



## & Scanning Scene



Is anyone out there?

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- *In the Ed's shack Kevin builds a TT1340 40m QRP kit*



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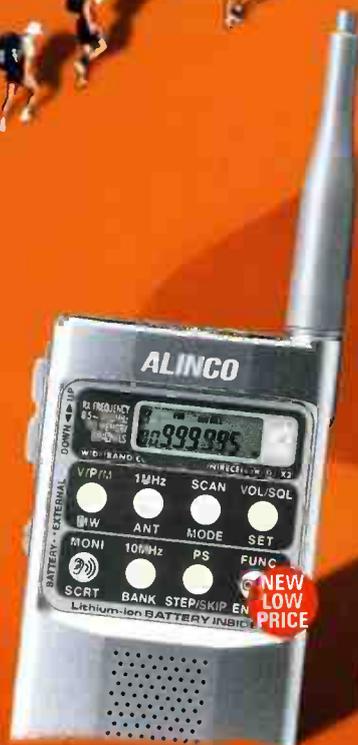
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This month we're back in the Ed's radio room for some more construction - Kevin Nice builds the Ten-Tec 1340 QRP c.w. transceiver kit, ideal for the new M3 licence holders.

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Is there other life in the universe? Surely we're not alone? Lawrence Harris presents the work of enthusiasts - both professional and amateur - on earth, who are listening for that breakthrough call.

**73 SWM UK Radio Club Listing**

If you want to meet others with a radio passion, then look no further - use our comprehensive guide - which now includes International Radio Clubs on page 76.

**24 So You Wanna Be A Radio Ham?**

Our 'Amateur Bands' columnist Clive Hardy G4SLU looks at just what's involved in getting on air. So if you've been tempted, but not sure where to start, turn to page 24 and all will become much clearer.

**30 My Month as MXISWL/P (and MCISWL/P!)**

Teacher Tom Read M1EYP, G-20843 thought the school holidays would be as good a time as any to operate the ISWL's second club callsign M1SWL. Turn to page 30 now and follow Tom throughout his travels.

Turn to page 7 now for details of the SWM Listening Contest.



**Amateur Bands**

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To provide you with a ready reference, please provide the contact details of all our regular

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## Coming Next Month

in SWM May 2003

- FREE 32 page Scanning Scene Extra Supplement
- How To QSL successfully.
- Build a NAVTEX decoder - Part 2.
- Keep on top of the world of monitoring with SWM.
- and much more...

\*contents subject to change

Check out the latest SWM web site

[www.pwpublishing.ltd.uk/swm](http://www.pwpublishing.ltd.uk/swm)

Join in with the on-line action on the  
 'SWM Readers' E-mail Forum - send an E-mail to [swm\\_readers\\_subscribe@yahoo.com](mailto:swm_readers_subscribe@yahoo.com) to  
 subscribe - don't miss the on-line action!

Share your thoughts

# ED's

## comments



### Iraq

With the world news media bristling with reports that the USA are suggesting that they are prepared to take the conflict into Iraq alone, it's looking increasingly like there will be serious military action in the region. Last month, we published some frequencies of interest and unfortunately, I miss-typed two frequencies, the correct versions are as follows. FleetSatCom F3 at 23°W broadcast channel 250.55MHz and F8 at 172°E 250.45MHz. I've heard many reports of very high activity on the 5.616MHz where REACH flights abound talking to Shanwick and Gander. The other transatlantic ICAO frequencies are without doubt worth a listen.

### Young Reader

I didn't have space last month to say hello to young reader Tom O'Grady of Whitecross School in Hereford. He made himself known recently by asking my son Josh if his dad was the Editor of SWM. Tom, I can definitely confirm that Josh's dad is the Editor. Glad to learn you enjoy our efforts.

### Huge Growth

I noted in a DTI press release recently that for the first time ever, the number of mobile telephones world-wide exceeded the number of fixed lines - incredible. I remember very clearly when Vodaphone and Cellnet were vying for first place with almost one million subscribers each - a very significant milestone at the time some 15 or so years ago. The speed of growth to achieve this landmark is truly amazing.

### Scanning Scene Extra

Due to massive reader demand, we're giving away another 32 page Scanning Supplement with next month's SWM. Stuffed with vital scanning info - it's a must. Don't miss SWM next month and the chance to enter the £2500 prize competition.

Good listening  
 Vy 73

*Kevin*

### SWM Services

#### Subscriptions

Subscriptions are available at £36 per annum to UK addresses, £43 in Europe and £48 (Airmail), £54 (Airmail) overseas. Subscription copies are despatched by accelerated Surface Post outside Europe. Airmail rates for overseas subscriptions can be quoted on request. Joint subscriptions to both Short Wave Magazine and Practical Wireless are available at £50 (UK), £73 (Europe) and £81 (rest of world), £93 (airmail).

#### 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, Collden 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 £2.50 per article. Binders are also available (each binder takes one volume) for £5.50 plus £1.50 P&P for one binder, £2.75 P&P for two or more. UK or overseas. Prices include VAT where appropriate. A complete review listing for SWM/PW is also available from the Editorial Offices for £1 inc. P&P.

#### Placing An Order

Orders for back numbers, binders and items from our Book Store should be sent to: PW Publishing Ltd., Post Sales Department, Arrowsmith Court, Station Approach, Broadstone Dorset BH18 8PW, with details of your credit card or a cheque or postal order payable to PW Publishing Ltd. Cheques with overseas orders must be drawn on a London Clearing Bank and in Sterling. Credit card orders (Access, Mastercard, Eurocard, AMEX or Visa) are also welcome by telephone to Broadstone (01202) 659930. An answering machine will accept your order out of office hours and during busy periods in the office. You can also FAX an order, giving full details to Broadstone (01202) 659950. The E-mail address is: [bookstore@pwpublishing.ltd.uk](mailto:bookstore@pwpublishing.ltd.uk)

#### 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.

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# QSL

**Is there something you want to get off your chest? Do you have a problem fellow readers can solve? If so then drop a line to the Editor at QSL, Short Wave Magazine, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW.**

**THE BEST LETTER WILL RECEIVE A £20 VOUCHER TO SPEND ON ANY SWM SERVICE.**

## topqsl

**Dear Sir**

SWM recently featured a letter from Roy GOTAK/2E1RAF (whose E-mail address I don't have), concerning the modification of commercially produced amateur radio equipment for experimental use on 5MHz frequencies.

Towards the end of last year, the RSGB formed a 5MHz Working Group to encourage and co-ordinate activity, support and validate findings where appropriate, and liaise with the primary user of the frequency on the outcomes of the experiments. The Working Group's website went live in December with a FAQ that we hope will help to reduce the uncertainty on a number of issues connected with experimentation on 5MHz. One of the model Q&As specifically addresses Roy's concerns, see [www.rsgb-hfc.org.uk/faq.htm#q9](http://www.rsgb-hfc.org.uk/faq.htm#q9)

I apologise for any delay in responding to the letter.

**John Gould G3WKL**  
**Chairman, RSGB 5MHz Working Group**

*Please note John's reply has been on hold at SWM for two months, so it's not as late as it appears. - Ed.*

**Dear Sir**

May I please take advantage of your kind offer to help on matters relating to radio. My particular interest concerns both radio and yachting. Consequently, my boating involves both radio and boating. Regrettably, no one publication covers both spectrums adequately.

The advice requested concerns ship's radio. Initially, it was my intention to include a short wave radio, together with v.h.f., but decided on TX/RX. Consequently, the short wave radio remains unused and available for disposal - hence the problem. I follow the items as advertised in 'Trading Post', but lack the knowledge on describing and pricing the object.

The radio receiver is a Sony CRF-V21 and as yet, little used. The radio has priority tuning, activity search, recording, timer, spectrum analyser, scan tuning, memory function and reception. Additionally, two batteries are available together with charger. There are also original operating manuals, in French and in English.

The current value of the radio is difficult to establish. Therefore, I would welcome your advice if a market exists for this type of radio and what would be a realistic sale price. If it is not possible for you to help in this direction, would it be possible to point me in the direction where this information may be obtained.

**G.B. Long**  
**Lancs**

*I have seen CRF-V21s for sale in the past. Prices, from recollection, have varied from the original*

*£2000 new price tag to £400. As with most items for sale, it all depends what the market will support. If there is strong interest, then the price will be higher. I'm sorry, but it's very difficult to be more helpful than that. - Ed.*

**Dear Sir**

I am writing to you regarding amateur SETI and other forms of radio astronomy. I'd love to turn my shack into an amateur SETI station, but have no clue how to go about this. I was wondering if you could include a step by step guide for us budding listeners who might just one day find the ultimate DX. Thanks in advance for any help you can give. Keep up the great work SWM.

**Mike Collins**  
**Wales**

*Mike, please see page 45 of this issue. - Ed.*

**Dear Sir**

I write with reference to your mention of the 'Lighthouse Weekend' and to suggest that you feature an article on 'How to QSL' before the event session starts. As a newly licensed M3, I really enjoyed the challenge of 'bagging' as many lighthouses as I could over the weekend (total 50 - UK and Europe), and faithfully sent out QSL cards to all of them. To date I have had three replies.

Now I realise that cards sent through the RSGB Bureau can take months, if not years, to come back and (maybe) if I'd have sent s.a.e.s the stations may have QSLed by return. It's a funny thing, when I was a CBer, almost everyone would QSL 100%, but since joining the "gentleman's league, the upper echelon of radio operations" etc., this doesn't seem to be the case.

I sent an E-mail to Kevin VK2CE on this subject, as he's the organiser, and was politely told that QSL policy is down to the individual operators and he has no responsibility for their actions - or lack of them. I know it's only a fun thing, but as you can tell, I am quite upset by the attitudes.

Anyway, I thought that a small article describing the pit-falls of QSLing and the way that the RSGB Bureau operates would be of benefit to any new operators and short wave listeners.

Now, having got that off my chest, thank you for a brilliant magazine. It is, for my money, the most informative of all the publications available - a very good balance of articles covering the hobby in all its facets.

**Howard Grundey**  
**Isle of Man**

*Howard, I'm sorry to learn of your disappointing QSL results. Look out for our guide next month in SWM. - Ed.*

**Dear Sir**

With reference to the mention of NAVTEX reception by Mike Richards in his 'Decode' column (August 2002 SWM), Mike briefly mentions commercial dedicated Navtex systems which are available. I have run one of these for the last seven years or so and it is in constant daily use. I would like to point out a couple of things regarding these which readers may find useful.

Firstly, it is very important when using one of these in the shack to use a good quality power supply and one that is earthed, the latter being very important as mains borne interference on the Navtex frequency can prevent reception of the signal. This is due to the power supply not only powering the unit, but also the active antenna that is supplied.

Secondly, it is useful to note that these receivers can be programmed to receive signals from different NAVTEX areas in the world (subject to being in reception range) - the stations listed in Mike's table refer to Area 1. It is also possible to select which message type you wish to receive, along with a particular station in the selected area you wish to receive messages from.

At my location here in Northern Ireland, I can receive regular signals from a station in Area 2, which provides me with information from the Bay of Biscay area.

Some commercial NAVTEX receivers have a built-in memory, my NASA Marine Video Navtex receiver has a 16 page memory, also some have facilities to link to a printer and print out the messages as they are received. This can save tying up your computer for reception.

Finally, a money saving tip. If you have access to yachting magazines, keep an eye out for clearance offers of an older model after the introduction of a newer model. I picked mine up from a major yachting equipment dealer for under £100 shortly after a new model had been released - well under half price - and it still carried a full warranty.

**Robert A. Connolly**  
**N. Ireland**

*Thanks for the tips Robert. NAVTEX monitoring is indeed fascinating. In my view, a dedicated set is a must. - Ed.*

# The 2003 Short Wave Magazine

# Listening Contest

**Listen & Win!**

A Short Wave Listening Contest organised by *Short Wave Magazine* in conjunction with a day's operation of the magazine's amateur radio callsign G3SWM.

On Sunday  
May 4 2003

we will be running a station manned by *SWM* Editor Kevin G7TZC, M3SWM, Amateur Bands author Clive G4SLU and various other keen volunteers who have been crazy enough to offer their assistance. The station will operate from Dorset's famous Island of Portland at grid reference SY700727.

Station operation will commence at 0500 and finish at 1700, the main band used will be 40m on approximately 7.070MHz. It is likely that the station will be operating on other bands, this will be mentioned on the day in the 40m frequency. The event station's objective is to work as many other stations as possible so that entrants in this listening contest have as many logging opportunities as possible. If you are a licensed amateur, then please feel free to work the event station too. The more contacts we make the better.

Every hour on the hour, starting at 0700, we will have a 10 minute window for M3 exclusive contacts to promote M3s working G3SWM. There will be an attractive and unique QSL card available for the day's activity from the Portland location. To make things even more interesting we will be located in the relatively rare WAB square SY77DOR\*. This square's rarity is due to most of the area being occupied by ocean.

The overall winner of the *SWM* Listening contest will have amassed the most points based on the stations they have logged during the 12 hours operating period. All stations must have worked the Event station G3SWM to be a valid logging. All reports must include the report given to G3SWM and the station operators name working G3SWM, if the contact is to be considered. Please note that the event station will not be repeating their received report from the station worked, so you'll have to listen carefully. There will be several winning categories, overall winner, best UK place and best overseas place.

\*Note that G3SWM is not a WAB Book Holder.



## Sample Log

**DXers Name:** My SW Listener  
**Address:** The Shack, Antennatville, W Midlands, UK  
**Receiver:** HF-150

Date	Time	Callsign	Frequency	RST for G3SWM	Op Name	Country	Points
4 May	0500	M3SWM	7.070	48-	Kevin	England	1
4 May	0503	G4SLU	7.071	59-	Clive	England	3
4 May	0510	G3XFD	7.071	47-	Rob	England	5
4 May	0801	MM3ABC	3.685	56-	Bruce	Scotland	1

Total No of Pages 1  
Page 1 of 1  
Total Points 10  
Points this page 10



## The Rules

**Purpose**  
This contest is designed to promote the short wave listening hobby and to provide those s.w.l.s and DXers interested in competing an opportunity to participate in a carefully run, challenging contest.

**Eligibility**  
The 2003 *SWM* Listening Contest is open to all *Short Wave Magazine* readers. *SWM* staff are excluded from participation.

**Listening Period, Frequencies & Times**  
The contest listening period will begin on Sunday, 4 May 2003, at 0500UTC and ends Sunday, 4 May 2003, at 1659UTC.

**Prizes**  
A plaque will be awarded by *SWM* to the winners. All entrants will receive

a participation certificate indicating that they competed in the 2003 *SWM* Listening Contest. The certificates for the top ten will have their position indicated on the certificate.

**Scoring**  
Contestants are to log as many stations being worked by G3SWM as possible from as many countries as possible within the prescribed listening parameters. The first station logged from each country = 1 point. The second station from each country = 3 points, each additional station from that country = 5 points. To qualify for the contest, each contestant must present logs of 30 entries as a minimum - entries without these 30 logs will not be considered. These required loggings are to be counted in point totals. Upon completion of the contest, multiply the point total by the number of countries heard to determine the final score. A station is a radio amateur who has established contact with and been allocated an event serial number by G3SWM. All entries will be checked against the G3SWM station log for validity.

Each contestant is required to submit a paper log to include date, country, callsign, frequency, time, RST given to G3SWM, operator name and points for contact. Electronic log print-outs are acceptable.

Each contestant is required to total his own entry and provide a summary of the number of countries and stations claimed to support the point totals. The receiver(s) used in the contest must also be indicated. Logs must be in the format below and will be judged on accuracy, completeness and neatness. If the judges cannot read a log, it will not be counted for scoring purposes. The decision of the judges is final.

**Entry**  
Entries should be sent to: *SWM* 2003 Listening Contest, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. All entries must be received by Monday 19 May 2003.

Contestants will be notified of the results in the August 2003 issue of *Short Wave Magazine* in which a list of winners will be published.

## AR8200 MK3 RECEIVER

*evolution produces the very best 3000MHz hand portable*

Evolution has led to the **AR8200 MK3** and provides excellent full coverage all mode receive including USB, LSB, AM, NFM, WFM with multiple IF bandwidths. Frequency coverage is **530kHz - 3GHz** with minimum acceptable input of 100kHz. Supplied with NiMH rechargeable batteries, charger, car lead, whip aerial, MW aerial and comprehensive illustrated operating manual.

**The MK3 changes are in the following areas:** Some RF component change with a positive performance advantage with sensitivity and strong signal handling increasing on some frequencies. The frequency coverage has been extended to 3GHz. The AR8200 MK3 is supplied with 1500mAh NiMH batteries (in place of NiCads) for extended operation. The LCD illumination may be switched to AUTO so that the illumination will automatically switch-on (for just a few seconds) when the squelch opens, ideal for noting the active frequencies at night time.

**AR8200MK3 review SWM March'03: This is a compact little hand-held with some innovative design ideas. It performed well on the bands that I monitored and the powerful scan, search and other facilities are a great asset to good scanning.**

Many options are available including SLOT CARDS for CTCSS, analogue voice inverting, external memory, recording / playback, tone eliminator, computer interface lead, reaction tune lead, soft case, free PC software from the AOR web site.

**Summary:** A Temperature Compensated Crystal Oscillator (TCXO) forms the heart of the AR8200 MK3 resulting in **high stability** with **minimal internal spurious**. RF preselection in the mid-VHF bands ensures **best sensitivity and strong signal handling** with a wide coverage up to 3GHz (all mode receive without gaps).

**Flexible tuning steps including 8.33kHz**, programmable in all modes down to 50Hz. LCD illumination is nice and bright with sharp display of LCD characters and adjustable contrast, the beep is also configurable.

**Flexible power**, a set of 4 x 1500mAh AA rechargeable high capacity NiMH are provided, a DC lead with cigar plug is also provided along with AC charger which doubles up as a power supply. The receiver may also be powered from standard dry batteries such as alkaline.

**Computer control**, nearly all functions can be controlled via computer (optional 8200PC interface required). **£439.00 inc VAT**



## AR8600 MK2 RECEIVER *wider coverage all mode receiver 100 kHz - 3000 MHz with RS232 port*

The **AR8600 MK2** is an amazingly versatile receiver which can be used mobile, base or trans-portable... powered from an external 12V d.c. power supply, 12V vehicle or from an optional internally fitted NiCad battery pack. Due to continuous development of our products, the AR8600 MK2 has been enhanced in several areas. The upper **frequency range has been extended to 3000MHz (3.0GHz)**, lower band sensitivity has been increased (now officially covering to 100kHz) with an **enhancement to short wave performance** by the addition of further bandpass filters and revision to I.F. filters. **Mini-Circuits RMS1 / RMS2 mixers** have been employed with **active SPM aerial switching devices** (not diode-switching) abundantly employed throughout the signal path. **Technical boffins** will recognise the significance of such devices in minimising signal loss & maximum spurious free range, and will be versed with the quality of Mini-Circuits parts]. The AR8600 MK2 provides remarkable short wave performance, making other similar wide band competitors mediocre by comparison. When the AR8600 MK2 arrived in the UK, **short wave listeners were amazed at how the AR8600 MK2 sounds so much like a dedicated short wave receiver** with pleasant audio on SSB and good CW tone with Radio Japan rolling in on a simple telescopic whip, much less like the usual expectations of a scanning receiver!

**AR8600MK2 review SWM March'03: I assessed the performance of the AR8600MK2 not only on the airbands but also on a variety of v.h.f and u.h.f. bands between 40 and 100MHz, the overall performance was good to very good.**

An RS232 port further extends the capabilities with free supporting control software available from the AOR web sites. 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. A FREE software package is available as a download from the AOR web sites.

In addition, **'optional internal SLOT CARDS'** (which fit into the rear chassis of the AR8600 MK2) extend the capabilities even further, five cards may be fitted with two operational simultaneously •**Memory slot card** (increase storage to 4,000 memories, 160 search banks). •**CTCSS slot card** squelch & search. •**Record chip slot card** (records up to 20 seconds of audio) with 'continuous loop' capability. •**Tone eliminator slot card**. •**Voice inverter card**. The slot cards are common to the AR8600 and AR8200 receivers.

**Portable operation** is a reality, when the optional BP8600 battery is fitted, **several hours operation** is provided away from the base or vehicle power supplies (optional PSU7030 15V power supply recommended for charging).



**£719.00 inc VAT**



**AOR (UK) LTD** 4E East Mill, Bridgefoot, Belper, Derbyshire, DE56 2UA England



**Tel: 01773 880788** Fax: 01773 880780  
info@aoruk.com www.aoruk.com E&OE

## G3SWM To Hit The Air

Early May will see the operation of the long silent *Short Wave Magazine* amateur callsign, G3SWM, in a 12 hour stint to support the *SWM Listening Contest*. The station will be operating from the relatively rare Worked All Britain (WAB) Square, SY77DOR from 0500 to 1700 on 4 May 2003.

The Portland location was chosen due to several factors, not least of which is the WAB rarity in an effort to promote a busy day of activity. This is an essential requirement to give *SWM* readers wanting to enter the listening contest the maximum number of stations to catch.

For more details of the event see page 7 of this issue.

We look forward to working as many licensed readers as possible on the day. Visitors to the station will be most welcome. There will be a 10 minute window on the hour exclusively for M3's to work the station.

## Chelmsford Foundation Courses



As part of the Foundation assessments candidates have to carry out QSOs on both the h.f. and v.h.f./u.h.f. bands. Here is Foundation candidate **Srinivasan Sampathkumar** (Sam) operating under the supervision of **Martyn G1EFL** on 21MHz using the club callsign **GX0MWT**. The **Chelmsford Amateur Radio Society** runs Foundation evening courses every two months and an Intermediate course will be starting on 15th May 2003.

The Chelmsford Amateur Radio Society meets on the 1st Tuesday of each month at the Marconi Social Club, Beehive Lane, Great Baddow, Chelmsford. The doors open at 1915 and the meeting gets underway at 1930. A bar is available for refreshments.

For further information, contact the secretary **David Bradley M0BQC** on **(01245) 602838**, E-mail: [cars@g0mwt.org.uk](mailto:cars@g0mwt.org.uk) or visit [www.g0mwt.org.uk](http://www.g0mwt.org.uk)

## Annual Contest & Rally

The **Bangor and District Amateur Radio Society** meet on the first Wednesday of every month in 'The Stables', Groomspout, County Down at 8pm. On Wednesday 2nd April 2003 at 2000 they are holding their annual constructors contest. There will also be a talk on vintage radio restoration by Norman G13YMY. As always, visitors and new members are most welcome.

Bangor's Summer Radio Rally will take place on **Sunday 22nd June 2003**. A good selection of radio and computer traders will be in attendance, and the always excellent Bring & Buy will in operation. The rally will be located at the Crawfordsburn Country Club, which is near Bangor, County Down. Doors open at 1200. Further details from club website <http://welcome.to/bdars> or from **Mike GI4XSF** on **0284-277 2383** or E-mail [mike@gi4xsf.com](mailto:mike@gi4xsf.com)

## Golden Web Award

The **Southport & District Amateur Radio Club (SADARC)** is proud to announce that it has been awarded a Golden Web Award by the International Association of Web Masters and Designers (IAWMD). The IAWMD issue these awards to sites whose web design, originality and content have achieved levels of excellence deserving of recognition.

Derek Hughes, SADARC's Publicity Manager, said that the web site had been up-and-running for around twelve months now and was receiving, on average, two hits per day. He went on to say that the web site was designed to be viewed by all Radio Amateurs, not just those of the club and the content reflects this well. There is plenty of up-to-date club, UK and world-wide news, features written by the site's visitors, a diary of club meetings, local rallies and courses, free software to download from G7LFC Software and a comprehensive list of Amateur Radio and computer-related links. The clubs new newsletter can also be downloaded from the web site, which can be found at [www.southportarc.org.uk](http://www.southportarc.org.uk)

In addition to their web site, SADARC is also running a free e-Group which all Radio Amateurs are welcome to join. The e-Group is intended to be a focus for Radio Amateurs around the world to exchange their news and views, arrange scheds, share photographs of their events, list their favourite links and generally keep in touch when conditions mean that it can't be done over the radio. Everyone is welcome to join the group, which can be found at <http://groups.yahoo.com/group/SADARC/>

The Southport & District Amateur Radio Club usually meets on the third Monday of every month, Bank holidays and Christmas permitting. The club serves the area of West Lancashire and Sefton and meets at St. Marks Church Hall, Scarisbrick and Lancashire.

The Southport Club is very active, growing in numbers, that enjoys running special event stations, on-the-air evenings, welcoming guest speakers, arranging visits to interesting organisations and taking radio into local schools. Everybody is welcome to go along to their meetings, licensed or not, young or old.

If you require further information about SADARC, then please contact the Publicity Manager, **Derek Hughes G7LFC** on **(01695) 573870**. You can also E-mail at [derek@g7lfc.co.uk](mailto:derek@g7lfc.co.uk) or write to: **86 Colinmander Gardens, Ormskirk, Lancashire L39 4TF**.

## RSGB Morse Test - 17th Anniversary

County Morse test teams will again be on the air during the 17th anniversary weekend of the **10/11th May 2003**.

For ease of identification, all stations will use a special event GBO prefix, followed by the county code suffix, e.g. the Isle of Wight will use the callsign GBOIOW and London GBOLDN. The Chief Morse Examiner will use GBOCW and the Deputy Chief Morse Examiner GBOMTS.

There will be a minimum of 27 stations active and a Morse Test 17th anniversary certificate will be available to any amateur who makes contact with at least 10 of the GB stations. The cost of the certificate is £2.50 (cheques or postal orders made out to the RSGB), \$5 or six IRCs. Applications should be sent to: **Chief Morse Examiner, David Waterworth G4HNF, 116 Reading Road, Woodley, Reading, Berk RG5 3AD**. QSL cards are not required to claim the award, which is also

available to listeners.

Activity will be concentrated in the 80 and 40m bands and in order to encourage newcomers to apply for the award, each team will spend some time calling slowly in the Novice c.w. section of the 80m band, above 3.560MHz. The event is not a contest and examiners will be happy to reply at any preferred calling speed. There are no restrictions on the type of Morse key used, all are welcome to call in and enjoy the friendship.

## Dundee ARC

**T**hirteen members of the **Dundee Amateur Radio Club** enjoyed a visit recently to Fife Ness Coastguard Station based at Crail, where they were warmly welcomed and shown around the establishment. The communications equipment and computer operation was explained to all and a warm thanks was proposed by Alec Ferguson on behalf of the members for the enjoyable visit. Find out more about the Dundee Club from Hon. Sec. **Martin Higgins MM3AWM** or visit [www.dundee-amateur-radio.co.uk](http://www.dundee-amateur-radio.co.uk)



## From The Hilltops

**F**ollowing his successful use of the ISWL club callsign **MX1SWL/P** with just 230mW in August 2002 (including operation as **MC1SWL/P** from North Wales), **Tom Read M1EYP** has secured two further months in 2003 with the club call. The months granted are April and August, deliberately selected to coincide with the school holidays and therefore the periods of greatest operation (Tom is Head of Mathematics at Brownhills High School in Tunstall, Stoke-on-Trent).

Plans for August are still at a very early stage, but will include operation from a campsite and areas around North-East Essex and hopefully another session as **MC1SWL/P** from the Great Orme (NW-070, 207m a.s.l.) near Llandudno, North Wales. This will also count as a summit activation in the SOTA (Summits On The Air) programme. This is based on the *Marilyns* programme, a Marilyn being defined as a relative hill with a drop on all sides of at least 150m.

The April operation is set to include several SOTA activations in the English *Marilyns*, particularly in the Pennines. A trip to Larne in Northern Ireland is planned for April 21st-24th, with at least two summit activations in the County Antrim hills and mountains included. The two definite targets here are Slemish mountain AH-007, 437m a.s.l. and Agnew's Hill AH-005, 474m a.s.l.

Most if not all operation will be on 2m v.h.f., using a Yaesu FT-817. Further information on the International Short Wave League can be found at [www.iswl.org.uk](http://www.iswl.org.uk) while SOTA details may be found at [www.sota.org.uk](http://www.sota.org.uk) Links to these, plus much more related information and a comprehensive s.w. broadcast QSL gallery may be found at Tom's website - <http://tomread.co.uk> - also see page 30 this month for details of Tom's activities as **MX1SWL/P**.

## Nevada Clinch New Deal

**B**PL, India's largest Radio & TV Manufacturer, has awarded **Nevada** the distribution of its range of WorldSpace Radios in the UK and Europe. The new range of BPL WorldSpace radios will be available from mid March 2003.

First to be released will be the Celeste 11 portable radio. This radio covers both the WorldSpace service and the regular a.m./f.m. radio programmes. The Celeste 11 has a PC data interface allowing data downloads from the satellite (with suitable software). For outstanding audio reproduction, it features a pair of large speakers and for the traveller may be powered from battery or 230V mains. The Celeste 11 is expected to retail at £139.



*Pictured with the new Celeste 11 Radio are: (L-R) Nevada's Mike Devereux with BPL's Julian Smith (Head of European marketing) and Dale Bradley (Business Manager of WorldSpace UK), concluding the appointment of Nevada as European distributors for the BPL WorldSpace Radios.*

## Oops

In the March 2003 *SWM* Club Listing, we published the incorrect meeting place for the **Shirehampton Amateur Radio Club**. The correct details should have been that members meet at the TS Enterprise Sea Cadet Unit, Station Road, Shirehampton, from 1930. The club is also currently running the Foundation Course and Morse Assessment classes. More information on their website at [www.shirehampton-arc.org.uk](http://www.shirehampton-arc.org.uk) or contact **Ron Ford** on **0117-985 6253**. Apologies to the Shirehampton Club. *If your club isn't on our list - then send us your details now and be part of our comprehensive UK Radio Club Listing.*

## Icom Winner

**C**ongratulations to **John P. Coyle** from Glasgow who correctly answered the three questions in our competition to win an Icom IC-R5, which appeared in March's *SWM*. Well done John and the prize is on its way to you.



## rallies

### World DX Club

International short wave broadcasters start their new schedules on March 31st. The **World DX Club** publishes a 12 page pamphlet listing the times and frequencies of English broadcasts in country order. Over 100 broadcasters are listed and the pamphlet is constantly updated so that the information is as up-to-date as possible when you order. A revised edition covering the new schedules will be issued in mid-April.

To reserve a copy send 50p or two IRC's to **Arthur Ward, 17 Motspur Drive, Northampton NN2 6LY**. The club's monthly magazine *Contact* has now been published for 40 years and its 64 pages contain a wealth of information for the broadcast DXer. Copies of the magazine are available for an additional 50p.

### Unveiling the Statue of Marconi in Chelmsford

The **Chelmsford Amateur Radio Society** was represented at the official unveiling of the Marconi statue by club President Harry G5HF and Chairman John G8DET. The statue was created by Stephen Hicklin and is located in the entrance hall of the Record Office, Wharf Road, Chelmsford.

Councillor Michael Mackrory, Leader of Chelmsford Borough Council introduced Princess Elettra. He invited the Princess to unveil the statue of her Father, Guglielmo Marconi. She gave a nice speech in which she said she was pleased that Chelmsford had honoured her Father.

CARS Chairman John G8DET had the opportunity to have a chat with the Princess and reminded her of the 100 year Marconi Celebrations just over two years ago when she transmitted to Cape Cod. She said she remembered the event with pleasure and liked the photographs of herself on the CARS web site.

The Chelmsford Amateur Radio Society meet on the first Tuesday of each month in the **Marconi Social Club, Beehive Lane, Great Baddow, Chelmsford**. The doors open at 1915 and the meeting gets underway at 1930. A bar is available for refreshments. For further information contact the secretary David Bradley MOBQC on **(01245) 602838**, E-mail: [cars@g0mwat.org.uk](mailto:cars@g0mwat.org.uk) or visit the club website: [www.g0mwat.org.uk](http://www.g0mwat.org.uk)



Space Radio Princess Elettra and John G8DET with the statue of Marconi.

**April 6:** Lough Erne Amateur Radio Club hosts the 22nd Enniskillen Amateur Radio Show in the Killyhevin Hotel, Enniskillen, Co Fermanagh, Northern Ireland. Admission £3, includes free raffle ticket. Doors open at 12 noon. Big car park, bar and good food. Bring & Buy, with no fee, raffle with valuable prizes. Amateur Radio, Electronics, Computers, traders big and small, equipment, accessories, components, new surplus and second-hand, and traditional attendance from all over Ireland, north and south. For more details contact **Herbie G16JPO** on **0286-6638 7761** or E-mail: [h.graham@bigfoot.com](mailto:h.graham@bigfoot.com)

**April 6:** The 46th Northern Mobile Rally (Harrogate Rally) will take place at Harrogate Ladies College. Doors open at 1030. Entry is by programme at £2.50. More information from Gerald at [webmaster@harrogaterally.co.uk](mailto:webmaster@harrogaterally.co.uk) or telephone **(01765) 640695** or mobile **(07734) 478080**. Trade stands are available through the website or by contacting **Gerald Brady G0UFI** as above.

**April 13:** The Cambridgeshire Repeater Group are holding their Annual Rally at Bottisham Village College, Bottisham, which is six miles east of Cambridge. Access is via A14

and A1303. Features a large hall, car boot sale and a Bring & Buy. Doors open at 1030 and admission is £1.50. Refreshments will be available and there is a talk-in on S22. Details from **Paul Dyke G0LUC** on **(01462) 683574** or [g0luc@btinternet.com](mailto:g0luc@btinternet.com)

**April 27:** The Aldridge and Barr Beacon Amateur Radio Club are holding their 4th Annual Radio & Electrical Sale at Aldridge Community Centre, Anchor Meadow, Middlemore Lane, Aldridge, Walsall. Admission is just 50p and doors open at 1030 - there will be a free car park and refreshments. More information from **Doug G4LQY** on **(01543) 571269**.

## IEC Votes in Favour of DRM International Standard

The International Electrotechnical Committee (IEC) has given the Digital Radio Mondiale - DRM - on-air system its highest stamp of approval - International Standard. The IEC voted in favor of the DRM standard.

DRM is the world's only non-proprietary, digital system for s.w., m.w. and l.w. with the ability to use existing frequencies and bandwidth across the globe. With near-f.m. quality sound that offers a dramatic improvement over analogue a.m., DRM will revitalise the a.m. broadcasting bands below 30MHz in countries world-wide.

"The vote for the DRM standard occurred at midnight on January 31st," said Pierre Vasseur, Chairman of the Joint Rapporteur Group ITU-IEC and Director, Advanced Business at DRM member Thales Broadcast and Multimedia. "It is the culmination of years of contributions toward our goal of global standardisation". Mr. Vasseur has been involved in the DRM standardisation process since it began. He will officially report the IEC results to the International Telecommunications Union's (ITU) Working Party Group 6E at its next meeting in mid-March. Lindsay Cornell, Head of Digital Radio at DRM member the BBC, who managed most of the drafting and editing work on behalf of DRM, said, "It is an important achievement because it underscores the universal capabilities of DRM."

With DRM's commercial roll-out drawing nearer, DRM will launch its inaugural broadcasts toward the ITU's WRC 2003 in Geneva this June. "This IEC standard opens the door to the development of DRM products by any manufacturer interested in providing DRM-capable receivers to the marketplace in the future," says Michel Penneroux, Chairman of DRM's Commercial Committee and Head of AM Systems at DRM member TéléDiffusion de France.

DRM has also received endorsement by the ITU for all three broadcasting bands below 30MHz - s.w., m.w./a.m. and l.w. No other digital radio system has received such broad recommendation (including s.w., as well as m.w./a.m. and l.w.) by the ITU.



## Callsign Activated

The events calendar for the Windermere Steamboat Museum has now been finalised for the coming season. The WSMARS will be activating the Callsign GB2WSM on the following days from the Museum premises at Rayrigg Road Bowness on Windermere.

**Sunday 23th March, Sunday 13th April, Sunday 18th May, Sunday 8th June, Sunday 13th July, Sunday 17th August, Saturday and Sunday 1-7th September**

If any licensed amateur would like to visit and help to operate the station on any (or all) of these dates, please get in touch with the Museum Administrator **David Addison** on **(01539) 445565**, **G0XTC** on **(01539) 446863** or **G0TAK** on **(01539) 738293**.

## GOING MOBILE

### G. SCAN II MOBILE

Freq: 25-2000 Mhz Length: 620mm  
Dual coil capacitor trapped vertical coils, 3.5" magnetic base with rubber protection, 4mtrs RG58 coax cable, terminated with a BNC. (Don't loose those signals while on the move, the G.Scan II is the answer for continued high performance reception where ever when ever).

**Our Price £24.95** plus £6.00 p+p.



### SKYSCAN MOBILE

Freq: 25-2000 Mhz Length: 650mm  
4 tuned stainless steel vertical radials, 3.5" magnetic base with rubber protection, 4 mtrs RG58 coax terminated with a BNC. (With not just one but four vertical radials, take your scanner in the car & enjoy superior reception with this dedicated antenna).

**Our Price £19.95** plus £6.00 p+p.



### MINISCAN MOBILE

Freq TX: 144-146 430-440 Mhz  
Freq RX: 100-1300 Mhz Length: 300mm  
Spring loaded black stainless whip, 1" super strong magnetic mount, 4mtrs of mini hi-spec coax, terminated with a BNC. (Ideal for "low profile" scanning while for those with transceivers with wideband reception its the perfect choice for dual band TX and continued large scale reception).

**Our price just £14.95** plus £3.00 p+p.



## PORTABLE ANTENNAS

### TRI-SCAN III

Freq: 25-2000 Mhz Length: 900mm  
This Desktop Internal Antenna comes with 3 vertical capacitor loaded coils, mounted on a unique helically wound tri-pod, to give its own ground plane for smooth reception. Complete with 5 mtrs of RG58 coax, terminated with a BNC. (Get the most from your scanner with the Tri-Scan III Desktop and enjoy great performance without the hassle of erecting an external one).

**Our Price £39.95** plus £6.00 p+p.



### SKYSCAN DESKTOP

Freq: 25-2000 Mhz Length: 900mm  
This discone style indoor antenna comes with 4 tuned stainless steel vertical whips, 8 ground plane 12" radials, plus 4 loaded horizontal 3" helical radials. Complete with heavy duty base 5 mtrs RG58 terminated with a BNC. (Don't loose those wanted signals indoors. Use the Skyscan Desktop at your radio station, on the window seal or even in the loft for increased performance).

**Our Price £49.95** plus £6.00 P+P.



### SWP GLASS MOUNT ANTENNAS

These two superb universal antennas, one for VHF/UHF & one for HF have internal tuned wound coils encased in a fibreglass tube with black covering. Includes two suction cups for easy fitting to any smooth surface, complete with 5mtrs of mini hi-spec coax terminated with a BNC. (With these antennas, take your hobby mobile in the car, at home on the patio or bedroom window. A perfect solution for sometimes awkward antenna installations. Great results - No hassle)

#### SWP2000

Freq: 25-2000 Mhz Length: 515mm.  
**Our Price £29.95** PLUS £6.00 P+P.

#### SWPHF30

Freq: 0.05-30 Mhz Length: 770mm.  
**Our Price £39.95** PLUS £6.00 P+P.



### MAX-5 ACTIVE

Freq:25-1800 Mhz Length:1400mm  
This portable active antenna incorporates a easy fold away 300 Ohm receiving element joining to a matching coil, wideband pre-amplifier (9v batt not inc) 4mtrs RG58, terminated in a BNC. (Don't loose performance by not choosing an external antenna! Install the in the loft, hang by the window, or even from a tree while out and enjoy upto 14dB Gain with the MAX-5 pre-amplified Active Antenna).

**Our Price £49.95** PLUS £6.00 P+P.



## SHORT-WAVE WIRE ANTENNAS

### MO37 SKYWIRE

Freq: 0-40 Mhz Length: 25mtrs  
This complete HF wire antenna system comes with 25 mtrs of enamelled copper antenna wire, dog bone insulator, choke balun, & 10mtr RG58 patch lead terminated with a PL259.

**Our Price £39.95**



### MVA-HFMKI

Freq: 0-40 Mhz Length: 25mtrs  
This complete HF wire antenna system comes with 25 mtrs of high grade flexweave antenna wire, dog bone insulator, di-pole centre choke balun, guy rope, & 10mtr RG58 mil spec patch lead terminated with a PL259.

**Our Price £49.95** plus £6.00 P+P.

*(Both these wire antennas have our own ferrite wound baluns that give an extra 2 "S" points greater signal than some similar baluns. No ATU required as perfect 50 Ohm match is achieved over all 40 mhz).*



### Long Wire Balun

Balun only with SO239 socket and wing nut for wire connection.

**Our Price Just £19.95** plus £2.00 P+P.



## BASE VERTICALS

### SUPERSCAN STICKS I & II

These two superb external antennas will receive on all frequencies unlike a mono base antennas. Both have capacitor loaded coils (4 in the SuperScan Stick and 8 in the SuperScan Stick II) inside the vertical element to give maximum sensitivity to even the weakest of signals. Also the SuperScan Stick II has 3dB gain over standard SuperScan Stick !!!

*(Perfect for every scanner, from the beginner starting out to the more experienced listener).*

#### SUPERSCAN STICK

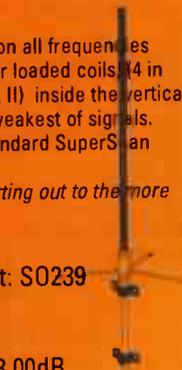
Freq: 0-2000 Mhz Length:1000mm Socket: SO239  
**Our Price £29.95** PLUS £6.00 P+P.

