

FOR THE RADIO LISTENER

# shortwave magazine

February 1994 £1.90 ISSN 0037 - 4261

# WIN

A Dressler ARA 2000 50MHz - 2GHz Active Antenna in Our Reader Survey Competition

## MARINE ISSUE

- UK Coast Radio Stations in the 1990s
- Marine Navigation Aids
- Global Maritime Distress & Safety System

*Reviewed*

- Yupiteru MVT-3100 Multi-band Receiver
- Timestep PDUS

*Plus*

- Modifying the Sangean ATS-803A
- Restoring an R1155

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# short wave magazine

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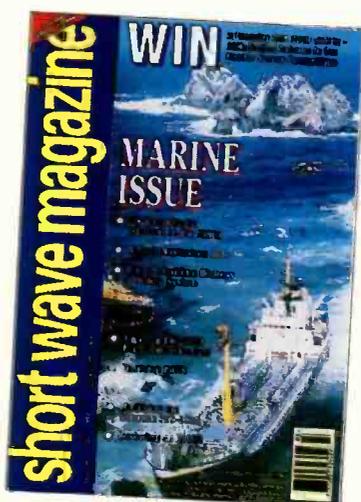
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**Cover:**  
This month's cover photo, kindly supplied by the RNLI, shows the St Peter Port (Guernsey) lifeboat *Sir William Arnold* attending the wrecked *Point Law* on the coast of Alderney. A French helicopter also assists in the evacuation of the crew.

Photo: A M Perry



**DISCLAIMER.** Some of the products offered for sale in advertisements in this magazine may have been obtained from abroad or from unauthorised sources. *Short Wave Magazine* advises readers contemplating mail order to enquire whether the products are suitable for use in the UK and have full after-sales back-up available. The Publishers of *Short Wave Magazine* wish to point out that it is the responsibility of readers to ascertain the legality or otherwise of items offered for sale by advertisers in this magazine.

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Help us to provide the SWM you want to read and you could win a Dressler active antenna.

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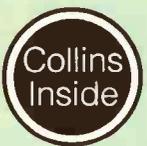
## good listening



# The New Classic

## AR3030 General Coverage Receiver

**\*Collins mechanical filter inside**



When the AR3030 was first placed onto the drawing board about 15 months ago, the R&D team at AOR had the dream of producing a high quality DDS (Direct Digital Synthesizer) receiver with excellent filtering characteristics offered by the legendary \*Collins mechanical filters. This dream has now come true, a feat rarely achieved by any manufacturer whether large or small. As a shortwave listener you too can enjoy the experience of this very special marriage of high technology and classical styling.

Most receivers employ ceramic filters, such filters offer good performance and reasonable cost. However the "best" kind of filter is the mechanical resonator filter, pioneered and still manufactured by the \*Collins Division of Rockwell International. In contrast to ceramic filters, \*Collins mechanical I.F. filters are more expensive and rarely used in any but the very top of the range and professional equipment.

Our aim here at AOR has been to produce a general coverage receiver using the \*Collins 6kHz AM mechanical filter fitted as standard yet at an affordable price for most shortwave listeners around the World. We believe that only the very best receiver design deserves the \*Collins mechanical filter, and feel our R&D team have succeeded with this goal. It is very easy to appreciate the true effectiveness of the \*Collins AM mechanical filter on today's crowded medium and shortwave bands especially in Europe after dark.

We also believe DDS is the best method available today to produce the cleanest signals, absolutely essential for high performance receive capability especially on crowded bands containing many strong signals. There are two other filters fitted as standard, these being 2.4kHz for SSB/FAX/CW and narrow AM/S.AM & 15kHz for NFM. Additional filter options include a \*Collins 7 resonator mechanical 500Hz filter for narrow CW operation and a \*Collins 8 resonator mechanical 2.5kHz filter for even better selectivity on SSB.

Our "Collins inside" logo and use of name has been fully approved by Collins Rockwell and we are proud of that fact. Our pride will be lifted even higher should other manufacturers be brave enough to follow our example in the near future.

The AR3030 boasts a wide frequency coverage from 30kHz to 30MHz and all mode reception 'as standard': AM, S.AM (synchronous), NFM, USB, LSB, CW & FAX with a minimum tuning step of 5Hz. Frequency stability and alignment is excellent featuring a temperature compensated crystal oscillator (TCXO) fitted as standard.

The AR3030 has a number of unique facilities to offer. In particular the BFO (Beat Frequency Oscillator) is switchable on USB/LSB/CW and FAX modes. During 'normal' operation the AR3030 uses true carrier re-insertion techniques for SSB reception, this ensures ease of use and good audio quality. However should adjacent interference be encountered, the BFO may be switched on so that the main rotary tuning control can be used to tune away from interference and the BFO used to recover readable audio thus provide a simple but effective manual form of passband tuning.

Operation is from a nominal 13.8V DC input or from internally fitted dry batteries for short duration use to provide greatest flexibility while operating from a fixed or portable location. Two optional internally fitted VHF converters are also planned.

**AR3030 all mode receiver with \*Collins AM mechanical filter and TCXO, includes mains power supply**

**£699.00 inc VAT.**

**AOR (UK) Ltd.**

Adam Bede High Tech Centre, Derby Road, Wirksworth,  
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\*Collins is a trade name of Rockwell International.



# editorial



**Y**ou can help me in my task of providing you with the magazine you want to read. How? By taking a few minutes to fill in the Reader Survey Form included in the centre of this issue. By way of an incentive you will get a free entry into our Prize Draw for a Dressler active antenna. If you haven't already filled it in, do it now - before you forget.

## Volume Numbers

Something went wrong with the issue numbering system towards the end of last year and the volume number mysteriously increased by one with the October issue. To correct this and avoid a missing volume this issue is correctly identified as Vol. 52 Issue 2. Volume 53 will start with the January 95 issue. If you use the Volume Number for reference purposes please correct the October, November and December 93 and January 94 issues. The annual Index, published in the December issue, is not affected as the issues are referred to by Issue Month.

Dick Ganderton G8VHF

# letters

IF YOU HAVE ANY POINTS OF VIEW THAT YOU WANT TO AIR PLEASE WRITE TO THE EDITOR. IF YOUR LETTER IS PUBLISHED YOU WILL RECEIVE A £5 VOUCHER TO SPEND ON ANY SWM SERVICE

The Editor reserves the right to shorten any letters for publication but will try not to alter their sense. Letters must be original and not have been submitted to any other magazines. The views expressed in letters published in this magazine are not necessarily those of *Short Wave Magazine*.

## Dear Sir

In the USA we have a licence-free experimenters' band at 160 to 190kHz. One watt and 15 metre antenna is maximum. Receiving techniques must parallel those of low-frequency broadcast bands - except that very narrow bandwidth is useful to receive Morse.

I suspect high perfection has been achieved in your s.w.l. community. I want to correspond on 'Ham' with those interested.

**David Jones AD4NR**  
1600 Hilton Avenue, Columbus, OH 31906

*Has anyone outside the USA heard these signals? - Ed*

## Dear Sir

Having contacted this awful 'flu virus that's going around, it's led me to have some sleepless nights. One night (7 December to be exact) I decided to get up and do a bit of DXing.

I was amazed to come across a station from Russia. It was a religious station who's name and address I didn't catch because it was read out too quickly, plus it was impossible for me to write down the words as I couldn't understand them!

I caught it at 0350UTC on Short Wave Magazine, February 1994

41m/7.105MHz. I think the station was Radio Neaster using R. Moscow's transmitters. The station finished at 0400UTC (as it was 0300 to 0400). The address, as I said, was pronounced quickly, but I caught the town name, I think, being Trasnister (appropriate name, I thought).

In the CIS they said that it is scheduled for 7.105MHz on 2100UTC, and then 0300-0400UTC, but I've yet to log it, have any of your readers logged it yet?

**Lee Williams**  
Birmingham

## Dear Sir

Why is it getting harder and harder to receive QSLs from ILR stations these days? As an avid QSL collector, I am becoming perplexed by the number of non-replies to reception reports from these stations. I have tried sending friendly letters with my reports, stamped addressed envelopes and even prepared postcards, but with very little result, my success rate being about 50%

The most notable non-verifiers are Capital Gold - London (5 reports), Brunel Gold - Swindon and Bristol (6 reports each) and Radio 210 - Reading, who finally verified after 7 reports over two and a half years.

Have your readers any tips on how to receive these elusive QSLs. Thank you for your help and I look forward to reading the next issue of your magazine.

**Mr T. Vaughan**  
Southampton

*We have received other letters on the difficulties of obtaining QSLs from both UK and foreign stations and would be pleased to hear from any readers who feel they have a higher than average success rate. Do we have any readers working in ILR? - Ed.*

## SWM SERVICES

### Subscriptions

Subscriptions are available at £22 per annum to UK addresses, £25 in Europe and £27 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 £39(UK) £42 (Europe) and £45 (rest of world).

### Components for SWM Projects

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

The printed circuit boards for SWM projects are available from the SWM PCB Service, Badger Boards, 87 Blackberry Lane, Four Oaks, Sutton Coldfield B74 4JF. Tel: 021-353 9326.

### Back Numbers and Binders

Limited stocks of most issues of SWM for the past five years are available at £2.00 each including P&P to addresses at home and overseas (by surface mail).

Binders, each taking one volume are available for £5.50 plus £1 P&P for one binder, £2 P&P for two or more, UK or overseas. Please state the year and volume number for which the binder is required. Prices include VAT where appropriate.

Orders for back numbers, binders and items from our Book Service should be sent to: **PW Publishing Ltd., FREEPOST, 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 or Visa) are also welcome by telephone to Broadstone (0202) 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 Poole (0202) 659950.

# letters

## Dear Sir

A short while ago I purchased an MVT-7100 scanner along with a base station antenna, more commonly known as a discone. While the discone was not extremely expensive, (around £30), it does justice to the scanner and I am quite pleased with its performance.

However, there is the cause that has prompted me to write in. - To the best of your knowledge, have you ever heard of a musical discone? If not, perhaps I could sell you one.

The problem began about a week after I had installed it on the chimney stack. It was in the early hours of Sunday morning that it happened! HOWLING, WHINING, WHISTLING, DRONING, the notes changing in pitch to the force of the wind.

Needless to say, it's no longer up there! The discone is

completely manufactured of solid aluminium rods, eight in total with eight short elements at the top, (a typical discone).

On inspection on the antenna, the fitter found the noise to be transmitted down the pole and into the chimney lining, thus acting as a wind tunnel. Can you imagine the noise? It was torture to say the least! I am now in the process of buying a Scanmaster from Nevada.

Surely I am not the first to be cursed with this wretched noise.

**A. Webb  
Gwent**

*My own v.h.f./u.h.f. amateur array, consisting of large beams for 50, 144 and 430MHz, makes some strange noises in high winds, but not as bad as described. I too would like to know of any ways readers have found to reduce this problem. - Asst Ed.*

Cairo, Dubai, etc. can be received almost as well as the BBC.

The adapter I use for power is quite a simple one costing under a fiver from a local discount store.

All this is obtained using the antenna as purchased, as per instructions, but I wonder if this is where Mr Grant went wrong.

On one occasion I wanted to use the set in another part of the house which meant extending the lead supplied with it and attached to the whip, using an extension lead of around four to five metres. This not only cut the signal strength by more than half, but caused the adapter to over-heat and, when trying to overcome this by the use of batteries, flattened them in about fifteen minutes. Needless to say, I abandoned this idea, and back in its old position, it's working fine again.

I hope this will be of help.  
**G. Robinson  
Leeds**

## Dear Sir

I was very interested to read the letter from Mr D A Grant of Worcestershire in your January issue and his experience with the Sony AN1 antenna.

I purchased one about two years ago, after noting the success of the various people who subscribe to your Band Report pages, and have had great success with it.

Living on a city housing estate and being unable to use an outside antenna, I mounted this in the loft and used it in conjunction with my Sony 2001 and Kenwood TR600 receivers.

It has been a great success and I can easily listen to amateurs chatting to each other from most parts of the world including Japan, India, the Americas and all the Russian continent, plus aircraft over the Atlantic calling Gander, New York, and the RAF on flights over Gibraltar and Cyprus. The main broadcast stations such as HCJB (South America), Israel,

## Dear Sir

I appreciate that you have only recently published one of my letters, but having read the letter from K Brown (G7EXO) in the January 1994 issue, I felt I just had to reply.

Why is it that the only letter I read campaigning for the abolition of the Morse Test always seem to be written by those people who, for one reason or another, haven't passed it? These letters moan on with various reasons from outdated modes to unfair testing. Reading between the lines, would it not be true to say that for the majority of people, the Morse Test equates to another examination for which people are not prepared to dedicate some more time and effort to?

Having read many such letters on the subject, I have yet to see any mention of the fact that in NO way has anyone 'moved the goal post after the game begun'. We are all aware, when setting about studying for the RAE, that the Morse Test must be passed if we wish to operate on the h.f. bands. Nobody hides this fact from us or slips the information to us just after sitting the RAE but you wouldn't know this from the content of these letters.

Learning the Morse Code can be likened, in a lot of respects, to a diet. In order to obtain the final result you have to stick with it. In a diet, it's very easy to have the odd snack, but this is usually accompanied by the gaining of the odd pound in weight. The Morse is similar in the respect that it's easy to miss the odd night of practice, but this is usually accompanied by a slip back in speed or the odd letter not learnt. Eventually, with the diet, no weight is lost. With the Morse, the test is failed. I passed the RAE in 1983 but finally passed the Morse Test in 1988. During the five years between, I tried to settle down and learn the Morse of numerous occasions without success. It finally took three months of 30 minutes practice per night before I cracked it. No one told me it was easy and it wasn't.

Is this fact that a particular test or examination is difficult to obtain really a sufficiently good reason to abolish it? If it is, then I hope they never apply the same logic and reasoning to the Driving Test.....or the RAE for that matter!

**Chris Carrington G0IYZ/G-20365  
Derby**

*This topic has been using up space in the Amateur Radio press for many years. Rather than continue this debate could we hear from those who have tackled the Morse Test with their tips on how to succeed, and their pit-falls to avoid. - Ed*

Short Wave Magazine February 1994

## Dear Sir

I read with horror the report from Mr T Brown GONSA on lightning in the September issue. Being a TV/Video engineer, I come across quite a few lightning strikes.

If you disconnect your PL259 or BNC plug and leave it dangling on either work station or carpet and you get a direct hit, the lightning will find its way to the nearest earth, e.g., radiator or mains socket. Lightning can travel any distance from the end of your cable to earth from 50mm to well over 6 metres. Be prepared to call out the Fire Brigade or ambulance if you're in the way.

Even without a direct hit, electrostatic charges damage front ends and micros and even with the radio disconnected it can still destroy memory or micros.

There are only a few ways of nearly full protection:

1. As stated, electrostatic surge protectors (these will protect against indirect strikes).
2. Make sure your neighbour's aerials are a lot higher and better earthed than yours. (Your neighbour may not be very impressed with this!)
3. Have your aerials on a crank arm (so you can reduce the height), this may be inconvenient.
4. The best way is to fit a socket to a metal plate, take an earthing strap (say as thick as the mains earth from the electricity meter to your fuse box) and feed it outside to an earthing stake, making sure the aerial mast is earthed as well. In time of storms disconnect your equipment and fit a plug with a shorting connection, then just wait for the almighty bang!

**M. Robinson  
Essex**



# grassroots

## Club Secretaries:

Send all details of your club's up-and-coming events to: Lorna Mower, Short Wave Magazine, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Please tell us your County and keep the details as brief as possible.

\* Short Wave Magazine & Practical Wireless in attendance

## rallies

**February 13:** 3rd Northern Cross Rally is being held at the Rodillian School on the A61 between Leeds and Wakefield (near junction M1/M62). Doors open at 11am, 10.30am for disabled visitors and Bring & Buy. Usual dealers, ample parking, bar & refreshments, Morse tests. Talk-in on S22. **Dave Gray** on (0532) 827883.

\***February 20:** The Great Northern Rally, G-MEX, City Centre, Manchester. All the usual attractions, including free tea and coffee until 10am, cafeteria for hot and cold refreshments, licensed bar, Bring & Buy, Talk-in on 144MHz via GB1GMX. Admission £1.50, doors open at 10.30, close at 5pm with priority for the disabled. Further information on 061-748 9804.

**February 26:** Tyneside Amateur Radio society are holding their eighth annual rally at the Temple Park Centre, South Shields. 18,000 sq. feet of floor space, all one level, direct access to the exhibition floor, ample car parking for exhibitors and visitors, comprehensive catering and leisure facilities. **Jack GODZG.** 091-265 1718.

**February 26:** The 9th Rainham Radio Rally is being held at a new and larger venue at the Rainham School for Girls, Derwent Way, Rainham, Gillingham, Kent. Junction 4 M2, well signposted. Traders, ample parking, Bring & Buy, refreshments. Admission £1, children under 16 Free. Talk-in on S22. **GJJB0** on (0634) 365980.

\***March 12/13:** The London Amateur Radio & Computer Show will be held at the Picketts Lock Centre, Picketts Lock Lane, Edmonton, London N9. Large trade presence, free parking, lectures and disabled facilities. Bring & Buy, special interest groups, talk-in on S22. (0923) 893929.

\***March 20:** Norbreck Amateur Radio, Computing & Electronics Exhibition, Norbreck Castle Hotel, Queens Promenade, Blackpool, Lancashire. Extended free car parking with free shuttle service, novice licence details and demonstrations, Bring & Buy, competitions, refreshments, talk-in on S22. Doors open 11am (disabled entry with ramp from 10:45am) close 5pm. Admission £1.50, over-65s £1.00, under-14s free. **Peter Denton G6CGF.** Tel: 051-630 5790.

**March 20:** Tiverton South West Radio Club are holding their 1994 Mid Devon Rally at the Pannier Market, Tiverton. Doors open at 10am. Easy access, only minutes from junction 27 on the M5. Excellent free parking, two halls of trade stands, Bring & Buy stall and mobile snack bar. Further displays and full refreshment facilities in the club room bar which is open throughout the day. Talk-in on S22. **G4TSW, Mid Devon Rally, PO Box 3, Tiverton, Devon.**

**March 27:** Bournemouth Radio Society are holding their 7th Annual Sale at Kinson Community Centre, Pelhams Park, Milhams Road, Kinson, Bournemouth. Doors open at 10am. Talk-in from G1BRS on S22. Amateur Radio and Computer Traders, clubs and specialised groups. Admission £1 including free raffle ticket. **Ian G2BDV QTHR** on (0202) 886887.

If you're travelling long distances to rallies, it could be worth phoning the contact number before setting off to check all is well.

## AVON

**RSGB City of Bristol Group:** last Mondays, 7pm. The Small Lecture Theatre, Queens Building, University of Bristol, University Walk, Bristol. January 31 - Talk on Portishead Radio. **Dave.** (0272) 672124.

**Shirehampton ARC:** Fridays. January 28 - Acorn packet radio (SARCPD), February 4 - Chat night, 11th - Neural Networks. **Ron Ford G4GTD.** (0272) 770504.

**South Bristol ARC:** Wednesdays. Whitchurch Folkhouse Assoc., Bridge Farm House, East Dundry Rd, Whitchurch. February 2 - 10 metres activity evening and committee meeting, 9th - Demonstration on h.f. operation, 16th - Demonstration of practical Morse, 23rd - Soldering techniques and their use. For more information ring (0275) 834282 on a Wednesday evening.

## DERBYSHIRE

**Derby & DARS.** Wednesdays, 7.30pm. 119 Green Lane, Derby. February 2 - Surplus sale. Mrs Hayley Winfield, 2 Hilts Cottages, Crich, Matlock, Derbyshire DE4 5DD. (0773) 856904.

## DEVON

**Torbay ARS:** Fridays, 7.30pm. ECC Social Club, Highweek, Newton Abbot. February 18 - AGM. **Peter G4UTO.** (0803) 864528.

## ESSEX

**Vange ARS:** Thursdays 8pm, Barnstable Community Centre, Long Riding, Basildon, Essex. February 3 - Junk sale, 10th - Aerials - noise phasing, 17th - Home-brew, hints and tips, 24th - AGM. **Doris.** (0268) 552606.

## FIFE

**Dundee ARC:** Tuesdays, 7pm. College of Further Education, Graham Street, Dundee. February 1 - Lecture 'Oliver Heaviside' by Leslie McKenzie GM0TGG, 8th - Construction Night, 15th - Lecture 'Computers in your amateur radio station' by Allan Duncan GM4ZUK, 22nd - Construction Night. **GM4FSB,** 30 Albert Crescent, Newport-on-Tay, Fife DD6 8DT.

## GREATER LONDON

**Acton, Brentford & Chiswick RC:** 3rd Tuesdays, 7.30pm. Chiswick Town Hall, Heathfield Terrace, Chiswick, W4. February 15 - Kit building for beginners. **Colm G0JRY.** 081-749 9972.

**Wimbledon & DARS:** 2nd & last Fridays, 7.30pm. St Andrews Church Hall, Herbert Road SW19. January 28 - Backyard antennas. 081-540 2180.

## HAMPSHIRE

**Horndean & DARC:** 1st Thursdays, 7.30pm. Horndean Community School, Barton Cross, Horndean. February 3 - Junk sale. **S. Swain** (0705) 472846.

## HEREFORD & WORCESTER

**Bromsgrove ARS:** 2nd & 4th Tuesdays. Lickey End Social Club, Alcester Road, Burcot, Bromsgrove. February 8 - 'Noise bridge construction' by Derek Pearson of JANDEK, 22nd - RSGB Night. **Barry Taylor.** (0527) 542266.

**Droitwich Spa ARC:** 1st Tuesdays, 8pm. Droitwich Community Hall. Many interesting evenings already booked. **Jenny Read.** (0905) 771571.

## KENT

**Medway AR & TS:** Fridays, 7.30pm. Tunbury Hall Catkin Close, Tunbury Avenue, Walderslade, Chatham. February 11 - Construction contest, any item relating to radio. **Gloria.** (0634) 710023.

## LANCASHIRE

**Rochdale & DARS:** Mondays, 8pm. Cemetery Hotel, 470 Bury Road, Rochdale. February 21 - Talk by Rev. **George Dobbs G3RJV.** G7OAI. (0706) 376204.

## NORFOLK

**Norfolk ARC:** Wednesdays, 7.30pm. Formal meetings: University Arms, South Park Avenue, Norwich. Informal meetings: Hewett School, Hall Road, Norwich. February 2 - (formal) NARC Film Archives by Jack G3NJO, 9th - (informal) Night on air construction, QRP, 16th (formal) 'Science for all' by Arnold G3PTB, 23rd (informal) Night on air construction, QRP. **Sheila Snelling G0KPW.** (0603) 618810.

## NOTTINGHAMSHIRE

**Mansfield ARS:** 2nd Mondays, 7.30pm. The Polish Catholic Club, off Windmill Lane, Woodhouse Road, Mansfield. February 14 - Talk by Charles G4ZZG 'Are we being conned?' '3'. **Mary G0NZA.** (0623) 755288.

## SOMERSET

**Wincanton ARC:** 1st & 3rd Mondays, 7.30pm. The Community Lounge, King Arthur's Community School, Wincanton, Somerset BA9 9BX. February 7 - Worked all Britain by Mr D. Moore G1THG, 21st - Open evening - general discussion and activation on the clubs h.f./v.h.f./u.h.f. stations. **Dave G3ZXX.** (0963) 34360 Or **Andy G1FPW.** (0747) 51381.

## STRATHCLYDE

**Milton of Campsie ARS:** 2nd Wednesdays, 7.30pm. Milton of Campsie Community Hall. **Alan Foulis GM7PGT.** 041-779 1444.

## SUFFOLK

**Sudbury & DRA:** 1st Tuesdays, Wells Hall, Old School, Great Cornard, 3rd Tuesday, Five Bells Public House, Bures Road, Great Cornard. February 1 - Talk by Frank G3FIJ - Measurements in the shack, 15th - Natter and noggin at 5 Bells Public House. **Tony Harman G8LTY.** (0787) 313212

## WARWICKSHIRE

**Stratford-upon-Avon & DRS:** 2nd & 4th Mondays, 7.30pm. Home Guard Club, Main Street, Tiddington, Stratford-upon-Avon. February 14 - Test equipment evening, preferential treatment given to home-brew or converted equipment. **Mr A Beasley G0CXJ.** (0608) 682495.

