

Moderate Performance

All in all a moderate performance, with the changing sensitivity between bands probably due to different front-end band pass filtering. It's interesting that the sensitivity increase at higher frequencies where of course you can use it, but the sensitivity lower down is still adequate for most listening.

As one might expect from the mixer design, the third order intercept point was better than specification at +35dBm with a dynamic range of 103dB, whilst the use of front-end filters assisted the second order intercept (6.5/7MHz) to a creditable +71dBm with a dynamic range of 96dB.

Phase noise performance was not especially impressive with only -102dBc/Hz at 10kHz, falling to a mediocre -128dBc/Hz at 100kHz. I took a look at the spectral purity of the synthesiser and found that the synthesiser signal was sitting on a little plateau of noise extending about 10kHz either side of the oscillator as shown in **Fig. 3**, whilst a closer sweep showed two little 'rabbit ears' of noise at ±666Hz either side of the oscillator signal. **(Fig. 4)**. Interesting but inexplicable, and the 3030A is not at the top of the phase noise tree when compared to something like the RA1792.

Testing, Testing

Following my findings about the conducted and re-radiated noise from the Watkins-Johnson HF-1000, it was inevitable that I would also take a look at the Cubic 3030A. The test set-up, in case you missed the original description, was to put the receiver on a wooden table, 800mm above a ground plane in an r.f. anechoic chamber, and with an active whip antenna as used in military emissions testing placed at a distance of 4m from the receiver front panel.

Figure 5 shows the radiated emissions from the receiver alone, whilst **Fig. 6** shows the effect of placing an operator's hand on the main tuning knob. You will note the peak of signals from about 600kHz to 1.5MHz, analysis of which shows that the peaks are 60kHz apart, and the typical processor noises from 15 to 30MHz which increase dramatically when a hand is placed on the tuning knob. These levels are nowhere near as significant as those encountered in the HF-1000, but still a drawback to quiet reception at higher frequencies.

The 60kHz spacing on the lower frequency emissions suggested to me that they originated in a switched mode power supply and I checked the conducted emissions on the mains lead of the '3030A using the set-up and limits for the marine radio test standard. **Figure 7** shows the result, with a banging signal at 60kHz and at the second harmonic of 120kHz and the peak of harmonic emissions centred on 1MHz. The fact that these are being conducted down the mains lead explains why there was no change in level when the tuning knob was held in the hand.

Serious Listening

Note that the emissions comply with the limits laid down in the test standard, but that's no consolation to the user of the receiver in serious listening. To hammer home the point that h.f. listeners are being given a rough ride by current EMC legislation, I took a final scan of mains lead emissions using the limits laid down in the harmonised European standard for CE marking for domestic equipment, and **Fig. 8** shows the emissions recorded between 600kHz and 2MHz.

12dB SINAD results

Frequency (MHz)	Mode	Bandwidth (Hz)	Sensitivity (dBm)
28.2	s.s.b.	3200	-113
	a.m.	6000	-103
	c.w.	500	-119
14.2	s.s.b.	3200	-108
	a.m.	6000	-99
	c.w.	500	-115
9.5	s.s.b.	3200	-104
	a.m.	6000	-94
	c.w.	500	-110
6.5	s.s.b.	3200	-104
	a.m.	6000	-95
	c.w.	500	-109
0.90	a.m.	6000	-84
0.09	a.m.	6000	-75

Once again these are below the limits set down in the standard, and the equipment as tested easily meets the test requirements. Nevertheless, it can be seen that for a keen listener, this level of noise could interfere with DX listening, and you can perhaps understand why switching on a computer near an h.f. receiver often results in 'wipe-out' noise appearing across the short wave bands.

For the unfortunate city dweller who may be within a few hundred metres of an office building stuffed full of desktop computers all running into the mains, there is no respite. Do what I did and move to the relatively quiet Southwest of England. It's your only hope.

Summary

The Cubic 3030A is a thoroughly competent receiver and would satisfy the needs of quite demanding users. I like the fact that i.f. filtering is carried out by conventional filters which gives good stop band rejection, so necessary for a.m. broadcast listening and desirable for utilities. The front panel is very clear with all functions being monitored, even though changing a function means fiddling with a membrane keypad.

RF intermodulation performance is excellent, although the phase noise of the synthesiser falls a little short of some other receivers in this high end category, and a long way short of the outstanding AR7030. The 100 memory channels store every setting from the front panel, and scanning the memories is straightforward.

The frequency sweep between user settable limits is a very good feature, and the 'skip' facility can also be used in this mode to eliminate constant signals which you may not want to hear all the time. Overall I enjoyed having and using the 3030A and it gave me the feeling that it is a receiver that will still be working perfectly in another 50 years, such is its ruggedness. Wish I could afford one! Happy listening.

SWM

Condition Critical

John O'Toole G7UYT recently had personal experience of the London based Helicopter Emergency Medical Service, the rapid air ambulance.

John O'Toole would like to dedicate this article to his son

Liam Michael O'Toole

who only lived for a few hours on the day of his birth - January 29th 2001.

As the calls come into the London Ambulance at Waterloo, all 25,000 of them, every single day they are monitored by a specialist trained paramedic, seconds from HEMS. If he or she thinks the emergency call involves a patient suffering from major trauma, the HEMS swings into action.

A button is pushed, an alarm sounds in a roof top operations room high above the Royal London Hospital in Whitechapel, just to the east of the city and everyone runs. A medical team picks up a ready packed bag, the operator takes details of the injured lists of hospitals and specialist units in London and the south east, the pilot races to the awaiting Dauphin Helicopter and within a couple of minutes of the alarm sounding, the blades are turning and the doctors and paramedics have scrambled on board and are airborne. Another life is about to be saved by the Helicopter Emergency Medical Service.

Incredible Noise

In the streets down below everyone stops to look up and wonders where the helicopter is heading. The noise is incredible, but that only adds to the sense of drama. The helicopter services go to the aid of those within the M25 area three or four times a day, sometimes more, but that frequency never dulls the wonder of it. The skill of the helicopter pilots may be called upon to land in seemingly impossible locations such as the centre of a housing estate or at a major intersection.

Air ambulance services exist in other parts of the country and the Automobile Association is trying to achieve a national network, but the service based at the Royal London Hospital has a particular advantage over all others in that it is unique in carrying a specially trained doctor on board as well as a paramedic. The helicopter medical team is equipped with a substantial range of drugs, emergency surgical kits, monitors and other equipment - a mini Accident & Emergency Dept. (A&E) of their own, so that they can begin treatment at the incident scene.

Someone with a major head injury, say, needs to have neurosurgery within three hours to have a chance of survival and recovery. HEMS can achieve that whereas a conventional road bound ambulance may not have been able too. In the London area it may well take three quarters of an hour to get proper attention to a critically injured person by road, the helicopter can take 12 minutes.

Equipped To Cope

One of the other advantages of the HEMS service, is the lack of obligation to take injured patients to the nearest hospital A&E Department that the road based ambulances have, HEMS may deliver them to the best place to treat the injured for major head trauma.

For example, only five London hospitals are equipped to cope: Charring Cross, Kings, Oldchurch, The Royal Free and the Royal London itself. Of all the London hospitals, only the Royal London and Kings have a full range of specialist services to offer. Over the years, at least 4000 people have been rescued by HEMS and the majority of these have been taken by air to the Royal.

There is a medical team of four doctors at HEMS, usually at registrar level, they serve a term of six months. One of the last stages of lengthy training as a specialist in A&E under the supervision of two senior consultants who man the service. On the days that the doctor is designated Medic 1, he or she is the primary responding doctor suited up and ready to go, unable to leave the helicopter deck, except when the helicopter is on call.

On other days, as Medic 2, they can expect the occasional call out. On really busy days, a Medic 3 may need to be sent out. The doctor sees at first hand injuries that are often horrific. Without the helicopter service, it is likely that many more of these patients would have died.

Not Cheap

Virgin owns the current helicopter which is used by HEMS, it is leased free of charge. The health authorities fund its use at the cost of £1.3 million a year - this is not a cheap service. Cuts to funding have often been threatened, yet HEMS is adamant that it does provide a cost effective service. Each year it saves the lives of more than 12 people and additionally has enabled many others to fully recover from what would have been ? incidents. Currently, for example, 84% of head injury cases attended by HEMS resume an active life - a far higher rate than for non-HEMS cases. The service has improved and it has consistently proved its worth, so in the 11 years it has been running, there has been a steady increase of lives returned to normal, as the doctors of HEMS will tell you.

Over The Years

Over the years, HEMS has become an integral part of London life. It may still have a certain high tech glamour about it, what it has to show for itself through its speed of operation and application of medical skill is the roll call of lives saved and lives restored.

If you want to know more, HEMS has its own web site - see **http://hems-london.org.uk** which includes information service background and even a helicopter model to download.

Or you can contact **The Helicopter Service, HEMS, The Helipad, The Royal London Hospital, Whitechapel, London E1 1BB, Tel: 0207-247 6722, FAX: 0207-247 6764, E-mail: info@hemslondon.win-uk.net**

The National Association Of Air Ambulance was established in 1997 to raise money and to provide a focus for these services, they may be contacted by post at **4-18 St Clare Street, London EC3 1JX.**

Frequencies Used By HEMS

122.950	G-HEMS Ops
166.425/171.225	CH7 Paramedics
166.4375/171.2375	Pilot/Doctor Coms

■ PETER BOND, C/O EDITORIAL OFFICES, BROADSTONE
■ E-MAIL: skyhigh@pwpublishing.ltd.uk

Sky High

The Best of Both Worlds

Welcome to the new combined airband columns in *Short Wave Magazine*. It was perhaps the logical step to combine the two primary elements of the airband world, whilst some subjects can be easily defined as Civil or Military, there are many that are grey areas which affect both airband disciplines. A simplistic example being that London Military regularly work Civil aircraft and London Control does the same for the Military. Consequently, a decision was made to combine all the airband elements into one column.

The new combined column will follow a similar pattern to the old 'MilAir' column, with information included on a wide range of subjects related to the airbands. Not only will there be Frequency and Callsign information, but we will also look at suitable radios, antennas and other equipment, reviews of books and software and reports on all types of aviation events. All sorts of other related subjects such as Selcalls and Transponder Codes will be included and perhaps a few items which are a bit more obscure or off at a tangent. One other thing I intend to include in the future, (without hopefully treading on Graham's toes), is the h.f. aspect of the airbands. Up until now I have generally avoided the subject as it can be included under the Utility title, but as we have now encompassed the airbands under one heading, I feel it would be remiss of me to leave out any information that would be useful to those readers that listen to the h.f. airband spectrum.

It is not my intention to attempt each month to balance the information into an even Civil/Military split, basically the contents of the column will be down to current news, topical events and perhaps most importantly the input from you, the readers. If my Civil postbag is bigger than the Military one, then that will be reflected in the column and obviously the same with the reverse scenario. In other words, it's down to you, our loyal readers, to keep sending in the letters and E-mails and consequently influence the contents of this column.

My thanks go to all my 'MilAir' correspondents over the past five years and I now welcome on board all those of you who have regularly contributed to the former 'Airband' column. Please keep the letters/E-mails and information coming in and hopefully I will see my postbag full to overflowing, (well at least partially full!). Whilst the old E-mail address milair@pwpublishing.ltd.uk will remain active for a while, a new E-mail address is now active which can be used for airband information on any frequency band or subject - this is **skyhigh@pwpublishing.ltd.uk**

Incidentally, for those readers of the former 'Airband' column who may be concerned that a self confessed Military Airband enthusiast will be taking over the Civil Airband text - don't worry! The reason that I concentrated on the Military airbands was that I worked in civil aviation operations for over 23 years until fairly recently, and consequently whilst I might be a bit rusty, I do know a bit about it!

MILDENHALL 2001

Tuesday - my prayers were answered! After the 480km drive to Mildenhall, we arrived around mid afternoon on the Tuesday before the show, in glorious sunshine - honest! We set up base camp in the Farmer's field underneath the approach to Runway 11. A local we parked next to, informed us that the inbounds for the show were to be spread out more over the three days rather than centred on the Friday, one reason for this was because the US Army Parachute Team the Golden Knights were to be given an hour and a half slot on the Friday for a practice!

Valley Hawk in a special 60th Anniversary colour scheme.

Within 30 minutes of arrival a US Navy E-6B from Patuxent River, callsign HERON 32, landed in excellent photographic light - it was then that I had a feeling that it was going to be a good few days! A Ramstein C-130E, (HERKY 120), a C-9A, (AIREVAC 1061) and a based C-12 followed in the next hour or so. Later on whilst we were engrossed in a BBQ, a C-141B from the 62 AW which was to be the Golden Knights aerial platform, landed using a callsign new to me, RAWLY 31.

Wednesday dawned bright and sunny and the 0700 Sky News informed us that the weather was set fair until at least Saturday, compared with the persistent rain of last year it all seemed to be going so well. Hmm - well I knew there had to a hiccup or two and that was about to happen - read on!

The wind was still Easterly so we set off for Runway 11, we had barely arrived when the local doom-mongerer informed us that the US Navy had cancelled - why was I not surprised? (A good job I put the F-14 picture in *SWM* last month). Oh well never mind, the sun was still shining and there was plenty to look forward to.

It was then that my Yupiteru MVT-7100 died on me, just three hours into a four day trip! No amount of new batteries or button pressing achieved any success. In the end I had to resort to the dreaded processor reset, but still no luck, the screen was blank and my long serving hand-held was an ex-radio!

Swiss Hornet vaporises the air during a practice display.

I did have a second radio with me, but it was set up as a base station in the car and it wasn't the ideal situation to convert it to a mobile rig. Consequently, my thanks go to **Steve, Doug, Andy** and **Kevin** who all helped to fill in the information gaps over the next few days. Here are some of the highlights for Wednesday.

Wednesday was a steady day, which started with two Dutch F-16s, NETHERLANDS AIR FORCE 312A/B one of which was painted in very nice special marks. Next up was BELGIAN AIR FORCE 695, being a propliner fan it was nice to see the HS-748, especially as I had not photographed it in the white colour scheme. Following from Belgium were two F-16s from 2 Wing/Florennes using the callsign MATRIX 01/02 which is a new callsign to me. Two F-16Cs from Spangdahlem were calling RALLY 01/02, this callsign doesn't seem to be used very often by the 52 FW. TALON Ops on 248.425 was very active during a Special Operations Air Show practice, involving three MC-130s and three MH-53s, it was good to see a different demonstration rather than the usual air refuelling flyby.

The two Medivac helicopters, (UH-60s) arrived as DUSTOFF 66 followed a while later by two Dutch aircraft, PC-7 DIAMOND 19 and F-16 from 322 Squadron calling AUDIO. A steady stream of KC-135s departed during the day, (not to return), all called QUID except one from the 316 ARW which used RESORT 98. One non airshow movement of note was the fairly rare visit of a McChord C-17A, which arrived and departed as REACH 90166.

Colourful Du Fokker 60 fro

In my opinion, **Thursday** turned out to be the best arrivals day, certainly in terms of quality rather than quantity. Runway 11 was still in use, the sun just kept on shining and a few enthusiasts were starting to look rather frazzled! The morning started fairly early with the arrival of the heavy mob, two B-52s from the 2 BW callsigns DOOM 70/80.

A stream of NATO fighters arrived, including Spangdahlem A-10s, JACKAL 01/02, Lakenheath Eagles, SHIFTY 41/42 and possibly the stars of the day the three Swedish Air Force Gripens, callsigns SWEDEFORCE (SVF) 391/2/3. Four larger aircraft then followed, two 7 BW B-1Bs calling DARK 11/12, followed by a very nice T-43A from Randolph, GATOR 50, wearing 562 FTS titles, plus the E-6B flew a mission calling GOAT 24.

Even with my limited radio facilities it appeared that only well documented Mildenhall ATC and Ops frequencies had been noted in use. The only exception being 134.55

which was being used from Thursday onwards as Mildenhall Ground. As far as I am aware, this is one of the new PAR frequencies, unfortunately I was not able to confirm any of the other PAR frequencies as it has apparently been withdrawn until the end of July. I did confirm the standby frequency 142.275 in use as a Ground backup. Thursday was also quite a busy day for Lakenheath and a few callsigns noted in use by Eagles in the circuit were, Bolar, Jump, Lynx, Mugger, Rambo and Reaper.

French Air Force Mirage 2000B overshoots the Runway 11.

Other items of note that afternoon were the arrival of the three Italian Air Force aircraft, (MB-339, Tornado, AMX, G-222), all using standard INDIA callsigns, two Turkish F-16s using the imaginative callsigns, TURKISH AIR FORCE 01/02 and the 437 AW C-17A did a display practice calling VOLT 25. Lastly, two RAF Tornados arrived from Lossiemouth using the 14 Squadron callsign SNAKE.

ch Air Force 334 Squadron.

A dull start to the day on **Friday** due to high pressure gloom, but this soon burnt off to become another scorcher. Once again they were landing on Runway 11, so an early departure down to the farmer's field brought forth a bit of a surprise - it was packed. Now, I have been taking photos since the early seventies and I like to think that I was one of the first who regularly took approach pictures at Airshows, rather than just shooting the static - but it is very different these days!

For example, in 1977 when the YC-14, YC-15, DM A-10s, etc. were at Mildenhall show on-route to Paris, the Friday before the show was the same as this year, sunny and landing on Runway 11. The difference was that in 1977 I was one of only about five cars parked in Pollards Lane, compared with this year where there were hundreds, possibly thousands of enthusiasts in the surrounding fields - how times have changed!

T-43A from Randolph AFB wearing special 562 FTS marks.

As the two previous days had been busier than normal and with aircraft numbers down it was a relatively quiet Friday with much of the standard NATO aircraft arriving. The morning started with two 1 FTS Tucanos using the callsign, PISCES. Other items of interest were as follows. Two nice Swiss Air Force F/A-18Cs using the uninspired callsigns HORNET 1A/B. A pair of 15 Squadron Tornado's using STELLA, followed a short while later by Dutch Air Force Fokker 60 from 334 Squadron, (NETH AF 468), in a rather photogenic two tone grey-blue camouflage.

Next up was the welcome arrival of four aircraft from the Portuguese Air force, two F-16s PORTUGUESE AF 1563 and two Alpha Jets, PORTUGUESE AF 1573. Most of the RAF callsigns in use are well documented such as, 56 Squadron Tornados RAMBO, 20 (R) Squadron Harriers FORAGE and 100 Squadron Hawk, JAVELIN. The only other items of note were the two Slovenian PC-9's and a pair of Dutch AF helicopters, a BO-105 calling HOPPER and a AH-64D calling HAWKEYE 41.

Once again, little new was noted with regards to frequencies, except for the fact that the long, 1.5 hour, reconnaissance by the Golden Knights meant that I did find their air/ground 'Target Acquisition' frequency on 123.475. Incidentally, the main reason for this long practice slot was that they filmed a combined jump between the Golden Knights and the Red Devils. This was quite impressive as they formed a 16 man matrix during the freefall stage.

The Verdict

I heard a few people moan that the number of participants was well down on previous years, but it must be remembered that just from a USAF Europe point of view they have a lot less units, (around 25 fighter Squadrons), to draw from than they did 10 years ago. Even so, there was only around a 100 participants by the time I left on Friday evening, compared to around 180 in the peak years. Even participation by the former eastern block countries seem to have faded, in many cases because they have priced themselves out of the market!

Because of a family 50th birthday party, I had to leave early on the Saturday morning to endure an eight hour fight through endless traffic jams to reach home. Those who attended the show said that the good weather brought forth enormous crowds with the ensuing traffic and airfield parking problems. On the Saturday I understand that they closed the gates mid morning to arriving traffic and many people were turned away, some not even reaching the show! All in all not a bad show with a few gems and a number of regular participants noticeable by their absence - but it was cracking weather!

Whilst the transition to the new format is in progress, I must apologise that this month's column does contain a large percentage of Military news. This is primarily due to the fact that before I knew of the intention to combine the columns, I had already planned to include a detailed report on the Mildenhall Air Fete in this month's now defunct 'MilAir' column.

Airline Frequencies

It is rare for this column to receive a letter from a lady so I am very pleased to answer a letter from **Judy**, who is the girlfriend of one of my regular 'MilAir' correspondents. Her query is regarding Airline operations frequencies their allocation and operation. Airline operations frequencies do appear to be allocated in certain bands, but do not take that as a definitive statement.

As a generalisation, five bands do seem to contain the large percentage of these airline or company frequencies. They are: 122.05-122.375, 129.7-129.775, 130.025-130.65, 131.425-131.975, 136.8-136.875, all in MHz. If you search any of these bands and in particular the busiest, 131.425-131.975 you will quite quickly find some airline operations. The bands I have listed are those which have been reported in use by enthusiasts and may not be the full range of frequencies available, also they are not exclusive, so expect to find general ATC and other frequencies in the middle of them.

To answer the second part of the question, yes to the new listener these frequencies can be confusing to start with. This is mainly for two reasons, the first is that some airlines have their own dedicated frequencies which only they use, whereas a number of different airlines may heard calling a handling agent such as Gatwick Handling or Servisair. Secondly, to further confuse matters, some less busy airlines also share common frequencies.

As you are not too far from Heathrow, try listening to 131.45, 131.7 of 131.925 for some examples of this. A third point that can also puzzle the new listener is that some companies use one or more Nationwide frequencies, for example British Airways on 131.85. On this frequency you will hear 'Speedbird' calls to a number of different airfields within the UK. All of these points have lead to people wrongly identifying the user of a specific operations frequency. In the end, patience and listening over a period of time will help you build up a picture of the active frequencies, or of course you could buy an airband guide such as *Airwaves* which will give you instant access to the active airline frequencies.

Thanks for reading the new column, any comments, questions or information would be most welcome. Lastly, this month's photographs show some participants at this year's Air fete at Mildenhall.

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Attention-123!

Parlez vous francais? (Family XIX)

Although France is one of the major world powers, very little is publicly known about its intelligence service - the world's first, founded in 1364 "To promote the security of the state for the happiness of the people" (Charles V). The French people and politicians tend to avoid discussing espionage, and popular spy authors, such as Ian Fleming and John Le Carre, simply don't exist in France.

This reluctance is due to the fact that, for the French, espionage is seen as something 'ungentlemanly'. They prefer to speak of 'intelligence' as the obtaining of information in order to protect their country from external threat, rather than 'espionage' for the obtaining of other countries secrets. This subtle but important difference is reflected in the very discreet way the French agent-running communications operate.

As far as we are aware, they have never used voice transmissions (in French or any other language) at least over the last 30 years. All transmissions have been, and still are, sent in Morse - possibly from their St Assise transmitter site as well as the DGSE site at Mont Valerien - not from Indonesia! (see later). This, of course, means the recipients of these transmissions are trained wireless operators, rather than being recruited in the field from foreign military, government or commercial organisations or from exile groups. Here again the DGSE (Direction Generale de la Securite Exterieure - known as SDECE before April 1982) differs from MI6, KGB, CIA, etc., although the Russians do operate extensive Morse networks.

Indonesians In Paris (M16)

For years a station using the bogus Indonesian callsign 8BY has operated every hour on the hour for 20 minutes on four parallel frequencies (7.668, 10.248, 12.075 and 14.391MHz). Rather than sending messages itself, it sends traffic lists made up of a number of three figure groups. This number can vary between none (in which case QRU is sent) and 11 or more. It is almost certain that these represent addressee identifiers.

These figures are selected from a fixed 'pool' and **not** sent in numerical order, but in a fixed order nevertheless, relative to one another. These figures may change on an hourly basis, some being short-lived, others maybe lasting for weeks. They indicate that messages are awaiting the identified agents, but how these messages reach them is a mystery.

Occasionally additional short pieces of information in the form of obscure Z codes, etc. accompany addressee numbers. Rarely, when no messages have been left, the call VVV VVV VVV 8BY is simply followed by 'QRU' - meaning no messages.

Auto-keying (long zero) is used, but very rarely hand-keying has been noted. Other frequencies noted are 12.169, 12.283, 14.433, 14.925, 18.415, 20.946MHz. Codes used include: ZCC, ZKY, QAP (wait) and transmissions end conventionally with 'AR'.

The wide frequency range indicates 24-hour world-wide coverage and the use of the same four parallels every time gives no hint as to the target area of particular addresses. No seasonal frequency changes are ever made, nor is there any difference between night and daylight hours such common features of so many stations. 8BY's exclusive operation above 7MHz, **could** mean that the station's target areas are all outside Europe.

How then are the actual messages passed on? Perhaps the most likely explanation is the widespread use of 'dead-letter-boxes' set up by the French embassies concerned. Sites pre-arranged for a period of years could be quite feasible, considering that trained agents are involved. The transmission of a particular addressee number would simply alert the recipient that a message had been left at a location already known to him/her. Of course, other possibilities may easily exist.

The Inscrutable M51

The answer to the mystery may **partly** lie in France's other main numbers station, M51, which replaced the former P8K (M33). However, it may be quite unconnected as its two parallel frequencies only seem to operate between 4 and 7MHz (quite randomly from day to day), thus indicating a European target area only.

Unlike M16, however, M51 does send messages, but also unlike M16 it has no fixed schedule. The daily transmissions take place at any time of day, and usually last at least an hour, sometimes six hours or more. All messages are numbered consecutively from 01 to 90, after which the sequence starts again.

All messages consist of 100 random 5-**letter** groups and their times given to the nearest second, e.g. NR56 (msg No) M 31 (31st May) 19:22:17 (time) 2001 (year). Each message begins and ends with BT, but the last message of a transmission usually cuts off in mid flow!

The great mystery of this station is: How does the recipient know when to listen for his/her message when there is no pattern whatsoever to the schedule - both time or frequency. Like, for example, E3 (Lincolnshire Poacher), M51 operates fixed-length messages, many of whose groups must be dummy 'fillers' and many of whose messages themselves must be dummy also.

Unlike E3, M51's lack of schedule provides a further level of obscurity. Virtually nothing can be gleaned, in the way of traffic analysis from M51, due to these secretive habits. France's independence from foreign influence and control is echoed by its unique Numbers Stations.

ENIGMA is only aware of two voice stations which have **ever** used the French language: V12 and V23. V12 was a member of Family IV (NNN) which had a very active Morse arm, M2. This family probably originated in Austria and had a very good signal in Britain. Hungarian (V18) was its first language to close, followed by French, German (G12), English (E12) and finally M2 a. few years ago. V23 was a very short-lived Russian operation with many peculiarities which we have discussed in a previous article.

Some Recent Snippets

Yet another new Morse station has been reported. It was heard on 8th June at 1240 on 8.399MHz with English procedural codes. Calling VVV CQ CQ CQ DE X2M X2M X2M for three minutes, followed by MSG MSG CH CH MSG CH NR02 NR02 (message serial Nos) CK100 CK100 (GC check) TIME0738 TIME0738 DATE0906 (a day ahead!) DATE0906 = (100 single 5-figure groups followed) then AR NR03 CK100 CK100 TIME 0743 TIME0743, etc. followed, this message stopping in mid-flow.

Analysis of the group structure indicated that this was a test transmission, possibly used for training, i.e.

31905 05193 53901 15093 59013
42090 96204 64092 26904 60924
53187 87315 75183 37815 71835
64278 78426 86374 48726 82746, etc

The use of English may point as SAS or MI6, but will it prove to be another Number station? Only time will tell.

Talking of training transmissions, M50, the daily (in theory, but erratic) training arm of the mysterious Russian Family XIV (includes M1, M45 and S21) has reappeared after a gap of four years! Noted for its appalling keying and its silly formats!

The faders, so great a mystery for the past 30 years or more seem to have disappeared - once heard everywhere at all times, they've not been heard now since May. Two of these were identified as coming from the h.f. compound at USAF Mildenhall.

New **E10** frequencies: EZI 23.739, CI0 18.178, SYN 6.930 and MIW 5.380 - can be added to the already lengthy list. MIW actually sent a message recently. Normally confined to sending the MIW2 idler, at 1830 on 6th June, it was sending MIW only, on 5.339//4.360 and was followed by a 15 group message, all repeated for several hours. At the same time VLB, SYN and CI0 continued to send the standard 2 idler. At 1945, two E10s can be heard only 18kHz apart- SYN on 6.930 and VLB on 6.912.

Why don't some of you try learning Morse? It is many times more frequent than voice activity nowadays and although we receive many run of the mill voice logs, very little in the way of Morse is sent in, yet this is where the really interesting traffic lies. For most Numbers Station monitoring, only the figures 0-9 need to be learnt, and the little practice involved will be worth it.

Just to get you started:

0:	- (or -----)	**5:**	.....
1:	.----	**6:**	-....
2:	..---	**7:**	--...
3:	...--	**8:**	---..
4:	....-	**9:**	----.