#### SUPERSCAN STICK II

Freq: 0-2000 Mhz Length:1500mm Gain: 3.00dB  
Socket: SO239.

**Our Price £39.95** PLUS £6.00 P+P.

*(Both these antennas come complete with 3 ground plane radials 12" stub mast, v-bolts & clamps). ★ Also Available !!! Base Scan Sticks (as above) with Tx Capabilities !!! (for use with transceivers only) ★*



#### MULTISCAN STICK I

Freq RX:25-2000 Mhz TX 144-146/430-440 Gain 2.0/4.0dB  
Length:1000mm Socket: N-type.  
**Our Price £39.95**

#### MULTISCAN STICK II

Freq RX:25-2000 Mhz TX 144-146/430-440 Gain 4.0/6.0dB.  
Length:1500mm Socket: N-type.  
**Our Price £49.95**

#### IVX2000

Freq RX:25-2000 Mhz TX 50-52/144-146/430-440  
Gain 2.5/5.0/7.0dB  
Length: 2500mm Socket: N-Type **Our Price £89.95**

## AR-AIR BAND ANTENNAS

These dedicated civil & military fibreglass antennas are made pre-tuned & dual band trapped for both Air Band frequencies. Easy connection with an SO239 socket (With these antennas you can obtain high dual band gain which is not available on wideband antennas. Just don't miss take off !!!)

### AR-30

Freq:Civil & Military Gain:3.0/6.0 dB  
Length:1000mm.  
**Our Price £39.95** PLUS £6.00 P+P.

### AR-50

Freq:Civil & Military Gain:4.5/7.0 dB  
Length:1500mm.  
**Our Price £59.95**

(Both these antennas come complete with 3 ground plane radials 12" stub mast, v-bolts & clamps).

### X1-HF VERTICAL

Freq:1-50 Mhz Length: 2005mm  
Socket: SO239

The X1 incorporates loaded helical traps, similar to that of a horizontal di-pole, encapsulated in a heavy duty high impact plastic tube, with a top tapered stainless steel whip. (The answer for those enthusiasts looking for short-wave reception but haven't the space for a long wire).

**Our Price £49.95** PLUS £6.00 P+P.

## DISCONE ANTENNAS

### STANDARD DISCONE

Freq: 25-1300 Mhz Length:1000mm  
Socket:SO239

This antenna comes with heavy duty centre cone with 16 sturdy aluminium radials, no capacitor coils just pure elements, complete with mounting pole, clamps & v-bolts to mount upto a 2" mast. (The discone has been around for over 25 years and is generally recognised as the original and probably the best all round scanner antenna).

**Our Price Just £29.95** plus £6.00 P+P.

### SUPER DISCONE

Freq: 25-2000 Mhz Length: 1380mm Gain: 3.0dB  
Socket: SO239

The super discone has enhanced the original discone design with a vertical wire trapped fibreglass vertical element. Comes complete with mounting pole, clamps & v-bolts to mount upto a 2" mast. (Experience increase range and upto 3dB gain over standard conventional discone !!! Get more with the Super Discone !!!)

**Our Price £39.95** plus £6.00 P+P.

### HF DISCONE

Freq:0.05-2000 Mhz Length:1840mm  
Socket: SO239

The HF Discone has the same spec as the Super Discone, but includes a 3ft heavily wire trapped vertical section, encapsulated in fibreglass, Thus enables to obtain a massive receive spectrum within the discone design. Come complete with mounting pole, clamps & v-bolts to mount upto a 2" mast. (Get the best of both worlds, use the HF discone for both scanner and HF receiver)

**Our Price £49.95** plus £6.00 P+P.

### ROYAL DISCONE 2000 (Stainless Steel)

Freq: RX 25-2000 Mhz TX: 50-52/144-146/430-430/900-986/1240-1325Mhz Length: 1550mm  
Socket: N-type

The ultimate discone antenna !!! Highly polished centre cone, with 16 Stainless steel elements, loaded top coil & whip. Complete with mounting pole, clamps & v-bolts to mount upto a 2" mast. (With a WHOPPING 4.5dB Gain over standard discone, this highly sensitive, perfectly matched receiving and transmitting discone is the best there is !!!)

**Our Price £49.95** plus £6.00 P+P.

★ Remember Discones can be placed in the loft with surprising results !!! ★



## BE DEDICATED

### TURNSTILE 137

Freq:137.5 Length: 1000mm

This weather satellite antenna has two di-poles adjacent to each other mounted on a 1mtr fibreglass section. Both di-poles have been internally connected, for easy use. Complete with mounting section & clamp to mount up to a 2" mast. (Beam skyward and reach those weather images)

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## BEAM ANTENNAS

### MLP32

Freq:100-1300 TX&RX  
Gain:11-13 dB  
Length:1400mm  
Con: N-Type

**Our Price £99.95**  
plus £6.00 P+P

These two professional quality antennas, come with aluminium booms, aluminium and stainless radial & stainless bolts & fittings. (Don't strain to hear those long distance signals, with near perfect matching of 2:1 SWR across the whole frequency spectrum, make your scanner come to life with the ultimate receiving antenna !!! Sold mainly to our commercial and military customers, you know your getting the best !!!)

AR300XL Rotator for above beams **£49.95** plus £6.00 P+P.

### MLP62

Freq:50-1300 Mhz  
Gain:10-12 dB  
Length:3000mm  
Con: N-Type

**Our Price £169.95**  
plus £6.00 P&P.

## HANDHELD ANTENNAS

### SUPER GAINER RUBBER DUCKS

Freq:25-1800 Mhz Length: 400mm

MRW-100 BNC fitting **Our Price £19.95** plus £2.00 P+P

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(Going Out ? Don't Miss Out! Replace your existing hand-held antenna with a Super Gainer one).

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BNC (Screw Type) .....£1.00 each  
BNC (Solder Type) .....£1.00 each  
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N TYPE to SO239 .....£3.00 each

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RF mini 8 7mm mil spec ...£0.85 per mtr (Phone for 100 mtr discount price)

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# Off The Record

For those interested in old pirates, how about Laser Radio broadcasting via a 100kW transmitter at Riga in Latvia on 5.935MHz each Sunday evening. The present schedule is 1500 World Bible Network; 1700 Geoff Rogers' Music Choice; 1800 Mary Warner; 1900 The Anorak Hour with Stewart Ross; 2000-2100 The Media Show with Julian Clover. Reception has been quite good, but with a period of slight splatter from Radio Prague on 5.930MHz. It goes without saying that the Anorak hour is highly recommended and programmes are also available on the Internet at

[www.laserradio.net](http://www.laserradio.net)

The Italian Radio Relay Service, known for providing relays for ex-pirates, have recently been seeking purchasers for their pair of old 10kW transmitters, which has left me wondering what power this station is using now. For those considering broadcasting on s.w. legally, it is possible to buy airtime sometimes directly from the transmission company or through an agent.

Ludo Maes, a former offshore radio and TV engineer, has a website that includes a world map, you just click on the area of the globe and the s.w. transmitters covering this area appear. Propagation and transmitter availability are clearly not quite that simple and potential clients need to apply for the current rates applicable. There is also a list of frequently asked questions, see [www.airtime.be](http://www.airtime.be)

A Dutch radio group headed by Jan van Jager hope to restart The Voice Of Peace, the original station of this name was an offshore station of the Israeli coast that broadcast during the 1970s. The proposed new station would operate on s.w. and broadcast from somewhere in Europe, targeting nations involved in the Iraq conflict.

## Long Wave Radio

Paul Rusling, the engineer and entrepreneur behind MusicMann 279, has finally won the planning appeal that was preventing his company building a l.w. offshore transmitting tower in Ramsey Bay at the Isle of Man. Objectors were concerned with environmental issues and any visual impact the platform may have from the shore. The antenna installation, now being called 'Caroline Island' because of its proximity to the former anchorage of the Radio Caroline pop pirate radio ship, would be on the horizon and be scarcely visible from the shore.

Suggestions are that the station could be on air later this year and the 500kW signal should be easily receivable throughout the UK. The new station is expected to be of huge benefit to the island that has seen a decline in tourism in recent years, but the exact programme content has not yet been revealed.

## Overseas Pirates

The Dutch s.w. pirate Radio Alpha Lima has recently been publicising Russian and Ukrainian

pirates, many of which operate on lower frequencies than those in Europe. They can be heard on frequencies from 2.920 to about 3.145MHz using either ordinary a.m. or u.s.b. As one would expect, the best time to listen is during the evenings. 3.030MHz Ryabina, Poltava; 3.085 Piramida, Orel; 3.100 Dozhdik, Kursk are just samples from about 20 stations.

Nearer home, Jolly Roger Radio from Waterford, Ireland, has changed frequency due to Dutch stations using 6.240MHz, so now programmes are on 6.255MHz. The station continues to relay other broadcasters like Seldom Heard Radio, Laser Hot Hits (not the same as Laser Radio) and the Old Time Radio Hour, other features include tapes of old pirates like Israel's Voice of Peace.

Radio Caroline started broadcasting via the UK's Sky TV satellite, though they had no EPG (Electronic Programme Guide) listing, however the service was suddenly disconnected on 7th February. The station now continues on an encrypted channel of the WorldSpace Afristar satellite to Europe and Africa and also on the Internet via [www.live365.com](http://www.live365.com) Their programmes can also be heard via an unlicensed 200W transmitter reported to be in County Cork in Ireland on 1593kHz. This is being widely received in the UK after dark, but allegedly has nothing to do with the Maidstone based station.

Radio Caroline has also been heard on frequencies around 7.140MHz in the 41m band with a relay of their WorldSpace service. Disc jockey John Patrick who had publicised his intended resignation from the station has now decided to stay, they hope to have the Sky service restored as soon as possible.

## Pop Pirate Film

Scarborough on the Yorkshire coast is soon to become the location for the film *Making Waves* - a movie based on the town's famous offshore pirate radio station Radio 270 that broadcast during 1966 and 1967 from a former Dutch fishing boat the *Ocean 7*. This same station was fairly recently the subject of a book written by Bob Preedy called *Life on the Ocean Waves*. Proposed actors for the film include Michael Gambon, Richard E. Grant, Johnny Vegas and TV presenter Angus Deayton. The recreated vessel may, after filming is complete, stay at Scarborough as a tourist attraction.

## Forces Radio

A report received via the British DX Club and Glen Hauser's Listening Digest says that the British Forces Broadcasting Service, in support of troops on operation Telic in the Gulf, are supplying hundreds of portable radios to help them keep in touch with home. Depending on operational circumstances, an f.m. service will be established to back up the present short wave BFBS transmissions at 0500-0800 on 13.720MHz and 1800-2100 on 5.945MHz. During the last conflict in Kuwait, BFBS used a 'portakabin' type building to house a temporary radio station.

## Internet Radio

Many broadcasting enthusiasts who are unable to become professionals tend to be involved in pirate radio, however those who respect the law have taken to broadcasting on the Internet. This has been regarded as a harmless legal activity, fairly cheap to set up and with a theoretical world-wide audience.

The Performing Rights Society, who are one of the organisations responsible for the licensing the playing of copyright music, appear to be tracing stations via their Internet service providers and are demanding payment on behalf of their members. Unfortunately, these demands are mysteriously high and one can only conclude it is all part of the battle the UK music industry is having with the Internet and downloadable audio material. The streamed audio is clearly not the same, but this action could ensure that only Britain's nationalised and best-funded radio stations might afford to broadcast on the 'net.

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

# LM&S



If you enjoy searching the broadcast bands and intend to use this edition of 'LM&S' as a guide, then do bear in mind that some of the international broadcasters may alter their short wave transmission schedules on March 31, a few days after this issue is on sale.

The changes which they introduce will be intended to compensate for seasonal variations in propagation and other factors during the summer and they are likely to affect some of the s.w. data herein. If you encounter any such changes, could you please make a note of them and then send the details to me at the above address for inclusion in 'LM&S'.

## 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 January.

The Ríkisutvarpid (RUV) outlets at Gufuskalar, W.Iceland on **189** (300kW) and Eidar, E.Iceland on **207kHz** (100kW) were both heard just after midnight on the 4th by **Simon Hockenull** in E.Bristol. He rated them respectively as SINPO 25442 at 0020 and 22342 at 0030. He also heard both outlets during the early hours of the 8th. During daylight on the 15th, he received a test transmission on **252kHz** from Clarkestown, Eire.

Over in Co.Down, **Eddie McKeown** (Newry) did most of his checks in this band well into the night! He says "By 0500 most were audible. Exception was R.Ropa, with the ident of R.Rossi heard around 0500 on **261**. Intriguingly, both Icelandic outlets (**189 & 207**) could be fairly easily heard at this hour by nulling out interference from Saarulous and Munich."

Encouraged by the two listeners who logged Azilal, Morocco on **207kHz** at night in November (see 'LM&S' l.w. chart, *SWM* February 03) **Sheila Hughes** decided to listen later than usual to see if she could hear anything under DLF on **207kHz**. At 2245 on the 29th Sheila rated the transmission from DLF SINPO 43443 when a weak co-channel broadcaster was audible. The reception of it gradually improved and a man was heard talking in a language that sounded like Arabic and there was also music and singing. By 2320 it was peaking 22212 under a news bulletin in German from DLF. No ident was heard during the broadcast, but it seems likely that it came from Radiodiffusion-Television, Marocaine via Azilal.

## Medium Wave Reports

The many m.w. stations in the Middle East, N.Africa, Europe and Scandinavia attracted the attention of some listeners after dark - see chart.

The sky waves from a station on 1458 were picked up at 0425 on the 22nd by **Ernie Strong** (Ramsey, Cams), which he rated 44343. Continuous Arabic type music was heard for over an hour and no station ident was given. Ernie referred to the *World Radio TV Handbook (WRTH)* and found that two 10kW outlets in Israel share that frequency - one at Eilat and the other in Jerusalem. When he checked that frequency at a slightly earlier time on subsequent nights the station was inaudible.

During daylight some listeners searched the band for distant local radio stations. An interesting log of some forty-seven stations was compiled by **Fred Wilmshurst** in Northampton - see chart. On the 10th, Simon Hockenull picked up the ground waves from what proved to be an elusive local radio station for him - BBC R.Shropshire via Woofferton (0.3kW) on 1584, which he rated 13221 at 1207.

## Short Wave Reports

In the **25MHz (11m)** band the daily broadcasts from Radio France

International (RFI) on **25.820** (Fr, Eng to E/C.Africa 0830-1300); Deutsche Welle (DW), Germany on **25.740** (Ger to Asia 0800-1400); also DW on **25.700** (Eng to Africa 1100-1145) continued during January. No indication of how well they reached the intended target areas arrived here, but good reception was reported by **John Parry** in Larnaca, Cyprus. He logged the transmission from RFI on **25.820** as SINPO 45554 at 1237 and from DW on **25.740** as 45554 at 1305.

Reception of their broadcasts in the UK varied from day to day - occasionally good, often fair but sometimes poor, or buried in the high noise level created by the effects of solar activity. For example RFI was noted as "Just bursts of backscatter and noise on 2/1/03" by **Vic Prier** in Seaton. The SINPO ratings quoted by some listeners in the UK for RFI were 25522 at 0903 in Newry; 25333 at 0924 by **Ian Evans** in Ebbw Vale; 55444 at 0950 by **Bernard Curtis** in Stalbridge; 34433 at 1110 by **Thomas Williams** in Truro; 35422 at 1125 in E.Bristol; 25433 with echo at 1125 by **Fred Pallant** in Storrington; 25333 at 1200 in Northampton.

Those for DW on **25.740** were 45544 at 0904 in Newry; 55344 at 0955 in Stalbridge; 23422 at 1000 in Seaton; 22222 at 1112 in Truro; 45522 at 1130 in E.Bristol; 25422 at 1124 in Storrington; 25433 at 1130 in Northampton; 44444 at 1235 by **David Hall** in Morpeth. Their broadcast in English on **25.700** was rated 45434 at 1100 in Truro; 35422 at 1100 & 45433 at 1130 in Ebbw Vale; 22422 at 1110 in Seaton; 35433 at 1123 in Storrington; 35522 at 1135 in E.Bristol.

Solar activity also affected reception in the **21MHz (13m)** band during some days. R.Australia's early morning transmission to Pacific areas via Shepparton on **21.725** (Eng 0200-0900) sometimes reached the UK. It was rated 24222 at 0833 in Newry. From 0900 their broadcast to Asia on **21.820** (Eng 0900-1400) was often received quite well in the UK. It was logged as 44433 at 0905 by **Stan Evans** in Herstmonceux; 45433 at 1237 in E.Bristol; 44444 at 1300 in Morden; 43333 at 1323 in Morpeth; 35444 at 1325 in Northampton.

Noted from other areas were BSKSA Riyadh, Saudi Arabia **21.505** (Ar to N.Africa 0500-1500), rated 44444 at 0830 in Seaton; R.Pakistan, Islamabad **21.465** (Ur, Eng to Eur 0700-1010) 44422 at 1100 by **Rhoderick Illman** in Oxted; VOIRI Tehran **21.470** (Eng to Asia 1100-1228) 22222 at 1105 in Morden; DW via Wertachtal, Germany **21.780** (Eng to Africa 1100-1145) 35433 at 1105 in Ebbw Vale; Voice of Turkey via Emirler **21.715** (Tur to Asia, Australia 1000-1300) 34333 at 1118 in Ebbw Vale; HCJB Quito, Ecuador **21.455** (Eng to Eur, Australasia [u.s.b.]) 33333 at 1340 in Truro; BBC via Cyprus **21.660** (Eng to E.Africa 1400-1700) 53444 at 1400 in Stalbridge; DW via Sri Lanka **21.650** (Ar to N.Africa, M.East 1400-1430) 44554 at 1415 in Larnaca, Cyprus; R.Portugal Int, Lisbon **21.810** (Port to S.Asia 1400-1600) 43343 at 1440 by **Robert Hughes** in Liverpool; Channel Africa via Meyerton, S.Africa **21.760** (Eng to W.Africa 1300-1500, Sat/Sun) 55444 at 1450 in Herstmonceux; BBC via Ascension Is **21.470** (Eng to S.Africa 1300-1900) 35553 at 1457 in Larnaca, Cyprus & 35433 at 1725 in E.Bristol; R.Japan via Ascension Is. **21.630** (Jap to C.Africa 1500-1700) 23232 at 1530 by **Jim Brown** in Dregghorn; UAE R.Dubai **21.595** (Eng to Eur 1030-1050, 1330-1350, 1600-1635) 45544 at 1604 in Newry.

There were no reports of broadcasters using single sideband (s.s.b.) in the **18MHz (15m)** band, which is narrow and allocated for that mode in the future. However, amplitude modulated (a.m.) transmissions were noted from R.Norway Int on **18.950** (Norw to N.America 1200-1230), rated 25222 at 1220 in E.Bristol; R.Sweden via Horby **18.960** (Sw to N.America 1130-1200, 1300-1330, 1400-1430 daily, 1140-1200 Sat/Sun; Eng to N.America 1230-1300, 1330-1400, 1430-1500) 55545 at 1255 by **Ian Pakeman** in Folkestone, 44444 at 1320 in Truro & 44434 at 1426 in Oxted; VOA via Sri Lanka? **19.010** (? to W/S.Asia 1430-1630) 43333 at 1455 in Liverpool; R.Norway Int **18.950** (Norw to N.America 1700-1730) 45544 at 1700 in Seaton; Family R, WYFR via Okeechobee FL, USA **18.980** (Eng to Eur 1600-1945) 55444 at 1855 in Stalbridge.

From time to time solar activity affected reception in the **17MHz (16m)** band, but usually propagation over long distances was good. R.Australia's transmission to E/SE.Asia from Shepparton on **17.750** (Eng 0030-0400, 0530-0800, 0830-0900, 0930-1100) often reached the UK. It was rated 44433 at 1025 in Herstmonceux.

Also mentioned in the reports were Africa No.1, Gabon **17.630** (Fr to W.Africa 0700-1600), rated 45444

### Listeners:

- (A) Simon Hockenull, E.Bristol.
- (B) Sheila Hughes, Morden.
- (C) Eddie McKeown, Newry.
- (D) Ernie Strong, Ramsey, Cams.
- (E) Thomas Williams, Truro.
- (F) Fred Wilmshurst, Northampton.

## Long Wave Chart

kHz	Station	Country	Power (kW)	Listener
153	Bechar	Algeria	1000	D*
153	Donebach DLF	Germany	500	A,B*,C*,D*,E*,F
153	Bod	Romania	1200	C*,D*
162	Allouis	France	2000	B*,C*,D*,E,F
171	Nador Medi-1	Morocco	2000	D*
171	B'shakovo etc	Russia	1200	A,B*,C*,D*,E*,F
177	Dranienburg	Germany	500	A,C*,D*,F
183	Saarulous	Germany	2000	C*,D*,E,F
189	Gufuskalar	W.Iceland	150	A*,C*,D*
189	Caltanissetta	Italy	10	D*
198	Droitwich BBC	UK	500	B,C,D*,E*,F
207	Munich DLF	Germany	500	A,B*,C*,D*,E*,F
207	Eidar	E.Iceland	100	A*,C*,D*
207	Azilal	Morocco	800	B*,D*
216	Roumoules RMC	S.France	1400	A,B*,C*,D*,E*,F
216	Krasnyyarsk	Siberia	1200	D*
225	Polskie R-1	Poland	?	A,B*,C*,D*,F
225	Van TRT-1	Turkey	600	D*
234	Beidweiler	Luxembourg	2000	C*,D*,E*,F
234	Krasnyy Bor	Russia	1200	D*
243	Kalundborg	Denmark	300	A,B,C*,D*,E*,F
252	Tipaza	Algeria	1500	A,B,C*,D*,E*,F
252	Yerevan	Armenia	150	D*
261	Burg(R.Ropa)	Germany	85	A,C*,D*
261	Taldom Moscow	Russia	2500	B*,C*,D*
270	Topolna	Czech Rep	1500	A,B*,C*,D*,E*,F
279	Sasnovy	Belarus	500	A,B*,C*,D*,F

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

## DXers:-

- (A) Jim Brown, Dregthom, N.Ayrshire.  
 (B) Robert Connolly, Killeel.  
 (C) Bernard Curtis, Stalbridge.  
 (D) Jim Edwards, Wigan.  
 (E) Stan Evans, Herstmonceux.  
 (F) David Hall, Morpeth.  
 (G) Simon Hockenhuil, E.Bristol.  
 (H) Robert Hughes, Liverpool.  
 (I) Eddie McKeown, Newry.  
 (J) Fred Pallant, Storrington.  
 (K) Peter Perkins, Hemel Hempstead.  
 (L) Clare Pinder, Appleby.  
 (M) Vic Prier, Seaton.

at 0845 in Seaton & 33343 at 1525 in Liverpool; Israel R. Jerusalem **17.535** (Heb to N.Africa, Eur 0600-1900) 34444 at 1035 in Truro; BBC via Skelton, UK **17.640** (Eng to Eur 0700-1500) 44333 at 1015 in Morden & 42232 at 1312 in Ebbw Vale; BBC via Ascension Is **17.830** (Eng to W/C.Africa 1100-2100) 24343 at 1155 in Northampton; R.Tunisia Int, Sfax **17.735** (Ar to N.Africa, M.East 0600-1710) 43343 at 1208 in Oxted & 33333 at 1515 in Liverpool; R.Ukraine Int, Kiev **17.760** (Eng to Eur 1200-1300) 54444 at 1225 in Herstmonceux; R.Romania Int, Bucharest **17.720** (Rom to Eur 0800-1500) 44344 at 1305 in Ebbw Vale; Voice of Turkey **17.815** (Eng to Eur 1330-1430) 44344 at 1351 in Newry; DW via Kigali, Rwanda **17.840** (Ger to ? 1400-1800) 34553 at 1410 in Larnaca, Cyprus; DW via Antigua **17.765** (Ger to S.America 1200-1700) 44434 at 1437 in Oxted; Voice of America (VOA) via Botswana **17.895** (Eng to Africa 1600-1700) 45333 at 1605 in E.Bristol; World Harvest R. (WHRA) via Greenbush, Maine, USA **17.650** (Eng to M.East, Africa 1500-2200) 43334 at 1700 by **Gerald Guest** in Dudley; VOA via Morocco **17.895** (Eng to Africa 1700-1800) 25443 at 1752 in Storrington; VOA via Botswana **17.895** (Eng to Africa 1800-2000) 55344 at 1850 in Stalbridge; R.Nederlands via Bonaire, Ned.Antilles **17.605** (Eng to C/W.Africa 1830-2025) 35232 at 1930 in Newry; Swiss R.Int (SRI) via Monsinery, Fr.Guiana **17.660** (It, Ar, Eng, Ger, Fr to Nr East, Africa 1830-2130) 33233 at 1930 by **Clare Pinder** in Appleby.

During some mornings R.New Zealand's broadcast in the **15MHz (19m)** band to NZ peacekeepers in Bougainville, the Solomon Is and E.Timor on **15.175** (Eng 1100-1300) has been received in the UK. It was rated 43333 at 1105 in Truro, 33333 at 1200 in Morden & 34322 at 1230 in E.Bristol.

R.Australia's broadcasts have been reaching the

## Tropical Bands Chart

MHz	Station	Country	UTC	DXer
2.325	ABC Tennant Creek	Australia	2030	K
3.205	R.Ribeirao	Brazil	0035	D
3.210	REE via Cpsa Rica	Costa Rica	0145	B,F
3.230	SABC Meyerton	S.Africa	1900	I,J,M
3.240	TVR Manzini	Swaziland	0300	O,I,K
3.255	BBC via Meyerton	S.Africa	0320	O,I,K
3.270	Namibian BC,Windhoek	Namibia	0526	I
3.279	La Voz del Napo	Ecuador	0235	D
3.315	AIR Bhopal	India	0030	B,D,K
3.320	SABC (RSG) Meyerton	S.Africa	1952	B,D,I,J,K,M
3.345	Channel Africa	S.Africa	0509	I
3.365	GBC R-2	Ghana	1946	J,K
3.365	AIR Delhi	India	1625	D,M
3.915	BBC via Kranji	Singapore	1712	B,D,G,H,I,K,M
3.950	Qinghai PBS, Xining	China	1555	B,D,G
3.955	R.Korea via Skelton	England	2200	A,E,G,I
3.955	R.Taipei via Skelton	England	1905	C,E,I,K,L,M
3.965	RFI Paris	France	1900	C,H,I,K,M
3.975	R.Budapest	Hungary	1906	H,K,L,M
3.985	VOIRI	Iran	0115	G,K
3.985	China R.Int via SRI	Switzerland	2345	B,D
3.990	Xinjiang BS, Urumqi	China	1555	D
3.995	DW via Juchif	Germany	1902	B,C,G,H,I,K,M
4.005	Vatican R	Italy	1945	A,I,K,M
4.085	V of Iraqi Kurdistan	Iraq	2003	K
4.190	CNR Minority Sce	China	2125	D,M
4.330	Xinjiang BS, Urumqi	China	1540	D
4.460	CPBS 1, Beijing	China	2220	D
4.500	Xinjiang BS, Urumqi	China	1555	B,D
4.620	PBS Nie Mengyu	China	0020	D
4.750	Hulun Buir-Mo	China	2322	D,K
4.750	Xining	China	0040	B,M
4.755	R.Educ.CP Grande	Brazil	0134	K
4.760	AIR Port Blair	India	0033	B,D,I,K
4.770	FRNC Kaduna	Nigeria	1951	D,F,I,J,K,M
4.775	AIR Imphal	India	1650	B,D,J,K,M
4.783	RTM Bamako	Mali	2223	K
4.790	AIR Chennai	India	0027	B,I,K
4.790	AIR Itanagar	India	1516	D
4.790	Azad Kashmir R.	Pakistan	1657	D,J,K
4.800	CPBS 2 Beijing	China	2124	D,I,K,M
4.800	R.Buenas Nuevas	Guatemala	0159	K
4.800	AIR Hyderabad	India	1709	B,D,J,K
4.805	R.Nac.Amazonas	Brazil	2319	K
4.815	R.Difusora, Londrina	Brazil	2355	B,D
4.820	R.Botswana, Gaborone	Botswana	1958	I,J,K
4.820	Xizang, Lhasa	China	2126	D,I
4.820	AIR Calcutta	India	1756	B,I,K,M
4.820	Xizang, Lhasa	Tibet	2025	B,K
4.825	R.Cancap Nova	Brazil	0055	B,K
4.830	R.Tachira	Venezuela	2325	D,K
4.835	ABC-Alice Springs	Australia	2136	J
4.835	RTM Bamako	Mali	1957	B,D,F,I,J,K,M
4.840	AIR Bombay	India	1652	B,D,J,K,M

MHz	Station	Country	UTC	DXer
4.845	DRTM Nouakchott	Mauritania	1946	B,D,H,I,J,K,M
4.850	AIR Kghima	India	0039	D,I
4.860	AIR Delhi	India	1756	C,D,I,J,K
4.865	R.Alvorada, Londrina	Brazil	0035	D
4.875	R.Roraima, Boa Vista	Brazil	0101	K
4.880	AIR Lucknow	India	1741	B,D,J,K
4.885	R.Clube do Para	Brazil	0041	B,D,F,I,K
4.885	R.Difusora Acreana	Brazil	0320	D
4.885	KBC East Sce Nairobi	Kenya	1747	B,I
4.890	RFI Paris	via Gabon	0400	F,I
4.890	R.Port Moresby	Pap.N. Guinea	1948	J
4.895	R.IPB AM C'po Grande	Brazil	2345	D
4.895	AIR Kurseong	India	1653	D,J,K
4.905	Xizang-Tb, Lhasa	China	0031	B,D,I,K
4.910	Tennant Creek	Australia	2133	D,J
4.910	AIR Jaipur	India	1653	D,F,I,J,K
4.915	R.Anhanguera	Brazil	2255	B,D,K
4.915	R.Difusora, Macapa	Brazil	0111	F,K
4.915	GBC-1, Accra	Ghana	2110	B,D,I,J,K,M
4.915	KBC Cent Sce Nairobi	Kenya	1730	J
4.920	Xizang-Tb, Lhasa	China	2255	B,D,K
4.920	R.Quito, Quito	Ecuador	0730	D,F,I
4.920	AIR Chennai	India	1750	B,D,J,K,M
4.927	RRI Jambi	Indonesia	2350	D
4.930	R.Costena Ebenezer	Honduras	0210	B,D
4.935	R.Capixaba, Victoria	Brazil	0230	D,K
4.940	AIR Guwahati	India	0110	D,K
4.950	R.Nacional, Mulvenos	Angola	1915	D,F
4.950	AIR Srinagar	India	1733	B,I,K
4.950	VOA via Sao Tome	Sao Tome	1956	C,D,I,J,K,L,M
4.960	R.Cima	Dominion Rep	0035	D,K
4.960	AIR Ranchi	India	1709	D,K
4.960	VOA via Sao Tome	Sao Tome	0259	F,I
4.965	Christian Voice	Zambia	1734	D,I,J,K
4.970	AIR Shillong	India	1545	D
4.975	R.Uganda, Kampala	Uganda	1958	D,I,J,K
4.980	PBS Xinjiang, Urumqi	China	1520	D,K
4.980	Ecos del Torbes	Venezuela	0045	B,F,I
4.985	R.Brazil Central	Brazil	0103	B,D,F,I,K
4.990	Hunan 1, Changsha	China	0048	D,K
4.990	AIR Itanagar	India	0046	O,I
5.005	R.Nepal, Kathmandu	Nepal	1734	D,J,K
5.009	R.TV Malagasy	Madagascar	1800	K
5.010	AIR Thin'puram	India	0047	I,K
5.014	R.Pioneira, Teresina	Brazil	0140	D
5.025	ABC Katherine	Australia	2134	J
5.025	R.Parakou	Benin	0543	F
5.025	R.Pakistan, Quetta	Pakistan	2015	D
5.025	R.Uganda, Kampala	Uganda	1800	I,M
5.030	RTM Kuching	Sarawak	2300	K
5.035	R.Aparecida	Brazil	0305	D
5.040	Jepoyre	India	1640	D,K
5.047	R.Togo, Lome	Togo	2109	D,I,J
5.050	Guangxi FBS, Nanning	China	1545	D
5.050	R.Tanzania	Tanzania	1938	I
5.055	RFO Cayenne(Matoury)	French Guiana	0517	I
5.060	PBS Xinjiang, Urumqi	China	2325	B,D,F,K,M

UK on two frequencies from Shepparton: **15.240** (Eng to Pacific, Western N.America 0700-0900) 43333 at 0845 in Herstmonceux; **15.415** (Eng to SE.Asia 2330-0900), noted as 33323 at 0835 in Seaton.

Many other broadcasters use this band to reach listeners in selected areas. They include RFI via Issoudun, France on **15.300** (Fr to C/S.Africa 0600-0700), rated 35553 at 0635 in Larnaca, Cyprus; Voice of Nigeria via Ikorodu **15.120** (Eng to N.Africa, Eur 0500-0800) 53433 at 0735 in Herstmonceux; KTW

## Listeners:-

- (A) Robert Connolly, Killeel.  
 (B) Simon Hockenhuil, E.Bristol.  
 (C) Sheila Hughes, Morden.  
 (D) Eddie McKeown, Newry.  
 (E) Ernie Strong, Ramsey, Cambs.  
 (F) Fred Wilmshurst, Northampton.

## Local Radio Chart

kHz	Station	ILR BBC	e.m.r.p (kW)	Listener
558	Spectrum, London	I	0.80	B,E,F
585	R.Solway	B	2.00	A
603	C.G.Litt'brme	I	0.10	B,E,F
630	R.Bedfordshire(3CR)	B	0.20	B,E,F
630	R.Cornwall	B	2.00	A,E
657	R.Clwyd	B	2.00	A
657	R.Cornwall	B	0.50	A,B*
666	CI.Gold 666, Exeter	I	0.34	B,E,F
666	R.York	B	0.80	A,E
729	BBC Essex	B	0.20	E,F
738	Hereford/Worcester	B	0.037	A,B,E,F
756	R.Cumbria	B	1.00	A,D
756	The Magic 756,Powys	I	0.63	A,B,E,F
765	BBC Essex	B	0.50	B,E,F
774	R.Kent	B	0.70	C,E,F
774	R.Leeds	B	0.50	A,E
774	CI.Gold 774, Glos	I	0.14	E,F
792	CI.Gold 792,Bedford	I	0.27	C,E,F
792	R.Foyle	B	1.00	A
801	R.Devon	B	2.00	A,B,E
828	CI.Gold 828, Luton	I	0.20	C,E,F
828	Asian Net Sedgley	B	0.20	E
837	R.Cumbria/Furness	B	1.50	A,E
837	Asian Net Leicester	B	0.45	A,B,E,F
855	R.Lancashire	B	1.50	A,D*,E
855	R.Norfolk, Postwick	B	1.50	E
855	Sunshine 855,Ludlow	I	0.15	F
873	R.Norfolk, W.Lynn	B	0.30	E,F
936	Brunel CG, W.Wilts	I	0.18	E,F
936	Fresh AM, Hawes	I	1.00	A
945	CI.Gold GEM, Derby	I	0.20	E,F
945	Capital G, Bexhill	I	0.75	A,E
954	CI.Gold 954 via ?	I	?	A
954	CI.Gold 954, H'ford	I	0.16	B,F

kHz	Station	ILR BBC	e.m.r.p (kW)	Listener
963	Asian Sd, E.Lancs	I	0.80	A
963	Liberty R, Hackney	I	1.00	E,F
972	Liberty R, Southall	I	1.00	B,E,F
990	R.Devon, E.Devon	B	1.00	A,B,E
990	Magic AM,Doncaster	I	0.25	E
990	CI.G. Wolverhampton	I	0.09	D,E,F
999	C.Gold GEM Nott'ham	I	0.25	F
999	Magic 9-99 P'stn	I	0.80	A,D
999	R.Solent	B	1.00	C
1017	CI.G.WABC, Shr'shire	J	0.70	A,B,E,F
1026	R.Cambridgeshire	B	0.50	E,F
1026	Downtown R, Belfast	J	1.70	A
1026	R.Jersey	B	1.00	B
1035	Mean Country 1035	I	1.00	B,C*,E,F
1035	R.Sheffield	B	1.00	E
1035	N.Sound 2, Aberdeen	I	0.78	A
1116	R.Derby	B	1.20	A,E,F
1116	R.Guernsey	B	0.50	?
1116	Valley R, Ebbw Vale	I	0.50	B
1152	CI.G Amber, Norwich	I	0.83	E
1152	LBC 1152, London	I	23.50	E,F
1152	Magic 1152,Manch'yer	I	1.50	A,E
1152	CI.G 1152, Plymouth	I	0.32	E
1152	CI.G, Birmingham	I	3.00	B,D*
1161	R.Bedfordshire(3CR)	B	0.10	E,F
1161	Magic 1161, Goxhill	I	0.35	A,E*
1170	CI.G Amber, Ipswich	I	0.28	E
1170	Magic 1170,Stockton	I	0.32	A
1170	Capital G,Portsm'th	I	0.50	A,E
1170	Swansea Snd, Swansea	I	0.58	B
1251	C.G Amber,Bury StEd	I	0.76	E
1260	Marcher G, Wrexham	I	0.64	A
1260	SabresSnd,Leicester	I	0.29	E,F
1296	Radio XL,Birmingham	I	5.00	A,B,D*,E,F
1305	Magic AM,Barnsley	I	0.15	A
1305	Premier via ?	I	0.50	D*,E,F
1332	CI.Gold 1332,P'tbo	I	0.80	A,E,F

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



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items of interest

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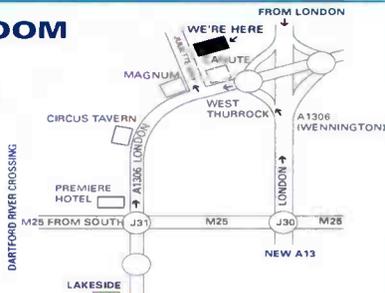
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Can be used in reverse

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Ant B (30-2000MHz) } insertion loss SEND SAE FOR DATA SHEET

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Includes 8.33kHz spacing **£449.95**

Optional case .....£15.00  
Optional battery box .....£14.99  
Cigar lead .....£19.99  
PC interface .....£42.95

#### C) ICOM IC-R5

New pocket hand-held scanner (0.1-1310MHz) AM/FM/WFM. Superb high-speed scanning featuring alpha tag and much more. Includes nicads & charger.

NOW IN STOCK **£159.00**

BATTERIES AND CHARGER INCLUDED  
Soft case .....£17.99

#### G) AOR AR8200MkIII

Never before has one hand portable offered so much. ★ Covers 100kHz-3GHz (all mode) ★ Computer control capability ★ 8.33kHz steps for the new airband spacing ★ Reaction time capability ★ Includes nicads/charger/antenna and car lead.

OUR PRICE **£385.00**

Optional case .....£19.99  
CC-8200 PC interface .....£79.99

#### D) ALINCO DJ-X3

Micro-handly scanner. 100kHz-1300MHz. 700 memories/stereo FM (earphones)/attenuator/bug detector/audio descrambler. AM/FM/WFM/ Selectable tuning steps (incl's 8.33kHz).

SALE PRICE **£99.95**

Optional battery pack and drop in charger **£39.99**  
Soft case .....£15.99  
PC interface .....£42.95

#### H) ICOM IC-R3

'A first!' TV/video picture & sound! Certainly a gadget for the future - see things you didn't know existed! A wide-band scanner covering 0.5-2.3GHz (AM/FM/WFM) with "TFT" colour display.

FOR THE TRUE ENTHUSIAST

SALE PRICE **£349.99**

Soft case for IC-R3 .....£17.99

### base s

#### I) BEARCT UBC-9000XLT

25-1300MHz wideband desktop scanner with turbo scan. (Selectable AM/FM/WFM). Selectable tuning steps + alpha-numeric tagging. "Our best selling desk-top scanner". Incl's PSU.

Send SAE for review OUR PRICE **£235.00**

#### J) BEARCT UBC-780

New comprehensive scanner (25-1300MHz) Alpha Tag, PC cloning control. Smart scanner + trunk track facility. Incl's PSU.

Send SAE for review OUR PRICE **£299.99**

Software 780XLT .....£34.99

#### K) YAESU VR-5000

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

OUR PRICE **£575.00**

Optional DSP .....£79.95

#### L) AOR AR8600MkII

Extremely versatile all mode receiver (100kHz-3GHz). "Superb HF performance".

SALE PRICE **£625.00**

Optional power supply/8600 .....£19.95.00  
AR5000 .....£1295.00  
AR5000+3 .....£1529.00  
SDU5500 .....£769.00  
AR3000A .....£699.00

Short Wave Magazine, April 2003

# THE PLACE TO SHOP



## scanners

## sw receivers

## portable receivers

### M) BEARCAT UBC-278

New base scanner with built-in clock radio. 25-956MHz (with gaps) 88-108MHz (WFM) 500kHz-1720kHz (AM). Fully programmable. Ideal for the bedroom.

OUR PRICE **£219.99**

### N) COMMTEL 225

500 channel. 25-1300MHz. AM/FM/WFM.

Our best selling low price scanner

OUR PRICE **£219.99**

### O) FAIRHAVEN RD-500VX+

Superb wideband receiver (all mode) with over 50,000 memories capable of holding text. 20kHz-1750MHz. Incl's remote control/PSU/PC lead and software.