## WILTSHIRE

**Salisbury Radio & Electronic Society:** Tuesdays, 7.30pm. 3rd Salisbury Sea Scout Hut, St Marks Avenue, Salisbury. February 1st - Talk by G7GWF 'A Radical New Licence Procedure'. **David Kennedy.** (0722) 330971.

**Trowbridge & DARC:** 3rd Wednesday. The Southwick Village Hall, Southwick, Trowbridge. February 2 - Surplus equipment sale, 16th - Social. **Ian G0GRI.** (0225) 864698.

## Contest News

The **International Listeners Association** has opened its contests to non-members. They have told us of two contests in February:

On 6 February the **1st Prefix Contest 1994** and on 13 February the **1st Set Listening Period 1994**. Both contests cover the period 0000 to 2400UTC, but you must select six hours total logging time.

For the Prefix Contest monitor the 1.8 and 3.5MHz amateur bands and log as many amateur prefixes as possible on each band. Multiply the totals from each band together to get the total points.

For the Set Listening Period monitor the 60 and 75metre broadcast bands and log as many stations as possible in the time allowed.

For both contests send a copy of your log and an entry fee of £1.00 to **K Burnell, Contest Manager, 91 Mablins Lane, Coppenhall, Crewe, Cheshire CW1 3RG** who, I'm sure, would be willing to send you details of other contests on receipt of an s.a.s.e.

All amateurs are invited to participate in the **EA RTTY Contest**, from 1600UTC Saturday 12 February to 1600UTC Sunday 13 February, organised by the **Union de Radioaficionados Españoles (URE)**.

This type of contest is a wonderful opportunity to hear those rare "contest only" stations and prefixes on the 10, 15, 20, 40 and 80-metre bands.

Copies of the full contest details are available from the SWM offices in Broadstone on receipt of an s.a.s.e.

**Contest organisers please note:** we are always please to publish details of listeners' contests or contests with a listeners' section and brief details of other contest if you get them to the SWM office well in advance of the date.

## Thanks from RAIBC

The Northern Ireland Area group of the Radio Amateur Invalid and Blind Club have asked us to convey their thanks to all who donated petrol tokens to them.

The RAIBC are still collecting Air Miles and petrol tokens and vouchers of all types. Send them to **Radio Amateur Invalid and Blind Club (NI Area), FREEPOST BE1769, Belfast BT15 3BR**. Further information can be obtained from **David Caldwell G10HOW, 59 Connsbrook Avenue, Belfast BT4 1JW, Tel:(0232) 471370 or Fax:(0232) 471980**.

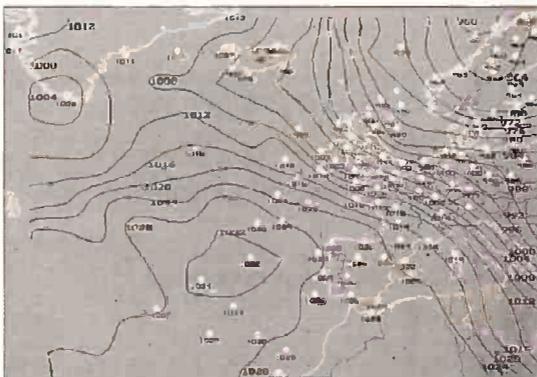
## Weather Plotting with Isobars

Weather information from shore, ship, oil rig and aircraft based observing stations is gathered and broadcast by radio immediately on receipt. This information is collected, processed and rebroadcast by national meteorological agencies in Europe every three hours. This information is, however, at least three hours old and the "raw" data could only be decoded as a meaningless jumble of letters and figures.

ICS Electronics Ltd produce ICS-SYNOP which will gather the "raw" data from a suitable h.f. receiver and present it in a fully zoomable map of Europe on the screen of any IBM-PC compatible computer to show wind, barometric pressure, temperature, cloud cover, etc. The latest version ICS-SYNOP III now includes isobars (or isotherms).

The package includes both the computer software and the radio interface. For further details contact **ICS Electronics Ltd, at Unit V, Rudford Industrial Estate, Ford, Arundel, West Sussex BN18 0BD. Tel: (0903) 731101 or Fax: (0903) 731105**.

*(We will be reviewing ICS-SYNOP III in a future issue of SWM)*



# news

## The Early History of Radio: from Faraday to Marconi by Gerald Garratt

Most books on the history of Radio start with Marconi and ignore the men and the work that went before. This new book deals with the "pre-history" of Radio and ends with Marconi.

The book outlines the sequence of development from Faraday's first prediction and concept of the electromagnetic field, the mathematical definition of the conditions for propagation of waves by Maxwell, the demonstration of their physical existence by Hertz, identification of the need for resonance between transmitter and receiver by Lodge and finally Marconi's successful practical application and "invention".

The late Gerald Garratt was formerly of the Science Museum, London.

This book is part of the Institution of Electrical Engineers "History of Technology" Series and is published at £19 including p&p within the UK. Add 10% for Europe or 15% for accelerated surface post elsewhere. Further details from **The Marketing Officer, IEE, Michael Faraday House, Six Hills Way, Stevenage, Herts. SG1 2AY. Tel: (0438) 313311 or Fax: (0438) 313465**

## Deutsche Welle Changes

The English language programmes from Deutsche Welle have left the long-established medium wave channel of 1269kHz and are now to be heard on 5.960 and 7.285MHz (short wave) at the new time of 2000 to 2050UTC.

The satellite service on Astra has also moved, it is now carried on an audio subcarrier of RTL Plus television (transponder 2) at 7.740MHz.

## Drake SW8 Receiver

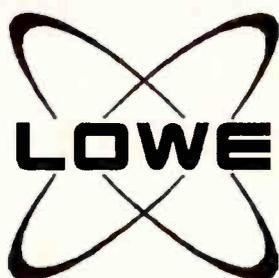
Nevada Communications have told us of the new Drake SW8 receiver that they expect to be released by the time the edition of SWM is published. This microprocessor-controlled, synthesised, world band receiver features continuous coverage from 500KHz to 30MHz with a.m., u.s.b. and l.s.b. modes, 116-136MHz (airband) a.m., and 87-108MHz (Band 2) f.m. with stereo available on headphones.

The receiver follows the modern trend of using a multi-function back-lit liquid-crystal display featuring a seven-digit frequency display. The 70 memories, which do not require a battery backup, store all the parameters associated with a particular communication channel including the frequency, mode, bandwidth, fast or slow a.g.c., r.f. attenuator and synchronous detector.

The receiver is powered from either six "D" cells or an external adapter and is expected to sell in the £500-£600 price range.

Further details from **Nevada Communications, 189 London Road, North End, Portsmouth, Hants. PO2 9AE. Tel:(0705) 662145 or Fax:(0705) 690626**.

*(SWM will be reviewing the Drake SW8 just as soon as we can get our hands on one! - Ed.)*



# Lowe Electronics

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**WE PROUDLY PRESENT....**

## **JPS Communications, Inc. NTR 1**



*The NTR1 is a sophisticated audio processing unit that uses Digital Signal Processing to provide superior operating characteristics to those attainable using analogue techniques. The unit takes the audio from the receiver and converts it into a digital bit stream, processes it and turns it back into an analogue signal.*

*Four pushbutton switches provide Power On/Off, Noise Reduction On/Off, Notch On/Off and Bandwidth Wide/Narrow. All functions are independent and can be used separately or together. Whenever a function is engaged, a companion LED is illuminated.*

*The NOTCH mode removes tones, whistles or heterodynes. This is useful when adjacent channel carriers are present or when CW or RTTY tones interfere with desired speech reception. When receiving CW or RTTY signals, the notch must be disengaged or nothing but key clicks will be heard!*

*The NOISE REDUCTION mode is known as "Dynamic Peaking", and works by forming dynamic bandpass filters around any coherent frequencies appearing within the audio passband such as the fundamental and harmonic frequencies of speech, CW tones, RTTY MARK and SPACE tones etc. These dynamic filters reject the non-coherent frequencies of white noise and other similar noise types. Therefore it can actually be used to accentuate or peak CW or RTTY signals, as well as eliminate white noise from them.*

*Here at last is a device that provides noise and tone elimination from wide band audio signals, yet leaves the desired speech with good fidelity.....and you can buy it from Lowe for just £199.00.*

*The NTR1 needs a REGULATED 12V DC power supply, at 800mA current. A suitable unit is available from us at £29.95.*

*Other JPS digital filters are also available - full details on request.*

**Wide band noise and tone remover. Works with any receiver or scanner.**

**Provides wide band operation for AM or FM signals (approx. 6.8kHz).**

**Narrow band operation for SSB, CW or Data reception (approx. 3.4kHz).**

**State-of-the-art Digital Signal Processing.**

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**Operates on receiver audio output - no modification required.**

**Built-in audio power amplifier**

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**Lowe Electronics Ltd**

**Chesterfield Road, Matlock, Derbyshire, DE4 5LE**

**Tel. 0629 580800 Fax. 0629 580020 FaxInfo. 0629 580008**

**PLEASE NOTE:  
OUR FACTORY AT  
"CROMFORD" IS PURELY  
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NO CUSTOMER FACILITIES.  
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RETAIL OPERATION AT  
"MATLOCK" OR TO  
OUR BRANCHES.  
OUR APPOLOGIES FOR ANY  
CONFUSION CAUSED!**

# AOR AR3030

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BE WITH US BY THE TIME  
YOU READ THIS! SEE IT AT LOWE'S!**

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HF150	Short-wave receiver: AM; AMS; SSB 30kHz to 30MHz	£389.00	D *
PR150	Active pre-selector	£235.00	D
HF225	Short-wave receiver: AM; SSB; CW; 30kHz - 30MHz.	£479.00	D
HF225 EUROPA	Limited edition HF225: Narrower AM filters etc	£699.00	D
SRX50	Portable SW RX; inc. LW; MW; & VHF/FM in stereo	£39.95	C
NRD535	Top class general coverage receiver	£1,695.00	D
ICR72E	General Coverage Receiver; inc Stand By Battery	£859.00	D
FRG100	Receiver 50kHz-30MHz	£529.00	D
ICFSW7600	Portable SW RX with VHF /FM B'cast : SSB with BFO	£169.00	D
ICFSW55	Portable SW RX	£269.00	D
ICFSW77	Portable SW RX	£369.00	D
VT125UK	VHF Airband scanner,	£189.00	D
VT225	VHF/UHF Airband, 100 memories	£269.00	D
MVT7000	500kHz - 1300MHz 200 memories, 10 search bands	£319.00	D
MVT7100	500kHz - 1650MHz, 1000 memories, 10 search bands, AM/FM/WFM/USB/LSB	£389.00	D
MVT8000	Base / mobile version of MVT7000	£389.00	D
R537S	Tuneable airband receiver	£79.95	B
R535	VHF/UHF Airband scanner, civil and military	£329.00	D
WIN108	VHF Airband scanner 20 mem,	£139.00	D
AR3000A	Base / mobile wide band receiver, all-mode, 400 memories, 150kHz - 2036MHz	£939.00	D

## ...DESERVE THE BEST ACCESSORIES

AN1	Active antenna	£52.95	C
MLB	Magnetic Longwire Balun	£39.95	B
MLBAMK1	MLB Antenna kit; 12.5m	£66.95	C
MLBAMK2	MLB Antenna kit; 20m	£76.95	C
MTA	Magnetic Transfer Antenna;	£179.00	D
DXONE	High quality active antenna	£289.00	D
AD370	Datong active antenna	£79.95	D
AT1000	SWL Antenna tuning unit	£89.95	B
FL3	Datong multimode audio filter with automatic notch	£149.95	D
ABF125	VHF airband filter NEW!	£24.50	B
D130N	25 - 1300 MHz discone c/w 15m COAX	£99.95	B
LAB	Airband ground plane antenna	£21.95	C
SCANMAS	Wide band receiving antenna 500kHz - 1300MHz	£39.95	C
JIM75	(JIM M75) Scanner pre-amp	£84.95	B
HB400	Mobile mount for scanners	£15.00	B
PSU101	Scanner PSU and stand	£29.95	C
MG125B	Airband mobile antenna with mag mount & cable with BNC plug	£29.95	C
LNA3000	Masthead pre-amp, 50 - 3000MHz	£159.00	C
AFG	Airband Frequency Guide (covering Civil & Military)	£5.95	B
ATR	Air Traffic Radio	£2.25	A
OAC	HF Oceanic Airband Guide, Spa Publications	£3.99	A
UKSD	UK Scanning Directory	£16.95	B
VUFG	The VHF/UHF Scanning Frequency Guide	£9.95	B
SCANNERS	Scanners 3rd edition,	£8.95	B
SCNR2	Scanners 2, International	£10.95	B

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Tel 0753 545255

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Strathclyde  
Tel 0236 721004

**SOUTH EAST**  
Communications House  
Chatham Road  
Sandling, Maidstone,  
Tel 0622 692773

**SOUTH COAST**  
27, Gillam Road,  
Northbourne,  
Bournemouth,  
Tel 0202 577760

Most branches and Head Office open Mon - Fri, 9.00am until 5.30pm and on Sat from 9.00am until 5.00pm. See you soon!

\* CARRIAGE CHARGES - A = £1.00, B = £3.00, C = £5.00, (POST) D = £10.00 (PARCELFORCE - NEXT WORKING DAY SERVICE)

## Broadcast Shorts

A leaflet from **Radio Vlaanderen International** arrived in the office inviting free membership of their International Listeners' Club. To join write to: **Brussels Calling, PO Box 26, 1000 Brussels, Belgium** for an application. Once this has been returned all you have to do is send two detailed reception reports per month and in return you will receive a QSL card and a copy of their *Club Echo* magazine.

## 48th WRTH

Just out is the 48th Edition of the radio listener's bible - the *World Radio TV Handbook* - affectionately known by the tongue-twisting acronym WRTH. This encyclopaedic guide has been recognised as the most authoritative and up-to-date publication of the world's long, medium and shortwave radio and television stations for many years. Designed for easy access, the book allows the user, with the right radio equipment, to tune into any of the world's radio and TV stations.

WRTH '94 was produced with computerised editing, ensuring that new information is inserted right up to the time the final pages were sent for printing

Available now from the SWM Book Service for £15.95 plus £1.00 UK p&p or £1.75 overseas surface.

## China Steps Up Jamming of BBC Broadcasts

The BBC announced that there has been a sharp increase in Chinese jamming of all frequencies carrying BBC Chinese language programmes in Mandarin. Originally the jamming, which began in 1989 at the time of the pro-democracy demonstrations, was confined to transmissions from the BBC relay station in Hong Kong. Now it has spread, according to BBC engineers, to all frequencies beaming BBC Mandarin broadcasts into China, including those from transmitters in the former Soviet Union.

Jamming is not being directed at BBC output in Cantonese and English for China, but Voice of America's Mandarin service is also being harder hit than previously.

No other countries are currently jamming the BBC. Iraqi interference to the BBC Arabic Service which started during the Iran-Iraq war and continued during hostilities in the Gulf has recently ceased.

## Vintage Service Manuals

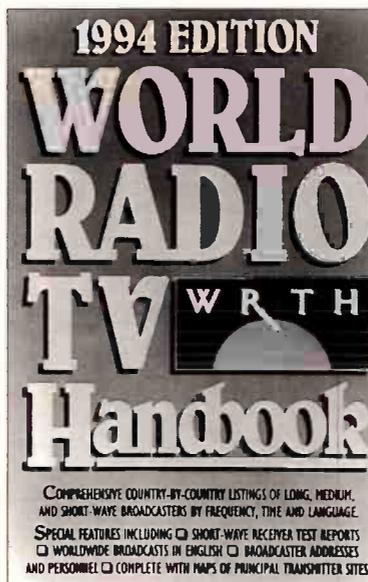
"**Savoy Hill**" Publications claim to have the world's largest and most comprehensive library of circuits and service manuals for vintage equipment. They can supply copies from the most comprehensive and varied library of technical information on domestic appliances, electrical, electronic, hi-fi, radio, military, and television equipment manufactured from the Victorian era up until the 1970s. Equipment from the UK, USA and Europe is included.

Material available includes service sheets, company manuals, test reports, original price, year verifications and historical information.

Write to **Warrens View, Wrington Hill, Wrington, Bristol BS18 7PR, or telephone (0934) 863491 (10am to 7pm).**

## Ready-made Loops

In September 1992 SWM published an article "The Living Room Loop". We are pleased to announce that these loops, for m.w. DX, are now available made to order from **Mr M Evans, 120 Loughton Way, Buckhurst Hill, Essex IG9 6AR**, to whom you should send an A5 s.a.s.e. for further details.



## Radio TVDX News

Problems in Malta with the officially allocated two u.h.f. channels of E21 and E29 being 'taken' by private stations operating on nearby Sicily. Overtures are being made to the Italian authorities to remove the invaders from the Maltese allocations.

Meanwhile 'Super One Television' on Malta has now opened test transmissions on the non-allocated Ch. E43!

Zambia will have her first taste of private broadcasting early 1994 with at least 12 bidders receiving licences for radio and TV stations. The radio stations will operate at v.h.f. f.m. Band 2. There are no plans to privatise the state-owned ZNBC in the short term. Nearby Kenya has received grant aid cash from Japan to modernise her radio and TV network system with three new TV transmitters at Kisii,

Nakuru and Webuye, a new studio complex at Ngong which should bring population coverage up to 60%.

RTL has been allowed to continue broadcasting into the Saxony (German) region using local Deutsche Telekom facilities. This is despite moves by the local licensing authority, the ruling was announced in Dresden recently.

Further to the news of 5 Doordarshan satellite channels (see 'Satellite TV News'), the broadcaster is to terrestrial broadcast the same channels on low power transmitters in the main centres of Calcutta, Bombay, Delhi and Madras using a mix of Band 3 Chs. E5,7 and u.h.f. Chs. E23, 26 and E29.

The Polish 2nd TV chain will be transmitting in PAL from January 1994 and dropping SECAM. It is intended that the

1st chain will also adopt the PAL standard from early 1995.

The Warsaw transmitter at the Palace of Culture has apparently been unwell and local viewers have suffered 2 months of interruptions during repairs to the aged transmitting system. The press report suggests the installation is 38 years old! Polsat, the satellite channel is being granted a licence/franchise for ten years to create a nationwide terrestrial network.

'Telefis na Gaeilge' is a Gaelic language channel to open across Eire during 1994 initially running three hours daily with a mix of locally produced material (30%), RTE produced (30%) and imported dubbed/subtitled. Running costs are about £1.5 million Irish with a similar figure for annual operating costs.

The Franco-German arts

channel 'ARTE' has been struck a blow by Belgian's RTBF pulling out of funding due to severe money problems. Though the programme will cease to be aired in Belgium, it will continue to appear on the numerous Belgian cable systems.

Finally if you are a 405 line vintage TV enthusiast and crave for the good old Test Card C then weep no more! HS Publications are making available a limited number of digital pattern generators displaying the real BBC Test C. This unique item is a limited edition generator made under licence from the BBC. For more information write - with s.a.e. - to HS Publications, 7 Epping Close, Derby DE3 4HR or ring (0332) 513399.

## Broadcast Schedules

Every post seems to bring another batch of short wave broadcast schedules into the SWM office. Obviously we cannot publish everything or there would be no room for anything else in SWM, but we will attempt to squeeze in as many of the English language listings as we can using a condensed "frequency(MHz) / time(UTC) / target region" format. We will also try to list the dates for which these schedules are valid.

### Channel Africa (until 26 March)

9.585	0300-0500	Kenya, Uganda, Ethiopia
5.955	0300-0500	Zambia, Zimbabwe, Malawi
7.275	0500-0700	Zambia, Zimbabwe, Malawi
11.900	0500-0600	Nigeria
17.710	0600-0700	Nigeria
17.810	1000-1100	Kenya, Uganda, Tanzania, Ethiopia, Somalia
9.730	1100-1200	Zambia, Zimbabwe, Malawi, Namibia, Botswana
7.270	1500-1800	Zambia, Zimbabwe, Malawi, Kenya, Uganda, Tanzania, Ethiopia, Somalia
15.240	1500-1800	Ghana, Sierra Leone, Gambia, Liberia, Nigeria, Cameroon

### Adventist World Radio (until 26 March)

11.870	0000-0100	C & S America
15.610	0100-0200*	S Asia
9.835	0200-0300	S Asia
11.855	0200-0300	SE Asia
13.720	0200-0300*	N & E Asia
7.210	0700-0800	Europe
7.230	1000-1100	Europe
5.030	1000-1300	C & S America
9.725	1000-1300	C & S America
13.750	1000-1300	C & S America
9.725	1000-1300	N America
11.870	1100-1300	C & S America
11.780	1200-1300*	Africa
9.835	1500-1600	S Asia
13.750	1500-1700	C & S America
7.455	1600-1700	S Asia
13.720	1700-1800*	S Asia & Africa
13.720	1800-1900	Africa
5.980	1900-2300*	C & S America
7.140	2300-0000	Europe
9.835	2300-0000	N & E Asia
11.870	2300-0000	C & S America
15.610	2300-0000	SE Asia

\* Not daily

A new transmitter at Rimavsaka Sobota, Slovakia will begin test transmissions on 8 January. A full service will be provided in the next period.

Provisional test schedule:

7.270	0100-0300	India†
9.465	0300-0500	W Asia†
9.455	0400-0500	E Africa
13.715	0600-0700	W Africa
7.180	0700-0800	N Europe
13.790	1400-1500	India
9.455	1500-1800	India†
11.610	1600-1800	E Africa†

† May include other languages

### Radio for Peace International (until 26 March)

21.465	0000-0400	u.s.b.
15.030	0100-0800	a.m.
7.375	0100-0800	a.m.
7.385	0100-0800	u.s.b.
15.030	0900-1600	a.m.
7.375	0900-1200	a.m.
7.385	0900-1400	u.s.b.
21.465	1200-1800	u.s.b.
15.030	1700-0000	a.m.
21.465	1700-0000	u.s.b.

### Polskie Radio Warszawa (until 26 March)

6.135, 7.145, 7.270, 9.525, 11.815	1300-1355	Europe
7.285, 9.525	1600-1655	Europe
5.995, 7.270, 7.285	1800-1855	Europe
1.503, 5.995, 6.135, 7.285	2030-2125	Europe

### Radio New Zealand International (until 19 March)

9.700	0659-1206	S Pacific
9.655	1206-1649	S Pacific (occasionally)
9.655	1650-1849	S Pacific (Mon-Fri)
11.735	1850-2137	S Pacific
15.115	2138-0658	S Pacific

## 430MHz Repeater Stolen

The complete GB3GF 70cm repeater was 'very professionally' stripped and stolen from its site at Guildford, Surrey, in the early hours of Thursday 30 December 1993. This was obviously a pre-planned operation as the equipment was neatly and skilfully dismantled with tools during its time of least usage, and a 15m high tower was scaled on a wet night to remove the antenna.

The main repeater items consist of a Pye F9U wall-mounted base station, much modified, an 8W power amplifier in an unpainted die-cast box with GB3GF engraved on the lid, a home-brewed 12V power supply in a black plastics box and a number of cavity filters approximately 200mm long by 100mm diameter.

Antennas stolen were a J-Beam 'white stick' collinear with a glass-fibre outer tube, approx. 3.5m long, an X-50 dual-band collinear with a white glass fibre outer and three small radials near the base approximately 2.6m long and a 2m high 4-stack professional folded dipole array.

As the theft was so professional it is possible that the equipment will be re-assembled and used for illegal purposes. This repeater is crystallised for 433.300MHz receive and 433.900MHz transmit, so any unexpected activity on these frequencies, outside the usual repeaters, particularly if the GB3GF Morse ident is used, should be reported to PC1284 Clarke at Guildford Police on (0483) 31111, ext 3128 or to the Guildford Repeater Group's Secretary, Alex Morris G6ZPR, on (0483) 892348, or Fax: (0483) 898927

## Kenwood Appoints Dealer for Channel Islands

Kenwood's dealer network has been further strengthened by the appointment of Geoff Brown as an official Kenwood Amateur Radio Dealer.