M13 with its very slow keying is ideal for beginners.

----. ...-- .-.-. ..-.--

KEITH HAMER & GARRY SMITH, 17 COLLINGHAM GARDENS, DERBY DE22 4FS
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DX Television

Despite a relatively slow start to the new season, Sporadic-E activity was present in all its glory by the middle of the month; enthusiasts described the band as jammed on the 13th. **John Lees** (Cheltenham) identified Iceland and Lithuania, both excellent catches so early in the season. In the Netherlands, Jordan made an appearance and remained interference-free for around ten minutes.

An opening to the Baltics developed around 1330UTC on the 19th with football from Lithuania on Channel R2. Over on R1, colour bars from Latvia materialised with a black identification band sporting the identification 'LATVIJAS TV-2'. At first a tone was transmitted, but later a pleasant rendering of 'I Left My Heart In San Francisco' formed the accompanying music. The station opened at 1400UTC. Colour bars without identification were showing on R2. A subtitled programme from Sweden occupied E2, E3 and E4 for almost an hour. The new '1' symbol is difficult to detect in the top right of the picture, especially if the picture is slightly over scanned!

Arabic Signals

A weak Arabic station made a brief appearance at 1555UTC on the 21st here in Derby. Arabic credits were visible once the signal strengthened, but there was no obvious logo present.

A strong picture with Arabic lines of text was resolved on E4 at 1235UTC on the 23rd, which was eventually swamped by HRT-1 (Croatia). **Ian Milton** (Ryton) identified Tunisian f.m. signals around this time so there is a possibility that the picture originated from Tunisia.

On the 24th **Martin Dale** (Stockport) encountered a weak signal around 1240UTC on E3, with 'foreign' subtitles and what seemed like Arabic text in the top left.

Italian Private Stations

The private Italian station TVA appeared on the 14th with their logo in the bottom-left and an additional 'cinerama' logo top-right. Later, during previews, only the 'cinerama' logo was shown. Its transmission frequency is slightly higher than Channel A. The Italian shopping channel just below E2, previously known as 'VIDEO', is now called TELE A+. **Brian Williams** (Penarth) confirms its vision carrier frequency as 49.964MHz.

Mega Opening

On the 23rd a 12-hour spectacular opening was experienced with at least 23 countries logged. These included Tunisia (tentatively), Croatia, Slovenia, Germany, Austria, Hungary, Czech Republic, Belarus, Estonia, Moldova, Ukraine, Russia, Albania, Lithuania, Latvia, Italy, Spain, Portugal, France, Corsica, Sweden, Finland and Norway. MUFs were high with Ukrainian signals at record levels on R4.

John Lees reports a test card described as the '0249', which was once used by Soviet stations. It is supposed to have been discontinued in favour of the G-204 test card - the latter was present on R2 from 1240UTC, probably of Lithuanian origin.

At 2330UTC, **Simon Hockenhull** (Bristol) received a news broadcast on E4 showing a collection of captured arms, probably from surrendering Albanian forces. The square box logo bottom-right suggests Macedonia.

St. Petersburg TV

Ian Milton has identified a mystery 'N' logo on R3 as St. Petersburg TV. The logo, top-right, resembled letters arranged in an arc or circle with the temperature displayed in the bottom-right. Ian has also successfully identified TVM (Moldova) on R2 and R3 in addition to Ukranian signals on R2, R3 and R4.

Unusual Allocation

The 25th, although not as spectacular, produced an unusual signal for **Stephen Michie** (Bristol) from the Ukraine (YT-2) around 57MHz (between E3 and R2). This mystery station has appeared several times during the past five seasons.

Conditions quietened towards the end of the month with mainly Italian DX. **Peter Barber** (Coventry) saw TVA radiating colour bars at 1835 on the 29th and RUV (Iceland) E4 at 1223UTC on the 31st showing programme trailers.

Tropospheric Reports

At 1900UTC on the 22nd **Peter Barclay** (Sunderland) was surprised to find the 'TV-2' PM5534 test card with tone on E40. Other second-network stations on E27, E28 and E30 were broadcasting programmes. The only viable explanation is that the transmitter link failed, thus automatically switching in the test card. **George Garden** (Edinburgh) encountered many Norwegian u.h.f. stations. Two off-screen pictures are featured this month.

FM Reports

On the 6th, **Ian Milton** monitored 87.9MHz and by 1400 a Spanish station was present via Sporadic-E with dialogue about the Balearic Islands. On the 23rd **Barry Bowman** (Manchester) heard 'Radio Kolob' on 87.8MHz, a Polish station based in Warsaw. **Simon Hockenhull** discovered the band full of Italian stations between 2215 and 2300UTC on the 25th.

Improved tropospheric conditions on the 13th produced a host of Norwegian signals for **George Garden** (Edinburgh). George queries Rock FM on 103.7MHz, heard on the 23rd - the RDS display showed the time as minus one hour! The 25th was a productive day for **Barry Bowman** who logged a host of Dutch and German stations including Eins Live 106.7, Hitradio Antenne 105.7 and 107.9 and Skyradio (Netherlands) on 100.7 at 'local strength'.

Service Information

Spain: The Band I transmitters at Navacerrada E2 (Madrid) and Gamoniteiro E3 (Asturias) closed on 1st July, moving to E26 and E63 respectively. La Muela E3 closed on 1st March, moving to E33. Remaining v.h.f. outlets (Bands I and III) will eventually close to make way for other services such as digital radio in Band III, but not for other TV services.

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 JPG files on PC disks and good-quality video recordings. The new E-mail address is **GarrySmith@dx-tv.fsnet.co.uk** and our website is **www.test-cards.fsnet.co.uk**

Fig. 1: Norwegian TV-2 programme caption on E44 captured by George Garden (Edinburgh).

Fig. 2: TV-2 Norway on E44 received by George Garden.

Fig. 3: The old Russian '0249' test card with unusual CCCP identification.

Fig. 4: The G-204 test card currently used by Russia and other CIS countries.

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SSB Utilities

Aeronautical Maps

The first item this month is the result of a letter from **Roy Smart** in Scotland who has some questions following my recent comments about the NAT system (see *SWM* June 2001). Roy says that he has a North Atlantic Chart which shows the various beacons and waypoints on either side of the Atlantic, and because it is marked with latitude and longitude lines he can plot the position of flights when they make their reports to Shanwick and Gander. Roy would like to know if there is anything similar for the AFI network covering Africa - he has been listening to Tripoli ATC on 11.300MHz and wants to know where all the reporting points are - I presume that Roy wants to plot the positions of the flights there also.

Having recently spent a lot of time listening to the AFI network, I can offer some advice in this area. You can either buy copies of the maps used by pilots from various aviation supplies shops (see later) or you can use the *AirNav* computer software which has been mentioned in this column many times in the past few years. Each system has its good points and bad points so the decision in what method to choose is up to you and your personal preferences and capabilities.

Aeronautical maps covering almost the whole of the planet are available from suppliers such as Racal/Aerad and No 1 AIDU at RAF Northolt, and from experience they are more than happy to supply copies of maps, charts and books in small quantities to enthusiasts. The trick with these suppliers is to make sure that you ask for exactly the right thing, as it can be very frustrating to find that what you receive is not what you need for the job. If you buy any maps you have to make sure that they show the high-level routes - they are marked as **En Route High/Low Altitude** and the ones covering North Africa and East Africa (which I can both recommend) are marked **AF(H/L)5** and **AF(H/L)3** respectively. The first map covers the southern half of the Mediterranean from Gibraltar to the Libyan/Egyptian border, and the second covers the area from the Egyptian coast of the Mediterranean down to Zambia.

The Fun Begins

Having got your maps and studied them carefully, and tuned your receiver to one of the AFI network frequencies, now the fun begins! You will find that the numerous different accents in that region make it quite difficult for you to understand what is being said. It is also quite common to hear a number of different ATC centres all talking at once, aircraft talking at the same time, and the general atmospheric noise just adds to the confusion.

It may take you a week or more for you to become accustomed to the 'sounds' of the various beacons, waypoints, NDBs and other features which make up the routes in Africa, so the first few times that you try to plot the course of a flight if will be very difficult to work out what is where, which way the flight is going, and when it will get to the next reporting point. This is where having copies of the various aeronautical maps and a copy of *AirNav* is most useful.

When you hear a flight pass a position report including a beacon that you are not quite sure how is spelt, you can use the database explorer within *AirNav* to search for likely sounding beacons and check if they are in the region (simply by checking the lat/long coordinates). If you are lucky, when the aircraft passes its position report it may include one of more waypoints that you already know, so it is a simple task to find the known position on the map, and then search along all the air routes passing through that point until you find another position mentioned by the aircraft. This is much easier to do than it is to describe, so I hope the above makes sense. The only advice that I can offer is to keep trying and keep listening, and don't try to plot or follow more than a few flights at once.

One thing worth remembering is that when an airway crosses from one country to another there is usually a beacon or reporting point, and flights usually have to report as they pass the position, and that means giving an estimated time over h.f.

Another factor which causes confusion is the way that flights on the AFI network change from h.f. to v.h.f. and then back to h.f. again. This can lead to gaps in position reports by aircraft. For example, a flight from Europe to East Africa will be controlled by h.f. while north of Cairo, v.h.f. while in the Cairo region, back to h.f. for the part of the route down to Khartoum in Sudan, v.h.f. again while over Khartoum, and back to h.f. as the flight continues south.

Roy also mentions in his letter that many h.f. frequency listings show lots of different frequencies and stations for the AFI nets, but he never hears many of them. Well Roy, I suspect that this may be down to your choice of a v.h.f./u.h.f. scanner as a h.f. receiver. It is not a question of the make and model of scanner used, it is the simple fact that it is a scanner - I am sure that your results would be better with a dedicated h.f. receiver.

I am sure that I have voiced my opinions on this matter in the past, a decent h.f. receiver will easily out-perform a scanner which covers the h.f. bands. It also helps to have a good antenna feeding the signals to your receiver. I have listed all the AFI-3 frequencies and stations, **Fig. 1**, and there are still a number of stations that I have never heard. This list was extracted from a current Racal/Aerad map covering the region - the AF(H/L)3 mentioned above - so I am confident that it is correct.

Another person with an interest in the AFI network is **M. Vyner** from Surrey who comments that he listens to 11.300MHz after 2100UTC and usually hears Tripoli ATC and Cairo ATC working flights. He comments that it sounds very chaotic, often with more than one station talking at the same time. This is a very common comment concerning the AFI network, and it can seem quite strange to listeners who are more used to the busier but more organised NAT network frequencies.

Web Watch

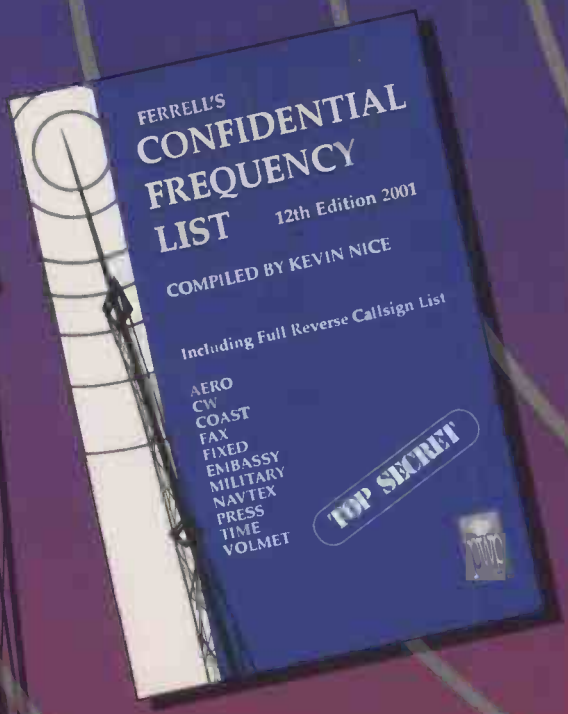
The following web-pages relate to the subjects covered on this page.

No 1 AIDU - **http://www.rnd.aidu.dial.pipex.com/**.
Jeppensen - **http://www.jeppesen.com/**
Racal/Aerad - **http://www.ravl.co.uk/aerad/index.html**
AirNav - **http://www.airnavsystems.com**
RAF Brize Norton & C-17A - **http://www.rafbrizenorton.com**

Fig.1: AFI-3 Network Frequencies & Stations

MHz	Station
3.467	Addis Ababa, Aden, Benghazi, Cairo, Khartoum, Mogadishu, Mumbai, Nairobi, Riyan, Seychelles.
5.505	Comores, Djibouti.
5.517	Addis Ababa, Asmara, Benghazi, Cairo, Entebbe, Seychelles, Tripoli.
5.658	Aden, Comores, Djibouti, Hargeisa, Khartoum, Kigali, Mogadishu, Mumbai, Nairobi, Riyan, Sa'naa, Seychelles.
6.574	Addis Ababa, Cairo, Khartoum
8.870	Addis Ababa, Dar Es Salaam
11.300	Addis Ababa, Aden, Asmara, Benghazi, Bujumbura, Cairo, Comores, Dar Es Salaam, Djibouti, Entebbe, Hargeisa, Jeddah, Khartoum, Kigali, Mogadishu, Nairobi, Riyan, Sa'naa, Seychelles, Tripoli.
13.288	Addis Ababa, Aden, Cairo, Khartoum, Kigali, Mumbai, Riyan, Sa'naa, Seychelles.
17.961	Addis Ababa, Seychelles.

Don't miss...



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Scanning Scene

I used to like watching the motor racing. Sometimes I'd attend an event, but mostly my trackside spectating was done from a sofa in front of the TV. If I did attend a race, I'd always take a scanner with me. It was really handy to listen to a broadcast newsfeed to get full details of the action that couldn't be viewed from one point on the side of the circuit. The teams could be heard on air as well.

Then it all got a bit professional. Race team communications went digital. I lost interest. Living across the Atlantic for a while fired an interest in stock car racing. The sport had started with guys racing their cars on circuits at county fairs and the like. In the countryside bootleggers running moonshine during the prohibition years, built cars that would be able to outrun the lawmen.

Soon the whole thing became legal with people paying to watch racers scream round a banked circuit. These days the racing, and the business, is big. Radio is a big part of the event with race team communications and video circuits being utilised. Scanner use is encouraged. Well, now it's all happening here. Some forward thinkers have built a £50 million, one and a half mile (2.4km) banked oval speedway just north of Corby, Northants.

The racing will be similar to the Busch series racing in the USA which means that the cars will have a small block Chevrolet engine with around 550bhp available. Now just like in the USA they are positively encouraging scanner use on the track. Not only will they have scanners on sale at the circuit on race days, but they also will be publishing the frequencies for the race teams. The teams frequencies are in the 446, 447 and 462MHz ranges.

The Rockingham Speedway, as it is known, has seating for 27,500 with additional temporary seating available too. If you have web access, Ian Watson's site **www.rockingham.org.uk** will try and keep frequencies updated, but give the Speedway a call on **(08700) 134044** to book a day out.

Covert Stuff

Regarding the covert stuff I have described in previous months, **Paul Beaumont**, who has considerable knowledge of these items, sent me a comprehensive description of a set up.

Paul says, "The device used is a 'telecoil'. A passive telecoil is a very small coil that will have an inductance of 96 to 2900mH depending on the application. The physical size will also vary between 3.61 and 24mm long, while the diameter would vary between 2.11 and 4.29mm.

There is another type available, the active or amplified telecoil. Such a device will have an integral preamp and will operate at voltages 1-5V d.c. They are also frequency selective by a variation of the response shape. Further attenuation at unwanted frequencies can be increased by a specific selection of a blocking capacitor value.

Telecoils can easily be wound using 38 or 40s.w.g. enamelled wire on a couple of ferrite beads. But the devices are easy to come by in old hearing aids easily available at jumble sales.

Discard the earmould and give the aid a clean before use. A replacement ear-pip is easily available by fitting a short length of acoustic tube through a non-wax ear defender (ear plugs) available at the High Street chemist. Make sure that the aid you buy has an MT switch. Not only have you bought the coil, but the receiver and amplifier is already made up.

Ear level receivers at very cheap prices are also seen in catalogues found in various mags and newspapers. A home wound telecoil could easily be inserted in place of the microphone. A suitable value range would be 100 to 500mH at 1kHz. If acoustic tube is not available, use a bit of the thin clear plastic used in aquarium air pumps. An inductive loop is used to couple the telecoil to the sound source.

These loops were seen in churches and council chambers and some may still remain. This so called perimeter or room loop induces a low level magnetic field for the telecoil as the varying lines of force cut the telecoil. For body worn units the inductive loop would be the neck loop. Such covert devices used to be a horrible fleshtone colour reminiscent of the old NHS Medresco hearing aid.

Wind a suitable sized coil to fit around your neck with maybe 40 turns (experimentation required here) and via a 100nF capacitor plug into your sound source. Advance the a.f. gain until you can hear what you are receiving. If you are worried about impedance matching, use an LT700 transformer 8Ω into the recever output and the coil connected on the other side. This approach may not produce a 'squelched' output, but it certainly costs a lot less.

Another correspondent, **Steve**, also mailed me regarding covert harnesses. He has used them for some time to do with his work and also for his scanning hobby. At the Alexandra Palace Rally he noticed that a company were selling covert harnesses (no earpieces) for £4 a piece. He gave me the details of the firm and after some difficulty, I contacted them. It seems that they purchased a mass of ex Customs & Excise gear consisting mainly of Philips PFX and PF85 radios. In addition to the sets, they have harnesses and batteries, etc. I have written to them with an order and I will report on how I get on when I receive the batteries and harness that I have ordered.

Identity Codes

Paul Beaumont has told me that the police use some more ethnic identity codes than I mentioned in a previous article. Apparently the codes are printed inside the rear cover of some officers notebooks. **Ian**, who writes from Kent, tells me that in that county the code IC9 is used to denote someone of gipsy appearance. He also says that the fire brigades there now have radios on which they can talk to the police.

Another useful mail came from the Grimsby area with details of some shopwatch frequencies in the area:-

456.525/462.050 Great Grimsby Freshney Place Shopwatch

453.800/460.300 Great Grimsby Freeman St. Shopwatch

456.025/461.525 Cleethorpes Shopwatch.

All are f.m.

All Change

Retailers have now really taken to using radio in a big way with stock control, movement and dispatch commonly being expedited by wireless. One of the first covert users was, of course, the fast food industry with McDonald's the burger chain being very obvious with their belt clip radios and headsets. It has been known for disreputable people with wide band transceivers to attempt to upgrade their order to mega large from the comfort of the car park while waiting for the drive through cheeseburger and chips to arrive. Sorry guys it's all changing.

A company called Quail are flogging belt clip sets which operate in the 423-470MHz range. These little radios are claimed to have a range of 200m and have been sold to McDonald's and many other food outlets and retail stores. Now the bad news, they are digital radios. They appear to be selling well with the customers appearing delighted at their operation.

It is now just as cheap to buy digital sets as it is to get analogue equipment. The boards are mass produced and inexpensive. The buyers don't even know that the gear they have bought is digital and they don't care. It works well so they are happy. No more monitoring the Two Star Till Tyke at the Golden Arches folks, sorry.

Underspent

Lucky old Tayside Police I say. It seems that they have underspent this year by £467,000. Their distraught Chief Constable thought that he should do something about it and is spending £140,000 on 120 encrypted analogue radio sets and some mobile 'phones for his guys. The purchase is seen as an interim measure to provide some security for the existing system until the secure Airwave TETRA system is bought in 2004/5.

A pilot scheme is being set up in Dundee and by the autumn the additional sets should all be in use in different parts of the force. The idea is to send sensitive information by encrypted radio. The force are concerned that scanner users are 'tapping' the force's radio system and officers could potentially be sent into dangerous situations because full facts of incidents cannot always be sent by existing, insecure, means.

The chief will not have to worry about underspending once his Airwave contract goes live. It's going to be quite expensive with coverage priced per square kilometre. I wish that I had an underspend problem.

dressler

ACTIVE ANTENNAS - THE NEW ARA RANGE

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ARA 40

Technical performance

Frequency range	40kHz-40MHz at full performance 40MHz-108MHz 2.3dB gain
Output impedance	50-75 ohm coaxial
Connector to Rx	PL comes as the standard. Other standards can be fitted upon request
Gain	5dB +/-0.2dBs
Intercept Point	+45dBm IP 3rd order (10MHz/12V)
DC power supply	11.5-13 volt DC at 70mA typ. (230V mains adaptor for 12V DC is supplied with the antenna)
Mast diameter	30-50mm can be fitted
Dimensions	**ARA40** 115cm total length with glassfibre whip. Antenna tube 40mm x 140mm **ARA40 TEL** 125cm total length with telescopic whip extended. 45cm minmum length. Antenna tube 40mm x 140mm

Ideal for portable radio

ARA 60

Technical performance

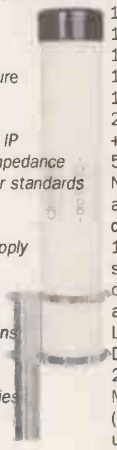
Frequency range	40kHz-60MHz (full performance) 60-120MHz 2-3dB less gain
Output impedance	50-75 ohm coaxial
Connector to Rx	PL type delivered as standard. Other standards can be fitted on request
Gain	10dB +/-0.2dBs
Intercept Point	+50dBm IP 3rd order (10MHz/12V)
DC power supply	11.5-13 volt DC at 80mA 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

Ideal for base stations

ARA 2000

Technical performance

Frequency range	50-2000MHz
Output impedance	50-75 ohms coaxial
Gain	19dB -1000MHz 18dB -1400MHz 16dB -2000MHz
Noise figure	1.5-2dB -1000MHz 1.8-2.5dB -1500MHz 2.5-4dB -2000MHz
3rd order IP	+35dB typical
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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■ MIKE RICHARDS G4WNC, 49 CLOUGHS ROAD, RINGWOOD, HANTS BH24 1UU
■ E-MAIL: decode@pwpublishing.ltd.uk ■ Web: http://www.mikespage.btinternet.co.uk

Decode

Let's start this month with a few more clues on active press frequencies. You will recall that last month **Alan Pudsey** reported on a Philippines station operating on 16.800MHz using FEC. I've managed to log this one myself, though it is a bit weak.

Well, this month **Peter Thompson** has written with details of the North Korean Press agency that can be found at around 1000UTC on 15.6333MHz. This station has also been spotted on 11.536MHz at 1330UTC. Peter also reports that he has heard the Sudanese agency SUNA using narrow shift RTTY on 11.536MHz at 1330UTC, but he hasn't had a fresh log on this one for close on a year now.

I've yet to log either of these latter two, but if you can confirm, or know of any other active press station, please drop me an E-mail or letter so I can pass the information on through the column.

SkySweep UK Agents

Anyone considering buying this excellent decoding and filtering package will be delighted to hear that our good friends at Pervisell have just been appointed as Sole UK agents. This is great news because Pervisell have been offering excellent service to 'Decode' readers for many years now, so you can buy with confidence.

Judging by the comments I get back, you can rest assured that Pervisell's service is second to none. As well as making the program easily accessible, the appointment of Pervisell means you can now purchase without putting your credit card at risk on the Internet. The price for the latest version of *SkySweeper* is set at £59.99 inclusive of VAT and postage.

For more information contact Pervisell on **(01494) 443033** or you can write to: **Pervisell Ltd., 8 Temple End, High Wycombe, Bucks HP13 5DR**. Alternatively you can visit their web site at **http://www.pervisell.com**

Palmtop Help

Stuart Trench-Brown has written asking if anyone can help with decoding software for an HP Journada palmtop. This uses the *Windows* for H/PC 2000 operating system so falls outside the range of software I usually report on. If you know of any software, please drop me a line and I'll pass it on and give mention in the next column.

SSTV Upgrade

For those of you that enjoy monitoring amateur SSTV transmissions, it could be worth taking a look at the latest release of the popular *Mscan* decoder. This is now at version 3.13 and includes a number of useful enhancements including supporting the GIF file format, saving in a number of different graphics formats, also the TWAIN interface is upgraded.

The latest version of *Mscan* is available for download from:
http://mscan.com/download/Mscanv3.exe
The upgrade is free for those with a registered copy of version 3.10, €23 for users of v2.0 or 3.0 and €43 for new users.

Linux Update

Further to last month's venture into the world of *Linux*, I'm starting to find a number of software packages that can be used to support decoding. Not surprisingly, these are not for the faint hearted as the *Linux* is not the most friendly when it comes to handling software portability.

Whilst some packages come in the very convenient RPM (Red Hat Package Manager) format, many are just zipped-up source code that you have to compile for your system. Whilst this is nowhere near as bad as it sounds, it does demand a certain level of system knowledge to complete a successful installation.

If you're determined to give *Linux* a go and want a good book to get you going, I can thoroughly recommend *Running LINUX* published by O Reilly (ISBN 1-56592-469-X). This has got me out of a number of fixes and is well laid-out, making it easy to use to solve problems when you get stuck. You should be able to get a copy from Amazon online or from your local major bookstore for just over £20.

New *Mscan* SSTV - now available.

Dennis Pepler has been really helpful in my search for new software and one of the best finds is Kais DL3LBA *Linux* software archive that can be found at:
http://hamgate.crb.org.br/SUSE/INDEX.en

Another good source is Dr Oliver Welps excellent SoundBlaster collection that also includes a number of packages written for the *Linux* platform, visit
http://www.muenster.de/~welp/

Digital Fun

With so much of our decoding hobby being computerised, I thought it was about time I started to pull together a few short tutorials to help you understand the basics of what happens inside your decoding software. The only reason this is important, other than general interest, is to help you make better use of the wide range for user adjustable settings that many programs have.

If you've used any of the analysis tools you will have come across terms like Hamming and Blackman windows - I bet you don't know what they do? Over the course of a few short articles I will try and shed a bit of light on the subject.

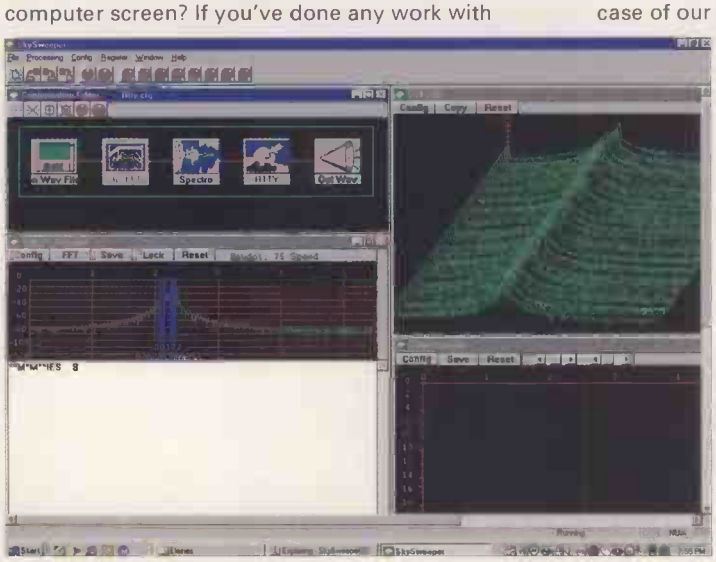
Let's try starting right back at the beginning. In almost every type of decoder or d.s.p. filter, we are usually trying to do something clever with the audio signal coming from the line-out or record-out jack on your receiver.

There are a few things we know about this signal before we start. For example, filters within the receiver will limit the range of audio frequencies available from this output to around 300Hz to 3kHz, though the upper limit may extend higher than this in receivers that are specifically designed to handle commercial broadcast transmissions.

For our decoding, we are often only interested in a fairly narrow range within this. For example, a typical ARQ signal would have a shift of around 200Hz and be tuned with an audio note of between 1 and 2kHz.