SSP: £899.00 OUR PRICE **£745.00**

### P) ICOM IC-R8500

Next generation wideband receiver. 0.1-2GHz. (All mode)

Latest UK version

2 YEAR WARRANTY

(Includes PSU) OUR PRICE **£1149.95**

SP-21 extention speaker .....£74.99  
Voice synthesiser board .....£34.95

Short Wave Magazine, April 2003

### Q) REALISTIC DX-394

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

SEND SAE FOR COPY OF REVIEW

OUR PRICE **£199.95**

### R) ICOM IC-R75

The short wave receiver for the true enthusiast.

- 0.03-60MHz (all mode)
- Synchronous AM detection
- PC control capability.

2 YR G'EE

Optional DSP unit £85.00

OUR PRICE **£589.99**

OUR BEST SELLING HF RECEIVER

SP-21 Extention speaker .....£74.99

### S) AOR AR7030+ MODEL

A superb top of the range HF receiver. This plus model has certainly earned a name for itself. Enter the world of "professional" short wave listening at well under £1000.

OUR PRICE **£799.99**

### T) JRC NRD-545DSP

The ultimate short wave receiver with DSP - for the real perfectionist.

This is JRC's latest professional receiver.

OUR PRICE **£1299.99**

NVA-319 Extention speaker .....£189.00  
CHE-199 VHF/UHF converter.....£269.00

### U) SANGEAN ATS-505

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

OUR PRICE **£89.95**

Optional power supply for ATS-505/ATS-909.....£16.95

### V) SANGEAN ATS-909

A superb performance portable/base synthesized world receiver with true SSB and 40Hz tuning for ultra clean reception. The same radio is sold under the Roberts name at nearly twice the price. Other features include RDS facility, 306 memories and FM stereo.

(Optional PSU £16.95) OUR PRICE **£139.95**

### W) SONY SW-100E

★ Miniature portable all mode SW receiver ★ Station presets for 50 frequencies ★ Single side band system ★ Synchronous detector ★ Tuning in 100Hz + 1kHz steps ★ Includes compact antenna/stereo earphones/carrying case.

OUR PRICE **£159.95**

ACE-30 Power supply unit for above .....£24.95

### X) EVOKE-1

Using the latest third-generation D.A.B. technology, Evoke-1 delivers outstanding digital sound quality at an affordable price. A stylish, mains powered receiver without the normal hiss, crackle and fade of old AM/FM broadcast. Transform your listening.

OUR PRICE **£99.95**

Car DC lead.....£14.99 Optional spkr .....£29.99

Eur 1500-1600) 33343 at 1550 in Folkestone; R.Pakistan, Islamabad **11.570** (Eng to N.Africa, M.East 1600-1615) 44243 at 1600 in Newry; R.Nederlands via Uzbekistan? **12.070** (Eng to S.Asia 1430-1625) 55545 at 1600 in Dreghorn; R.France Int via Allouis, France **11.615** (Eng, Fr to M.East, N.Africa 1600-1800) 54444 at 1615 in Liverpool; WWCR Nashville, USA **12.160** (Eng to N.America, Eur 1200-2300) 44333 at 1645 in Morden; R.Jordan via Al Karanah **11.690** (Eng to W.Eur, E.USA 1300-1730) 55545 at 1700 in Seaton; Israel R, Jerusalem **11.605** (Eng to Eur, N.America 1730-1745) 44444 at 1730 in Appleby; R.Kuwait via Kabd **11.990** (Eng to Eur, N.America 1800-2100) 55445 at 1820 in Stalbridge; All India R. (AIR) via Bangalore **11.620** (Eng to Eur 1745-1945) 44434 at 1825 in Ebbw Vale; HCJB Quito, Ecuador **11.895** (Eng to Eur 2000-2200) 31231 at 2003 in Ebbw Vale & 25444 at 2155 in Northampton.

R.Australia's broadcasts in the **9MHz (31m)** band have been reaching the UK on three frequencies from Shepparton: **9.710** (Eng, Tok Pisin to Oceania 0800-1100), rated 21111 at 1053 in Truro; **9.475** (Eng to Asia 1330-1858) 24422 at 1454 in E.Bristol & 34333 at 1635 in Folkestone; **9.500** (Eng to Asia 1900-2130) 54444 at 1920 in Stalbridge - this was also logged in Larnaca, Cyprus as 43553 at 2005.

Also mentioned in the reports were **WTJC** Newport NC, USA **9.370** (Eng to N.America 24hrs), rated 44444 at 0450 in Morpeth; **AWR** via Austria **9.660** (Ger, Eng to Eur 0800-0900) 54444 at 0830 in Morden; R.Nederlands via Bonaire, Ned.Antilles **9.790** (Eng to Asia, Far East, Pacific 0930-1130) 43443 at 0930 in Newry; R.Vilnius, Lithuania **9.710** (Eng to W.Eur 0930-1000) 54544 at 0940 in Herstmonceux; R.Nederlands via Wertachtal, Germany **9.860** (Eng to Eur 1130-1330) 44444 at 1130 in Dudley; R.Singapore Int via Kranji **9.600** (Eng to SE.Asia 1100-1400) 42332 at 1337 in Newry; R.Polonia (Polish R, Warsaw) **9.525** (Eng to Eur 1300-1400) 44434 at 1350 in Folkestone; BBC via Kranji, Singapore **9.740** (Eng to SE.Asia 0900-1600) 33333 at 1412 in Ebbw Vale; **AWR** via Austria **9.850** (Eng to Eur 1630-1700) 44444 at 1633 in Oxted; **VOA** via Philippines **9.760** (Eng to SE/S.Asia 1600-1700) 32333 at 1645 in Dreghorn; All India R. (AIR) via Bangalore **9.950** (Eng to Eur 1745-1945) 34333 at 1745 in Seaton; R.Cairo, Egypt **9.990** (Ger, Fr, Eng to Eur 1900-2245) 32232 at 1910 in Liverpool & 55454 at 2115 in Newry; **VOA** via Kavala, Greece **9.760** (Eng to M.East, S.Asia 1700-2100) 54445 at 1915 in Stalbridge; R.Nederlands via Flevo **9.895** (Eng to Africa 1830-2025) 44454 at 1925 in Liverpool; Israel R. Jerusalem **9.435** (Eng to Eur, N.America 2000-2025) 44444 at 2000 in Appleby; R.Korea, Pyongyang **9.975** (Kor to M.East, Africa 2000-2050) 44554 at 2003 in Larnaca, Cyprus; **WTJC** Newport NC, USA **9.370** (Eng to N.America 24hrs) 25433 at 2035 in Northampton; R.Thailand, Udon Thani **9.535** (Eng, Ger, Fr, Thai to Eur 1900-2115) 22222 at 2040 in Truro; R.Canada Int via Sackville **9.770** (Fr, Eng to W.Eur, Africa 2000-2200) SIO 444 at 2106 by **Francis Hearne** in N.Bristol; R.Taipei Int via WYFR Okeechobee, USA **9.355** (Eng to Eur 2200-2300) 32232 at 2215 in Dreghorn.

Quite a few of the broadcasts in the **7MHz (41m)** band are intended for listeners in Europe. Some come from R.Japan via Woofferton, UK **7.230** (Eng 0500-0700), rated 44433 at 0650 in Herstmonceux; Sudwestfunk via Rohrdorf **7.265** (Ger 24hrs) 34333 at 1340 in Stalbridge; **DW** via Russia **7.440** (Ger 1200-1600) 44333 at 1440 in Oxted; Vatican R, Italy **7.250** (It 1530-1600) 43343 at 1535 in Liverpool; R.Slovakia Int. **7.345** (Eng 1730-1800) 55555 at 1745 in Seaton; R.Polonia (Polish R), Warsaw **7.285** (Eng 1800-1900) 42333 at 1823 in Ebbw Vale; Voice of Greece via Kavala **7.475** (Eng 1930-2000) 34433 at 1937 in E.Bristol; R.Budapest, Hungary **7.135** (Eng 2000-2030) 44344 at 2000 in Appleby; VOIRI Tehran, Iran **7.320** (Eng 1930-2030) 44344 at 2000 in Folkestone; Voice of the Mediterranean, Malta via Russia **7.440** (Eng 2000-2100 Sat-Thurs) 35544 at 2045 in Northampton; Voice of Russia, Moscow **7.340** (Eng 1800-2200) SIO 444 at 2105 in N.Bristol; Family R. (WYFR) Okeechobee FL, USA **7.580** (Eng 2000-2245) 44333 at 2239 in Newry; R.Bulgaria, Sofia **7.500** (Eng 2200-2300) 55444 at 2250 in Dreghorn; China R.Int via Russia **7.170** (Eng 2200-2300) SIO 444 at 2254 in N.Bristol; R.Romania Int **7.195** (Eng 2300-0000) 22222 at 2328 in Truro.

Whilst beaming to other areas **KTBN** via Salt Lake City, USA **7.505** (Eng to N.America 0100-1500) was 33333 at 0903 in Morpeth; **VOA** via Greenville, USA **7.370** (Eng to C.America 1000-1100) 34333 at 1010 in Morden; **VOA** via Udon Thani, Thailand **7.125** (Eng to Asia 1400-1800) 44344 at 1425 in Dreghorn; BBC via Singapore **7.160** (Eng to SE.Asia 1600-1800) 32232 at

1610 in Liverpool; World Harvest Radio (WHRA) via Maine, USA **7.580** (Eng to Africa 2200-1000) 45544 at 2310 in Northampton; R.Vilnius, Lithuania **7.325** (Eng to N.America 0030-0100) 44343 at 0030 in Newry.

Many broadcasts for listeners in Europe may be received in the **6MHz (49m)** band. Some originate from HCJB in Quito, Ecuador **5.965** (Eng 0700-0900), rated 44444 at 0700 in Appleby; R.Finland via Pori **6.120** (Fin, Sw 0500-2300) 44434 at 0745 in Ebbw Vale; R.Vlaanderen Int, Belgium via Julich, Germany **5.985** (Eng 0800-0830) 55555 at 0820 in Herstmonceux; Bayerischer Rundfunk, Germany **6.085** (Ger 24hrs) 55545 at 0830 in Seaton; R.Nederlands via Flevo **5.955** (Dutch 0600-1800) 44444 at 0850 in Oxted; Deutsch Welle (DW) via Julich **6.140** (Eng 0600-1900) 55444 at 1540 in Dreghorn; Voice of Vietnam via Austria **5.955** (Eng, Viet, Fr 1800-2000) 43434 at 1800 in Dudley; R.Polonia (Polish R) Warsaw **5.995** (Eng 1800-1900) 44443 at 1830 in Morden; R.Japan via Rampisham, UK? **6.175** (Jap 1700-1900) 55555 at 1855 in Stalbridge; R.Yugoslavia, Serbia **6.100** (Eng 1930-2000) 43433 at 1930 in E.Bristol; VOIRI Tehran, Iran **6.110** (Eng 1930-2030) 44344 at 1950 in Liverpool; DW via Sines, Portugal **6.180** (Eng 2000-2045) SIO 444 at 2021 in E.Bristol; Vatican R, Italy **5.890** (Eng 2050-2110) 33333 at 2056 in Truro; R.Canada Int via Skelton, UK **5.995** (Eng 2100-2200) SIO 444 at 2156 in N.Bristol; R.Budapest, Hungary **6.025** (Eng 2200-2230) 45544 at 2200 in Northampton; R.Austria Int, Moosbrunn **5.945** (Eng 2230-2300) 43434 at 2235 in Folkestone; R.Sweden via Horby **6.065** (Eng 2230-2300) 32322 at 2237 in Newry; R.Bulgaria, Sofia **5.800** (Eng 2200-2300) 45444 at 2245 in Dreghorn.

Some to other areas may also be received here including RAI Rome **6.010** (Eng to E.Africa, M.East 2025-2045), rated 44243 at 2026 in Newry; Voice of America (VOA) via Sao Tome **6.035** (Eng to W.Africa 1800-2200) 42333 at 2044 in Ebbw Vale; BBC via Antigua, W.Indies **5.975** (Eng to C/N.America 2200-0500) 35544 at 2300 in Northampton & 23422 at 0111 in E.Bristol; WWCR Nashville TN, USA **5.070** (Eng to N.America 2300-1200) 33333 at 2359 by **Robert Connolly** in Kilkeel; R.Japan via Sackville, Canada **6.145** (Eng to N.America 0000-0100) 44444 at 0005 in Folkestone; WWRB Manchester TN, USA **5.085** (Eng to Eur & N.Africa 0100-0700), heard at 0127 by **Peter Perkins** in Hemel Hempstead; R.Havana, Cuba **6.000** (Eng to N.America 0100-0500) 33333 at 0300 in Morpeth; American Forces Network (AFN) via Puerto Rico **6.458** (Eng [u.s.b.]) 44444 at 0433 in Morpeth; Family R. (WYFR) Okeechobee FL, USA **6.105** (Sp to S.America 0800-1100) 24231 at 0912 in Oxted; WEWN Birmingham, USA **5.825** (Eng to N/C.America 0000-1000) 53444 at 0955 in Stalbridge.



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

### List of Equipment Used

LM&S for \$February, #March; \*April 2003.

- \* Jim Brown, Dreghorn, N.Ayrshire: Lowe HF-225 + AT-1000 a.t.u. + 30m wire.
- \* Robert Connolly, Kilkeel, Co.Down: JRC NRD-525 + Timewave DS9+ filter + Datong AD-370 active antenna.
- \* Bernard Curtis, Stalbridge: Realistic DX400 + rod or r.w. in loft.
- \* Jim Edwards, Wigan: JRC NRD-535 or Drake R8E + 60m N/S wire attached to guttering on a block of flats.
- \* Ian Evans, Ebbw Vale: Sangean ATS-818 + 11m indoor wire or Eddystone 888A + RF Systems EMF in loft.
- \* Stan Evans, Herstmonceux: Kenwood R-2000 + Balun + 11m wire in loft.
- \* Geraint Gill, Llanfairfechan: Grundig Yacht Boy 400.
- \* Bill Griffith, while in S.Italy: Sony ICF-SW55 + 15m wire.
- \* Gerald Guest, Dudley: Roberts RC818 + r.w.
- \* David Hall, Morpeth: AOR AR7030 or Ten-Tec RX350 + Global AT-2000 + 13m wire.
- \* Francis Hearne, N.Bristol: Sharp WOT370 + r.w.
- \* Simon Hockenhill, E.Bristol: Battery powered Roberts R876 or Bush TR130 + built-in antennas or AKD HF-3 + 4m wire.
- \* Robert Hughes, Liverpool: AOR AR7030 + 15m indoor wire or Drake R8E + RF Systems MTA on roof.
- \* Sheila Hughes, Morden: Sony ICF-7600DS + home-built loop or Panasonic DR48 + 16m inverted L.
- \* Rhoderick Illman, Dxted: Kenwood R-5000 + r.w. or AN-1, Sony ICF-7600DS.
- \* Dick Male, Yeovil: Icom R8500 + 15m wire in loft.
- \* Eddie McKeown, Newry: Grundig Yacht Boy 400 or Sangean ATS-818.
- \* Ian Pakeman, Folkestone: Sangean ATS-818 + 7m wire.
- \* Fred Pallant, Storrington: Trio R-2000 + Howes CTU8 a.t.u. + r.w.
- \* John Parry, Larnaca, Cyprus: Realistic DX-394 or Yaesu FT-767 or Realistic DX-400 + r.w.
- \* Peter Perkins, Hemel Hempstead: Grundig Satellit 800 Millennium or AOR AR7030 + BHI NES noise eliminator + ADR loops.
- \* Clair Pinder, Appleby: JRC NRD-525 + a.t.u. + r.w.
- \* Peter Pollard, Rugby: Sony ICF-2001D + r.w.
- \* Vic Prier, Seaton, Devon: Fairhaven RD500VX + Datong AD-270 active dipole with helical elements erected east/west inside indoor balcony.
- \* David Stevenson, Swansea: Steepleton MBR-7 or Matsui portable.
- \* Ernie Strong, Ramsey, Cambs: AKD HF3 or Yaesu FRG-8800 + a.t.u. + 30m wire.
- \* Scott Turner, Rye: Realistic DX-394 + Palstar active antenna indoors.
- \* Thomas Williams, Truro: Grundig Yacht Boy 400 or Grundig Yacht Boy 206 or Sharp 5454 + r.w.
- \* Fred Wilmshurst, Northampton: Icom IC-R70 + Global AT-1000 + r.w. in loft.

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# Bandscan Europe

**B**y the time you read this, unless some 11th hour miracle comes to pass, we will in all probability be at war with Iraq. In support of British troops, who have been gathering forces for some months now, Services Sound and Vision Corporation (SSVC) has supplied hundreds of portable radios to help keep them in touch with home.

Meanwhile, the British Forces Broadcasting Service (BFBS) is already broadcasting into the region and will be rolling out several local f.m. transmitters as more troops arrive. You can try for BFBS to the Gulf on 13.720MHz from 0200-0500, 9.820MHz at 0400-0500, 15.530MHz at 1500-1700, 12.040MHz at 1700-1800 and on 5.945MHz from 1500-1800. All times UTC.

For the other side of the story, the Iraq Satellite Channel beams to Europe on *Hotbird* at 13°E on 12.654GHz MPEG-2, horizontal polarisation. Be prepared for some gruelling images. Having said that, radio and TV stations, as well as comms links and earth stations, are likely to become early victims of the conflict, so the channel's days may be numbered.

## Old Satellites

If you're reeling from digital fatigue, here's another potential fledgling system to get your head around. The European Space Agency (ESA) announced that it is considering using old satellites to carry radio stations relaying traffic information, weather forecasts as well as music and entertainment.

The European consortium believes that careful use of the satellites' dwindling fuel supplies could extend their useful life by five years to create a continent-wide digital radio network. Successful tests have already been made and a design for a cheap 12GHz car antenna that can track the satellites is being developed.

Satellites naturally drift, and using precious on-board fuel to maintain their exact orbital positions limits the life of the craft. Whereas highly directional satellite TV dishes require that the satellite remain within close range of its allocated slot, car antennas would not exhibit such directional properties and could easily accommodate the movement of a drifting satellite.

Our American cousins already enjoy satellite-derived digital radio services in their cars courtesy of rival systems Sirius and XM Radio. Monthly subscription is up around at \$11. The ESA believes it could set up a similar service for European drivers at a fraction of the cost.

The 'only' disadvantage of such a system is that signals can be lost in built-up areas where tall buildings block signals. Another fly in the ointment is that both Luxembourg-based Global Radio and a WorldSpace/Alcatel consortium have advanced plans to provide a similar service by around 2005.

Over in Switzerland, digital terrestrial television launches in the Engadine region, after which it'll be extended to the rest of the country. In Europe, DTT is being trialed in many countries and some have already introduced it. France, Germany, Austria, Italy and Switzerland are currently conducting technical tests on broadcasting and reception in small-scale networks. In the Berlin area, the use of DTT on a regular basis started in November 2002. We and the Swedes already have the technology in place.

Talking of which, the BBC's Freeview took heed of

users' feedback and added Radios 1, 2, 3 and 4 to the line-up that already includes Five Live, Five Live Sports Extra, 1Xtra, 6 Music, BBC 7, World Service in English and the Asian Network. As predicted, BBC Choice rebranded as BBC 3, bringing to a close the corporation's digital launch programme.

## Strong Sales

DAB, and the news is that all the major retail outlets reported extremely strong sales of digital receivers and tuners over Christmas. Top of the league was the Pure Evoke 1, with many thousands sold. The PersTel DR101, a walkman-style, battery-powered DAB/f.m. receiver also completely sold out. Penetration of DAB digital radio products in the UK is estimated at around 135,000 and is expected to rise to between 300,000 and 500,000 during the year.

Goodmans announced the launch of a range of DAB products, including the first integrating a DAB Digital Radio Tuner and CD Player. Each will retail from between £100 - £200 and will represent an affordable way into DAB for many.

Finally, on the DAB front, a new website for all those interested in this medium, was launched recently by the Digital Radio Development Bureau (DRDB).

**digitalradio.com** is a one stop web site for all things DAB and showcases all the available products you can buy on the high street, guides to all the channels and a station finder that invites you to enter your postcode and works out which digital stations are within range.

## One Step Closer

Long wave news, and the proposed station for the Isle of Man is one step closer, with the High Court's dismissal of objections to the awarding of a site licence for the 279kHz transmission facility in Ramsey Bay. Paul Rusling, the project's founder, commented, "We can at last get on with building the

facility and get the radio station on the air, hopefully during the Summer. Its coverage of the entire British Isles, and beyond, will put the island firmly on the map and enhance its international profile". The project has been dogged with problems almost from the start, and with the proposed use of the revolutionary crossed-field antenna, don't necessarily expect plain sailing from now on.

Meanwhile, over in Ireland, the Atlantic/team TALK 252, 500kW facility has, so far, remained silent, with its owner, ukbetting plc, disposing of its assets to Radio Telefis Eireann (RTE), who plan to use the transmitter to broadcast to the Irish community in the UK. Programming may either be a relay of RTE Radio One, or a composite of the various RTE networks.



## Station News

From June, Germany's international broadcaster, Deutsche Welle (DW), will transmit programmes on short wave in digital using the Digital Radio Mondiale (DRM) system. DRM is predicted to revolutionise long, medium and short wave radio, as the digital signals have near-f.m. quality sound - albeit in mono - with static and signal fading a thing of the past. That's the theory. DW can continue to use existing transmitters after technical modifications. Furthermore, digital transmission will cut energy costs by more than 50%.

Hot on the heels of Reading's low power TV station, mentioned last time, the Independent Television Commission (ITC) has just advertised the licence for a similar venture in the Taunton area. The new service will go out on u.h.f. channel 50 from the proposed transmission site near West Monkton. Coverage is predicted to include much of Taunton and Norton Fitzwarren.

Our old friends, Radio Caroline, turned up on satellite again, this time at 28.2°E, right where your Sky minidish is pointed. Celebrations were short lived, though, as the channel - carried on the 11.623MHz horizontal transponder - went quiet a short time later. The word on the street is that they will return on 11.585MHz horizontal.

As there are significant costs involved in being included on a Sky digibox's Electronic Programme Guide (EPG), Caroline, even when up on the satellite, did not appear on the channel listing. In addition, a manual search must be carried out to add the station to the receiver's memory. Check out the web page of links I've left at [www.pwpublishing.ltd.uk/swm/bandscan/](http://www.pwpublishing.ltd.uk/swm/bandscan/) for help with tuning Caroline in on your Sky box, and a whole heap of other stuff related to this month's piece. Meanwhile, an unofficial relay of Caroline's satellite transmission via WorldSpace is heard each day on 7.150MHz.

As the clocks go forward, have a pleasant spring and see you next time.



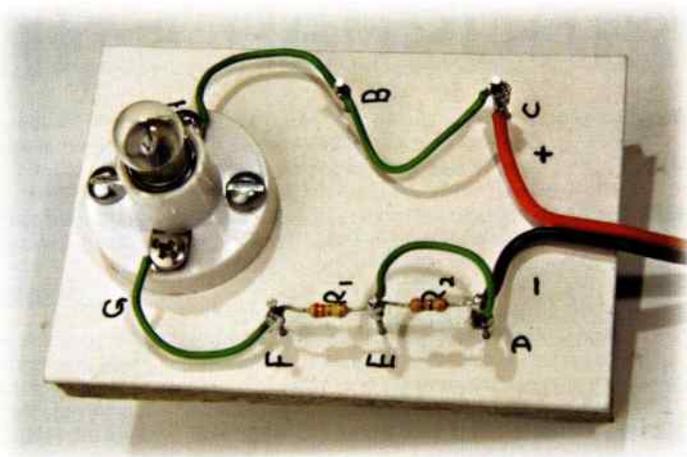
For all of you who are tempted, our Amateur Bands Columnist Clive Hardy G4SLU explains just what's involved in getting on air.

If you've read this far, then there's no doubt that at some point you've given the idea some thought, and probably wouldn't mind having a crack at it. But the burning question is 'How

### How It All Began

Back in the early days when radio was new to the human race, various people were doing experiments with this wire less method of communication, Marconi being the most famous. As more and more of the populous started to experiment with wireless, governments, as is their wont, stepped in to regulate the airwaves. The radio spectrum was divided into bands of frequencies, defined then by wavelength. For example, the long wave length band where Radio 4 can be heard today on 198kHz.

Those who were developing the use of radio waves for commercial



An example of the current practical project that is to be built as part of the Intermediate course.

free for all? Because without some sort of regulation it would be chaos on the frequencies, with stations transmitting wherever they liked and interfering with

and Full, with each one allowing access to more amateur bands and/or permitting higher transmit powers than the one before. After the beginning of 2004,

# So You Wanna B

difficult is it?' Over the past few years there have been some major changes in the qualifications required to play radio. Without doubt it's never been easier to become a radio amateur than it is today. So what does it involve?

purposes were allowed to operate on certain bands in the frequency spectrum, and amateur experimenters were let loose on other shorter wave lengths. Licences were issued to all radio stations, together with callsigns which the operators had to transmit at regular intervals so that the origin of any transmissions could be ascertained. The callsigns were based on an internationally agreed system which allocates each country different numbers and/or letters which must prefix the callsign.

Moving on the best part of a century to today and radio amateurs are still allowed to operate on certain bands in the radio spectrum, still allocated a callsign, and still have to obtain a licence. Why a licence? Why not a

other stations to such an extent that it would be wireless gridlock. No one would be able to use any frequency without the risk of interference. Imagine what we couldn't do if there wasn't reliable, safe, radio communications. An awful lot of things!

So anyone who's going to be allowed to use the radio spectrum must be licensed. And if like radio amateurs, they're given a fair bit of freedom with how they operate within their allocated bands, they need to pass some sort of test or examination to show that they know how to operate without causing interference to other radio users before being granted a licence.

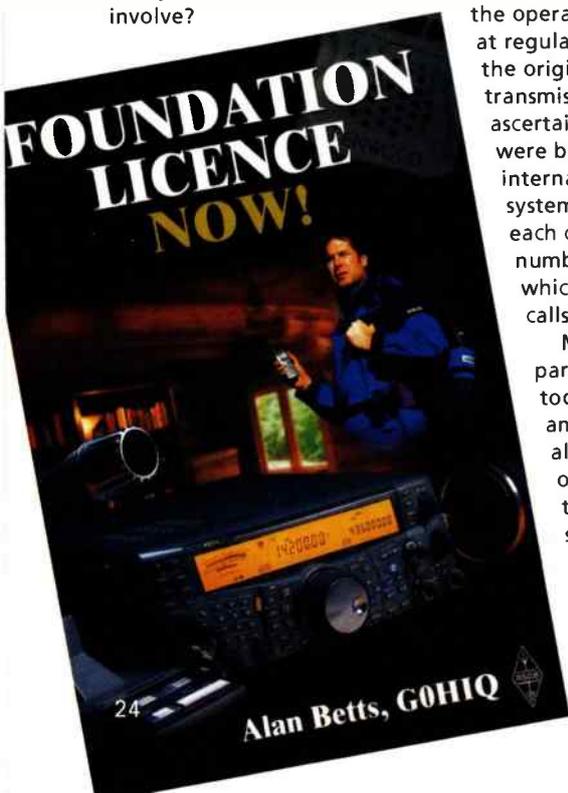
### The Amateur Radio Licence

Right now there are three types of amateur licence: the Foundation, Intermediate (which was called the Novice)

it will be necessary to obtain the Foundation licence first, then the Intermediate, before moving onto the Full licence. Of course there's no obligation to move onto the higher level licence, but if you want to, then that will be the route.

For a description of the licences let's start at the top. The Full\* licence allows transmissions on all of the frequency bands allocated to amateur radio. There are 24 bands, from 1.f. (low frequency) up to the microwave frequencies. The maximum transmit power permitted is 400W. There are no limitations on the equipment that can be used other than it must not cause interference. Although there are over 20 bands within the radio spectrum allocated to amateur radio, the most used frequency bands are the eight in the h.f. or short wave bands between 3 and 30MHz.

Why? Because they are the bands for world-wide



communication. Obtaining a Full licence requires a pass in the Radio Amateur Examination of which more follows. Currently callsigns for Full licences are prefixed M followed by either 1 or 0 and three letters.

\*At the moment there are two classes of Full licence, the A and B. The difference between A and B class licences is that, as well as passing the Radio Amateurs Examination, to obtain an A licence a Morse code test, currently at 5w.p.m., also has to be passed. The A class licence permits access to all the amateur bands. B class licence holders can only transmit on the v.h.f. bands and above.

However, sometime after the middle of 2003, and possibly as soon as July, all Full licence holders will be

permitted to use all the bands, and the terms A and B will end. This is because it is expected that the *World Administrative Radio Conference* in June 2003 will drop the requirement for users of the h.f. bands to have the ability to send and receive Morse code. So no Morse requirement, no Morse test. With that difference gone, there'll be no difference between the licence classes, and it will only be necessary to pass the exam to get the one class of Full licence. A similar situation will apply with regard to the current A and B class Intermediate licences

As the exam for the full licence was the only one for many years, it was always known as the Radio Amateur Exam, or RAE for short. Although there are now other

radio amateur exams, I suspect the exam for the Full licence will always be known as the RAE. A bit like vehicle tests being called MOTs long after the demise of the Ministry Of Transport.

### What To Do?

So how to get a Full licence? There are two chances left, one on Monday 19 May and the other on Monday 1st December 2003, to take the RAE without having first obtained a pass in the



# Are A Radio Ham?

**INTERMEDIATE LICENCE**  
*Building on the Foundation*

Edited by **Steve Hartley, G0FUW**

Intermediate licence exam. It's probably too late to sort out taking the RAE in May, so effectively there's only one chance. By December the Morse requirement will certainly have been dropped, so if you think you want to get the Full licence as soon as possible then go for the December exam.

The RAE is administered by the **City and Guilds London Institute** (Exam number 7650) and you should contact them at **1 Giltspur Street, London EC1A 9DD, Tel: 0207-294 2468** or at **www.city-and-guilds.co.uk** for information about where you can take the exam. To check out the syllabus, look in *Radio Amateur Examination Manual* 16th edition. I won't say any more about the current RAE as it has such a short life. Perhaps there'll be a mad rush to take the December exam. Who knows? However, let's assume you're not going to take the RAE December 2003. What

then is the route after 2003 to a Full amateur radio licence? As a first step for the newcomer, a pass in the Foundation licence exam must be obtained.

### The Foundation Licence

The Foundation Licence, which is often called the M3 after the prefix allocated to this licence. This licence allows operation on most of the h.f. bands, the v.h.f. and u.h.f. bands with a maximum transmit power of 10W. Equipment must either be CE approved or built from commercial kits.

Qualification for the licence is by answering correctly at least 15 four-option multiple choice questions out of 20 in an exam lasting 30 minutes, and completing a few practical operating tasks. And, probably only up to July 2003, a very simple Morse assessment. The RSGB

administers the testing and assessments on behalf of the Radiocommunications Agency which administers the radio spectrum in the UK.

Before taking the exam, it's compulsory to attend a course. This might be at a local radio club, but instructors may be willing to travel to a student's home, if necessary. Non radio clubs such as schools, scouts,

important to have a good read of it before the course. Included in the syllabus are topics on transmitters, receivers, antennas and propagation as well as licence conditions, but none of it is too deep. The maths is simple enough for a calculator to be unnecessary, so don't worry!

About half the course will cover the theory side of the syllabus, the rest will be

radio clubs, others operate independently.

**3)** Contact the instructor of your choice and arrange when and where to take the course.

**4)** Read, mark, learn, and inwardly digest the contents of *Foundation Licence Now!* Attend the course. Pass the written and practical elements of the exam.

**5)** Apply for licence.

With the *Foundation Licence Now!* book comes various other papers including a licence application form. This has to be sent to the Radio Licensing Centre in Bristol with an annual fee of £15. The address is on the form.

The Foundation Licence callsigns consist of the prefix M3 followed by three letters, e.g. M3SWM. For countries in the United Kingdom other than England a second letter is added to the prefix to indicate the country where the station is located. For example, MW3 is the prefix for stations located in Wales. It is possible to choose your own three letters provided the callsign hasn't been issued already, or you can accept the next available callsign on the alphabetical list.

## The Intermediate Licence

Having dealt with the Foundation licence, perhaps you'd like to move on to the Intermediate licence. Before taking the Intermediate exam, it's necessary to obtain a pass in the Foundation licence exam and assessment, but not necessary to obtain the Foundation licence itself.

The main difference between the Foundation and Intermediate licences is that Intermediate licence holders can transmit on all of the amateur bands, and the maximum permitted transmit power is increased from 10 to 50W. The restrictions on commercial equipment that apply to the Foundation licence are lifted for the Intermediate licence.

Like the Foundation licence, qualification for the Intermediate licence involves a written exam and practical assessment. The exam has 45

multiple choice questions and the practical element involves building some simple circuits and one more complex item. Obviously the questions are a little harder than in the Foundation exam as a deeper knowledge of radio theory is required. But it isn't essential to attend a course before taking the exam and assessment.

As with the Foundation licence instructors, the RSGB has details of persons permitted to assess for the Intermediate exam. For the immediate future the exams will be held at various centres around the UK, at 1830 on the first Monday of each month, but as the RSGB has only recently taken over administration of the exam, things could change with experience.

## Bigger Steps

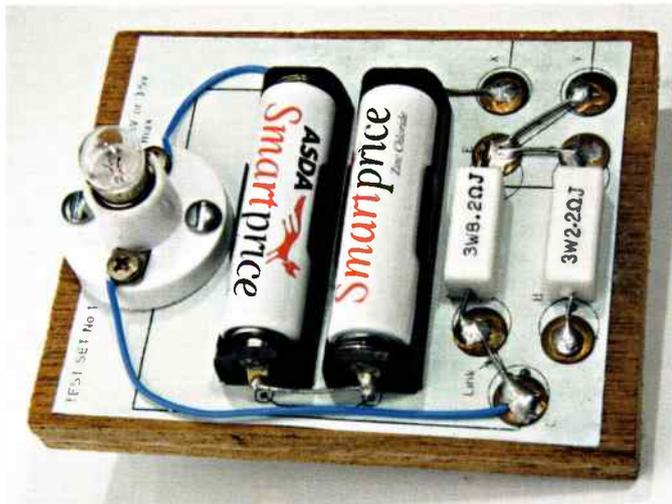
Similar to the Foundation licence, there's a set of steps to take to success in the Intermediate licence exam. These are:-

- 1)** Pass the Foundation licence exam (see 'Small Steps'!).
- 2)** Buy the *Intermediate Licence* book - £4.75 Plus P&P from the SWM Book Store - and like the *Foundation Licence Now!* book you should give it a good read.
- 3)** Contact the RSGB for details of assessors in your area.
- 4)** Contact local assessor - it might well be the lead instructor on your Foundation course.
- 5)** Arrange when and where to take the assessment and exam.

Carry out the practical tasks required for the assessment - this involves building some simple circuits. For example, a circuit with a battery, bulb and a couple of resistors. Nothing too difficult. These could be done on the day of the assessment, but it's more sensible and saves a lot of time to do them beforehand.

Although not essential, it

### The old Novice project - now superseded.



guides, cadets, etc. might have sufficient students wishing to take the exam for the course and exam to be held on their premises. The practical component, which involves some operating and antenna tuning, will be carried as part of the course.

A lead instructor will almost invariably obtain the assistance of other radio amateurs with the practical components of the course. From my experience, the courses are relaxed enjoyable events from which students and instructors gain much pleasure. Exams can be taken at any time so courses are typically arranged on an *ad hoc* basis, although demand in some areas is sufficient for clubs to hold regular courses.

As a general rule of thumb, a course will run for around 12 hours. There is no fixed format for the courses, so some are run over five short weekly sessions for example, and others over a weekend. Whatever suits. All the theory that you need to know is in the *Foundation Licence Now!* book, and it is

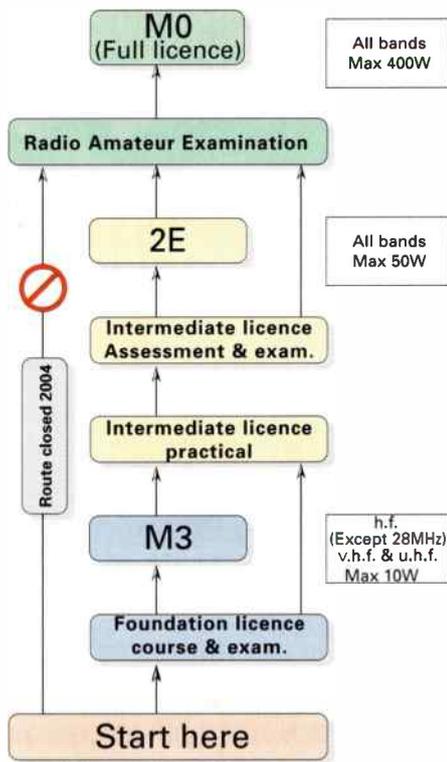
hands-on practical assessments and the exam. There is a £5 fee to take the exam. There may be further charges to cover use of club premises and the supply of refreshments for example. A typical cost including the exam is £10.

It's hard to fail the exam, but if you do it's possible to take it again (with a different paper of course!) on the same day. Your instructor can run through the failed paper with you beforehand so that you know where you went wrong.

## Small Steps

So the steps you need to take are:-

- 1)** Obtain you copy of the *Foundation Licence Now!* book - £5.45 inc. P&P from the SWM Book Store.
- 2)** Contact the **RSGB at Lambda House, Cranborne Road, Potters Bar EN6 3JE, Tel: (0870) 904 7373** [www.rsgb.org.uk](http://www.rsgb.org.uk) for details of lead instructors in your county. Some are linked to



Foundation exam, so failure means a few weeks to wait before another stab can be made at the exam. Let's be positive! You will pass! Having passed the exam and

licence permits, which is basically to transmit considerably more power than the other licences allow. After 2003 it will be necessary to have passed the Intermediate licence exam before tackling qualification for the Full licence. Again this will involve an exam but, like now, and unlike the other exams, there won't be a practical element. Although

the Foundation and Intermediate licence syllabi. This means that the current RAE manual will still cover the requirements of the new exam, but not everything covered by the book will be in the new syllabus. The exam should be shorter than the current 80 questions over two papers. The sort of areas that won't be covered by the new exam will be log book keeping, regulations and operating procedures.

Although there will be more stages to go through to get a Full licence, there's no reason why it should take a long time. Nothing in the new procedure indicates how long there should be between passing one exam and taking the next.

I really can't see why, for example, a student shouldn't build the practical components of the Intermediate exam over a week or two, attend a Foundation licence course over the following weekend with the exam on the Sunday. Obtain Pass. Take Intermediate assessment and exam the following Monday evening. Pass. Take RAE later that month. Pass. Get Full licence. All in a few weeks!

It used to be a complaint that someone could get onto the amateur bands with a Full licence without first going anywhere near an amateur radio! With the new licensing system that just isn't possible. The Foundation licence requires some operating, and anyone with an Intermediate licence will have experienced the smell of the solder flux and the roar of the student who's burned his hand on the soldering iron!

With thousands of new amateurs appearing on the bands every year there's never been a better time to get on the air. And there's no licence fee for the under 21s and over 75s! **Go for it!** **SWM**

**Of course, we would be rather remiss if we didn't point you at our sister magazine *Practical Wireless*, aimed exclusively at the radio amateur.**

# Radio Amateurs Examination Manual

16TH EDITION



John Case, GW4HWR and Hilary Clayton-Smith, G4JKS



no doubt some clubs will run courses, most students will probably have to swat up at home and simply turn up on the day of the exam. But approaching that task with the knowledge and experience gained from having done the earlier exams should help a great deal.

Exactly how this new exam will be administered is uncertain, but it is probable that exams will be held far more frequently than has been the case. It has been suggested that it might be monthly, perhaps, for example, on the evening of the first Thursday of each month. We must wait and see if radio clubs will be allowed to be venues for the exams.

A book covering the new syllabus is likely to appear soon. The major change is that the new syllabus won't cover the areas currently covered in the RAE syllabus that are already covered by

might be easier to attend a course run a registered assessor. As you progress through the course and complete the practical components, your tutor will be able to 'sign off' the work you have done, thus saving much time on exam day.

One of the items that has to be built should take about 20 hours. A list of items to choose this from is in the *Intermediate Licence* book. A couple of examples; an antenna tuner unit with built in s.w.r. bridge or a simple low power transceiver. The practical assessment component of the exam is to demonstrate to the assessor that you can understand and explain the operation of the practical items, and that they were built by your own fair hand. Appropriate allowances will be made for students with disabilities. Depending on whether or not some assessment has been done before the final day, this could take fewer than 30 minutes.

So, having passed the practical bit, then take and pass the exam. 75 minutes for 45 four-option multiple choice questions. If you fail, there isn't an immediate opportunity to re-take the exam as there is with the

assessment, apply for your licence. The cost, £15, is the same as for all the licences. The format of Intermediate callsigns is that they are prefixed by the number 2, followed by a letter to identify the country. England's letter is, not surprisingly E. The rest of the call consists of a number and three letters. The different A and B class licences are identified by the number after the country identifier, A class licences with the number 0, and B class licences with the number 1.

When the Morse requirement goes, all licences issued will be class A with the number 0 identifier. Like the other licences, it's possible to select your own call letters provided it hasn't been issued already.

## Going All The Way

So having got the Intermediate licence, why stop there? The next move is to go for the Full licence. I've already covered what the Full

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- 500kHz - 1310MHz
- FM, WFM, AM
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- 11 tuning steps
- CTCSS decode
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- PC programmable
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This palm size handy offers great performance.