Based in St Helier on the island of Jersey, Geoff has been involved in Amateur Radio for some 30 years and supplied Kenwood locally under its previous *Trio* brand name as long ago as 1975. Geoff is internationally famous for his operations, as GJ4ICD, on the v.h.f. and u.h.f. bands and has been Chairman of the UK Six Metre Group (UKSMG) for many years. For further information contact **Trio Kenwood UK Ltd., Kenwood House, Dwight Road, Watford, Hertfordshire WD1 8EB, Tel:(0923) 816444** or **Geoff Brown, The TV Shop, Belmont Road, St Helier, Jersey, Channel Islands.**

## Vintage Valves Still Available

We are pleased to learn that **Valve & Tube Supplies**, run by Rod Burman, has acquired the valve stock of the former Vintage Wireless Co. of Bristol.

Once the stock has been thoroughly sorted (probably by the time this issue appears) a two- to three-day order turn round is promised. Both tested and untested valves are available, at different prices.

For further information contact **Valve & Tube Supplies, Unit 2A, Rink Road Industrial Estate, Ryde, Isle of Wight PO33 2LT. Telephone: (0983) 811386 or Fax: (0983) 564708.**

## New UK Agent for Mosley Antennas

From 1 January 1994 Eastern Communication have been appointed as the sole UK Agents for the world-famous beam antennas manufactured in the USA by Mosley Electronics Inc. of St Louis, Missouri.

Mosley manufacture a full range of beams for the Radio Amateur from 5-element h.f. monobanders, to 9-element multibanders, h.f. verticals and v.h.f. & u.h.f. Yagis.

A full catalogue is available on request from **Eastern Communications, Cavendish House, Happisburgh, Norfolk NR12 0RU. Telephone: (0692) 650077**

# NEW IMAGE **SMC** & **ARE** COMMUNICATIONS

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**FRG-100 HF Receiver 50kHz – 30MHz. SSB, CW, AM, FM\***



Carriage D. Includes FREE PAIIC mains power unit list price £39

SMC PRICE  
only  
**£499**



+ Yaesu  
**CASH BACK**  
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\*FM unit optional

## **AOR** HF Receiver AR-3030

- ★ am, s.am, fm, usb, lsb, cw, fax
- ★ Collins mechanical filters
- ★ Optional VHF converters
- ★ Adjustable B.F.O.
- ★ Mains power unit included



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**£699**  
Optional filters  
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## FRG-8800 HF Communications Receiver

- ★ Built in power unit
- ★ Built in automatic timer
- ★ All mode am, fm, ssb, cw
- ★ Optional VHF converter
- ★ 12 channel memory
- ★ Direct entry keypad



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## Restoring An R1155 Part 3

*In this last part, Chas Miller tests the receiver's s.s.b. performance and attends to its physical and mechanical faults.*

The final test of the R1155 was of its single-sideband capability using the b.f.o. This, by the way, operates at 280kHz (half the i.f.) and the harmonic used to beat with the i.f. signal. It must be borne in mind that the sole application of the b.f.o. in the R1155, as in most communications sets of its period, was to render c.w. signals audible; to this end the b.f.o. was tuned to around 1kHz off the i.f. The half-frequency method was employed to prevent the b.f.o. from becoming locked to the i.f. signals and thus failing to produce an audible note in the operator's earphones. My standard test for s.s.b. uses the RAF Volmet station on approximately 4.8MHz, which provides a reliable signal at constant signal strength throughout the day. Excellent speech quality could be resolved and since the b.f.o. is injected into the secondary of the i.f.t., after the a.g.c. diode has been fed from the primary, there is no need to change from the a.v.c. to manual control modes. This was tried as a matter of course, but found to be not only unnecessary but undesirable as it introduced some unpleasant background noise. Once the preset adjustment had been made to the b.f.o. it required no further attention.

### Mechanical Considerations

The semicircular surround which carries the Celluloid dial cover was removed to enable a new cover, cut from thin optical quality plastic, to be fitted. This necessitated unscrewing a number of rusty 8BA bolts, which required a dose of penetrating oil well in advance of being tackled with a screwdriver. It is absolutely essential, by the way, that the blade of the latter should fit the screw slot accurately, especially on such small bolts as these: a major cause of failure to remove tight screws is ill-fitting driver blades which simply chew up the screw heads.

Operation of the epicyclic drive to the tuning gang had become tight and jerky; this was cured by some grease on its

moving parts. The bearings on the moving vanes of the gang were given a little light oil, which in addition to making them move freely quietens them electrically.

The dial itself had become severely discoloured and in parts had faded badly, no doubt due to damp. The paint used to print the legends on R1155 dials was on a par with that used on many domestic receivers in the '30s and '40s - in other words, deplorably impermanent! It is hopeless to try to remove dirt by using a cloth having even the slightest amount of dampness, for it will assuredly remove the markings from the dial as though they had never existed. The most that may be tried is a very gentle rubbing with a dry cloth - and even that is chancy. As it happened, thanks to a reader, a spare dial was available, but instead of using it direct experiments were made as to the feasibility of making a photo-copy to be pasted over the old one. The original coloured sections were lost in the process, but this is not a very serious objection since later models of the R1155 were in fact fitted with black-and-white dials.

The various small brass plates giving the functions of the controls responded to light cleaning with a slightly dampened cloth. The same treatment makes the front panel reasonably acceptable, but in due course it will probably be repainted.

The holes left in the front panel by the removal of the d.f.-related controls are a problem with any R1155 which requires careful consideration. Blanking plates, unless very carefully fitted, may not look much better than holes! Filling the latter and then painting them over is tedious but effective, provided that the redundant indicator plates also are removed and their screw holes filled as well. If any reader has suggestions to make in this respect they would be much appreciated.

The bank of Jones plugs used for interconnecting the receiver to the power supplies, indicator units, antenna, headphones and associated T1154 transmitter had



all been removed and a small panel carrying a fuseholder and jack socket fitted in their place. This job had been done rather well, tending to confirm my suspicion that the previous owner had been much better at mechanical than electrical work. The fuseholder was retained to protect the h.t. input, whilst the jack was earmarked for the output to the loudspeaker.

### A Final Job

The performance of the set from the rubbish dump was as good as any R1155 I have tested, and better than some. Sensitivity was well maintained over the full extent of each band, and between midday and two o'clock on a July afternoon it was particularly noticeable on the 600 to 1500kHz range that dozens of UK 'local' low-power stations could be heard with almost uniform volume, despite the wide variation in signal strengths. On the h.f. ranges the sensitivity was maintained right up to the 18.5MHz limit. Selectivity was excellent with no evidence of sideband 'splash'.

The fact that the set worked so well served to highlight a problem that is common with these receivers. The presence of R26 in series with h.t. - and the lower end of the volume control prevents the latter from reducing the signal to the triode grid to zero when turned to its minimum position. When the set has been modified for loudspeaker use even moderately powerful signals may produce a minimum-volume output that is embarrassingly loud, especially in the quiet of

night. In addition the frequency response of the output stage varies noticeably as the control is moved through the first third of its travel, being initially 'bassy' and then rather shrill. To overcome these effects R26 should be replaced by a link to h.t. -, and C105 replaced by a small 50µF/25VW electrolytic (this may be fitted into the same clip). Some extra negative feedback is introduced by changing R2A to 180kΩ and fitting an additional 1MΩ, R3A, taken from V8 anode to the anode of the output valve. The volume control will then be found to operate normally and without affecting the tone. In fact, the output from the set via a good loud speaker will almost certainly surprise the listener by its quality. ■

### Abbreviations

A	ampere
a.g.c.	automatic gain control
a.v.c.	automatic volume control
b.f.o.	beat frequency oscillator
BA	British Association (screw-thread standard)
c.w.	continuous wave (Morse)
h.t.-	high tension negative
i.f.	intermediate frequency
i.f.t.	intermediate frequency transformer
kHz	kilohertz
kΩ	kilohm
MHz	megahertz
MΩ	megohm
RAF	Royal Air Force
s.s.b.	single-sideband
Volmet	VOLume METeorological report
VW	volts working
µF	microfarad

# Some Modifications to



*Some months ago we mentioned some modifications by Graham Maynard to the ATS-803A that we had seen in Medium Wave News, the journal of the Medium Wave Circle. We've had so many inquiries that we are, with their permission, reprinting them here.*

With technology advancing so rapidly we can easily be forgiven for thinking that designs more than five years old are out of date, so any receiver that remains in production and sells well for a similar period must embody competent circuitry. The longest running model of a large international family of digital world band portable radios that are manufactured in Taiwan, is the Sangean ATS-803A, and it, like the Sony ICF-2001D, is becoming a classic in its own lifetime.

Since 1986 there have been many versions of this receiver, they all look the same but carry different importers badges and type numbers. One of the first, the Sangean ATS-803, did not have switchable a.m. i.f. passbands; this was closely followed by others - Ambassador EEB2020, Edvis RX33, Eska 33, Matsui MR4099, Realistic DX440, Tatung TMR7602 and many more. All use the same p.l.l. digital synthesis and mixing techniques, although there may be minor circuit and performance differences; e.g. the MR4099 has a single stage crystal roofing filter where the ATS-803A has two.

Though already good for broadcast listening, these portables can be further improved, especially with regard to tropical band sensitivity and chuff tuning.

Their digital system cannot be accessed to enhance poor ergonomics or the basic 1kHz frequency resolution, but we can overcome the chuffing annoyance and add to ownership satisfaction by:

1. Making the b.f.o. knob into a  $\pm 2\text{kHz}$  fine tuning control that smoothly interpolates the digital steps on a.m., l.w., m.w. and s.w. This is ideal for minimising s.w. whistles or rocking the narrow filter over a quieter sideband to avoid splatter.
2. Render inoperative the audio mute to enable 'listen whilst scanning', and use the mute switching line to smooth a.g.c. levels so that weak and average signals may be slowly digitally tuned without disturbance. Strong signals still chuff, so no improvement here.
3. Slightly boost l.w.-m.w. ferrite antenna sensitivity.
4. Slightly boost a.m. i.f. gain with an LC circuit that improves weak signal demodulation. This might not improve MR4099 types; the extra gain could be unnecessary and just increase front end noise.
5. For external a.t.u. use between 1.62 and 6MHz

increase sensitivity by disabling the internal 50 $\Omega$  load that shunts the external antenna RCA phono socket. This modification is not suitable if you live in a high signal strength area or your external antenna is active or long; receiver generated l.w.-m.w.-Tropical harmonics might cause problems in m.w.-Tropical-s.w. bands respectively.

6. Fit an internal antenna amplifier to improve amateur and tropical bands sensitivity with the set's own whip antenna. This enhances portable performance and is automatically powered at frequencies above 1.62MHz via an internal processor controlled line.

I'll not go into circuit detail, nor expound oft-written text on how to get the best out of a portable, merely limit text to relevant points. These modifications are 'back off' and 'soldering iron in' jobs, and best left to a practical hand. There is always the risk of damage, so try only modification 1 if you lack confidence or have limited experience. You'll need a magnifying glass or +4 dioptré specs to work comfortably inside this receiver.

## Removing the receiver back

- a. List your 25 memory frequencies on a sheet of paper; the nine manually stored and the 16 band button executed.
- b. Remove the battery cover and bottom three large batteries.
- c. Lay the radio face down on a soft surface.
- d. Remove six back screws - all the same.
- e. Gently click off the back and open like a book, setting it flat down on the left. Look out for the fragile white wire between the back mounted telescopic antenna and the internal p.c.b. - for convenience unscrew the antenna tag.

To re-assemble work in reverse.

## The Modifications

1. Locate the rear of the b.f.o. switch towards the bottom left beside the flat p.c.b. interconnection. (Fig. 1.) Cut one p.c.b. track with a sharp craft knife and solder in a sub-miniature 47k $\Omega$  resistor. If

# the Sangean ATS-803A

necessary trim T111, above the a.m. filters, with a sharpened matchstick to centre the zero beat of an indicated station frequency.

2. Find R49 near the top middle a.g.c. pre-set. (Fig. 2.) Solder a 22 $\mu$ F capacitor between it and pin 2 of the inter-p.c.b. 8-way ribbon cable on the right hand audio board. Link the two tracks shown.
3. Locate and snip one leg of R72, in the top left back corner, to reduce r.f. stage damping without affecting stability. Those who are more adventurous might wish to change C61 at the same time from 220pF to 100pF.
4. Solder a series connected 33 $\mu$ H inductor and 4.7nF capacitor between R112/4 and R115/6 beside Q121, below the a.g.c. pre-set. (Fig. 3.)
5. Locate R7 above the external antenna switch and carefully solder a 40mm wire link between it and the screening can. (Fig. 4.) Watch out for overload problems - fit a switch if necessary.
6. Try the circuit shown in Fig. 5. as the basis for a whip antenna amplifier. Noise and stability problems can occur when this type of buffer is mounted with the receiver cabinet, so it could be tried externally.

Other improvements are possible in the form of narrow a.m. and f.m. i.f. filters - 455kHz types are OK for a.m. if T111 is re-trimmed to pull the second crystal oscillator. However, I enjoy my 803A for broadcast listening and don't expect to be modifying it again. ■

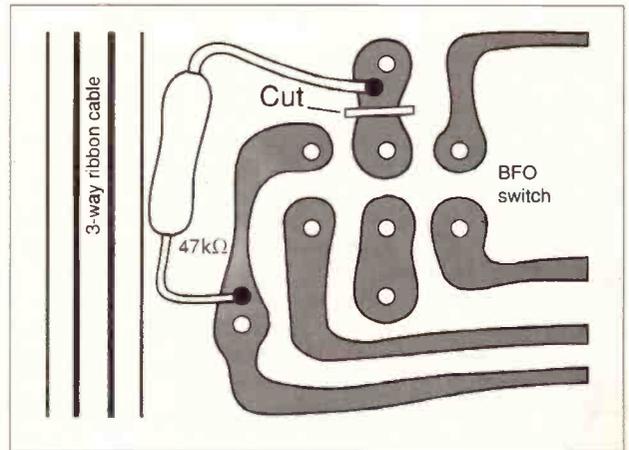


Fig. 1

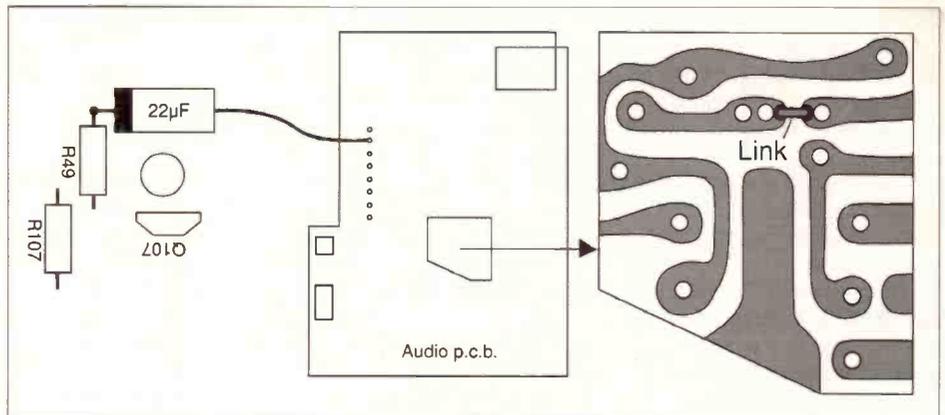


Fig. 2

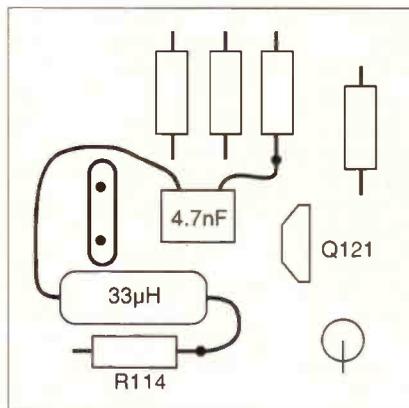


Fig. 3

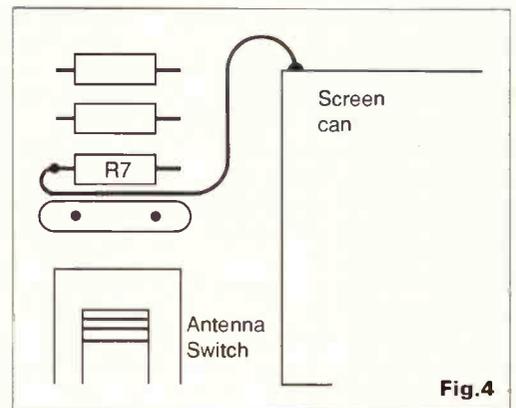


Fig. 4

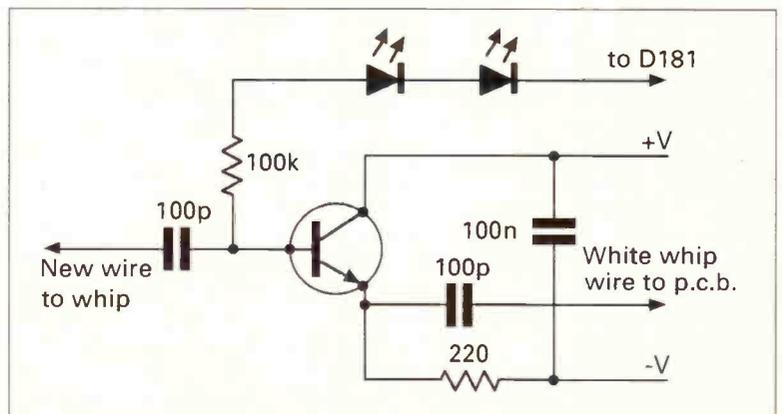


Fig. 5

And finally - once you've tuned in a weak l.w. beacon or m.w. signal, remember to use the lock button. Below 850kHz, and at some other frequencies, this set can annoy by picking up its own internal strobe noise. Switching the lock to 'on' effectively mutes this noise, and the new tuning, volume and tone controls may be adjusted for comfortable listening.

# Yupiteru MVT-3100 Multiband Receiver

*This month we borrowed Donna Vincent from our sister magazine Practical Wireless to put this scanner through its paces.*

The Yupiteru MVT-3100 is a slim hand-held multiband receiver covering the 143 - 162.025, 347.7125 - 452.0 and 830.0 - 960.0MHz bands, operating in f.m. mode. It is supplied with a flexible antenna, hand strap, belt clip, earphone, car connector and a 58-page owners manual. As well as four 4.8V NiCad batteries and a 12V UK charger.

The first thing that struck me after unpacking the MVT-3100 was its user-friendly look, in fact you could almost call it trendy! The main controls are housed on a 16-button key pad which is mounted on the front of the receiver. The **POWER/VOLUME** switch and **SQUELCH** controls and external speaker jack are situated on the top panel, with the all important **SEARCH** and **SCAN** controls are next to the display panel.

It's worth pointing out that although the MVT-3100 has a black plastics casing the button controls are very colourful making it easy to determine which controls perform which functions. For example the pink **FUNCTION** key is used to execute the extended functions of the keys also labelled in pink.

## Search Bands

The MVT-3100 has ten pre-programmed search bands catering for Marine, Amateur and p.m.r broadcasts to name a few. Even though these search bands are pre-set it is possible to change the range of the search band.

Changing the range is very easily done by first selecting the manual mode, then pressing the **FUNCTION** key followed by the **BAND WRITE** key. After

this you enter the lower limit of the band frequency before pressing **ENTER** and then the upper limit followed by **ENTER**. Once this has been done press the appropriate search band key, e.g. **3 MARINE**, followed again by **ENTER**.

When using the receiver in search mode it is possible to 'pass over' frequencies where there is noise or unreadable signals from weak stations. This can be easily achieved by using the search pass memory function. This function is particularly useful as a time-saving device because it enables the search mode to be more efficient by allowing unnecessary or noisy frequencies to be passed over. It is also possible to verify the frequencies that have been stored in the search pass memory.

Another very useful search function is the continuous search facility. This allows the user to enter an approximate frequency manually and then leave the receiver to automatically search for stations based on the frequency entered.

I thought this was a simple but effective idea especially for someone who's not entirely sure of the desired frequency. However, you have to bear in mind that only stations that are within the receiving frequency range of the receiver can be searched for.

When operating the MVT-3100 in search mode it automatically stops searching when it reaches a signal. It will stay on the received signal until you press either the directional arrows to shift the signal or until the signal is broken for longer than two seconds. When the signal does become broken the receiver

will start to search for another signal.

## Memories and Scanning

The MVT-3100 has 100 memory channels which are arranged in ten banks giving the user the freedom to enter and store useful and favourite frequencies into the memory. It is very easy to store frequencies into the memory channels and the method involved is explained very well in the manual.

It is also possible to scan through either all of the 100 memory channels or if you prefer just through specific banks. This again is a useful feature especially if you only want to scan for specific frequencies.

Another interesting feature is the priority function. This allows you to store chosen frequencies as priority channels. For example, if you are listening to a particularly active frequency but also want to search or scan for others you can program the active frequency into the receiver as a priority channel. If you do this and then activate the **PRIORITY** function, the priority channel will be displayed every five seconds enabling you to keep tabs on what's happening on your active frequency, at the same time as searching for others.

## Additional Features

As well as the features I've already mentioned the MVT-3100 also has two buttons and one switch on the left hand side of the plastics casing. These are labelled **LAMP**, **MONI** and **ON KEY LOCK**.

The function of the **LAMP** button is self explanatory and

when pressed operates a back lit function on the display. **MONI** is a monitor switch that is designed to be used when the reception of a signal is broken or becomes weak. The **KEY LOCK** switch when used locks the keypad completely.

I thought the idea of the **KEY LOCK** was very useful especially when I was monitoring an interesting frequency and did not want to lose it by inadvertently touching the keypad.

There is also the option to hear a beep tone every time a key is pressed. I was glad that this was an optional feature as after a while the continuous beeping heard when I pressed a key became irritating. Needless to say I soon switched this function off.

## Display and Manual

I found the display on the MVT-3100 to be very well laid out and mainly self explanatory. It was easy to see at any one time exactly what was happening. For example when using the receiver to search through the search bands the frequency and appropriate search band number was displayed, together with the signal strength and frequency step.

The well designed uncluttered display is definitely a plus point. I don't think there is anything worse than a display that is so busy that you are constantly referring back to the manual to see what all the various symbols mean.

I would like to congratulate the writers of the 58-page manual that accompanies the MVT-3100. The manual is very well set out and takes you through all of the various features,

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functions and display symbols in step by step stages. The terms used on the keypad buttons are also explained with a brief description of when and how they are used. Each function description is also accompanied by an illustrated example.

I think the user-friendly approach of the manual is very good especially for someone who is fairly new to using receivers or for those of us who get lost in the jungle of jargon that is often used in manufacturers' manuals.

## Ease Of Operation

I found the MVT-3100 very easy to operate and soon felt comfortable using the various functions. I liked the way the receiver felt in my hand and the fact the it was relatively light to hold.

The buttons gave a very positive sounding click when pressed, so there is no question of whether you've pressed them hard enough or not.

Charging the batteries is also straight forward as all that is needed is the 12V charger which plugs directly into the receiver without the need to remove the batteries first.

The only real criticism I have of this compact receiver is of the lamp function. I would like to have been able to have the lamp on for a desired length of time upon the operation of a switch. Instead I had to keep my finger on the lamp button. I suppose this could be a battery saving design but as I found the l.c.d. to be somewhat on the dark side and therefore difficult to see even in daylight a switch to allow the lamp to be on or off as required would have been nice.

## Summing Up

My overall impressions of the Yupiteru MVT-3100 were

good. I enjoyed using it, got good results and found it lived up to the claim made on the box about it being user friendly. I managed to pick up quite a few amateurs operating mobile, as well as some interesting signals when using the marine band on a visit to Poole Quay.

I feel it would be a particularly good receiver to start out with as it is uncomplicated, good looking and at £199 relatively inexpensive. However, the more experienced scanner enthusiast may find that it doesn't offer enough in the way of memories and receiving modes and may not like the fact the frequency steps cannot be adjusted.