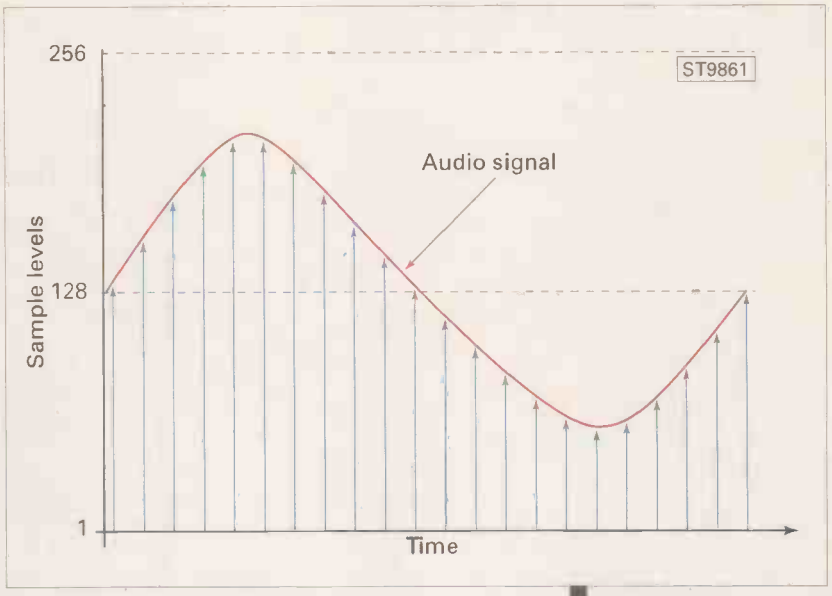
Just a few years ago, it was common to use a comparator interface that connected between the receiver's audio and the computer's serial port. That system still has its merits, but many listeners have been attracted by the convenience of just connecting the audio direct to the line-in on their PC sound card.

So what has to happen to convert the basic audio signal into decoded RTTY text on the computer screen? If you've done any work with computers, you will know that they really can only handle numbers, so the first task is to convert the audio signal into some sort of numerical representation.



***Skysweep* now available from UK agent Pervisell.**

This process is known quite simply as analogue to digital conversion - often abbreviated A-D conversion. This is a remarkably simple process that is greatly helped by high-speed modern electronics. The technique involves using a fast digital voltmeter to take lots of readings of the input signal at regular intervals. The results of these measurements are then stored as a number ready for the computer to process.



Basic sampling of an analogue signal.

The secret to capturing an accurate digital representation of the signal is related to the rate at which the measurements are taken. You will probably not be surprised to hear that the theories for calculating the measurement rate or sample rate, as its known, were devised by Nyquest back in the 1920s!

This theory states that the sample or measurement rate must be at least twice the highest frequency you want to sample. In the case of our receiver with a top frequency of 3kHz, we would have to set the sound card to take measurements of the incoming signal at least 6,000 times per second. I know this sounds amazingly fast, but the SoundBlaster card in a modern PC is easily able to support a sample rate of over 44,000 times per second!

The next stage is to decide how accurate a voltage measurement you want to store. The standard is to use either an 8-bit or 16-bit digital number for each sample. In more conventional terms, an 8-bit number means that each measurement can have one of up to 256 different levels, whilst a 16-bit number can have 65,535 levels, so is much more accurate.

Let's just re-cap what we've discovered so far. The first stage in any decoding system is the analogue to digital conversion D-A. The quality of this decoding is determined by the sample rate and the number of bits used. So when you get any of these options presented to you in your decoder or d.s.p. filter, you will have some idea of what they do!

In the next tutorial I will take a look at the different ways the digital signal can be processed.

Introducing the WorldSpace Global Club

This is an important notice for all new or existing WorldSpace listeners:

We are pleased to announce the launch of the **WorldSpace Global Club**. Members will be able to receive a regular newsletter including all the new developments in WorldSpace around the world, new stations that have joined the WorldSpace line up and many other stories.

The **WorldSpace Global Club** also offers members the following important technical assistance:

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  Your prompt return of this card confirms your rights to the protection available under the terms and conditions of your WorldSpace warranty.*
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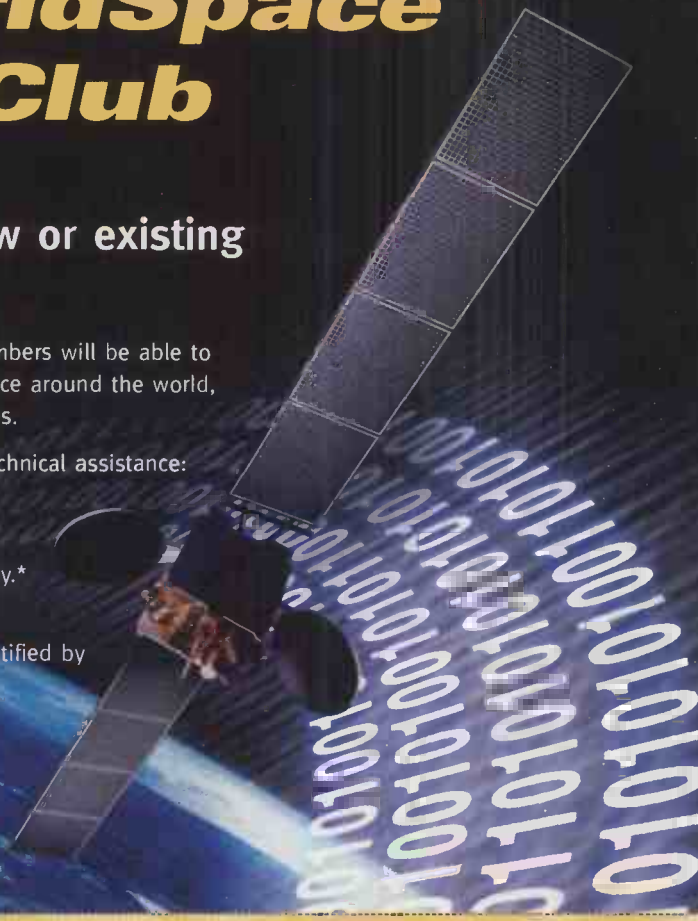
- **PROTECT YOUR PRODUCT**
  We will keep the model number and date of purchase of your WorldSpace product on file to help you refer to this information in the even of an insurance claim such as theft or loss.

* *This does not affect your statutory rights.*



Receiver Serial ID Number

Date of purchase (Day, Month, Year) Place of purchase

Name:

Mailing address:

City State/Province

Zip/Potal code: Country

Phone E-mail

Including yourself, how many people are currently living in your household? _____ What is preferred language? _____

What is your occupation?
☐ Self Employed/Owner ☐ Professional/Technical ☐ Clerical/Service Worker ☐ Middle Management
☐ Upper Management ☐ Labourer/Tradesman ☐ Sales/Marketing ☐ Retired
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Where did you hear about *WorldSpace*? ☐ Television ☐ Radio ☐ Website ☐ Magazine ☐ Friend ☐ Expo or show ☐ Other _____

Do you have any *WorldSpace* accessories? ☐ Yagi antenna ☐ Cable extension ☐ Low noise amplifier ☐ No ☐ Other _____

Do you have a computer? ☐ Yes ☐ No Do you have an internet connection? ☐ Yes ☐ No

Do you have any *WorldSpace* Direct Media products? ☐ PC Adaptor Kit ☐ PC Card ☐ No

Thank you for filling out this questionnaire. Your answers are important to us.

Please check here ☐ if you would prefer not to learn more about *WorldSpace* or obtain new product and service updates from *WorldSpace*.

Data Protection Act: Occasionally we may make sufficient information available to other companies who have products and services which may be of interest to you. If you would prefer not to receive such offers please tick the box ☐.

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radio ACTIVE

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- The New Maycom FR-100 5-band airband radio on test
- European repeaters: Take your 2m FM transceiver on holiday and find out where the locals chat
- The Ionosphere: Just how does it work and how do radio signals travel the globe and space?

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Satellite TV News

Despite the threat of encrypting Globecast's trans-Atlantic feeds of the Professional Golf Associations various matches across the USA earlier this year, the arrival of summer has produced a fine crop of golfing tournaments. Certain of the PGA feeds have appeared on the BT Washington leases - 11.489GHz-H and 11.550GHz-H on *NSS-K* being favourites and even Globecast are carrying some tournaments in the clear now.

The *Mastercard Colonial, Corning Classic* and the *Wegmans Rochester International* have all appeared in recent weeks. But other dramatic sporting events have also crossed the screens, the most dramatic perhaps was the Cyprus rally early June. I noted live pictures plus edited packages showing cars hurtling round dusty corners and barren hillsides uplinked by NTL out of Cyprus over several early June days on *Eutelsat W2*, 16°E (SR 5632 + FEC 3/4, service id -'Auto 13.5MHz') over the NTL-UKI 457 truck.

May 26th and NTL were busy uplinking tennis out of Germany on their 'NTL.MCE.2' truck using 10.969GHz-H, 5632+3/4 via *Eutelsat 2F3* @ 21.5°E. That same day **Roy Carman** (Dorking) watched the preparations for the Monaco Grand Prix carried over the *Telecom 2B* satellite at 3°E, previously *2B* had been resident at 11°W - 12.673GHz-V, SR 6289 + FEC 7/8.

The 3°E slot used to be favoured by BBC TV for regional and near European satellite hookups, so keep a close watch on this slot! Whilst commenting on *Eutelsat 2F3*, the 'ITN Core Coverage' unilateral feed appears from time to time at 11.096GHz-H (5632+3/4) - this trails various news packages upcoming, but just as they run their VTR machine, Bill Smith at ITN hits the 'encrypt' button and the picture disappears!

Onto other news and the month's 'hot' event was the general election and with many news insert feeds being generated up and down the UK. My first election day sighting on June 7th was via *Intelst 801*, 31.5°W @ 11.006GHz-V (5632+3/4) and a shot of the counting venue - actually a sports hall - at Sunderland. This was my only sighting incidentally as within the hour I was actually working as a real count assistant in the counting (sports) hall at Eastleigh making a few honest quid.

Interesting that Meridian were here with a BT uplink truck outside the back door plus a roving camera inside the hall! (Crawled home at 0300 on the 8th and with full working days either side of the count experience I went straight to bed ready for the same day's 0630 start - roll on retirement!).

Incidentally, following on my comments of analogue reception from the *Anatolia-1* 50°E satellite in the June column, **Godfrey Manning** (Edgware) comments that this is owned by a Turkish Telecoms group and named after part of Asian Turkey. It's odd that it has such minimal activity and no customers! The Turkish hot-spot is of course at 42°E with the *TurkSat* fleet, recently joined by *EurasiaSat-1* and one of it's first customers is the Swiss 'ProSieben' free to air channel with their '.TV - The Technology Channel'. For techno fans check 12.723GHz-V (20,000+5/6) - there's also 26 other encrypted channels on this frequency for hacking enthusiasts.

Another broadcaster hits the digital button with Canal+ Poland dropping both *Hot Bird* 13°E (11.516GHz) and terrestrial analogue transmissions - viewers must now take 'Cyfra+' in digital via satellite or DTT so advised **Edmund Spicer** (West Sussex). Incidentally, he suggests checking out any French TV5 transmission since the text carries valuable info on their satellite activity, try page 527 for 'La Vie des Transpondeurs'.

TV5 Europe - *Astra* 19°E digital, 10.788GHz-V, SR 22500 + FEC 5/6 and TV5 analogue - *Hotbird* 13°E, 11.322GHz-V, audio 6.60MHz, PAL and on *Telecom 2C*, 5°W, 12.585GHz-H, audio 5.80MHz, PAL. Whilst commenting on the three Clarke Belt hot spots, namely 13°, 19° and 28°E, Dubai has appeared recently on *Eurobird*, 28.5°E and for readers with BSKYB digital reception it might be worth checking for Dubai Business Channel, Dubai Sports and Dubai EDTV which are sitting at 11.585GHz-H with a common SR 27500 + FEC 2/3.

Nearby is another digital package worth checking out - we have the GOD 24-7 promo channel currently FTA (free to air) - and from a GOD to a DOG channel - actually called 'Go Barking Mad' channel that covers dog racing and is regularly on-air (subject to the dogs running!). These and 'TBN-Europe' are currently residing @ 11.681GHz-V with the 27500+2/3 parameters.

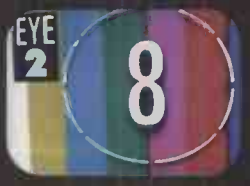
Eurobird and *Astra-2* though with a 0.3° spacing will romp in on your 250mm Sky digidish. Reader **Sean Bateman** (Coalville, Leics) also dropped a line recently on several 'DX flavoured' channels from this spot on his digidish - Czech Republic - 12.607GHz-H, trdr F3S with TV3 TV and several radio channels. All satellite parameters, downlinks, etc. can be checked on **http://www.SatcoDX.com** - it's updated daily.

The fast moving 'Iran TV Network' is a channel that drifts between various satellites and recently popped up on *Telstar-12* @ 15°W, 12.612GHz-V with an odd SR 3037 + FEC 3/4 as advised from **Stefan Hagedorn**. Cruising across the *Arabsat 3A*, 26°E spot and a new channel package can be found on 12.015GHz-V 27500 + 3/4, there's the Dubai based ZEN-TV, KFSH (?) on test, SAHAR and the Iranian 1st channel IRIB-1 plus 'BBC World India'. Students of Arabic life could well tune into the *Arabsat* 12.034GHz-V channel package that includes Libya, Iraq, Jordan, Saudi-1, Kuwait and the Oman...OK on a 900mm-1m dish.

Both *Astra* slots - 19 and 28°E and the *Eutelsat Hot Bird* 13°E slot carry very strong signal downlinks so it's **very easy** for any reader to obtain worthwhile reception with very minimal equipment and a smallish dish say under 800mm which won't upset your local council planners - unless you live in the Test Valley Borough Council area. The dish is mounted on a small ground stand and it just needs to have a clear view of the sky towards the ESE at say 28°ish elevation.

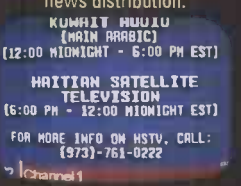
Lots of analogue and digital on 13°E, even news feeds as **Nick** (near Sutton) with his small dish confirms. Late May Nick checks out the usual *Hot Bird* APTN slot 12.581GHz-H, but it's quiet. However 12.590GHz-H (5632+3/4). Time 2030 and up comes the APTN 'North America Late', a news package compilation of what's happening in the news broadcasts across the 'States.

Council planning enforcement officers and my 1.5m disputed dish - as reported in an earlier column. My original plans for dish removal prior the council officers arrival have come to fruition...the dish now has been positioned on a flat roof some **four storeys high** and visible from all directions, the neighbours and his council planners have raised no objection to the structure, clearly having a more positive outlook on modern life than those officers that patrol Test Valley.



Colour bars plus roving eye news cam ex USA over *NSS-K* 21.5°W digital.

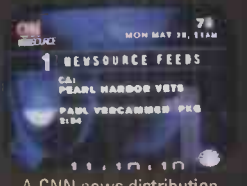
Eutelsat 21.5°E carries ITN news distribution.



Haitian TV is sending a news item to Kuwait TV via Globecast.

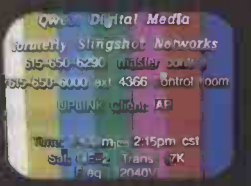
Sunny June days encourages Meridian TV to set up for their 1800 weather man live from Bournemouth beach, via *Intelsat 801*.

The return of the American 'hostages' from the China/spy-plane incident in April, families await their loved ones, live via Reuters on *NSS-K*.



A CNN news distribution package.

A news package ex Washington for the Gulf region over *NSS-K*.



An unknown corporate originating in the 'States and airing over the *GE-2* bird (85°W covering N. America and Hawaii) finds its way onto the Atlantic circuit and lands in Europe!

■ JACQUES D'AVIGNON VE3VIA ■ E-MAIL: jacques@pwpublishing.ltd.uk

Propagation Forecasts

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.

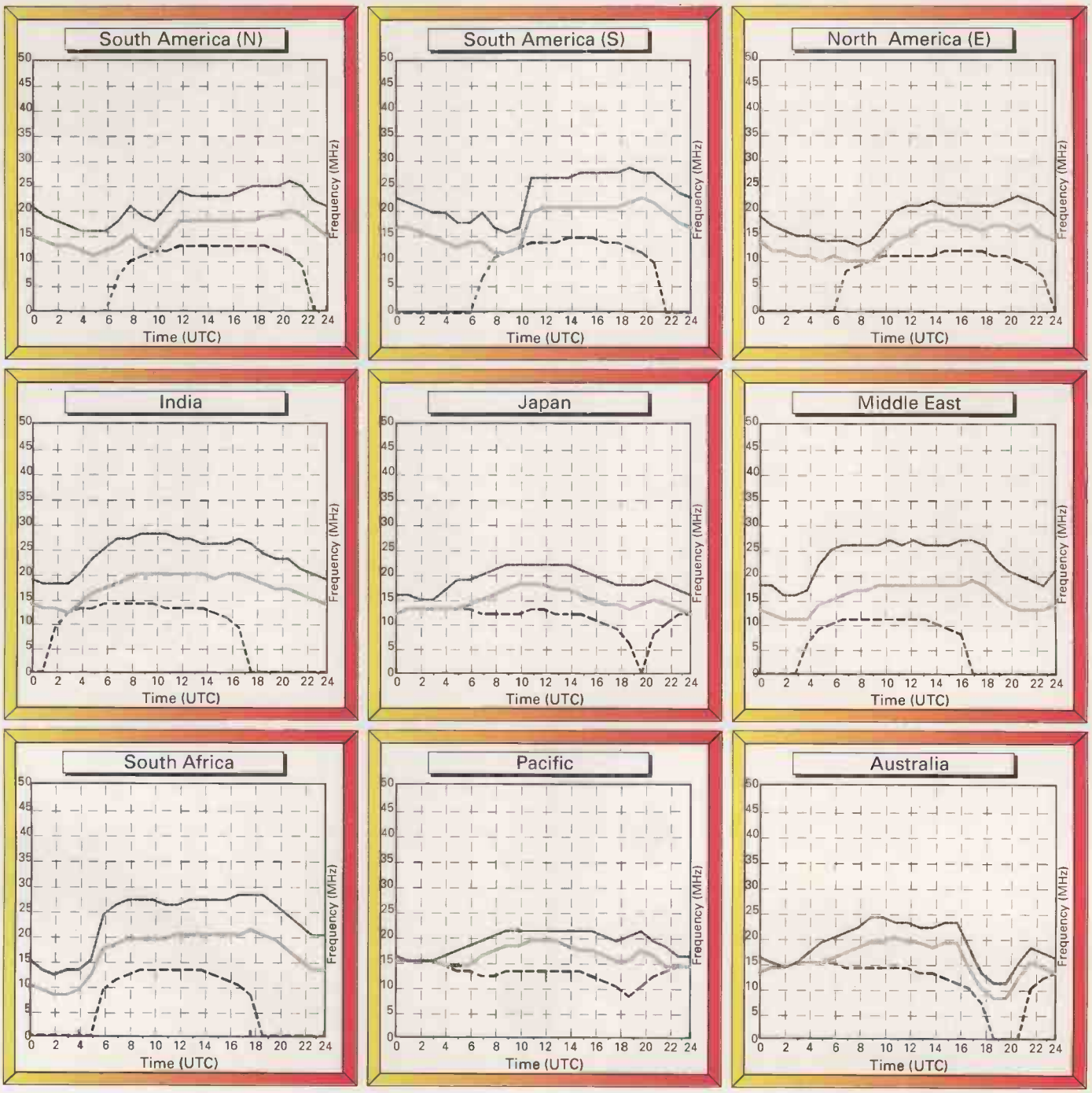
The middle line indicates the optimum working frequency (OWF) with a 90% probability of success for the particular path and time.

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 2001
Circuits to London

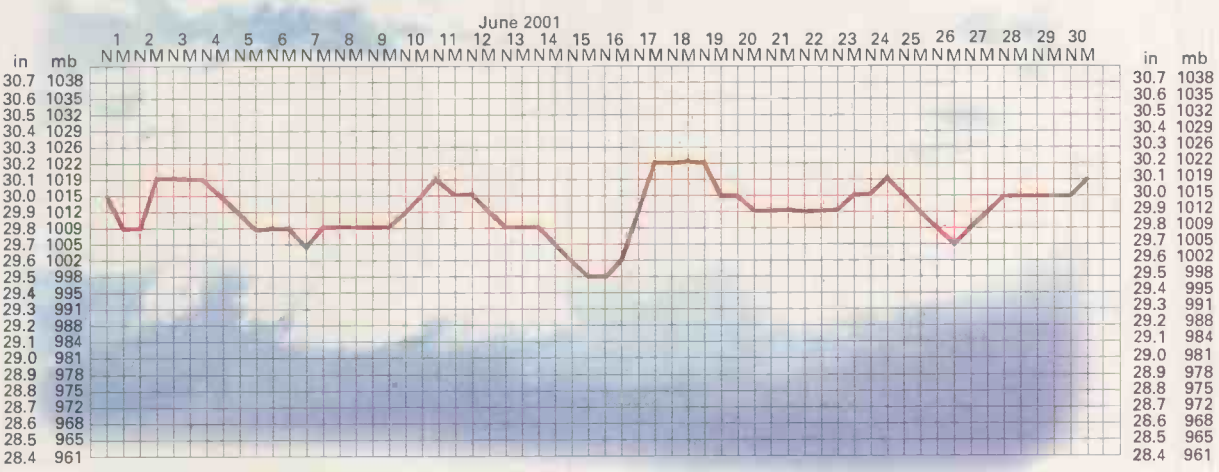


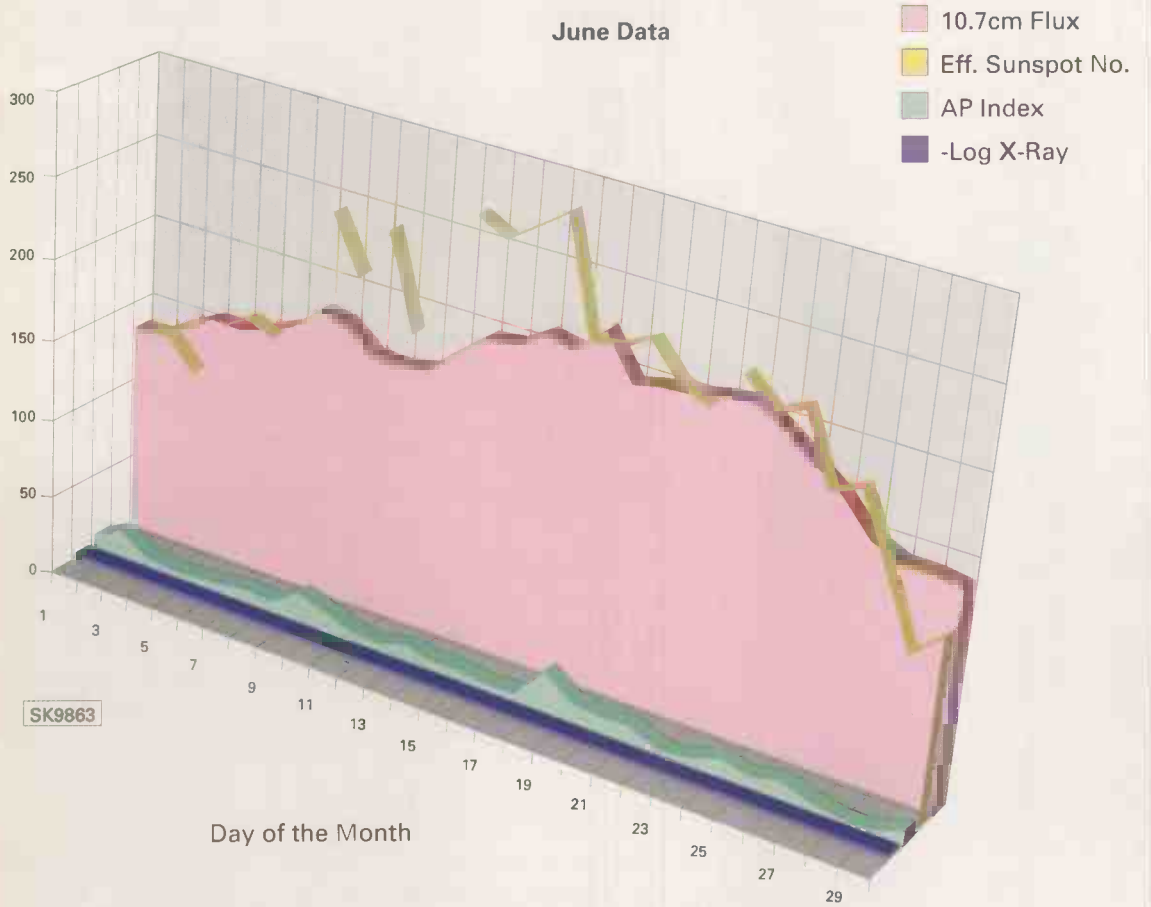
SK9862

■ KEVIN NICE G7TZC, SWM EDITORIAL OFFICES, BROADSTONE ■ E-MAIL: kevin@pwpublishing.ltd.uk

Propagation Extra

Ron Ham's barometric pressure chart, taken at Storrington, W. Sussex, June 2001.





guide to the chart

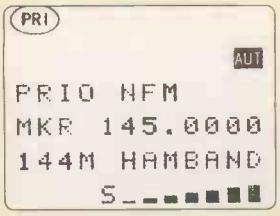
The 10.7cm solar radio flux is used as an indicator of the general level of solar activity.

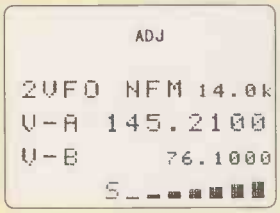
The K and AP indices are measures of geomagnetic activity.

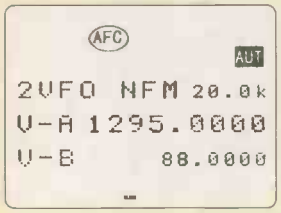
The K index ranges from zero (very quiet) to nine (severely disturbed).

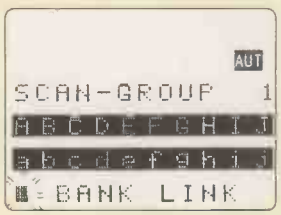
K values of five or greater correspond to geomagnetic storm conditions that can relate to poor propagation conditions.

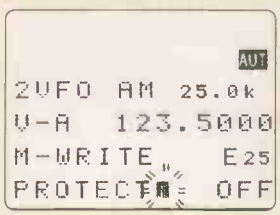
The AP index ranges from 0 to 400. An AP of 30 is the threshold for geomagnetic storm conditions.

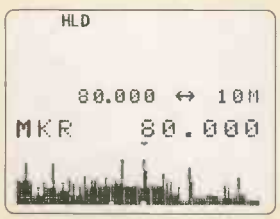


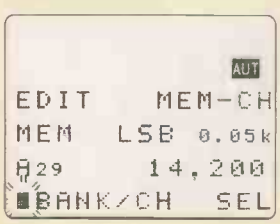












NEW AR8600

MOBILE - BASE - TRANS-PORTABLE

*High sensitivity design

The AR8600 is an extremely versatile **all mode** receiver (**530kHz - 2040MHz**) which can be used virtually anywhere, mobile, base or trans-portable... powered from an external 12V d.c. power supply, optional d.c. lead from a 12V vehicle or from an optional internally fitted NiCad battery pack. A strong twin metal case with die cast front panel characterises the multi-purpose role. All mode receive capability is provided including Single Side Band with programmable tuning steps down to a resolution of 50Hz with the frequency established by a highly accurate Temperature Compensated Crystal Oscillator (TCXO). An RS232 port further extends the capabilities with free supporting control software available from the AOR web sites.

Although many microprocessor features have been adopted from the trendsetting AR8200 Series-2 hand portable receiver, **the AR8600 RF front-end is an all new (*high sensitivity) design with a first rate switched attenuator and preselection around VHF to ensure the highest levels of adjacent channel rejection with software spurii cancellation**. In addition to a hinged telescopic whip aerial, the AR8600 is supplied with a **detachable plug in medium wave bar aerial** which locates on the rear chassis of the receiver for localised medium wave monitoring. An additional BNC socket is mounted on the rear chassis so that **10.7MHz i.f. output** may be extracted for use with external spectrum display and vector analyser units such as the AOR SDU5500. The TCXO ensures **high stability** with **minimal internal spurii** and is usually only seen in top of the range (more expensive) models such as the AR5000 and AR7030.

The chassis is manufactured from two metal compartments, effectively a **metal chassis inside a metal cabinet...** this provides excellent screening characteristics and great robustness highlighting its multi application role. The **front panel** is also manufactured from **die-cast aluminium**. Size is 155(W) x 57(H) x 195(D) excl. projections, weight less than 2kg.

The all important **8.33 kHz airband channel step is *correctly implemented*. Computer control** is available via a standard 9-pin RS232 D-type connector on the rear chassis, just a standard RS232 cable is required for connection to a PC, the extensive RS232 command list is printed in the operating manual. In addition, **'optional internal SLOT CARDS'** (which fit into the rear chassis of the AR8600) extend the capabilities even further, five cards may be fitted with two operational simultaneously. **Supplied with:** Swivel base telescopic whip aerial, MW bar, comprehensive illustrated operating manual with RS232 listing, d.c. lead.