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- 66 - 1000MHz with gaps
- NFM, AM
- 200 memories
- 100 Pass channels
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- Descrambler
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- 100kHz - 1650MHz Displayed
- NFM, WFM, USB, LSB, CW, AM
- 1000 memories
- 500 Pass channels
- 12 tuning steps
- 4xAA Ni-Cds / AC charger
- 12V DC cigar lead
- Telescopic Antenna
- Earpiece

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## YUPITERU MVT-7300 "COMPACT SIZE"



- 521kHz - 1320MHz
- NFB, WFM, NAM, WAM, USB, LSB, CW
- 1000 memories
- 500 Pass channels
- 16 tuning steps
- 8.33kHz airband spacing
- 3xAA Ni-Cds
- 12V DC/230V AC mains
- Telescopic Antenna

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## YUPITERU MVT-9000 mk2



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

"TOP OF THE  
RANGE"

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## AOR AR-8200 mk3 NEW



- 530kHz - 3000MHz
- WFM, NFM, SFM, WAM, AM, NAM, USB, LSB, CW
- 1000 memories
- 50 select scan channels
- Tuning steps programmable
- 8.33kHz airband spacing
- 4xAA NI-MH
- Detachable MW bar antenna
- Telescopic Antenna

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## ALINCO DJ-X3



- 100kHz - 1300MHz
- AM, FM, WFM
- 700 memories
- 11 tuning steps
- 8.33kHz airband spacing
- Stereo FM (with headphones)
- Audio descrambler
- 3xAA dry cell battery case
- SMA Antenna

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## UNIDEN-BEARCAT UBC-3000XLT



- 25 - 1300MHz with gaps
- NFM, WFM, AM (Airband)
- 400 memories
- 10 Priority channels
- Twin Turbo scan & Search
- 6V 600mAh Ni-Cd pack + AC charger
- BNC Flexible Antenna
- Leatherette case
- Earphone

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## UNIDEN-BEARCAT UBC-280XLT



- 25 - 956MHz with gaps
- NFM, AM (Airband)
- 200 memories
- 10 Priority channels
- 5/12.5kHz channel steps
- 4.8V 800mAh Ni-Cd power pack
- AC Charger
- BNC Flexible Antenna
- Earphone

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## UNIDEN-BEARCAT UBC-220XLT



- 66 - 956MHz with gaps
- NFM, AM (Airband)
- 200 memories
- 10 band coverage
- 100 Ch/sec scan speed
- Priority channel
- 4.8V 600mAh Ni-Cd int.
- AC Charger
- BNC Flexible Antenna

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## UNIDEN-BEARCAT UBC-120XLT



- 66 - 512MHz with gaps
- NFM, AM (Airband)
- 100 memories
- 10 Priority channels
- 5/12.5kHz channel steps
- Data skip (lockout channels)
- 4.8V DC Int. battery
- BNC Flexible Antenna
- Earphone

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PRICE"

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## UNIDEN-BEARCAT UBC-60XLT-2



- 66 - 512MHz with gaps
- NFM
- 80 memories
- 1 Priority channel
- 5/12.5kHz channel steps
- Data skip (lockout channels)
- 4x AA cells (not provided)
- BNC Flexible Antenna
- Earphone

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## ALINCO DJ-X2000 "FABULOUS FEATURES"



- 100kHz - 2150MHz
- AM, NFM, SSB, CW
- 2000 memories
- 23 tuning steps
- Channel scope
- Fully programmable
- 4.8V Ni-Cd battery pack
- 8-15V DC ext.
- Telescopic Antenna

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## WATSON HP-100 NEW



- Excellent lightweight communication headphones with tailored response ideal for the modern transceiver or receiver.
- 8 Ohms 200-9,000Hz
  - adjustable headband
  - 3.5mm stereo plug
  - 1/4" stereo adaptor

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## WATSON HP-200



- Mono 8 Ohm
- 200 - 10,000Hz
- Tailored for Comms
- Padded ear pieces
- Good sound proofing
- Single cable
- 3.5mm stereo plug
- 1/4" stereo adaptor

These superb headphones have a tailored response for radio communications and are offered at an amazingly low price. With excellent sound proofing, you can pull in the weak DX.

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  - Noise Attn levels 8
  - Audio output power 2.5W RMS max (8 Ohms)
  - Audio connections: Line level in/out (RCA Phono), Audio in/out 3.5mm mono jack
  - Line i/p Impedance 10K
  - Line o/p impedance 100 Ohms
  - Line In sensitivity 300mV -2V RMS
  - Headphone socket 3.5mm mono jack
  - Headphone power 2.5W RMS max
  - Power 12-24V DC 500mA
  - Size 170 x 85 x 34mm • Weight 265g
- Accessories included: Fused power lead, 3.5mm mono audio lead 1.2m and operating manual.

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- Alphanumeric display
- Automatic Tape recorder option
- Antenna BNC
- 13.8V DC 700mA

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## AOR AR-8600 II



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

**£679 C**

## YAESU VR-5000



- 100kHz - 2599MHz
- FM, AM, SSB, CW
- 2000 memories
- Large digital display
- Real-time band scope
- DSP Noise & notch filters (Opt)
- Super HF performance
- Automatic Tape recorder option

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## YAESU VR-500 YAESU 2 YR WARRANTY



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- NFM, AM
- 1000 memories
- 100 Skip channels
- Smart search feature
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- Band scope
- PC programmable
- Flexible Antenna

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HF PC RECEIVER  
9 kHz to 30 MHz  
See Review in February  
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\*Tuning resolution: 1Hz  
\*Modes: AM, AMN, AMS,  
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DSB, Pro Demodulator  
Option only) \*Antenna:  
50ohm (SMA) \*Dynamic  
Range: 95dB \*IP3: +8dBm

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## WINRADIO WR-1550E PC RADIO



- 150kHz - 1500MHz
- AM, NFM, WFM, SSB, CW
- Limitless memories
- Built-in speaker
- RS-232 Interface (D9)
- Requires PC (not included)
- BNC Antenna connection
- AC Mains adaptor
- Start-up Antenna

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- Limitless memories
- Easily fits into PC
- Sound through PC system
- Power from computer
- BNC Antenna connection
- Start-up Antenna

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NES10-2 \*Speaker with built-in DSP  
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- 4 x AA cells (Alkaline)
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- AM, SSB/CW, FM (Stereo)
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- Stereo through earphones
- Dual time
- Clock/Alarm
- 4 x AA cells (Alkaline)
- 230V AC adaptor

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\* Frequency 100 - 1000MHz \* Gain variable 0 - 20dB \* Bypass switch \* Requires PP3 battery or ext. 9V DC 100mA min. \* I/O connectors BNC (50 Ohms) \* Size 40 x 95 x 35mm \* Weight 100g

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Teacher Tom Read  
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 thought the school  
 holidays would be  
 as good a time as  
 any to operate the  
 ISWL's second club  
 callsign M1SWL.  
 Read on and  
 follow Tom  
 through his  
 travels.

# My Month as M1SWL/P (and M1SWL/P!)

did encourage me to have a go anyway, despite my practical limitations.

Looking at *Monitor* again this year, I did note the succession of 'empty' months for the M1SWL club callsign, and I realised that I had absolutely nothing to lose. Even if my lack of time, power and antennas limited me to just one contact in the month, then that would still be one more than otherwise!

Pressure off, I gave Arthur Kinson G0KOC/G-20358, the ISWL



**W**hen I noted in *Monitor* - the monthly journal of the International Short Wave League (ISWL) - that the League had acquired a second club callsign, M1SWL, and that it was available with priority for Class 'B' licensees, I was very interested at this opportunity. However, I thought that my limited time available to 'play radio', left over from work and family duties, would not do justice to a club call.

After all, one gets the impression that other club callsign operators, both in the League and other societies, manage to be very active, making 1000s of contacts in their allotted months. Then there is my equipment - since becoming a radio amateur after thirteen years of s.w.l., I have used exclusively a Standard C108 hand-held transceiver, which I won in a Worked All Britain SWL contest a few years ago, and had previously only been used for listening to 2m and airbands. John Raynes G0BWG/G-16436 at ISWL HQ, on the old Sunday night ISWL Internet chatroom,

Club Callsign Manager, a ring to request M1SWL for the month of August. I am a school teacher by profession and while the summer holidays are a lot busier than most imagine, I figured I would still have more flexibility to get 'out and about'. The documentation was sent through from League President Peter Rayer G-13038, and I was raring to go, just waiting for July to become August.

## First Contact

The first contact was made on the 2nd of August at 1340, with Dave Blurton M3DPP/M in Stoke-on-Trent, via GB3VT, the Stoke-on-Trent repeater ('VT' = five Towns - the towns in the Potteries: Stoke, Tunstall,

Burslem, Hanley, Longton, although the current trend is to refer to the '6 Towns' and include Fenton - I have always found it a little strange that Newcastle-under-Lyme is always kept separate!) on 145.725MHz. This occurred up at the Peak View Farm Kitchen on the A537 Cat & Fiddle road between Macclesfield and Buxton. This used to be the *Shining Tor* pub, but is a now a delightful Victorian tea-room. I would highly recommend their special cream tea!

The next set of contacts was the following day, using the Stockport repeater, GB3MN, on 145.650MHz. In his August column in *ISWL Monitor*, Cliff Jobling G4YHP/G-13557 mentioned, quite rightly, that

repeater use is prioritised for mobile and portable stations. However, I can assure everyone that my activity did not prevent use by such stations, quite simply because I was such a station! The Standard C108 puts out 230mW (-6 dBW; note **negative six**), and is not **powerful** enough to be called QRP! Therefore repeater operation was pretty important for me, although I did achieve a handful of 'direct' contacts.

Even to operate via a repeater, I needed to be out and about, with this not being possible from my home QTH with my hand-held. I am fortunate in Macclesfield to be within minutes of either the Peak District and the North Staffordshire Moorlands, so many handy locations for 'hilltopping'. From these sites, I can work well into four repeaters: GB3MN Stockport, GB3VT Stoke-on-Trent, GB3MP North Wales and GB3HH Buxton. I didn't hear any activity on the Buxton repeater to try and join, but the other three are usually busy with great bunches of lads and lasses, a mix of Class A, Class B, Foundation and Novice stations.

On August 3rd, I was parked in Gatley, close to where the M60

meets the A34. Amongst the stations worked was GB2MCG, a special event call to commemorate the Commonwealth Games in Manchester. This station was operated by Annick M0HDE, about whom a short news item appears on page 10 of the September 2002 *RadCom*. The Manchester Commonwealth Games itself was an excellent event, both in terms of the standard of competition and the organisation. I have never seen Manchester looking so good, even driving through the outer suburbs of the city, everywhere seemed to be spotless.

Our niece Kayleigh was up staying for a week, and we took ourselves up to Goyt's Moss (between Macclesfield and Buxton) for a long circular hike. Contacts were made during stops near the beginning of the walk using the Stockport repeater, and towards the end (Shining Tor) using the Stoke repeater, before settling in for lunch at the *Cat & Fiddle*. More contacts were made

I am up to English stations beginning with H at the moment, meaning that A-G is finished, as well as all countries from Alaska to Egypt. (Alaska being a country in DXCC terms). The rest of the alphabet of countries is not empty - there are quite a few QSLs scanned in, especially for more exotic countries such as Mauritania, Hawaii, Honduras, India, Indonesia, Offshore, etc.

The next day saw me drive to 'usual suspect' locations in the form of SJ968609 near Meerbrook, North Staffs and The Mermaid, a high omnidirectional take-off point overlooking the A53 Leek-Buxton road. Several well-known stations were worked on GB3VT - known to me from my journeys to work in Tunstall, Stoke-on-Trent.

### Annual Camping Holiday

The following week was our annual camping holiday to Essex. On or around the 14th of August

attraction was Radio Mi Amigo, broadcasting from the LV18, anchored in Harwich harbour between Harwich and Shotley. Also broadcasting with an RSL at this time was Susy Radio, from Mertsam in Surrey, easily audible on the low frequency of 531kHz. My two sons Jimmy (9) and Liam (5) and I were joined by my old schoolmate Steve and his two kids Holly and Ben (also 9 and 5 respectively).

We were blessed with fantastic hot dry sunny weather all week, hence the beaches at Frinton-on-Sea and Jaywick were frequented, with lots of opportunity to listen to Radio Mi Amigo (featuring the original jingles from the 60s station) in the car between campsite and beaches. The weather was also superb in the late evenings, allowing Steve and myself to settle the children to bed around 2230/2300 each night and then fetch out a couple of deckchairs between the tents, not forgetting the vodka and fresh orange juice, plus torch for pouring of course!

The skies were wonderfully clear at night, giving excellent detailed views of many star constellations and the milky way. The timing couldn't have been better, as this was the week of the peak of the *Perseids* meteor shower, with the Monday night (Tuesday 13th August 0000) giving a spectacular overhead show. In this most intense half-hour period, we viewed around 30 meteors shooting all directions across the sky, each leaving a bright orange trail.

Our campsite was the excellent Strangers Home pub site in the village of Bradfield, between Manningtree and Harwich. On my previous visit last year, I tried to have QSOs using my little rig, but unsuccessfully. This time however, I was delighted to be able to work via the Ipswich repeater GB3PO.

Five stations were worked over a couple of days including a tractor mobile - Bob M3MUD/M! Bob must have covered quite an area on his tractor, because in the morning he was /M in Helmingham, while in the afternoon he was /M in Otley, both tractor mobile!

### Moving On

Two days after returning from camping, my wife Marianne decided it was her turn for a holiday, so off we all went to Llandudno in North Wales. After Marianne, Jimmy and Liam had all gone to sleep in the hotel that night, I went out for a drive up to the summit of Great Orme, from where I could work into the GB3MP Moel-y-Parc (near Wrexham) repeater, the main one for Merseyside and North Wales. This time, the club call sign generated particular interest, especially with MX1SWL/P becoming MC1SWL/P. Three contacts were made before one of these, Pete GW0ETN in Rhuddlan, reported he could receive me on the input and so we QSYed to 145.300MHz.

I later resumed on the 'MP' frequency of 145.750MHz, this time with many stations wanting to work the club call sign. Billy G0SXAM, a well-known Liverpool taxi driver and amateur on this repeater, was kind enough to assume 'net control', helping me to work a total of 13 stations for the evening. Billy until recently also held M5CAB - which unusually he gained by taking the 5w.p.m. Morse test after he had already got his G0 by passing the 12w.p.m.!

Sadly for Billy, he was instructed to relinquish his M5CAB when the ABs were equated with the As, although he would have preferred to have retained this and



later that afternoon, from a lay-by on the A537.

### Of Interest

The aspect of the ISWL that seemed to interest most stations worked was the QSL Bureau - I directed interested stations to the ISWL website at <http://www.iswl.org.uk> Those who also wanted to know details of my little hand-held were directed to my website at <http://tomread.co.uk> This has pictures and the full manual for the Standard, as well as publicity and links to the ISWL. I am also building up a gallery of my QSL collection - broadcast & amateur - on the website, but it will take a long time to complete.

each year, there tends to be some sort of offshore commemoration event in this area, including a 28 day special event restricted service licence broadcast. Previous years have seen our Essex camping holidays take-in listening to, and visiting, Radio London, Radio Northsea International, Radio Caroline and Radio England.

This year's

given up G0SXA. At just past 0130, I closed down the station for the night and drove back down to the hotel for some horizontal mode.

### More Contacts

Back home, more contacts were made from the Meerbrook site, before we did more walking, this time with niece and nephew Lauren and Calum, and walking along The Roaches, near Upper Hulme and Meerbrook, near Leek, Staffordshire. Needless to say, it was the Stoke repeater again and some 17 stations were worked.

Driving around looking for a good location on Sunday 25th August led me through and up the hills around Disley, near Stockport. I eventually settled and parked at the summit of a hill, outside Bowstones Farm. Looking into the grounds of the farm, I could see five antenna structures. I realised that one of these was probably the GB3MN repeater I regularly use. Time was limited, as I was meeting the family for lunch in one of the local curry houses and there didn't seem to be any other activity on the bands, so I had a



go via the repeater!

Paul M1EFT often ribs me about my modest set up telling me to get a proper mobile rig and antenna (and quite rightly so - I must get round to this one of these days), so I could not resist telling him I had done just that and asking him how it sounded. Paul replied positively, and said I now sounded like a radio amateur rather than a bag of crisps! I then delivered the punchline about my location and Paul confirmed this was indeed the site of the GB3MN repeater through which we were working. Eight stations were worked, and the ISWL given more publicity, before I headed back down into Macclesfield for

some fine Indian cuisine.

In many of the new contacts made, conversations have gone like: "Oh yes, are you the bloke that...?". It's a small world and lots of the amateurs met had mutual friends or interests outside radio. Worked on this day was Nick M1DDD, mobile in Stockport. I asked Nick if he recalled my s.w.l. reports from around four years ago, and thanked him for the QSL cards returned.

He did indeed remember my G-20843 s.w.l. cards and mentioned that he was on his way to a banger and stock car meeting at Belle Vue in Manchester. I mentioned that my sons and I were regulars up at the Buxton Raceway at Hi-Edge for the bangers and stock cars. Nick then explained that he was the same Nick that ran the website for the Buxton Raceway, which I have visited many times to check fixtures. So I had been in some sort of contact with this guy for two separate things, without realising he was one and the same!

### Sneaky Contact

The next day, Bank Holiday Monday, saw Marianne and myself heading back out to Llandudno to one of our favourite hotels, The Empire, for our wedding anniversary. The actual anniversary date was three weeks previous, but as any parents will confirm, getting the hotel you want and a babysitter on the same night can

be tricky! It was very tempting to use the opportunity to have another go as MC1SWL/P, but this could well have confirmed this occasion as our final anniversary, so I played safe and remained with Marianne throughout the short stay.

I did have a sneaky go on the hand-held while Marianne was in the Jacuzzi bath in our *en suite*, but alas 230mW from our hotel room was never going to get out. I then turned my attention to tuning round various local f.m. and m.w. radio stations, plus talkSPORT and BBC Radio 5 Live, and the television stations provided in our room in order to find out that day's football score between Lincoln

City and my beloved Macclesfield Town. However, I couldn't find it anywhere, and even when I took the Telegraph from the rack in the lounge the next morning,



the sport section had been removed! I was to find out the score later - thanks to amateur radio!

Returning around lunchtime the following day (Tuesday), I gallantly persuaded Marianne that I should drop her off at home, then go on to collect the boys and take them out for the afternoon, giving her a restful afternoon to herself. Jimmy G-20848, Liam G-21007 and myself G-20843/M1EYP/MX1SWL/P headed back up to the GB3MN repeater site of Bowstones Farm. On my previous visit, I had noted several public footpaths leading away from this point and we all enjoy a good long walk. Furthermore, I figured that I would enjoy excellent signals in and out of the repeater throughout the walk, and the possibility of some simplex work from the higher parts of the hill.

It turned out to be a fantastic day. Absolutely glorious weather, a really enjoyable long walk with my boys, taking in Lyme Park for refreshments and lots of playing radio with the club callsign. In all, I made 28 contacts, each time stopping and giving very precise details of my current position, in order to satisfy the requirements of the portable club callsign and my licence. Many of the stations were already acquaintances having previously worked me as M1EYP/M, but I also met some new stations for the first time.

At each stop, I looked for opportunities to work simplex either with stations already on or by putting out a CQ call. Although activity was sparse, I

was still very pleased to work G7HVO and M0CPT/M on 145.425MHz and G4OCR and 2E1HZZT on 145.525MHz. A station which sounded like it was

from Merseyside was on 145.550MHz, but after 25 minutes of the same over, I decided not to wait any longer!

### Disturbing Views

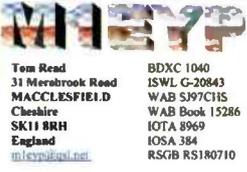
All stations were very friendly and interested in the 'news' about the ISWL and the club callsign. One station, although fine with me personally for the contact, offered some disturbing views to others in the group. Most of the time he did not announce his callsign, and referred to three kinds of radio amateur (hinting at M1s, M3s and M5s) as 'rubbish', 'riff-raff' and 'the other', and talked about 'G7 filters' and other such nonsense. He went onto ridicule the Foundation course and Morse assessment.

I have heard about amateurs like him before, but this is the first time in 14 years of s.w.l. and 15 months transmitting that I have ever come across one. I just hope that this sort of arrogant drivel is as rare as I have always perceived it to be as it does our hobby no favours whatsoever. I personally feel that the new status afforded to M5s, the opportunity for M3 and the RSGB's continued efforts in modernising attitudes towards Morse will go a long way to slowing and hopefully reversing the decline in numbers in amateur radio. The penultimate station worked on the day was the most distant, and yet had one of the best signals into the box all day - Ian G0FYD in Blackpool.

Most of the locations described in the article are within the area covered by the above map. The Peak View Farm Kitchen is by Shining Tor, the 169m peak by the A537 Macclesfield-Buxton road. The river to the right of this is the River Goyt and the area around this is Goyt's Moss. The minor road by the broken line towards the centre-bottom of the map is where the take-off point close to Meerbrook is, while The Mermaid is close to the 148m peak near the bottom-right. Lyme Park, towards the centre-top of the map, and the 124m peak just below is Bowstones, the site of the GB3MN repeater and more of my QSOs.

## Last Three Days

Into the last three days of operation on the 29th of August, the first logging of the day was actually Susy Radio on 531kHz. This was the same station as heard on the Essex holiday - the 28 day RSL from Surrey - but this time heard with a readable signal in the late afternoon in

		
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<b>SWL report / QSL TO RADIO:</b>	BDXC 1040 ISWL G-20843 WAB SJ97C1S WAB Book 15286 IOTA 8969 IOSA 384 RSGB RS180710	
Wkg _____ Date _____ Time _____ UTC QRG _____ MHz Mode _____	RST _____ QRN _____ QSB _____ Condx _____	My Tx / Rx / Ant: <input type="checkbox"/> Standard C108 <input type="checkbox"/> Sony ICF-SW7600G <input type="checkbox"/> Realistic PRO-2006 <input type="checkbox"/> Grundig YB 218 <input type="checkbox"/> whip <input type="checkbox"/> 25m LW+ATU <input type="checkbox"/> discone <input type="checkbox"/> 3m wire
TNX / PSE QSL DIRECT or via BURD (ISWL) Vy 73 es DX DM/YL de _____ Opr.		

Cheshire! Then it was up into North Staffordshire - Meerbrook and The Mermaid. Thirteen stations were worked through either GB3MP or GB3VT, including four from Wales and one from Bolton-le-Sands near Morecambe. Like previously, some were new stations for me, while others were existing acquaintances.

One such was the distinctive voice of HGV driver Mark M0BWA. I have heard or worked Mark many times over the years, initially as a s.w.l. when he was M1AEN. We have a laugh when we work these days as he refers to his 'collection' of cards he has received from me via the bureau. I have sent him cards for M1AEN, M1AEN/M, M0BWA (on h.f.) and two for M0BWA/M, one a

confirmation of a contact, the other a s.w.l. report. In doing so, he has three different designs of my own cards, including the ISWL club card.

However, this time Mark came on and said "Right, listen to this ...G0DJQ!". I recognised this immediately as the callsign of my friend Ali in Macclesfield. She now has the G3JQ callsign of her late husband Eric, and recently arranged with Mark for him to take over her G0 callsign. I telephoned Ali that night to let her that Mark had made it on the air for the first time as G0DJQ, and in fact that I had joined the ranks of radio amateurs myself, as it had been a long while since we last got in touch. On both counts, she was delighted!

## Final Fling

On the 30th I went into work at Brownhills High School, Tunstall, to rearrange my classroom and do some preparation for the coming term, and worked a few of the guys on VT during the day. Finally, on the 31st, I went up to Bowstones Gate for a 'final fling'. I had earlier confirmed

with Arthur by telephone that I could work until midnight, although in the event I didn't use the extra hour, deciding instead to return to the home QTH and watch a video. Bowstones is a bit of a 'cheat' spot to use the MN repeater, being adjacent to it, but it is a great take-off and I did at least make three simplex contacts while I was up there.

I also heard a new RSL broadcast station from Manchester on 106.5MHz - LHFm, from Moston and displaying an RDS identification of "\_LH-FM\_". A total of 12 stations were worked, and again lots of 'news' about the ISWL was requested and given, with

several stations making a note of the website URL.

I am looking forward to getting my hands on this club callsign again - I made a total of 135 contacts using MX1SWL/P or MC1SWL/P, which is as many stations in the club callsign month as I worked in the previous year - almost back to when I was first licensed! Having now become a frequent activator in the SOTA - *Summits On The Air* programme, using my new Yaesu FT-817, I was keen to secure more slots with the club call and be able to align them with my summit activations.

## Wish Come True

My wishes have been granted, and I am set to have MX1SWL/P back for the months of April and August. These months co-ordinate with vacations from work and hence when I will be out activating summits! A recent rule change in the SOTA programme means that points I gain using the club callsign may still be accredited to my own existing SOTA score. I believe this will lead to benefits for both SOTA and ISWL, with the interest I can potentially create from using a special callsign from intriguing locations!



I hope to enjoy another slot from Wales as MC1SWL/P during August, while in April I am in Northern Ireland for four days. I have submitted my details to operate as MN1SWL/P from County Antrim, including summits such as Agnew's Hill and Mount Slemish.

It has been something of a surprise to me that demand for this callsign from members has been low. It is a very attractive and interesting callsign, and I can assure everyone that it does attract great interest on the bands (or in my case, 'band!'). I never thought I would encounter



pile-ups of stations queuing to work me until I became a class A and went off to activate an island or rare WAB square. Well, they haven't exactly been pile-ups, but it has been very exciting and gratifying to be putting the calls out and always getting another station coming back.

Time and again I have heard something of the order of "I was just listening wasn't really intending coming on, but when I heard that interesting callsign...". Many conversations have ensued as to the suffix 'SWL', with most stations initially assuming 'Short Wave Listener'. This I found to be the perfect cue to explain more about the League, in particular its parity between amateurs and short wave listeners, and between amateur and broadcast. I would have to encourage fellow ISWL members to take up this opportunity.

Indeed, I would encourage members of any radio society to 'do their bit' and air the club callsign, especially any under-used Class B calls. You will be glad you did. I would imagine that many Class B licensees, like myself, would enjoy being centre of attention for a while, a sought after prestigious callsign to work. It may also provide an opportunity for Class A stations who tend to work exclusively on h.f., to revive some interest in v.h.f. work.

I must express my thanks to Arthur Kinson at the ISWL for his help, support and enthusiasm in setting me up with the club callsign. This has been highly motivating and much appreciated. A summarised log for my month as MX1SWL/P & MC1SWL/P is on the SWM website

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# GRUNDIG Product sheet 2003

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**SCANMASTER Product sheet 2003**



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# Window Loops, DRM Receiver, and GPS Vs Loran

John Wilson is taken aback with the highly portable small aperture loop - the WL500 from AOR. Aimed at the traveller or those extremely strapped for space, it really does perform. JW also has a brief encounter with a DRM equipped AR7030 and uncovers some startling news regarding GPS based navigation.

**M**y respect for the capabilities of the loop antenna has grown over the years, and regular readers will know from my test results and also from their own experience that for general short wave listening, and particularly for

low frequency listening, a loop antenna system is hard to beat. The rejection of local E-field interference by a loop antenna really has to be experienced to be believed, and using the directional properties of a good loop can be a powerful aid to digging out the weaker signals from the "all pervading luminiferous aether", as one of my historic books describes the r.f. spectrum. Readers will know that I have tested all types and sizes of loops including the mighty K9AY from Wellbrook, together with other screened and unscreened smaller loops from the same manufacturer, all of them performing wonderfully well, down to the impressive desk top loops from AOR, but whilst all these have been excellent for the listening enthusiast, there is one person who has not been covered so far, and that is the listener who travels around and wants to take his hobby with him. I can imagine the desk clerk's response to someone booking into the Savoy Hotel carrying an Andy Ikin Wellbrook

ALA1530 loop around his neck! Well, someone has spotted this missing product and has done something about it.

## Square Loop!

Over the last few weeks I have been evaluating the AOR WL500 loop antenna and I've

been tickled pink by the concept as well as by the results. AOR have designed the WL (Window Loop) 500 as a collapsible antenna which folds up into a package which will fit into the bottom of a briefcase and yet can be put together in a couple of minutes to give you a high performance loop antenna to hang inside a window opening or on a wardrobe door, or even on the back of a chair. The loop itself is constructed from very flexible stranded cable and folds out from its packed length of 400mm into a square loop with a nominal diameter of 600mm - large enough to behave as a 'proper' loop antenna. The square is maintained by fitting a collapsible two section wooden rod from corner to corner, whilst the loop is hung vertically from one of the other two corners, with the antenna feeder coming out of the opposite (bottom) corner. At the feed point is a small plastic enclosure having a band switch on the front, one band marked as 3.5 to 10MHz, and the second band from 10 to 30MHz. In use I found that the low frequency coverage extended well below 3.5MHz, so the range quoted is a bit conservative. Investigating the contents of this enclosure revealed an intricate network of matching transformers, together with two dual tuning diodes, for the loop is remotely tuned rather like the Wellbrook K9AY system. From the socket on the bottom of the box, a small diameter feeder coaxial cable some five metres long, terminated in gold plated connectors, is connected to the smart black box which sits alongside the receiver.

Inside the control box is the loop amplifier which AOR data says has a gain of 16dB and an IP3 of +14.5dBm, together with a tuning control and power 'on' lamp on the front panel, and the loop cable input, output to the receiver and power input connectors on the rear panel. The unit can be powered either from an internally fitted PP3 battery (supplied by AOR) or 12V d.c. power from an a.c. mains supply (also provided by AOR). In fact the AOR package contains everything you need to use the WL500 right down to an 'S' shaped hook to hang the loop on the aforesaid wardrobe door, or picture rail. As usual with AOR, everything about the system is beautifully crafted and a pleasure to see.

I connected up the loop, hung it on the window frame in my lab, and used it to feed an AR7030. It was immediately apparent that signals were coming in at substantial levels, and tuning to my favourite frequencies, mainly h.f. Transoceanic channels, the loop tuning showed its usefulness in being able to peak up the incoming signals, even those very weak from the other side of the Atlantic and in the Caribbean. Comparing the WL500 with my other antenna systems showed no loss of performance, and I was very surprised at how good the WL500 was in comparison. Being a loop, the rejection of local interference was excellent, and I was able to test out its directivity by taking hold of the top hook and twiddling the loop around in my hand. I noted that I was getting a good 20dB of null effects at middle h.f. frequencies, which proves that

the WL500 really is behaving well.

## Advantage

One advantage of a tuned loop, as I have mentioned in previous reviews, is that the loop adds considerable front-end selectivity to receivers with an untuned r.f. stage, and I took some measurements of the selectivity using a method I have described before, with a signal generator driving a single turn calibration loop antenna as the transmitted source and the receiving loop, in this case the WL500, connected to a spectrum analyser. As you can clearly see in **Fig. 1**, the WL500 shows a very useful selectivity peak when tuned, and this really does help to reduce out of band signals which might otherwise sneak into the front-end of a typical non-selective receiver. Similar results were obtained with the loop peaked at 9 and 15MHz in the 10 to 30MHz band, and since a lot of my listening is done on the ATCC frequencies around 8.8MHz, I do know how various antennas perform here, and the WL500 proved to be very satisfactory.

Comparing signal levels from the WL500 to those from a wire antenna led me to 10MHz, simply because I have a 15 metre long wire fed via a 'balun' of the type described in my article in last month's *SWM*, and the 'end-fed half wave' at 10MHz performs quite well. The spectrum plots in **Fig. 2** show the signals received via the WL500, and **Fig. 3** shows the same spectrum one minute later from the end fed half wave wire. Note how clean the spectrum from the loop appears to be, and the signal levels in the 31 metre broadcast band peak at around -30dBm. By comparison, the half wave wire signals are about 10dB lower, and in the region from 10 to 11MHz there are a lot of 'spikes' which are not from broadcast or other transmissions but from my wife's electric fence around the sheep enclosures. This is continuing proof of the loop's ability to reject local E-field interference. And that's enough of spectrum analysers and such like; I know how the WL500 performs with a top class receiver like the AR7030 so I decided to transfer my

trusty old Sony ICF-2001D (2010D for our US readers) from my bedside to the workshop and try out the WL500 as one might use it when travelling. I entered some of my favourite h.f. frequencies into the memories, plugged in the WL500 and started to listen. The first thing I noted was how easy it was to

the LM500, which replaces the wire loop. The rotating antenna has a band switch on the front labelled 'LW' and 'MW' which is self explanatory, and the ferrite antenna is tuned using the same control on the receiver box so that signals can be peaked. I have to say that this accessory was a little disappointing in its

hand-held synthesised 2m transceiver ever produced, AOR have produced a string of mould-breaking designs, such as the AR2001, AR2002 and AR3000, the AR3030, the world beating AR7030 - still the one to beat, if anyone can - and all the interesting and useful accessory designs still coming out of their fertile company.



The packaged AOR WL500 - just how portable is that?

overload the Sony with the output level from the WL500, but putting the 'local/DX' switch to 'local' on the Sony cured all that and gave me quite astonishing h.f. reception compared with the Sony in-built whip antenna. I know that's hardly surprising, but it meant that I could hear all the weak signals from the Caribbean that were totally inaudible using the whip antenna. Not having any circuit information for the Sony, I couldn't say whether the input matching was any good between the receiver and the antenna, but I hope to cure that lack of knowledge when my friends at Mauritron send me their CD of Sony receiver service manuals. As an aside, I have found that Mauritron carry an amazing range of operating and service manuals for every possible kind of electronic and domestic equipment, and their customer service is excellent. Take a look at [www.mauritron.com](http://www.mauritron.com) or ring (01844) 351694 if you need help in this direction.

## Lower Down

For frequencies in the medium and long wave broadcast bands, AOR have designed a rotating ferrite rod antenna,

performance compared to a classic loop antenna, signals being well down on those from such a loop. It also has to be said that receivers such as my Sony do already have a very efficient ferrite antenna built into the body of the receiver, so I can't see many users taking up the AOR accessory rod. On the other hand, the performance of the WL500 on the h.f. bands is absolutely excellent and AOR are to be congratulated on a very well thought out and carefully executed design. I thoroughly recommend the WL500 system, and for anyone who simply cannot get any kind of antenna outside their house, the WL500 will fill the need perfectly. As an antenna system for the travelling listener, the WL500 could not be more perfect, and with a typical portable receiver having an external antenna jack will provide excellent reception of even weak h.f. transmissions.

## Service Driven?

On a more general theme, when you stand back and take a look at AOR, they have proved to be one of the most consistent producers of high quality equipment over the last 30 years. Starting with the first

Their customer support, particularly in the UK, reminds me of the kind of support I remember from companies such as Hallicrafters and Collins, when factory people gave advice and assistance readily and expertly. In my professional life I sadly contrast the falling away of such support from companies like Agilent (once the great Hewlett-Packard) who when asked by me recently for the schematic for a power supply board in a current catalogue signal generator (8648B) replied that they no longer supplied information but that they could sell me a replacement board for £375!! or I could return the unit for repair at a standard cost of £1000. I could tell you more, but believe me, AOR UK still carry on the old tradition, and it is surely significant that Ten-Tec have adopted the same approach of direct sales and direct support from the factory, without distancing themselves from their customers. Maybe the world is about to change for the better?

Incidentally, I finally dug into the power supply for the 8648B and replaced one resistor and one electrolytic capacitor at a total cost of £1 and the generator is now back

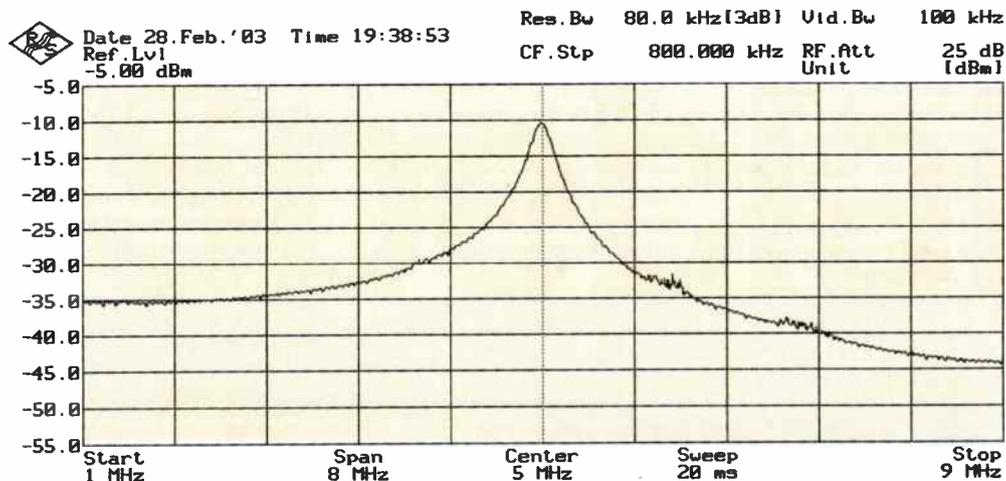


Fig. 1: Selectivity plot centred at 5MHz for the WL500 window loop.

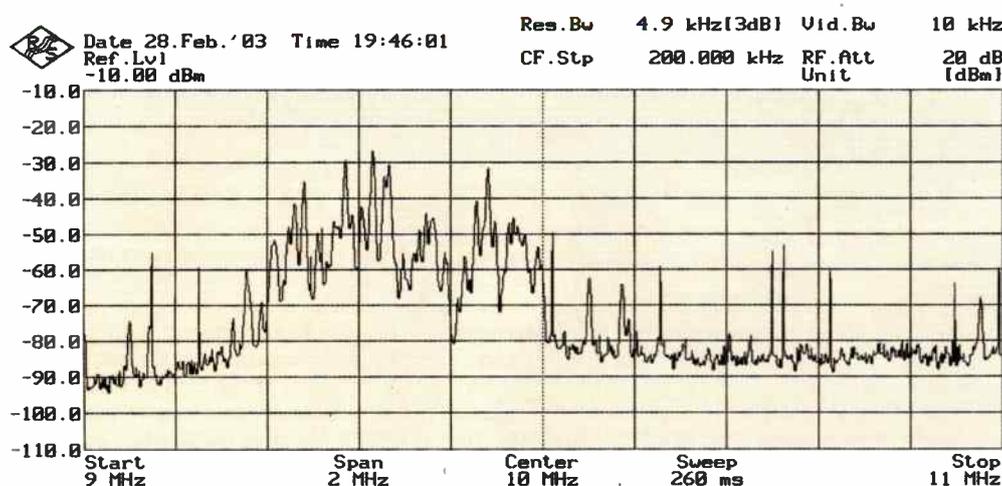


Fig. 2: WL500 off-air signals between 9 and 11MHz.

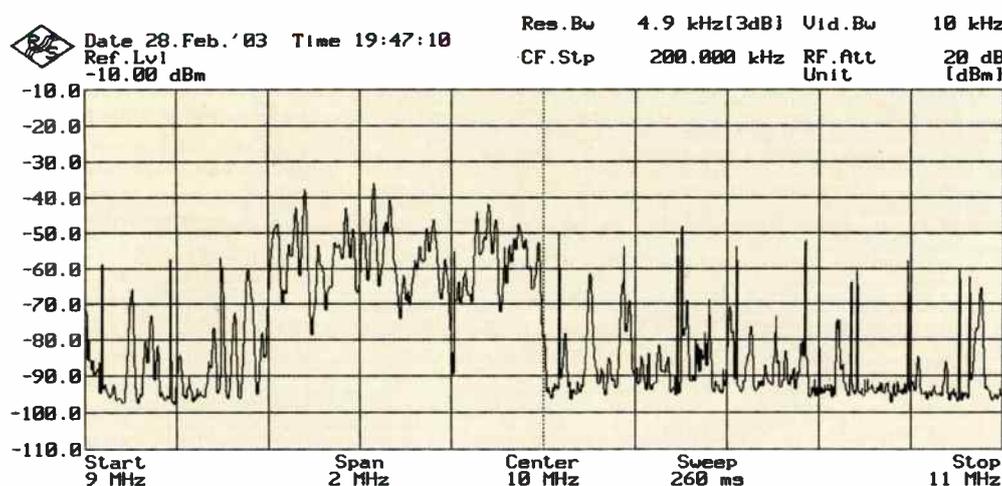


Fig. 3: Comparison  $\lambda/2$  wire antenna also between 9 and 11MHz.

to good health. £375?, you have got to be joking. Rant over!

## DRM Ready

As AOR had kindly shipped the WL500 to me, they offered me the opportunity to try out their

DRM modified AR7030 at the same time, and since I had wanted to do just this since reading the articles in *Short Wave Magazine* last year I readily agreed. Unpacking the bubble-wrap revealed an apparently standard AR7030, but one having an extra 3.5mm

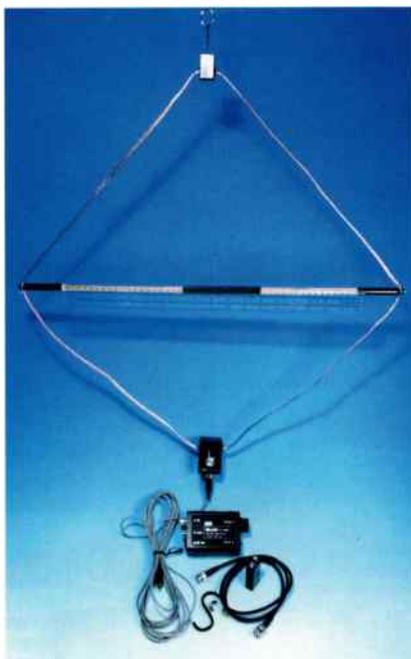
jack socket on the rear panel. This was connected to the input of my computer sound card, the accompanying CD was slotted in and the decoding software loaded, and away I went. One minor problem was that the experimental broadcasts are not, at the

moment, running 24 hours-a-day, but I did find the Juelich transmissions on 5.975MHz during a DRM period and was very impressed indeed with the results. The audio quality and absence of any background noise or fading made me check the receiver to convince myself that I really was listening to a short wave a.m. station, and if the system is introduced on a full time basis it would mean the end of 'listener fatigue' because the dreaded selective fading distortion would vanish, together with general noise and 'crud'.