Yupiteru have many scanners in their ranges and while this is probably one of the more basic ones, its low cost and high standard of operation make it a very tempting option. I know I would like to own one.

My thanks go to *Nevada Communications, 189 London Road, Portsmouth PO2 9AE. Tel: (0705) 662145* for the loan of the Yupiteru MVT-3100, which they can supply for £199.



## Specifications

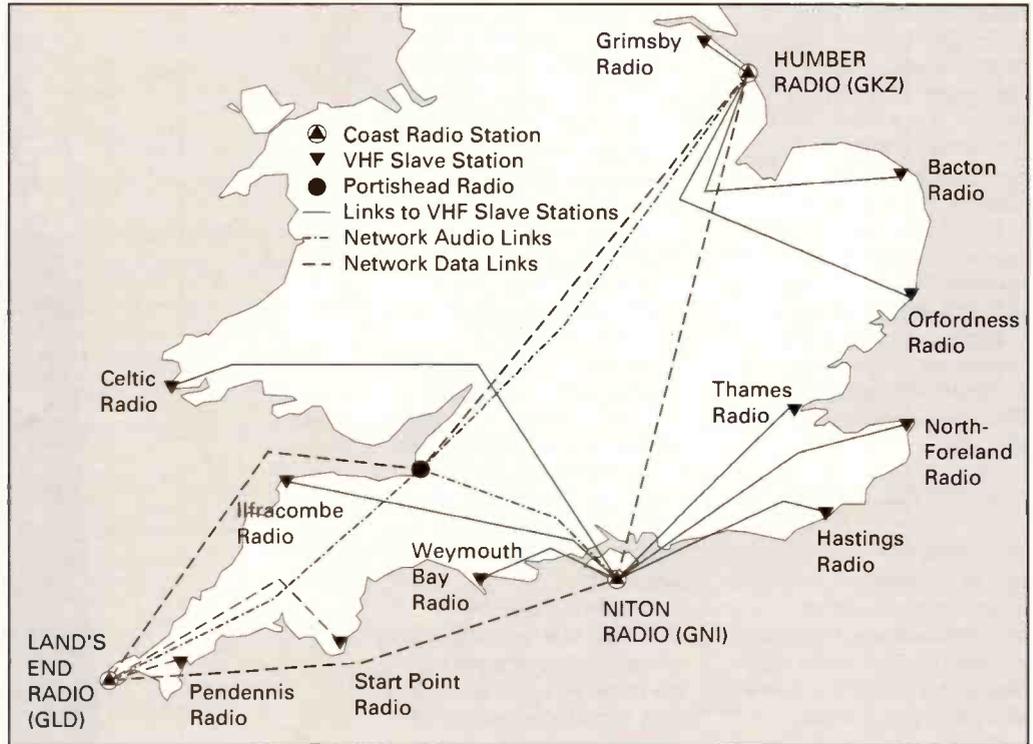
<b>Frequency Range:</b>	143.0 - 162.025MHz 347.7125 - 452.0MHz 830.0 - 960.0MHz
<b>Tuning Steps:</b>	10/12kHz
<b>Modes:</b>	n.f.m.
<b>Memories:</b>	100 arranged in 10 banks of 10 Priority 1 Search pass 100
<b>Scan/Search Speed:</b>	30 channels/40 steps per second
<b>Antenna:</b>	50Ω BNC
<b>Audio Output:</b>	100mW into 8Ω THD 10%
<b>Power Supply:</b>	NiCad battery (4.8V) External power 12V d.c.
<b>Current Consumption:</b>	140mA max. audio 65mA standby.
<b>Operating Temperature Range:</b>	0-50°C
<b>Dimensions:</b>	59 (w) x 147 (h) x 38mm (d)
<b>Weight:</b>	280g (excluding antenna)

# UK Coast Radio Stations in the 1990s

*The Maritime Radio service around our coast has to change with the times. David Bailey describes recent changes to see the service through the next few years.*

Only a few years ago, if you walked into a coast radio station, you would have found just about what your mind's eye would probably have foreseen; operating consoles, each with a couple of professional communication receivers and a mass of knobs and switches to control transmitters, antennas and landing circuits. It would no longer be noisy, phones would be ringing, people would be talking, telex machines buzzing and a babble of voices and Morse signals would be tumbling out of loud speakers from receivers guarding 2182 and 500kHz, the international distress and calling frequencies. And, of course, no matter what day you arrived, and no matter what time, someone would always be there, a fact not lost upon the local police station, whose officers knew where they could always find a welcoming cuppa in the dead of a cold and miserable night.

Like the castles of the robber-barons dotted along the banks of the Rhine, controlling their stretch of river, the coast stations were independent communication centres spread out around the UK coast; liaison by telephone and telex of course, but essentially individual units, staffed by a pretty individualistic bunch of people, looking after and dealing with those afloat on their patch of sea.



## Integration

But, things are different now. Four of these coast stations have disappeared; Oban on the west coast of Scotland was the first, followed by Anglesey and Ilfracombe and, most recently, by North Foreland Radio. At least the names of the last three live on, as v.h.f. slave sites to the remaining stations; Anglesey under the control of Portpatrick; Ilfracombe and North Foreland controlled by Niton.

All the remaining coast stations offer their services around the clock, but nowadays you might walk into one and find it deserted, with not a voice or a Morse signal to be heard. You might just hear a printer operating, and if you went over to read the emerging text, you could be surprised to find details of radio traffic that was handled by the station that very minute. Indeed, the station's own transmitters would have been in operation, and its own telephone lines would have been used to connect the ship's call to the subscriber ashore, but the

coast station radio officer who dealt with the traffic would have been hundred of miles away, sitting at his console at another radio station, and a very different kind of console it would be, gone are the general coverage receivers directly in front of the operator, and gone are the transmitter control panels. Console now means a modern office desk, upon which sits a v.d.u. and keyboard, and an almost-silent ink-jet printer. There's a lightweight head set and just one old familiar item, a Morse key. And that's it. The system that makes all of this possible is called Distributed Operations Control (DOC) and, of course, at the heart of it all the inevitable computer, referred to in the DOC as the Processor.

Each station has two identical processors, one 'on-line' and the other on standby. If a processor failure is detected, the standby processor will automatically come on-line and the faulty unit will be shut down. But now, onto the organisation of the DOC system.

## North-South Split

Two independent DOC networks exist, one in the north of the country, and one in the south. The northern ring consists of Cullercoats Radio, Stonehaven Radio, Wick Radio and Portpatrick Radio.

The southern ring members are Humber Radio, Niton Radio and Land's End Radio. Of these seven remaining stations, two, Stonehaven and Humber, no longer have W/T facilities, but of course, the staff at these two stations can take full control of the W/T equipment at the other stations in their region.

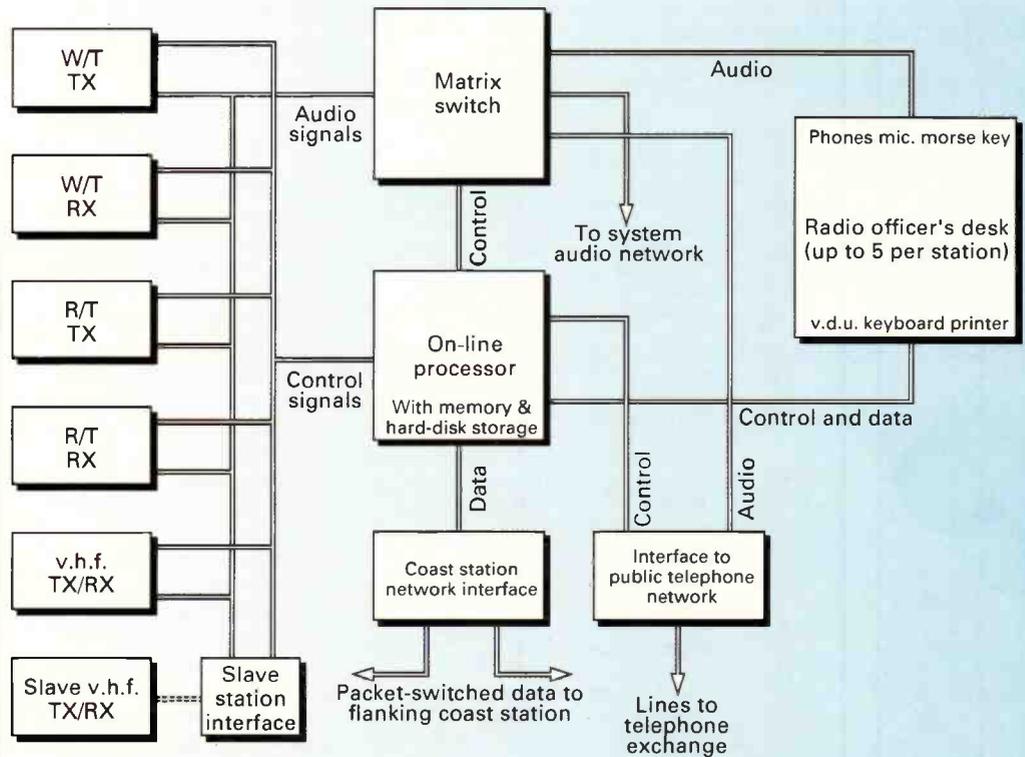
Although all are essentially the same, the coast stations fall into one of two categories, Commercial Coast Stations (CCS), or Distress Watch and Broadcast Stations (DWBS). Each region has one DWBS; Stonehaven in the north and Land's End in the south.

As the name implies, a DWBS is responsible for keeping the distress watch in its region on 2182kHz and 500kHz (channel 16 v.h.f. is now the responsibility of the

Coastguard service) though its own receivers, and also through those at the other stations. All broadcasts in a region are done by the DWBS. For example, gale warnings concerning the waters off Humber or Niton Radios would be effected by the staff at Land's End controlling the transmitters at the local stations. The broadcast control station, incidentally, is independent of the DOC system, so if the DOC system circuits were to fail (not unknown), broadcast action would continue. Of course, the broadcast system could fail too (also not unknown), in this eventuality the responsibility for broadcast action would be assumed by the stations concerned, and the messages to be broadcast would be sent by telex from the DWBS to the broadcast station. A DWBS is staffed throughout the 24 hours.

A CCS is not continuously staffed, although during the day, on weekdays, at least one radio officer will usually be on the station. A Commercial Coast Station is normally just that, handling paid-for traffic between ships and individuals or organisations ashore. The bulk of the traffic will be radiotelephone calls, but the stations still equipped with W/T remain quite active with telegram traffic. Radiotelex traffic is also passed via coast radio stations, but this is through a fully automatic system controlled from Portishead Radio, actually situated at Highbridge, Burnham-on-Sea. A DWBS, of course, fully participates in commercial traffic handling via the DOC system.

If a distress incident occurs in a CCS's area, the CCS will normally take no part in the proceedings, the DWBS will handle the entire situation. However, under exceptional circumstances, a CCS might have to handle a distress, and it is fully equipped to do so, all editions have fully capabilities



on a 'stand alone' basis.

But, back to a CCS's usual activities. A Ship with, say, v.h.f. traffic will call on one of the CCS's v.h.f. working channels, after first listening for a moment to ascertain that the channel is clear. The voice of the ship's operator will not be heard, but the coast station receiver will detect the signal, and the presence of the signal will cause the DOC processor to switch on the associated transmitter, which will radiate a series of pips to indicate to the ship that its call has been registered. At the same time, the processor will look for a free coast station operator. If there is an operator free at the station, through which the call is being made, the traffic will always be offered there, if not, it will be offered via the network to a free operating position at another station. When a free operating position is found, the processor signals to the radio officer there, that traffic is available, the word 'traffic' appears on the v.d.u., and there is a short audio 'beep'. At this point there is no indication of what the traffic is, nor through which station the ship is calling.

The radio officer will key his acceptance of the traffic, and when this is done, some basic details will appear on the v.d.u.

The coast station being called by the ship is identified on the screen by its callsign. The main stations have their own long established callsigns, GLD, GNI etc., and the v.h.f slaves have '2' prefix callsigns, e.g., 2CE is Celtic Radio. The frequency on which the ship is calling is shown, on v.h.f., this will be given as the international channel number. The radio officer's headphones are now connected to the receiver and his microphone. He will ask the ship to identify itself, and enter its name and callsign on the screen via the keyboard.

## Computer

The ship's name and callsign are passed instantly by the station processor to a computer at Portishead Radio, and checked against database records. If any to-ship traffic is on hand for the ship, the Portishead computer signals this fact back to the coast station, and information about the traffic appears on the operating position v.d.u. This all takes about a couple of seconds.

Various screen displays are now available to the radio office, and he chooses the one relevant to the traffic to be handled, to-ship, from-ship, telephone call or telegram.

Assuming that the ship wishes to make a telephone call, the corresponding screen is selected, and the phone number required is typed in. A single key stroke will then cause the processor to select an exchange line, and the number is automatically called. When the subscriber answers, another touch of the keyboard connects the radio circuits to the line, and the call can commence. When the radio officer is satisfied that all is well, he then passes the call to 'system control', his headset is disconnected from the audio circuits, and the v.d.u. screen clears. He has nothing more to do with the call, and is free to accept new traffic.

The telephone call is now monitored solely by the on-line processor. When the processor detects that the call is ended (by sensing the condition of the exchange line), it once again searches for a free operation position, in exactly the same way as at the beginning of the call, and so it follows that the radio office who deals with the conclusion of the call need not be the one who started it, and it is quite likely to be at another coast station. The radio officer responds to the 'traffic' promptly, and all the details entered at the start of the call will be displayed, plus the

Marine Radio Frequencies				
Coast Station	Channel	Service	Ship Transmit (kHz)	Ship Receive (kHz)
Norwick (GNK)	A	Radiotelephone	2006	2751
	B	Radiotelephone	2277	2840.6
	C	Radiotelephone	2013	2604
	D	Radiotelephone	2084	1659
	2	Autolink RT	3338	3528
		Broadcast		1770
	GNK1 GNK2	Radiotelex Radiotelex	2577.0 2574.0	2832.7 3542.7
Wick (GKR)	E	Radiotelephone	2524	2705
	F	Radiotelephone	2060	1797
	G	Radiotelephone	2099	1755
	H	Radiotelephone	2108	2625
	4	Autolink RT	3335	3775
		Broadcast		1764
	GKR1 GKR2	Radiotelex Radiotelex	2147.5 2149.5	1612.5 1923.7
		Morse Working Morse Broadcast	467.5	517 510.5
Stonehaven (GND)	I	Radiotelephone	2555	1856
	J	Radiotelephone	2075	1650
	K	Radiotelephone	2566	1946
	L	Radiotelephone	1999	2607
	M	Radiotelephone	3249	3617
	T	Radiotelephone	2016	2698
	1	Autolink RT	2066	1722
	3	Autolink RT	3252	3666
		Broadcast		2691
	GND1 GND2	Radiotelex Radiotelex	2576.0 2515.0	3615.7 2780.7
	Cullercoats (GCC)	N	Radiotelephone	2527
O		Autolink RT	1953	2828
P		Radiotelephone	2123	3750
		Broadcast		2719
GCC1		Radiotelex	2150.0	1615.0
		Morse Working	466	515.5
		Morse Broadcast		510.5
		Navtex Marine-Page		518 441
Humber (GKZ)	Q	Radiotelephone	2105	1925
	R	Radiotelephone	2002	2684
	S	Radiotelephone	2562	2810
		Broadcast		1869
	GKZ1	Radiotelex	2496.3	3607.3
North Foreland		Radiotelephone	2132	1707
		Broadcast		1707
Niton (GNI)	U	Radiotelephone	2009	2628
		Broadcast		1641
	GNI1	Radiotelex	2000.2	3517.0
		Morse Working	487	447
		Morse Broadcast		447
		Navtex Marine-Page		518 441
Land's End (GLD)	W	Radiotelephone	2111	2782
	X	Autolink RT	2120	3610
		Broadcast		2670
	GLD1	Radiotelex	2146.5	2696.7
		Morse Working Morse Broadcast	488	448 448
Portpatrick (GPK)	Y	Radiotelephone	2135	1710
		Broadcast		1883
		Morse Working	482	442
		Morse Broadcast		510.5
		Navtex		518
Hebrides (GHD)	Z	Radiotelephone	2534	1866
		Broadcast		1866
	GHD2	Radiotelex	2147.0	3607.8
Alternative Morse Ship Transmit Channels (GKR, GCC, GNI, GLD and GPK)		Morse Working	454	
		Morse Working	458	
		Morse Working	468	
		Morse Working	480	
		Morse Working	480	

duration of the call. He then speaks to the ship, and advises the call duration. If the quality of the call was affected by interference, or if there was any other reason to warrant it, the chargeable duration of the call can be adjusted downwards. A function key on the keyboard is then used to bill the call, this causes all the screen details to be transferred to hard disk and printer (at the station through which the ship is calling). Once a week or so, coast station staff copy all the billing data from the hard disk to floppy, and the floppy disk is then sent to a processing centre for the preparation of bills. Further traffic with the ship can now be handled, or, if there is nothing else on hand, goodbyes can be said and the circuit cleared down.

## Medium Frequency

That was an outline on how a typical v.h.f. radiotelephone call is handled, Medium Frequency R/T and W/T call are dealt with along the same lines, but there are differences of course. For m.f. R/T, which incidentally is always on s.s.b. using upper sideband, coast stations have receiving frequencies paired with the transmitting frequencies, and these are given an m.f. channel identification letter. Channel 'R', for instance is the TX/RX pair 2684/2002kHz at Humber Radio.

The receive paths on these m.f. working channels are fitted with speech detectors that are supposed to differentiate between human speech and the squeaks and pops and other strange noises that appear on m.f. The idea of the speech detectors is to make possible direct calling on working frequencies. If a ship does call direct, exactly the same things will happen as though the call was on v.h.f., except that instead of the v.h.f. channel number appearing on the radio officer's v.d.u., the m.f. pair will be displayed.

However, the speech detectors are in fact

susceptible to false alarms, especially at night, and they may have to be disabled by the coast stations staff on duty. The ship will then have to call on 2182kHz, or it may prefer to do so anyway, especially if it is a foreign vessel and not familiar with UK coast stations. As already mentioned, the DWBS maintains a 24 hour watch on 2182 and 500kHz, both through its own receivers and those at CCS sites. If the watch keeping radio officer at a DWBS hears a ship calling a CCS on 2182kHz, he will use the CCS's 2182kHz transmitter to answer, and advise the ship of the working frequencies to be used. Through a facility known as the Search Point Screen, he is able to feed the ship's details and the frequencies to the CCS processor, which will then respond as if it had just detected a direct call on the m.f. working channel, and progress as previously described. The Search Point Screen is available from all operating positions, and when staff are on duty at a CCS, 2182 and 500kHz are monitored, so that a CCS could also deal with ships calling on those frequencies of the DWBS was unable to respond immediately.

The same procedure is followed if a ship is heard calling in Morse on 500kHz (and there are no direct calling arrangements for W/T working frequencies). The radio officer at an operating point responding to the traffic prompt, would see from the frequencies displayed that the ship was on W/T, if the ship had a telegram to send, the relevant screen would be brought up, and the message entered onto the screen via the keyboard. The station processor would count the words in the completed telegram, and pass it directly to the Message Handling System at Portishead Radio for automatic forwarding to its destination. If there was a telegram on hand for the ship, it would be fetched from the

Message Handling System to be displayed on the screen and the radio officer would transmit it using his Morse key.

When an m.f. ship is being worked, full control of the transmitter and receiver is available from the keyboard, function keys are provided for such things as power levels, gain and bandwidth control, tuning and frequency changing.

That then, is a basic description of how this very complex system operates. It has its 'teething troubles' of course, and in the very early days some of these verged on the catastrophic. However, the system is now very reliable, and of course continues to be refined. Needless to say, there are some very comprehensive and sophisticated monitoring and control facilities available to the staff from their operating positions, that it is not possible to describe in this outline of the DOC system.

If the trend of the last decade continues, traffic through coast stations will further decline and, at a guess,

the northern and southern regions could combine into a single UK network. Whatever the outcome, a few of the famous names (and callsigns) of maritime radio history will at least be heard for a few more years to come.

## Network Map

The map shows how the stations are linked by landline for the various purposes within the DOC system, these landlines are the private wire circuits as leased by the BT regions to various users. The lines used for the broadcast and distress watch network are not shown, this network is independent of DOC, although DOC is interfaced to it, because they share the radio hardware.

The arrangements for the north are similar, an anomaly being that Portishead Radio is used as the switching site for the audio signals between the stations of the southern region, Portishead is the UK's maritime h.f. station, and does not participate in the m.f. and v.h.f. coast station service. The

switching site was formerly Land's End Radio, but the lack of alternative trunk line routes into the West Country meant that line failures (farmers with JCBs!) could not easily be circumvented. When North Foreland Radio ceased to be a manned m.f. station, the processors from these were installed at Portishead to enable it to become the region's audio switch. There are no DOC operating positions at Portishead. The switching site for the northern region is Stonehaven Radio. The north has a link to Portishead Radio, because Portishead is used by both regions for traffic storage and forwarding, as well as holding database information.

The data links in the system are arranged as a loop, and the data between stations is sent both clockwise and anti-clockwise, if one leg of the loop becomes interrupted, the system can still function.

The link between the v.h.f. slaves and their parent stations were in place before DOC was implemented, and remain unchanged.

## Coast Station Block Diagram

All data to and from the processor is in serial form. The matrix switch is a complex electronic device controlled directly by the processor, and all audio paths within the station, as well as those entering and leaving the site, are routed through it. A malfunction of this gadget can give rise to truly wonderful effects.

There are many more transmitters and receivers than shown on the diagram, of course. The m.f. W/T and R/T receivers are multi-channel spot frequency types. In addition each station has a fully tuneable Eddystone 1650 receiver whose audio output feeds into the system via the matrix switch, but is manually controlled. Keying of the W/T transmitters is effected by it following an audio interrupted by the Morse key.

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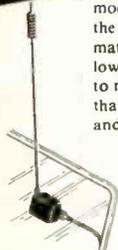
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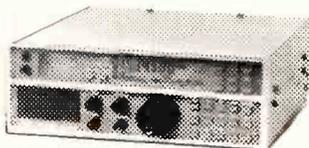
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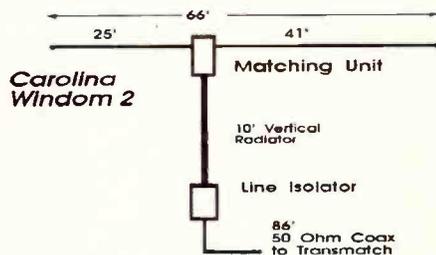


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# Navigation Aids

*Finding your way around the high seas has never been easier. Brian Oddy G3FEX describes the techniques used and the sort of equipment that those of us on dry land need in order to listen to the beacons.*



Yachtsmen, fishermen and the owners of small boats who wish to make coastal and short sea passages rely upon aids to find their position at sea. The basic aids are a compass and a chart (marine map) covering the area. Only the more important lighthouses and aids to navigation are marked on the 'small scale charts' which mariners use to plan their route and plot their position whilst at sea. Much more detailed 'large scale charts' are used when approaching land. They show the nature of the coastline, land marks visible from the sea, the depth of water to the shore, dangers which must be avoided and the position of buoys and lightvessels.

When in sight of land, a mariner can ascertain the boat's position by using a hand bearing compass to obtain the bearing of two charted landmarks, such as a lighthouse and the point of a headland. On a chart of the area a pencil line is then drawn towards each of the chosen landmarks in the same direction as the bearings. The point at which the two lines intersect represents the position of the boat and is called a 'fix'. If the angle between the lines is less than 30° the fix cannot be relied upon.

## Additional Aids

After dark it may well be dangerous to approach the shore and impossible to enter harbour without the help of visual aids, such as lights mounted on buoys or installed on shore. The colour and nature of a light is chosen to convey information and to avoid one light being mistaken for another - it may be fixed, flashing or alternating in colour. In mist or fog it may not be possible to see any lights, so reliance must then be placed on audible warnings. Some buoys are fitted with whistles, which are operated by compressed air, or bells which are activated by passing waves. On shore, explosive charges may be fired at regular intervals. A number of different fog horns are employed, the most well known being the diaphone type installed at lighthouses, which emit a powerful low-tone note ending in a sharp descending note, which sounds like a grunt!