AR8200 SERIES-2

NEVER BEFORE HAS ONE HAND PORTABLE OFFERED SO MUCH

The AR8200 represented a beacon when first released, technology marches forward with the NEW AR8200 SERIES-2 keeping the innovative concept and forward thinking alive and bright. It has not been easy improving on what many thought to be the ultimate, however the NEW AR8200 SERIES-2 does provide even more with nothing taken away.

A Temperature Compensated Crystal Oscillator **(TCXO)** now forms the heart of the AR8200 SERIES-2, this ensures **high stability** with **minimal internal spurii**. Performance too has seen the AOR R&D team fine tuning the design for **best sensitivity and strong signal handling** over the extremely wide coverage of 530kHz to 2040MHz (all mode receive without gaps). The aerial has also been replaced by a **telescopic whip** on a swivel base, this ensures the best results, a medium wave bar aerial is also provided as standard. The design team have certainly been taking account of customers wishes, the keyboard ZERO key has been swapped in position with the DECIMAL to match the telephone layout, LCD illumination has been increased (for improved visibility) and following requests for longer operation between charges, the **4 x AA size NiCads have been increased in capacity**, again reflecting improvements in modern technology. The obvious change has been left for last... the **cabinet colour** has been changed from green to **black!**

The list of features is vast, tuning step sizes are programmable in all modes down to 50Hz with comprehensive step adjust and correctly implemented **8.33kHz** for the new VHF airband spacing. Connection to a computer is possible with the optional CC8200 lead/interface with free PC software available from the AOR web site. Unique optional slot cards further enhance features (CTCSS, tone eliminator, record / playback, external memories, voice inversion).

>>> Hobby & commercial markets collide <<<

Over the last couple of years, John Wilson has provided (through the pages of ***SWM***) reviews for ex-commercial equipment which is finding its way via surplus supply into the hobbyist market. Such equipment dates back from the days of nostalgia right up to modern times, in particular the 'attraction' to **OLD** commercial units is due to **excellent performance and keen prices**. The reviews have on occasion proved quite controversial, while its nice to receive an endorsing confirmation that 'your pride & joy' represents a landmark in design, for some, public criticism of their equipment has proven 'bitter medicine'. Through plain speaking, John Wilson is considered (by many) to be the 'Jeremy Clarkson' of radio reviewers (to-date JW is less harsh but his communication skills leave the reader with no doubt of his opinions - but without references to cigarettes, beer and... *perhaps we will leave the comparisons alone*).

While the flow of equipment from commercial to hobbyist markets is apparent, an equal or greater flow is happily taking place in the opposite direction unnoticed by hobbyist eyes. The reason for the demand is for exactly the same reason as stated above, **excellent performance and comparatively low price.** Everyone wins.

In the last year alone, there have been many hundreds of receivers supplied to European governments including (principally) the **AR5000**, **AR5000+3**, **AR5000c**, **SDU5500** and **AR8200-2** - this picture is duplicated in America and to an even greater extent in Asia. The **AR7030** is enjoying huge popularity with European authorities with a daily growing number providing the platform for monitoring DRM (short wave digital transmissions) for evaluation purposes.

Commercial use is not only a recent occurrence, several years ago we were given photographs of the AR2002 & AR3000A fitted to US A6 military aircraft. Sadly we do not hold copyright of the pictures so cannot reprint them here, but they are displayed on the wall at AOR UK and are often present at exhibitions. Be assured, if you select AOR equipment, you are joining a world-wide family of professional operators who appreciate the innovation, latest features and facilities. In addition you will be rewarded with excellent performance at a very competitive price with something extra for free - legendary technical support from AOR UK.

'REAL' SHORT WAVE LISTENING

No sooner than we had completed a large number of commercial overseas orders for the AR7030, more orders arrived. Despite being over five years old, the AR7030 is tremendously popular **still beating off the competition.** AR7030, **the professional choice**. *Sorry if you encounter short delays in the supply of the AR7030, it will be well worth the short wait.*

Excellent strong signal handling, low noise local oscillator (producing extremely low reciprocal mixing figures) and excellent audio fidelity demonstrates the attention to detail carried through design and into manufacture... the analogue circuits of the AR7030 exhibit none of the strange AGC and poor audio characteristics found in other 'higher priced' DSP competitors. Many feel that the AR7030 is the best short wave analogue receiver ever. Receiver of the Year 1996/97 WRTH, 5-star award and editors choice Passport to World Band Radio for several successive years. Designed and built in the UK as a collaborative project between internationally acclaimed designer John Thorpe and AOR.

★★★★☆ AR5000+3 awarded four stars by both the authoritative Passport To World Band Radio and World Radio & TV Handbook

AR5000
True base receivers are few and far between, some have simply evolved from the hand held equivalents with little tangible improvement in performance or facilities over their smaller counterparts - *the AR5000 is not like this!* High performance, top quality build and true wide coverage all mode receive. The "+3" version offers even more with synchronous AM, AFC and Noise Blanker. Popular with government agencies throughout the world. **AR5000c** Frequency coherent version for commercial applications, special order.

Commercial & government operators have selected the AR5000, AR5000+3 and AR5000c in great numbers over recent years resulting in the model being recognised within their organisations in the same manner as many household brand names & products. For counterintelligence surveillance, the AR5000 (often partnered with the SDU5500) forms the cornerstone of modern day monitoring. System training often revolves around the AR5000 which leads to even wider implementation across departments. Transform ***your*** hobby to a commercial grade listening post with the AR5000, **the professional choice.**

AR5000+3 - Sync AM, AFC, NB
The "+3" version offers even more with synchronous AM (upper side band, lower side band and double side band with excellent lock range), AFC (Automatic Frequency Control for accurately tracking moving transmissions or unusual band plans) and Noise Blanker.

SDU5500 The SDU5500 is a Spectrum Display Unit providing practical and cost effective spectral monitoring for band occupancy and identification of new transmissions.

Many other products available including the ARD-2 ACARS / NAVTEX decoder, AR3000A receiver, aerials, software etc. Please phone or write requesting details or visit the extensive AOR UK web site at ***www.aoruk.com***

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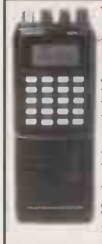
YUPITERU MVT-7100



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Info in Orbit

When I started work on this month's column, I had 29 pictures in the folder. Several were contributions from readers, a couple were collected by my own reception station. Russian and Ukrainian scientists contacted me with information about their projects, and about the next generation of Russian/Ukrainian resources satellites, including what I believe is a real scoop - a picture of the *OKEAN-O* Mission Control Centre! The latter has taken priority in order to prevent Editor Kevin from suffering from shock, had I not made some serious cut-backs! Not a bad month for correspondence! I hope you like the result.

The clear, sunny skies enjoyed mid-May enabled excellent weather satellite (WXSAT) images, including some days showing minimal cloud over Britain. Some of my favourite pictures came from the morning passes of *NOAA-15*, currently providing a stream of high quality image data, following the 'fix' now applied automatically within *NOAA-15* on a daily basis.

Cedric Roberts produced **Fig. 1** - an unusual composite of two h.r.p.t. (high resolution picture transmission) images from *NOAA-12*, using his *Siamiv* software's facilities to 'stitch together' concurrent satellite passes. Cedric applied this to a couple of *NOAA-12* passes on 23 May to produce an image of Europe showing the large anticyclone over the UK which gave the summer-like spell of weather, as well as the large Atlantic depression to the west, waiting in the wings to break down the settled spell for the Spring Bank Holiday weekend.

I have had to revert to my a.p.t. (automatic picture transmission) system, following accidental damage done to my h.r.p.t. antenna controller in March, described recently.

WXSAT Activity

RESURS-01-N4 remains operational, though we experience an occasional day without transmissions. Monitors report periodic short transmissions from *OKEAN-O*, often for a few consecutive days in the early morning.

Fig. 4: *GMS-5* high resolution image courtesy Dr. Emil Herbeck.

METOP News

METOP is the polar orbiting satellite series being planned by EUMETSAT; the EUMETSAT Polar System (EPS) forms Europe's contribution to the Initial Joint Polar System, co-ordinated with the USA. Starsem is a European-Russian joint venture company, formed in 1996, to oversee commercial operation of the Russian Soyuz launch vehicles, and was recently awarded the contract to launch the METOP satellites. The contract includes launch of two of the three METOP spacecraft, currently scheduled from Baikonur in Kazakhstan. *METOP-1* is scheduled for launch in late 2005.

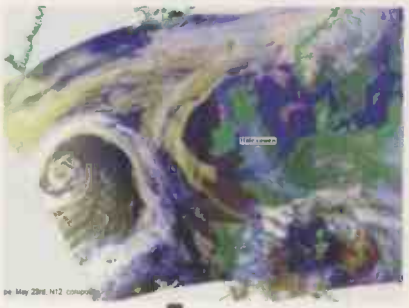

Fig. 1: *NOAA-12* composite h.r.p.t. image 23 May from Cedric Roberts.

METEOSAT-5 To Continue

EUMETSAT has decided to continue operations with *METEOSAT-5* to provide Indian Ocean Data Coverage until the end of 2003. This geostationary WXSAT reached its tenth birthday on 2 March 2001, whilst continuing to image from its vantage point above the Indian Ocean. Selected images are re-transmitted unencrypted from *METEOSAT-7* in both WEFAX and PDUS formats.

Russian Scientific Research

The WXSATs are widely used by amateurs and professionals all over the world, and many of those with access to the Internet keep in touch via the 'wxsat-l' mailing list. **Dr. Emil E. Herbeck** is the Head of the Satellite Monitoring Laboratory, a sub-division of the Institute of Automation and Control Processes of the Far East Branch of the Russian Academy of Sciences in Vladivostok. I E-mailed him to enquire about the work of his Centre and he kindly replied in some detail.

Fig. 2: METOP polar satellite - courtesy Image (EUMETSAT).

The Inter-Institute Centre for the Satellite Monitoring of Environment is established on the base of the Satellite Monitoring Laboratory of the Institute of Automation & Control Processes. Dr. Emil explained:

"We are located at Vladivostok, Russia (41°11'N, 131°59'E). All the information received is placed to our CD Historical Archives. Besides standard data processing, we are conducting an information support of wide range of oceanographic researches, including maritime scientific cruises support. We can develop new methods and software for various satellite monitoring applications as well. We are open for collaboration on the activity as mentioned above.

Fig. 3: Inter-Institute Centre.

My laboratory is dealing with environmental satellite monitoring of Far East marginal seas and adjusting North West Pacific areas to support marine and atmosphere researches (including maritime scientific cruises), and some economic application, primarily fishery as well. Our main focuses: 1) development devises, methods, and software for the remote sensing of natural processes and objects (such as eddies, currents, sea ices, etc.) for various applications. Besides new ones, we adapt to specific features of our region some existing methods; 2) carrying out monitoring as such.

The most hard regional specific feature is cloudiness, so we make much efforts to filter it. We use various methods, most of them based on multi-

Timestep

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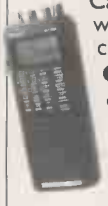

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Fig. 5: *OKEAN-O* Mission Control Centre.

channel and multi-session (sequence of digital images) processing. Naturally, we are forced to improve image navigation, and now we have sub-pixel accuracy.

We are conducting our monitoring since 1994, but up to 1999 our observations were of an occasional nature - according to seasons or expeditions. In 1999, the Inter-Institute Satellite Monitoring Centre was established on the base of our laboratory, with the aid of Pacific Oceanology Institute and Pacific Scientific Fishery Centre. Both institutes are our old users. Since that time, we provide everyday monitoring, and since 2001, day-and-night one.

The Laboratories' web site **http://www.satellite.dvo.ru** carries more information. "We distribute the results of monitoring via (non-anonymous) directories on the site. From the beginning, we collect all the raw data received in CD-archives. On the base of archive data, we are carrying out investigations of long-term sea water variability, together with institutes mentioned above.

The main source of satellite data is NOAA h.r.p.t. Now, we are mastering GMS/S-VISSR. We were working with digitised a.p.t. between 1982-1990, trying to find various natural objects on sea surface and evaluate their dynamic characteristics. It was very difficult work, especially when we tried to find any small objects or small details of large ones. Besides insufficient spatial and in-pixel resolution, and only two channels, a.p.t. has additional disadvantage: its signal is analogue (converted from digital a.v.h.r.r. after onboard processing). It means that we have unnecessary processing and digital-to-analog (onboard) and analog-to-digital conversion errors, and we have a lot of interference because the analogue signal is less interference-protected in comparison with the digital one.

Fig. 7: Destination paradise - an island in the Caribbean.

Besides, a.p.t. has 2.4kHz sub-carrier frequency, and it is hard enough to filter it, if we wish to maintain original resolution (as it is in four times worse than that of h.r.p.t.). When we changed to h.r.p.t., it was the same as cleaning a window that had not been washed for 100 years!" My thanks to Dr. Emil Herbeck for his contribution.

National Space Program Of Ukraine - Remote Sensing Of The Earth

I am also indebted to **Volodymyr Astapenko** who originally invited me to visit his web-site: **http://www.dniprokosmos.dp.ua/okean-o/images/** to see examples of the images of Earth collected by the Ukrainian and Russian remote sensing satellite *OKEAN-O*. That was an invitation too good to miss!

However, it gets better! After providing me with a high quality version of my selected image for publication in last month's edition, Volodymyr very kindly offered to send me a publication on *OKEAN-O* and an *OKEAN-O* calendar for 2001! The calendar is most beautifully produced, with full colour images from the MSU-V scanning radiometer, together with superb pictures of the Ukraine itself. Look out for reproductions of some of these images in a future 'Info Special' edition.

Figure 5 has to be a significant 'scoop' for this column - surely the first time that a picture of the Mission Control Centre has been published in Britain? I then became aware that two new resources satellites - *SICH-1M* and *SICH-2* were listed as being scheduled for construction and launch! It was certainly fascinating news to me.

The *SICH-1M* spacecraft is designed for operational data collection to investigate the conditions of the world's ocean and the Earth. The scheduled starting date is 2002. Information provision of the spacecraft is distributed between Russia and Ukraine in the proportions 50:50 on a resource of each device. The Ukrainian information holder is Program Research Centre of National Space Agency of Ukraine (Snovyanka, Chernigov province) and Data Processing and Distribution Centre (Vyshgorod, Kiev province). These centres keep the data received from the spacecraft. The access of the remote sensing data users to the catalogues is provided through the Internet. *SICH-1M* data will be transmitted in a.p.t. on 137.40MHz, on approx. 600MHz in digital form, on 8.192GHz, and 1.7GHz.

Readers should note that the above information has been carefully transcribed from information kindly provided by Volodymyr Astapenko, provided for the DniproCosmos State Company. Any errors due to mis-interpretation will be corrected as soon as identified. I am extremely grateful to Volodymyr for permission to use this information. There will be further news about these Ukrainian-built satellites in future editions.

Fig. 6: Processing *OKEAN-O* data.

Fig. 8: On the beach - shaded by a QFH!

Reader's Remote Imaging Station (In Paradise)

Robby Bain lives in West Yorkshire, but has spent the last six years travelling between home and San Juan, Puerto Rico, where he ran American Airlines' Caribbean operations. Some three out of every four weeks was spent out there, eventually leading to the award of the *Million Mile Certificate*. This has given him the opportunity to some (very) remote imaging!

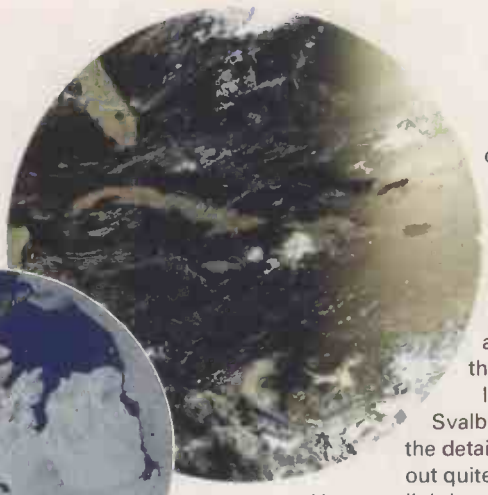

Fig. 10: Sample results - Florida region.

Fig. 12: Alaska - h.r.p.t. image from Dick Mobley.

He told me about one of his expeditions to a small, deserted Caribbean island to the east of Puerto Rico. A checklist of equipment was essential if you set off at 0500 - if you wish to avoid a wasted journey when you discover which essential item you forgot to pack! The equipment included the RIG RX2 WXSAT receiver, 12V battery, MiniDisk recorder, QFH and coaxial, sections of mast, a set of predictions, camera, provisions for the day, suntan lotion and a good book. A car drive followed by a short boat trip takes Robby to his desert island - a little different from the Yorkshire hills that he takes to for quiet mobile imaging back home!

Arriving at the beach by 0900 and experiencing the warmth of 28°C, Robby has recorded his first passes by the time that other sun-seekers arrive. The QFH antenna always arouses curiosity, so Robby takes some hard copy pictures to help explain what he is up to. He comments "It is pretty difficult (and disappointing) to explain to people what you are doing, if all you can do is let them hear an audio recording of a satellite going overhead!"

"The day passed uneventfully. The only thing that interrupted my reading was the need to cool off in the ocean every hour or so. On the dot of 1700, my boat reappeared, the owner keen to see his cash. At the end of my drive back to San Juan, I plugged my minidisk into my soundcard and fired-up *WXSAT* and *SatSignal*. Great images - a most satisfying day".

Dick Mobley E-mailed from southern Alaska where he has had pretty clear skies. His h.r.p.t. system produces some spectacular imagery, including **Fig. 11**. Anchorage and the Cook Inlet are in the upper right of the image; Augustine volcano is in the centre and looks like a small, round island. Kodiak Island is at the southern centre area of the image.

Way Up North

David Taylor - http://www.davidtaylor.pwp.blueyonder.co.uk - does not have an h.r.p.t. system, but using NOAA-recorded h.r.p.t. files, he has developed some outstanding software for processing the raw telemetry files. This has enabled other people who do not have reception hardware, to collect raw files from NOAA's data archive on the Internet, and process selected pre-recorded regions. David requested and received the raw file that was processed to produce **Fig. 12**, showing Svalbard. I had to check my atlas to recall its location - further north than Norway, up at latitude 80°.

I asked David what prompted him to select Svalbard? He replied: "As I recall, simply that the detail had been brought out quite well - lowish angle lighting. I'm really trying to establish what sort of post-processing is best. It seems to me that, for display purposes, you need to select the area over which you measure the histogram, and then process. This facility will be added to the *HRPT Reader*. I'm also interested to see what processing brings out the best detail - stretch to 0.5% and 99.5% histogram limits, or do the formal histogram equalisation? Then again, there is a slight amount of unsharp masking in this image - does it enhance it or detract. So I guess it was the thought "can I automate all processing to produce images like this?", coupled with "should images look like this in any case?" Oh, and I happen to like Svalbard, having visited there...!

David's image was obtained by request from the NOAA Satellite Active Archive, previously featured in this column.

Fig. 9: Shady spot for hardware.

Fig. 11: Svalbard, *NOAA-14*, from the SAA, 2001 18 May 1231UTC pass.

International Space Station - Component Launch Schedule

Mission STS-105 *Discovery* is the 11th flight (7A.1) to the *ISS*, and is scheduled for launch no earlier than 5 August for an 11-day flight carrying the *Leonardo* payload. *ISS* crews will also be exchanged.

Frequencies

NOAA-12 and *NOAA-15* transmit a.p.t. on 137.50MHz.
NOAA-14 transmits a.p.t. on 137.62MHz.
NOAA-16 has unresolved faults with a.p.t.
METEOR 3-5 uses 137.30MHz.
RESURS 01#4 transmits a.p.t. on 137.85MHz.
OKEAN-O, *OKEAN-4* and *SICH-1* use 137.40MHz for brief transmissions.
METEOSAT-7 (geostationary) uses 1691 and 1694.5MHz for WEFAX.

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Amateur Bands

Many readers will recall the activities of the Colvins - Lloyd W6KG and Iris W6QL operated from over 200 DX countries and the Yasme Foundation did so much too. The Yasme Foundation has asked Jim Cain K1TN to write a book about Lloyd and Iris' activities. Anyone with memories, photographs, reminiscences or whatever is asked to pass it on to Jim at **yasmebook@mybizz.net** Incidentally, a full list of Yasme operations can be found at **http://www.yasme.org**

Up & Coming

August 5-8 sees activity from Market Reef OJ0 - details from **http://www.qsl.net/la9vda** Also KF8UN will operate from Sitka City Island as KF8UN/KL7; July 7-10 on 7 and 14MHz.

Letters

An opener from **Ian Johnson** of Kidderminster on the question of sealing feeders points and that self-amalgamating tape needs to be stretched before it will self-amalgamate. The letter and drawings are too long for this piece, so if anyone is desperate for a copy, please let me know. Ian clearly 'has done it for himself'. Still with Ian, he notes how 'ordinary plastic' complains at either heat or perhaps worse, cold.

Our regular anonymous correspondent brings up the question of intruders. We must break them down a bit. Firstly we have downright pirates, secondly the person, who, knowing no better, buys from a trader not knowing that a licence is required, but has a genuine need of some sort and thirdly the services which share our bands legitimately.

What to do? For the first two categories, pass the word to the authorities, preferably with a recording and all the time and frequency data possible.

I suppose by now everyone will have heard of the interim proposals for the future of amateur radio.

Safety

Summer is antenna putting-up time, whether at home or Field Day. If you must use power tools, then do use an RCD and check it before use. A neighbour has used one for years without checking and was surprised that after years of not checking, it didn't work!

One **Jaz Long** regards my words last time as 'contentious reactionary drivel' - well, well, Jaz sees facts as 'drivel' - does that mean he is the only one who is right? Any bit of electronic circuit requires that one starts by making a few notes - for the receiver we need to define the bands to be covered, width of the i.f. and so on. Jaz is saying guesswork is better than design!

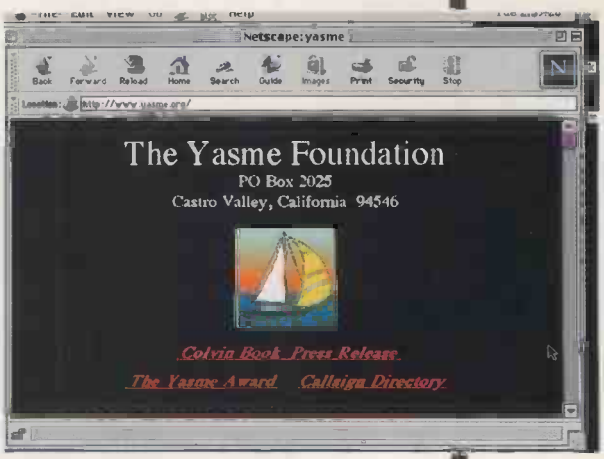
Now to **Ted Trowell** on Sheppey - 10MHz produced AP2AP, ZL75, 9M6BG, 3B6RF and JW3FL. On 14MHz 3B6RF again and 5V1SM, VP8SDX, LW2EU, 3W7D, FG5XC, D2BB while 18MHz yielded ZL2AGY, HC2/UA4WA, 3B6RF, AP2ARS, 3B8/F6HMJ, 9Q5BQ, BP8SDX, JA7BXS, CO8LY, XU7ABC, PY3DX, 5H3RK, SU9ZZ, P4/W1XP, A25/KY4P and KP2J. 21MHz attended to HC2/UA4WA, VK8AV, YB2LSR, DS1CCU, YC5VYH, DS2QJS, VK9C XJ, YB0AVK, 9M2TO, JV1YM, JR5DBO, 5R4/TI5KD, not forgetting more run-of-the-mill DX on 24 and 28MHz. Ted is all c.w. of course.

Onto **Colin Dean** (Barnsley) his sideband log shows 18MHz from AP2JZB, BA4CH, BV2KI, EK6TA, EX2X, an assortment of JAs, KP3EN, OH0/OH1JZ, while 21MHz showed AP2IA, BVFG/RN3OA, FG5DH, FY5LQ, HL1JV, HR5LBI, HS1NGR, VU2PAI, VK4JS, V26AU, XX9TKW, ZD7KT, 3B6RF, 3V8SF, 4L5T, 4S7SW, 5A1A, 5R8FL, 7J 2YUF,8A0ITU, 9K2RA, 9M6ONT, 9M7MS, before 28MHz and AP2JZB, A41LZ, CP6XE, DU1EIB, D2GG, JT1BV, J5X, OA4DJW, OD5NH, RA0FN, TU2KC, VP8SDX, V85GA, 3B6RF, 5X1GS, 8R1RPN and 9G0ARS.

Calling in at Oxford and the Goodhalls - father Paul and son Peter. Peter's sight is definitely improving and one hopes the improvement is sustained. With all the problems, Paul was worrying about Peter's exam results - 85-90% answered that question nicely - and still the log was the usual length.

Making a start with the parental log - and deleting non-DX - we find JG0JLO, VP8SDX, VK9CXW, VA2TG, VE6ARA, YU8/9X0A, 7X5JF, VU2HY, GB2BM, GB2FFL, GB2HBF, GB0MWL, 3B6RF, VK3EGN and a familiar call from Memory Lane in GX3SAD/P. As for Peter, he has sharp ears, listening at the same time as yours truly and hearing what I missed: Z21GN, HP3XBH, VP5/YT6A, 5A1A, ZA1K, 3B9FR, 9M6ONT, CE5GO, 4S7BRG, TF3GC, JV9NG, 4X4FL, PY2CSM, CO6TY, D44AZ, ZP6CW, VE1REC/M, YC2TT, PV0F, VE6LB, JY9NX, 5X1Z, P51DX, ZS2E, ZF2AH, OY9UR, VO1R and an enormous crop of smaller fry.

I was amused to read in a VK magazine someone wondering why 50% of radio amateurs aren't YLs. Personally I'd be much more surprised did it happen! In my opinion, men are interested in 'things', YL's in people and in outside appearances. Even among the YL contingent BYLARA represents the real ones while the one or two in a local club are there for different reasons.



A full list of Yasme operations can be found at http://www.yasme.org

Something quite different now. Since demobilisation, I'd heard nothing about my old lot, save that they were dubbed 'The Funnies', then recently I spotted two references to 79th Armoured Division - the latest in the Canadian Amateur written by VE3CFL in a different context altogether.

So - there you have it again. Since the last piece, I've managed to have a stroke, which has made a bit of a pig's ear of this piece - but the forecast says I'll still be able to write a column for a few years yet.

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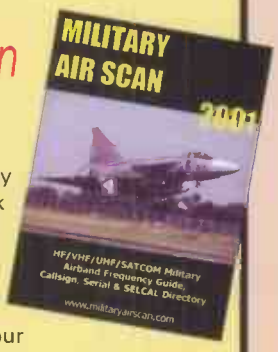

Military Air Scan 2001 is now stocked by the *SWM* Book Store. Those of you who regularly read *SWM* will have noticed our mentions of this book in the 'Communiqué' pages. Priced at £14.99, *Military Air Scan 2001* is the ultimate airband monitoring guide. Order your copy now!

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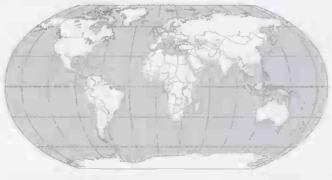

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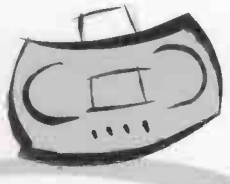

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radio ACTIVE
the world of radio communications

special edition August 2001

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Welcome

Welcome to this special free edition of *Radio Active*. It contains a selection of articles from some of our recent issues to show you that we are a magazine for everyone who has an interest in radio.

We cover everything to do with radio including military airband, covert operations, scanning, broadcast and general listening, CB and much more.

We hope you enjoy reading this sample and if you do, you can read many more articles like these in the regular full-sized issues of *Radio Active* that are on sale every month at most good newsagents, or take a look at the trial subscription offer on page 15.