There are some drawbacks of course, the first being that I encountered the occasional drop-out of signal, and like digital TV, when the signal drops out you have nothing but silence. I suspect that the drop-outs were due to my relatively slow (500MHz processor) PC, because the recommendation from AOR was that I should be using at least an 800MHz processor to handle the action. That aside, I believe that manufacturers such as Sony intend to introduce DRM compatible receivers before too long, and that will certainly remove the cross-connections between several bits of kit which are necessary at the moment. It is further credit to AOR UK that they are at the forefront of new technical developments, and I look forward with enthusiasm to the introduction of full DRM services. As with the WinRADIo device recently tested, the marriage between the h.f. spectrum and the computer is proceeding at some pace, and I have been reading with interest some of the experimental work being done in listening to u.l.f. (below 10kHz) signals by using a PC sound card as the receiver, and 100 metre coils of wire for antennas. Some of the findings are pretty scary and we really don't know all that is going on in the world of submarine communications.

## Reliable Radio

Isn't it interesting that every time that the h.f. spectrum is assumed to be old-fashioned and useless, there is a revival of interest caused by the introduction of new technological ways of using h.f. One thing often forgotten is



**WL500 assembled and ready to go.**

that when the satellites are down, and let's face it, it's a sure bet that there are already devices out in orbit which are designed to 'take out' military and communications satellites in the event of serious conflict, the h.f. spectrum is an ionospheric resource which will still be there. This was an interesting backdrop to some information I dug out when looking at the Loran navigational system recently. I have mentioned in some of my reviews that the pyramidal spectrum shape centred on 100kHz is from the Loran system, and I for one was glad to have it leave its previous frequency of around 1.9MHz because it made the upper end of the 160 metre amateur band unusable. What I didn't realise was just how important the Loran chain still is in aeronautical navigation, and in a curious way my research ended up by tying together what I have just said about satellites and my endless chuntering about loop antennas. Let me tell you how this happens.

A report on the future of Loran-C (the current system) mentions an independent study carried out in 1997 by the USA to evaluate the impact of discontinuing Loran-C, and in June 1998 a decision was taken to continue system operation beyond its termination date of December 2001. Then the FAA at an ICAO conference announced that GPS would not

be approved for sole use navigation and would require a back-up system in all aircraft. (Here comes the blow to the invincible satellite). I quote from the article:

"Excellent though GPS may be, its problem is that it is so low powered that the signal can easily be blanked out or disrupted - as demonstrated at a 1997 Moscow air show where a jammer destroyed the signal over a radius of 200km. The notion of GPS as sole means of navigation is dead."

Wow! I then found a report describing in-flight trials of Loran-C carried out over

Alaska, where the GPS signals are very low level due to the satellites vanishing below the horizon, and mentioning the use of Loran

*"particularly in terrain, urban canyons and high latitudes"*. The tests were carried out in August 2001 using two aircraft, one a Beechcraft King-Air and the other a Convair 550. They both carried Loran and GPS receivers, but there was one significant difference - you can guess where I'm going. The Convair carried an H-field loop antenna, whilst the Beechcraft King-Air carried a conventional avionics active whip antenna.

Let's take some direct quotations:

"The King-Air utilized an E-field antenna, which experienced a significantly higher rate of message loss when compared to the H-field antenna on the Convair...The other source of message loss is probably precipitation static (P-static) caused by the aircraft traversing through the cloud layers."

In the conclusions we have another quote:

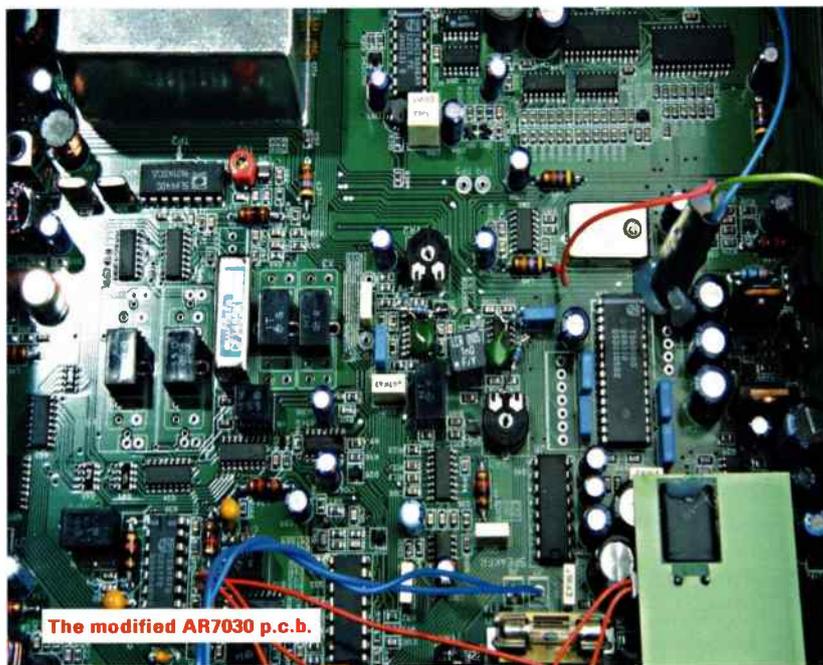
"The test also demonstrates the advantages of H-field antennas over E-field antennas for LDC (Loran data channel). Significant improvements can be made using the H-field antenna. However the tests also show that these antennas require more care in terms of installation. The lessons learned from this trial will be used to make such improvements."

Seems pretty conclusive, but I didn't let it go at that and turned up another report entitled "Loran-C, P-static eliminated using loop antennas" dated December 1998. Let me give you just one quotation from this report:

"In controlled tests with the aircraft generating precipitation static (principally corona discharge from trailing edges of the airframe) at levels known to be typical of severe in-flight conditions, receivers connected to aviation-quality 'whip' or electric-field

storm. When I was an active 80 metre enthusiast and used an antenna with open wire feeders connected to a classic balanced antenna tuner, I could hear the sparks jumping across the vanes of the wide-spaced variable capacitors long before the storm arrived, and many a semiconductor receiver has met a premature death by being connected to such antennas. I find it truly astonishing that the commercial appreciation of the benefits of the loop antenna have apparently been recognised only in the last few years, but as far as the hobby users are concerned, let me propose a toast to Andy Ikin at Wellbrook and the designers at AOR who have worked so hard to bring loop antennas to the market and given us all a safer and better way of extracting signals from that "all pervading luminiferous aether". Quiet listening.

**SWM**



**The modified AR7030 p.c.b.**

antennas suffered reductions in signal to noise ratio of greater than 25dB, causing a loss of navigational data. Simultaneously, identical receivers connected to 'loop' or magnetic-field antennas were affected only slightly, with a SNR drop of no more than 2dB, and with no observable effects on navigational accuracy."

Now I, and many of you reading this, will know about precipitation static generated on wire antennas during rain or on the approach of a rain

The WL500 cost £149 including VAT and p.s.u. in the UK. The optional LM500 costs £49.00 post and packing is £5.00 for both if ordered together or £5.00 per item if purchased separately. Thanks to **AOR (UK) Ltd.**, Tel: **(01773) 880788**. Web: **www.aoruk.com** for the loan.

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# In The Ed's Shack

This month we're back in the Ed's radio room for some more construction. Since you are reading the amateur bands special issue of *SWM*, what more fitting than a simple QRP c.w. transceiver kit?

## The Ten-Tec 1340 QRP c.w. Transceiver Kit

the same ones I initially drooled over in the pages of *Practical Wireless* as a 13 year old. As long as you are able to solder proficiently then there is really no reason not to build a kit such as this. Additionally, there really is nothing quite like the satisfaction of using a piece of

The first job, mindful of my omission with the last kit - you may remember I missed a vital link - was to carefully read the instruction manual. I believe that it's worth my making an important point at this stage and it's this. I'm one of those people who firmly believe that

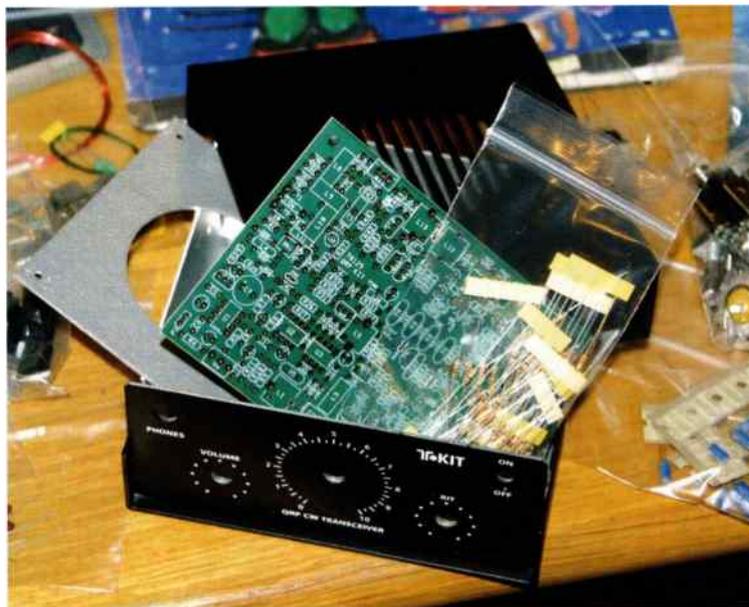
### Reading Done

Here I am, back again. Having read the manual for this compact little radio I am looking forward to following the step-by-step instructions - I'm in for a fair few hours of work which frankly I could

cover in minute detail that would take up a good half dozen pages. However, I reckon that would be rather dull so I'll stick with a brief approach.

The 1340 boasts a good specification, the receiver is a superhet design featuring a 4-pole crystal filter, it covers a 50kHz minimum segment of the 7MHz (40m) amateur band. The radio's three watt output transmitter offers full break-in keying with side-tone - so you can hear what you're sending - by

**From this to this  
in 30 hours!**



**T**ime to build another kit. With the emphasis of the new radio amateur licensing being well and truly practical, I thought that I'd show you all the effective and relatively easy to construct, single band c.w. transceiver from US manufacturer Ten-Tec. As well as producing some superbly innovative receivers and transceivers, Ten-Tec are also renowned for their self contained kits.

The 1340 40 Metre c.w. transceiver is no exception, I that know I mentioned this with the last kit I built, the Direct Conversion 40m receiver (*SWM* Feb. 2003), but these Ten-Tec kits really are well packaged. I am reminded strongly of the Heathkit products of yesteryear,

equipment that you've built with you own hands, and of course, a few tools.

The 1340 is supplied with all the materials needed shrink-wrapped in it's own case. Upon removing the film I discovered some eight self-seal poly-bags with the components logically split between them. This makes the initial checking even simpler than with the recent receiver build. The breakdown is as follows, there are bags for: hardware - knobs, screws, feet and so on; Inductors; polarised capacitors; inductors, wire and ferrite cores; sockets potentiometers and interconnecting wire and crystals; high precision capacitors; semiconductors; resistors and finally all the other radial capacitors.



manuals for manufactured equipment, are the last port of call when you can't get the item to work how you think it should. That logic has no place here, the kit builder really must familiarise themselves fully before going any further. Time for a brew, I'll be back in a while.

utilising fully electronic switching.

I must mention that this kit is rather more complicated than the direct conversion 1056, just as a guide to the relative complexity, the component listing runs into four pages, there are 66 resistors, 92 capacitors, four integrated

circuits, 19 transistors and 10 diodes. I'm going to need a fair few hours to finish this compact set - at a guess I'd say about 15 hours. Having read the manual, my next job is to prepare the components into organised piles. This time, I've decided to place all the materials on sheets of paper marked with their values to ease later selection. This job alone takes about an hour. Having completed this exercise I have to report that there was one component missing from the kit at 10pF disc ceramic capacitor. Lucky I checked before starting the build. A quick 'phone call to Ten-Tec Direct and there's a replacement being sent via first class post. Thankfully C52, which couples the first and second r.f. stages, arrived the

The trickiest parts of the whole build proved to be the winding of the four toroid based inductors and the toroid transformer. Setting the spread of the v.f.o. stage is quite time

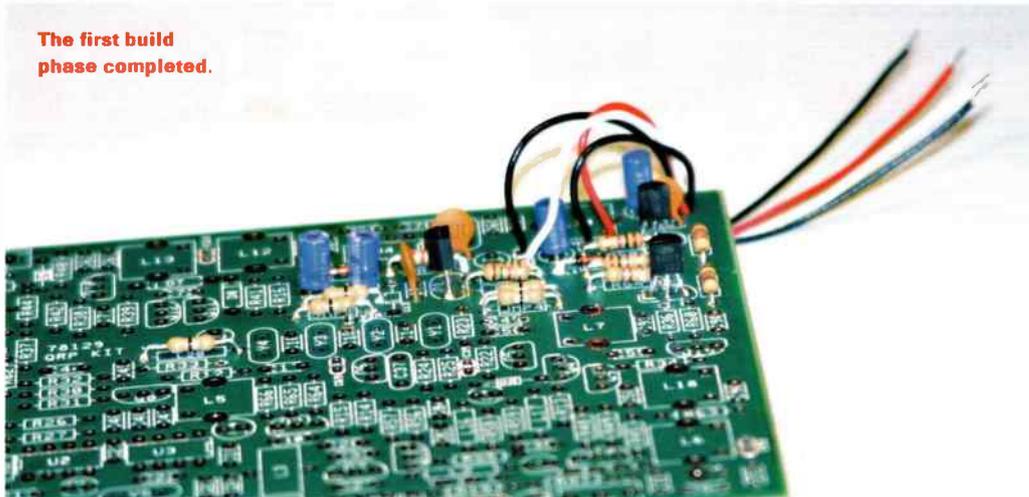
manual. All in all, pretty good and I'm sure this problem will be corrected as a result of me spotting it. I really am impressed with the manual.

My estimate for the build

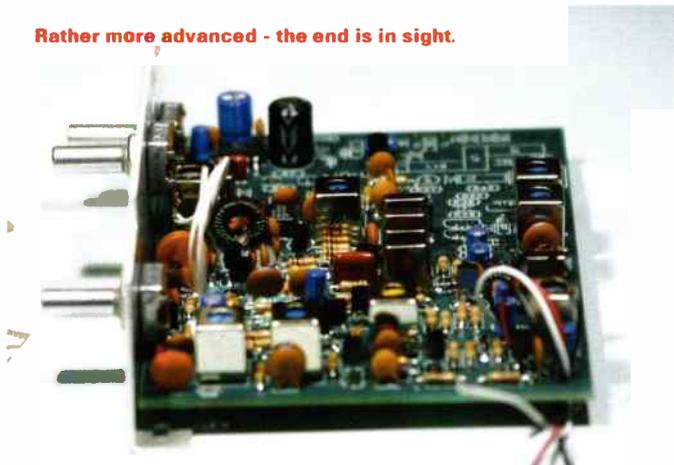
transmitter, two and as previously mentioned the common v.f.o. one set of toroid winding spacings need tweaking.

If you have a yearning to get

The first build phase completed.



Rather more advanced - the end is in sight.



next day. It was needed for 'Phase 4' of the build process - there are eight phases in total - so I soldered it in and aligned the first r.f. stage two stages late, but it didn't impede the project, thanks to the speedy response from TT Direct. For the record, by the time I fitted C52 I'd been going some 19 hours. As I mentioned, this kit is quite complex, but I really believe anyone who can take a methodical approach and follow the excellent very clear, step-by-step instruction manual, can build a project such as this. It really is lots of fun. I found myself working into the early hours of the morning, just so I could experience it working. Those of you who read about my last kit build, please note that this time I read all the documentation including the two addendum sheets and so avoided missing vital steps!

consuming as you have to spread the windings on one of these inductors to achieve the correct upper and lower limits. This part of the process took me about 45 minutes and finally involved removing one turn from the inductor L3 to achieve the correct spread, the manual suggests that this can be necessary - whether it is necessary is influenced by the exact specification of the supplied core.

### Observations

As far as the documentation is concerned, there was only one anomaly that I spotted, this concerns the colour coding reference to L16, which is a moulded 10µH inductor. It is correctly described in the initial component schedule, but incorrectly so, in the build phase detail on page 'Assy - 13' of the

was somewhat adrift, I ended up taking a total of 30 hours, but let me say that it was worth every moment.

The test and alignment procedure, like the build, is broken down into easy steps. For the receiver section, you can get away with only a DVM and either a digital displayed h.f. receiver or a frequency counter. The transmitter setting up requires a power meter such as an s.w.r. bridge. If you don't have one of these, it's time to acquaint yourself with your local radio club.

I found that the alignment process went very smoothly indeed, most of the Toko adjustable inductors were in the optimum or very close to near optimum position straight out of the bag. The process of setting up the receiver section requires the adjustment of just five tuning slugs, the

on air, you fancy having a go at construction and you're interested in learning the art of Morse, this little QRP rig is a really good way forward. It fulfils all the requirements for the foundation licence. It would easily count as a construction project for the intermediate practical and it's lots of fun into the bargain. I must draw your attention to the requirement for M3 licensees having built a kit such as this, to have it checked out by a full licence holder before using it on air. Many thanks to Ten-Tec Direct for both the loan of the kit and the superb response time in sending the missing capacitor. You can obtain a TT1340 by contacting **Ten-Tec Direct** on (01773) 880788. The kit will set you back **£88.50** plus **£8 P&P**. More information is available on [www.aoruk.com/tentec/](http://www.aoruk.com/tentec/)

**SWM**

### M3 Equipment

As an important aside, there seems to be some confusion regarding which equipment can be used by Foundation licensees. Some people seem to incorrectly believe that only CE approved equipment can be used. I checked with the Radiocommunications Agency Amateur Radio section and I'm assured that this is **not** the case since this would preclude use of equipment from yesteryear such as the Trio TS-120V - which of course complied with the regulations pertaining when it was built - I'm currently using, courtesy of **Rob Mannion G3XFD**, Editor of *PW*, the magazine you should also be reading once you've got that M3 call! The Trio TS-120V of course, complied with the regulations pertaining at the time when it was built.

KENWOOD

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Is there other life in the universe? Surely we're not alone? Lawrence Harris looks at the work of enthusiasts - both professional and amateur - on earth, who are listening for that breakthrough call.

**T**he Search for Extra-Terrestrial Intelligence (SETI) is a project that has occupied the thoughts of thousands of people for hundreds of years, and never fails to stimulate the imagination. It recently received new impetus because of major advances in technology - radio, optical and computing. Until ten years ago, the main methods available to search for such evidence were relatively slow, involving meticulous measurements over a range of frequencies on sensitive radio receivers.

To illustrate comparable

in knowing the answer to the near-ultimate question "Is there life in outer space?". Since civilisation began, we have been able to look at the stars, to realise that they were at great distances and wonder whether

potentially discover evidence of distant civilisations.

Perhaps you spend time scanning with your receiver, listening for unusual sounds. You might have wondered whether it was technically possible to receive extra-terrestrial signals with home equipment. Although the answer is that this is most unlikely (due to equipment insensitivity), there is a way in which you can take part in SETI. The world-wide project called seti-at-home (SETI@home) uses domestic computers to analyse data received by the world's largest dish - read more about this later.

the garden to abduct people. I saw this 'belief' in action when a family filmed planet Venus early one morning during their drive to a holiday resort. They claimed on local television that it 'must' have been an alien ship following them along the road, and even claimed to fear that they could be 'abducted' (by Venus!). A total lack of scientific knowledge, and virtually no knowledge of astronomy and radio can lead to astonishing misconceptions by the public. The creative ideas of filmmakers then finish the job!

If aliens really had visited earth, this would be of enormous interest and

# SETI

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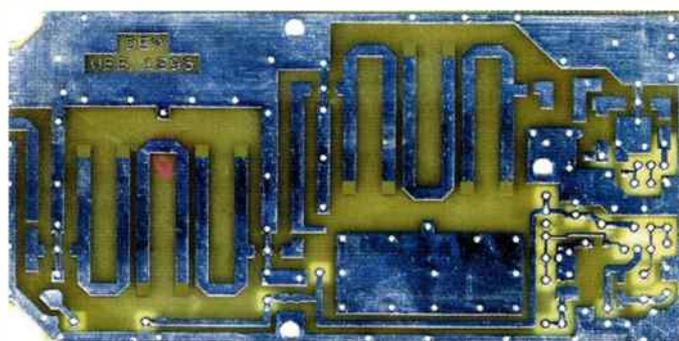
progress at an amateur level, searching the skies with my telescope took a dramatic leap forward in 1992 when the 'goto' telescope became available. It became only necessary to enter

they had inhabited planets orbiting them. Our most powerful telescopes cannot (yet) resolve the planetary nature of bodies orbiting distant stars, but this could change within the

Scientists developed the idea of cosmic evolution which predicts that life is a natural phenomenon likely to develop on planets that have suitable environmental conditions. We know that life developed on Earth relatively quickly, so perhaps life will occur on similar planets orbiting sun-like stars. The discovery during recent years of extra-solar planetary systems makes this possibility appear even more likely. We must remember that we are but one planet orbiting an ordinary star. There are some 400,000 million other stars in our Galaxy and maybe 100,000 million other galaxies. Would it be reasonable for us to be the only intelligent beings in the universe?

importance - and impossible to hide. Despite the belief by many in 'aliens', and over fifty years of so-called UFO sightings, the lack of credible physical evidence makes it difficult for serious scientists to believe that UFOs are associated with extraterrestrial visitors. Remember that unidentified flying objects are usually real objects that the layperson cannot recognise. Feel free to write to the Editor or me if you wish to dispute these comments!

There are billions of places outside our solar system that may possibly host life. With our current radio technology, we may now have the ability to discover evidence of where life has evolved and developed to a technological level at least as advanced as our own.



A computer interface board modified by SETI League engineers for use as a 1420MHz weak signal source. Many amateur groups are setting up equipment for SETI projects.

the name of the target, and the telescope would drive automatically. No more hopping from star to star - I could view several objects without spending time searching for them. Computing methods can now be applied to radio searches.

Why might we be interested

next few years.

The driving force behind SETI has been the computer. With processor speeds breaking the 3GHz barrier, radio technologies producing ever more sensitive receivers and the construction of large, highly accurate antennas, scientists believe that we have now the equipment to

### Aliens?

Many people have seen science fiction programmes on television and in the cinema, and as a result, are convinced that extra-terrestrials fly the countryside in spacecraft, sometimes leaving circles in fields, possibly even landing in

### First SETI Projects

The magazine *Nature* carried a paper in 1959 by Phillip Morrison and Giuseppe Cocconi about using radio waves to transmit information over interstellar distances. In 1960,

Frank Drake (now Chairman of the Board of the SETI Institute) performed the first known radio search for evidence of life in other solar systems - called Project Ozma - using a 26m antenna at the National Radio

Richard Bryan introduced an amendment that eliminated all funding for this program. The Senator gave 'budget pressures' as his reason for ending NASA's involvement with SETI, despite the minuscule cost of the project.



**The SETI Very Small Array in winter. October 2002 sees snow falling on autumn leaves. Outdoor work on the VSA is suspended, giving time to work on the Low Noise Amplifier.**



**SETI Institute's Rapid Prototype Array taken in August, 2000. The RPA was built near the University of California's Berkeley Leuchner Observatory to test engineering concepts for the planned Paul Allen Telescope.**

Astronomy Observatory in Green Bank, West Virginia, USA. He studied two sun-like stars about 12 light years away.

Frank also developed a formula for presentation to a scientific meeting in 1961, to help estimate the number of intelligent civilisations existing in our galaxy that might be broadcasting signals. The number of sun-like stars, and the fraction of habitable planets supporting communicating civilisations, are amongst various factors, but unfortunately many of these factors are poorly known. Consequently, estimates range from one (we are alone in this Galaxy) to thousands or even millions.

## Government Funding

The first formal government SETI project was the funding of NASA's 'High Resolution Microwave Survey (HRMS)'. However, in 1993, Senator

programme. Currently-active projects include Mars investigations, planetary science, exobiology and related topics.

Equipment from the original (HRMS) project is now being used by the SETI Institute for Project Phoenix - the follow-on to NASA's HRMS. In addition to this research, the SETI Institute is also designing and developing systems of greater capability, as well as supporting other projects. Since February 1994, this work has only been supported by private donations.

## Project Phoenix

The SETI Institute runs Project Phoenix - the most ambitious search for extra-terrestrial intelligence ever undertaken. It costs about \$4.5 million and uses the world's largest telescopes (40 to 300m in diameter) - including antennas in Australia, West Virginia and Puerto Rico, to scrutinise the vicinities of

nearby, sun-like stars. It has been searching for signals since 1995.

Stars are examined for artificially produced signals over a part of the microwave region of the electromagnetic spectrum. The Targeted Search System looks for signals in the range 1000 to 3000MHz (1 to 3GHz), with a frequency resolution of 1Hz. This research requires a specialised digital signal processor, housed in a Mobile Research Facility (MRF) container.

The microwave frequency band is studied because there is little background static from galaxies, quasars and other noise in this part of the spectrum, so faint signals are easier to pick out. There is a naturally-produced narrow-band emission line at 1420MHz caused by interstellar hydrogen. Every radio astronomer will know about this hydrogen emission, so it may serve as a universal calibration on the cosmic 'dial'. Nearby frequencies might therefore be used for interstellar "Are you there?" signals.

Phoenix is the only targeted star search running, and has unparalleled sensitivity, together with a comprehensive coverage of frequencies and signal types. The 28-million channel Phoenix receiver can accumulate radio energy from individual stars for minutes (rather than seconds), providing unequalled sensitivity to weak signals. Project Phoenix is estimated to be 100 trillion times more effective than Project Ozma.

Observations made during 1997 and early 1998 took place at the same observatory used by Drake in 1960, although on a larger telescope. Note that more than 99% of radio astronomy is not associated with SETI

research.

Project Phoenix checks all signal candidates within 20 minutes of their discovery, using the radio telescope at Jodrell Bank for confirmation or elimination. Hot gas flowing between stars can cause 'signals' from distant star systems to oscillate over a few hours - hence the need to check suspect signals quickly.

## Bandwidth Considerations For SETI

The feature most likely to distinguish transmitter signals from those produced by natural processes is bandwidth. Narrow bandwidth signals - less than about 300Hz wide - are probably produced artificially, and these are what all SETI measurements look for. Other clues include polarised signals.

Much confusion is caused by narrow-band signals from planet earth - military radar and telecommunications satellites use such signals. Project Phoenix therefore uses a second telescope hundreds of kilometres away to help eliminate this unwanted interference. The second telescope receives the same signals at a slightly different frequency because of the Earth's rotation and Doppler shift. This provides a good way to differentiate between local and truly extra-terrestrial signals.

Any technology based civilisation would realise that narrow-band broadcasts are the most efficient at producing a detectable signal at the receiving end, so these would probably be used for long distance (DX) communications. Virtually all radio SETI experiments have looked for 'narrow-band' signals; they are



**SETI amateur's low noise amplifier on the RPA dishes.**

probably the mark of a purposely built transmitter. Natural cosmic noise - pulsars, quasars and the interstellar gas of our own Milky Way - do not make radio noise that is this narrow. An extra-terrestrial engineer is therefore likely to use narrow-band signals as beacons to get our attention.



**The SETI@home software sometimes produces potentially interesting results.**

The ability to detect slowly-drifting signals, and the application of near real-time data processing, make Project Phoenix the most comprehensive and sensitive SETI search in the world.

The receivers used for SETI are looking for carrier signals - comparable to a musical tone against the background of a waterfall. Any variation in the signal (the modulation or message) would probably be lost. In order to understand anything contained in it, we would have to build much larger instruments. However, if such a detection is made and confirmed, the money would probably become available! Despite limited information, the detection of alien intelligence would be a big story, proving that we are not alone.

## Monitoring & Measuring

Funded by Paul Allen (co-founder of Microsoft) and Nathan Myhrvold (former Chief Technology Officer for Microsoft), the new Allen Telescope Array offers great potential. This will be a set of inexpensive commercial antennas to be constructed from April this year. They are to be simultaneously used for both SETI and radio astronomy research. It will have the ability to study many areas on the sky at once, more channels and for 24 hours a day, so the Array will expand Project Phoenix's stellar

reconnaissance to 100,000 or even one million nearby stars. The Array is a joint effort by the SETI Institute and the University of California, Berkeley, and will be built at the existing Hat Creek Observatory.

Phoenix looks for signals, but does not send them. Humankind started transmitting signals into space - mainly high-frequency radio, television, and radar - over fifty years ago. Although these broadcasts have reached a thousand stars, alien viewers would have to build a large antenna to detect them.

SETI researchers are not interested in broadcasting because of the reply time! Instead, some symbolic messages have been sent, including one transmitted in 1974 from Arecibo Observatory - a simple picture describing our solar system, the structure of the DNA molecule and the form of a human being. This was transmitted towards the direction of globular star cluster Messier-13, some 25000 light years away.

Most earth-based transmitters are too weak to be detectable at the distance of even the nearest stars. High-powered radars and the three-minute Arecibo broadcast of 1974 could be the exception.

## What If...?

The procedures to be followed when the discovery of an extra-terrestrial signal is confirmed are described in the Post-Detection Protocol. Unexplained signals are not very convincing. Project Phoenix is one of the few SETI searches that can immediately check out candidate signals - and none has so far proven to be extra-terrestrial; radar, telecommunications satellites and other causes are known.

There have been several unexplained signals detected in SETI projects. Many have heard of the 'Wow' signal picked up at the Ohio State Radio Observatory in 1977. None of the signals was ever detected again; credibility requires that

all results are reproducible. One detection alone is unconvincing evidence.

Using tens of millions of channels, and the world's largest antennas, SETI frequently picks up possible signals. Observations at Jodrell Bank provide elimination or convincing proof. Following confirmation of an extra-terrestrial signal, any discovery will be announced as quickly and as widely as possible.

A Declaration of Principles Concerning Activities Following the Detection of Extraterrestrial Intelligence, endorsed by six international space organisations, describes how to make such an announcement. The SETI Institute has a plan of action that resembles the Declaration of Principles. There will be no secrecy because there would be an urgent need to have astronomers world-wide monitor such a signal 24 hours a day.

## SETI@Home

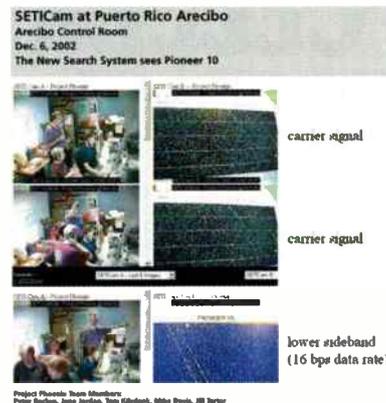
Other SETI searches include SERENDIP IV (as in serendipity), in which astronomers from the University of California, Berkeley, carry out research at the Arecibo Observatory in



**Arecibo Observatory.**

Puerto Rico. About 3% of these data are available for processing by the SETI@home screen saver software. Visit <http://setiathome.ssl.berkeley.edu> for more details about running this software on your home computer.

New optical SETI programs are being conducted at the University of California Berkeley's Leuschner Observatory and at Harvard University. Other radio searches are underway in Australia and Italy. SETI experiments on a smaller scale continue to be



**The New Search System at Arecibo Observatory sees the faint signal from Pioneer-10 during tests.**

conducted by individual scientists and radio amateurs in America and elsewhere - see the pictures.

## Is SETI Worthwhile?

A comparable question in the 1960s was the value, or otherwise, of the Apollo manned lunar landing programme. There are many reasons to support SETI - practical considerations include the technological spin-off. Signal processing techniques developed for Project Phoenix have been applied to the detection of breast cancer. SETI research is done because we hope it will answer questions

that previous generations could only ask. Is intelligent life rare or common in the universe? Can technological civilisations survive, or do they destroy themselves?

Any civilisation that we discover may be far more advanced than ours, and might help us develop positively

and communicate with other intelligent beings. Even detecting an indecipherable signal would tell us that we are not unique in the universe. The effect on earth's nations might be positively profound. When I gaze at the heavens through my telescope, I am reminded of Carl Sagan's comment that if we are alone in the universe, that would be astounding; if we not alone, that would be equally astounding.

**SWM**

**Credits: Several of these pictures are published courtesy of the SETI League.**

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3rd order IP	+38dBm typical PidB = +22dBm
Output impedance	50-75 ohms coaxial
Connector standards	-N type connector at the antenna. BNC male connector to the receiver
Power supply	12V DC at 160mA DC. Power supply for 230V AC is delivered comes with the antenna
Dimensions	Length 450mm. Diameter 90mm
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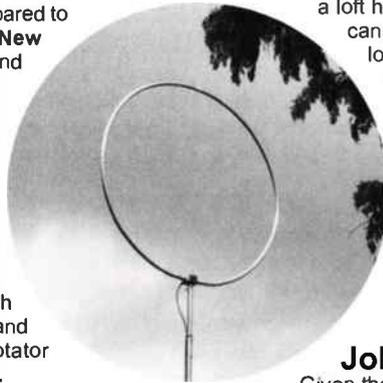
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### This is what the experts say.

#### John Wilson; Nov 2000 SWM:

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# WINRADIO

■ ROGER BUNNEY, 35 GRAYLING MEAD, FISHLAKE, ROMSEY, HANTS SO51 7RU

# Satellite TV News

**S**aturday February 1st and yours truly is monitoring 156.600MHz (Southampton VTS) the activities of Greenpeace with their 'peace' ship blockading the Marchwood Military Port in Southampton Water preventing military supplies being shipped to the Gulf. A tug has apparently been told to ram the ship, missing by 5m when the 'phone rings - it's **Roy Carman** (Dorking) with the terse message - "the Shuttle's down"...

I quickly pan the dish onto *Atlantic Bird-1* @ 12.5°W. The Globecast bouquet @ 11.014Gz-Hor (SR 20145+ FEC 3/4) had been carrying the return and landing of the *Columbia* back in the 'States. I found 'Channel 1' with a stunned Johnson Space Centre crew standing around, little action, perhaps too dazed to act. 'Channel 3' had carried the *Columbia* downlink of video plus audio comms, only left was a screen of snow and just harsh on audio - nothing.

The final words from Johnson queried a problem on the left wing tyre compartment and the reply came back "Roger..." then a click.....that was the last *Columbia* downlink, repeated calls from Johnson resulted in an uninterrupted shash. Thereafter the media took over and the resultant vapour trails, collecting debris and body remains are well documented.

Perhaps the best news feeder source was the CNN 'NEWSFORCE' lease over *NSS-7*, 21.5°W 11.563GHz-H (6117 + 3/4) which carried all the press calls, news footage over the following days. The memorial service from NASA HQ Tuesday 4th February was compassionate, US President Bush presenting the sermon and a US Navy sailor tolling a bell seven times, one toll for each astronaut lost. The evening of February 11th at 2000 a live NASA presser (press conference) appeared over the *NSS-7* 'NEWSOURCE' lease updating progress in the disaster recovery and investigation program for *Columbia*.

Whilst NASA has been recovering from the *Columbia* loss, preparations for war in Iraq continue. The media troops are now well established in the Gulf with surprisingly most feeds carried over *Eutelsat W1* @ 10°E, not as I had anticipated over *Europe\*Star-1* @ 45°E. Fox News have uplinks operating out of Doha (Qatar); Kuwait City and Baghdad - check the following - 11.154; 11.164\*; 11.183GHz all vertical at SR 3255, FEC 5/6.

APTN meanwhile have two terminals uplinking out of Baghdad on 10.958 and 10.964GHz - both vertical @ SR 4072 + FEC 5/6 with idented colour bars 'APTN BAGHDAD Path 1' or '...path 2'. CNN have been monitored with a 'production centre' at Lanarka, Cyprus though only on-air for actual uplinking, closing down when not required - 'INA PATH-1 UKI-805', 11.164GHz-horizontal, 5632+3/4 and again over 10°E.

At the time of writing, news content has been mainly the preparation and build up of military forces, though Feb 9th and 12th both carried an hour long video playback with no commentary of giant hovercraft landing tanks across the sea, tracked vehicle exercises in the Kuwaiti Desert, detailed pictures of a well guarded comms centre, large dishes, masses of antennas, all sited in a small rocky desert depression. The dishes were perhaps 6m diameter and at low elevations suggesting a direct hop from approx. 50°E into the 'States via *Atlantic Bird-1* (12.5°W) or *Telstar 12* (15°W) - if a West bound single hop - the military will use commercial company sats for their comms.

Fox News will often leave their locked-off camera shot on the uplink throughout the 24 hours. A late report February 14th advises that the BBC have been intermittently using *Europe\*Star-1* @ 45°E for live

feeds back into the UK, check out 12.675, 12.681GHz-V (4425+5/6) for the action. Note: An expert notes - February 13th and received footage shows the US '101 Airborne' leaving their Kentucky base suggesting that war is four to six weeks distant...

Drama on February 11th and a terrorist alert at Heathrow and Gatwick Airports, the army and security groups have moved in, mention of a Gatwick flight path over Berkshire with a live feed into Meridian from Gatwick over their regular 8°W *Telecom 2D* feed - 12.600GHz-H (5632+3/4). Meanwhile, pictures arriving from the USA the same evening suggest another security alert is in force, a city bridge structure - possibly in New York - is being carefully surveyed both by a helicopter/searchlight and police launches, clearly we're entering a new phase of concerned alert as a new Middle East war approaches...

Live high drama was carried over the *NSS-7* CNN feeder - 11.562GHz-H (6117+3/4) January 31st when a gunman hijacks a US mail truck with postwoman in Miami and is eventually stopped by law enforcement at an intersection on 183rd. There then followed a standoff between the hijacker and the Miami police, eventually the SWAT teams moved in and a remote caterpillar tracked 'vehicle' appeared. Rehearsals followed nearby with SWAT trying various methods of storming the mail truck. SWAT eventually negotiated the freedom of the female mailworker and eventually the hijacker is captured without loss of life. The whole episode was covered live from a heli-cam and ground cameras by local TV stations (CNN affiliates) WFOR-TV and WSVN-TV.

Whilst on the topic of trans-Atlantic news feeds, **Alan Richards** (Nottingham) comments that three ex USA feeds appeared over *Intelsat 901*, 18°W - unusual since traditionally Italian activity is the main TV downlinks from this bird. For the record, check 11.569; 11.669 and 11.679GHz - all vertical at SR6111+3/4.

From reader **Edmund Spicer** (Littlehampton), news that Radio Caroline is available within the *Hot Bird* 13°E slot on a Globecast leased bouquet - 12.597GHz-V (SR27500+3/4) with a service ident 'WRN for hire 3'. The Russian NTV bouquet on *Hot Bird* - 11.938GHz-H (27500+3/4) has recently gone FTA, though this channel block seems to pop in and out of encryption as the wind changes - so NTV may well be encrypted by the time you read this! As is well known, the *Telecom 2C* slot at 5°W carries the French TV channels in good old analogue and is widely accessed in the UK by French ex-pats, by schools and those interested in viewing French TV. Digital progress however may mean that these French TV channels could disappear.

Edmund checked with the authorities as to the future and advises that the near future analogue TV transmissions will continue pending the problems of digital terrestrial TV (DTT) across France, which even being kind is described as chaotic! It's likely that by end 2004 a French nationwide DTT service will be available and at that point the 5°W downlinks may possibly change to MPEG-2 and hopefully still in the clear.

The French TV *Telecom 2C* downlinks are used by many terrestrial relays for their TV channel origination source as do a considerable chunk of the population itself. It's unlikely therefore that the French will switch off *Telecom 2C* analogue overnight - but for those folk seeking French - TV the long term view must be digital.

A final 'DX' note, 'TV Cote d'Ivoire International' (Ivory Coast) is airing 11.576GHz-H (2918+1/2) over PAS-1 @ 45°W.

**\*Doha often used MPEG 4:2:2.**



The 'Fox News' uplink dish on their Baghdad hotel room balcony.



South Wales firemens union rep for Harlech TV programme, via 8°W.



Columbia's down, the Johnson control room minutes after Shuttle loss, Channel 1 via *Atlantic Bird 1*, 12.5°W.



Columbia's down, the Columbia video/audio downlink after Shuttle loss, Channel 3 via *Atlantic Bird 1*.



Channel-2 Israeli reporter at NASA now breaks news to home viewers that their hero astronaut is dead, via *Atlantic Bird-1*.



NASA-TV officially tells the world that Columbia is lost, via *NSS-7*, 21.5°W.



Live pictures of mail truck hijacking in downtown Miami, note SWAT left hand corner preparing, via *NSS-7*.



Mail truck upper right hand, SWAT crouch behind truck, centre right hand, about to storm truck, remote control crawler with camera looks through truck windows. Live via *NSS-7*.

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# DX Television

**R**eception conditions during January were depressing with only a hint of F2 propagation on the 15th. The odd Meteor Shower burst and a couple of short-lived Sporadic-E openings summed up all the fun of the month.