## Radio Beacons

As an additional aid the maritime authorities have installed low power long wave radio beacons at prominent charted positions around coastlines worldwide, also on certain light vessels. The

radiation from the transmitting antenna (often a Marconi 'T') is vertically polarised and non-directional. When within range, it can be detected with a fairly simple receiver.

Prior to 1 April 1992 they operated either within a group (maximum of 6) or as a single beacon. Their transmissions were either sequential or continuous. The carrier of each beacon was amplitude modulated (a.m.) with a tone, thereby producing a double sideband (d.s.b.) signal. It was keyed in Morse code (modulated carrier wave - m.c.w.) so that the beacon could be identified by its two or three letter callsign. The duration of each beacon signal was one minute. It consisted of the callsign keyed three to six times (22s), a long dash (25s), the callsign keyed once or twice (8s) and a silent period (5s).

After that date the use of modulated Morse code largely ceased and only the carrier of each beacon is radiated. The beacons now operate individually and continuously. Each carrier is keyed in Morse code (c.w.) so that it can be identified by its callsign. The single or two letter callsign is sent at least twice (13s), followed by a long dash (47s). Those situated on the coasts of Europe and the UK transmit on frequencies between 283.5 and

315.0kHz. The use of c.w. has enabled them to be spaced 0.5kHz apart, but due to the large number of beacons involved it has been necessary to allocate shared frequencies to some beacons which are geographically well apart. A few beacons, notably around Iceland and along the Baltic coast still operate in groups and employ m.c.w.

## Use Of Beacons

Provided two or more beacons are within range, their signals can be used at sea to obtain a fix. The key factor in this process is the use of a receiver which has either a vertical loop or a horizontal ferrite rod antenna mounted on top, so that it can be freely rotated above a fixed circular scale, which is calibrated 0° - 360°. The directivity pattern of the antenna resembles a figure of 8. The two points of minimum response to incoming signals are indicated on the antenna by a line, which acts as a pointer for the calibrated scale. The set is positioned so that the 0° - 180° line on the scale is parallel to the boat's fore and aft line and as far away as possible from the mast and rigging.

After tuning the receiver to the frequency of one of the beacons the antenna is rotated for maximum signal so that

the keyed callsign can be clearly heard. During the 'long dash' which follows, the antenna is slowly rotated until it reaches a position where the signal can no longer be heard. It is then swung slightly to either side of this point to find the exact point of zero received signal, called the 'null'. As soon as this is achieved the exact compass heading of the boat is noted. The 'relative bearing' of the beacon is then read off the circular scale beneath the antenna. This process is then repeated with the second beacon.

(There are two such nulls 180° apart. Some sets have a 'sense' circuit to establish the correct null, otherwise it must be ascertained from a local chart, taking into account the estimated position of the boat).

The relative bearings of the beacons are then added to the noted magnetic headings of the boat to obtain the magnetic bearings of the beacons, if necessary subtracting 360°. They are then plotted on a chart to obtain the fix. If the bearings of three beacons are taken and then plotted on a chart the pencil lines will be unlikely to meet at a point. Usually they form a triangle, known as a 'cocked hat'. If the cocked hat is small the indicated position can usually be relied upon.

## Radiobeacon DXing

Many 'landlubbers' enjoy searching for radiobeacon signals. After logging the local ones, the hunt for others may prove to be quite a challenge!

Several factors need to be borne in mind when starting out on this interesting aspect of our hobby. Perhaps the first point to mention is that unfamiliarity with the Morse code need not deter anyone from taking part. The callsigns are sent so slowly that it is possible to jot down the dots and dashes as they are received and then decode them later by referring to a copy of the Morse code. After only a few hours most people find they are able to recognise

certain letters without reference to the code! (Two books about learning Morse are available from the *SWM Book Service* - see page 76.)

## Choice Of Receiver

The capabilities of the receiving equipment will play an important part in achieving good results. Many of the older portables which cover the long and medium wave broadcast bands will also tune to the beacon band, but they cannot detect c.w. signals without modification. This involves injecting the output from an oscillator operating close to the receiver intermediate frequency (i.f.) into, or just ahead of, the detector stage. When an incoming c.w. signal (at i.f.) mixes with the output of this 'beat frequency oscillator' (b.f.o.) an audible beat note occurs, which is reproduced by the loudspeaker. It may be quite a simple matter to add a b.f.o. to an existing a.m. portable. A b.f.o. kit is available from H. Corrigan, 7 York St, Ayr KA8 8AR - see advert on page 66, December '93 *Practical Wireless*.

Relatively expensive modern portables often cover a wide range of frequencies and cater for several transmission modes, including c.w. The digital frequency display will prove to be an especially useful feature. Some have a memory bank in which can be stored the frequency of known beacons for subsequent recall at the touch of a button. Quite good results can often be obtained when using this type of set with just the built-in ferrite rod antenna, but most have provision for connecting an external antenna, which may be advantageous. Some listeners prefer to use a large loop when DXing. Simply placing the set near to the loop may give sufficient coupling and better results than a direct connection.

Some communications receivers can produce outstanding results when coupled to a large loop or a properly matched external

antenna. However, not all such receivers are sensitive in this part of the spectrum and some do not cover the band at all! Such problems can be overcome by using an up-converter to shift the beacon signals to a band more suited to the set. A crystal controlled v.l.f. converter, which shifts all signals in the range 10-500kHz to 28.010-28.500MHz in the 10m amateur band, is manufactured by Datong Electronics - see advert on page 67, December '93 *SWM*.

Because a c.w. signal has no sidebands it is possible to increase the selectivity of the receiver. This will enable the signals to be separated more easily, but an added advantage is that a marked improvement in signal to noise ratio will occur. An optional quartz crystal c.w. filter (B/W 250Hz) can be fitted to the i.f. chain of some modern communication receivers, but a cheaper alternative, which can be used with most receivers, is to install an audio filter between the headphone jack and the headphones. In practice it has been found that some beacons can only be resolved by using a very narrow audio filter (B/W 30Hz) and a good loop to null-out an unwanted co-channel beacon signal.

## Propagation

DXers should bear in mind the differences in propagation during daylight and after dark when searching the band. During daylight, only the waves which leave the beacon antenna at low angles can reach a point of reception. They are known as 'ground waves' because they follow the natural contours of the earth. Any radiation which leaves at high angles will be absorbed by the lowest (D) layer of the ionosphere, which is highly ionised by the radiation from the Sun.

Soon after sunset the D layer disappears to expose the E layer, which acts like a giant mirror in the sky. It may reflect the waves back towards earth. The reflected 'sky waves' may

arrive within or well outside the area covered by the ground waves. The sky waves from distant beacons may be logged after dark, but just how well they are reflected depends upon the state of the ionosphere, which is continually changing. Some DXers use the signal from a distant beacon as a pointer to conditions.

## Interference

Reception at night is sometimes impaired by static and thunderstorms, but man-made electrical interference is a more common problem. A marked reduction in the level of interference from nearby TV sets may be achieved by suspending a random length of wire between two supports erected as far away from the house as possible. A magnetic balun installed at one end of the wire will enable the signals to be conveyed to the receiver via a screened (coaxial) cable.

## Aeronautical Beacons

Many aeronautical radiobeacons also operate in this part of the spectrum and they tend to confuse DXers. Most radiate a plain carrier which is keyed once with a two or three letter callsign in Morse code. There are no breaks in transmission.

## Guide Books

One of the most popular guides is *Reed's Nautical Almanac*. A new edition is published each year by Thomas Reed, 178-185 High Street West, Sunderland Tyne and Wear. Some major bookshops stock the *Admiralty List of Radio Signals*.

The quarterly radiobeacon chart in *SWM* can be used as a guide, but there are many more waiting to be logged!

*As I am putting this edition of the magazine together the distinction between the sea and dry land is a little vague in Southern England! - Ed*

# Global Maritime Distress and Safety System

John Griffiths explains the intricacies of the new Marine Radio requirements and explains how the equipment would assist in a search and rescue operation

The International Maritime Organisation (IMO) has been working for the past ten years on the development of a new safety and distress system that will enhance the current system used at sea. In the autumn of 1988 the IMO convened a conference with a view to revising sections of the 1974 Safety Of Life At Sea (SOLAS) requirements regarding communications at sea with emphasis on safety and distress.

Currently, and in its most basic form, radio at sea provides watchkeeping monitors on two specific frequencies in the DUS portions of the spectrum. Ships NOT carrying a Radio Officer - and there aren't many at sea today that do - would maintain a listening watch on 2.1829MHz and v.h.f. Channel 16 (156.8MHz), while ships with a Radio Officer aboard and over a set tonnage, would, in addition to the above, monitor 500kHz.

However, with effect from 1 January 1992, the new system, known as GMDSS, for Global Maritime Distress and Safety System, came into force which is in line with the revised Chapter IV of the SOLAS Convention. It uses the latest in communications technology to provide immediate distress alerts, rapid transmission of DUS and an efficient communications network during any Search and Rescue (SAR) operations. Now, every ship without exception in its area of operations, should be able to perform ALL communications functions which are vital for its own safety and the safety of other vessels in its area.

With the coming of satellites and the tie-in with radio, advances in radio communications allow for greater coverage and availability, message duplication in the case of safety alerts and, despite natural limitations, like global 'footprints' associated with satellites, mandatory reception of safety messages and associated SAR transmissions. GMDSS allows any ship in danger to automatically link-in

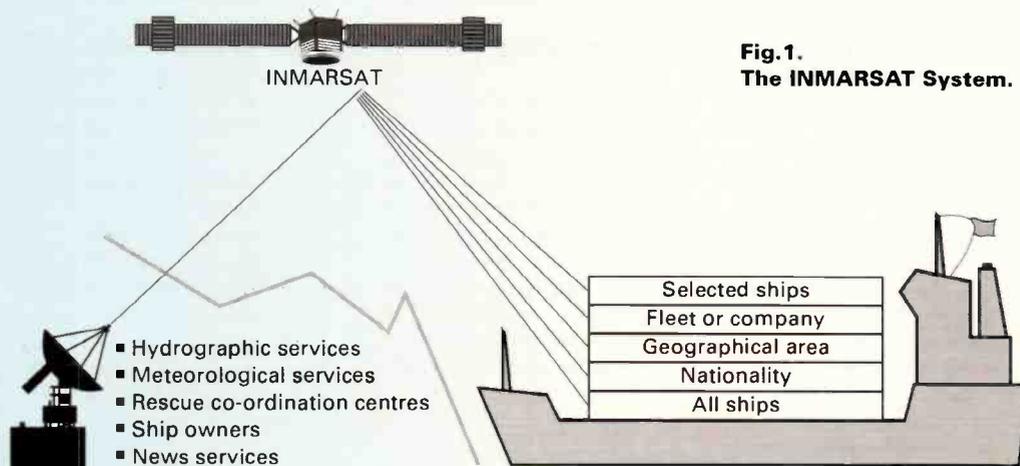


Fig.1.  
The INMARSAT System.

and alert land stations, including rescue co-ordination centres, and pass on the distress to other vessels in the area. Separate systems aboard the ship will allow her to communicate with other vessels as well, in effect doubling the transmission spread.

To ensure the system is up and running as soon as possible, legislation maintains that all vessels constructed after 1 October 1995 must meet GMDSS requirements, whilst vessels built before that date must fit before 1 February 1999, or satisfy ALL requirements of the older Chapter IV SOLAS Convention. Alternatively, for ships built before 1 February 1995, that they must meet all the requirements in GMDSS after 1 February 1999. GMDSS equipment may be installed on both new and existing tonnage on a voluntary basis from 1 February 1992. Many ship owners are already fitting their new tonnage to comply.

## Basic Principles

Ships will fit equipment based on their areas of trading, irrespective of their size. Four areas have been defined:

- A1 Within range of a v.h.f. Coastal Radio Station (CRS) with Digital Selective Calling (DSC)
- A2 Within range of an m.f. CRS with DSC
- A3 Within cover of International Marine

Satellite (INMARSAT) system

- A4 All areas outside A1, A2 and A3 (The Polar regions, North of 70°N and South of 70°S).

For example, a ship trading world-wide and within the INMARSAT area must have the full functions of A1, A2 and A3 while a coastal trader working around the UK coast would only be required to satisfy criteria for A1.

## Equipment

The equipment required is comprehensive, being duplicated in a lot of cases, and covers on an 'All Rights' basis. It can be seen that coverage is a very important by-product of the new system which ensures safety is given the highest priority at all times. For example, a bridge, that is the navigation control centre, will be required to have the following items:

DSC watch receiver/printer for continuous monitoring of v.h.f. channel 70.

A DSC watch receiver/printer for continuous monitoring on 2.1875MHz.

An R/T distress frequency watch receiver for 2.182MHz but only until 1 February 1999.

A NAVTEX receiver - in all areas with NAVTEX coverage.

An INMARSAT EGC receiver - Enhanced Group Call, on ships

engaged in trade in non-NAVTEX areas. However, where Marine Safety Information (MSI) can be received on h.f. Radiotelex or MARITEX, this is not mandatory.

Following that, there must also be as deck fittings, that is, fitted to the fabric of the ship, and able to float free, a 406MHz COSPAS-SARSAT EPIRB or an INMARSAT 1.6GHz L-Band EPIRB. However, where the satellite EPIRB serves as one of two alter-native methods for DUS alerts, if duplicated, then it must have a facility for remote activation.

To round it off for mandatory fittings, there is then the equipment for survival craft. The ship must carry THREE portable v.h.f. units for use in survival craft. If the ship is less than 500 tons gross, then only two must be carried. If the v.h.f. is a permanent fixture in lifeboats, then arrangements for battery charging and/or replacements must be made. In addition to this, all ships must carry a 9GHz radar transponder for use in all survival craft, but, if under 500 tons gross, only one need be carried. They must be kept in an accessible place for transportation to survival craft.

## Distress and Safety Frequencies

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## Radio Equipment Functions

For those with no knowledge of tags such as 'DSC' and so on, in its basic form it is an automatic call system which is digital based. It allows an individual ship to be called - ship to shore, shore to ship, ship to ship - and can be originated from a terminal and sent 'direct' to an addressee. It can also be grouped, e.g. to a company fleet using a code to 'All Ships' in a particular area. It has been in use in aircraft communications for many years - and some amateur equipment has it!

Under GMDSS, equipment will include a processor and a v.d.u. A printer may be attached. A dedicated scanning receiver will be included in equipment fits, scanning on both m.f./h.f. as well as v.h.f.

On m.f. (1.6-4MHz), DSC will be used for automatic DUS communications. A radio-telex will be connected to the equipment for printing. As in all cases, emergency back-up power cable of maintaining the facility will be a requirements in event of a main power source failure.

On h.f. (4.0-27.5MHz) DSC will be sited along with the usual s.s.b. and RTTY/SITOR links. There is a clause requiring upgrading for Duplex R/T should it be deemed feasible. In power output, back up batteries must be able to provide 400 watts of s.s.b. operation, so battery banks will need to be pretty big although with advances in battery development this need not be as big as imagined!

On v.h.f. DSC must provide two-way simplex telephony as well as having DSC TX/RX facilities with the addition of full semiduplex and full duplex operation recommended under the GMDSS umbrella. Important information will automatically be printed out or displayed on a

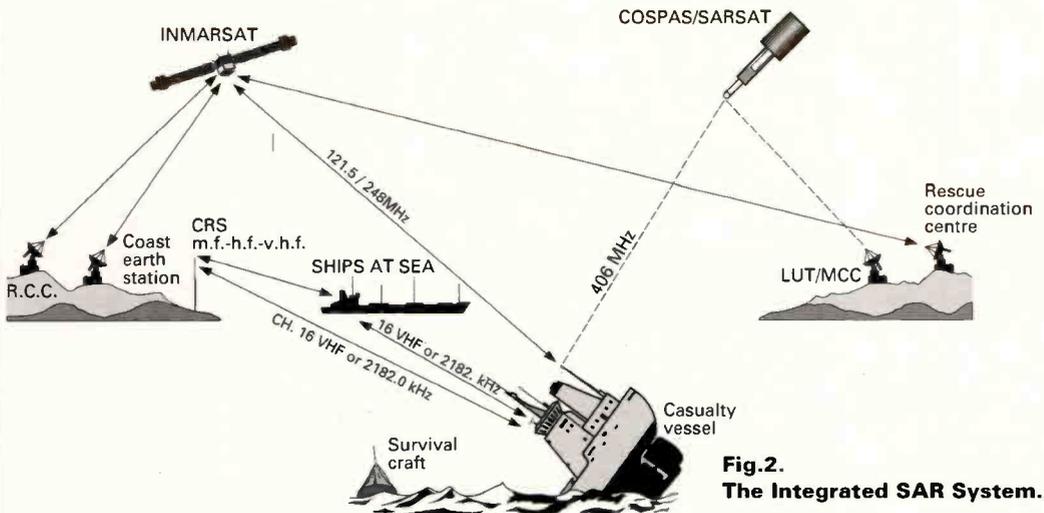


Fig.2. The Integrated SAR System.

v.d.u. or alphanumeric display.

Portable v.h.f. sets must be capable of two-way communications on v.h.f. 16 and at least one other channel. It should be easy to operate and have an output of at least 0.25 Watts. Power source must last eight hours in normal use.

Oh, and should any of the 'purists' be wondering - no, there is no longer a provision for c.w. (Morse) operation. In fact, the General Operators Certificate (GOC) has no provision for Morse as a communications medium.

Further communications items are the Enhanced Group Call (EGC) Receiver. This is part of INMARSAT's EGC Safety Net and enables users to receive marine safety information on a national or regional basis. See Fig. 1. In fact, the International Telecommunications Union (ITU) and the IMO have approved 490kHz for MSI broadcasts in national languages! Some DXers on the East Coast may like to see what they can pick up on that one! This equipment also gives access to 'FleetNET', where commercial information via public data bases can be distributed on a fleet, regional or national basis. Some INMARSAT-B, C and M fits will have an in-built EGC receiver. Some will not. Radiotelex in A3 area must have ARQ (automatic telex fault correcting) as standard, as do vessels in A4 likewise. The system must also provide automatic reception of MSI messages.

So, in terms of communications aboard ship, things appear to be well and truly covered. It should prove to be an exciting time in marine communications as developments 'shrink' the globe making it feasible to send a note from your office desk in, say London to a ship's master

across the world in Australia - and in under an hour! Usage of satellites is proving this to be the case but, prior to GMDSS, DUS was a 'hit and miss' affair, as a lot of owners, especially in poorer third world countries, made use on board ship of sometimes obsolete equipment.

However, to ratify this, the IMO which is the International 'Watchdog' have come up with GMDSS in the hope that safety at sea is now more of an accurate affair than previously. By 1999 all vessels should be GMDSS equipped, the exception being vessels under the lower tonnage limit of 500 tonnes.

## Location Devices

Various methods exist at sea for location of survival craft in the event of a sinking, or other emergencies. Most of these will be Emergency Position Indicating Radio Beacons (EPIRBs) and Search and Rescue Transponders (SARTs). However, in this category also falls the airborne Automatically Deployable Emergency Locator Transmitter (ADELT), which is carried by helicopters overflying water. It will be seen that auto-location devices are not just 'smart' but extremely versatile.

Marine type satellites fall into basic groups. The INMARSAT groups are A (Ship - Earth station), B, M and C are followed by the COSPAS/SARSAT 'birds'. SARTS stands for Search And Rescue Satellite Aided Tracking and COSPAS is an acronym of the same words, but in Russian! In the event of an emergency, beacons can 'call up' the 'bird' and initiation of a rescue mission can be got underway quite literally in minutes.

Quite simply, INMARSAT is one of the main communications systems approved in GMDSS work. It

offers automatic handling of distress traffic by 'phone and telex. Some systems have an in-built function which will report the ship's position automatically in response to a password.

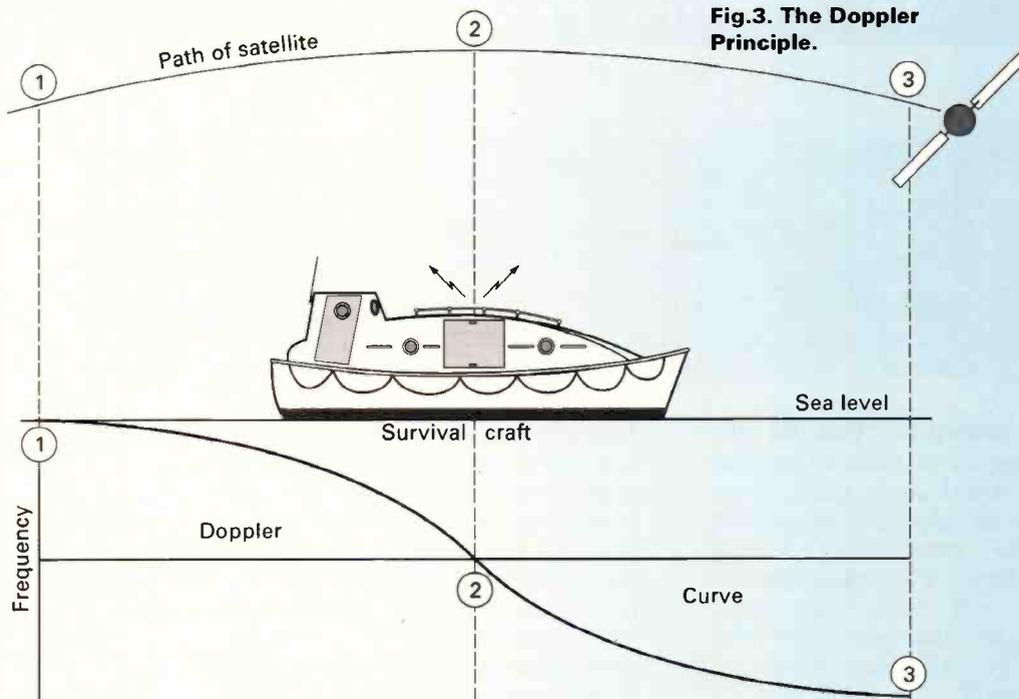
INMARSAT B and M use digital signalling, coming with GMDSS functions as standard and includes the EGC facility. Users know which satellite is which as INMARSAT M is a simplified version of B, denotable by the slight reduction in voice quality due to an antenna that does not compensate for sea movement.

INMARSAT C is based on an automatic telex transmissions between two electronic mailboxes. It is limited to 600baud and is standardised for use with PCs, carried nowadays by most ships. 'C' has auto reception of EGC messages as standard.

COSPAS/SARSAT is a low altitude, polar orbiting satellite which monitors all parts of the earth. It uses space segment packages as the 'birds' are not exclusively used for sole SAR work. In the event of any DUS traffic being received, it would automatically pass on the information to a LUT, Local User Terminal. COSPAS monitors signals on 121.5MHz and 406MHz and SARSAT monitors both of these plus 243MHz.

In actual use the system would run as follows (see Fig.2.): In the event of EPIRB or SART or ADELT triggering the satellite, the signal would be temporarily stored until a ground receiving station comes into view. It would then re-broadcast the information it has stored, which would be acted upon by staff at the ground station. Typical time in European waters is 45 minutes or less.

406MHz beacons are stored with the ship's name and callsign, while 121.5MHz EPIRBs



**Fig.3. The Doppler Principle.**

are monitored also by aircraft.

The 1.6GHz L-band EPIRB transmits its signal via geostationary satellites. Within range of the space segment, outside the Polar areas, it can send position and identify in near real time. At least one of the CRS in the coverage area will have L-band processors for auto-alerting of SAR services. Location comes from the beacon transmitting its position and this is done by the use of an on-board Global Positioning System (GPS) receiver which constantly updates its position. Later developments are planned to include a keyboard, making additional information for the SAR services available. Accuracy is, it is claimed, down to 200 metres.