Elaine Richards, Editor

World Radio History

monitoring the military

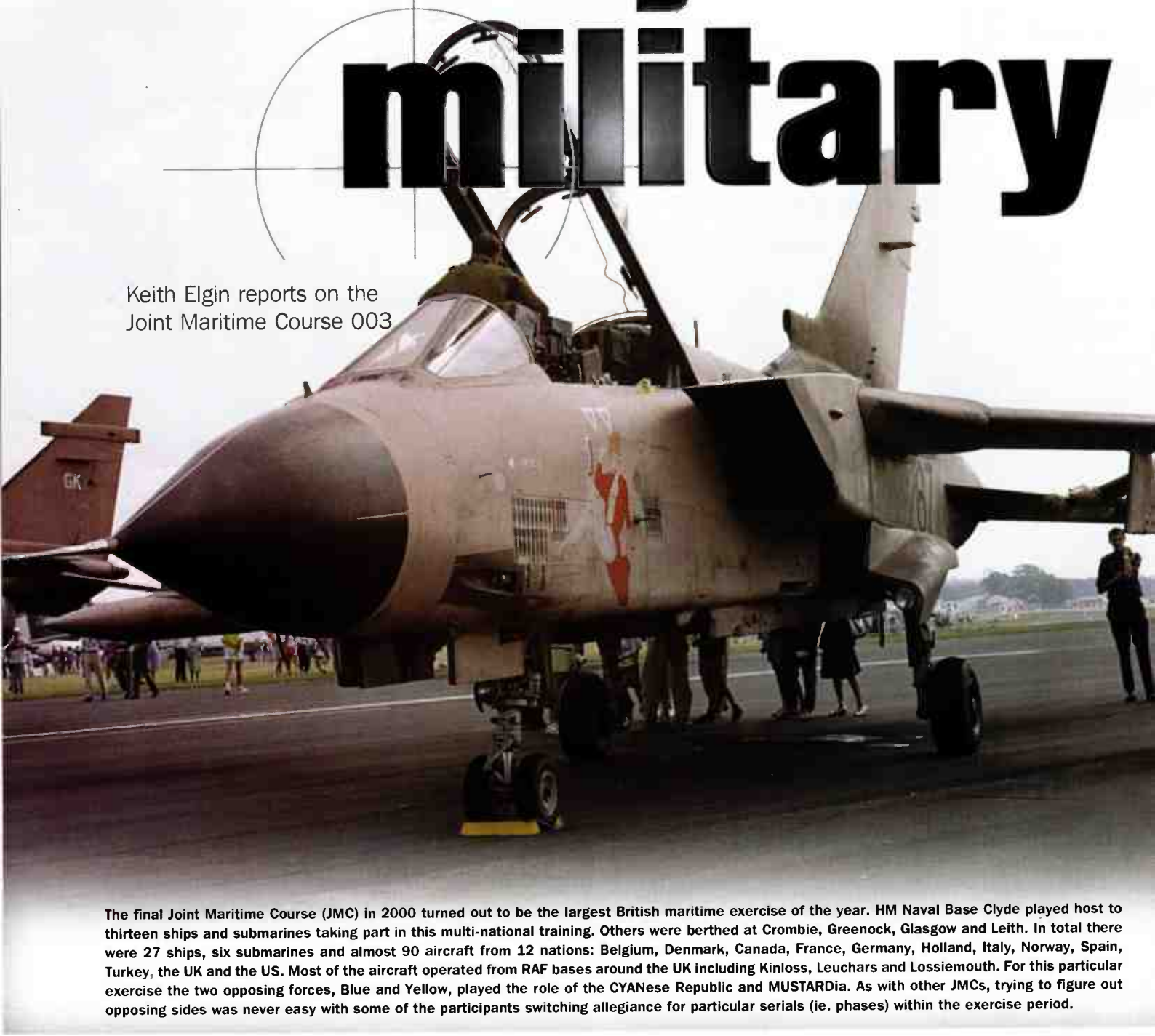
Keith Elgin reports on the Joint Maritime Course 003

Judging by the e-mails received it appears that quite a few monitors managed to hear some HF activity during JMC003. Line designators for the Joint Anti Air Warfare Shore Co-ordination (JAAWSC), Command and Control (C^2) and Chick Co-ordination circuits were once again relayed as additional information following the STCICS (Strike Command Integrated Communications System) hourly and half-hourly broadcasts.

One of the additional information broadcasts on the morning of Saturday 28th October 2000 caused some initial confusion and a couple of e-mails arrived here within 10 minutes! The message was relayed as follows "*2 RPT2 Tac TG Tac PH Tac PO*". Studying the layout of the message it became apparent that the controller had misinterpreted the shorthand for repeat and had spelled it out phonetically. The correct message should have been "*2 repeat 2 - TG - PH - PO*".

The first few days of the exercise saw **4.484MHz** used for the JAAWSC circuit. It was then shifted to **6.724MHz** for a couple of days causing a few problems as this was the primary HF SURPIC (Surface Picture) frequency. Following that it moved to **4.724MHz** where it remained for the rest of the exercise. The Vector Logic Reference Points (VLRP) heard on the JAAWSC circuit were based on the solar system. Those noted in use were *Earth*, *Jupiter*, *Mars*, *Moon*, *Neptune*, *Saturn* and *Uranus*.

The Link Co-ordination (LC) circuits were once again the most



The final Joint Maritime Course (JMC) in 2000 turned out to be the largest British maritime exercise of the year. HM Naval Base Clyde played host to thirteen ships and submarines taking part in this multi-national training. Others were berthed at Crombie, Greenock, Glasgow and Leith. In total there were 27 ships, six submarines and almost 90 aircraft from 12 nations: Belgium, Denmark, Canada, France, Germany, Holland, Italy, Norway, Spain, Turkey, the UK and the US. Most of the aircraft operated from RAF bases around the UK including Kinloss, Leuchars and Lossiemouth. For this particular exercise the two opposing forces, Blue and Yellow, played the role of the CYANese Republic and MUSTARDia. As with other JMCs, trying to figure out opposing sides was never easy with some of the participants switching allegiance for particular serials (ie. phases) within the exercise period.

World Radio History

active frequencies to monitor and could be heard 24 hours a day. There was an East and West Coast LC operating throughout the two-week period but on the odd occasion UHF was used severely limiting the range for monitors. Noted active were **4.8785**, **5.0915**, **5.310**, **6.940**, **7.795**, **7.934**, **240.300** and **258.950MHz**.

As with other JMCs, the weather was quite atrocious at times with the fleet having to remain close to the coastline for shelter. Operating in the vicinity of land appears to cause additional problems with the Link-11 data circuit and numerous frequency changes were made to try to maintain a good picture. Both HF and UHF data circuits were used and these included **4.7785**, **5.2765**, **5.460**, **5.733**, **5.910**, **6.779**, **6.882**, **9.394**, **338.200** and **383.150MHz**.

RAF *Leuchars* had an interesting mix of foreign participants based there during the exercise. This included six Tornado IDS of MFG-2 from Eggebek, Germany. The aircraft flew using the callsign '*Viking*' and were noted on **399.850MHz** for air-to-air communications. This was preset as Channel 26 but was mainly switched to as '**F1**'. They were also heard on **243.600MHz** when flying in company with Tornado IDS of 156 Gruppo. These Italian Air Force aircraft are normally based at Gioia Del Colle, Italy and during their stay in the UK used the callsign '*Lynx*'. **243.600MHz** can be used by both these units as it is programmed into their emergency radios. The German Air Force and Navy refer to it as '**E4**' and the Italian Air Force refer to it as '**2E**'.

There were also a number of F-16s based at Leuchars for this particular exercise. This included two F-16 A/B of 31 Sm from Kleine-Brogel, Belgium, which arrived for the second week of the exercise. During their stay they used the callsign '*Hammer 61-62*' and were noted using their operations frequency **142.675MHz** for air-to-air communication, this was programmed as **Victor 19**.

The other F-16s were four 31st FW aircraft from Aviano AB, Italy. They also arrived during the second week of the exercise, replacing six 48th FW F-15Es from RAF Lakenheath. The F-16s used a couple of callsigns during the exercise period, '*Buzzard*' and '*Nickel*'. **138.550MHz Victor 12** and **141.425MHz Victor 13** were the air-to-air frequencies in use.

Refuelling operations

Air-to-air refuelling operations were conducted on ARA-1 and ARA-14. RAF *Brize Norton* based VC-10s operated in ARA-1 although for

Logbook

Date	Time(Z)	Freq(kHz)	Notes
08/11/00	1430	20943	Shark 82 wkg u/i station
14/11/00	2001	6694	Rescue 323 wkg Halifax Military with p/p to Rescue Ops
14/11/00	2233	3506	NATO LC Net - 3MH (French), T4W (Dutch) very loud
14/11/00	1257	4484	Crosstell Net - Buchan, Crowbar, 6JO requesting 'Vector Logic point'
15/11/00	2340	5707.5	NATO LC Net - T7V, 3NU, 3SF (all RN)
16/11/00	0820	5707.5	Same net as above - Q5X, R3H etc.
16/11/00	0950	5685	MKH5 - CWL 88
16/11/00	1103	5690	0A - C253 IAC Casa voice/data with CW id
16/11/00	1112	6690	Magic 73 (AWACS) - LBV3 Voice and RATT traffic
16/11/00	0855	6697	MKL - D1T (Nimrod) RATT failed, relay to J0Q on task time 1000
23/11/00	1952	5127	NATO tracking net with E2B, 1MU and 1ZB
26/11/00	1001	9013	Q6H (Submarine) wkg Navy Prestwick and F3U (Sea King) for pax transfer
28/11/00	1835	4733	Croughton, Magic 92, MEF and MPD in ALE, RATT and Voice. Also on 5684 and 6724
29/11/00	0052	2544.5	British Army net with Zero wkg U30, W10 and W11 in voice and data
29/11/00	1708	5685	British Army net with 34 wkg 11C, 11D, 12C, 12D and 41C
29/11/00	1711	5687	GAF 449 wkg DHM91 with arrivals message
30/11/00	0011	5725.5	NATO LC Net during NAVSOUHT exercise with C3E, E0W and 6YY
30/11/00	1045	8965.5	S5L wkg NAWS and 5OS

World Radio History

monitoring the military

Photo: Neil Howard

much of the exercise period they flew from RAF *Leuchars*. The callsigns used were '*Cotton 01/02*'.

Refuelling operations were usually under the control of RAF *Buchan* and the primary AR (Air Refuelling) frequency was **252.400MHz (TAD 077)**. For the first time in years, the 100th ARW, RAF *Mildenhall*, were also involved in JMC refuelling operations. One KC-135 would be available in ARA-14 for the morning raids and two for the afternoon raids. For these particular sorties the tankers used their regularly heard '*Quid*' callsign. The numerical part was in the forties with the morning callsign higher than the following two. For example, during Wednesday 1st November 2000, '*Quid 43*' was the early morning tanker followed by '*Quid 41/42*' in the afternoon.

During AR the track's primary frequency **340.700MHz** was used. Refuelling operations for the USAF tankers also came under the control of RAF *Buchan* on **340.900MHz TAD 022**. When two tankers were on the track together they used **379.075MHz**, known as **Bullpen**, for air-to-air communications.

High drama

There were some quite dramatic communications to be heard on the 27th October 2000. This involved the ditching of an EH 101 Merlin HM Mk 1 anti-submarine warfare helicopter which had been operating on the BUTEC (British Underwater Test and Evaluation Centre) Range 'D710' off the western coast of Scotland. At the time I had been monitoring the HSAAF (High Seas Anti Aircraft Firing) circuit on **5.431MHz** when one of the ships taking part in the firing mentioned the possibility of a helicopter going down.

A quick scan of the rescue frequencies found '*Rescue MU*' working '*Kinloss Rescue*' on **5.680MHz** inbound the scene. On the UHF Scene of Search frequency **282.800MHz** E-3 AEW '*Magic 89*', which was on station in orbit area UK11 at the time, was working with warship callsign '*4PD*' and Super Puma helicopter '*Broadway 09*' in relation to the incident. By the time '*MU*' had arrived on scene, the five-man crew had been rescued by a couple of fishermen in a creel boat which had come to their aid. Four of the crew were taken to the Mackinnon Memorial Hospital at Broadford, Skye, for tests. The fifth was airlifted to the Western Isles Hospital in Stornoway with back injuries.

Dramatic end games

As well as the tactical UHF frequencies, a lot of the communications for the final serial of the exercise were conducted on VHF marine Channel 73 **156.675MHz**. In previous days it had been used for diplomatic traffic between the opposing fleets but it was now about to carry one of the most dramatic end-games to a JMC since the 'Battle of Faraid Head' which was played out on the 1st November 1998.

Following the early morning raids by Cyanese aircraft (Jaguars and FRADU Hawks), two of the Mustardian MCMVs (HMS *Cattistock* and HMS *Atherstone*) were on escort duty with 'Merchantman' (played by HMS *Bulldog*). They were attempting to run a blockade of HMS *Gloucester*, TCG *Kemalreis* and HDMS *Peter Tordenskjold* who were situated about five miles offshore.

Completely outgunned by the Cyanese destroyer and her escorts and remaining suspicious of their offer of protection, the Mustardians did the only thing possible; bluffed their way out and then ran for shallow water where the frigates couldn't follow. The Cyanese Air Force then went rogue and allied themselves with a third party known as the 'Independent Scottish Territories' becoming a serious threat to both the Cyanese Navy and Mustardians!

JMC003 - Participating Vessels

Vessel	Pennant	Type	Force
FGS *Lubeck*	F214	Frigate	German Navy
FGS *Spessart*	A1442	Auxillary	German Navy
FGS *U23*	S172	Submarine	German Navy
FS *Jean de Vienne*	D643	Frigate	French Navy
HDMS *Niels Juel*	F354	Corvette	Royal Danish Navy
HDMS *Peter Tordenskjold*	F356	Corvette	Royal Danish Navy
HMCS *Halifax*	FFH330	Frigate	Royal Canadian Navy
HMS *Atherstone*	M38	Minesweeper/Hunter	Royal Navy
HMS *Bulldog*	H317	Survey/Manned Auxiliaries	Royal Navy
HMS *Cattistock*	M31	Minesweeper/Hunter	Royal Navy
HMS *Chatham*	F87	Type 22 Frigate	Royal Navy
HMS *Cottesmore*	M32	Minesweeper/Hunter	Royal Navy
HMS *Glasgow*	D88	Type 42 Destroyer	Royal Navy
HMS *Gloucester*	D96	Type 42 Destroyer	Royal Navy
HMS *Grafton*	F80	Type 23 Frigate	Royal Navy
HMS *Inverness*	M102	Minesweeper/Hunter	Royal Navy
HMS *Lancaster*	F229	Type 23 Frigate	Royal Navy
HMS *Monmouth*	F235	Type 23 Frigate	Royal Navy
HMS *Quorn*	M41	Minesweeper/Hunter	Royal Navy
HMS *Richmond*	F239	Type 23 Frigate	Royal Navy
HMS *Southampton*	D90	Type 42 Destroyer	Royal Navy
HNLMS *Willem van der Zaan*	F829	Frigate	Royal Netherlands Navy
HNLMS *Zuiderkruis*	A832	Supply Ship	Royal Netherlands Navy
HNOMS *Trondheim*	F302	Frigate	Royal Norwegian Navy
HSMS *Uppland*	J17	Submarine	Royal Swedish Navy
RMAS *Salmaster*	A186	Mooring & Salvage Vessel	Royal Navy
SPS *Asturias*	F74	Frigate	Spanish Navy
SPS *Patino*	A14	Tanker	Spanish Navy
TCG *Kemalreis*	F247	Frigate	Turkish Navy
USS *Thomas S Gates*	CG51	Guided Missile Cruiser	United States Navy

Check it out!

With an earlier than usual deadline due to the Christmas holidays I have not seen any JMC listings for the 2001 calendar. The first JMC of the year is often held during late February running into early March so it may be worth checking for activity around that time.

That's it for another month. Thanks to **Nick Owen** (Ripley, Derbyshire) for his help with the column, **Oldtimer** (Portrush), **Ronald Rensen** (the Netherlands) and **Terry Ford** (Sheffield) for their HF loggings. Logs or questions to: 806 Farranseer Park, Macosquin, Coleraine, Northern Ireland BT51 4NB. Or via e-mail to **keith@coleraine.demon.co.uk** ■

World Radio History

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World Radio History

tried & tested

Yaesu VX-246
PMR 446 hand-held

On 31st December 2003 the short range business radio (SRBR) service will finally close and those using the band will move over to use PMR 446. This licence-free service can be used by anyone, business and consumer alike, and so there are a variety of radios appearing on the market for these different users.

If you want a tough, rugged radio that will stand up to dubious treatment on a building site, out in the field or factory complex then choosing a consumer unit that's built to a price for occasional, well-handled use won't work. Very soon the radio will fail, probably in more than one piece! You need to choose the right radio for the right job. Likewise, someone wishing to have a couple of radios for occasional use whilst out with the family has no need to invest in expensive, business quality radios.

Yaesu have built the VX-246 radio for the professional or business user. The radio looks and feels strong, business-like and ready for the task. Here's how we got on using them.

The first thing you notice about the Yaesu hand-helds is the weight and rugged feel to the radios. They don't have any 'bells and whistles' on them to attract consumers, they don't have colourful panels or bright colours. That's not to say they're boring or bad. They have been built to a high standard for business use and those buyers aren't looking for multi-functions or bright colours. They want a radio that will work for many hours each day, several days a week and for years on end.

Controls

The controls on the Yaesu radios are both basic and complicated as there's two levels of programming available to the user. Basic Operation involves using the Channel control (there are 16 positions as each of the 8 channels are repeated) and adjusting the volume control. Both controls are rotary and the channel change control is taller than the volume control and has 16 definite steps. You can tell which channel you are operating on by looking at the longest tab on the control and reading the numbers at the base of the switch.

Once you've chosen the channel of operation you're going to use it is just a case of pressing the **PTT** (press-to-talk) switch and away you go. When you're transmitting the LED on the top panel glows red continuously, when the radio is receiving a signal it blinks green. You can check whether there is a weak signal on the channel by pressing the **MONITOR** button on the side of the radio (just under the **PTT** switch). This disables the squelch and you can check for other signals on the channel, a quick press of the button again enables the squelch again.

The received audio is crisp and clear, which you would expect from a professional radio. It made listening to signals under difficult or noisy conditions much easier, although there are optional headsets and microphones that can be used with these radios. In fact you can have speaker mics, VOX headsets or earpiece microphones. Other optional extras are a larger NiCad battery pack (1100mAh), the DTMF pager unit and a rapid desktop charger.

The radios use a NiCad battery pack (7.2V 700mAh) and come with a drop-in overnight charger. It takes approximately 15 hours to recharge a completely discharged battery pack. You can buy optional extras like the FBA-25 battery case that allows 6 AA alkaline batteries to be used if you are likely to be in a situation where you won't be able to recharge the radios. Of course, this is the radio in its most basic mode. If you have a large number of untrained people who will need to use the radios then this mode could be very useful. If you're dealing with trained staff, then the Advanced Operation mode will give them a much more versatile piece of equipment.

The range of these radios is greater than the average consumer model, not because they're using more power but because they use a more efficient antenna. The one on these hand-helds doesn't fold away for carrying around in your pocket, nor is it a short little antenna. But when you want to be heard across a large sprawling building site or between several floors of a office construction site, then the extra range is vital.

Advanced mode

If you've already got one or two PMR-446 radios around then the first thing you may want to do is make sure they are all using the same DCS or CTCSS tone for each of the 8 channels. If your existing radios are preset you don't need to worry, because you can alter the DCS/CTCSS to channel assignments in the Yaesu radios. This was simple to do and just required a button press plus entering the two digit code for the CTCSS/DCS set you want.

When you're operating in unfamiliar circumstances there's always the worry that you will end-up moving out of range and losing contact. There's no excuse for this with the Yaesu radios thanks to their ARTS transponder system. Before you start, you just put both radios into program mode and enable the ARTS feature and from then on the radios will send test signals every 60 seconds or so to make sure they are still within range. If they drift out-of-range each radio emits a series of rapids beeps to alert the operator that contact has been lost. This is a real timesaver that I've found useful on so many occasions.

One of the truly advanced facilities available for the Yaesu is the use of a DTMF tone signalling facility. DTMF is an acronym for Dual Tone Multi Frequency and is the system used on all modern telephones to signal the dialled digits. You may well have heard the tone when using your Cellphone or if you inadvertently press a dial button whilst on the phone. You're probably wondering why anyone would want to send these tones on a PMR-446 radio! By fitting the optional FVP-25 encryption/pager unit you add a DTMF signalling facility and a voice encryption system.

With the DTMF signalling system you can assign each of the radios its own 3 digit DTMF code. Once set, the radio will only respond to a signal containing this code sequence. This is almost like having your own private on-air phone system. To call a particular person you just hit the PTT and use the keypad to type in the three digit code for the a station you want. The next stage is to store your favourite sets of DTMF tones into the ten available memories.

If you're using the radios for commercial operation you may find the

Yaesu VX-246 • Price – £175 • Available – Now • Stockists – All Yaesu dealerships

World Radio History

voice encryption system particularly handy. This facility is included with the FVP-25 module and, when activated makes the speech totally undecipherable unless you have the FVP-25 decoder. This was really effective and makes the Yaesu's particularly powerful contenders in the commercial market place.

Who's likely to use them?

If a day spent at my local sports centre is anything to go by, then it's places like that who need radios like this! Watching staff move from one place to another trying to find other personnel, having to go to the main reception to have a tannoy message relayed or just the general movement of staff made it obvious how the use of business radios can transform the working day. If you don't need to wander around a complex looking for staff or customers, if staff can be moved efficiently around the building so you don't end up with a surplus near the swimming pool and a deficit on the all weather turf outside then it makes sense for staff to carry radios.

Premises like factories, sports complexes, security sites, schools and office blocks all rely on communication to get jobs done. But they also need a radio that's reliable for long periods, powerful enough to reach all around the complex and not fail after a few hundred yards and rugged enough to cope with the occasional bit of clumsy handling! Extra facilities like the CTCSS tones, DTMF paging and voice encryption all goes to help keep your signals heard by your staff and helps prevent picking up of messages not intended for your staff.

The debate on whether business users and consumers will be able to operate side by side still hasn't been answered, there are many business still using their SRBR equipment (and they will continue to do so until the deadline). But those investing in new equipment or upgrading existing equipment will all move onto the PMR 466 band. Hopefully, even in busy areas, there won't be too much interference although users may not always be able to transmit exactly when they want due to someone else using the channel nearby. The next few years will see more and more users moving onto PMR 446 and so high quality radios like the Yaesu VX-246 will be in demand.

Around the world

Another important consideration is that these radios can now be used in several other countries around the world. If you are sending teams of workers abroad frequently then being able to take PMR 446 radios with you ensures communication between employees wherever the job may be.

At the present time PMR 446 radios can be used in the following countries:

Austria	France	Ireland	Portugal
Belgium	Germany	Liechtenstein	Spain
Denmark	Greece	Luxembourg	Sweden
Finland	Iceland	Netherlands	Czech Republic

Many thanks to **Yaesu UK Ltd., Unit 12, Sun Valley Business Park, Winnall Close, Winchester, Hants SO23 0LB. Tel: 01962 866667 www.yaesu.co.uk** for the loan of these radios, they were a pleasure to use. ■

A radio designed to a high standard for the professional or business user, excellent facilites.

World Radio History

radio active news

from the world of communications

Leicester Show

The 30th National Amateur Radio, Electronics and Computer Exhibition at Donington Park will be held on Friday 21st and Saturday 22nd September. There will approximately 120 traders in attendance with something like 6000 visitors expected over the two days.
www.lars.org.uk

New Kenwood Portable Transceiver/ Scanner

Kenwood UK is very pleased to confirm the initial information issued at the recent Dayton show, where visitors saw the first Kenwood amateur VHF/UHF portable transceiver to feature a built-in full range Scanner.

The sample shown at Dayton was a prototype of the American-market triple band radio, which includes the 220MHz band not available in Europe. The UK/European version doesn't cover this band for TX purposes and therefore will have a different model designation - it will be called the TH-F7E.

Basic details are:

* Dual band TX 144/430MHz.
* Receives 2 frequencies simultaneously, even on the same band.
* 0.1 ~ 1300MHz RX (on "B" band).
* FM, FM-W, FM-N, AM plus SSB/CW receive.
* Internal VOX.
* Internal bar antenna for AM broadcast RX.
* 1200/9600 packet ready (with external TNC).
* 434 memory channels
* 16-key pad plus multi-scroll key
* Lithium-Ion battery as standard (7.4V/1550mAh) giving 5W output.
* Special charging circuit for simultaneous charging/operating.
* MIL-STD 810 C/D/E for vibration, shock, humidity and light rain.
* Automatic Simplex Checker.
* Windows Memory Management software (free download from Kenwood Website).

The price is not yet fixed, but is expected to be under £300. Deliveries commence in the autumn.

Kenwood Electronics UK Ltd., Kenwood House, Dwight Road, Watford, Hertfordshire WD1 8EB. Tel: 01923 655284

YOU MAY BE AN ENGINEER...

If the thought that a CD could refer to finance or music never enters your mind!

Back on the air

GB3WX, the 6m repeater north-east of Wincanton, is back on the air. It was switched on again at 11.25am on Saturday 7th April. After much modification to the logic controller, the DTMF and data bit stream circuits having been disabled and isolated.

www.twxrg.org.uk

Broadcasts in English

The summer 2001 edition of broadcasts in English is now available from the British DX Club. It was compiled by BDXC-UK editor Tony Rogers and lists international broadcasts in English on short wave and medium wave for the Summer 2001 schedule period. It is in time order throughout and covers all target areas. Transmitter sites are included where know. A comprehensive guide to DX and media programmes is also included along with WorldSpace and WRN Euromax schedules.

Copies of this 40 page booklet are available for £2 (payable to BDXC) or $3 US for Europe.

British DX Club, 126 Bargery Road, Catford, London SE6 2LR.

Test & Measurement

Wavetek has introduced a line of more than 60 versatile, easy-to-use test and measurement products designed for shop, too bench, boat, home or pocket. The Meterman line includes everything from rugged digital multimeters to basic and speciality testers for lighting, electrical and electronics testing. Clamp-on ammeters offer precise electrical readings, while component testers and speciality test tools are the right match for electronics troubleshooting.

www.metermantesttools.com

Skywaves

The British FM & TV Circle has just launched its new streaming audio service via the Internet, called Skywaves Radio. This new service which broadcasts programmes made for broadcast band DXers, by DXers.

The club is aimed at enthusiasts, who have an interest in FM, TV, DAB or satellite DXing.

For readers who do not have access to the Internet, a subscription for the printed version of Skywaves can be taken out. Sample copies available for £1 plus and SAE

Skywaves, 27 Barton Road, Tilehurst, Reading RG31 5NJ.
www.skywaves.co.uk

Marconi museum

Patricia Hewitt, the e-Minister, visited Grey Coat Hospital secondary school to launch the interactive online Marconi Museum on May 3rd. The website launch coincides with the 100 year anniversary of the world's first transatlantic wireless transmission by Marconi and captures the extraordinary achievements and the innovative tradition of Marconi, the pioneer of wireless communications.

www.marconicalling.com is a comprehensive site featuring 10,000web pages containing an historic collection of 500 pieces of ephemera, 426 photographs, 33 sound clips and 10 film clips. It caters for the interest of all ages including students, historians, researchers and wireless enthusiasts.

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Radio Specialists are 'Dreaming' of Success

For the second year running, employees of radio manufacturers Icom UK, are taking part in the Formula One 'Dream Team' Contest, organised by *The Sun* newspaper. They are also joined by David Wilkins from Kenwood UK, Mark Francis from Waters & Stanton PLC, Chris Taylor of Martin Lynch & Son, Ailsa Turbett from Yaesu UK, and several other interested parties. Event organiser Mark Jarvis, Amateur Radio Product Specialist at Icom says, "*We ran the contest for the first time last year, purely for a bit of fun, and also because we have a number of motor sport fans within the company. It proved so popular that we've decided to go it again this year*".

The contest runs over the course of this year's F1 World Championship, with the final race coming from Japan on 14th October.

The current positions are:

1st: Paul Position - Icom
4th: Medical Fly Boys - Icom Marine Sales
17th: Gibbering Wrecks - Ailsa at yaesu
20th: The Watford Speedsters - David Wilkins at Kenwood
21st: The Taylors - Chris Taylor from ML&S
23rd: Marks' Mighty Machine - Mark Jarvis at Icom
25th: Memories of Mansell - Mark from W&S

We'll keep you posted to see how the various team do and see if some can improve as the season progresses!

Coming Soon!