## Reception Reports

**Tom Crane** (Hawkwell) comments that there has been little reception worthy of note since Christmas, apart from occasional brief scanner-level video carriers on R1, all unidentified of course. With the very unsettled weather conditions, tropospheric activity has suffered too. Sporadic-E came to the rescue when **Simon Hockenhull** (Bristol) captured Norwegian programme schedules on E2 at 1312 on the 12th during a short-lived opening. **Peter Barber** (Coventry) detected weak scanner-level F2 signals on E2 from 0916 on the 15th. On the 20th another small Sporadic-E opening produced a Swedish subtitled programme on E3 from 1658 for **Stephen Michie** (Bristol).

## Meteor Shower DX

The *Quadrantids* meteor shower event in early January seemed very low-key and generally disappointing. Looking back through past logs revealed that some of the events of the mid-Seventies lived up to expectations and were certainly dramatic. The *Quadrantids* in January 1977 produced many brief but recognisable images in Band III, the exotics including the 0249 test card from the former USSR and the RS-KH test card from former Czechoslovakia, both on R6. There were several bursts of PM5544 test cards from Denmark, Sweden and Norway on E5 and E6 and also an FuBK test card, thought to have been Finland on E6. Could we please have more events like that one!

## DX Topics

**Philip Smith** (Cwmbran, Wales) asks if colour DX is possible via F2. The answer is yes, but it is rare because of the restricted bandwidth imposed by the upper limit of the m.u.f. (maximum useable frequency) The colour subcarrier sits at 4.43MHz above the vision carrier, with sound at 5.5 and 6.5MHz, depending whether System B or D. The m.u.f. needs to be in excess of these frequencies to permit the reception of colour or sound. To complicate matters, F2 signals suffer from severe multi-path distortion which creates phase errors and cancellation effects; this in turn can lead to loss of chroma or a heavily distorted sound carrier.

**Pat Magnier** (Tipperary, Éire) asks what the term 'DX' means, when referring to radio or TV reception. Well, Pat, it simply means 'distant' and you will often see the term used on many radio receivers to indicate its local or distant r.f. input settings.

**Gordon Still** (Ruislip) depends mainly on loft antennas for DX reception, but has also experimented with telescopic and hand-held antennas in his shack with huge success. Sometimes the signal is stronger, or there is less interference, when compared to fixed antennas. Gordon has noticed that Lopik E4 (NED-1, Netherlands) is sometimes, but not always, stronger with the main antenna beaming west for some odd reason. Canal Plus (France) on L9 is also a regular tropospheric visitor, usually with sound.

## Freeview Latest

It is estimated that around 1.25 million UK homes now have access to digital terrestrial reception. More than 300,000 digital adapters were sold in the two months following Freeview's launch on 30th October. Demand outstripped supply with the trade reporting a shortage of set-top boxes. One of the reasons given by consumers for wanting a box is for ITV-2 reception with its time-shifted 'soaps' and extended versions of 'docusoaps'.

New channels appearing during January were FTN with its distinctive red and yellow theme. Bid-up TV, an auction channel, has also entered service. The ITN News channel underwent frequency changes and required a set-top box rescan for continued viewing.

One of the main gripes by Freeview users is the painfully slow and unpredictable behaviour of digital teletext and interactive functions. A properly developed EPG (Electronic Programme Guide) would be an enormous benefit to the Freeview service, rather than the current simple 'now and next' function. Sky's EPG is superb with its easy comparison of programmes and channels for up to one week ahead.

A further gripe is the inclusion of radio channels, albeit a limited number, on Freeview. **George Garden** (Edinburgh) feels this could hamper the promotion of DAB (Digital Audio Broadcasting). Some countries may abandon DAB, as consumers are not convinced that it has any worthwhile advantages over conventional radio.



Fig. 4: Another example of what the authors view as totally incomprehensible, the current range of BBC-1 Identification Symbols. This one is called 'Salsa'.

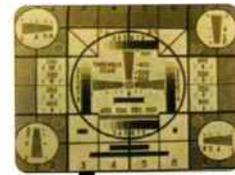


Fig. 1: The distinctive 0249 test card as used by the former USSR TV service, TSS.

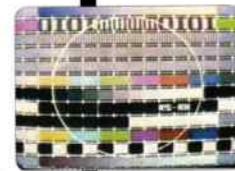


Fig. 2: The electronically-generated RS-KH test card used by Czechoslovakia with the introduction of colour TV in the early Seventies.



Fig. 3: The Swedish clock caption received in Bristol by Stephen Michie.

## Service Information

**Sweden:** The first Swedish TV network, SVT-1, has a revised logo, still positioned in the top-left corner of the picture. SVT-1 relays the SVT24 news service throughout the night.

**Norway:** The Danish TV-2 network is now available via Norwegian cable networks. The PM5534 test card displays the identification 'Nibe', a transmitter located in Denmark, implying that the signal is picked up terrestrially and then redistributed.

**Italy:** Complete digital conversion may take up to 12 years, the cost of set-top boxes being the determining factor. It has been estimated that even by 2006, with a price tag of £100 or less, only around 20% of the population would be interested in converting. The Italian 'Rete-4' network will transmit digitally from 2006.

**Netherlands:** The DVB-T platform 'Digi TENNE' has started tests.

**United Kingdom:** Teletext UK, the text service aired by ITV and Five (Channel Five) since last year, celebrated its tenth birthday on January 1st.

This month's Service Information was kindly supplied by Gösta van der Linden and the BDXC (Netherlands), Reflexion (Germany) and Lionel Michelland (France).

## 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 discs and good-quality video recordings. Our DXTV and Archive TV website can be found at: [www.test-cards.fsnet.co.uk](http://www.test-cards.fsnet.co.uk)

■ DAVE ROBERTS of SWM EDITORIAL OFFICES, BROADSTONE

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# Scanning Scene

Just when you thought the digital revolution couldn't get more revolting, along came *Free Speak*. Using DECT technology, the clever people at Drake Electronics assisted by Cambridge Consultants have developed a little gadget that looks like a belt mounted personal stereo with a headset and boom microphone attached. It's a totally digital, licence free wireless intercom. Their target customers are studio staff and people involved with command and control functions. The idea is to interface the units with existing systems and thereby enable controllers and dispatchers to have cordless communications with their consoles. The system is inherently secure and I'm sure will become a hit with the fashion conscious ICT buyer.

## Batteries

I've had a mail from **Don Jackson** who made the original suggestion for the recent article that I put together on batteries. Don wonders whether it is a good idea to totally discharge batteries before re-charging them and the best way to achieve this. Like most of us, I have been fooling around with NiCad batteries for decades and with NiMH batteries since their introduction to mainstream electronics and I always discharge both types prior to charging. Both types can exhibit memory effect and this is eliminated by charging a completely flat battery.

When it comes to methods of discharging, I have always just let the radio run on receive until the thing ceases to function. I appreciate that this may not always be possible and so a small circuit can be made incorporating a bulb of a suitable voltage. This can then be used as a discharger. It has the advantage that it doesn't draw excessive current.

Never short out a battery to discharge it. This can cause fire and of course will destroy the

battery in short order. Some multi-port battery chargers designed for commercial use have a discharge circuit that kicks in for the first couple of hours or so to ensure that the batteries are totally flat prior to charging. The Burndepth BE 314 charger was one of this type. It used to charge those little yellow nine volt units that were used in portable u.h.f. sets for many years.

There are many things that one can do to batteries to make them go off with a big bang and I've done most of them, so it does pay to treat them properly.

## Frequencies In Use

**Tony** from Manchester very kindly sent me details of the military fire engines that were deployed in the Greater Manchester area during the recent dispute. For now it seems that both sides are talking and strikes appear to be off the agenda, but you never know. There were a large number of military appliances deployed around the area, being based at police stations and barracks. Frequencies in use were 155.150 a.m. (base TX) and 146.075 a.m. (base RX). This is normally a police channel, but did the dispute give it a new lease of life prior to TETRA? If anyone requires the details of those deployments, E-mail me and I'll send you the spreadsheet.

I recently came by several u.h.f. Pye PF5000 personal radios that had been withdrawn from service. They are now on their way to the Pye museum, but the frequency was interesting. These sets had been all working on 405.6875 f.m. simplex. This is within a frequency range allocated to meteorological devices and in theory should not be used for voice comms. I think it highly likely that these units were used either by the Met. Office or by another government department. It's not a channel that would normally be searched for two way voice traffic and so may be more interesting because of that simple fact, eh?

## Totally Illegal

A quick peek at any UK Internet auction site illustrates just how much kit is being sold that is totally illegal to use in the UK. From ex PMR kit working simplex and a.m./s.s.b. CB gear right through to military kit and even digital radio equipment, hundreds of transmitters are circulating weekly. This is not to say that any more are in use than before, it just seems that ownership is changing regularly.

Even digital and encrypted radios are now being offered for sale. If a fraction of this equipment is in use, it's a wonder that the bands are not clogged with illegals. Just to illustrate this, a mate of mine was working on 10m s.s.b. when he was told to clear off the frequency by a station with a Middle Eastern/Asian accent. The station pointedly didn't identify himself and my mate could faintly hear a conversation in progress between a male and female in an unidentifiable language. This was certainly not genuine amateur radio traffic.

It is possible that misuse of the spectrum has increased due to increased monitoring of electronic and telephone communications by the authorities. The recent security alert at Heathrow Airport was partly triggered by a perceived increase in E-mail traffic between certain areas identified as housing a number of 'terrorist suspects'. Past experience has indicated that when individuals involved in illegal activity lose confidence in the integrity of their land-line or mobile 'phones and electronic mail systems, they migrate to good old fashioned analogue communications, albeit often coded.

Our government don't have monitoring sites everywhere, but we hobbyists do. Radio traffic on frequencies that are normally quiet is a good starting point for suspicion.

## New From Garmin

Personal communications just get better. Garmin have just brought out a Family Radio Service set that also contains a GPS receiver. When any company says FRS, they mean that they'll be flogging it in the UK as a PMR446 set, no question. This very well made and functional set they sell as the RINO (Radio Integrated Navigation Outdoors). The set operates as a normal two way FRS radio with the usual number of channels and facilities as any other similar unit but it has a GPS installed too.

Many mobile 'phones are sold with integral GPS these days, so what's the big deal? The big deal is that you can transmit your location to another set. On picking up the data, the receiving unit displays a 'New Contact' page that shows sender's identification, distance and displays a map showing the sender's position. The locations of several users can be displayed simultaneously on the l.c.d. display.

Garmin say that this could be a life saving innovation and it would be difficult to disagree. The sets are 'ruggedised' and certainly look as if they will endure a lot of hard use. I would have thought that these radios would constitute essential equipment for any group hiking in remote areas. When will the PMR446 version emerge?



# DISCOVER A WORLD OF INFORMATION & INTRIGUE

**WHAT'S HAPPENING ON THE STREETS AND BEYOND? - FIND OUT WITH AN ICOM RECEIVER!**

## IC-R3

• The ICOM IC-R3 is a compact and stylish handheld radio receiver with a 2" colour screen merging both radio and TV technologies into one product. You can watch terrestrial television, view video images or listen to broadcast bands. The Icom IC-R3 is guaranteed to open a whole new world of visual and listening pleasure.

## IC-R5

• The IC-R5's combination of small size, powerful performance and outstanding features will impress. Although compact to the extreme, the IC-R5 wideband receiver (0.150~1309.995MHz), covers virtually everything from AM broadcast to UHF TV audio. Every UK TV broadcast channel is programmed into the IC-R5. Listen to AM and FM radio stations, utility comms and much more. For the motor racing fan, the IC-R5 can put you so close to the asphalt that only the man on the track experiences more!

## IC-R10

• The ICOM R10 handheld receiver covers 0.5MHz~1300MHz in all-modes and boasts a real-time band scope function to make the finding of busy frequencies easy. The passband width of the scope is selectable. Voice-scan function (VSC) pauses scan, when modulated signals are received.

## IC-PCR1000

• The explosive growth of the Internet has brought a wealth of information to PC users the world over. However, long before the Internet even existed, the airwaves have been filled with communications of all kinds - broadcast radio and television, Ham, special services and aviation to name just a few. The IC-PCR1000 is a versatile, new radio interface that lets you listen to this exciting world from your computer.

## IC-R75

• All-Mode 30kHz/60MHz-USB-LSB-CW-RTTY-AM-FM-S-AM! This superb receiver is designed to suit a range of market sectors from the demanding 'decoder' to the interested SWL. The IC-R75 incorporates Icom's leading-edge technology and offers a range of features that make it exceptional in many ways. It sets a new standard for performance and value, and will become a popular choice for SWL's everywhere.

## IC-R8500

• The IC-R8500 looks like, and handles like a classic HF receiver, but has the capability of receiving everything from 100kHz to 2.000GHz. It is easy to use and to get to know. The IC-R8500 does it all!



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# SSB Utilities

## Web Watch

Wellbrook ALA1530 loop -

[www.wellbrook.uk.com/ALA1530.html](http://www.wellbrook.uk.com/ALA1530.html)

Magnetic loop information (including links) -

[www.iri.tudelft.nl/~geurink/magnloop.htm](http://www.iri.tudelft.nl/~geurink/magnloop.htm)

Coastal Radio Communications -

[www.coastalradio.greater-peterborough.com](http://www.coastalradio.greater-peterborough.com)

In the past few months I have been searching for some suitable marine or maritime information to bring you, but everything that I have found has been either very specific to one maritime station, not very complete, or not up-to-date. During January I found an excellent web site devoted to coastal radio communications, and I thought that it deserved some coverage.

The website is called 'Coastal Radio Communications' (see 'web watch' elsewhere on this page for the URL) and it is devoted to the numerous Medium Frequency (MF) coastal radio stations around the world. There are dozens of links to further web pages devoted to individual coastal stations or events relating to them such as close-downs and their individual broadcast schedules. It also contains a number of documents which can be downloaded and read on your own PC.

There are listings of maritime stations operating on 500kHz as well as a very long listing of maritime stations operating between 1.6 and 3.7MHz. Both these listings are *Adobe Acrobat* documents, so you will need that program on your PC if you want to be able to read them. I found this listing very useful for identifying a weak maritime station which I heard on 2.182MHz during January.

I'm very much an amateur when it comes to maritime stations, and I was unable to make out the name of the station, but I did hear them mention some working frequencies. Using the listing from the website I was able to determine that I had heard Szczecin Radio in Poland. This may be quite a common station for regular maritime listeners, but I was more than a little surprised to hear it.

For those of you with good antenna systems, there are three other documents to be downloaded. They cover the American coastal radio stations, and probably the most useful is the listing of US Atlantic coastal stations. I have been told that when conditions are right it is possible to hear US stations on 2.182MHz, and the US listing will help you to identify which ones you can hear.

The web pages of the individual coastal stations contain many pictures of each station, including their buildings, their operators and also some very impressive antennas. The first page contains a list of updates to the website, and there is hardly a week goes by without some kind of update or additional information appearing.

## Loop Antennas

Nick Lloyd wrote to ask if I could clarify a point that I raised in the November 2002 column regarding reader Ian McDowell's home-brew loop antenna. In that column I explained how Ian had constructed a cheap and simple antenna within a window recess, and I commented upon the directional qualities of the antenna. Nick says that he thought that if a loop were constructed in a window recess that faced north (for example) with the plane of the loop parallel to the glass, then strong nulls would be found due north or south.

Well, I have to say that I thought it would be the opposite way around - signal nulls would be found due east and west, and signal peaks would be found due north and south. When I checked some references to loop antennas on the Internet (for

example, the Wellbrook web site), they indicate that the nulls are perpendicular to the plane of the loop, which supports Nick's idea rather than mine.

I can remember making some small 2m loop antennas during the 1980s for 'fox-hunting' contests and we used them by peering through the hole in the center of the loop and turning it until we got a maximum signal reading. However, those were very small 2m versions rather than large h.f. versions, so maybe the antenna responses are completely different. I am willing to be proved wrong, so I am hoping that somebody more knowledgeable will write in and let me (and Nick) know the answer.

Nick says that he is trying to obtain as much information regarding loops before committing to buying a Wellbrook ALA1530 to use with an Icom R8500 and Lowe HF-225. The Wellbrook ALA1530 has been mentioned several times in *SWM* in the past few years, there are reviews in May 1999 plus an in-depth test in November 2000.

## Reach Callsigns

As I write these words in mid February, hostilities in the Middle East have not yet broken out, and if the politicians are to be believed, it is just a matter of time. Since late 2001 the callsigns of USAF aircraft transporting equipment and troops into the region have followed a set pattern. All the flights have been using their standard 'Reach' callsign, and the numeric flight number is a simple anonymous three-digit number with a 'Y' suffix. I suppose that there must have been some kind of pattern to these callsigns in the early days, but now the flight number appears to be a random number.

In the early days of the airlift, the majority of the flights were made by USAF long-range transport aircraft - the C-5A and C-5B Galaxy, the KC-10 Extender and the C-17A Globemaster, and the occasional chartered airline for cargo or troop flights. In recent months, with the massive build-up of troops, aircraft and equipment for a possible conflict in Iraq, the number of flights has increased and the range of aircraft operating the flights has varied greatly.

The flights are still using the same range of callsigns, but now it could be almost any type of aircraft. The original series of callsigns are now being used by C-130 Hercules aircraft, KC-135 Stratotanker refuelling aircraft, C-141 Starlifter transport aircraft, and a wide range of airliners chartered from commercial airlines. This has made it much more difficult to work out what kind of aircraft you are listening to when you hear a 'Reach' flight on h.f.

The secret is to listen to their 'phone patch and see if they mention their aircraft type when they talk to the ground station. If a 'Reach' flight needs weather information for their destination, they will often pass back a weather report from their location, and this usually includes their aircraft type.

The chartered airliners usually like to let their own company know where they are and that they are safe and well, so it is quite common for the flight to as the ground station to pass a message to a named airline. This will not allow you to determine the aircraft type, but at least you can tell that it is an airliner. Next month I will take a look at the CRAF fleet of airliners being chartered for these flights.

# Sky High

It was fairly typical that the information I wanted to include last month reached me a week after the copy deadline. Anyway, I have now had the chance to look through the substantial UK Airspace changes and if I tell you that the AIRAC which amends the Air Pilot runs to 327 pages, you can see how significant a set of changes this is. It is impossible for me to detail the extensive amounts of new information, but I will try and give you an insight into the many changes. From **20th March 2003**, the following airspace changes will have been implemented into the United Kingdom.

Although primarily affecting the North Sea area, the changes in one form or another affect all parts of the country, including both London and Scottish Flight Information Regions. As I understand it, these changes are in a way a joint venture between the Civil Aviation Authority and the Ministry of Defence. The MOD wanted to re-align and re-size some of the North Sea Training areas and Danger Areas so that they were ready suited for the new Eurofighter, when it is eventually introduced into service, (several first flights were made in February). This also linked in with plans by the CAA to revamp the UK airspace and airways to make them more effective for the future planning and expansion of Air Traffic.

Some primary airspace boundaries are being revised, including parts of UK North Sea airspace passing to Dutch Air Traffic Control, (Amsterdam Control). The Manchester Control area is to be enlarged taking in parts of London Control Sectors. A number of military Danger Areas and Training Areas are being introduced, re-aligned or withdrawn. The Wash and Lakenheath ATA's, (Aerial Tactics Areas), are both having their lateral limits changed and the same applies to the Vale of York and Lincolnshire, Areas of Intense Aerial Activity.

The Air to Air Refuelling Areas, AARA 4, AARA 5, AARA 6, AARA 7 and AARA 8 are all to have their lateral limits changed with the vertical limits being amended to several of them, including the area AARA 13. For many years, UK military airband enthusiasts were more than familiar with the North Sea reporting point MIKE CHARLY SIX, (the end of TACAN routes TR1 and TB6). A couple of years ago this became MIKE CHARLEY SIXTEEN, but on the 20th March it will become NAVPI, it doesn't have quite the same ring to it!

One of the biggest areas of change involves the introduction, re-aligning and deletion of a

significant number of Airways and Reporting Points within the UK. Whilst many of the longstanding reporting points such as SAMPTON/SAM, DAVENTRY/DTY and POLE HILL/POL remain in use, the new allocations continue the trend of all being five letter reporting points.

Having worked in the industry, I am not so certain that this is such a good thing. With reporting points such as Daventry, in your own mind you could associate them with a location on the UK map, but with some of these new points such as BUKUT or MAMUL, they apparently mean nothing and so do not automatically make you identify their position immediately.

I am sure that if you use them regularly they would soon become familiar, but it's just not the same as CLACTON or WORTHING. Having said that they apparently mean nothing, some points that have been introduced in recent years such as HEMEL and WELIN, do tie in to geographical places. I am certain that to some of the people who allocated the names there may well be a hidden meaning, especially when points such as OTBED and PENIL appear on the map? Anyone out there like to comment?

As you can see this is a major re-vamp of the UK Airspace, with well over a hundred different changes being made to a variety of civil and military ATC elements. The one thing most of us had expected was to see the introduction of the first 8.33kHz spaced sector frequency, but at present this is not the case. There are nevertheless some frequency changes to report. London Control North Sea sector frequency, 121.325 moves to Scottish Control and will continue to be utilised for Middle and Upper airspace in the North Sea. Manchester Centre frequency 135.4, RIBEL Northeast is to be replaced by 133.8. Scottish Control, Moray Sector frequency 126.25 is to be replaced by 133.875.

My thanks go to Photavia Press, who pointed me in the direction of this information. Incidentally, they tell me that their new airband guide *Airwaves 2003* will be published in April and will contain these airspace changes.

## The Gulf

The build up of armed forces in the Gulf region continues with a fair percentage of our army now deployed to the area and further deployments of RAF aircraft are currently in progress. The latest estimates are that there are in excess of 150,000 allied troops in the region. The political arguments continue with Belgium, France, Germany and Russia using their veto on varying items including the location of specific equipment and troops in Turkey. I wonder if the French or Germans would be quite so against the deployment of a US defensive Patriot missile system to their country, if they had a border with Iraq?

The amount of US forces now based in the Gulf area is extensive including a large aviation

## Air Show Dates

As promised, here's a couple of air show/fly-in dates for April, don't forget to check that the event is still on before setting off.

Date	Event	Contact No:
April 13th	Popham, Hants Fly In	(01256) 397733
April 20th	Henstridge, Somerset, PFA Spring Fly-In	(01963) 364231

presence. In addition to the Carriers, USS *Constellation*, *George Washington*, *Abraham Lincoln* and *Kitty Hawk* who are all in or around the region, other US combat units known to be deployed are the 1st FW, 4th FW, 28th BW and the 52nd FW.

Air support for this build up has been noticeably increasing over the past few weeks. Being a bit of an insomniac, I regularly wake up at 0400 or 0500 in the morning and usually cannot get back to sleep. Consequently, an h.f. receiver sits permanently by the bedside for listening in the early hours. (Incidentally, does anyone know of a modification that allows you to dim the light on an NRD-345?).

In addition to the usual USAF HF-GCS frequencies, listening to the North Atlantic traffic in the early morning on Gander, Shanwick, New York and Santa Maria during February proved interesting, especially as every other call seemed to be from a REACH callsign. In addition to the USAF, AFRC and ANG flights, it was noticeable that the civil reserve fleet of airliners was being utilised.

A check on some Selcalls showed that all sorts of different operators were being used for AMC REACH flights, for example, American Transair, Omni Air, Polar Air Cargo and Continental. In addition to the REACH flights, all sorts of odd US military flights were heard over the month, can anyone identify PARSEC 11 on Santa Maria inbound to LEMO, (Moron) or CRATER 61 to 64 flight escorted by OPEC 21, destination unknown. For those of you who are awake in the early hours, a bit of h.f. listening could prove rewarding.

I mentioned in the February SWM that the Autumn AMC movements through Mildenhall were minimal compared with that of Ramstein and Rhein Main in Germany - (in mid February, 22 C-17s were noted on the deck at one short visit). Well, what a difference a few weeks and a possible conflict makes, movements through Mildenhall picked up during January and by the middle of February, the airfield saw its busiest day for two years.

The number of C-17s and C-141s has increased dramatically and in just three days in mid February fourteen C-141s passed through the airfield, (they all used REACH callsigns). It's interesting to also note that Special Operations C-130s are now using the REACH callsign quite regularly. In addition to the AMC traffic, other movements have also increased with more C-130s and C-135s being noted, with the Air Force Reserve Command being one of the main participating agencies.

What with other various movements such as E-3s, RC-135s, MC-130s plus various other visitors, it is almost like the old days. Sadly, no really interesting callsigns came from the reports sent to me, they were all previously well documented aircraft, but at least there is more of them, and perhaps more to come!

An interesting callsign was noted on the 3rd of



February when TOXIC 69 routed south across the UK and then entered French Airspace with Brest Control on 125.5MHz. He announced that he had no diplomatic clearance for Spain and so took a route out to the west of Spanish airspace into the Atlantic, and then headed eastbound up the Mediterranean. All sorts of possible identifications were associated with this callsign with people suggesting U-2s and unusual RC-135s. This was a new callsign to me and it took a few days to identify it, but according to a correspondent in Florida, it is a Pope 43rd Airlift Wing C-130 - excitement over, nothing exotic after all!

### AirNav Live

Following on from some comments in Mike Richards' 'Decode' column in the February SWM, a couple of readers have E-mailed me to ask what I know about the *AirNav Live* Flight Tracking Software. The simple answer was not a great deal, I had briefly used *AirNav 3.1* some time ago but nothing since. Consequently, I contacted the *AirNav* author who kindly loaned me a copy to review. So next month we will have a closer look at the world of 'live' aircraft flight tracking - (wars permitting).

### Air Shows

As predicted last month, sadly Mildenhall Air Show has been cancelled for the second year running. With the airfield closed next year for runway resurfacing, it will mean a long wait for fans of the Air Fete. On a personal note, I have to admit that I shall once again miss the pilgrimage to camp in John's field under the approach to Runway 11. It was always an enjoyable few days and a great chance to meet up with a lot of old friends.

On the positive side, my doubts about the future of this year's RIAT at Fairford appear to be unfounded. As I understand it, an agreement has been reached between the USAF 3rd Air Force and the IAT, so that the air show can still proceed, even if aircraft are deployed there for operations in the Gulf. Any resident aircraft will be moved to another base, possibly Mildenhall, for the duration of the Air Tattoo. This is hopefully good news having lost the Air Fete at Mildenhall.

Remembering the problems at RIAT last year, the only thing that worries me is the intensity of the security levels if some form of conflict is in progress during the Air Tattoo.

Thanks this month to **Nick, John A, John L, Dick, Clive P** and **Steve F.**

Our photo this month is an unusual visitor to the UK - Johnsons Air, Canadair CL-44 Guppy and 9G-LCA.

# 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.

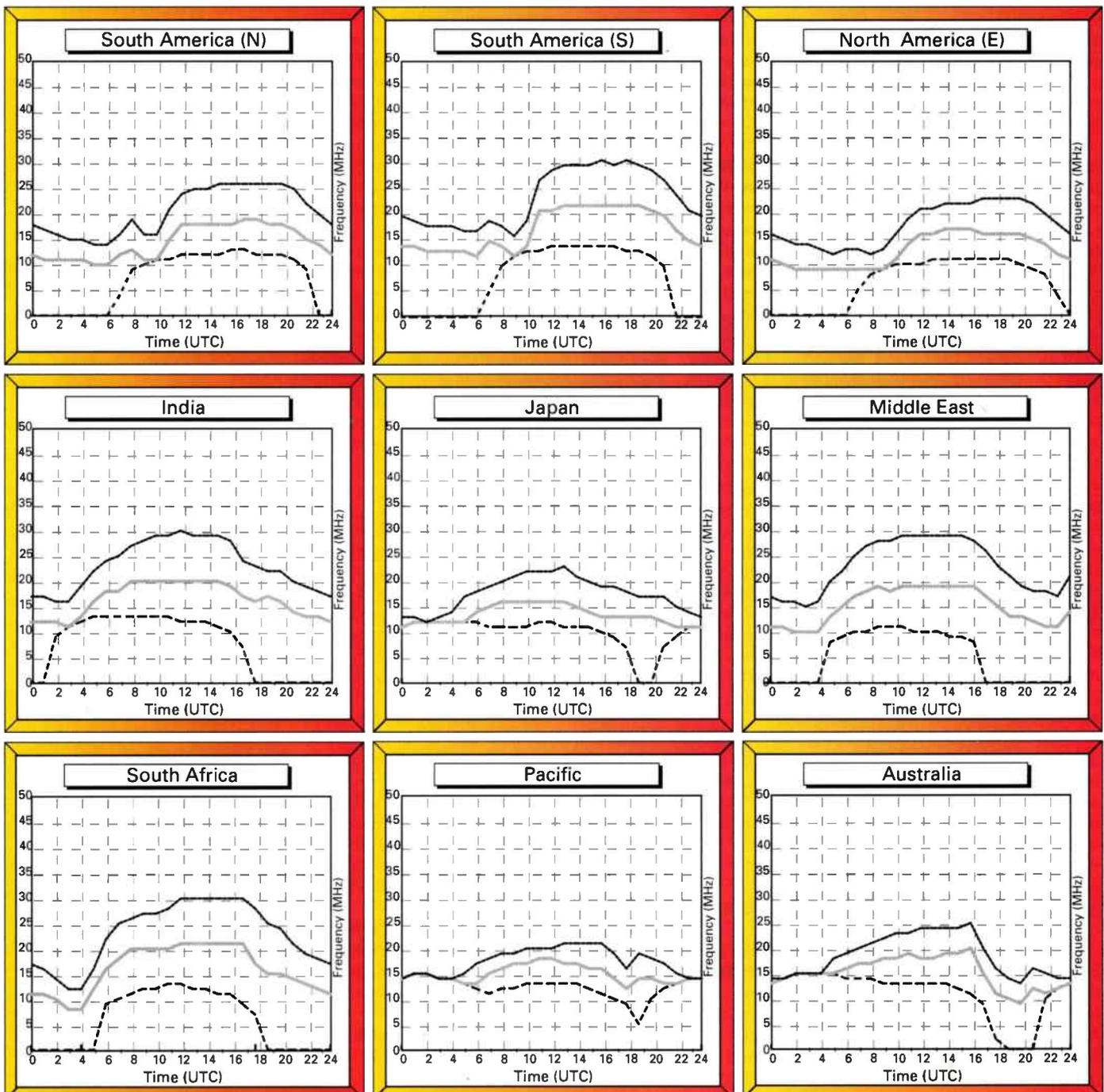
Lastly, the upper dashed line represents the maximum usable frequency (MUF), a 50%

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 the frequency.

Good luck and happy listening.

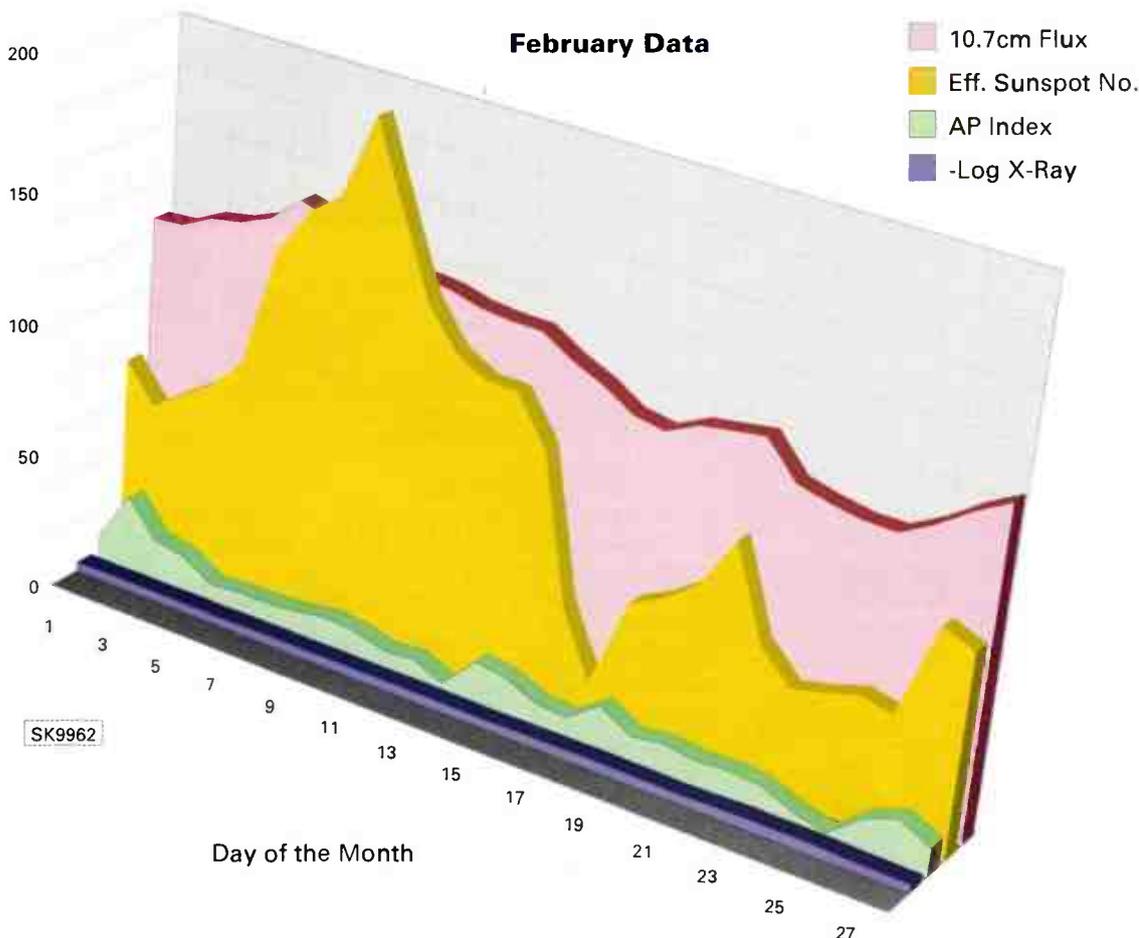
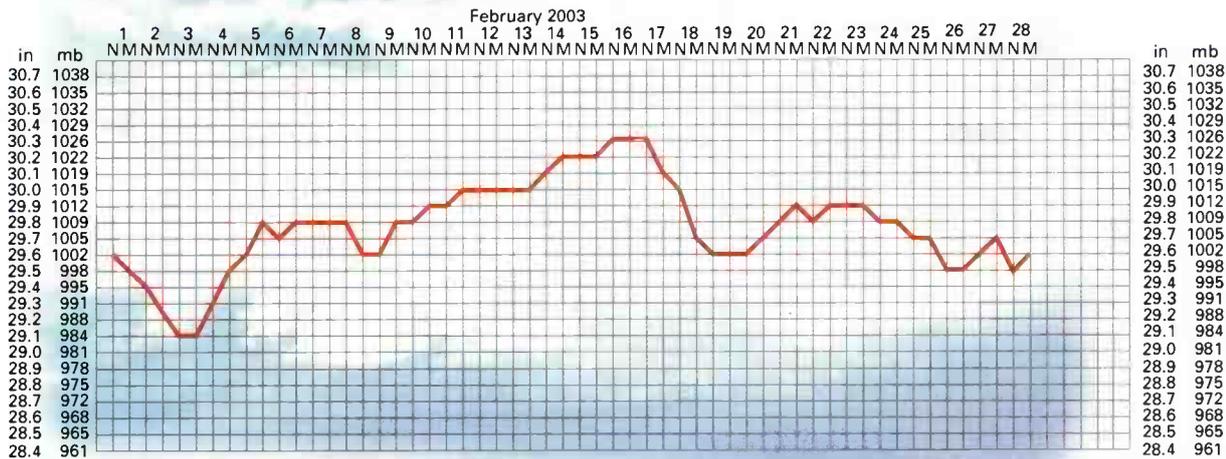
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# Propagation Extra

Ron Ham's barometric pressure chart, taken at Storrington, W. Sussex, February 2003.



## 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.

The books listed have been selected as being of special interest to our readers. They are supplied direct to your door. Many titles are overseas in origin.

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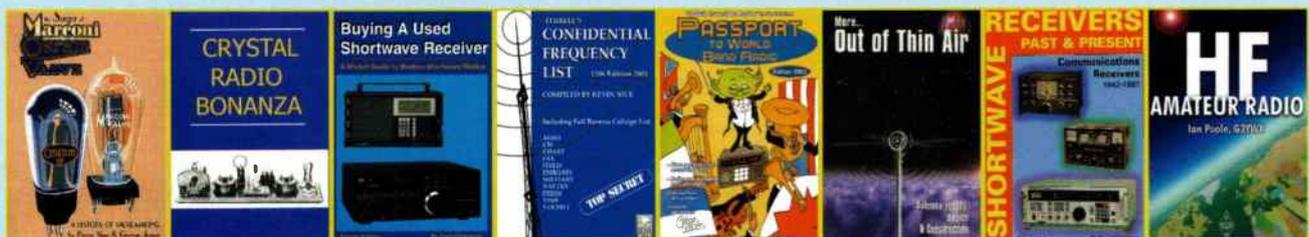


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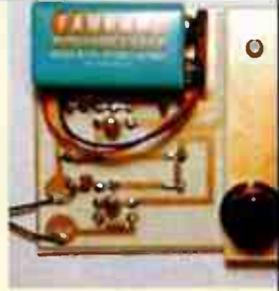


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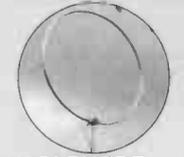
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# Amateur Bands

It took me a while in my early days of playing radio to work out the reason for beacons on the amateur bands. Once I knew, it was obvious. So, what are they for? The purpose of beacons is to give an indication of propagation. The idea is to listen out for these beacons which transmit an identifying signal all day every day on fixed frequencies. Then if you can hear a beacon from a particular part of the world then the band should be open in that direction to work or hear amateur stations. Obviously the reverse - no signal, no propagation, is true.

Probably the most well known beacons are those which operate as part of the International Beacon Project. These 18 beacons, which are spread around the globe, transmit in a very accurately timed sequence. Over a three minute period, all of them transmit in turn (a ten second window for each beacon) and the cycle repeats continuously '24/7'. They can be heard on 14.100, 18.110, 21.150, 24.930 and 28.200MHz. The beacons transmit their call signs in c.w. at 22w.p.m. followed by four long dashes. The first at 100W, and each of the rest at 10% of the power of the one before. Having different transmit powers for each dash helps the listener assess the propagation.

For those of us who struggle a bit to read Morse at 22w.p.m., there's always the MFJ-890. This clever little box has a map of the world on its front panel, with an i.e.d. marking the location of each beacon. When a particular beacon's transmission window is open, the relevant i.e.d. lights up. A Rugby controlled clock within the unit ensures that each i.e.d. lights at the right time. Armed with an MFJ-890 alongside your receiver, if you can hear a beacon, it's only necessary to look at the unit to see which beacon is transmitting.

Now what those of us with PCs would like is a bit of software that decodes the Morse identifiers, reads the signal strengths from the receiver and generates a graphical display of propagation laid over a great circle map centered on the one's location! If you're looking for more information on the MFJ-890, PW's Editor Rob Mannion wrote a user review in the December 2002 issue.

## All New M3s

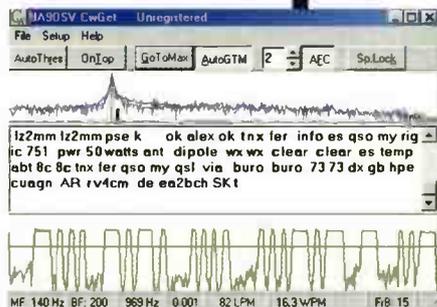
It is generally thought that in the first few months of 2002 the majority of Foundation licences were obtained by Full and Novice B class licence holders using the M3 route to the h.f. bands. It's probably also true that most of the B licence holders who are going to get M3 licences have done so, and that from now on the vast majority of licences issued will be 'new', issued to people who don't already have another licence. The RA tells me that of the 'new' M3 licences, of which there have been almost 3000 issued so far, over 25% are held by people who are under 21 years of age. Who says amateur radio's a dying hobby that's in decline?

## Morse Is Dead?

The TV detective may be, and the requirement for it as part of qualification for a full amateur licence is well within the grim reaper's sight, but interest in the mode is still alive and kicking. A recent customer of the SWM Book

Store ordered a book about learning Morse code along with his *Foundation Licence Now* pack. Even when I pointed out that the Morse component of the Foundation Licence was virtually impossible to fail provided one could distinguish between a dot and a dash, his desire to buy the book was undimmed.

For him - and he wasn't an 'old codger' - and many others, Morse has a fascination all of its own. However high tech the world, and however much it's derided by some, I'm certain that the use of Morse code will continue on the amateur bands for as long as the hobby exists. For those with computers whose Morse reading skills are a bit weak, try the CwGet software by Sergei Podstrigailo UA9OS. It's downloadable from [www.dxsoft.com](http://www.dxsoft.com) and works exceedingly well. The usual set up of a lead connecting the rig's extension speaker output to the PC's sound card is all that's required.



## What To Listen For?

**Steve Gregory VK30T/VK3SIX** will activate VK9XI from Christmas Island, south of Indonesia, for a fortnight from the 7th April. By UK day most operations will be on 50MHz, with h.f. operations from 2300 to 0800 hours. 6400km to the east in the south Pacific, and later in April, seven Italian amateurs will be operating from the Marquesas Islands for two weeks. Other than the prefix of FO, the call sign is unknown at the time of writing.

Closer to home, **Macedonian Vlado Z35M** has been active as ZA/Z35M from Tirana in neighbouring Albania since mid 2002, and will be there for several years. Back round onto the other side of the world, the HL prefix of South Korea is being activated by Australian **Mirek VK6DXI** and others until the middle of May. Three French amateurs are going to operate from the Chausey Islands, south west of Jersey in the St. Malo Gulf for a week from the 19th April. They plan to use all the h.f. bands, and operate RTTY and SSTV as well as the usual modes.