SARTs respond automatically with a transmission of a special 9GHz or 3cm sweep signal when interrogated by a radar in the 9GHz band. This signal appears as a line of 20 dots on a radar screen, which provides a line for a bearing. The signal can also be picked up by a suitably equipped aircraft and at a much greater range. On interrogation, an audible alarm and visible indicator will sound and flash on the SART, indicating that the beacon has been 'seen'.

ADELT is ejected from an aircraft at 8m per second in order to clear props, fuselage and rotors. On deployment, activation is automatic and it begins to transmit on 121.5MHz and 243MHz plus bringing in an X band radar transponder. All of these frequencies are air and sea compatible. Like the SART above, the reflected interrogated

signal is unmistakable and obvious.

### System On-Pass Operation

Should an LUT be informed of a DUS message via satellite it will come to them via an MCC, and will decipher the data needed for things like callsign, name and position. Data links from satellites to LUTs are carried out on 1544.5MHz. A Doppler component exists in this link due to the motion of the low orbiting satellite. The Doppler component is used to fix the location of the emergency transmission, this results in last and long fix which is then on-passed to the Mission Control Centre (MCC). The UK LUT is at Lasham in Hampshire.

### Doppler Principle

By looking at **Fig. 3** we see that in the left-hand side the satellite (travelling left-to-right) approaches the transmitter. Here the frequency of the transmitter received by the satellite is higher than the transmitted frequency. When the satellite is overhead or alongside the transmitter, the received frequency is the same as the transmitted one. As the satellite passes away on the right-hand side the received frequency is lower than the transmitted one. The curve, called a Doppler Curve, is monitored by the LUT and results in them working out the Time of Closest Approach (TCA) of the satellite. Using the slope of the curve it can be determined how far the emergency transmitter is from

the satellite. By knowing the exact position of the LUT and the satellite, fixing the transmitter's location is a matter of knowing the other two and computing the TCA.

### Mission Control Centres

The UK MCC is at Plymouth in Devon. It is a national point of contact for data exchange, and this involves the transfer of system control data which is needed at the LUT and from other MCCs. Once data is received at the MCC from its associated LUT, SAR responsibility is determined and the alert sent out to the Regional Control Centre (RCC). Military RCCs in the UK are located at

Edinburgh (Edinburgh Rescue) and Plymouth (Plymouth Rescue). In civilian locations, centres would be those manned by HM Coastguard and are located at Falmouth, Dover, Great Yarmouth, Aberdeen, Clyde and at Swansea. Certain CRSs also have an alert responsibility.

So, by combining GMDSS with established SAR procedure, and making it a mandatory system by 1999, the IMO will hopefully be able to achieve a world-wide safety net from which mariners the world over, and aviators too, can safely assume the nature of their distress can not only be ascertained, but pin-pointed and, let's face it, down to 200m (700 feet or so) is pretty accurate! Then, using traditional methods of marking such an orange dye and smoke flares, pyrotechnics and the still used 'mirror to catch the sun' device, location can be more or less dead on.

With alerts taking minutes, thanks to the advances in technology safety at sea has never been in better stead. Who's have thought though that the old Morse code, used so dramatically through the years, would finally have been usurped - and in the very environment it proved so good in?

I trust that, if you're into marine monitoring on whatever bands, this look at GMDSS, which is even now taking a hold aboard ships, was simple enough to follow. Don't worry if it isn't - even hardened and experienced seafarers are having nightmares about it! Then again, I expect they said the same about Morse, too.

### Abbreviations

ADELT	Automatically Deployable Emergency Locator Transmitter
ARQ	Automatic Repeat reQuest
COSPAS	Search and Rescue Satellite Aided Tracking ( <i>in Russian!</i> )
CRS	Coastal Radio Station
DSC	Digital Selective Calling
EGC	Enhanced Group Call
EPIRB	Emergency Position Indicating Radio Beacon
INMARSAT	International Marine Satellite
ITU	International Telecommunications Union
GOC	General Operators Certificate
GMDSS	Global Maritime Distress and Safety System
GPS	Global Positioning System
IMO	International Maritime Organisation
LUT	Local User Terminal
MCC	Mission Control Centre
MSI	Marine Safety Information
RCC	Regional Control Centre
SAR	Search and Rescue
SARSAT	Search and Rescue Satellite Aided Tracking
SART	Search and Rescue Transponder
SOLAS	Safety Of Life At Sea



# For the best in Shortwave Look to Lowe Production



The HF-235; It's a little known fact that the HF-235 dominates its own sector of the market, but where you have a true professional need, there you will find the HF-235. Broadcasting companies use them for remote monitoring; airline companies with international HF networks use them for keeping in touch with their fleet; Government monitoring services use them (but who knows for what?); but what has this to do with the short wave listener??

I simply use the HF-235 to show that the team at Lowe Production Ltd. not only design and make short wave receivers for the enthusiast, but are equally at ease in professional markets. Mind you, it is true that there are many individual owners of the HF-235 who appreciate its quiet, relaxed approach to the HF bands and who prefer the professional style of a rack mounted unit. If you want to know more about the HF-235, just ask for a brochure or write to me at the address on this page.

## Why the "Europa"??

Many people have asked me why we made the "Europa" version of the HF-225, and how it differs in performance. The "Europa" is a very carefully reworked HF-225 aimed at the real short wave DX enthusiast, and the performance we obtain from the "Europa" comes from a host of detail changes, each one contributing to the end result. For example, those of you who follow "leading edge" technical discussions will know that several well respected authorities such as Ulrich Rohde (as in Rohde & Schwarz) have pointed out that intermodulation can be caused by the switching diodes used for filter selection (RF or IF), and that by correct selection and biasing of these diodes a great improvement in intermodulation performance can be gained. The snag is of course that a typical switching diode might cost 2p whereas the diodes we are talking about could be £2 or more – but we fit just such diodes to the "Europa" because the results are worth it to the user who can tell the difference. This is just one small example of the "Europa" approach, but when we have fitted all the detailed improvements, including a new filter bank, and new control software, and specially selected magnetically shielded filter inductors, and so on and so on, you have one h\*\*l of a receiver.



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*Happy Listening*  
*John Wilson*



## For Design and Manufacture Look to Lowe Production

### *New Year – New Company*

When I first suggested some eight years ago that we had the knowledge and ability to design and manufacture a British short wave receiver, some people told me I was dreaming. But perhaps due to my foresight and certainly due to another man's talent (the genius of John Thorpe) I am delighted to announce that we have reached the point where the design and manufacturing team can stand alone as a separate company to be known as "Lowe Production Limited". During that eight year period we have produced a series of receivers with a particularly "Lowe" flavour which comes from having a clear vision of what the short wave listener needs from his radio, and an equally clear determination from John Thorpe and myself to design our products to give the results in performance, features, and reliability which we see as correct.

Not that we stop at receivers; in addition to a growing number of short wave accessories such as the WireMatch aerial system and the PR-150 preselector, we have also designed and produced pulsed laser equipment for the treatment of veterinary injuries, and we are involved in design consultancy for very high quality compact disc transports and signal processing, so there is more going on here than many folk realise.

I did say "The Team", and I consider myself fortunate to have an enthusiastic and capable group around me. In the photograph you will see John Thorpe in the centre, surrounded by Jean Jones my production controller; Kevin Whitehead my general manager; Beryl Goulding in charge of sales order processing and everything else; and then there's me at the back with the specs. We look happy because we are; it's not every day you get a chance to go forward to an exciting future, particularly in these dark days, but we are all short wave enthusiasts at heart and what better work than your hobby?

There is another "Team" of course, and that is made up of Carl and his merry men; Dave, Steve, Mark, John and Henry. If I could only stop them working and gather them together in front of a camera I could present them to you – perhaps next



month, but they are the chaps who have put together your receiver with such care and skill, and my thanks go to them for their dedication.

Finally, we all thank you dear reader for supporting our little company by buying, and I hope enjoying, the receivers which we make. Without you we would not exist, and I hope that we can count on your support in the future. If you have any comments on what we do, we are here at our new location for you to ring or write to us. It's by listening to you that we can all listen to the world with such ease.

*Happy Listening*

**John Wilson**  
Managing Director

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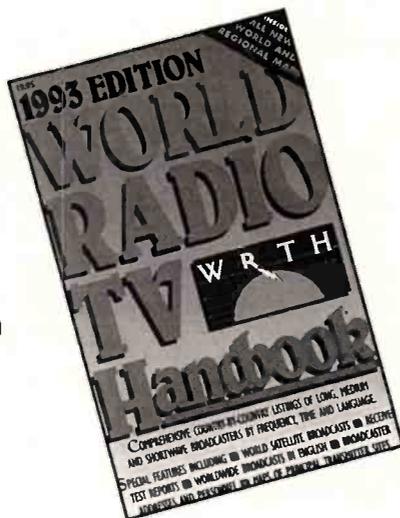
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Join the *Practical Wireless* party, led by *PW* Editor Rob Mannion G3XFD, when we fly out on a scheduled Delta Airlines flight from Gatwick on Monday April 25 1994. We'll fly direct to Cincinnati, then our private coach will take us to the Holiday Inn in Dayton for our seven night stay.

There'll be several day trips in our private coach and we'll spend a day at the world famous United States Air Force Museum. There's plenty of shopping and other attractions for the family too!

Book your seat on the *PW* 1994 HamVention Holiday for only £630 per person, sharing a twin bedded room. Single rooms are available for an extra £205. The price includes the return flight and meals on the aircraft, coach transfers, accommodation for seven nights, two day excursions by coach and an admission ticket to the HamVention. We return home on Monday May 2, arriving at Gatwick on Tuesday morning.

Although Rob Mannion G3XFD is leading the *PW* party, the entire holiday is being organised by the Bristol based professional tour group operator RCT International. Sheila Bayliss at RCT is waiting for your enquiry and she'll be delighted to send you a full itinerary and booking form. Don't delay, telephone Sheila now or send away today and you'll fly with *PW* to the greatest amateur radio adventure of 1994!

**Seats to Dayton HamVention 1994 are strictly limited, don't miss your chance...book now. We don't want you to miss the flight!**

To Sheila Bayliss  
*Practical Wireless* 1994 HamVention Holiday  
RCT International  
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I am interested in joining the *Practical Wireless* 1994 Dayton HamVention Holiday, please send me further details.

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# short wave magazine *Reader Survey*

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To enter the free competition all completed questionnaires must be sent to the address on page Q4. Entries must be received at the SWM offices by Friday 30 April 1994. The first questionnaire drawn out by the Editor will win the sender the ARA antenna. The two runners up will win the one year subscriptions. The Editor's decision is final and no correspondence will be entered into.



### How many issues of SWM do you usually buy a year?

1  3  6  9  12

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### Do you have difficulty finding a copy of SWM?

Yes  No

### How many other people usually read your copy of SWM?

None  2  4  6   
1  3  5  7 or more

### How many of these magazines do you also read or buy per year?

	None	1-3	3-6	6-9	9-12
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### Which of these newspapers do you regularly read?

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### Do you own a home computer?

Yes  No

If "Yes", which type (e.g. BBC, IBM PC Compatible, Macintosh, etc).

**Do you hold an amateur radio transmitting licence?**

- No
- Yes (Class A)
- Yes (Class B)
- Yes (Novice A)
- Yes (Novice B)

**How much do you spend on the radio hobby in an average year (including QSL expenses, books, equipment, shows, etc)?**

- |                                    |                                      |
|------------------------------------|--------------------------------------|
| Under £50 <input type="checkbox"/> | £251-£500 <input type="checkbox"/>   |
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**Have you ever bought anything from an advertisement in SWM?**

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| 1 <input type="checkbox"/>    | 3 <input type="checkbox"/> | 5 or more <input type="checkbox"/> |

**How would you describe your expertise in electronics?**

- Beginner       Average       Advanced

**Which of these clubs/societies/groups do you belong to?**

- |   |                                 |                                |
|---|---------------------------------|--------------------------------|
| AMSAT <input type="checkbox"/>                | BARTG <input type="checkbox"/>  | BATC <input type="checkbox"/>  |
| G-QRP <input type="checkbox"/>                | EDXC <input type="checkbox"/>   | ISWL <input type="checkbox"/>  |
| RAYNET <input type="checkbox"/>               | RSGB <input type="checkbox"/>   | RIG <input type="checkbox"/>   |
| ILA <input type="checkbox"/>                  | WACRAL <input type="checkbox"/> | Local <input type="checkbox"/> |
| Radio Sation DX Club <input type="checkbox"/> | None <input type="checkbox"/>   | Other <input type="checkbox"/> |

**Do you have any other major hobbies? If so, what are they?:-**

**How interested are you in the following regular features in SWM?**

	Very interested <input type="checkbox"/>	Fairly interested <input type="checkbox"/>	Slightly interested <input type="checkbox"/>	Not interested <input type="checkbox"/>
Reviews - Receivers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reviews - Scanners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reviews - Accessories	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Historical Features	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Constructional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Modifying Equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Letters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Junior Listener	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Advertisements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grassroots	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
News	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Airband	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Amateur Bands Round-up	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bandscan America	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bandscan Australia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bandscan Europe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Decode	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DXTV Round-up	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Info in Orbit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Long Medium & Short	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maritime Beacons	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Off the Record	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Propagation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Satellite TV	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Scanning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SSB Utility Listening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Watching Brief	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trading Post	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rallies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Competitions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Book Service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Special Offers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**On a scale of 1-10, how would you rate the content of SWM?**

(Not technical enough)      1      2      3      4      5      6      7      8      9      10      (Too technical)

**We regularly devote issues to a theme and sometimes we add extra pages in the form of free pull-out supplements. How do you rate them?**

	Very interested	Fairly interested	Slightly interested	Not interested
<b>Themes</b>				
Simple Receiver Projects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Airband	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Marine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Propagation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Antennas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Historical	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Projects to Build	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Computers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Radio Stations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Going on Holiday	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Free Supplements</b>				
<i>What Scanner</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Guide to SWL</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**How interested are you in reading about the following aspects of radio?**

	Very interested	Fairly interested	Slightly interested	Not interested
Help for Beginners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
New Products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
News Items	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Computing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Modifying Equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Test Equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CB	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Airband	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Historical Items	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Show Reports	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Scanning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Short Wave Listening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Constructional Projects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Satellites	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (Specify _____)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**How do you rate the overall design and layout of SWM?**

Poor            Fair            Good            Excellent     

**How do you rate the look of SWM's covers?**

Poor            Fair            Good            Excellent     

**How easy is it to spot SWM on the newsagent's shelf?**

Very Easy            Fairly Easy            Fairly Difficult            Very Difficult     

**How often do you construct projects published in SWM?**

Never            Seldom            Often            Always     

**How closely do you read the advertisements in SWM?**

I read all or nearly all of the advertisement     

I read some of the advertisements     

I read the occasional advertisement     

I never read the advertisements     

**Which of these do you listen to regularly?**

Broadcast Stations	<input type="checkbox"/>	Utilities	<input type="checkbox"/>
DXTV	<input type="checkbox"/>	Fax	<input type="checkbox"/>
Airband	<input type="checkbox"/>	SSTV	<input type="checkbox"/>
Weather Satellites	<input type="checkbox"/>	Amateurs	<input type="checkbox"/>
Bacons	<input type="checkbox"/>	Amateur Satellites	<input type="checkbox"/>

Other \_\_\_\_\_

**Which of these bands do you listen to most often?**

	Usually	Often	Sometimes	Never
Long wave	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Medium wave	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
VHF FM	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6MHz	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7MHz	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9MHz	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11MHz	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13MHz	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16MHz	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19MHz	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21MHz	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25MHz	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Satellites	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Airband	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Utilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DXTV	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Amateur	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Can you say, briefly, how you would like us to improve SWM?**

---



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**PERSONAL DATA**

Personal details are required for statistical purposes and will be treated in the strictest confidence. Please ignore any of the following questions that you do not wish to answer. You must, however, supply your name and address if you want to be included in the prize draw. The information in the questionnaire will be stored on a database but it will not be stored and/or associated with your name and address.

**How old are you?**

Under 15	<input type="checkbox"/>	46-55	<input type="checkbox"/>
15-25	<input type="checkbox"/>	56-65	<input type="checkbox"/>
26-35	<input type="checkbox"/>	Over 65	<input type="checkbox"/>
36-45	<input type="checkbox"/>		

**Are you employed in an electronics related field?**

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

**What is your annual income?**

Under £6,500	<input type="checkbox"/>	£15,001 - £20,000	<input type="checkbox"/>	Over £30,000	<input type="checkbox"/>
£6,500 - £10,000	<input type="checkbox"/>	£20,000 - £25,000	<input type="checkbox"/>		
£10,001 - £15,000	<input type="checkbox"/>	£25,001 - £30,000	<input type="checkbox"/>		

**Please tick this box if you do not want to receive further information from PW Publishing Ltd and/or associated companies**

Thank you for taking the time to fill out our questionnaire. If you write your name and address in the space below and send the completed form to the address below, you will be entered into our free prize draw. We will be happy to pay the postage\*.

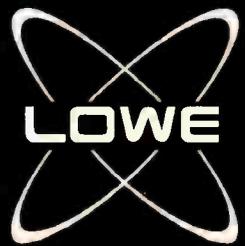
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 ADDRESS \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 POSTCODE \_\_\_\_\_

\*Unfortunately, the FREEPOST facility is only available for readers within the United Kingdom, Northern Ireland, Channel Islands and the Isle of Man. Despite this, although readers abroad will have to pay the postage to return their questionnaires, they will still have free entry to the competition, and with the closing date of 30 April 1994, we have allowed plenty of time for entries to arrive from around the world. - Ed.

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**Frequency coverage:** 30kHz-30MHz.

**Modes:** USB/LSB/AM/Sync. AM (selectable 5'band).

**IF Bandwidths:** 2.5kHz & 7kHz.

**Tuning:** 8Hz steps with variable speed. **Memories:** 60 holding frequency & mode.

**Aerial inputs:** 600 ohms, 50 ohms & Hi-Z Whip.

**Power:** 12Vdc from mains adaptor (supplied).

**Case:** All metal light alloy case.

**Size:** 185mm(W) x 80mm(H) x 160mm(D).

**Weight:** 1.3kg (less batteries).



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# Radio Days

*Many of us have to put up with less than ideal radio shacks. Bob Ellis describes a wireless set that almost required mountaineering skills to adjust.*

I'm sure Woody Allen won't mind if I borrow one of his film titles for this little piece. Like Allen reflecting on his native New York, radio for me has always been a thing of wonder, mystery and magic. Something special, your closest friend and yet somehow out of reach. Growing up in a Midlands town, the first radio I can remember was out of reach. It was screwed to the ceiling!

To live in Derby in the early sixties meant that Dad was a Rolls Royce man, so could turn his hand to anything. We lived close enough to the engine test beds at Sinfin to have their constant roar as a backdrop to everything we did. Just as you were getting complacent, one of them would playfully fire a loose bolt through next-door's greenhouse. It kept you on your toes.

The radio had probably been a bargain. A marked cabinet, perhaps. For a few hours, the test beds became a poor second to the sound of manic carpentry from the prefab garage. The new cabinet had a front, but no sides. It was nothing more than a large baffle board the width of the back door, a system of chains holding it a jaunty angle between the top of the door frame and the ceiling.

To this day I can't work out where it got its power from. All I can recall is that when Mum stood on a chair to switch it on, the reassuring

glow of the station glass was followed by the strains of The West End Celebrity Orchestra with the theme to the *Housewife's Choice* on the Light Programme of the BBC – fifteen hundred metres on the long wave from Droitwich. Station names like Daventry, Warsaw and the other country that was West Region hold memories for all my generation, more so when to read them meant dragging the kitchen table, a vision in yellow Formica, over to the back door then, from a chair placed on top of it, listening could begin.

Minor adjustments could be made by leaning out from the work surface, a route only attempted after scaling the north face of the Aga. What wonders were held frozen in the station glass. Reading across you find the results of early European Cup matches; Hilversum 1, Sottens 2, a sad day for Hilversum fading in extra time. I could find Prague in the school atlas, but where was Athlone?

Tuning to Saar-Louis only got me the news in Welsh – writing to the External Service of the BBC only got me a terse note from the Board of Trade telling a six-year-old that grant-in-aid funded broadcasts in the Empire Service are not for domestic consumption. Tell a boy he should not be listening and you have a listener for life!

As the family settled down with Perry Mason, the

scaffolding would be erected in the kitchen for the evening session. News from Moscow had to wait until I knew the winner of *Have A Go* and the eight o'clock repeat of *The Goon Show*. Moscow and AFN played cat and mouse across the dial agreeing only when Cuba became the perfect holiday home for nuclear missiles. We stood at the brink of war, but as long as Sunday lunch brought me *Round the Horn*, *The Navy Lark* and in the grey afternoons of winter, *The Clitheroe Kid* and *The Billy Cotton Band Show*, that was a problem for the grown-ups.

My only problem then was Sam Costa. As the days went by he was getting fainter and fainter. Dad said one of his valves was going and we could sort it out at the weekend. This would mean missing *Saturday Club*, but it would be worth it. The radio was taken down from the altar above the back door and dusted. Each valve was removed with a true sense of ceremony, wrapped in newspaper, its position noted on the back of a fag packet.

You had to queue in a radio shop in those days. An earnest young man in a white coat took our newspaper parcel into the back room. Whatever he did in there, he had to do it alone. A man's relationship with his valve tester is a personal thing.

The worst part is the waiting. After what seemed an age our hero returned and told

me to be strong.

"It's the rectifier. Gone low emission. I'm very sorry".

Not as sorry as Dad. A new 7Y4 would set him back fourteen shillings. On the journey back, he moaned about paying for new technology. "These all-glass valves are bound to fail because you can't seal glass against the metal pins. They never had this problem with International Octal..."

The new valve was fitted in an atmosphere of relief and resentment, depending on which one of us owned the wallet, normal service being resumed just in time for *Two Way Family Favourites*.

After Dad had had a chance to mourn the passing of fourteen bob, he decided to turn his loss to my educational gain by breaking the glass of the old valve to explain to me how it worked.

It was obvious to me that it could never have worked. I'd been making circuits with batteries, bulbs and switches and had learned that if you wanted it to work, there must be a circuit across positive and negative. The bits inside the valve aren't connected to each other. No wonder it didn't work! I know better now, of course. As I finish this while listening to Classic FM on a fully synthesised wireless, I realise just how far we have come.

But where is the magic?

**Don't forget, if you have difficulty finding Short Wave Magazine at your local outlet, call the Editorial Office in Poole and we will talk to our distributors to find out why!**

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# Timestep PDUS

*Lawrence Harris reviews of one of the first METEOSAT Primary Data systems to become available at amateur prices.*

There can be few people who have not seen the weather pictures routinely shown on most weather forecasts. These are pictures taken by the geostationary METEOSAT satellites, orbiting the earth at some 35800km.

## METEOSAT data

METEOSAT transmits different types of telemetry, apart from digital and analogue picture data. Forecast charts and other basic information are broadcast as part of the Meteorological Data Dissemination (MDD) to small receiving stations, often called SDUS (Secondary Data User Stations), as WEFAX images.

Major national weather centres and research establishments often require images of the highest possible quality, and this is where Primary Digital data comes in.

This product from Timestep Weather Systems is not designed to receive WEFAX. It goes all the way and decodes the original, high resolution (Primary Data) digital images transmitted on 1694.5MHz (channel 2), from which WEFAX pictures originate.

## Primary Data

The main mission for METEOSAT is the generation of 48 cloud images per day using three spectral bands - visible light, thermal infra-red and infra-red (water). This data is used for short term forecasting, although the same information produces a range of products for use in both meteorology and longer term climate studies.

Different types of image are broadcast, some being full earth (called A-format), and others which include Europe and a section of North Africa (called B format).

Each PD transmission usually contains images from more than one band, the data being interleaved. The AV format is a whole disc, visible light image having maximum

resolution - 2.5km, but AIVH contains both infra-red and visible images, each at 5 or 10km resolution; AW contains the water vapour image. Test images and re-transmissions from other satellites - METEOSAT 3 and the Japanese GMS are also broadcast.

## Hardware requirements

To receive and decode Primary Data from METEOSAT you need several items of hardware, and a suitable computer. The first item, and the only item, apart from the computer, not supplied by Timestep, is a large dish!