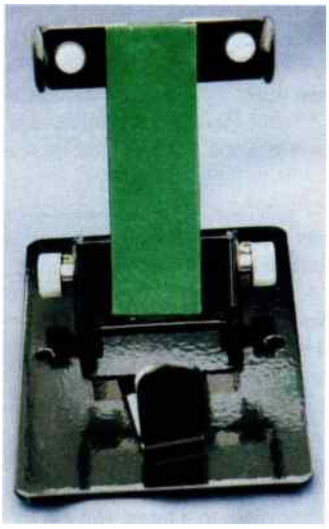
Coming soon from Alinco is the DJ-X3, a wideband communications receiver. It will have the 8.33kHz steps for airband as well as 700 memory channels and an audio descrambler. Covering 100kHz to 1300MHz with modes AM, FM and WFM, it measures just 56 x 102 x 23mm. It's expected to retail for £129.95 and full details are available from:

Nevada,
Unit 1 Fitzherbert Spur,
Farlington,
Portsmouth PO6 1TT.
Tel: 023 9231 3090.
www.nevada.co.uk

Radio Rally

The Huntingdonshire Amateur Radio Rally will be on August Bank Holiday Monday (27th August) at Emulf Community School, St Neots, Cambridgeshire. Doors open 10am to 2pm and admission is £1.50. It features a hall and car boot hard standing areas and there will be hot and cold refreshments available.

Peter 01480 457347 between 6 and 10pm please.



Tester stand

New from SSE, who are well-known for their range of hand-held radio stands, is the adjustable multimeter tester stand. It has adjustable stainless steel side arms and front stop as well as an adjustable back support so you can get the best viewing angle. For safety it has an earth static point. It comes in two different sizes and is suitable for holding most makes of hand-held meters.

Solid State Electronics (UK), 6 The Orchard, Bassett Green Village, Southampton So16 3NA. Tel: 023 8076 9598. www.ssejim.co.uk

Short wave in Cuba

Radio Havana Cuba is the short wave radio station of Cuba. It broadcasts in nine languages to latin America, the Carribbean, North America and Europe transmitting 30 hours of programming a day.

You can expect to hear news, on the hour and half hour, Cuba Today - interviews, stories and reports about Cuban events, Time Out - their sports programme, DXers Unlimited that is heard on Tuesdays and Saturdays and Cuban music.

They broadcast in English to Europe from 2030-2130 on 13.660 and 13.750MHz and from 0500-0700 on 9.830MHz.

Radio Havana Cuba, PO Box 6240, Havana, Cuba.

Internet Linking

Internet repeater linking represents an important element in the future of amateur radio. With a hand-held transceiver it will be possible to connect to any repeater in the world by punching in a 4 digit number.

Ian Able will take listeners through the process, give ideas and references to websites, where necessary software can be downloaded, followed by an interactive Q&A session.

Intecnet2001 is presented monthly by the South African Radio League and can be heard on 3.215MHz in the 90m band. This transmission is sponsored by Sentech.

www.qsl.net/g3zhi

Lighthouses

The International Lighthouse/Lightship weekend will take place from 0001UTC on Saturday 18th August until 2359UTC on Sunday 19th August.

This event is not a contest, each station decides how they will operate their station with regards to modes and bands.

YOU MAY BE AN ENGINEER...

You have a habit of destroying things in order to see how they work!

North Kent RS

The North Kent Radio Society meets on the 1st and 3rd Tuesday at the Bexleyheath Pop In Parlour, Graham Road (opposite Adsa) at 8pm. For the latest details, contact:

Dave G4YIB on 01322 330830 or e-mail dave@quartslab.com

Horndean club

The Horndean and District ARC meet on the 1st and 4th Tuesdays at Lovedean Village Hall, 160 Lovedean Lane, Lovedean. Meetings start at 7.30pm.

www.hdarc.cwc.net

Red Arrow Dates

August

1st	Broadstairs & Taunton
4th	Windermere & Dumfries
5th	Kielder Forest
15th	Cromer & Weymouth
16th	Dawlish & Eastbourne
17th	Bournemouth & Eastbourne
18th	RAF Valley & Eastbourne
19th	Eastbourne & Whitby

www.raf.mod.uk/reds/dates.html

World Radio History

Streetwise!

I am not a morning person. So why on earth I ended up doing a job that often necessitated early starts, or even worse late nights, I just don't know. Sometimes very early starts are inevitable. If you have to creep underneath a target's car and attach a tracking device, well you can't be doing it in broad daylight can you?

What is a tracking device?

A tracking device is a gadget that will send an indication as to the location of the vehicle to which it's attached and whether that vehicle or vessel is stationary or mobile.

There are a number of different types of these units. The fancy ones are gadgets that have to be fitted by a technical unit and involve a fair bit of work on the vehicle. These units incorporate a GPS receiver hooked up to a cellphone transmitter all of which then run from the vehicle's own power supply. the car's normal radio antenna is utilised.

As you can imagine they do take time to fit, usually a couple of hours or so. It's not the done thing to breeze up to a target and ask to look into his vehicle, so more underhand methods have to be utilised. Should the man have his car booked in for a service, then perhaps the garage can be coerced into letting the vehicle go for an hour or two. Often more direct action is required and the vehicle will be 'stolen' only to be found abandoned a few miles away later that day. The owner is pleased and amidst the universal rejoicing, the team are now able to look at the location of the motor on the fancy computer display.

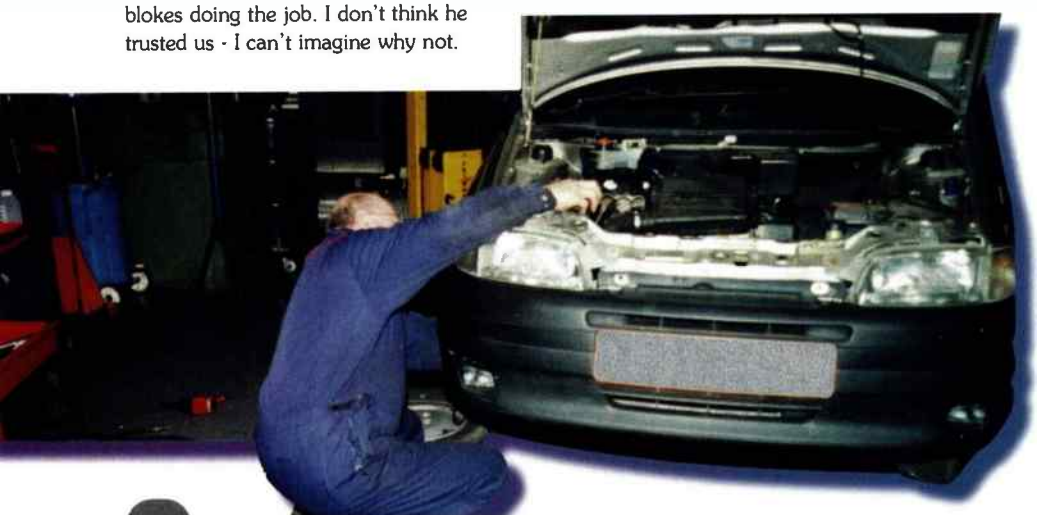
These gadgets have the advantage of being manpower efficient. The disadvantages, however, cannot be ignored. On one occasion that I remember, the boss wanted to have a unit fitted to a target's car but for some reason or other the local police force were involved. Normally, our own technicians would have fitted the unit to the vehicle but on this occasion the local chief constable insisted on his own blokes doing the job. I don't think he trusted us - I can't imagine why not.

Now, this particular bunch had a bit of history in the lash up department. On one occasion they had placed a TV transmitter and camera in a van to watch a suspect's house, but they had got the transmitter running on a normal UHF TV channel. When matey got home and turned on his set.... there was his front door and his neighbour walking the dog! More interesting than *Coronation Street*, but less dialogue. Another time they placed a similar rig watching an office, but this time they had learned their lesson so they put the transmitter right in the 70cm amateur band. Result: local amateur repeater wiped out together with a mould repeater and the local council's own radio system suffered terrible interference. Eventually they were tracked down and the unit was taken off air.

So we awaited their foray into tracking unit installation with bated breath. We were not to be disappointed. The target's car was 'acquired' and taken to a garage where the deed was to be done. They took a bit longer than normal so I'm told. When the target was reunited with his motor, the results can only be described as.... spectacular. The bad man turned on the engine, it started fine but so did the windscreen wipers. When he tried to turn them off the brake lights came on.... and stayed on. When he turned on the indicators the heater fan went on and off .. on and off.

Now this guy wasn't daft. He knew straight away that his car had been got at and drove straight to the police headquarters building to complain. The 'technicians' knew that their number was up so they put in a phone call and Mr. Target was kept waiting an inordinately long time to make his complaint enabling our heroes to take the car to a lock up in the police compound and remove the unit, then replace the car in the car park before he returned. A close one for them. If you are reading this, YOU KNOW WHO YOU ARE !! I heard that the target reckoned that the car was never the same again.

The other difficulty is that these gadgets have to be removed carefully using the same procedure as before. You may recall that Mr. Gerry Adams the Sinn Fein fellow made a big fuss about his boys finding one in his car. That is why the 'lump' or 'tango' is still a popular choice.



Early morning start

Which is why, at 4am on a drizzly morning, I was underneath a parked vehicle in a side street wielding the unit. With a tiny torch in my mouth illuminating the underside of the vehicle I was trying to find a suitable place to clamp it to using its powerful magnets. It can't be placed where it will get too hot and we want it in a location where the signal will get out. Job done, I scramble out rather damply and head off on foot to a vehicle parked up about five hundred yards away in another street.

I fired up a hand-held AOR800 scanner (very old) and found the unit on **81.4876MHz**

World Radio History

SSB. The scanner, however, could resolve the signal enough for me and then I radioed the technical car that I could hear it.... so could they. Hooked up to their receiver was a Datong DF unit. Instead of the usual four antennas mounted on the roof, which would have been a trifle indiscreet, this old type Ford Granada had a roof rack which in fact was the antenna system. The Datong unit gives a visual display of the direction of the received signal relative to the vehicle.

It's not as precise as the GPS based unit but it is easier to deploy and recover. The transmitter makes a kind of grumbling sound which is hard to describe, but once you have heard it you will always remember the noise. From the type of noise being made you can tell whether the unit is moving or stationary. All useful stuff. Then once the target vehicle is 'lumped up' then it's game on for a rally drive through the roads and byways with the technical car and the surveillance team all in touch by car to car radio following off the vehicle.

Bad driving or blocking tactics?

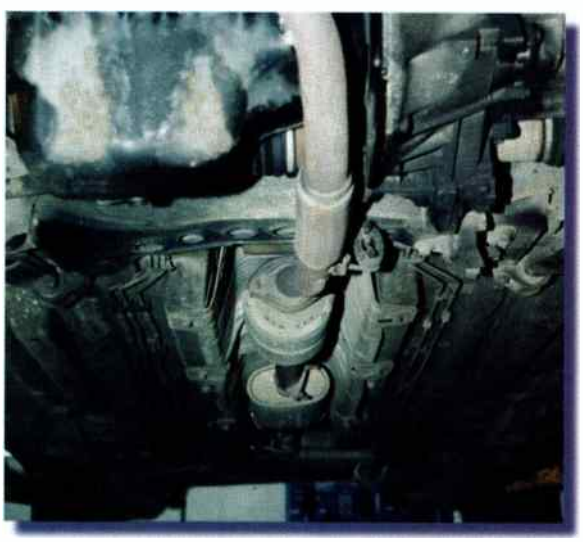
You may see such teams tearing up the roads on occasions. If you are ever waiting to enter a roundabout and a car drives almost all the way round the roundabout and then stops, effectively blocking the roundabout just before one of the exits this could be part of a team.

You'll know if it is because as all the other motorists are getting irate at being held up and sounding their horns etc., the driver will calmly sit there as if he has not heard a thing. Then you will see about another three or more vehicles tear on to the roundabout and scream off at another exit. The blocking car will drive off following them at the end of the queue, the 'tail end charlie' position. Don't try to keep up with them. Their boss will be shouting at them to 'make ground' as they are likely to be in a big hurry to get somewhere else quickly.

High speed chases

The 'lumps' are, of course, occasionally discovered and that's when targets with a sense of humour can get their own back. Lumps have been thrown onto dustcarts which results in a whole team ending up at the council tip. They have been bunged under police cars and once a unit was clamped to a high speed Intercity train which, if Norris McWhirter had been around, could have got the whole team some sort of Guinness World record for high speed multi vehicle driving. It was quite spectacular so I heard.

In the undercover world of covert ops you expect to collect some lumps and bumps, but they're not always what they seem! Jerry Wright explains.....



One more thing about the GPS/GSM tracking units that I would be keen to know is how they stop the diddly dum noise coming over the normal car broadcast radio and stereo because I haven't got a clue how they stop that.

Radio comms

Simplex radio is, of course, essential. Whether person to person or car to car or any combination thereof, the job would be totally impossible without it. Sometimes it can cause embarrassment. I was in a vehicle when we were at a slack time on a job, in the pre radio encryption days. It was about 10am. The boss, who had acquired himself the best car, a nice new 5 series BMW, called that he wanted a meeting with us at a layby about ten miles from where we were.

We had just pulled into the parking space in front of a large hotel as I needed to use the lav. The boss called up and Tom replied, "*OK boss we'll be about half an hour. We're just at the Castle Hotel in Windsor. Old Jerry wants to use the bog.*" I wandered into reception where two ladies were cleaning the foyer. The piped music was playing Radio 2. One of the gels shouted, "*Hi Jerry seeing as you're not booking in here the gents is down there, first on the right*". The bloody transmission had come up on the hotels piped radio system. After using the facility, I slunk out of the place like a bad payer. It was all rather embarrassing and not very covert, but these things happen and the boss was waiting, so we hurried off to see what our next awkward and inconvenient task might be. We were seldom disappointed. ■

Thanks to Al Clutches (Poole) 01202 625625 for their help with photographs.

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Setting up your first CB station

Malcolm Hoskins

This article is based on my own experience of CB over the last 10 years. One thing I have discovered during this time is that good advice, especially to begin with, is not easy to come by. True, there is an abundance of advice about, as you will soon discover, but in the CB world, to be honest, there is a lot of bad practice used.

One example you will soon hear about is that to get out and be heard you need a 'burner' or amplifier. Apart from being highly illegal and a downright nuisance to others it is a misconception. You can make contacts all over the world using half a watt of power if the conditions are right and, most importantly, if you set your station up using good equipment and have used the correct practices to put it together.

So, if you are just about to start out in CB radio, this is written to give food for thought on setting up a good radio station and to get the best out of it before you spend too much money.

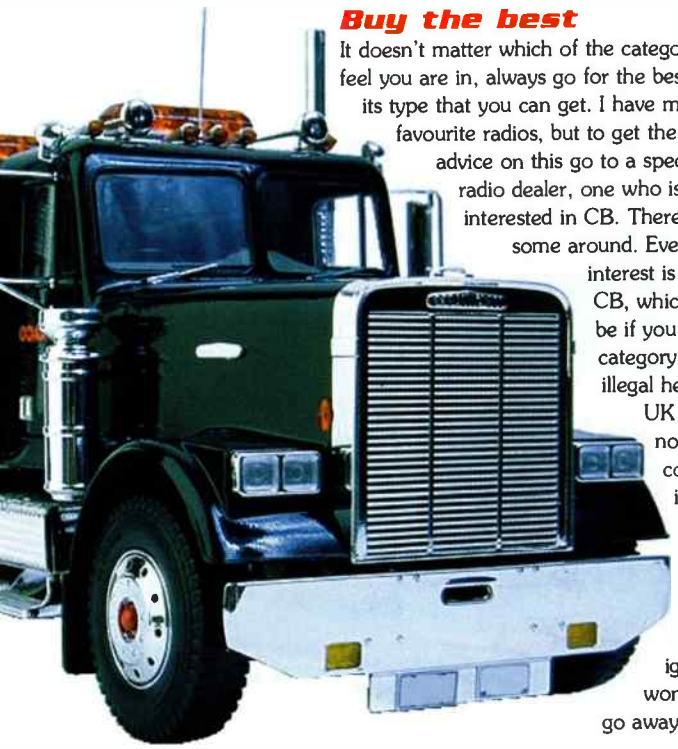
To begin with there are different reasons why people decide to use CB as a form of communication. I have put these into three main categories.

1: Business use, eg taxi firms.

2: People who just want to talk to their friends, perhaps between car to car or car to home.

3: Those who have a fascination with radio and the way it works, along with a little DXing.

Which of these categories you come into could be a deciding factor in what sort of radio you will buy, but not in how you set up the station. For example, if you come under category number 1, a pretty basic, low-priced set will probably be quite adequate. If you come into category 2, a bit more up-market radio with a few more features may be what you need. and if you fit into the last category, you will need the best set that you can possibly afford.



Buy the best

It doesn't matter which of the categories you feel you are in, always go for the best radio of its type that you can get. I have my own favourite radios, but to get the best advice on this go to a specialist CB radio dealer, one who is really interested in CB. There are still some around. Even if your interest is in SSB CB, which it may be if you fit into category 3 (this is illegal here in the UK and I am not condoning its use, but it is where a lot of the interest lies and ignoring it won't make it go away) go for the best you can buy. Be very careful purchasing second-hand sets privately, there are a lot of radio around that are very dodgy to say the least and you could be throwing your money away.

Of course, before buying any radio you have to decide where it is going to be used, ie at home, which means either having a 'homebase' set with an in-built power supply or using a mobile set and buying a purpose made transformer that is compatible to the radio.

If it is to be used in the car you will need a mobile set that usually comes supplied with fitting brackets. If you are fitting the rig to a lorry, which generally uses 24V systems, you will need to fit a voltage reducer to supply power to the radio.

Often forgotten items

There are two other items needed to set up your station, which are of equal importance to your radio and a lot of people ignore, or don't realise, just how vital these are to the success of a good station. They are the antenna and the much ignored coaxial cable. It's surprising how many newcomers, and not so newcomers, to CB don't appreciate the importance of positioning the antenna and the condition of the coaxial cable.

What can happen is that the new CBer goes off to the shop to buy themselves a nice new radio, and when they get home, out comes an old car antenna that they somehow connect to a bit of TV coax, they then hang the antenna out of the window and switch on - just to see if it works OK and that they can hear what's going on. Result? Disappointment, and worse if they try to transmit using this kind of lash up.

So, as with your radio, you need and where you will station you will need a need to get it as high as you away from buildings and chimney of you house is a to obtain planning for this, so check with want an antenna to be small ones. This may be permission and can't biggest and best legally buy. A tallest. again, favourites, so get makes by asking your think about what type of antenna be able to fix it. If it's a homebase homebase antenna and you will possibly can, preferably on a mast other obstacles, but obviously the good second best. You may need permission from the Council them first. Some CBers don't too conspicuous, so they buy alright if you need planning get it, but always try to get the antenna that you can five eighths wave is the operators have their advice on different dealer or reading articles in CB books or in magazines. Remember, the taller your antenna and the higher it is the better. This will make a huge difference between being a poor station and a good one.

The mobile option

Choosing a mobile antenna for your car, in principle, is the same as for a homebase. but in practice it's quite different. First, you have to get a mobile antenna and there are a lot of choose from. Again, get the largest you can put up with stuck on top of your car for best results. But you have to be practical. Ideally the best place to mount

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the antenna is the roof of the car, bang in the middle with a hole drilled through to take a stud mount. but you may not want to spoil the roof of your nice, shiny vehicle, so a magmount will do.

Next, and of equal significance, comes the coaxial cable and its connections. Go for the best you can afford, again. Personally I use RG213. You can tell good coax by looking at the braiding, it should

be of high density. Ask your dealer for advice. If you don't ask, they usually sell you the cheap stuff, and it does make a difference. You then need to buy quality coaxial plugs and if you can't do the soldering yourself, then ask your dealer to solder them on for you. The good, knowledgeable dealer will not only sell CBs, but repairs them and will help you with soldering plugs. RG213 is OK for homebase use but absolutely useless in your car as you will soon realise when you see it. So something like RG58 is more suitable. Usually you can buy ready-made up lengths with plugs already fitted for the car.

Putting it together

All of this advice is to enable you to get the best results from your radio station. However, circumstances vary in more ways than one and satisfactory results can be obtained from using smaller antennas and different, although still suitable, coax. The important thing is to make sure everything is put together properly.

OK, off to find the nearest good dealer or send for a catalogue from a mail order company, addresses can be found in this magazine and away you go.

Not it all has to be fitted. You have to find a suitable place to put the radio at home (the shack) or somewhere in the car, the antenna has to be mounted, the SWR has to be checked and the coax has to be correctly secured and tidied. ■

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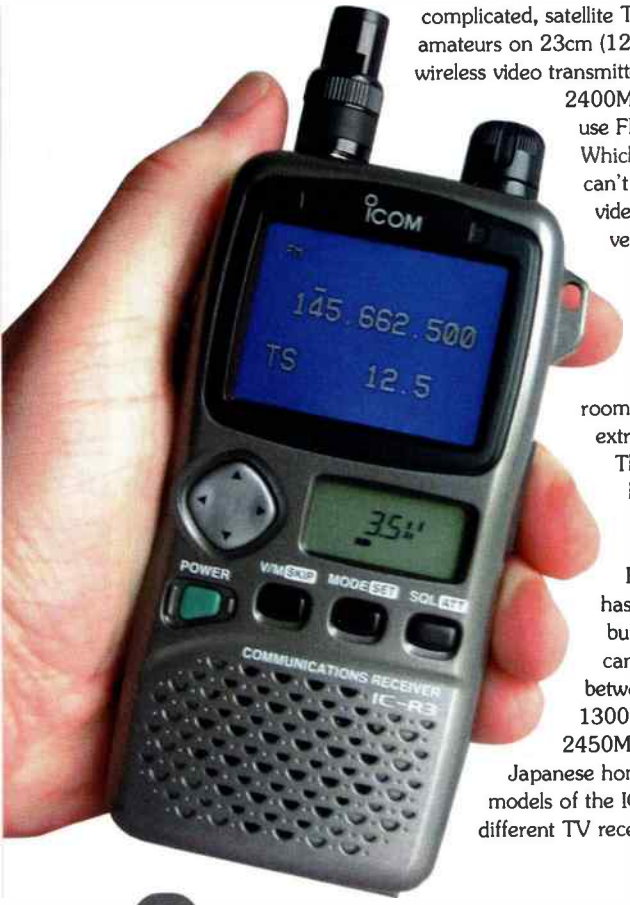
scanners

Bill Robertson brings you a review of Icom's latest hot little baby, the IC-R3

It's been demonstrated at shows, advertised in the press, and it's now finally available in the UK. It's the IC-R3, a hand-held scanner 'with a difference'; it's got a built-in colour liquid crystal display for off-air TV monitoring and display. Not just broadcast TV either - with a coverage up to 2450MHz it can tune into ham radio TV transmissions on 1249MHz, cordless video 'baby alarm' transmitters on 2400MHz, 'eye in the sky' helicopter-mounted cameras, wireless video surveillance systems....by now you're probably getting the idea! It's rather more than a scanner with a simple portable TV built in. Icom UK call it their 'hand-held audio-visual receiver'. But don't think the video monitor facility is the only thing you'd use the scanner for - it's a powerful wide-band receiver in its own right as well.

Coverage and TV modes

The hand-held receiver, which at 61 (W) x 120 (H) x 33mm (D) is actually smaller than the already small hand-held Casio TV-600 colour LCD TV I also use, covers the wide frequency range of 495kHz to 2450.095MHz in AM, FM and WFM modes. It'll also tune into AM broadcast TV transmissions above 30MHz in the UK, these using the 'PAL' (Phase Alternate Line) standard. This is the analogue TV standard which we've been receiving all these years from our local TV transmitter, and more recently from the RF lead to our TV from a video recorder or digital TV receiver. The sound is transmitted on an FM sub-carrier (the sub-carrier offset varies between different European countries) and it'll receive this as well alongside the broadcast picture you're viewing.



Just to make life a little more complicated, satellite TV, radio amateurs on 23cm (1240-1315MHz), wireless video transmitters around 2400MHz and so on use FM TV, not AM. Which means you can't receive the video, at least not very well, using a standard AM TV receiver like the one you have in your living room, without some extra clever circuitry. That is why we have an extra 'set-top' box to receive these. But the IC-R3 has FM TV receive built in, which you can activate between 900-1300MHz and 2250-2450MHz. The US and Japanese home-market models of the IC-R3 have a different TV receive standard, NTSC, fitted, this is incompatible with UK PAL. So be careful where you buy your IC-R3 from.

Displays

The large colour LCD is a 50mm active TFT screen, the type you'd find on 'top spec' portable PCs and hand-held TVs, which doesn't need a backlight - it actually transmits light from it for easy viewing. Just below the colour LCD is a small monochrome LCD, it's a smaller version of the type you'd normally see on a scanner.

The small monochrome LCD gives you most of the usual things you'd again find on a scanner display, like the tuned frequency, memory channel, bank and mode indications and a bargraph S-meter to give you an idea of the relative signal strength of the transmission you're listening to. But if that's not enough, you can also bring the larger colour LCD into use to give you a larger and more colourful text display of the frequency, mode, and so on.

In fact you can choose any one of eight different background colours for the text display. It's graphic facilities aren't wasted, because it can also display a few more things, as well as giving a more comprehensive display to set up your tuning step sizes and so on which the smaller LCD can't display. Here are a few examples:

Each memory channel can be assigned a short 6 character alphanumeric 'tag' to remind you of what you've programmed into that channel, which can be displayed on the colour LCD.

The LCD can also used to display a bandscope, with a span of up to 1MHz, the strength of received signals being indicated by the height of the appropriate bar. Whilst the set stays totally silent while it's in bandscope 'search' mode, you can move a small pointer along to select a wanted signal indication along the displayed bargraph and press a button to immediately listen to that frequency.

A 'direction finding' display mode is also available, where the display again gives a bargraph of received signal strength but with a horizontal axis of time rather than frequency, although I'd suggest a simple 'real-time' S-meter reading is just as useful for direction finding.

Rocker pad

To make the receiver its compact size, Icom have replaced the usual keypad you'd use on a scanner for frequency entry and the like with just three push buttons and a four-position rocker pad. Together with

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the click-step rotary knob on the top panel and a side mounted 'function' bar, these controls let you do all the usual things like select a frequency, program memory channels, adjust the channel step rate and so on. A further recessed green push button is used as the power switch, holding this down for a second or so acts as an on/off toggle switch.

Power

As for the power supply itself, Icom supply a 'right bang up to date' high capacity 1600mAh Lithium Ion 6V battery pack, which Icom say will give you up to 27 hours operation time. Note the words 'up to', more of this later! In case you get caught short with a flat battery pack, you can very usefully also pop in a set of 3 alkaline AA cells. My review sample came supplied with both the Lithium Ion pack and a set of AA NiCads, plus a wall AC charger which plugs into the side of the IC-R3 - it takes around 15 hours for a full recharge.

Bands and memories

The receiver's wide frequency coverage is divided up into 11 frequency bands, which the set cycles through using the left and right rocker pad buttons. These bands are arranged as:

AM Broadcast: 0.495-1.620MHz
HF: 1.625-29.995MHz
50MHz: 30.0-75.995MHz
FM Broadcast: 76.0-107.995MHz
VHF Aircraft: 108.0-135.995MHz
144MHz: 136.0-255.095MHz
300MHz: 255.1-382.095MHz
400MHz: 382.1-769.795MHz
800MHz: 769.8-960.095MHz
1200MHz: 960.1-1399.995MHz
2400MHz/TV: 1400.0-245.095MHz/UHF TV channels.

To tune to the frequency you're after, you use the rocker pad to get somewhere near where you want to tune to, then use the top rotary control to 'fine tune'. Pressing the side-mounted function button speeds the tuning rate up to 1MHz steps to help you get there somewhat quicker.

A useful extra touch is that you can pre-set the receiver to automatically detect when the tuning knob is being rotated quickly, this automatically increasing the step rate for you. You can also pre-set different tuning steps for each band (with the exception of the AM broadcast band which is fixed at 9kHz steps) to either 5, 6.25, 10, 12.5, 15, 20, 25, 30, 50 and 100kHz. No 8.33kHz steps for civil airband though.

To search for new frequencies to listen to, the IC-R3 has no less than 25 programmed band search ranges available, each of which you can program with a pair of lower/upper frequencies for the set to search between, halting when the squelch raises. 400 memory channels arranged into eight banks of 50 channels each are available to store your favourite frequencies in, these can be tagged to be included or skipped in subsequent memory scans. There are also up to 400 'pass' channels available (these using the 400 available memory channels) which can store frequencies to be automatically skipped in VFO 'search' mode.

In use

The manual told me (good job I read it first!) that the up/down positions of the rocker bar are used to adjust the receive volume. Also pressing the 'Sql' button while I rotated the top tuning knob varied the squelch level, to one of nine pre-set steps or an 'Auto' level adjustment where the set itself decides when to open the squelch. Not automatically obvious, though no doubt I'd have found out sooner or later.