You may have missed the first two, but there will be seven more special event stations from Cuba celebrating the birth of their national hero Jose Marti. One a month, each using a call sign with the suffix letter taken in sequence from his name. April's call sign, on the air from the 11th to the 13th will be CO0S, May's CO0E, etc.

Two Brits and five South Africans are off to Robben Island, just off Capetown's coast and Nelson Mandela's prison for 27 years, to operate as ZS1RBN for a long weekend from the 4th to the 7th of April. Around the clock activity on s.s.b. and c.w. is planned on the higher h.f. bands.





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# Info in Orbit

**N**ever a dull moment with weather satellites! *METEOR 3-5* was heard in the southern hemisphere during a period when its orbit was crossing the northern hemisphere in winter twilight, close to the terminator where land is unlit. This is one of the periods when transmissions (of a.p.t. on 137.30MHz) are not expected for a few weeks. Southern hemisphere observer members of the Internet WXSAT lists reported the transmission and Fritz Schouten of New Zealand kindly E-mailed me a couple of images that he had received. Fritz commented about the image contents - see **Fig. 1**: "Top left a developing hurricane. Bottom, a bit of ice at Antarctica".

Fritz described his set-up. On the roof there is a home-made Lindenblad antenna - see **Fig. 2** - followed by a Dick Smith Electronics v.h.f. masthead amp. "Downstairs, I use the famous home-built RIG RX2 (an a.p.t. receiver) with it's output connected to a 450MHz PC. For the audio recording I'm using *wxsat*, for the overlay and text generation I'm using *WXtrack* and the lot is put together with *SatSignal*. Normally I crop New Zealand out of the NOAA images, put it upright and put it on my home page. The full images, both NOAA and METEOR, I reduce in size to 400 (pixels) wide to save space on my home pages, and I normally keep the original for a few days. All the cropping and resizing is done with *PaintShopPro*".

For information for new readers, the RX2 is a receiver designed exclusively for WXSATs and is only available to members of RIG (the Remote Imaging Group). The others are programs: *wxsat* records a.p.t. as an audio file (and can decode it as well), *WXtrack* and *SatSignal* are programs written by author David Taylor, the former is a satellite tracking program and the latter is an a.p.t. sound-file decoding program. The remaining program is commercial image processing software. For those with Internet access, free image processing software can be obtained from two or more reference web sites - my favourite is Stroud's site:

<http://cws.internet.com/image.html> from where you can obtain the freeware *Irfan View*, or any of several others.

## Ships' Trails

With such excellent daily coverage from the NOAA WXSATs, I usually manage to catch a couple of passes on most days. On a morning in late January, Marion and I watched the late pass from *NOAA-17* as the WXSAT passed southbound over France and Spain, we were amazed to see a whole mass of white trails off the west coast. The meteorology of this was a mystery to me, but Marion told me that she believed that they were probably ships' trails, though we were not sure

exactly how they were formed.

**Len Clarke GW7RSE** E-mailed me the a.p.t. version of the same *NOAA-17* image. He commented: "I think there may be a few more inputs on this particular pass - the 1052 pass on Sunday 26 January. On most Sunday mornings we run a little net in South Wales on 145.300MHz, just a group of us who all have bit of a common interest in SSTV (slow scan television), weather satellite imaging and general banter. We had all downloaded this particular pass, and it led to a long and varied discussion on the cause of the large number of trails visible from the north of Spain up to the western approaches. All appear to be west to east and originate way out in the Atlantic. General consensus puts them as vapour trails from aircraft, but to be so persistent and extensive (seems) very unusual and none of us had seen it before". Len's image was collected using an RX2 receiver and turnstile antenna; recorded with *wxsat* then processed with *SatSignal*.

**Ton Lindemann** commented "There is much more to see on the 26 January images. Take a look to the Pyrenees and see how clouds disappear by the effects of Foehn (also known as Mistral wind) at the Spanish site. Take a closer look at northern Spain and

note the rib-form clouds of mountain winds. These wave-clouds are stable, but there is still northern wind. It seems to me that these are *Alto cumulus Lenticularis*-form clouds. They look like cigar-form clouds (or UFOs) from the surface. They don't move long as wind has not made changes for speed and direction. The waves are stable". (Source: Ton Lindemann/Meteo Maarssen, Netherlands).

The next day, **Dave Ball** sent me the *NOAA-17* image from his home-brew QFH antenna and RX2 receiver. He also commented on the

"multitude of different cloud formations". His picture was processed using *SatSignal*. **George Newport** also kindly sent me a copy of this image, reflecting the interest shown by many observers.

## Ships' Trails In WXSAT Pictures - NASA Explains

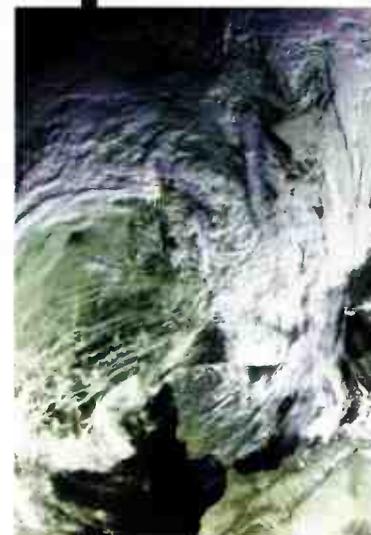
Scientists know that cloud formation depends on microscopic particles (called aerosols) that originate from the surface of the Earth. The particles provide nuclei for cloud droplets to condense around and together these droplets form clouds. They also allow condensation-forming droplets of mist or fog. Additional particles give the water vapour



**Fig. 1: METEOR 3-5 28 January southern hemisphere pass from Fritz Schouten.**



**Fig. 2: Fritz' Lindenblad antenna.**



**Fig. 3: NOAA-17 h.r.p.t. 1052 26 January from Southampton.**

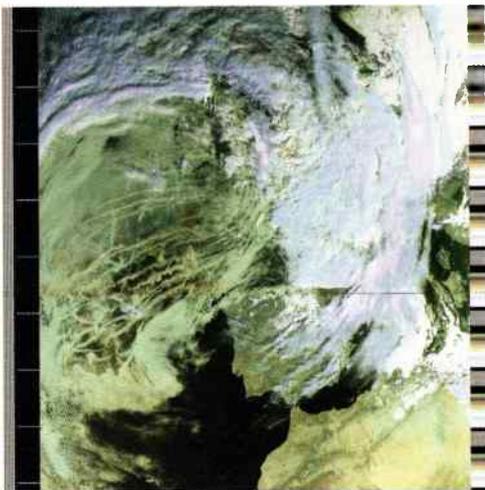


Fig. 4: NOAA-17 1052 a.p.t. transmission on 26 January showing ships' trails - from Len Clarke.

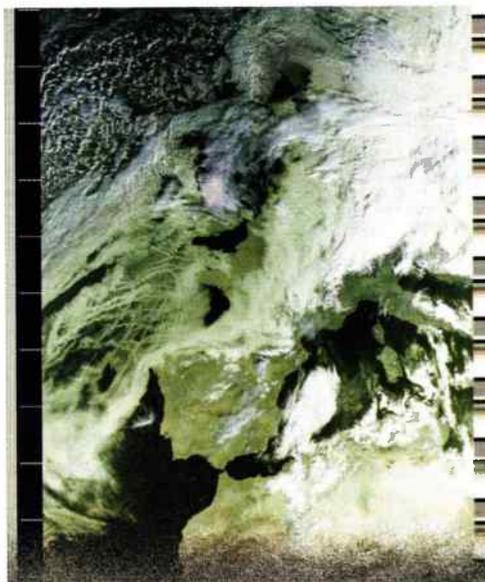


Fig. 5: NOAA-17 1038 27 January from David Ball showing the persistent ships' trails.



Fig. 6: NOAA-17 1034 Snowy Britain on 5 February from Kevin Hughes.

more nuclei to cling to, so more, smaller drops form in the cloud - which becomes brighter. The question about the origin of aerosols is unresolved. The consensus is that cloud-forming aerosols mostly originate from natural sources, but an increasing number of scientists believe that humans may produce a large quantity through the burning of fossil fuels. This makes the clouds above us brighter, and may create significant changes in our environment.

Testing theories of man-made cloud formation has been difficult. Scientists cannot discern exactly how pollutants contribute to forming clouds because the atmosphere over urban land is too tumultuous. Instead, researchers from NASA's Goddard Space Flight Centre and a number of American universities are studying 'ship tracks' - clouds, formed from the aerosols that come from large ships. Ships release their exhaust - not significant sources of pollution themselves - into the relatively clean and still marine air, where the scientists have an easier time of measuring the effects of fossil fuel emissions on cloud formation. What they have found is that the sulphur dioxide released from ships' smokestacks could be forming sulphate aerosol particles in the atmosphere, causing the clouds to be more reflective, carry more water, and possibly stop precipitating. This proves that humans have been creating and modifying clouds for generations through the burning of fossil fuels.

**James Coakley** is an atmospheric scientist at Oregon State University who, back in 1985, came up with the idea of studying ship tracks using WXSAT images. "I saw these bright streaks running through the images," he said. "Immediately I knew they were ship tracks". A temperature inversion places a cap on cooler air below, trapping pollutants and water vapour. The inversion causes smog that reduces air quality in cities such as Los Angeles; it also allows for the formation of long lasting ship tracks. The particles bellowing from ships'

smokestacks enter the air above the sea and create long, thin clouds that can remain for days. Coakley and his colleagues began a survey of ship tracks using satellite imagery. They took a number of images using the Advanced Very High Resolution Radiometer (AVHRR) on NOAA polar orbiting WXSATs. At infra-red wavelengths, many ship tracks appear as bright lines that can be distinguished from the surrounding, uncontaminated clouds. My thanks to Earth Observatory (NASA) -

<http://earthobservatory.nasa.gov/> for the use of extracts from their explanatory article.

## Significant Weather & Events

The morning pass from NOAA-17 on 5 February caught **Kevin Hughes'** attention. Kevin commented that they only received a few centimetres of snow in Tamworth, and that he felt sorry for those living further east.

**Cedric Roberts** obtained an h.r.p.t. image from NOAA-16 during the daytime pass at 1311, shortly after Kevin's pass showing "the snowfields over Scotland and the north of England in particular".

Dramatic pictures of the Australian fires were posted by people living in the regions affected - see **Fig. 8. Lyndsay Vincent** E-mailed from Melbourne to comment: "250km from the fires that have now burnt out in excess of 900,000 hectares and the smoke is like a fog in my street here in south-east Melbourne. My eyes are stinging! My mate has a farm 15km south of the fires in the Dargo High Plains area. I hope it's still there!".

Lyndsay received a picture from NOAA-17 and described its contents: "The upper left of the picture has a 'Morning Glory' cloud line in the Gulf of Carpentaria; remnants of tropical cyclone Beni are seen in the Coral Sea, east of Brisbane; the smoke from the fires flowing into Bass Strait, is then being pushed into Melbourne by the south-east breeze (at the lower centre of the picture)". Lyndsay added "Actually, there's a fourth item of interest. A dark stain around the Canberra area, which is where the most serious of the fires where. They burnt out over 500 houses and killed four people".

Lyndsay uses a home-made, tall and narrow QFH antenna mounted on 6m of pipe, 2m preamp (built from a kit), 16m RG-213 coaxial cable, the RX2 receiver and wxsat software. Thanks for the dramatic picture Lyndsay!

## Bothnia - Icebreakers To The Rescue

In early January I had a rare opportunity to receive a mostly cloud-free image from a mid-evening pass of NOAA-17, when it went over Finland revealing the frozen stretches of the Gulf of Bothnia. After admiring the image, I thought little more about it - until a correspondent to the Internet's rig-I mailing list pointed out that the h.r.p.t. image from that (and similar) passes were showing a series of lines visible across the ice flow. Comments suggested that they were the tracks of icebreakers. I reviewed my recorded data - see **Fig. 9** - and wondered how I had missed them. I usually view images in smaller formats, and this would probably prevent me seeing the higher detail.

I did a web search for 'icebreaker *Finland*' and immediately found the Finnish Maritime Administration that carries an English language page with regular updates on the ice situation. The organisation explained:

(As of 6 February) - the ice situation is still worsening. On Wednesday the Finnish Maritime Administration <http://www.fma.fi/> ordered its fourth icebreaker to the Gulf of Finland. The multipurpose vessel *Botnica* started operating in Hanko, where some ten vessels were already waiting for assistance. The *Sisu* is still assisting Helsinki and Sköldvik traffic, whereas the *Voima* operates from Helsinki westwards and the *Apu* in the eastern Gulf of Finland. Finland is the northernmost member of the European Union and one of the few countries in the world where all harbours are ice-bound during normal winters - some of them for as long as six months. The icebreaker *Botnica* is somewhat smaller than its predecessors *Fennica* and *Nordica*. Like these it is operated by a Norwegian organisation, its primary mission being light well and sub-sea interventions in the oil and gas fields of the North Sea.

### Calling Southampton Installers?

Having a WXSAT antenna installed on the roof seems to have become more difficult than I had ever expected. After ringing several antenna riggers and being staggered at the prices quoted (starting at over £90) for just mounting my

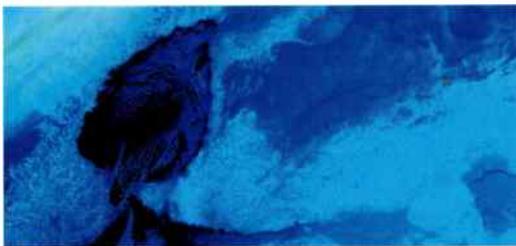


Fig. 9: NOAA-17 2008 10 January - cracks in the ice of Bothnia.

WXSAT crossed-dipole on a chimney stack, I finally arranged for a local firm to do the job. Of course, it rained on the day! The chap turned up, apologised and assured me of a Monday installation.

Although the weather was fine, a week later there was still no sign of him. I rang, but he refused to speak! After several seconds of silence, I bade him farewell and started checking the *Yellow Pages* again. Next I arranged for a rigger to come on the Monday afternoon. Despite a lovely sunny day, he did not turn up. I rang and found myself explaining the same thing all over again; it seems that none of the antenna riggers had ever heard of a crossed dipole, or a weather satellite, though this had not prevented them quoting me a price for installation. After a detailed repeated explanation, I was told that the chap would 'ring back' a few minutes later. Of course, nothing happened.

My next attempt has just ended with a 'too busy' comment. So after having had my new RIG dipole at ground level for over a month, up it had

to go on the low level mast until I can find someone reliable. Where are you Frank Russell - my friendly Plymouth antenna rigger? Oh that you covered Southampton!

### The Shuttle Disaster

The destruction of *Columbia* during re-entry for landing on 1 February was an exceptionally sad event. Future Shuttle launches are postponed indefinitely until the cause of the disaster is known.

### Frequencies of WXSATs

a.p.t.

NOAA-12 and NOAA-15 transmit a.p.t. on 137.50MHz.

NOAA-17 transmits a.p.t. on 137.62MHz. (during overlap periods, the secondary WXSAT a.p.t. may be switched off).

METEOR 3-5 usually transmits on 137.30MHz when in sunlight.

h.r.p.t.

NOAA-12 and NOAA-16 transmit h.r.p.t. on 1698.0MHz.

NOAA-14 transmits (faulty h.r.p.t.) on 1707MHz.

NOAA-15 transmits on 1702.5MHz.

NOAA-17 transmits on 1707MHz (from 0100 on 16 July).

FENGYUN-1C and -1D transmit on 1700.5MHz.

WEFAX: METEOSAT-7 (geostationary) transmits WEFAX on 1691 and 1694.5MHz, and Primary Data on 1691.0MHz.

### Explanation Of Terms

a.p.t. - automatic picture transmission: the low resolution telemetry in the 137MHz band receivable from many weather satellites using low cost equipment and software.

h.r.p.t. - high resolution picture telemetry: telemetry in the 1700MHz band from NOAA satellites that requires relatively expensive equipment to receive and process.

WXSAT - weather satellite.



Fig. 7: NOAA-16 images the snowfields on 5 February - from Cedric Roberts.

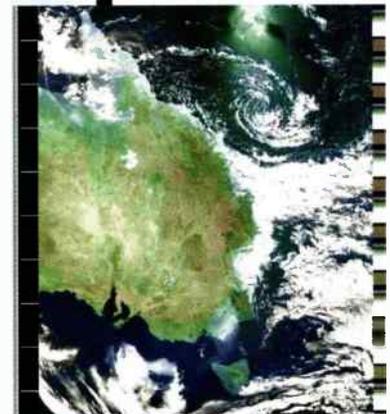


Fig. 8: Eastern Australia fires imaged by NOAA-17 on 3 February - from Lyndsay Vincent.

Fig. 10: Finnish icebreaker *Botnica* to the rescue - courtesy FMA.



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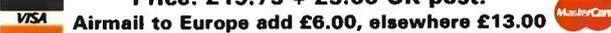
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# Attention-123!

**W**e've looked at active Morse, English-language and German-language stations in previous columns, now we'll look at the Slavic group of stations. In this group alone, all transmissions actually seem to emanate from Slavic-speaking countries. First of all, we need to say that the Slavic group of languages includes Russian, Ukrainian, Byelorussian, Bulgarian, Polish, Serbo-Croat, Czech and Slovak. (Two other languages, often erroneously assumed to be Slavic are not. **Romanian** is a Romance language like Italian, French or Spanish; **Hungarian** is part of the so-called Finno-Ugric group and is related to Finnish and Estonian. These languages use the ENIGMA 'V' prefix, which will be covered in the next 'Attention 123!').

The Slavic language stations are a complex group as, more than in other groups, many variants have been in use over the years. The following list only includes stations which are still consistently active. Others may exist.

Family Ref	Male/ Female	Notes	Morse Equivalent
XV	S4	f modified Slavic, slow delivery, ends 000	M13
la	S6	m Russian, 3-fig call, ends 00000	M14
	S6B	m two group (1st a stutter group), ends 00000	-
	S6C	m repeated single 5-fig grp, no call or ending	-
	S6E	m dual message, ends 00000	M14A
lb	S7	m Russian 3-fig call, 3 or 4-fig DK, ends 000 000	M12
IXa	S10E	m Czech, 5-fig call, ends 000	M10E
III	S11A	f Modified Slavic, 3-fig/GC call, ends <i>konyets</i>	M3
IXc	S17C	f Czech, non-text control, ends <i>konec, konec</i>	-
XIV	S21	f Russian, 3-fig call, ends 000	M45
0	S28	m Russian, the 'buzzer' on 4.625MHz, messages very rare, uses legitimate callsign <b>UZB-76</b> , otherwise buzz repeated every two seconds, 24h/day. Just before the hour, the sequence changes for one minute, then immediately reverts back	
0	S30	m 'the pip', 24h/day msgs are rare, 3.757MHz 1400-0530, 5448, 0530-1400	

Out of these, S6, S7, S21, S28 and S30 transmit from Russia; S11 possibly from Poland; S10 and S17 from the former Czechoslovakia; S4 possibly from Bulgaria - if so, this means that this country has an extensive and complex numbers station operation for M13 is still very busy and E18 is still active.

## Family XIV

S21, the only voice arm of M45, transmits from Kaliningrad and is linked to the mysterious M1 operation which has been running with little change since Cold War days. M1 still even uses the same schedules (025, 463 & 197), times and frequencies. Also in this family is M50, with its peculiar preference for sending figure 5s! As the standard of keying is often very poor, and as the text characteristics are often unlikely to be based on any genuine encrypted messages, it's clear that this station is used as an 'on air' training course for M1 operators.

M1 is always hand-keyed and errors (corrected) are quite common. M45 is also hand-keyed, but of a very high standard. As the Russians already have two major Number Station families (Ia and Ib), one of these dedicated to military intelligence, the agency

and purpose behind this third distinct family, whose habits are the most conservative of them all, is still a great mystery.

## Where Are You Cynthia?

A reader has asked us where all the E5 (CIA 'Cynthia') transmissions have disappeared to and wonders whether E3 (MI6) is carrying their messages. E5 is still quite active, but certainly not as active as it once was - despite the world situation. It's likely that many CIA agents now receive their instructions by other less secure means (satellite 'phones, Internet). Some of those still needing the 'deep cover' that h.f. communications provide are very likely to be making use of MI6's impressive new h.f. facilities on Cyprus, especially seeing that so much in the way of espionage and special forces activity is now directed towards the Middle East, Afghanistan and Pakistan. Both the British and Americans have covert forces placed in Kurdish Northern Iraq.

The Americans have nothing comparable to *Lincolnshire Poacher*, and their Numbers Station operations have always seemed rather amateurish in comparison with those of certain other countries. Nor does 'Cynthia' have anything like the complexity of the Russian and Czech operations. For example, E3, which traditionally kept most of its messages at or just below its maximum 225 group count, has in recent months been sending considerably shorter messages. I even heard a 25 group message a short time ago - possibly a record low. The apparent traffic levels of E3 (and E3A) with their never-changing system of 'blanket' broadcasting are opaque, and give no clue as to true traffic level.

A new English-language station, using a male voice, has recently appeared, **E25** operates daily at 1240 and 1340 and was transmitting on 9450kHz in December. Appearing in a.m. and s.s.b., it sometimes starts with Arabic music and uses a 3 figure call and 4 figure message groups. A variant, E25a, has a 3-fig, 3-fig, 2-fig, 2-fig, 2-fig call.

Current Schedule for **E15** (from Middle East, N. Africa).

UTC	MHz	Call
1100	18.000	BEC
1200	17.503	WSP
1230	11.170	OSS
1300	11.000	BEC
1400	14.000	FYP
1630	6.175	NAS
1700	14.000	FYS
1730	5.834	MSA
1800	5.834	WSP
1900	4.130	PAR
2000	5.530	NAS
2030	5.530	BEC
2100	4.130	MSA

Correction: In the list of families published in a previous article, XI (the lone bugle) should have been added to Family VII.

**That's all for now. Good listening!  
Logs and comments are always welcome.**

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**MORECAMBE BAY ARS, G4YBS.** Meets at the Trimpell Sports & Social Club, Outmoss Lane, Morecambe, Lancs. Details from Brian Watson G0ROH. Tel: (01524) 424522.

**PRESTON ARS, G3KUE.** Meets at the Lonsdale Club, Fullwood Hill Lane, Fullwood, Preston. Details from Mark Procter G1PIE.

**ROLLS-ROYCE ARC, G3RR.** Meets at the Club Room, Rolls-Royce Sports Ground, Barnoldswick. Details from Mr J.A. York G3KYJ.

**ROSSENDALE ARS, G1RRS.** Meets at the Old Fire Station, Burnley Road, Rawtenstall, Rossendale, Lancs BB4 8EV. Details from Ken Slaughter. Tel: (01706) 830306.

**THORNTON CLEVELAYS ARS, G4ATH.** Meets at the Frank Tomkinson Centre, Beach Road, Thornton Clevelays, Lancs. Details from Mr J.E. Duddington G4BHF. Tel: (01253) 853554.

### MERSEYSIDE

**LIVERPOOL & DARS, G3AHD.** Meets at the Churchill Conservative Club, Church Road, Waverfry, Liverpool L15. Details from David G. Parr GBDFE.

**SOUTH WIRRAL CONTEST GROUP, G3CSA.** Details from Mr T.B. Saggerson G4WSE. Tel: 0151-339 0842.

**SOUTHPORT & DARC, G20A.** Meets at St. Marks Church Hall, Scansbrck, Lancs. Details from Don Atkins M18UL.

**WIRRAL & DARC, G4MGR.** Meets at the Irbv Cricket Club, Mill Hill Road, Wirral. Details from Brian Black.

**WIRRAL ARS, G3NWR, M1IARC.** Meets at the Club Room, Ivy Farm, Arrow Park Road, Wirral L49 5LW. Details from Alan Upton G3UJU. Tel: 0151-677 3266.

### NORTH EAST

#### CLEVELAND

**EAST CLEVELAND ARC, G4CRD.** Meets at the Committee Room Of The New, New Marske Institute Club, Gurney Street, Cleveland TS11 8EG. Details from Malcolm Brass G4YMB. Tel: (01287) 638119.

**STOCKTON & DARG, G4XG.** Meets at the Billingham Community Centre, Billingham, Cleveland. Details from David J. London G0VGB. Tel: (01642) 896395.

#### CO DURHAM

**BISHOP AUCKLAND RC, G4TTF.** Meets at the Stanley Village Hall, Rear High Road, Stanley, Crook, Co. Durham. Details from Mark Hill G0GFG. Tel: (01388) 745353.

**ORWENTHIDE ARC, G4PFO.** Meets at the Steel Club, 36 Medomsley Road, Consett, Co. Durham. Details from Mr G. Darby G7GUJ. Tel: 0191-370 2032.

**GREAT LUMLEY AR & ES, G4EJZ.** Meets at the Community Centre, Great Lumley, Chester-le-Street, Co. Durham. Details from Mr O.J. Barclay M0BPM. Tel: 0191-388 8113.

**PETERLEE RADIO CLUB, G0KVI.** Details from Andrew Pennell G0NSK.

#### HUMBERSIDE

**EAST YORKSHIRE ARS, G0EOR.** Meets at the Northern Foods Sports & Social Club, Millhouse Woods Lane, Cottingham, E. Yorks. Details from David Taylor G4EBT. Tel: (01482) 876702.

**GOOLE R & ES, G0OLE.** Meets at the West Park Pavilion, Goole, South Humberside.

**GRIMSBY ARS, G3CNX.** Meets at Cromwell Social Club, Cromwell Road, Grimsby, South Humberside. Details from Mr G.J. Smith G4EBK. Tel: (01472) 887720.

**HORNSEA ARS, G4EKT.** Meets at The Mill, Alwick Road, Hornsea, North Humberside. Details from Jeff Southwell G4GVF. Tel: (01964) 533331.

**HULL & DARS, G3AMW.** Meets at the SWL Centre, Club Room, Gothaland Close, Walton Street, Hull. Details from Mr R. Hatton.

**RAYWELL PARK SCOUTS ARS, G4CMT.** Details from Mr A.O. Russell M0AXU.

**SCUNTHORPE STEEL ARC, G4FUH.** Details from Aistair Butler M1ECF.

#### NORTH YORKSHIRE

##### DARLEY ARC, G0FOS.

**HAMBLETON ARS, G0JQA.** Meets at the Mencep Centre, Northallerton, N. Yorks. Details from Ian Brockwood G0JQA. Tel: (01809) 775598.

**QUEEN MARY ARS, G6QM.** Meets at Blazefield, Pateley Bridge, Hamogate, North Yorks HG3 5DR. Details from Frank Hams G4IEY. Tel: (01242) 236715.

**RIPON & OARS, G4JSM.** Meets at The Bunker, rear of Ripon Town Hall, North Yorkshire. Details from Nigel Drumm M1BDZ. Tel: (01423) 884733.

**ROYAL SIGNALS SCARBOROUGH ARC, G0RCS.** Details from Mr A.W.W. Timme G3CWW. Tel: (01484) 842330.

**SCARBOROUGH ARS, G4BP.** Meets at the Scarborough Cricket Club, Pavilion, North Marine Road, Scarborough, North Yorks YO12 2TJ. Details from Mr D.P. Tipper G3BFR. Tel: (01723) 377296.

**SCARBOROUGH SE GRP, G0XOO.** Details from Roy Clayton G4SSH. Tel: (01723) 862924.

**THE VINTAGE & MILITARY ARS, RS183536.** Details from H.A. Aspinall.

**YORK ARS, G3HWW.** Meets at the Guppy's Enterprise Club, 17 Nunney Lane, York. Details from Keith Cass G3WVO. Tel: (01904) 422084.

**YORK RADIO CLUB (AMATEUR) G4YRC.** Meets at the

Bishopthorpe Social Club, Bishopthorpe Main Street, York. Details from Gareth Foster G1DRG. Tel: (01904) 421392.

#### NORTHUMBERLAND

**NORTHUMBRIA ARC, G4AAX.** Meets at the Old Telephone Exchange, Cresswell Road, Ellington, Morpeth, Northumberland. Details from Mr D. Stansfield G0EYV. Tel: (01670) 513026.

#### SOUTH YORKSHIRE

**FINNINGLEY ARS, G7HAM.** Details from John Fennell G4HOY. Tel: (01427) 872522.

**MALTY & OARS, G4SKM.** Meets at the Centenary Hall, Clifford Road, Hellaby, Rotherham. Details from Keith Johnson G1PQW. Tel: (01709) 798098.

**MEXBOROUGH & OARS, G4BTS.** Meets at the Harrop Hall, Mexborough, South Yorks. Details from Mr R.T. Sheppard G0KSK. Tel: (01709) 586329.

**SHEFFIELD ARC, G0INF, NRAE/RAE.** Tuition provided. Meets at the Sheffield University Staff Club, 197 Brook Hill, Sheffield. Details from Yrs Irene Giosopp G0SFP.

#### TYNE & WEAR

**HOUGHTON-LE-SPRING ARC, G3NMD.** Meets at the Durnley Royal British Legion, Durnley, Fenehouses, Tyne & Wear DH4 6LJ. Details from Foster Angles G0A6F. Tel: 0191-584 4673.

**SOUTH TYNESIDE ARS, G0XWQ.** Meets at the Boldon Scout Hut, Grey Horse Car Park, Front Street, Boldon. Details from William William M0BVM. Tel: 0191-421 9921.

**TYNEMOUTH ARC G0NWM.** Meets at the Linskill Centre, Linskill Terrace, North Shields, Tyne & Wear. Details from Mr G.N. Thompson G0SBN.

**TYNESIDE ARS, G3ZQM.** Meets at the St Teresa's Club, 200B Heaton Road, Newcastle-upon-Tyne NE6 5HP. Details from Mr J. Pickersgill G0DZG. Tel: 0191-265 1718.

#### WEST YORKSHIRE

**DENBY OALE & DARS, G4COO, G8KMK.** Meets at the P.P. Hall, Denby Dale, West Yorkshire. Details from Mr J.P. Morley G4F5G.

**HAULFAX & DARS, G2UG.** Details from Mr S.P. Ortmayer G4RAW. Tel: (01422) 203062.

**KEIGHLEY ARS, G0KRS.** Meets at the Cricket Club, Ingrow, Keighley, West Yorkshire. Details from Mr I. Tomson M1BQY. Tel: (01274) 723951.

**LEEDS & DARS, G4LAA.** Meets at The Radio Shack, Yarmbury (Horsforth), RUF Grounds, Brownme Lane, Horsforth, Leeds LS18 5HB. Details from Mr E. Howden G0IBU.

**NORTH WAKEFIELD RC, G4NOK.** Meets at the East Ardsley Cricket Club, Nr. Wakefield. Details from Mrs Olga Parker 2E1ASV. Tel: 0113-253 9087.

**OTLEY ARS, G3XND.** Meets at The RADB Club, Westgate, Otley, West Yorkshire. Details from Jack Worsnop G0SNV. Tel: (01274) 636197.

**PONTEFRACCT & DARC, G3FYQ.** Meets at the Carleton Community Centre, Pontefract, West Yorkshire. Details from Colin Wilkinson G0NQE. Tel: (01977) 677006.

**SPEN VALLEY ARS, G3SVC.** Meets at the Old Bank WMC, Mirfield, West Yorkshire. Details from Mr J.R. Wide G0FOI. Tel: (01274) 875038.

**WAKEFIELD & DARS, G3WRS.** Meets at the Ossett Community Centre, Prospect Road, Ossett, W. Yorks. Details from Ian Roberts. Tel: (01924) 216502.

**WAKEFIELD RPTX GP, G0KNR.** Details from Mike Charlton G6BZZ.

**WHITE ROSE ARS, G3XEP.** Meets at the Moorfoot RUF, Moss Valley, Kings Lane, Leeds LS17 7NT. Details from Mr M. Wilson G7SDW. Tel: 0113-273 6039.

#### MIDLANDS

##### BEDFORDSHIRE

**DUNSTABLE DOWNNS RC, G4DDC.** Meets at the Chevys House, 77 High Street South, Ounstable, Beds LU6 3SF. Details from Phil Seaford G8XTW. Tel: (01525) 384419.

**SHEFFORD & DARS, G3FJE.** Meets at the Church Hall, Amphill, Bedford. Details from John West. Tel: (01462) 812739.

**ST SWITHUN'S ARC, M0AJV.** Meets at St. Swithun's Church, Rectory Rooms, Sandy, Beds. Details from Kehyn Oatton G0WOD. Tel: (01767) 683179.

##### CAMBRIDGESHIRE

**CAMBRIDGE & DARC, G2XV.** Meets at the Coleridge Community College, Redegard Road, Cambridge. Details from Ron Huntsman G3KBR. Tel: (01223) 501712.

**OUXFORD ARS, GB21WM.** Meets at Building 177, Imperial War Museum, Duxford Airfield, Cambs. Details from Mrs B.I. Pope. Tel: (01279) 656149.

**GTR PETERBOROUGH ARC, G4EHW.** Meets at the 6th Form Building, Stanground College, Farcel Road, Fletton, Peterborough. Details from Alan D. Ralph G8XLH.

**HUNTINGDONSHIRE ARS, G0HSR.** Meets at the Medway Centre, Medway Road, Huntingdon. Details from David Leach G7OJU. Tel: (01480) 431333.

**MARCH & ORAS, G3PMH.** Meets at the British Legion Club, Rookwood Road, March, Cambs PE15 8DP. Details from Mr J. Brathwaite G3PWK. Tel: (01353) 698885.

**PETERBOROUGH R & ES, G3DQW.** Details from Mr V. Edwards G8NGZ.

**WISBECH AR & ELEC CLUB, M5ARC, G4POL, G8NED.** Meets at RAFA Club, Old Market, Wisbech. Details from Alan Bodgeand M0DQU. www.warec.org.uk

##### DERBYSHIRE

**BOLSOVER ARS, G4RSB.** Meets at the Blue Bell, High

Street, Bolsover, Derbys. Details from Colin Morns G0RXT. Tel: (01246) 822856.

**BUXTON RA, G4SPA.** Meets at the Leewood Hotel, Buxton. Details from Derek Carson G4IHO. Tel: (01298) 25506.

**DERBY & DARS, G2DJ.** Meets at Carlton Road United Reform Church, Carlton Road, Littleover, Derby. Details from Martin Shardlow G3S2J. Tel: (01332) 556875. **EREWASH VALLEY ARC, G0PCX.** Meets at The Sirwell Arms Public House (between Horsley Woodhouse and Woodside). Details from Peter Russell M0AQI.

**MOUNT ST MARY'S ARC, G4MSM.** Meets at the College, Spinkhill, Sheffield. Details from Rev. P. McArdie G0DAG. Tel: (01246) 812230.

**NOTTS & DERBY BORDER ARC, G4NID.** Meets at Marpool United Reform Church, Chapel Street, Marpool, Ilkeston. Details from Graham Bromley G4UTN. Tel: (01773) 834308.

**NUNSFIELD HOUSE ARG, G3EEO.** Meets at the Nunsfield House, Boulton Lane, Alwston, Derby. Details from William F. Smith G7PJJ.

**STH DERBYS & ASHBY W ARG, G0SRC.** Meets at the Mora Replan Centre, 17 Ashby Road, Mora, Swadincote, Derbyshire DE12 6DJ. Details from Mrs B. Wailey. Tel: (01283) 760822.

**STH NORMANTON, ALFRETON & DARC, G0CPO.** Meets at the New St. Community Centre, New Street, South Normanton, Derbyshire. Details from Peter Getring M0CQL. Tel: 0115-955 5766.

#### GLoucestershire

**CHELtenham AR ASSN, G5BK.** Meets at the Prestbury Library, Prestbury, Cheltenham. Details from Ivan Wilson G4BGW. Tel: (01452) 731956.

**CHELtenham CLUSTER SUPP GP, GB7XK.** Details from Mr A.M. Davies G0HDB. Tel: (01684) 72178.

**GLoucester AR & ES, G4AYM.** Meets at the Churchdown School, Churchdown. Details from Mr A.J. Martin. Tel: (01452) 618930.

**SMITHS INDUSTRIES RS, G4MEN.** Meets at the Sports & Social Club, Evesham Road, Bishops Cleeve, Cheltenham GL52 4SF. Details from A.J. Hooper G3JMF.

**STROU RS, G4SRS.** Meets at the Minchampton Youth Centre, Nr. Stroud. Details from Mr S.G. Spencer G3ILO.

**WHITE NOISE LISTENING G0WNL.** Details from Adnan Deane G7KCC

#### HEREFORD & WORCESTER

**BROMSGROVE & DARC, G3VGG.** Meets at the Avoncroft Arts Centre, Bromsgrove, Worcs. Details from Mr J.F. Burford G4OAZ.

**BROMSGROVE ARS, G4TUI.** Meets at the Liked End WMC, Bromsgrove, Worcs. Details from Barry Taylor G0TPG. Tel: (01527) 542266.

**ORITWICH ARC, G4PYO.** Meets in the Community Hall, Dotwich Spa, Worcs. Details from Hector Wragg M18UJ. Tel: (01905) 794399.

**HEREFORD ARS, G3YOD.** Meets at the Civil Defence HQ, Magistrates Court, Gaoi Street, Hereford. Details from Tim Bridgland-Taylor G0JWJ. Tel: (01432) 279435.

**KIDDERMINSTER & OARS, G0KRC.** Meets at the Sutton Arms, Sutton Park Road, Kidderminster, Worcs. Details from Mr A.W. Saunders G0OZB. Tel: (01299) 400172.

**MALVERN HILLS ARC, G4MHC.** Meets at the Red Lion Inn, St. Anne's Road, Malvern, Worcs. Details from Dave Hobro G4IDF. Tel: (01905) 351568.

**REODITCH RC, G4ACZ.** Meets at the WRVS Centre, Ludlow Road, Redditch, Worcs. Details from Mr R.J. Mutton G3EVT. Tel: (01789) 762041.

**VALE OF EVESHAM RC, G0ERA.** Meets at the BBC Club, High Street, Evesham, Worcs. Details from Mr A.C. Lindsay G4NRD. Tel: (01386) 41508.

**LINCOLN SHORT WAVE CLUB, G5FZ.** Meets At The Railway Club, Trinton Road, Lincoln. Details from Mrs Pam Rose G4STO. Tel: (01427) 788356.

**RAF CONINGSBY ARC, G3LQS.** Meets at Essex Block, RAF Coningsby. Details from Peter Hanson G0NYY.

**RAF WADDINGTON ARC, GORAF.** Meets at Pypewin Inn, Fosbeugh, Saxby Road, Lincoln. Details from Robert Pickles G3VCG. Tel: (01522) 526709.  
**SPALDING & DARS, G4D5P.** Meets at The Old Fire Station, Spalding, Lincs. Details from Raymond Pearson G8ELV. Tel: (01775) 711953, Web: www.sdars.org.uk

**SPILSBY ARS, RS91468.** Details from Clive Ironmonger G6HYF. Tel: (01790) 752112.

## NORTHANTS

**KETTERING & DARS, G5KH.** Meets at The Lilacs Public House, 39 Church Street, Isham, Kettering, Northants NN14 1HD. Details from Fay Barwell G6AKS. Tel: (01536) 390954.

**MID NORTHANTS AR EXP, GOING.** Details from Lonel Parker G5LP.

**NORTHAMPTON RC, G3GWB.** Meets at the British Timken, Social & Athletic Club, Cotswold Avenue, Duston, Northampton. Details from Norman Miller G0GBZ. Tel: (01327) 349188.

**NORTHAMPTON SCOUT ARG, G6NDS.** Meets at Overstone Scout Activity Centre, Northampton. Details from Ian Rivett G8WPU.

**PARALLEL LINES CG, G4LIP.** Details from Mr P.S. Lidsay G4CLA.

## NOTTINGHAMSHIRE

**ARC OF NOTTINGHAM, G3EKW.** Meets at the Haywood Road Community Association, Haywood Road, Mapperley Road, Nottingham NG3 6AD. Details from Ron Hague G4XOU. Tel: 0115-919 9177.

**DUKERIES ARS, G4XTL.** Meets at Ambleside Community Centre, Ambleside, New Olterton, Notts. Details from Colin Foster G7DEX.

**HUCKNALL ROLLS ROYCE ARC, G5RR.** Meets at the Hucknall Rolls Royce Sports & Social Club, Watnall Road, Hucknall, Nottingham. Details from Mr P. Hart G4JSM.

**MANSFIELD ARS, G3GQC.** Meets at the Debdale Park Sports & Recreation Club, Debdale Lane, Mansfield Woodhouse, Notts. Details from David Peat G0ROP. Tel: (01623) 631931.

**NORTH NOTTS DATA GROUP, G0WNN.** Details from Tony Jenkins G8TBF.

**SIEMENS ARC, G8ZK, G8IGQ.** Meets at the GPT Sports Ground, Beeston, Nottinghamshire. Details from Chns Archer G4VFK. Tel: 0115-943 3387.

**SOUTH NOTTS ARC, G0OAU.** Meets at the Farham Community College, Farnborough Road, Clifton, Nottingham NG11 9AE. Details from Gary Bishop G0WUG. Tel: (01509) 672846.

**WORKSOP ARS, G3RCW.** Meets at the Club House, 59-61 West Street, Worksop, Nottingham S80 1JP. Details from Terry Calvert G4GBS. Tel: (01302) 743130.

## SHROPSHIRE

**OSWESTRY & DARS, G4HTO, G1ORA.** Meets at the Sweeney Hall Hotel, Oswestry, Shropshire. Details from Ant Watkins G0WJA. Tel: (01691) 860545.