Although 1m, or even slightly less, can get you a good, apparently noise-free WEFAX image, to obtain reliable Primary Data, using current technology, we are looking at an absolute minimum of 1.6m diameter, with a strong preference for 1.8m. The 1.6m dish size can give good images if everything else is, and remains, perfect. For everyday operation you need a system with some flexibility, so that slight degradation of system performance in one or more of the associated components does not mean that the images are immediately degraded.

A 1.8m dish is large and must be accommodated properly. For correct use it should be supported at least half a metre above the ground, and preferably have provision for controlled movement in both elevation and azimuth. Such dishes are becoming more easily obtainable. It may also be prudent to enquire about planning consent from the local council.

## Feed and pre-amp

The dish must be fitted with the supplied horn feed, mounted on three long threaded rods, fitted near the rim of the dish.

A high quality pre-amp, provided as part of the equipment, is designed to be totally compatible with the rest of the hardware.

Cable of some 20m length was included, balanced to the pre-amp and receiver, so there was no need to cut it shorter. At first I was surprised to see F connectors fitted, but these have proved very efficient in combination with the CT100 cable.

The dish and pre-amp deliver the 1694.5MHz signal along the CT100 cable and into the receiver. This was upgraded during the review period, now having three switches and two rotary controls. Fortunately there is an absolute minimum of day to day adjustment required.

The receiver is connected to a card, slotted into a 16-bit expansion bus inside an AT computer - a standard procedure. Before installation I examined it carefully, noting the gold-plated connectors and neat, construction.

## Primary Data Receiver

This is a small unit, about 200mm wide by 80mm high and 140mm deep, with three switches, two rotary pots, and a carrier meter. It can take time to settle - no doubt enhanced thermal stabilisation will become a future upgrade.

To align the dish precisely for PD reception, I attached a micro-ammeter to a long cable and plugged it into the receiver output provided for this purpose, on the rear of the receiver. It indicates the carrier level to help with remote positioning. Alternatively, grab your spouse or other friendly person, and they can call out signal readings!

One switch selects 1691.0 or 1694.5MHz (to allow for possible transmission changes), and another switches between the carrier signal strength and data

tuning. The manual briefly describes the necessary adjustments, though without providing any significant information about the nature of what you are asked to do. Fortunately the equipment worked despite the manual's shortcomings.

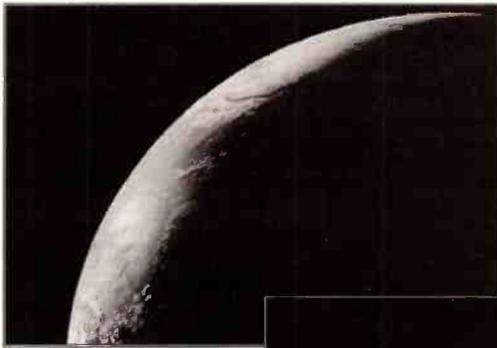
The receiver switches were set, the process completed within about fifteen minutes! It is a mark of the effectiveness of the hardware design that this took so little time. Other facilities on the back of the receiver include an i.f. monitor and other outputs, none of which I needed to use.

I found that for the first ten to fifteen minutes, the receiver was stabilising, so early decoding required some adjustment of the tuning control to obtain good lock. Sometimes the lock light would come on yet no data appeared on the screen.

## Computer requirements

Although framestores are often used for WEFAX imagery, a computer is virtually essential for Primary Data. For this system, you need an absolute minimum of a fast 286 machine; my own operations mostly use a 386DX running at 33MHz. A 1Mb RAM video card with SVGA graphics is also required. A hard drive is essential and it should be a reasonably good quality one - maximum 28ms access time.

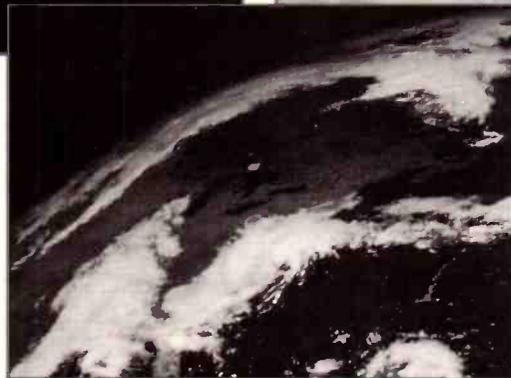
Timestep recommend the ET4000 video card. Using a different card means that the animation program gives only marginally usable results. The problem appears to be that the ET4000 card is one of only a few which permit bank switching - the ability to hold multiple images so that different ones can be switched into the display. I suspect that there might be software options potentially available to overcome this feature.



**Fig 1. METEOSAT-4 1 August 1992 2100UTC. The crescent earth seen in visible light.**



**Fig 2. METEOSAT-4 4 July 1992 eastern Mediterranean.**



**Fig 3. METEOSAT-3 25 September 1992; lakes of north America.**

## Setting it all up

Having manoeuvred the dish into the approximate position - pointing towards METEOSAT 4, I configured the equipment for WEFAX reception so that the signal could be located using the audio tone. Aligning the dish for the best initial signal proved the system was working, so I changed the input connection from the WEFAX receiver to the PD receiver.

## Test Image

Several separate programs are provided, and installed virtually automatically using the supplied software. The first is called MTEST, used in initial setting up - which puts every line of decoded data (normally infra-red) directly on the screen without saving. The resultant image is only for quality checking. It is necessarily distorted but allows you to see whether the lines are good. If any are corrupt you may need to troubleshoot. Any problems with the data stream will be obvious - missing data shows as lines or black bands; noisy data may show partially reversed sections.

If you have carefully positioned the dish and confirmed the signal strength then you should get a good quality picture. I ran this test for some time to ensure that

the receiver was operating consistently. When the quality is good, and it almost certainly will be, then you have got yourself a working system - read on!

After monitoring image reception quality (using MTEST), I ran the main PDUS program. The manual lists image types transmitted by METEOSAT, including resolutions (at the sub-satellite point) and the duration and frequency of transmissions. EUMETSAT publish the official dissemination schedule.

Software scales the image so that the whole of the format is shown during collection. Realtime data is stored with the filename TEMPDATA.MPD, and subsequent images replace previous ones with the same name.

After collection, you can zoom in to any selected region. Higher resolution formats give more detailed images - from 2.5km at the sub-satellite point, down to the lower resolution figures seen at higher latitudes.

Every line contains position information, so, unlike WEFAX data, you can start image decoding at any time during the transmission, and the program plots the image in the correct position. This can be useful if you don't have enough disk space for a complete image.

Data is written directly onto the hard drive. This is necessary because images

contain up to 30Mb of data, and is the reason for having a reasonably fast disk drive. You may also need to perform file and space consolidation from time to time.

## The software

The PDUS program is styled on the PROsat II format and has a similar menu choice - FILE, SECTION, RECEIVE, DISPLAY, COLOUR, OPTIONS, and QUIT.

FILE allows the loading of previously saved PDUS images which can take several seconds to load! SAVING the image is as quick as it is merely necessary to rename the temporary file. Image deletion and directory switching are also included.

The SECTION option allows marking for subsequent saving of a selected portion of the complete image. This facility lets you select the important part of an image instead of saving the whole image. RECEIVE offers several choices. You can start image collection immediately, or, using the SET READ TIMES option, do it under program control during your absence. Select AUTOSAVE and the software waits until the next programmed time slot.

The DISPLAY option allows channel selection when image collection or loading is complete, and indicators show what is available, though these do not always seem to

be accurate, sometimes indicating an absent channel as being present. You can select an area for zooming and the function keys are suitably programmed.

## Enjoy the View

When you collect either the European or whole disk images, you have, in one image, greater detail than seen in the sum total of all the WEFAX images that METEOSAT transmits during a whole hour.

I find several areas to be of great interest. The island of Sicily has the active volcano called mount Etna. When it erupted several months ago I was able to see the smoke emissions over several days. Images of the ever-changing snow covered peaks of the Alps, and the ice forming and melting around Norway are transmitted every half-hour. Yes, I even used it to see our weather! I also find that these images are a considerable help when I am planning on setting up my telescope for a night's observing. Individual clouds around Dartmoor and Plymouth Sound can be seen.

Special mention must be made of morning and evening visible-light whole disc images. They cannot have significant applications near these extremities but they look incredible - just like the crescent moon. Add some gentle false colouring and they are a must.

## Re-transmitted pictures

There are so many different areas available from these Primary Data images that selecting a few for detailed comment is a problem! METEOSAT 3 is currently near longitude 72°W, and some of its images are re-transmitted by METEOSAT 4 in the LXI slots.

The Amazonian rivers and jungles have proved consistently fascinating to me,



**Fig 4. METEOSAT-4 total solar eclipse 30 June 1992; circular shadow over south Atlantic.**

and can be scientifically monitored on a regular basis. Whole disc thermal images of America from METEOSAT 3 are re-transmitted from METEOSAT 4 every hour.

Further north, between Canada and Greenland we have the area which the higher orbiting METEOR WXSATs occasionally reveal to people monitoring from Britain. METEOSAT Primary Data images routinely show these areas, though from a different perspective. The enormous ice sheets and icebergs are visible in different spectrum images.

## Temperature

A complete infra-red image includes calibration data. This can be used by the software to allow both temperature profiles, and the direct reading of temperature to be accomplished. It works a treat! Images are calibrated to high accuracy, so you see displays such as  $-30.3^{\circ}$  indicated. The accuracy of the read-out compares well with the calibrations on NOAA polar WXSATs. I tried this and found them to be similar, but the thickness of the atmosphere might cause some distortion at higher latitudes for METEOSAT readings.

## Bugs??

Yes I did find a couple of bugs, even if minor. Using the mouse to move the pointer for menu selection is fine. When you switch to SECTION for zooming, it sometimes jumps to an unpredictable position. I can live with this one!

A second, slightly more

puzzling problem may occur during the use of AUTO-INVERT under the OPTIONS menu. This facility is used to reverse the display of infra-red images, and is very useful for METEOSAT 3 visible images which are sent in reverse grey scale. This initially operated correctly, but suddenly reversed its logic! My version now shows the proper grey scale when the option choice indicates that it is reversed. Timestep suggest that this might have been caused by data corruption from a METEOSAT 3 image.

Another 'bug' I found was the unclear result occurring if your disk becomes full during data collection. On my computer the image simply started to display regular missing lines; this then became the indication of a full disk. At least the system didn't crash!

In my view these problems are not very significant.

## Picture conversion

The software allows conversion from PD images (.MPD) to PROsat II (.DAT) files, and to both SCF and PCX file formats. This means that further conversion to common formats is possible. I tried all conversions using a variety of images and the results were excellent. It allows the selection of a section of the UK for saving and conversion, which can be read by DTP programs and even into my word processor for use as a letter logo! I also found it cheaper on disk space to convert files to PCX format, then compress using PKZIP or similar program.

## Animation software

There are two animation programs supplied - PDAFANIM, which animates the whole earth (A-format) infra-red images, and PDUSANIM which animates Europe. It is essential to recognise that the software only works effectively with the ET4000 video card and one or two others, and needs lots of RAM! The manual specifies a minimum of 4Mb.

This program for A-format images is very versatile, and contains other options, helping to make this a quite exceptional piece of software, provided your hardware can cope!

The second animation program is called PDUSANIM, and animates images of Europe. Like its sister program, it needs plenty of RAM (16Mb is specified!) because each file occupies over 1Mb. A description of sorts was included in the PDUS manual. Unfortunately this was not comprehensive, several software options not being mentioned. Additionally, the built-in HELP screen excluded reference to them as well! By experimentation, I managed to work out what was on offer.

## Encryption

Primary Data from METEOSAT will be encrypted in due course, starting with tests in early 1994, and continuing until routine encryption after 1995. Manufacturers of PDUS equipment were informed of this change during 1992 so that the necessary decryption key units could be built. Pricing policy for UK users will be decided by the Meteorological Office. 'Info in Orbit' will provide full details as information becomes available.

## Final notes

My aim with this review has been to provide a

comprehensive description of a Primary Data system, explaining what is available from both the satellite and the hardware. If you are actually proposing to spend money on purchasing a PD system, I would suggest that it could be worthwhile identifying your personal reasons for doing so. If you only want to see the weather, this is not for you - just watch the news!

In this part of the market I don't think that Timestep have much competition - I have come across few other PDUS systems around the world, and their prices need to be seen to be believed - they are so out of the reach of the amateur market.

This system provides some superb images, and needs minimum re-adjustment. My only significant criticism of the whole set-up is the manual, or rather the brief notes that were included. Timestep need to look urgently at this aspect of its output, a view repeatedly expressed by correspondents to 'Info in Orbit'.

My thanks to Dave Cawley and Peter Arnold of Timestep Weather Systems for providing this exceptional piece of equipment.

## Prices

Timestep can supply all or any of the parts for a complete PDUS system. If you already have a METEOSAT system you will not need all of it. Their catalogue, available on request, lists all the options. Typical prices are:

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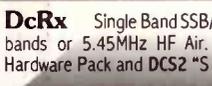


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# Propagation

By Ron Ham  
Faraday, Greyfriars, Storrington, West Sussex RH20 4HE

**B**roadly speaking, short wave enthusiasts are particularly interested in receiving radio and/or television signals from abnormally long-distances. This is commonly called DXing, however, before any of this can happen something must go 'wrong' somewhere in earth's complex atmosphere and upset the normal paths of such signals. The idea of this column is to publish readers' reports and observations so that others can compare these results with their own work or logs over a similar period.

## School Project

With this in mind, I must now congratulate, 13 year old, **Connor Walch** (Co. Wexford) who decided to use the subject of propagation for a school project last June. Briefly, he checked the prevailing atmospheric pressure against a range of signals that he received in Band II (87-107MHz) and writes, "I feel I learned something from it". Of course you did Connor, you recorded for future comparison the variations in pressure and the European stations that you heard.

Keep in mind that, in v.h.f. terms, Ireland is a long way from France and Germany therefore your reception of signals from those countries alone is worth recording. Your graphs show that more distant stations were audible when the pressure was high than while it is low. Such data is only available today because, over many decades,

people like yourself have taken the trouble to write down what they heard and compare it with other factors like sudden temperature changes, sunspots and the weather.

You also told me that on June 10, you logged a good number of Italian stations at the top end of the band. This was a bonus for you Connor, because, while you were looking for tropospheric openings, nature presented you with a nice fat disturbance, known as Sporadic-E. This often occurs during the summer months in the lower 'E' region of the ionosphere and it was this that gave you those Italians.

## Solar

From sites in Edinburgh and Glasgow, **Ron Livesey**, the auroral co-ordinator for the British Astronomical Association, using the projection method, located two active areas on the sun's disc on October 3, 4, 8, 10, 17 & 21 and three on the 16th & 22nd. The latter were also observed by **Patrick Moore** (Selsey) who kindly sent a drawing of these three areas, **Fig. 1**, as he saw them on his projection screen at 1100 on the 22nd..

## Auroral

Ron Livesey received reports of auroral 'glow or patch' for the overnight period on October 9/10, 11/12, 17/18 & 20/21; 'arc or band' on 16/17, 20/21 & 27/28; 'rayed arc or band' on 25/26; 'ray bundles' on 10/11, 11/12, 12/13, 18/19, 22/23 &

24/25; 'active forms or pulsations' on 5/6, 9/10 & 21/22 and 'all sky aurora' on 8/9, where visible, from observers in Canada and the United States, the Met Office at Wick and the Ocean Weather Ship *Cumulus*. May I remind you that Ron would be happy to receive your reports at Flat 1/2, East Parkside, Edinburgh EH16 5XJ.

## Magnetic

The variety of magnetometers used by **John Fletcher** (Tuffley), **Tony Hopwood** (Upton-on-Severn), **Karl Lewis** (Saltash), **Ron Livesey**, **David Pettitt** (Carlisle) and **Tom Rackham** (Goosetrey), between them, recorded strong disturbances to the earth's magnetic field on October 9, 10, 11, 25 & 27-29. Lesser activity was noted on days 1, 4, 5, 16 & 18.

## Propagation Beacons

As usual, my thanks are due to **Gordon Foote** (Didcot), **Cmdr Henry Hatfield** (Sevenoaks), **Ian McDermid** (Comrie), **Ted Owen** (Maldon), **Ern Warwick** (Plymouth) and **Ford White** (Portland), for their 28MHz beacon logs from which I compiled the chart in **Fig. 2**. Henry reports that EA3JA was very loud on November 6.

Among all the other South African beacon activity, Gordon copied a lone signal from ZS5VHF on November 7. Gordon also reported that reception was up and

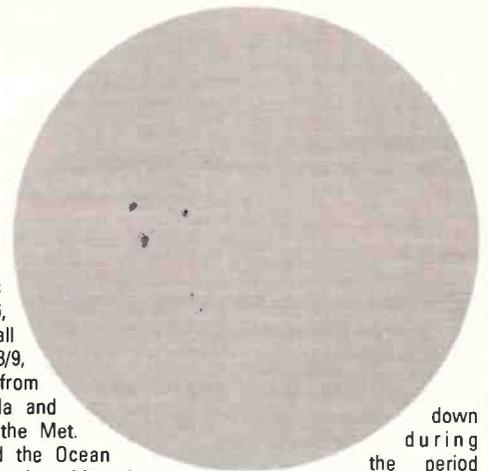


Fig. 1.

down during the period and he found the best day was November 14 when he logged 12 beacons and, significantly, a few Americans among them. Ern and Gordon told me that ZS6PW is now up on 28.160MHz (previously 28.160MHz).

## Band II

During the tropospheric opening on November 18, Connor Walch, using a Sony ICF-SW800 with its own rod antenna, heard a French transmission around 95.4MHz. While **Leo Barr** (Sunderland) was tuning through the band on his Philips car radio he found the local stations Radio Broadland and Lincs FM and an unidentified station from Holland. On October 29/30, Leo heard BBC Radio 4 from Ashkirk, Forfar and Sandale, Classic FM, BBC Radio Scotland and 1FM from Blackhill, 1FM from Darvel, BBC R Scotland from Skriag, Isle Of Skye, BBC Radio Solway and Viking FM. He identified these by their programme content.

Details of the atmospheric pressure, recorded by me from October 26 to November 25, can be seen in my television column elsewhere in this issue.

Fig. 2: Beacon Chart

Beacon	October					November																									
	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
CT0APO			X		X						X	X		X	X						X										
DF0AAB	X			X					X												X				X						
DK0TEN	X	X		X	X							X									X	X					X				
DL0IGI	X	X	X	X	X			X			X	X								X		X							X	X	
EA3JA	X	X	X	X	X	X					X	X			X	X				X	X	X	X	X	X	X	X				
HG5GEW	X	X	X	X	X			X			X	X			X					X	X	X		X			X		X		
IK1PCB	X	X	X	X	X						X	X	X							X					X			X			
IY4M	X	X	X	X	X	X		X	X		X	X	X	X	X					X	X	X	X	X	X	X					
KA1NSV	X			X																X											
KD4EC																				X											
KF4MS																				X											
LA5TEN	X							X						X						X						X					
NX20	X																			X											
OH2TEN			X	X	X	X		X				X		X		X		X	X	X	X				X			X			
DH9TEN				X	X	X		X																	X						
SK5TEN			X	X	X														X						X						
SV3AQR	X		X	X	X	X	X	X	X					X	X	X				X	X	X	X	X	X	X	X	X	X	X	X
S55ZRS	X	X	X	X	X			X			X	X	X							X	X	X									
VK6RWA																X									X						
VP8ADE																				X											
WC8E								X												X											
W3VD	X							X												X											
ZS1J	X	X		X	X	X		X	X	X	X	X	X	X	X	X				X	X										
ZS1LA	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X						X	X		
ZS5VHF													X																		
ZS6PW	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5B4CY	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

# Satellite TV

Roger Bunney,  
33 Cherville Street, Romsey, Hants SO51 8FB

The wind of change has blown through Eastern Europe these past couple of years, the most dramatic perhaps October '93 with the Russian Revolution - 2. World changing events like this are well covered in the media and for satellite 'zappers' the world's dramas are played out in their living rooms as the various satellite TV news feeds are monitored.

I personally would have thought a year ago that no Russian satellite would be carrying soft porn but I am again proved wrong! Cable Plus is a Prague based company producing an evening menu of films and imported programmes (such as the US version of *Candid Camera*) that are then downlinked across Czechoslovakia for cable systems in the major towns. Friday/Saturday nights from about 2300 is the cue for the soft porn segment in an evening of programmes running 1800-0100 approx. This televisual downlink can be monitored currently on the Russian satellite - Gorizont 11 @ 11°W - on its single Ku band 11.525GHz r.h. circular transponder with a relatively strong signal on a 1m dish.

Gorizont craft have no provision for station keeping (orbital stability) and gradually they move into an increasing inclined orbital movement requiring special receive dish tracking. That's why the 14°W Gorizont is so weak for much of the day as the bird moves in an inclined orbit above/beneath the Clarke Belt though centred at 14°W. The relatively stability of the 11°W bird suggests that its relatively new into service and has yet to move into an inclined orbiting pattern.

The past few weeks have seen several new satellite channels become established, there's never a dull moment out in the Clarke Belt! One *SWM* reader queried the new pop music channel, similar to MTV but in German on Eutelsat II F1 @ 13°E there are a series of triangles in the corner. This is the long awaited VIVA music channel ex Köln on 11.00GHz horizontal, opening December 1 and seems to be transmitting around the clock.

For Arabic students on the same bird at 11.67GHz horizontal (the old Filmnet pad) is found another 24 hours TV offering from EDTV Dubai (Emirates Dubai Television) with their domestic TV service at very high signal strengths. If you're into Albanian affairs then the arrival of TV Shqiptar on Eut. II F3 @ 16°E will please you though with a restricted programme/news offering 1730-1930UTC and using clear PAL - check out 11.575GHz horizontal for this service. Incidentally on the same bird at 12.53GHz vertical

arrived a news feed mid morning December 12 concerning Russian voting figures with 2-way reports from Moscow into several Western countries including the USA. Each item was interspersed with a test card and ident 'CNSRT - Moscow', a new one on me - can anyone advise the sourcing news agency?

On-going repairs in space to the Hubble telescope (December weeks 1-2) were witnessed by many sat-zappers mainly via Intelsat K 21°W. During this period I looked in vain for evidence of the NASA-TV feeds on Intelsat 504 @ 32°W that in previous expeditions has downlinked extensive NASA output into Europe. NASA TV was carried over this bird but only intermittently in Ku band - NASA carriage was seemingly in C Band via the TDRS bird or prebooked smaller chunks on the K craft in FSS band.

The final word from Jean-Louis Dubler in Montreux. Tele Monte Carlo and RTL-TV programmes now carried in the clear on Telecom 2B are being 'lifted' on to many Swiss cable systems without the permission from (or payment to) the originating programme source that may result in these services being encrypted. French cable systems pay a nominal charge to RTL/TMC for each subscriber thus connected. TMC now has their own live bulletin broadcast nightly from Euronews, Lyons. TF1 is rumoured to be opening a dedicated French language news service in 1994 using digital compression (Spectrum Saver) via Telecom 2B at 5°W. The signal will be in the clear, once you've found a digital decompressor!

## Orbital News

We've news of a really hot satellite DXing receiver with a claimed threshold of under 2.5dB - the SRX 2000E - made by NKM Elektronik GmbH. This rather dramatic development in low signal working results from a complete redesign and rethink around the video demodulator stages and combines a very low threshold video demodulator with digital signal p.l.l. processing. The incoming signal (either PAL, NTSC, SECAM) is split into its 3 basic components (r-y, b-y, y), each is digitally processed and recombined to produce a new cleaned up PAL signal, new syncs and colour burst. Though menu driven it is claimed to be 'user friendly'. Price tag is DM 5500 FOB Germany, for more details contact the manufacturers at PO Box 1705, 79507 Lorrach, West Germany (FAX: 07621 18840).

Another hot spot for satellite operations is the Middle East with several large groups planing to open rival TV services. Orbit Communications is opening a TV production facility near Rome, Italy that will offer digitally compressed and encrypted TV channels across the whole Middle East during 1994 aiming for over 20 available channels by 1997. MPEG compression will be used with encryption for the service of films, sports, general entertainment and children's programmes.