On first switching on. I found the Lithium Ion battery already had a good level of charge in it, which let me to have an initial 'play' on my trip home by train from the 'Ally Pally Rally' where I'd picked the set up. It certainly gave me a more interesting journey back! That evening I gave it an overnight charge, ready for a full day's listening starting the following morning.

I found it a little hard at first to get used to the fairly tedious method of getting to the frequency I wanted to listen to - I'd have preferred a direct frequency entry keypad. Likewise trying to 'alpha tag' the memories involved cycling through the various letters and positions using the rocker switch. However, Icom do have an optional remote PC interface available where you can remotely upload and download frequencies to and from the receiver, this I believe could be a very useful add-on for the serious IC-R3 user.

The IC-R3 is supplied with an extendable telescopic whip antenna, which is rather more efficient than a ubiquitous 'rubber duck' in that you can either just extend it fully, or to the length needed to make it approximately resonant as a quarter wave on the frequency range you're interested in. A belt clip and a soft pouch are supplied as carrying aids, although in practice I didn't use these, preferring to slip the set into my jacket inner pocket instead, often with an earphone plugged in for private listening.

I found the receive sensitivity typically on a par with several other hand-held scanners, although not quite up to that of the 'top of the range' sets from AOR and Yupiteru, although the efficient antenna helped here. As with may other scanners, connecting a rooftop antenna brought in a few problems from strong signal overload, but Icom have thoughtfully provided a four-step attenuator to help here. This I found especially useful on HF for short wave broadcast band reception. What a pity it didn't have SSB receive to listen into utility stations.

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The telescopic whip had a double hinge at the base, which at first I thought this was a little strange. But this arrangement let me 'double back' the retracted antenna so it was alongside the case, rather than sticking upwards and prodding me in the chin or neck while I carried it this way - very handy for 'close in' covert listening! It also let the receiver be placed flat on a table top for monitoring, the whip angled so that it was vertical. Unfortunately the audio amplifier gave a 'thump' every time the squelch opened and closed - very noticeable with a hi-fi style earphone (eg with good bass response) plugged in.

I mainly used the IC-R3 in memory bank scan mode - it could either scan any one bank or all eight banks, but I did also have a go at TV reception. Broadcast TV was fine, although I found the Lithium Ion battery pack only lasted about an hour and a half in this mode, likewise when I used the main TFT colour LCD in normal listening or scanning mode. Using three fully charged NiCads gave me less than 30 minutes worth of viewing before they went flat. Whenever the colour LCD in switched into use, the smaller LCD shows the battery voltage to the nearest half volt together with a small battery bargraph indicator - handy to warn you of impeding demise of battery charge! TV sound reception was fine using the 'AM TV' channels, but switching the colour LCD in to view the picture on weak signals brought up some 'mush' on the sound until I moved the antenna to get a stronger signal.

Cordless 2.4GHz domestic video transmitters commonly use one of four frequencies, 2400MHz, 2427MHz, 2454MHz and 2481MHz, so the IC-R3 can tune to two of these. In practice, I found the monitoring range very restricted, moving just a few metres away from a transmitter with its built-in antenna caused the signal to fade out on the R3, whereas the matching domestic video receiver again with its built-in antenna could receive the same transmitter several tens of metres away.

I had no luck at all on the amateur 23cm band with TV repeaters, as virtually all of these in the UK transmit in the 1308 - 1316MHz range, the IC-R3 stops at 1300MHz. However, a test using the R3 connected to a loop Yagi and aimed at one of my friendly local ATV buffs (who pointed his Yagi at me) gave me a watchable signal on the repeater input frequency of 1249MHz. Switching an in-line 23cm pre-amp in and out made a vast difference in the readability, or viewability, confirming the R3 to be somewhat 'deaf' on FM TV.

Most serious enthusiasts tuning into the 1300MHz or 2400MHz range would, in any case, undoubtedly have a mast-head pre-amp system for home-based monitoring,- and the R3 has a video output which you can connect to a larger video monitor. But all this does defeat the object of having a small portable receiver!

More usefully though, the TV video can be 'inverted' positive/negative - not all transmissions use the same and this saves viewing what appears to be a 'scrambled' transmission. Also, the sound offset can be varied slightly to suit different offsets - potentially useful for DX TV reception on VHF and UHF when used with a suitable antenna and possibly a VHF/UHF preamp.

Conclusions

Icom have broken new ground with the IC-R3, the incorporation of a built-in AM and FM TV facility being a 'world first' in a wide-range hand-held receiver at a consumer price. I found it was a reasonable 'all-rounder' for listening and broadcast TV reception, although somewhat insensitive above 1GHz for the 'interesting' TV things that you could find up there.

Our thanks go to Icom UK (Tel. 01227 741741) for the loan of the review receiver. The IC-R3 is available from all authorised Icom dealers in the UK at a current price of around £449.

Half a dozen things you could be tempted to use the IC-R3 for

- Wide-band scanning
- Listening in to virtually anything
- Watching Broadcast TV
- Watching Formula 1 car camera links while at the racetrack
- Tuning into your wireless video 'baby watcher' system
- Watching 'Eye in the Sky' video transmissions

Publisher's note; Please be aware that unless you're receiving authorised broadcast transmission or certain hobby radio transmissions, depending on your country's laws you must normally have prior permission to be able to tune in to other stations. The RA's free RA169 *'Receive Only Scanners Etc.'* information sheet has more information on what you can and can't listen to in the UK. ■

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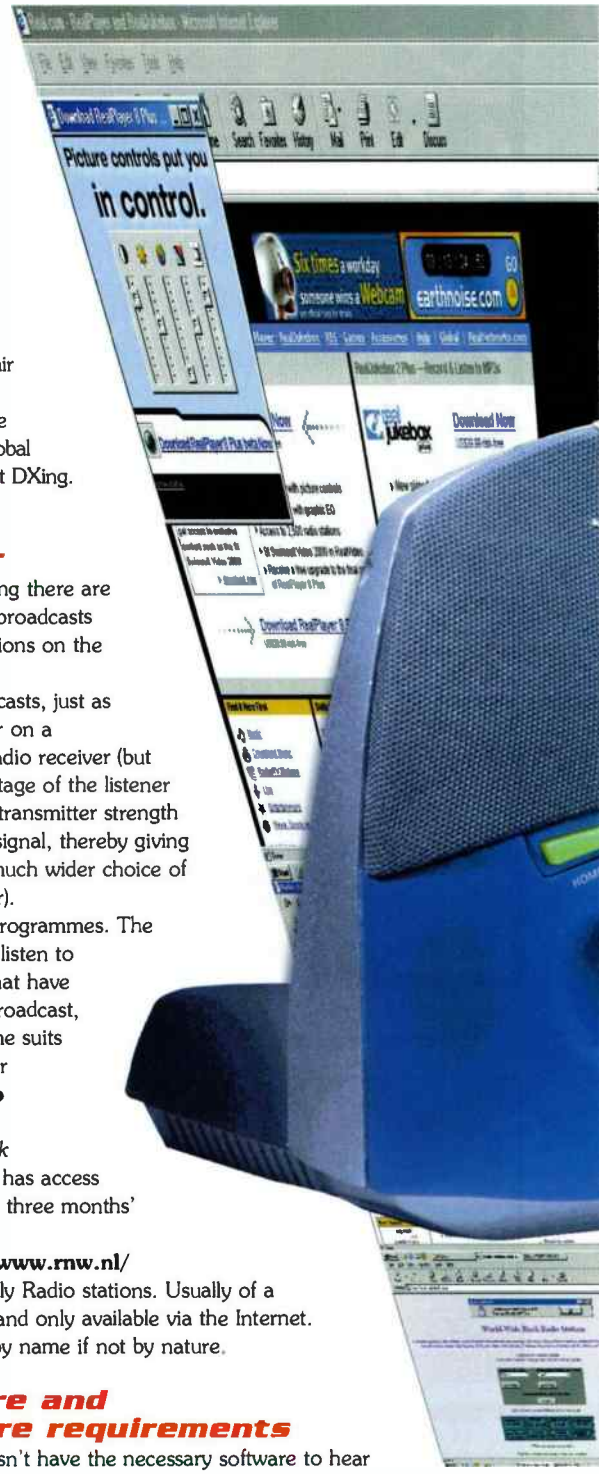
DXing



It's late at night as you sit in the shack, the rest of the house have long since gone to bed, leaving you with the elements trying to eke out a distant signal from Alice Springs, by the dim light of the desk lamp and LCD panels. However, this isn't the scene of a late night scan of the Tropical Bands, in fact there isn't a radio receiver being used, but a computer enabling you to hear remote domestic stations broadcasting live on the Internet.

This is the first of three articles that will show you how to pull in those low powered domestic stations and the bigger boys on the band, without crackle, fade or co-channel interference, without an antenna or even a radio receiver.

Why not turn the tables on the overseas audience that listens on Internet and contribute via e-mail to the *Up All Night* programme on **BBC Radio 5 Live** and late night shows on **Talk Sport Radio**? Listeners in mid-west America, small Pacific Ocean islands and the Far East can often be heard expressing their opinion alongside phone callers from the UK.

Just missed it!

How many times have you sat by your set all ready to listen to that eagerly anticipated programme? **VoA's** *Communication World* perhaps or *Musical Mailbox* from **HCJB**. You're tuned to the right frequency with a nice strong signal coming in, then the telephone rings, or there's a knock at the door.

We're not all so organised to always have a cassette tape ready to record the programme off air. By the time you have returned, the programme is all but finished, forever lost in the airwaves. Or is it? Not when the station's website archives it's programmes and you can access it at your convenience over the Internet.

To start with, I'll highlight the software needed and some of the major websites and portals that give lists and links to the radio stations on air. Then, over the next two months, I'll take a closer look at some of the radio stations themselves, both the low powered and some of the international powerhouses.

So why not unplug your receiver for the evening, take down the antenna that annoys family and neighbours so much, and drag a comfortable chair over to your computer, as we embark on a global guide of Internet DXing.

What's to hear

Broadly speaking there are three types of broadcasts from radio stations on the Internet.

* Live broadcasts, just as you would hear on a conventional radio receiver (but with the advantage of the listener not relying on transmitter strength to receive the signal, thereby giving the listener a much wider choice of stations to hear).

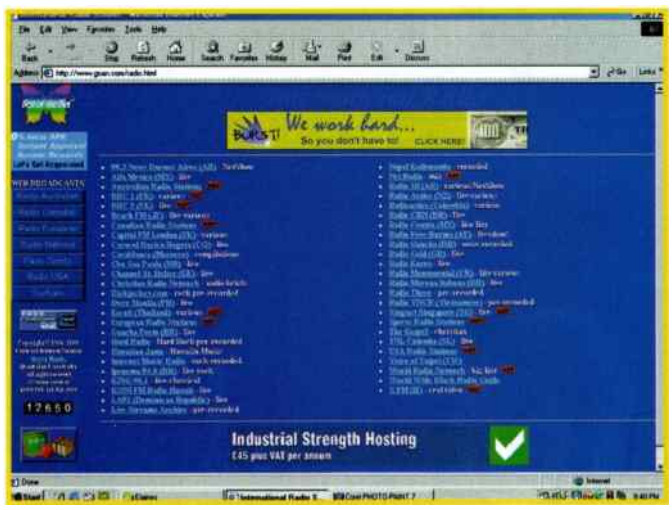
* Archived programmes. The opportunity to listen to programmes that have already been broadcast, at whatever time suits the listener. For instance **Radio Netherlands'** *Media Network* website always has access to the previous three months' editions.

http://www.rnw.nl/

* Internet-only Radio stations. Usually of a music format, and only available via the Internet. Called 'radio' by name if not by nature.

Software and hardware requirements

If your PC doesn't have the necessary software to hear



World Radio History

webcasts, audio streaming, Internet radio, or whatever other terms used for what is basically 'listening on the Internet', you'll need to download them from the appropriate website. It's an easy process and the software is free. The most common software used is Real Audio/Real Player, and Windows Media.

The Real Entertainment centre combines Real Jukebox, Real Player and Real Download, and is available from:

http://www.realplayer.com/

http://www.realaudio.com/ (the same website)

Windows Media Technologies consists of *'a variety of components for creating, serving, and playing digital media'*.

http://microsoft.com/windows/windowsmedia/en/download/

There is a good overview and links to all the software you'll need at:

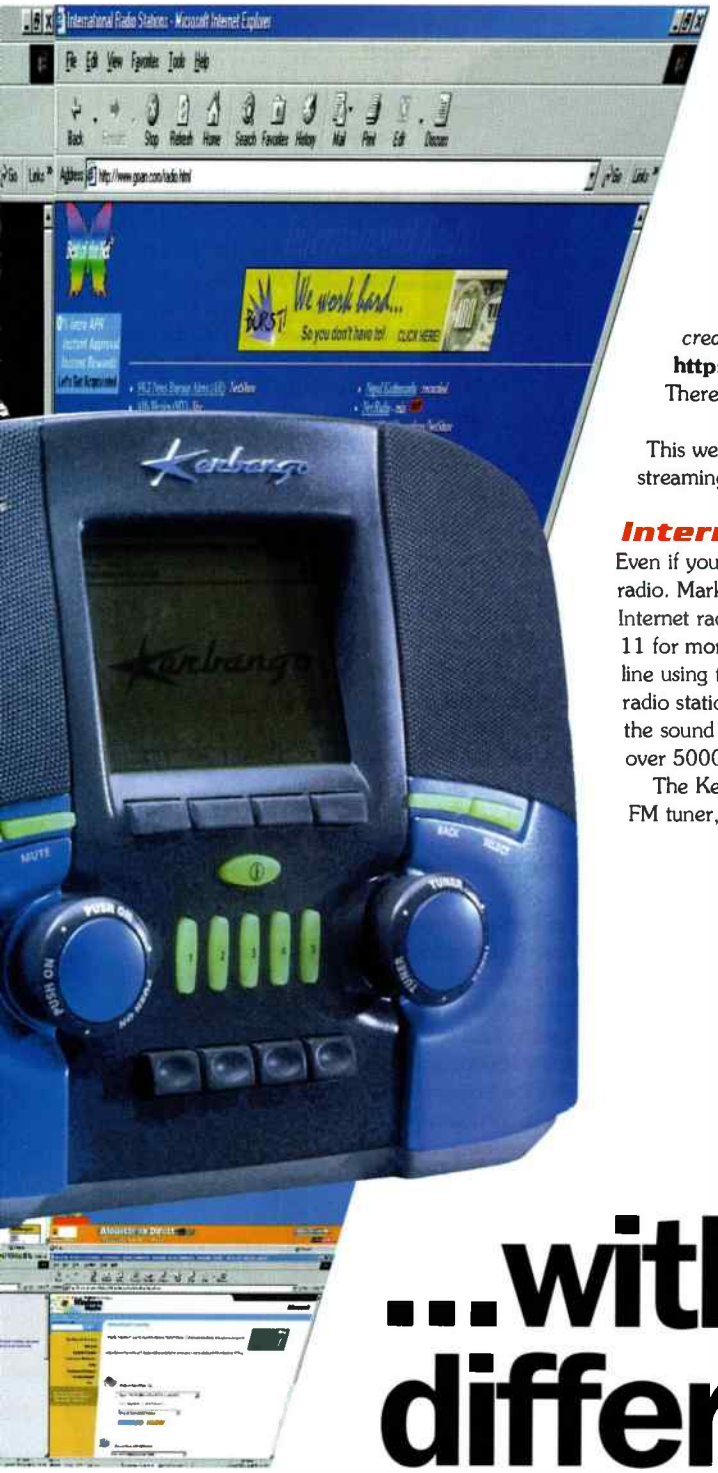
http://www.live-radio.net/info.shtml

This website also has a short and easy to understand technical definition of how streaming audio works.

Internet Radio without a computer

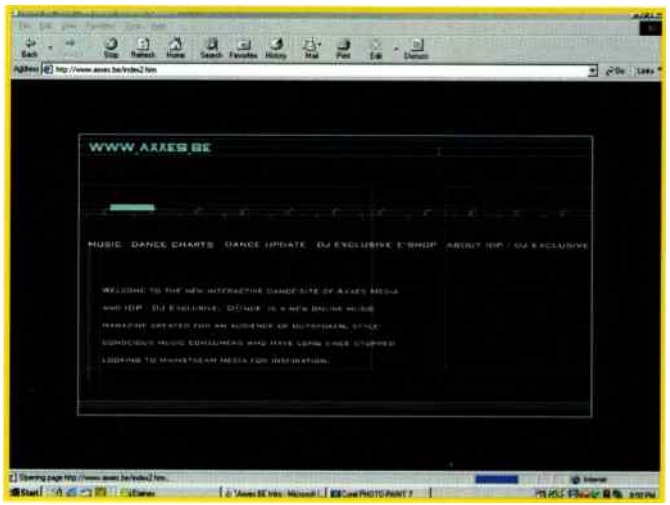
Even if you don't have access to a PC there is now another way of listening to Internet radio. Mark Savage of the British DX Club informs me of the world's first stand-alone Internet radio. This is available from a company called Kerbango (see the news on page 11 for more details). It looks like an old-fashioned radio and connects to the telephone line using the Kerbango Tuning service to provide a constantly updated list of all the radio stations that broadcast on the Internet. The service is free to access and also rates the sound quality of the stations. You can access over 5000 Internet stations from it.

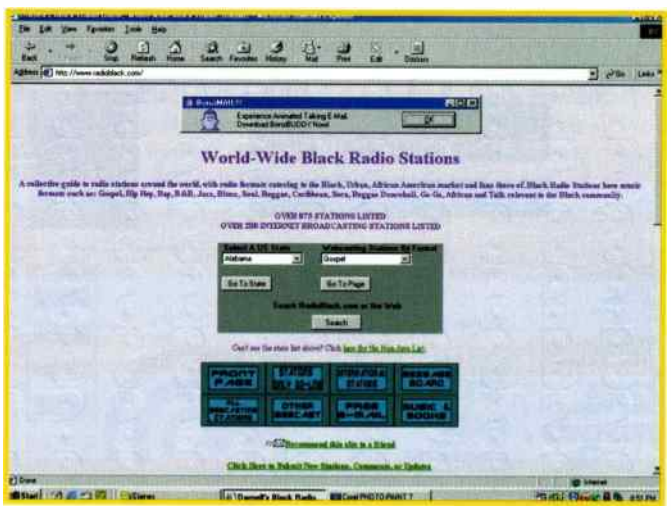
The Kerbango also features an ordinary AM-FM tuner, and has outputs to link to a home hi-fi



...with a difference

Chris Brand





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system. It can also be connected to PCs and play MP3 files through the 'radio'. Ingeniously, there's even a 'buy' button so that you can purchase a copy of the music on the station you've just listened to. The expected retail price at the time of writing is $300, although you are likely to have to wait a while as they're not due over here until at least the end of the year.

http://www.kerbango.com

Tune in and download

There are numerous websites which host links to radio stations. Many perform a similar function, but to different degrees and in different ways. I'll run through some that I have used and found to be the most accurate, informative and user-friendly. They all offer more than just a list of links. Some are specialist music radio websites, others try to give all and sundry. The best thing is to dip in and see which ones suit your tastes. This is often down to the website layout and design.

The best of the bunch

This section looks at some of the best websites to access Internet Radio from. Most of these connect to stations all over the globe, only a small percentage of which you can hear on a conventional receiver. As there are thousands of new and exciting stations to log, these portal sites are an ideal way to browse the options on offer.

Just as when you tune the dial on a regular receiver, there is variety in abundance when performing a similar function on the Internet. The main difference between 'regular' DXing and the Internet variety of DXing is that on The Net you first identify the station you want to hear, then click on its website to hear programme material and to read other information on it.

'*Live Radio on the Internet*' has been online since August 1997 and for me is one of the best websites of its kind. It's nicely laid out with a deep blue background and packed with all you could need to know, although the font size could be larger. It is categorised by continent, with easy to see graphics denoting a live feed or an archive programme.

Featuring little extras like a station of the month, links to new sites, wallpaper downloads, and a fun 'boss is coming' button, which transforms the webpage from radio into a page with a fake error message, if you're browsing at work and radio websites have nothing to do with your job!

http://www.live-radio.net/

It's well worth persevering with the small font (try changing the size via your control panel), especially when quotes like this come up:

"I am amazed at radio DJ's today. I am firmly convinced that AM on my radio stands for Absolute Moron. I will not begin to tell you what FM stands for." - Jasper Carrott

"It's not true I had nothing on, I had the radio on." - Marilyn Monroe

Well, to prove Jasper wrong, head off to the thousands of stations on offer and have a listen. As well as being the UK's most visited live radio site, it claims to be different from most as it monitors and updates the links daily, removing any that no longer work. That is a difficult task to keep up, and the bane of any surfer's time online must be the number of links that are full of promise but lead nowhere. The site is used by radio stations themselves, including the **BBC World Service**.

Another good starting point to discover what's being broadcast over the web is in France at *ComFM*

http://www.comfm.com/

You can link to over 6000 radio websites, 900 television and nearly 1500 media-related webcams, some of which show you behind the scenes in radio studios, some of which are live on the air, such as **Kalaallit Nunaata Radioa**, a radio station in Nuuk, Greenland. The web has heralded a new age of visual radio.

Although this site and the weekly e-mail list you can subscribe to are in French, it is easy to follow, with graphics and several key words which mean the same in several languages, such as radio, television and stereo.

The links are continually updated and the e-mail list keeps you informed of any new additions.

A handful of the many diverse live radio stations you can hear via the *Com FM* website are:

Radio Fragola, Trieste, Italy
Radio Simba, Kampala, Uganda
Voltage FM, Paris
FFH, Frankfurt, Germany
Univalle Stereo, Melendez, Colombia
RCI Martinique, Guadeloupe
RCI Guyane, Guyana

The '*Top Radio*' website in the USA states that it receives 1200 visitors a week. A nice feature to this site is that you can e-mail your own radio recommendations and your link is added. You simply e-mail '*Top Radio*' with the web address, station name, frequency, location, programme format (News, Talk, Sports, Business, Music), type of music programming (Oldies, Country, 70's Rock, Jazz, Classical, Big Band, etc.)

You can hear all manner of radio stations from here, with the

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option of searching for them by city, country, format or Internet-only.

http://www.topradio.com/

The *International Radio* website can be found by typing

http://www.goan.com/radio.html

It offers a cosmopolitan mix of live radio, to stations such as **Alfa Mexico**, **Beach FM** (Japan), **Cbn Sao Paulo** (Brazil), **Channel St. Helier** (Channel Islands), **Dwrr** Manila (Philippines) **KONI FM Radio** Hawaii and **LA91** (Dominican Republic).

A well-known and all encompassing website that lists most of what can be heard on the web is '*The MIT List of Radio Stations on the Internet*'. It bills itself as '*Your Electronic Guide to Radio Stations around the world*' and includes links to 10007 radio station websites and 2119 streaming radio stations.

http://wmbr.mit.edu/stations/

A good site called '*Radio Tower*' gives access to over 1100 live feeds across the planet. Running since 1996, which is quite a while in 'Internet Mean Time', the site provides a guide to find '*web radio of your choice: music, news, sports, business...*' It has a choice from 80 countries and 20 different genres. The website editors '*pick of the moment*' is a good place to begin, but if you still can't decide what to listen to, hit the Random Transmission button, which makes a selection from the extensive database for you.

http://www.radiotower.com/

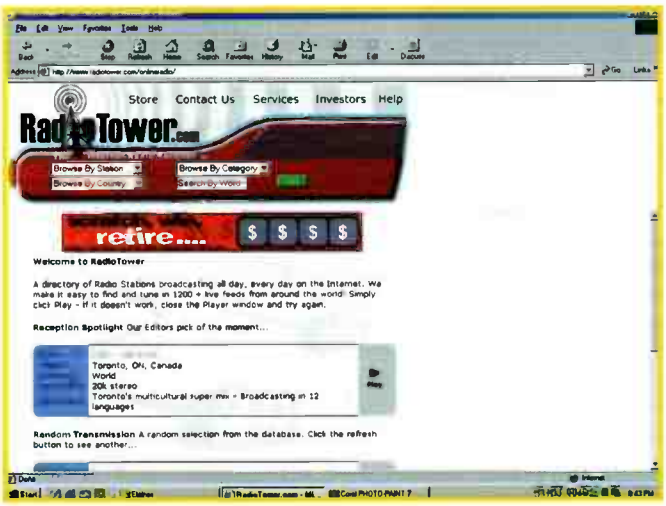
'*Radio-Stations.Net*' lists the stations by continent as well as country and station format, and also provides a weekly e-mail list of changes to programmes available via the Internet. Tune in to stations as diverse as **Guam's KGUM** in Agana (News/Talk), **Sud FM** in Dakar, Senegal to **Anet station** in sub-Antarctica.

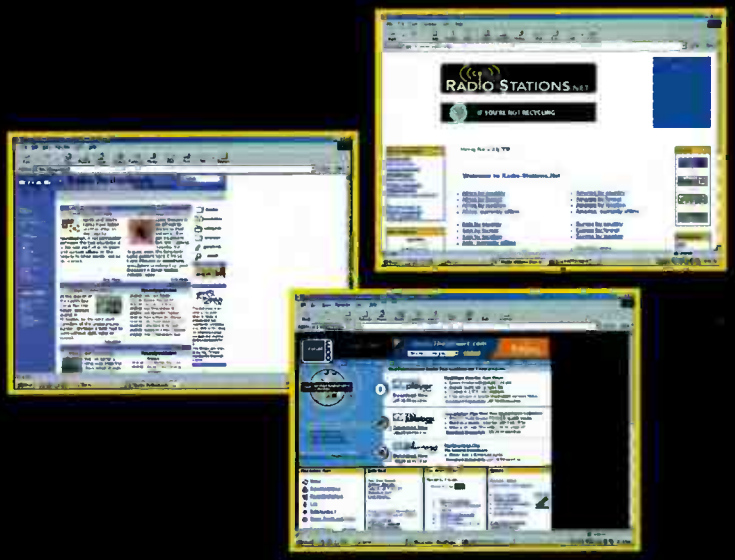
http://www.radio-stations.net/

If you have downloaded your software from the Real Player website, you might want to click on their radio tuner guide, comprising a selection of random stations that change regularly, and also an option to listen to stations playing a wide range of music; hip-hop, Christian rock, jazz, techno, pop, classical, world music, Latin/Salsa. Most styles of music appear to be on offer but nearly all of the stations featured are from the USA.

http://www.realaudio.com/

Click on a category and you are given a number of radio stations to choose from, each with a symbol denoting if it is a talk or music station. When I last visited the site, if you chose 'Techno' there were links to the following four stations, all of which appear to be Internet-only stations: **NetRadio.com** (Techno), **globalmedia.com** (Test Pattern), **globalmedia.com** (Club House), **GrooveRadio.com** (Electronic Dance). Choosing the 'Spiritual' button led to six links from: **Today's Christian Radio**, **Christian Pirate Radio**, **WAVA in Washington DC**, **KWRD 94.9 FM**, the **Black Gospel Network** and **Acaza.com**.





Specialist stations

The '*Radio Site*' has a traditional radio dial graphic, a calming pale yellow background, and an uncluttered interface, where you click from five buttons marked, 'Live, USA, Belgium, Europe, Other.'

With a straightforward array of links, it is a good place to start in many ways, as some of the larger websites can be overwhelming with their choice of everything under the sun. This site, based in Flemish Belgium, specialises in the Belgian radio scene. The 'Live' section has a useful list that includes links to Talk Radio stations and the *Real Radio Magazine* site, described as '*The ultimate list for live radio on the Internet*'.

http://www.ping.be/~ping0837/stationsb.htm

From the USA comes the award winning '*world-wide Black Radio Stations*' website, with over a dozen awards including Mr Media website of the week, Open Directory Cool Site Award, and Radio Contacts Hotsite.

http://www.radioblack.com/

This is a guide to over 875 radio stations around the world, with radio formats '*catering to the Black, Urban, African American market and fans there of. Black Radio Stations have music formats such as: Gospel, Hip Hop, Rap, R&B, Jazz, Blues, Soul, Reggae, Caribbean, Soca, Reggae Dancehall, Go-Go, African and Talk relevant to the Black community*'.

More than 200 of the stations have webcasts including

Vienna ORF 1476 MW (Reggae , Soca) Bahamas, Nassau, Freeport, 100.3 FM, 100 JAMZ; R&B , Hip Hop , Reggae , Reggae Dancehall, Soca, Gospel; Junkanoo and Calypso; Gospel on Sundays.

Haiti, Port-au-Prince, 99.3 FM, Vision 2000; Soca , Hip-Hop, Reggae, Jazz and Calypso.