**SALOP ARS, G3SRT, M1AXW.** Meets at the Telepost Club, Railway Lane, Abbey Forge, Shrewsbury. Details from John Burnford G0G7N.

**TELFORD & OARS, G3ZME.** Meets at the Dawley Bank Community Centre, Dawley, Telford, Shropshire. Details from Mr M. Vincent G3UKV. Tel: (01952) 255416.

## STAFFORDSHIRE

**BURTON-ON-TRENT & DARS, G3NFC.** Meets at the Stapehill Institute, Main Street, Stapehill, Burton-on-Trent, Staffs. Details from Mr M.W. Cotton G4HBY.

**CANNOCK CHASE ARS, G6SW.** Meets at the Four Crosses Inn, Watling Street, Hatheron, Cannock. Details from Arnold Matthews G3FZW. Tel: (01543) 262495.

**CHAD RC, G4CAR.** Meets at the Swinfen Officer's Club, Swinfen, Lichfield, Staffs. Details from Bernard Jayne G8BFL. Tel: (01543) 268569.

**LICHFIELD ARS, G3WAS.** Meets at the Queens Head, Sandford Street, Lichfield. Details from Roger Smethers G3NLY. Tel: (01543) 672762.

**MOORLANDS & DARS, G4NHT, G1MAD.** Meets at the Creds Works, Blythe Bndge, Stoke-on-Trent, Staffs ST11 9LJ. Details from Mr B.J. Butcher G4HKG. Tel: (01782) 395793.

**NEWCASTLE-U-LYME SCOUT AR COM GR, G7UQG**

**STOKE-ON-TRENT ARS, G3GBU.** Meets at the '45' Club, 92 Lancaster Road, Newcastle-under-Lyme, Staffs. Details from Albert Allen G4DHO. Tel: (01782) 638801.

**SUTTON COLDFIELD RS, G3RSC.** Meets at the Rugby Club, Watmley Road, Sutton Coldfield, West Midlands. Details from Paul G. Turner G7MWD. Tel: 0121-350 4263.

## WARWICKSHIRE

**AVON VALLEY ARA, MORAD.** Details from Mr Peter Bradham G0WJK. Tel: (01905) 724531.

**MID WARWICKSHIRE ARS, G3UDN.** Meets at the St. John Ambulance HQ, 61 Embscoe Road, Warwick. Details from Bernard Pittaway. Tel: (01926) 420913.

**RUGBY ATS, G4APD.** Details from Tony Humphnes G0OLS. Tel: (01455) 552683.

**STRATFORD UPON-AVON & DRS, G0SOA.** Meets at the Home Guard Club, Tiddington, Stratford-upon-Avon, Warks. Details from Ron Horsley G0MRH. Tel: (07970) 148204.

## WEST MIDLANDS

**ALDRIDGE & BARR BEACON ARC, G0NEQ.** Meets at the Aldridge Central Hall Community Centre, Middlemore Lane, Aldridge W59 8AN. Details from Mr C.J. Baker G0NOL. Tel: (01922) 636162.

**COVENTRY ARS, G2ASF.** Meets at the Binley Church Hall, Brnklow Road, Coventry. Details from John Beech G8SEQ. Tel: (01203) 673999.

**DUDLEY ARC, G4DAR.** Meets at the Community Centre, Sedgley, Central Library, St. James Road, Dudley. Details from Tony Lucas G4LVA. Tel: (01384) 277925.

**HILLCREST ARS, G0SPM.** Meets at The College, Simms Lane, Netherpton, Dudley, West Midlands. Details from Mrs Megan Fleetwood G0TMF. Tel: (01384) 294804.

**KYNOCH R & TVS, G3HPP.** Meets at the Club Workshop, Mill Ltd., Sportsfield, Perry Bar, Birmingham. Details from Mr G. Nicholls. Tel: (01922) 635376.

**MIDLAND ARS, G3MAR.** Meets at Unit 22, 60 Regent Place, Hockley, Birmingham (jewelry quarter). Details from John A. Crane G0LAI. Tel: 0121-628 7632.

**SANDWELL AMATEUR RADIO CLUB, G0CWC.** Meets at Sandwell ARC, Broadway, Oldbury, Warley, West Midlands B68 9OP. Details from Stuart Collins M0BTO. Tel: 0121-561 4663.

**SIERRA HOTEL ARCG, G0OBS.** Details from Warwick M. Hall G4WMM.

**SOLIHULL ARS, G3GEI.** Meets at The Shirley Centre, 274 Stratford Road, Shirley, Solihull, West Midlands. Details from Paul Gaskin G8AYY. Tel: 0121-783 2996.

**SOUTH BIRMINGHAM RS, G3OHM.** Meets at Hampstead House, Fairfax Road, West Heath, Birmingham. Details from The SBRS Secretary.

**STOURBRIDGE & ORS, G6OI, G6SRS.** Meets at the Old Swynford Hospital/School, Stourbridge, West Midlands. Details from Tom Edwards.

**WEST BROMWICH CENTRAL RC, G4WBC.** Meets at The Sandwell Public House, High Street, West Bromwich, West Midlands. Details from Ian Leitch G0PAL. Tel: 0121-561 2884.

**WEST MIDLANDS POLICE ARC, G0COP, G1WMP.** Details from Steven Jones G6LRL.

**WILLENHALL & DARS, G4ETW.** Meets at The Liberal Club, Villiers Street, Willenhall, West Midlands. Details from Dave Bradbury. Tel: (01902) 411252.

**WOLVERHAMPTON ARS, G8TA.** Meets at the Electricity Board Sports Club, St. Marks Road, Chapel Ash, Wolverhampton. Details from Mrs J. Smith. Tel: (01902) 751936.

**WOLVERLEY RC, G4WRA.** Meets at the Brick Maker's Arms, Mount Pleasant, Brierley Hill, West Midlands. Details from Andy Evans G1PKZ.

## LONDON & CENTRAL

### BERKSHIRE

**ARBORFIELD ARC, G3IHH.** Details from Mrs E.W. Harding Z61AUQ.

**BRACKNELL AEC, G4BRA.** Meets at the Coopers Hill Community Centre, Bagshot Road, Bracknell, Berks. Details from John Ellerton G3NCN.

**BURNHAM BEECHES RC, G3WIR.** Meets at the Farnham Common Village Hall, Victoria Road, Farnham Common, Bucks. Details from Mrs Eileen Chislett G6EIL. Tel: (01628) 625720.

**MAIDENHEAD & OARC, G3WIK.** Meets at the Red Cross Hall, The Crescent, Maidenhead, Berkshire. Details from Neil Savn G0SVN. Tel: (01628) 626210.

**NEWBURY & DARS, G5XV.** Meets at the Rugby Club, Monk's Lane, Newbury. Details from Mark Slade M0CUK. Tel: (01488) 638985.

**READING ARC, G3ULT.** Meets at the Woodley Pavilion, Woodford Park, Haddon Drive, Woodley, Reading. Details from Mamoch Standen G0JMS. Tel: 0118-972 3504.

### BUCKINGHAMSHIRE

**AYLESBURY VALE RS, G4VRS.** Meets at the Hanwick Village Hall, Aylesbury, Bucks. Details from Mr L.I. Copley G0DFC.

**CHESHAM & DARS, G3MDG, G1MDG.** Meets at the White Hill Centre, Chesham, Bucks. Details from Mr T.J. Thirwell G0VFW. Tel: (01442) 832169.

**CHILTERN ARC, G3CAR.** Details from Roy Page G4YAN. Tel: (01494) 534216.

**MILTON KEYNES ARS, G3HIU.** Meets at Bletchley Park Museum (The Green Room, B Block Annex), Wilton Avenue, Bletchley, Milton Keynes. Details from Mrs J. Battersby M1EPL (Secretary) on (01908) 565636 or Frank Collins M0RPM (Chairman) on (01234) 713148.

**MILTON KEYNES SCOUT ARS, G0SMK.** Meets at The Quames, M.K. Scout Campsite, Cosgrove. Details from Mr P.A. Orchard G0RYZ. Tel: (01908) 648186.

## GREATER LONDON

**ADDISCOMBE ARC, G4ALE.** Meets at the Lion Inn, Pawns Road, Croydon, Details from Mr Q.G. Collier G3WRR. Tel: 0208-653 6948.

**BARKING R & ES, G3XBF.** Meets at the Parkside Community Centre. Details from Bill Chewter G0IQK. Tel: (01708) 474443.

**BROMLEY & OARS, RS89030.** Meets at the Victory Social Club, Kechill Gardens, Hayes, Bromley. Details from Alan G. Messenger G0TLK.

**CLIFTON ARS, G3GHN.** Meets at the Kidbrooke House, Community Centre, 90 Mycenae Road, London SE3 7SE. Details from Mr J. Veaney G7BKH.

**CRYSTAL PALACE & DRC, G3VCP.** Meets at the All Saints Church, Pansh Roads, Beulah Hill, London. Details from Bob Burns G30OU. Tel: (01737) 551270.

**DARENTH VALLEY RADIO, G0KDV.** Meets at the Crockenhill Village Hall, Swanley, Kent. Details from Mr K.W. Hails G8VJG. Tel: (01322) 663022.

**ECHFIELD ARS, G3UES.** Meets at The Community Centre, St. Martin's Court, Kingston Crescent, Ashford, Middlesex. Details from Robin Hewes G3TDR. Tel: (01784) 456513.

**EDGWARE & DRS, G3ASR.** Meets at the Watling Community Centre, 145 Orange Hill Road, Burnt Oak, Edgware, Middlesex. Details from Stephen Slater G0POB. Tel: 0208-953 2164.

**HAVERING & DARS, G4HRC.** Meets at the Fairkites Arts Centre, 51 Bilet Lane, Hornchurch, Essex.

**RS OF HARROW, G3EFX.** Meets at the Harrow Arts Centre, Uxbridge Road, Hatch End, Middlesex. Details from Mr C. Fnel G4AUF. Tel: (01895) 621310.

**SILVERTHORNE RC, G3SRA, G2HR, G8CSA.** Meets at the Chingford Adult Education and Community Centre, Friday Hill Estate, Simmons Lane, Chingford, London E4 6JH. Details from Dave Chnsty G0VHC. Tel: 0208-504 2831.

**SOUTH LONDON COLLEGE ARS, G3HFF.** Meets at the Lambeth College, Norwood Centre, Knights Hill, West Norwood, London. Details from Mr M. Knott G0WCR.

**SOUTHGATE RC, G3SFG.** Meets at the Winchmore Hill Cricket Club, Firs Lane, London N21 3ER. Details from Mr D.F. Bery G4DFB.

**ST. DUNSTONS COLLEGE ARS, G4SDC.** Details from Sam Kennard G4OHX. Tel: 0181-690 1274.

**SURREY RADIO CONTACT CLUB, G3SRC.** Meets at the S.T. Terra Nova, 34 The Waldrons, Croydon, Surrey. Details from Maurice Fagg G4DDY. Tel: 0208-669 1480.

**WEST LONDON ARS, RS95599.** Details from Robin Clay G0VJI.

**WHITTON ARC, G0MIN.** Meets at the Whitton Community Centre, Percy Road, Whitton. Details from Ian Clabon G0OFN. Tel: 0208-B94 9131.

## HERTFORDSHIRE

**BISHOPS STORTFORD ARS, G5ZG.** Meets at the Royal British Legion Club, Windhill, Bishop's Stortford, Herts. Details from Tony Judge G0PQF. Tel: (01279) 506933.

**DACORUM ARTS, G7RIH, G0WUH.** Meets at the Guide Meeting Rooms (next to the Royal British Legion), Queensway, Hemel Hempstead. Details from Ian Hamilton G0TCD. Tel: (01442) 211925.

**HOODESDON RADIO CLUB, G0TSN.** Meets at the Rye Park Conservative Club, Rye Road, Hoodeston, Herts. Details from Don Platt G3JNJ. Tel: 0208-292 3678.

**MIMRAM CONTEST GP, M0ABC.** Details from Alan Holdsworth G800. Tel: (01707) 392950.

**RADIO SCOUTING TEAM, G82ST.** Meets at Tolmers Scout Camp, Tolmers Road, Cuffley, Herts EN6 4JS. Details from Mill Lvens G20KB. Tel: (01992) 558493.

**STEVENAGE & DARS, G3SAD.** Meets at the Stevenage Day Centre, Chells Way, Stevenage, Herts SG2 0LT. Details from Peter Bell Z61CRK. Tel: (01462) 674505.

**VERULAM ARC, G3VBR, G0BVS.** Meets at the RAF Association HQ, New Kent Road, St. Albans, Herts. Details from Walter Crane G3PMF. Tel: (01923) 262180.

**WELWYN & HATFIELD ARC, G3WGC.** Meets at the Royal Naval Association, Black Fan Road, Welwyn Garden City, Herts. Details from Dean Jackson G7PKF. Tel: (07973) 560649.

## SURREY

**BENTLEY ARC, G0VZS.** Details from Derek Gilbert G0NFA.

**CATERHAM RG, G0SCR.** Details from Mr P.N. Lewis G4APL.

**COULSDON AMATEUR TRANS. SOC., G4FUR.** Meets at St. Swithuns Church Hall, Grovelands Road, Purley, Surrey. Details from Andy Bners G0KZT. Tel: (01737) 552139.

**DORKING & ORS, G3CZU, G7DOR.** Details from John Greenwell G3AEZ. Tel: (01306) 631236.

**FARNBOROUGH & ORS, G4FRS.** Meets at The Community Centre, Meudon Avenue, Farnborough, Hants. Details from Mr M. Hearsay G8ATK. Tel: (01252) 715765.

**GUILDFORD & ORS, G6GS.** Meets at the Guildford Model Engineers HQ, Stoke Park, Guildford, Surrey. Details from Stella Whitbourn G0SWE.

**KINGSTON & OARS, G3KIN.** Details from Mrs Mary Ashdown G0BQV.

**REIGATE ATS, G5LK, G7RAT.** Details from Mr A.C. Embling G1LNT. Tel: (01883) 344723.

**SUTTON & CHEAM RS, G2XP, G7SAC.** Meets at the Sutton United Football Club, Borough Sports Ground, Gander Green Lane, Sutton, Surrey. Details from John Putterock G0BWV. Tel: 0208-644 9945.

**THAMES VALLEY ARTS, G3TVS.** Meets at the Thames Ditton Library, Watts Road, Gigg's Hill, Thames Ditton, Surrey. Details from Cdr. J. Pegler G3ENI. Tel: (01483) 284279.

**WIMBLEDON & DARS, G3WIM.** Meets at St. Andrews Church Hall, Herbert Road, Wimbledon, London. Details from Mr Reg Blackwell M1EEK. Tel: 0208-696 9857.

## SOUTH & SOUTH EAST

### EAST SUSSEX

**BRIGHTON & ORS, G4GQR.** Meets at the Roast Beef Bar, Brighton Racecourse, Elm Grove, Brighton. Details from Mr P.J. Felmingham.

**CROWBOROUGH DARS, G0CWR.** Meets at the Plough & Horses, Walshe Road, Jarvis Brook. Details from Mrs M. Clark. Tel: (01892) 663666.

**EAST SUSSEX AMATEUR TV GROUP, RS178475 was G83VX.** Details from Keith Elis G8HGM. Tel: (01323) 720220.

**SOUTHDOWN ARS, G3WQK.** Details from Jim Harris G4DRV. Tel: (01323) 728479.

**THE QRZ ARG OF SUSSEX, G83VX.** Meets at the Coach Station, Wartling Road, Eastbourne. Details from Stuart Constable M0CWH. Tel: (01435) 863020.

### HAMPSHIRE

**ANDOVER & RAC, G0ARC.** Meets at the Village Hall, Withham, Andover, Hants. Details from Mr R.S. Coleman G0WVD.

**BASINGSTOKE ARC, G3TCR, G8JYN.** Meets at the GEMS Social Club, Luster Road, Basingstoke, Hants. Details from Bob Brown M0CJJ.

**FAREHAM & DARC, G3VFE.** Meets at the Portchester Community Centre, Westlands Grove, Portchester, Hants. Details from Andrew Sinclair G0AMS. Tel: (01329) 235397.

**HIGHFIELD PARK RC, G4WID.** Meets at Highfield Park RC, National Air Traffic Service, Highfield Park, Heckfield, Hants RG27 0LD. Tel: (01734) 225019.

**HORDEAN & OARC, G4FBS.** Meets at Lovedean Village Hall, Lovedean Lane, Lovedean, Hants. Details from

Stuart Swain G0FYX. Tel: (01705) 472846.

**ITCHEN VALLEY ARC, G0IVR.** Meets at the Scout Hut, Bockfield Lane, Chandlers Ford, Eastleigh, Hants. Details from Sheila Williams G0NVI. Tel: (01703) 813827.

**SONY BROADCAST ARC, G4SZC.** Accredited C&G RAE centre. Meets at Sorby Sports & Social Club, Priestley Road, Basingstoke. Details from Stephen Harding G4JGS. Tel: (01256) 55011.

**SOUTH HAMPSHIRE INT. TELE SOC., G3DIT.** Meets at G3JZV's QTH, space is limited. Details from Rev. T.R. Mortimer G3JZV. Tel: (02392) 649254.

**SUBMARINE ARC, G3BZU.** Meets at HMS Collingwood, Newgate Lane, Fareham, Hants PO14 1AS. Details from Mr W.S. Blyth G0PPH. Tel: (01329) 232386.  
**THREE COUNTIES ARC, G4WWR.** Meets at the Bramshott Parish Inst. & Club, Headley Road, Liphook, Hants. Details from Daman Hamden G7RFV. Tel: (01426) 724456.

**WATERSIDE ARS, G4JYN.** Meets at the Applemore Scout HQ, Applemore, Hythe, Southampton. Details from Tony Horton G0LKG. Tel: (01703) 841794.

## ISLE OF WIGHT

**BRICKFIELDS ARS, G0BAR.** Meets at Brickfields Horse Country Centre, Newnham Road, Binstead, Isle of Wight. Details from Mr Pebody.

**ISLE OF WIGHT RS, G3SKY.** Meets at The Old Cafe, Whitecalf Bay, Holiday Park, Bembridge. Details from Alan Reeves G4ZFQ. Tel: (01983) 294309.

## OXFORDSHIRE

**BANBURY ARS, G0BAR.** Meets at St. John's Church Social Club, South Bar, Banbury, Oxon. Details from Mr R.S. Marsden G1VSY. Tel: (01295) 253509.

**HARWELL ARS, G3PIA.** Meets at the Social Club, Harwell Laboratory, Didcot, Oxon. Tel: (01235) 223250.

**OXFORD & OARS, G5LO.** Meets at the Grove House Club, George Street, Summertown, Oxford. Details from Mr D. Walker G3BLS. Tel: (01865) 247311.

**VALE OF WHITE HORSE ARS, G5RPF, G4VWH, G6VWH.** Meets at The Fox, Stevenston. Details from Ian White G3SEK. Tel: (01235) 531559.

## WEST SUSSEX

**CHICHESTER ARC, G2NMM.** Meets at the St. Pancras Hall, Chichester. Details from Graham Swann G0WSD.

**CRAWLEY ARC, G3WSC.** Meets at the Tigate Forest Rec. Centre, Hut 1B, Tigate Forest, Crawley, West Sussex. Details from Mr J.S. Spence G0FPI.

**HORSHAM ARC, G4HRS.** Meets at the Guide Hall, Denne Road, Horsham, West Sussex. Details from Alister Watt G3ZBU. Tel: (01403) 253432.

**MID SUSSEX ARS, G3ZMS.** Meets at Marie Place, Leylands Road, Burgess Hill, West Sussex. Details from Mr C. Childs Z61DCP. Tel: (01444) 244689.

ST AUSTELL ARC, GOECC. Meets at Poltair School. Details from Reg Pears G4TRV. Tel: (01726) 72951.

## DEVON

APPLEDORE & DARL. G2FKO. Meets at the Applepore Football Club. Details from Mr B. Jewell M08RB.

AXE VALE ARC. G8CA. G7AKE. Meets at the George Hotel, Axminster, Devon. Details from Pat Cross G0GHH. Tel: (01297) 33756.

DARTMOOR RADIO CLUB. G1RCD. G0DRC. Meets at the Yelverton War Memorial Village Hall, Meavy Lane, Yelverton, Devon. Details from Ron Middleton G7LLG. Tel: (01822) 852586.

EXETER ARS. G4ARE. Meets at the Moose Centre, Spinning Path Lane, Blackboy Road, Exeter. Details from Ray Donno G3YBK.

EXMOUTH ARC. G0XRC. Meets at The Scout Hut, Marpool Hill, Exmouth.

NORMAN LOCKYER OBSERVATORY ARG. G0AXC. Meets at the Norman Lockyer Observatory, Salcombe Hill, Sidmouth. Details from Ron Hamson G0NOC. Tel: (01395) 515349.

NTE (PAIGNTON) ARS. G0OSH. Meets at Paignton Community College, Upper School, Waterleaf Road, Paignton. Details from Rod Maude G0SWM. Tel: (01803) 521066.

SOUTH DEVON ARC. G4SSD. Meets at the Hillhead, Kingswear, Devon. Details from John May G0CDB. Tel: (01803) 522955.

TORBAY ARS. G3NJA. Meets at the Highweek Family & Social Club, Highweek, Newton Abbot, Devon. Details from John Oway G3RMA. Tel: (01803) 556425.

UNIVERSITY OF PLYMOUTH ARS. G0UOP. Details from Alan Santillo G0XAW.

## DORSET

BLACKMORE VALE ARS. G4RBV. Meets at Shaftesbury Club for Young People, Coppice Street, Shaftesbury. Dorset SP7 BPF. Details from Mr A. Marrott G0GFL. Tel: (01305) 860741.

BOURNEMOUTH RS. G2BRS. Meets at the Kinson Community Centre, Kinson, Bournemouth, Dorset. Details from Chris R. Ellis M5AGG, Broken Ridge, Fir Tree Close, St. Leonards, Ringwood, Hants BH24 2QW. Tel: (01202) 893126.

CHRISTCHURCH ARS. G0MUD. Meets at the Siemens Plessey Sports & Social Club, Grange Road, Somerford, Christchurch, Dorset. Details from Mr K.P. Hams G7WSN. Tel: (01202) 484892.

FLIGHT REFUELLING ARS. G4RFR. Meets at the Flight Refuelling Social Club, Merley, Wimborne, Dorset. Details from Martin Aun T21DFZ. Tel: (01202) 693334.

POOLE RS. G4PRS. Meets at the Boumemouth & Poole CFE, Constitution Hill Site, Poole, Dorset. Details from Phil Mayer G0KXL. Tel: (01202) 700903.

PORTLAND ARC. G0VOP/G7VQP. Meets at Clifton Hotel, Grove Road, Portland. Details from Kerry Morns G1WIK. Tel: (01305) 788591.

SOUTH DORSET RS. G3SDS. Meets at the Church Hall, Chickereil, Weymouth, Dorset. Details from John Rose M0BQO. Tel: (01305) 832057.

SWANAGE & PURBECK ARC. M0BLI. Meets at Kings Arms, Langton Matravers, Dorset. Details from Peter Wankfield M1WCH/M3WCH. Tel: (01929) 424413.

WESSEX AMATEUR WIRELESS CLUB. G1WAW. Details from Ken Powell G1NCG. Tel: (01202) 549376.

## JERSEY

JERSEY ARS. G13DVC. Meets at the German Signal Station, Rue Baal, La Moye, St. Brelade. Details from Mrs Anne Mourant MJOBUJ. Tel: (01534) 734948.

## SOMERSET

PRESTON COMMUNITY SCHOOL ARC. G0PCS. Details from Craig Douglas G0HJD. Tel: (01935) 71131.

TAUNTON & DARS. G3XZW. Meets at The Memorial Hall, Trull, Taunton. Details from David Rosewar M0CFF.

WEST SOMERSET ARC. G0OWX. Meets at The West Somerset Community College, Minehead, Somerset. Details from Alan Elliott G7RSU. Tel: (01643) 707207.

WINCANTON ARC. G0WRA. Meets at King Arthur's Community School, West Hill, Wincanton. Details from Mr G.A. Fingerhut G0ENW. Tel: (01963) 370506.

YEOWIL & DARL. G3CMH. G8YEO. Meets at the Bntsh Red Cross HQ, 72 Grove Avenue, Yeovil, Somerset. Details from George Davis G3ICO. Tel: (01935) 425669.

## ESSEX

BRAINTREE ARC & CCC. G4JXG. Meets at the Braintree Hockey Club, Church Street, Bocking, Braintree. Details from Keith Farthing ZEOARS. Tel: (01376) 347736.

CHELMSFORD ARS. G0MWT. Meets at the Marconi Social Club, Beehive Lane, Chelmsford, Essex. Details from David Bradley M0BQC. Tel: (01245) 602838. E-mail: cars@omwt.org.uk

CLACTON RADIO CLUB. G3CRC. Details from Mr D. Fitzpatrick M0CHL.

COLCHESTER ARS. G3VCO. Meets at the Colchester Institute, Sheepen Road, Colchester. Details from Frank R. Howe G3FUJ. Tel: (01206) 851189.

DENGIE HUNDRED ARS. G0UTT. G7SDH. Meets at the Henry Samuel Hall, Maryland, Essex. Details from Mrs Christine Wade. Tel: (01621) 772986.

HARLOW & DARS. G6JUT. Meets at the Mark Hall Barn, First Avenue, Harlow, Essex. Details from Len Brockstone G7UFF. Tel: (01279) 832700. Fax: (01279) 864973.

HARWICH ARC. G0GRH. Meets at the Park Pavilion, Barrack Lane, Harwich. Details from Eugene Kraft G4TFP.

LOUGHTON & EPPING FOREST ARS. G4QNP. Details from Marc Utchman G0TCC. Tel: 0208-502 1645/(07803) 023501.

SOUTH ESSEX ARS. G4RSE. Meets at the Paddocks, Long Road, Cayser Island, Essex. Details from Mrs Betty Maynard G6LUU. Tel: (01268) 695474.

SOUTHEND & DRC. G5QK. Meets at the Alexandra Yacht Club, Cliffon Parade, Southend-on-Sea, Essex. Details

from Alan Radley G0TTM. Tel: (01268) 741229.

STANFORD-LE-HOPE & DARL. G4SLH. Meets at the St Joseph Parish Rooms, Scraton Road, Stanford-le-Hope, Essex. Details from Ken Thompson G4PAD. Tel: (01375) 671238.

VANGE ARS. G3YCW. Meets at the Barnstable Community Centre, Basildon, Essex. Details from Mrs D. Thompson. Tel: (01268) 552606.

## KENT

BREDHURST RX & TX SOC., G0BRC. Meets at Rock Avenue Working Mens Club, Rock Avenue, Gillingham, Kent. Details from Mr T.M. Wheeler G7MIM.

CRAY VALLEY RS. G3RCV. G1RCV. Meets at the Progress Hall, Admiral Seymour Road, Eltham, London SE9. Details from Richard Perzyna G8ITB. Tel: (01689) 602948.

DOVER RADIO CLUB. G3YMD. Meets at the Dover Grammar School for Boys, Astor Avenue, Dover. Details from Brian Hancock G4NPM. Tel: (01304) 821007.

EAST KENT RADIO SOCIETY. G0EKR. Meets at St Bartholomew's Church Hall, Heme Bay. Details from Paul Nicholson G3VJF. Tel: (01227) 743070. FAX: (01227) 742288.

HASTINGS ELEC. & RC. G6HH. G1HHH. G6LL. Meets at West Hill Community Centre, Croft Road, Hastings, East Sussex. Details from Mr J. Boothroy G6M1J. Tel: (01233) 732656.

HILDERSTONE ARS. G0HRS. Meets at Hilderstone A.E.C., Broadstairs, Kent. Details from Mr G. Shaw M0AQA.

HOME COUNTIES ATV GRP. G6HCT. Meets at the Bnfield Club, Binfield (near M4/110). Details from Mr A. Brooker G4WZ.

MAIDSTONE YMCA ARS. G3TRF. Meets at YMCA Sports Centre, Melrose Close, Maidstone, Kent. Details from Colin Wilson G0VAR. Tel: (01622) 736636.

MEDWAY ARTS. G5MW. G6MWA. Meets at Tunbury Hall, Catkin Close, Tunbury Avenue, Walderslade, Chatham. Details from Mr J. Hale G3FTH.

NORTH KENT RS. G4CW. Meets at The Pop-in-Parlour, Graham Road, Bexleyheath, Kent. Details from Mr A.V. Frobbers G8MLQ. Tel: (01474) 365694.

SWALE ARX. G4SRC. G6SRC. Meets at the Ivy Leaf Club, Dover Street, Sittingbourne, Kent. Details from Gordon Powell M0AKA. Tel: (01795) 665559.

THE MORSE CLUB. G0XOXE. Details from Mr K. Churchill M1CZA. Tel: 0208-301 5067.

WEST KENT ARS. G3WKS. Meets at the St. Marks School Hall, Tunbridge Wells, Kent. Details from Malcolm Sheppard G4FWG. Tel: (01892) 652272.

## NORFOLK

ANGLIA TELEVISION ARS. G0TVX. Meets at Anglia TV, Norwich NR1 3JG. Details from Jim Bacon G3YLA. Tel: (01603) 615151.

GREAT YARMOUTH RS. G3YRC. Meets at the Bradwell Community Centre, Bradwell, Great Yarmouth, Norfolk. Details from Mr A.D. Bedford G3XHU.

GRESHAM'S SCHOOL ARC. G3XPX. Details from Rev. R.N. Myerscough G3PXO.

KINGS LYNN ARC. G3XYZ. Details from Derek Franklin G0MQL.

NORFOLK ARS. G4ARN. Meets at Norwich Aviation Centre, Norwich Airport. Details from John Wadman G0VZD. Tel: (01953) 604769.

NORTH NORFOLK ARC. G8ZMC. Details from Keith J. Martin G0GFQ. Tel: (01263) 588506.

## SUFFOLK

BURY ST EDMUNDS ARS. G2TO. Meets at the Cuford School Cuford, Bury St. Edmunds, Suffolk. Details from George Woods G3LPT.

FELIXSTOWE & DARS. G4ZFR. Meets at the Orwell Park School, Nacton, Near Ipswich. Details from Paul Whiting G4YQC. Tel: (01473) 642595.

FRAMLINGHAM COLLEGE ARC. M0CBB. Tel: (01728) 727232.

IPSWICH RADIO CLUB. G4IFC. Meets at the Golden Hind, Nacton Road (3rd Wednesdays at The Hollies, Bucklesham Straight Road), Ipswich. Details from Keith Gaunt G7CIY. Tel: (01394) 420226.

LEISTON ARC. G0TUQ. Meets at Leiston Town Athletic Assn., Victory Road, Leiston, Suffolk. Details from Sam Lyliate G4FD. Tel: (01728) 832959.

LOWESTOFT DRS. G3JRM. Meets at The George Barrow Hotel, Oulton Road, Lowestoft. Details from Phil Holden G0JSG. Tel: (01502) 585448.

MARTLESHAM RS. G4MRS. Meets at the BT Laboratories, Martlesham Heath, Ipswich, Suffolk. Details from Darren Hatcher. Tel: (01473) 644475.

SUDBURY & DRA. G0SWI. G7SRA. Meets at the Old School, Wells Hall Road, Great Combert, Sudbury, Suffolk. Details from Brian Panton G1TWV.

SUFFOLK DATA GROUP. G87MXM. Details from Peter Pryke G8HUE. Tel: (01473) 631313.

## NORTH WALES

### CLWYD

CONWAY VALLEY ARC. G6WTM. Meets at the Studio, Penrhos Road, Colwyn Bay, Clwyd. Details from Mr R.W. Evans G6PMC. Tel: (01745) 855068.

HALKYN & DARS. G6SHRG. Details from Mr D. Austin G1XHG.

NORTH WALES RS. G6WNR. Meets at the Old YMCA, Queens Drve, Colwyn Bay, Clwyd. Details from Ted Shipton G6WDSJ. Tel: (01745) 336939.

WREXHAM ARS. G64WXM. Meets at the Community Centre, Maesgwyn Road, Wrexham. Details from Mr P. Moran G6WDF.

### GWYNEDD

MERION ARS. G64ZLP. Meets at the Royal Ship Hotel, Dolgellau, Gwynedd. Details from Gervase Chavasse G64UR. Tel: (01341) 421028.

PORTHMADOG & DARS. G6WOMVI. Meets at The Yacht Club, The Harbour, Porthmadog, Gwynedd. Details from Mr G. Cadwaladr M1WDFN.

THE DRAGON ARC. G64TTA. Meets at the Ebenezer Church Hall, Lon Fael Graig, Llanfawr, Isle of Anglesey. Details from Stewart Rolfe G6OETF. Tel: (01248) 362229.

## POWYS

POWYS ARC. G64HVN. Meets at the ATC HQ, Park Lane, Newtown, Powys. Details from Mrs Jean Brown 2W1CEZ. Tel: (01686) 640814.

## SOUTH WALES

### DYFED

ABERPORTH YMCA. G64SZV. Meets at the Hut B17, The Airfield, Aberporth. Details from Mr G. Carruther G64HGJ. Tel: (01239) 811205.

ABERYSTWYTH & DARS. G6W0ARA. Meets at the Scout Hut, Plasgwyn Avenue, Aberyystwyth. Details from John Woodward G6WIDK. Tel: (01970) 890657.

CARMARTHEN ARS. G64YCT. Meets at The Aelwyd Care Home, Carmarthenshire County Council, Tregynwr Road, Llangunifor, Carmarthen SA31 3BS. Details from Mr W.D. Hughes G64ZXL. Tel: (01267) 231359.

CLEDDAU ARS. G6W0YG. Details from Trevor Perry G64DJK. Tel: (01646) 600725.

LLANELLI ARS. G6W0EQ. Meets in the Furnace Community Hall, Furnace Square, Llanelli. Details from Roy Jones G6W0ZK. Tel: (01554) 820207.

PEMBROKESHORE RS. G6W0EJ. Meets at Furzy Park Community Centre, Furzy Park, Haverfordwest, Pembrokeshire. Details from Ian M. Jones M6WOCAB. Tel: (01437) 763028.

### GWENT

ABERGAVENNY RS. G64GFL. Meets at the Hill Residential College, Pen-y-Pond, Abergavenny, Gwent. Details from Glyn Hughes G6W0DY. Tel: (01633) 483186.

BLACKWOOD & DARS. G6W8WG. Meets at the Oakdale Comprehensive School, Oakdale, Blackwood, Gwent. Details from John Evans G6W8IT. Tel: (01495) 225178.

EBBW VALE COLLEGE RS. G6W0IW. Meets at the Gwent Tertiary College, Ebbw Vale Campus, College Road, Ebbw Vale, Gwent. Details from Mr T. Hayden G6W0HCN. Tel: (01495) 305192.

NEWPORT ARS. G64EZW. Meets at the Brynglas Community Centre, Brynglas Road, Newport, Gwent. Details from Paul Nicholls.

PONTPOOL ARS. G6W3RN. Meets at the Settlement, Rochill Road, Pontypool, Gwent. Details from Graham Smith G6W0OZL.

## MID-GLAMORGAN

BRIDGE & DARL. G6W4LN. Meets at the Club Bynnynein, Bynnynein, Bridgend. Details from Alun Hulmes. Tel: (01656) 721574.

HOOPER (MERTHYR) ARC. G6W3RD. Meets at the Hooper Sports Pavilion, Hooper Ltd., Pentrebach, Merthyr Tydfil, Mid Glamorgan. Details Robert Cummings G6W0RVG.

MID GLAMORGAN ARG. M6WOCNA. Meets at Aberkenfig Sports & Social Club. Details from Mervyn Carey G64VSE. Tel: (01656) 734668.

## SOUTH GLAMORGAN

BARRY ARS. G6W3VKL. Meets at Sully Sports & Leisure Club, South Road, Sully, S. Glamorgan. Details from Richard Mortimore G64WBJ. Tel: (01446) 738756.

HIGHFIELDS ARC. G6W4LFO. Meets at the Highfields Physically Handicapped Centre, Ailensbank Road, Cardiff. Tel: (01222) 561542.

## WEST GLAMORGAN

PORT TALBOT (BS PLC) ARS. G6W3EOP. Meets at the British Steel PLC Sports & Social Club, Margam, Port Talbot, West Glamorgan. Details from Mr J. Chinnock M6W0AGE.

SWANSEA ARS. G6W4CC. Meets at the Applied Sciences Building, Swansea University. Details from David Williams G64BNJ. Tel: (01792) 519046.

## SCOTLAND WEST & WESTERN ISLES

### CENTRAL REGION

FALKIRK & DARS. G6W0FRC. Details from Scott Waterall G6W0KBU.

STIRLING & DARS. G6M6NX. Meets at Baneath Industrial Estate, Throsk, Nr. Stirling. Details from John Sherry G6W0AZC. Tel: (01324) 824709.

### DUMFRIES & GALLOWAY

WIGTOWNSHIRE ARC. G6M4RIV. Meets at the Aird Unit, Stranraer Academy, Stranraer, (entrance from Cairnport Road). Details from Neil Macdonald G6M4LQS.

### STRATHCLYDE

AYR ARC. G6M0AYR. Meets at the Cridal Leisure Centre, Ayr. Details from Peter Sturgeon M6M0BQP.

CENTRAL SCOTLAND FM GROUP. RS38728. Details from Thomas Stalker G6W7ZU. Tel: (01698) 816793.

DALRY ARG. M6M0ARG. Meets at The Turf, In Dalry Court, Hill Street, Dalry. Details from Alex McKeeman M6M0ABM. Tel: (01294) 823295.

DUNNOON & DARS. G6M0CDD. Meets at the Edward Street Community Centre, Edward Street, Dunoon. Details from A.B. Horton G6M0BUL. Tel: (01369) 840217.

HELENSBURGH ARC. G6M4HEL. Details from G. Capstick G6W0OAF. Tel: (01436) 675922.

INVERCLYDE ARC. G6M0QNK. Meets at the Cardwell Bar, Cardwell Road, Gourcock, Strathclyde. Details from Andrew Gwens G6M3YOR. Tel: (01475) 638226.

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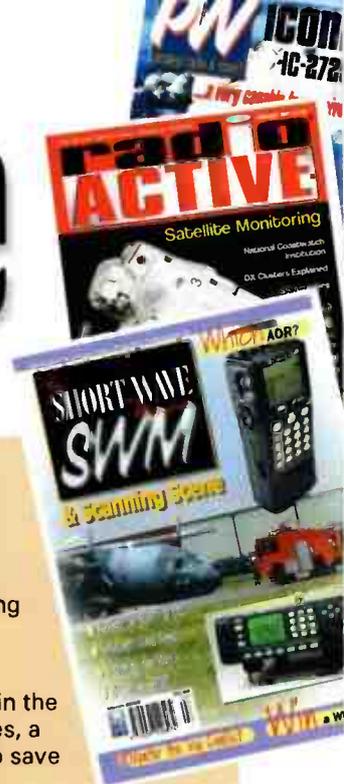
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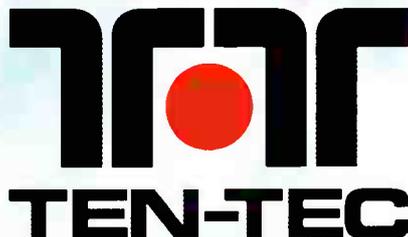
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*John Wilson, SWM April 2002...Third order intercept point measured at a nominal 14MHz was +15dBm with a 50kHz signal spacing as used by TenTec themselves (handbook specification +10dBm). Dynamic range was 98dB against the specification of 90dB, so all better than manufacturer's figures. The RX-320 has a wide band front-end, so I expected the second order intercept point to be quite modest, but it measured at +53dBm with a dynamic range of 92dB... it is remarkably good when compared with any receiver in the middle-price class, and considerably better than the Lowe HF150 which also had a wide-band front end... In conclusion, the TenTec RX-320 is an amazingly satisfying receiver to use, and despite its simple appearance when you look inside, it really does perform and has perhaps come the closest yet to marrying the power of a PC with a high performance short wave receiver. The tuning action is smooth, the a.g.c. system works properly, the d.s.p. is excellent...*

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There have been many enquiries regarding the suitability of the TenTec RX-320 for DRM reception using the Fraunhofer software decoder. As the RX-320 has an IF of 12kHz (where the DSP is implemented), it made an interesting project for testing. The 'full' findings of the UK workshop have been posted to the DRM page of the AOR UK web site:

[http://www.aoruk.com/drm.htm#rx320\\_drm](http://www.aoruk.com/drm.htm#rx320_drm)

A summary is given here, check the above web page for details... The RX-320 is conveniently designed so that the output from the main receive (top) board is at 12kHz. Its suitability for DRM has been briefly checked by disconnecting the output feed from the mini coax connector at the rear of that board and plugging in a lead from the PC sound card directly into the socket. The output to this socket is capacitively coupled so there is no need to worry about floating DC voltages. Doing it this way has the disadvantage that no signal is then being passed through to the DSP section of the radio. Ideally a separate capacitor feed could be taken from pin 1, IC U4A (TL082). The output was taken to the sound card mic input to allow some control of the input level.

The signal monitored was instantly decoded producing intermittent audio from a very marginal signal (The AOR AR7030-DRM producing similar results). In a period of clear signal reception, a good, uninterrupted period of audio was decoded with no obvious problems. The output wave form appeared not quite as clear (steep sided with flat top) as that produced by the AOR AR7030 but it was quite reasonable and perfectly usable. *Note that Fraunhofer PC software is required for DRM demodulation.*



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