If you want to listen in on the Canadian radio scene, then go to

http://www.canehdian.com/radio3.html

where you can access stations by musical genre, enter competitions and plenty more. '*featuring most Canadian radio stations, indexed by call signal (e.g.: CIGO)...Browse through comprehensive listings of radio stations for Canada's largest cities. Internet Radio Stations The newest force in Canadian radio. University Stations - The place where our future disk jockeys (sic) fine-tune their radio skills*'.

Although the use of the web is a technological leap forward for the world of radio, both in broadcasting and in disseminating information about the medium, don't forget that the Internet remains radio's servant, not it's master.

More next month when we continue our journey and listen to some of the bigger national and international stations broadcasting on the Internet.

World Radio History

tried & tested

Grundig Pors

Radio Active tests a portable short wave radio designed by F A Porsche

I first saw the Grundig Porsche P2000 in one of the dealers adverts in *Radio Active* back last year. Even in the adverts it scored 11 out of 10 for looks, but I wasn't sure whether its performance would match! Grundig kindly agreed to loan us a radio so we could find out. This is the first 'designer' short wave radio for many years. Grundig have commissioned F A Porsche to make special versions of other Grundig products, but this is the first short wave portable radio to get the treatment.

When the P2000 arrived it certainly lived up to the advert! It's a compact radio, small but not so small that it is fiddly to operate. All the rectangular buttons sit in a circular cut out making operation quick and easy. Its design is certainly stylish and different, which made it a very pleasant addition to the household.

Protected by a heavy-duty leather wrap-around case, the silver finish and design is different. Let's be honest, even a well-worn and slightly battered leather case will look much better than a scratched silver radio! With the case covering the radio only the speaker and power button are accessible, but fold back the cover and it becomes an effective stand for the radio. OK, so it looks good and is well laid out, but what was it like to use?

Operation

Let's look at the non-radio bits first. The Grundig P2000 has an alarm function that is very effective. Ideal if you plan to take a radio like this on your travels as it doubles as a clock and alarm. You can either have a noisy buzzer or a radio station of your choice wake you up. Other functions are the clock and 'sleep' function, which was the usual radio playing for a set time (adjustable between 10 and 90 minutes) before switching off automatically. Finally, for the non-radio side of the P2000, the backlight. The button in the top right hand corner switched on an effective backlight that I found provided enough light to see the display easily both in low light and darkness.

The **LOCK** button is useful when the radio is being carried around as it prevents any settings being changed accidentally. The power switch can be locked too if the button is slid into place when the radio is switched off, this prevents the radio being switched on accidentally and running the batteries flat.

The audio tone was pleasant, enough bass to make music comfortable and quite a bit of treble, which helped with both speech and weak signals. I always prefer using headphones or earpieces and the ones supplied were very comfortable stereo earpieces. Whilst listening to Radio Solent I tried taking the earpieces out and comparing the sound between the two. The internal speaker certainly sounded different, not unpleasant, but not as 'full' a sound. It probably has a lot to do with having the sound right inside your ear when using the earpieces.

I worked my way through all the controls before settling down for some serious listening. You can step up and down through any of the bands using the ∧ and ∨ keys, with the step size changing depending on the band you're using. There is no main tuning control and no fine tuning either. Alternatively, you can just go for direct frequency entry if you know where you want to find a station.

To move around the various short wave bands, and there are 13

Grundig Porsche P2000 • Price – £89.95 • Available – Now • Stockists – Check out Grundig dealers

World Radio History

che P2000

of them, it's best to use the **METER** button. The sequence was: 2.3 > 3.15 > 3.85 > 4.7 > 5.75 > 7.05MHz on SW1 and 9.4 > 11.50 > 13.5 > 14.95 > 17.4 > 21.3 > 25.6MHz on SW2. The **METER** button doesn't have any effect on the MW and FM bands.

Results

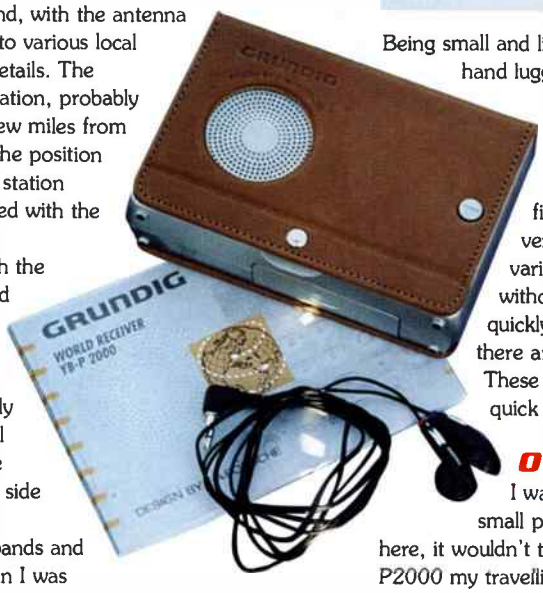
The first chance I had to use the radio was under some of the most difficult circumstances. I had cause to be in a local sports centre - as a spectator - and so had a couple of hours to spare. With no windows to put the radio near and being inside a steel structure I didn't expect any real results whatsoever. How wrong I was!

Starting on the medium wave band, with the antenna fully extended, I was soon listening to various local radio stations, see Table 1 for full details. The stations logged included a French station, probably from Rennes. I know I was only a few miles from the coast, but by the time you add the position of the radio and the distance of the station heard, you can see why I was pleased with the results.

Next followed a quick trip through the VHF FM band. Results were as good here, but when I tried again at home - a much better radio location - the stations were there to be heard. Obviously stations can only be heard in mono using the external speaker, but good stereo is available from the headphones socket on the side panel.

Finally, I thought I'd try the SW bands and see if anything could be heard. Again I was pleased with the results, see Table 1.

A small portable like this is the type of radio you would tend to take away on holiday, trips away for work and other portable operation.



Specification

Range:	
FM:	87.5-108MHz
MW:	522-1620kHz
SW1:	2.3-7.4MHz
SW2:	9.4-26.1MHz
Audio:	500mW peak power
Speaker:	2in wide range
Tuning Steps:	5, 9 & 50kHz
Antennas:	MW - ferrite rod
	FM/SW - telescopic antenna
Power:	4.5V plug-in (not supplied)
	3 x AA cells
Connections:	3.5mm stereo for headphones
	5.5mm for DC connector
Dimensions:	142 x 92 x 35mm
Weight:	3309 (without batteries)

Being small and light-weight it wouldn't take up much room in your hand luggage but gives good results.

Getting back home gave me a chance to read the manual and try the P2000 under more favourable conditions. The instruction book is in 10 languages, but the pages are edge marked to make it easy to find your preferred language. It was well-written and very easy to understand, with diagrams to illustrate various points. It dealt with all the functions of the radio without confusion enabling the user to get the best results quickly. It was after reading the manual that I discovered there are five programmable memories on each band. These would be ideal for storing your favourite stations for quick reference.

Overall

I was really pleased with the sensitivity and sound of the small portable. If I didn't already have too many radios here, it wouldn't take much persuasion to make the Grundig Porsche P2000 my travelling portable! Sadly it has now returned to Grundig - many thanks to them for the loan. I'm sure it will stand up to the knocks and bumps that a travel portable gets during its lifetime and still look good at the end of the day. The heavy leather case will protect the radio and the fact it also makes a stand puts the radio at a suitable angle for extended use.

The P2000 was very easy to use, stylish to look at (it occasioned much comment from those who saw the radio in use) and it gave great results. You can get an optional AC adaptor to save on batteries, although I didn't manage to flatten one set of batteries despite extensive use during the review. I was pleasantly surprised with audio tone, it was crisp enough to make listening to weak stations possible yet still pleasant for music listening. A fine tune control would have been useful, although there were only a few occasions when I would have like to have been able to off tune a station in the hope of picking up a weaker one.

I hope a few more radios get the designer touch, it certainly makes a pleasing change. Top marks Grundig! ■

Band	Frequency	Notes
MW	693kHz	5 Live. Discussions on the new England coach
	828kHz	Classic Gold Dorset & Hampshire playing Eric Clapton's *Leyla*
	909kHz	5 Live. Discussion on climbing Everest to 23,000ft
	1053kHz	Talk Sport
	1197kHz	Virgin Radio. Adverts
	1359kHz	BBC Radio Solent. Phone-in on young offenders.
MW	711kHz	French station ? Rennes ?
VHF	100.3MHz	Classic FM from Rowridge. Stereo classical music.
	107.6MHz	The NRG playing Madonna (this station is now called The Fire)
SW	5.955MHz	Radio Netherlands? UK records, Dutch(?) presenter.
	6.045MHz	Deutsche Welle
	11.755MHz	Voice of Russia
	13.800MHz	Radio Tashkent?. Female vocalist, ethnic music.

Table 1: Excellent results despite using the Grundig Porsche P2000 under extreme conditions

A stylish portable radio that gives good performance and value for money.

World Radio History

Them, watching u

Bill Robertson reveals what's behind those silent blu

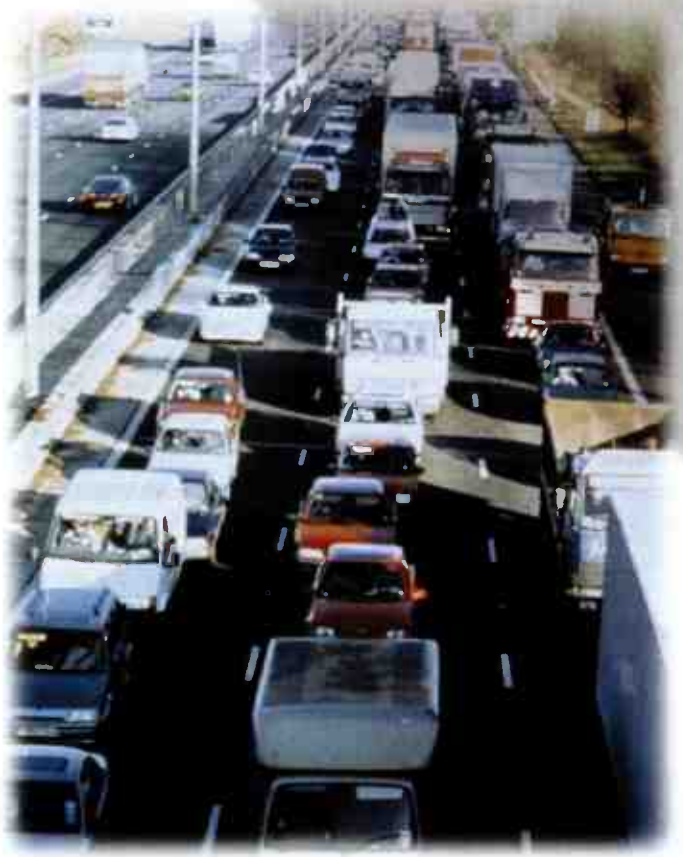
THERE MUST BE FEW MOTORISTS IN THE UK WHO HAVEN'T SEEN THE APPARENT 'SPEED CAMERAS' mounted on blue-painted posts around the UK. Much of the A-Road system in the UK has them dotted about every few miles, and there are similar sensors, although not as apparent, at virtually every motorway junction as well as on several motorway bridges.

What are they?

Are they police speed cameras, ready to catch the unsuspecting motorist who's doing a few miles per hour over the speed limit? Is a fixed penalty fine plus three points the result of passing these somewhat faster than you should do?

Many of us have witnessed the grey-painted rectangular boxes which really are traffic enforcement cameras, with their 'double flash' taking two consecutive pictures of speeding motorists, or those who jump traffic signals on red. These certainly are the ones to keep us 'in check'. But the blue ones are, reputedly, something rather different. They, if you believe what 'they' say, keep us informed of what speed the traffic's going at. Or rather, they're there to help us - the motorist - find out where the traffic isn't going at the speed that it should be. In other words, where there's traffic congestion. The TrafficMaster system does just this, using infra-red based cameras mounted on the blue poles, operating around the clock. In fact, on one section of the road network in Somerset these 'blue poles' had signs on them saying that they definitely weren't government speed enforcement cameras, to hopefully stop them being attacked by disgruntled motorists!

With this system using a small dashboard-mounted unit in your car, you can receive 'live' information of hold-ups in your area. Both the AA and RAC have units available at discount to members, one was even offering a free unit as an incentive for signing up as a new member. Other organisations and motoring retailers have similar units, with either free-to-use visual LED-based displays, or subscription-based units offering all manner of services such as voice alerts, up-to-date news, weather and sport information as well as traffic hold-ups.



How does it work?

The first TrafficMaster system relied on sensors mounted on motorway bridges to measure the local traffic speed, co-ordinated via their central headquarters, and transmitting data-based information at **433.92MHz** to receivers from the same installation 'boxes' which housed the local equipment. Take a look around a motorway junction, usually at the side of the road bridge on the elevated verge, and you'll typically see a grey-painted metal enclosure with similar grey poles containing the antennas.

The organisation later received permission to install a much more sophisticated system, the one that's now used with the infamous cobalt-blue poles, and there are already over 4000 of these around the UK. The system is based on car number plate tracking, and stores details of traffic movement based on number plate identification. It does this by measuring the time taken for a vehicle to travel between two successive 'blue pole' roadside sensors, usually spaced four miles apart, and converting this into a measure of traffic flow.

The patented system is called Passive Target Flow Measurement (PTFM for short) and came into 'live' operation in the UK in mid-1998. Each roadside unit converts this into a 'tag' along with the actual time that vehicle passed the sensor. Every four minutes, a data

World Radio History

...s, watching them

...ue guardians of the roads - the Trafficmaster system

transmission sends the tag and time information to TrafficMaster's central processing system which is currently in Milton Keynes, a new headquarters is also planned for Cranfield in Bedfordshire. This matches the tags and respective times, and thus calculates the average journey times between each of the four mile 'links' across the UK. This data is then re-transmitted throughout the network to us, the motorists.

Big Brother?

TrafficMaster claim they only read and store the central four characters of vehicle number plates. But then, most plates have 7 characters (so there are no 'middle four'!) as well as a wide variety of number plate lengths for personalised numbers, in my opinion the system must have the facility at least to read the whole number plate to be able to extract these four characters.

TrafficMaster however also say that only a sample of vehicles are used, so it's not definite that it's the details of every single car that's being stored and analysed. But all this does make the typical UK motorist think about the possibilities. Tracking of individual vehicles across the UK could certainly be possible, as well as an individual driver's journey time along a motorway or road to reveal an 'average speed' every few miles.

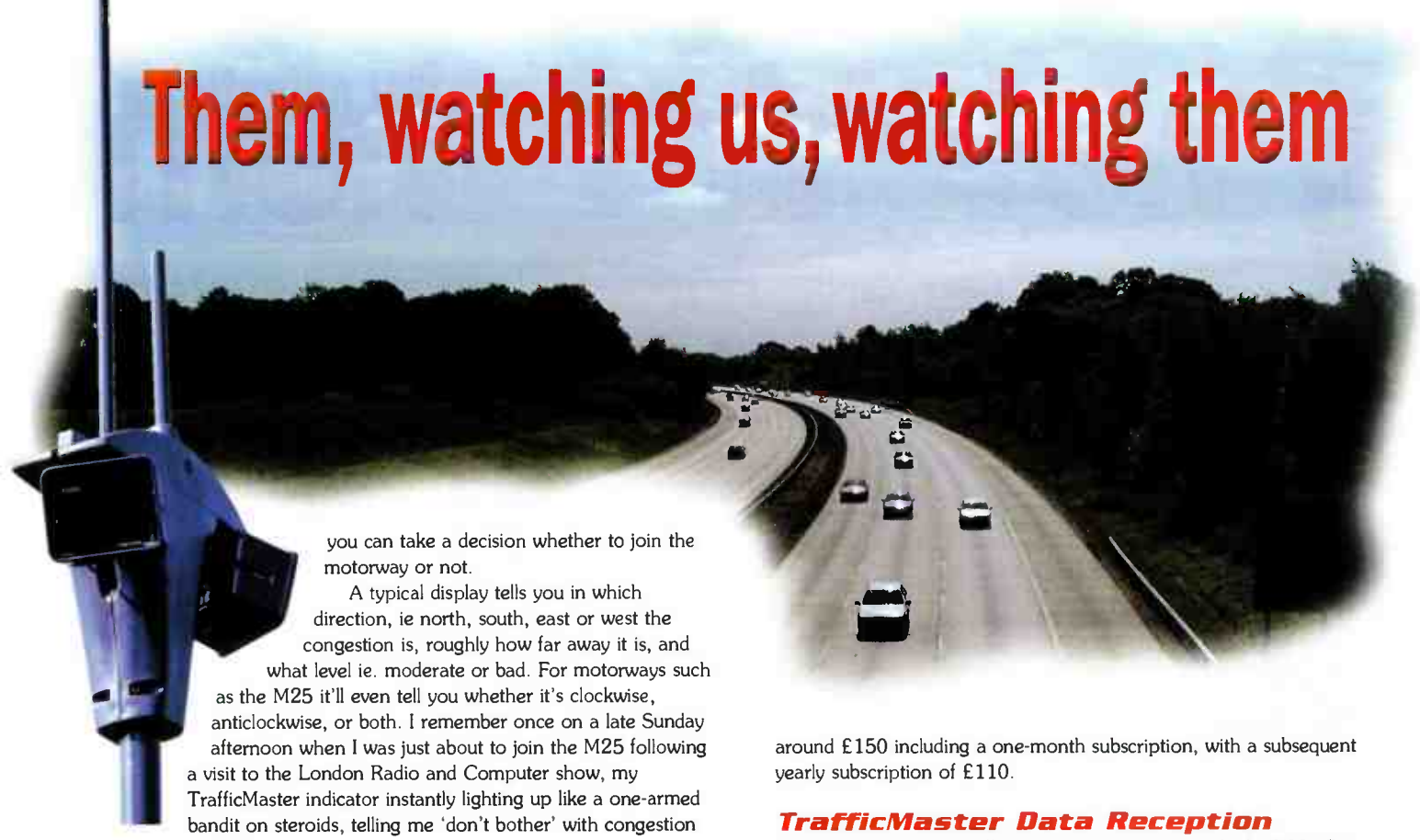
Information

The simplest receiver uses LEDs to give a local information display of any traffic congestion, up to several miles ahead. It receives its data signal from a sensor location you're physically near to, with a typical range of a few hundred metres from the antenna pole. This means that you can, if you wish, decide to leave the motorway or A-road you're travelling on to find a different route if you get an indication of problems ahead. It's also useful if, say, you're just about to join a motorway junction as the system can warn you of unseen congestion just along the motorway, so

Photos courtesy of TrafficMaster and Bill Robertson

World Radio History

Them, watching us, watching them



you can take a decision whether to join the motorway or not.

A typical display tells you in which direction, ie north, south, east or west the congestion is, roughly how far away it is, and what level ie. moderate or bad. For motorways such as the M25 it'll even tell you whether it's clockwise, anticlockwise, or both. I remember once on a late Sunday afternoon when I was just about to join the M25 following a visit to the London Radio and Computer show, my TrafficMaster indicator instantly lighting up like a one-armed bandit on steroids, telling me 'don't bother' with congestion in all directions!

Other subscription-based systems are also available, including the TrafficMaster YQ unit which can also act as a personal pager. Traffic information is displayed on the unit in an LCD 'map' format, which can be zoomed in or out as you wish - even the whole UK can be shown. When you 'zoom in' to a given area, slow traffic speed is shown as either 0, 5, 10, 15, 20 or 25 miles per hour.

As well as this, further 'pages' can be viewed which display news updates, sports and weather information. This is a 'wide area' system and, as it isn't just tied to in-car use, a number of transport companies such as airport couriers and haulage firms use these to good advantage in their offices. Wheras the 'local' in-car LED-based service is free to the user with a low purchase price, the 'YQ' unit costs around £150 including a one-month subscription, with a subsequent yearly subscription of £110.

The details of the system used by TrafficMaster are;

Receive Frequency:	**153.2750MHz** (FSK)
Data Format:	POCSAG
Data Speed:	512 bits per sec
Data RIC:	0901977

Publishers Note: Please be aware that although the information given in this feature is correct to the best of our knowledge, nothing in this feature should be construed to incite the reader to break the law, all details are provided for technical interest and educational information only.

TrafficMaster Data Reception

Inside the 'wide area' TrafficMaster unit there's a standard POCSAG (Post Office Standards Advisory Group) pager receiver. For the technically-minded, this uses the VodaPage network and each receiver has two 'capcodes', one for the personal pager and the other for the TrafficMaster information.

As regular readers of the *Radio Active* Scanners! and Software Spot columns will know, POCSAG signals can be received using a normal VHF/UHF scanner receiver, preferably with the audio output taken from the internal discriminator point, although the external earphone/speaker jack will often work as well. This audio from the receiver is then taken to a PC's sound card, with software such as POC32 or Semasoft used to decode the received data into on-screen text. The PD203 decoder program is also a popular choice, this needing just a simple data slicer circuit in-line between the receiver and your PC. I personally use POC32 which seems to work very well for POCSAG decoding.

For the benefit of readers, this month's *Radio Active* Software Spot CD carries the latest versions of all the above data decoder programs, plus several extra information files on data format decoding of the traffic, news, sport and weather transmission formats. ■

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dealers guide

Aberdeen

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World Radio History

satellite monitoring

2001 - our Space Odyssey unfolds says Lawrence Harris

As of 1st January 2001, we entered the new Millennium, and ahead - for this year and for the next several years - we will be able to literally watch and hear the progress of the construction of the International Space Station (ISS). If you are old enough (and I plead guilty), you may remember seeing Arthur C Clarke's seminal film, back in 1969, about a trip to the planet Jupiter. It was based on an earth-orbiting space station - as was then envisioned. In reality, the ISS has been designed within the constraints with which we are familiar - rather than those anticipated back in the 1960s.

The most impressive feature of the building of the ISS - at least in my view - is the ease with which the hobbyist and space enthusiast can monitor many of these events. The ISS is likely to become the brightest satellite visible from earth, possibly even brighter than planet Venus (which is shining in the western sky after sunset). I have already watched both the Shuttle and the ISS cross Plymouth skies during one clear, early evening. A tracking program and the latest Kepler elements ensured a positive identification.

What do you require to tune in and listen? The same equipment that you would use for monitoring any satellite: a suitable antenna, and a receiver that can tune to the desired frequencies. ISS frequencies? There are many, but the ones of greatest interest to us are in the VHF band - and may already be familiar!

Monitoring frequencies

The old MIR frequency of **143.625MHz** is being used for voice transmissions direct from satellite-to-ground. I have been monitoring these for some weeks.

Voice on **259.7MHz** from the Shuttle during launch has been reported during the early part of the flight while over Europe.

259.7MHz EVA 1 to shuttle & EVA 2
279.0MHz EVA 2 to shuttle & EVA 1
296.8MHz Shuttle to EVA 1 & 2
414.2MHz and 417.2MHz

Amateur Radio frequencies for ISS

STS-106 carried the first set of amateur radio hardware to the International Space Station. If you are interested in this international amateur collaboration, more information is available from:

http://ariss.gsfc.nasa.gov/

John D Corby reported on Monday 13th November 2000 that the crew of ISS has commenced operation of their ham radio equipment. The frequency to monitor is **145.800MHz** during crew rest periods.

Amateur radio satellite operators followed the launch of the *Soyuz TM-31* rocket that took place from the same site from which first human in space - Yuri Gagarin - blasted off in 1961. Aboard the *Soyuz* rocket was the *Expedition-1* crew bound for the International Space Station. The crew included commander/US astronaut Bill Shepherd KD5GSL, *Soyuz* vehicle commander/Russian cosmonaut Yuri Gidzenko and flight engineer/cosmonaut Sergei Krikalev U5MIR. The crew successfully docked with the ISS's *Zvezda* module as the spacecraft flew high above south-eastern Russia. The crew began, what many of us hope will be, a permanent human presence in space.

The Station has a radio callsign, following US astronaut Shepherd's request for a go-ahead to christen the outpost '*Alpha*' just hours after arriving at the complex. The *Expedition-1* crew's activities are scheduled such that their working day starts around 0800UTC and ends near 1900UTC - with a lunch break near 1200UTC. When the ISS passes over a given location, passes that are near the beginning, lunch, and end of the crew day could be favourable times to find a crewmember relaxing with ham activities. The crew should also have most weekends off - from about mid-Saturday until the end of Sunday. It is hoped that the power budget on *Alpha* will allow the astronauts to leave the packet rig powered during times when the crew cannot perform voice contacts.

The ARISS (Amateur Radio on the International Space Station) working group has requested that the packet rig be left on as much as possible. The crew has been trained in the use of the beaconing capabilities of the TNC. My thanks to NASA, AMSAT and ARISS for providing this information.

ISS Amateur radio workspace

Shuttle/Progress delivery schedule

The December Shuttle *STS-97* mission included the installation and checkout of the solar arrays, and an internal EVA (extra-vehicular activity) to move the *Zvezda* Docking Probe.

January's schedule includes continued checkout of the solar arrays, further experiments, a Progress unloading, the third *Progress* undocking, *STS-98* launch and docking, *Destiny* Laboratory installation and activation, *STS-98* undocking, *Soyuz* repositioning from *Zvezda* aft docking port to *Zarya* nadir port, and *Destiny* Laboratory checkouts.

February's schedule includes the fourth *Progress* re-supply Ship launch and docking, *Progress* unloading, US Laboratory *Destiny* checkouts, *Expedition One* crew packs for return to Earth, *STS-102* launch and docking, *Expedition One/Expedition Two* crew handover, *STS-102* undocking, *Expedition One* Crew returns to Earth with *STS-102* crew.

All of these operations will accompany voice communications, many of which may be monitored.

At this very moment as I write, Shuttle *STS-97* astronauts are installing the solar array wing onto the ISS. This is part of the P6 truss element, consisting of the array, an Integrated Electronics Assembly (IEA) section with a thermal radiator for the solar wing, and the Long Spacer (LS) truss segment with two thermal radiators for the *Destiny* module, which follows on a later flight). P6 will be installed on one end of the Z1 truss, though later, during further assembly, it will be moved to the other end of the port truss.

In fully deployed mode, the solar arrays are over 73m from tip to tip, and 11.58m wide.

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(ISS01-E-5011 taken November 2000) - A mass of storm clouds was captured on film from the International Space Station (ISS) by the Expedition 1 crew members. The picture, made with an Electrical Still Camera (ESC), was the first Earth observation still image downlinked by the three-man crew

Mystery signal identified

On November 5th. **Robert Christy** heard an unexpected satellite transmission on a frequency of **400.326MHz**. Robert is a member of the Kettering Group that monitors satellites, and has previously made some astonishing discoveries - such as identifying an unknown Russian launch site during the Cold War period of the 1960s and 1970s. After monitoring the signals for about two weeks, he came to the conclusion that the signals emanated from *Resurs 01-N4* - a weather satellite (WXSAT) that transmits APT (picture) imagery on **137.85MHz**. *Resurs* is routinely monitored by WXSAT hobbyists all over the world.

Following discussions with others, he was able to confirm that the unidentified transmissions were probably emanating from a piggy-back package called Little Leo - a European Space Agency data store-dump system which downloads once per orbit through a ground station near Spitsbergen, Norway. They believe that the signal being picked up is probably the trigger to activate uplinks from user stations as the satellite passes. This transmitter has been tracked by Robert. **Sven Grahn** and **Chris Wood** - all in Europe - and reception should be possible world-wide.

Signal characteristics are five distinct channels of signal at 4kHz intervals centred on **400.326MHz**. Each channel carries a series of rapid pulses at a rate of 1.3kHz. Although weak, they show up well on a receiver in CW mode. The transmitter appears to be on continuously - or at least transmissions are not confined to the European land mass. I am grateful to Robert for this information. It demonstrates once more, the potential discoveries that can be made by scanner frequency sweeps. In this particular instance, Robert had left the scanner frequency set for reception of a different satellite!

MIR to be de-orbited

Russia finally announced that the Mir complex will be de-orbited around 28th February 2001. This massive undertaking will be achieved by docking two *Progress* supply vessels with the MIR station, and then the *Progress* engines will be used to perform a re-entry manoeuvre. Yuri Koptev is the head of the Russian Space Agency, and he has stated that Mir will re-enter between 1500 and 2000km to the east of Australia.

Readers' monitoring logs

If you have been successfully monitoring any of the satellites mentioned in this bi-monthly column, or other satellites not recently covered, drop me a line or e-mail containing a description of your receiving equipment and a summary of your logged data. I can then pass the information on to enable other readers to appreciate that they are not the only hobbyists trying something 'out of the ordinary'! ■

Fig. 2: STS-106 docked to ISS

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