Another Rome based service - Arabic Radio and TV - (ART) is planning a 4-channel TV service via Arabsat 1D 'soon' though using D2-MAC with K4-Crypt scrambling. Further action is seen with established Middle East Broadcasting (MBC) out of London with their compressed + DigiCipher service though intended for over 150 terrestrial receive sites and related MMDS (microwave terrestrial retransmission) transmitters. The new services will include general entertainment, family entertainment and education, movies and a news channel. The other new satellite service is an Arabic station - 'Al-Mustaqbal TV' - broadcasting from Beirut across the Middle East via Arabsat 1D (20°E) in C Band for some 20 hours daily.

Finally, if you write in with information or queries can you please include an s.a.e. General reception reports and news are welcome, include details of your own receiving setup and any unique home construction or adaptations to the system. Due to time limitations I'd prefer not to receive long video tapes! I'm not too happy to receive 'phone calls at 0500 Monday mornings or 2200 Sunday evenings - which has happened!

Fig. 1: Test card of the new Turkish movie channel Eutelsat II F2 @ 10°E.

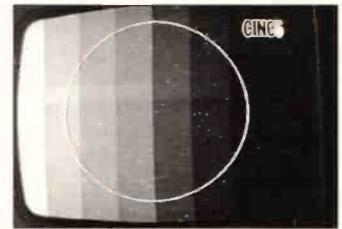


Fig. 2: Trans-Atlantic news feed circuit Atlanta - Europe via Intelsat K, 21°W.



Fig. 3: Test card of the French Telecom programme package.



Fig. 4: A Greek news feed rolling via Eutelsat II F4 7°E using sound-in syncs. Note jittery picture via John Locker.



Fig. 5: An NBC programme circuit via Intelsat K inbound for the revamped Super Channel output on 13°E via John Locker.

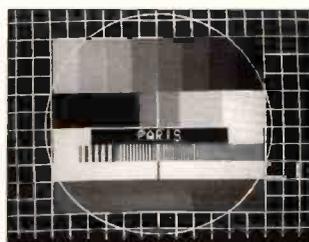


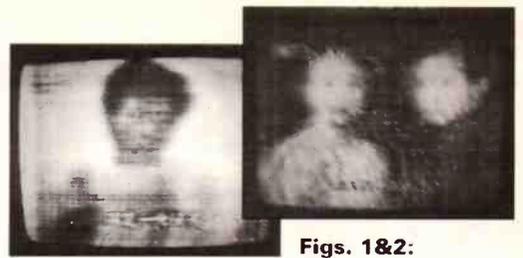
Fig. 7: Andrew Sykes snapped this impressive PM5544 test card from Nile TV, Egypt on Eutelsat II F3 @ 16°E.



Fig. 6: The non-too strong PM5544 test card from Nile TV, Egypt on Eutelsat II F3 @ 16°E.

# DXTV Round-up

Ron Ham,  
Faraday, Greyfriars, Storrington, West Sussex RH20 4HE



**Figs. 1&2:  
Bangkok TV.**

**Fig. 3: Unidentified news-reader.**



When I am asked, "do you ever get a thin time for material for your columns?", in theory, the answer should be "yes, at the end of the Sporadic-E season", but this is not the case, because, there is always something going on in the restless atmosphere to write about. Also, there is more behind the reception of long-distance (DX) television signals than the subject immediately suggests. For example, each time pictures from afar appear on your screen you have learnt that a natural disturbance is taking place in the ionosphere or the troposphere. Broadly speaking, a good Sporadic-E is required to see DX in Band I (45-68MHz), while Bands III (175-230MHz), IV (471-608MHz) and V (615-856MHz) need what's called a tropospheric opening.

The former is a sudden upset in the 'E' region of the ionosphere and the prevailing weather has a lot to do with the latter. DXTV can sometimes be seen in Bands I and III, rather grottilly, via auroral reflection and for a momentary 'flash' by meteor trail reflection. So, to sum-up, a small portable television receiver that covers all three bands is a super propagation indicator to have available. Don't forget readers, if pictures are being received on Chs. E2 & R1 then you are almost certain to find 'DX' in the 50MHz amateur band because of the similarity in frequencies. This association also goes for Band III and the 144MHz band and Bands IV and V and the 430 and 1296MHz bands. It all fits together nicely and this is where one interest in the world of radio can alert another.

## General Rules

For the benefit of our new readers, Bands I and III are in the v.h.f. part of the spectrum and Bands IV and V are in the u.h.f. region. Although

Sporadic-E events do occur, on a limited scale, during the winter months, the main 'season', when the big openings are expected, is between mid-April and mid-September with peaks in June and July.

Each 'band' represents a part of the radio frequency spectrum that has been internationally allocated to terrestrial television. Because of the limited frequency space available, the bands have to be shared and to do this they are divided into channels, a few megahertz wide and given a number that is recognised throughout the world. For instance, Band I has the West European 'E' channels and the East European 'R' channels that are allocated to many countries such as Norway on Chs. E2 (48.25MHz), E3 (55.25MHz) & E4 (62.25MHz), Denmark on Ch. E3 & E4 and Poland & Russia on Chs. R1 (49.75MHz) & R2 (59.25MHz). More precise information can be found in the latest edition of the *World Radio TV Handbook*, published by Billboard and, if wanted, can be purchased from the *SWM Book Service* at the Editorial Offices in Broadstone.

Over the years, TVDXers have proved that when Band I is open, television pictures from stations in Albania, Austria, Belgium, Czechoslovakia, Finland, France, Germany, Holland, Hungary, Iceland, Ireland, Italy, parts of the Middle East, Portugal, Romania,

Russia, Scandinavia, Spain, Sweden, Switzerland and Yugoslavia can be received in the UK.

Furthermore, Band III is split into 12 channels and the two u.h.f. bands have some 48 channels

between them. Now let's see what some of our readers have to say about conditions during October and November.

## Band I

In October, Lt Col Rana Roy (Meerut, India) found disturbances around Ch. E2 (48.25MHz) almost daily from the 3rd to the 28th and on November 6. While on most days he identified pictures from South-east Asia, he logged signals, sometimes smeary and fluttering, from Bangkok TV on 5 October, Figs. 1 & 2. Smeary pictures, suggesting some 'F2' activity were also seen during the late afternoon of the 7th.

Up North, Bob Brooks (Great Sutton) found short periods of winter Sporadic-E on November 3, 5, 6, 8 & 9. Spread through these events he logged test-cards and programmes from Denmark (DR), Norway (NRK) and Spain (TVE) and a few from unidentified sources. His log shows good Sporadic-E openings between 1420 & 1845 on October 15 and from 1040 to 1530 on the 19th. On the 15th he saw programmes from Denmark, Portugal (RTP) and Spain. On the 19th, the score was Czechoslovakia (Bratislava) CIS, Germany (ARD1), Italy (RAI), Norway (NRK), Poland (TVP) & Sweden (STV1) and watched captions, cartoons, ice-hockey, news and tennis from unidentified stations.

Because of the ever changing 'shape' of Sporadic-E clouds, many signals, like the news reader in Fig. 3, appear for too short a time to get a positive identity. In addition to the example in Fig. 3, Bob produced photographs of a regional caption from Spain, Fig. 4 that he took in 1986 and a film title from TVE, Fig. 5, complete with co-channel interference, that he received in August 1991.

My thanks to Tarostaw Grytner (Chorzow) for telling me that Poland has two government programmes TVP1 and TVP2 and many private TV stations. He thinks

it unlikely that we would receive the latter in the UK because of their low power.

## Satellite TV

Having seen a picture from a Polish satellite station (Polsat) in my November column, Tarostaw Grytner, kindly explains the origin. "It's a commercial Polish station, with films and news transmitted from Holland by Eutelsat" and added that this is the reason why you can sometimes read the word 'NETHERLANDS' at the bottom of the picture.

Rana Roy reports that as from August, India has 5 satellite channels that are telecast via INSAT 2B. The pictures received in July by Peter de Jong (Leiden, Holland) from ASTRA 1 C include an opening announcement, Fig. 6, a channel schedule, Fig. 7 and a German (WDR) programme, Fig. 8.

In New Radnor, Simon Hamer has been watching "all those German stations, via Astra satellite, the same as we aim for during tropospheric openings". He continued, "that includes 5 regions from the third network, BR-3, MDR-3, NDR-3, WEST-3 and SWF-3. I can even listen to Jonathan Mark's excellent *Media Network* on Radio Nederland in f.m. quality in the evenings". Simon pointed out that this is good because short wave reception can be rotten at that time during the winter.

## Weather

"We are having pleasant weather now. Temperatures are 27°C during the day and 11°C at night," wrote Rana Roy on November 18.

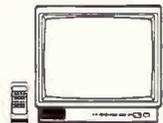
A little snow, icy winds, high pressure, fog, hard frosts and short periods of heavy rain is the best way that I can sum up November's weather here in West Sussex. I recorded 77.5mm of rain during the month compared with 171.7mm in November 1992. Most of this years rain fell on the 10th (17.8mm), 13th (22.9mm), 14th (16.5mm) and 30th (16.5mm). By midnight on the 14th the pressure reached 1026mb (30.3in) (see Fig. 13), the rain had gone and a cold spell set in that did not abate until the 24th. Some overnight temperatures, measured in my garden, were down to 21°F and there was light snow on the 20th and 21st.

The daily variations in atmospheric pressure for the period October 26 to November 25, Fig. 13, were taken at noon and midnight from my own barograph.



**Fig. 4:  
Spanish regional.**

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Fig. 5: TVE.



Fig. 6: Astra 1C.



Fig. 7: Channel Schedule.

## Tropospheric

Tropospheric disturbances often occur during periods of very high atmospheric pressure and make the higher v.h.f. and the u.h.f. bands DX prone when the 'high' begins to move and the pressure starts to fall.

This happened during the evening and overnight on November 16/17. The usual co-channel interference, in the form of patterns, developed on the u.h.f. screens and some of the networks apologised to viewers about the poor quality of their pictures and explained that it was due to the atmosphere and beyond their control.

Such events can last anything from a few hours to several days. It all seems to depend upon the extent of the prevailing high pressure system, the strength of the incoming 'low' that is pushing it and changes in temperature.

Reports from radio observers over the years have helped everyone to better understand what happens and it's not uncommon to learn that after seeing patterns on their domestic TV, v.h.f./u.h.f. enthusiasts make haste to their stations to see what DX is about on the nearest amateur band.

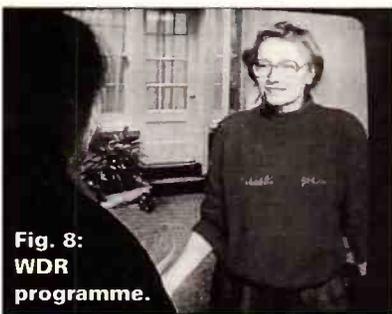


Fig. 8: WDR programme.

Connor Walch (Co. Wexford) tells me that, "in this part of Ireland everybody watches HTV (Wales), BBC1 and 2 (Wales) and S4C with a u.h.f. antenna on the roof and sometimes a booster". However, Connor has been keeping an eye on the changing pressure and on November 1st, with his family's domestic set and antenna, he received a noisy picture from the French Canal+ and a strong colour picture from Germany's ZDF.

Lower down, in Band III, on October 29, 31, November 1 and 2, Bob Brooks logged a test-card from Belgium (BRT) and Denmark (DR) and programmes from Denmark, France (Canal+), Germany (ARD1 & WDR1) and Ireland (RTE). Bob also received signals in this band from Belgium, France and Ireland again on the 17th and 18th.

On November 1, Simon Hamer, trawled Band III and logged pictures from Denmark (DR) on Chs. E5 and 8, Norway (NRK) on Chs. E8 and 11 and their TV2 on E12 and Sweden (SVT1) on Chs. E6 and 9. He also found Denmark's TV2 and Sweden's SVT2 in the u.h.f. band. As expected, Simon had a good haul on the 18th with programmes from Denmark, Finland (YLE1) on Ch. E6, Norway, Poland (TVP) on Ch. R8 and Sweden in Band III as well as Belgium, Denmark, France, Germany (ARD1, HR3, MDR3, N3, NDR3, SWF3 & ZDF), Holland, Ireland and Sweden's SVT1, SVT2 and TV4 in the u.h.f. bands.

## SSTV

In November, John Scott (Glasgow) received slow scan television captions, in

the 14MHz band around 14.230MHz, from stations in the Commonwealth of Independent States (CIS) Fig. 9, Germany Fig. 10, Spain Fig. 11 and Sweden Fig. 12. John has received QSL cards, acknowledging his reports, from stations in Ireland (Craigavon and Lisburn) in the north and Tipperary in the south and others from Kent and London.

He tells me that the SM5EEP, Fig. 12, has a regular net, on 14.233MHz, around 1330 on Saturdays, when other SSTVers come up to work him. Thanks for this info John, it will greatly help

newcomers to have a known signal to look for. To avoid disappointment, those of you who are new to slow-scan reception may like a tip; listen around 14.230MHz for a strong 'twittering' then, while watching the monitor, slowly tune through the 'twitters' until the picture starts to 'run' and slowly build up. It's best to try this several times before you tackle a weak signal.



Fig. 9: SSTV from CIS.



Fig. 11: SSTV from Spain.



Fig. 10: SSTV from Germany.



Fig. 12: SSTV from Sweden.

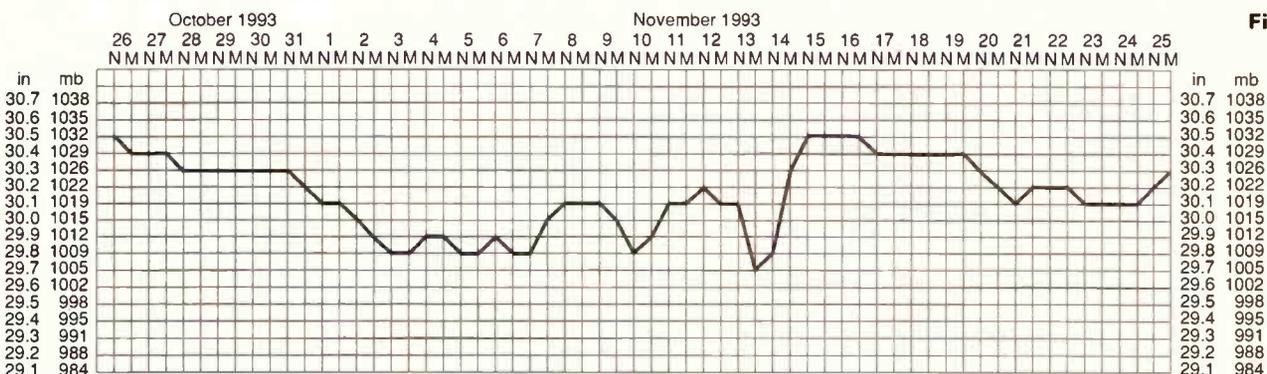


Fig. 13

# Bandscan

## BANDSCAN AMERICA

By Gerry Dexter

The Christian Science Monitor (Herald Broadcasting) has signed an agreement to sell WCSN, its short wave station in Maine, to Prophecy Countdown, a religious organisation headed by Seventh Day Adventist Pastor John Wesley Osborne, Jr. The actual transfer of ownership won't occur until September, but WCSN is already airing as many as 30 hours of Prophecy Countdown programming per week.

Prophecy Countdown, based in Mt. Dora, Florida, will pay \$5 million for WCSN. Herald Broadcasting expects to have the planned major improvements in place at its WSHB station in South Carolina by the September take-over date. These improvements involve the addition of another 500kW transmitter and associated antennas and will enable WSHB to fill in the gaps in Herald Broadcasting's world coverage left by the loss of WCSN.

### Radio Miami International Arrives

After years of effort, Radio Miami International has finally begun broadcasting. Initial test broadcasts were aired over a standby transmitter, using only about 400W watts. The regular 50 kW unit should be in operation by now. WRMI is using 9.955MHz. The first broadcasts consisted of periodic test tones and station announcements. Once the normal schedule is in place you should be able to find WRMI active for at least twelve hours out of every twenty-four. Much of the programming is expected to be in the form of half hour blocks of time sold to various organisations, a number of them anti-Castro groups. Most of the programming will be in Spanish. Reception reports will be confirmed with an attractive card. The address is Radio Miami International, PO Box 526852, Miami, Florida 33152, USA. You can contact the station via e-mail on CompuServe - 71163, 1735. The FAX number is (305) 267-9253.

### High Frequencies on The High Seas?

Word is still floating around about the coming operation of a 'radio ship'. The Motor Vessel *Fury II* is said to be in the process of being outfitted in Boston harbour and then is to be positioned somewhere in the Caribbean next year. The ship is supposed to have four short wave transmitters which were once used by the VoA, two of them said to be 40 kW and two of 10kW. Air time on will be sold to various groups. Brother Stair, a preacher based in South

Carolina, is reported to have bought all the available time on one of the transmitters so it will be devoted exclusively to his own preachings. Apparently a number of Caribbean island governments have turned down applications for a license for this station.

### Silent Canadians

CFCX, the short wave relay of CICO, Montreal went off the air last August and at the time, a spokesman made it sound as it would be a very long time before the station returned to short wave. However, US DXers are now hearing it again, (on its usual 6.005 frequency) and with better signals than before. Other DXers on a recent 'DXpedition' to Washington state, say it appears that two other Canadian short wave stations are currently off the air. No signals were heard from CKFX on 6.080 or CKZU on 6.160. Had they been active they should have been heard easily in Washington state.

### Notes from Central America and the Caribbean

Ondas Musical, Santo Domingo, is active from the Dominican Republic on 4.780 or slightly below, running to 0300 sign off. This is a return to short wave for this station, which was active on the 60 metre band years ago. Another reactivated station is Radio Barahona on 4.930, which now seems to have added 'Internacional' to its name. The religious station Radio Amanecer International on 6.025 will increase its power to 5kW. The station is broadcasting programming to Cuba, in addition to a two hour English program directed to the Caribbean each evening. The station is considering the addition of French language broadcasts as well.

A month or two before the first signals from WRMI were heard, its sister station, Radio Copan International, went on the air from Tegucigalpa, Honduras. It is operating with Spanish programming Mondays through Saturdays from 1400-1500 and 2100 to 2300 and on Sundays 2100-2200 on 15.675. A 60 second spot announcement on Radio Copan International costs \$5. Reports can be sent in care of Radio Miami International.

Radio Litoral, another new station from Honduras, is said to be active now on 4.830 although we've seen no loggings on this one. Supposedly it is located at La Ceiba and identifies as 'Radio Litoral, la oz internacional de La Ceiba'. Anyone who spends as much time tuning the 60 metre bands knows what a poor



frequency choice this is. 4.830 is normally occupied by a strong signal from Radio Tachira in Venezuela. Radio Reloj in Costa Rica is often active on 4.832.

Adventists World Radio's installation at Cahuita is reported to have been having some problems with its transmitters and are in the process of having the trouble fixed by the manufacturer. That will explain any absence you may note on one or more of AWR Cost Rica's frequencies.

In Mexico, Radio Education on 6.185 has added more English language programming and also plans to add programmes in French and German.

### South America

Ecós del Oriente, Lago Agrio on 3.270 has been reactivated and signs on at about 1015UTC.

Radio Oriental is using 4.780, slightly variable, which will make logging and identifying this one, or the Dominican mentioned earlier, just a bit confusing! The station operates from Tena, in Napo province and signs on just before 1000UTC.

Still another reactivation is Radio Bahai on 4.950 which signs on just prior to 0900.

And yet another returning station is Radio Luz y Vida, 4.850, which signs on around 1030. This station has been around for many years and has disappeared and then returned several times over that period.

Radio Occidente has reappeared from Venezuela after being silent on shortwave for a multi-year period. It's being heard on 9.750 for much of the daylight hours in the Western Hemisphere. The identification is said to also mention 3.225, where the station used to operate, but that channel seems not to be in use.

Surinam is one of the less easily heard South American countries. The only active station there is Radio Apinte which is using quite low power. To make matters worse, the station seems to change back and forth between 4.991 and 5.005, both variable and both subject to intense interference from other broadcasters. Sign off normally takes place shortly after 0300.

### Hawaii Calls!

KWHR may be on the air from Hawaii as you read this. KWHR is affiliated with US short wave station WHRI and will relay WHRI programming to Australia/New Zealand and Asia. The 100kW transmitter is expected to use 17.555 from 0000 to 0200. 17.510 at 0200, 9.930 at 0600, 7.425 at 1600,



13.625 at 1800, 13.720 at 2000 and 17.510 again at 2200.

Somewhere else in the Pacific: Dr. Adrian Peterson's shortwave newsletter reports that a 10kW shortwave transmitter is being readied for installation on some Pacific Island. Details have not yet been released.

Adventist World Radio plans to install a third 100kW transmitter at KSDA in Guam sometime later this year.

Radio Tonga continues to be silent on short wave. Apparently there is a problem with the line connection between the studio and the transmitter and getting this fixed is the responsibility of the Tongan Telecom Corporation. No one seems to have any idea as to how long Radio Tonga will be absent from its 5.030 frequency - which, by the way, is now also being used by another very rare catch - Radio Bhutan.

### Back on the Mainland

US short wave station WINB at Red Lion, Pennsylvania has cut its broadcast time to 7½ hours per day while it makes changes to its antenna system. Pastor Peter Peters has purchased a 15% interest in WINB. WINB went on the air in 1962, so it predates by two decades the flood of private US short wave broadcasters which began in the early 1980s.

WEWN in Alabama, which has been on the air for a year or so now, has decided to discontinue use of one of its four high power transmitters. The station will keep the fourth unit as a standby.

The Voice of America station at Dixon, California has now been completely closed down.

### Other Notes

KNLS, Anchor Point, Alaska now airs programming in English and Japanese between 1300 and 1400 on 7.355. It is also being relayed by a transmitter at Novosibirsk, Russia in Chinese between 1300 and 1500 on 6080. Unfortunately, this DXer friendly station says it cannot QSL reports for its Russian relay.

That's all for this time. We'll have more news from the Americans and the Pacific in three month's time. Good listening!

# SSB Utility Listening

Graham Tanner,  
42 David Close, Harlington, Middlesex UB3 5EA

I thought that I would take this opportunity to state the objectives of this section of *SWM*, for the benefit of new readers, and as a reminder to existing readers. This part of the magazine is devoted to the numerous s.s.b. signals heard between 0-30MHz that use the spoken voice for communications. When you subtract from that 30MHz segment the broadcast bands and the various areas allocated to radio amateurs, there are still vast areas available to all sorts of 'utility' signals. Many of these utility signals use complex equipment (e.g. FAX, AMTOR, RTTY, etc.) to code and decode transmissions, so you, the reader, will also need equipment to decode them; the benefit of s.s.b. voice transmissions is that you already have the best and most sensitive 'decoding' equipment available - your ears. This section reports upon transmissions where the English language is used, however I am happy to deal with other languages. I look forward to receiving your letters at the address at the top of the page.

Since I took over this column from the late Peter Rouse, I have mainly reported upon military transmissions, because that seems to be where much of your interests lie (judging by your letters, that is). Over the coming year, I would like to print more about the maritime scene (something that I know little about), and maybe mention a few different users of the spectrum.

All this is going to require information and letters from you, detailing what you heard, when you heard it, and what the conversation was about. If you're not sure of the full details, don't worry, one of the many readers of this column is bound to know - whenever I put questions in the column, I always get plenty of answers and a few more questions besides.

## More Britannia

A few months back, I mentioned the h.f. station operated by Britannia Airways at Luton. I have had quite a few letters on this subject, including a long letter from Mrs B in the Isle of Man. She explains that the Britannia set-up is so that they can monitor their flights and crews when they want, without having to rely on telephone-patches via the BT Portishead Radio. It also allows for longer conversations to discuss problems and flight changes.



KCC-130 Hercules refuelling tanker, it weighs 82921lbs dry!

Photo Mike Richards

Mrs B says that Britannia Airways has just taken delivery of six brand-new Boeing 767ERs (ER - Extended Range), which will be replacing some of their Boeing 737s; she doesn't know their Selcalls yet, so if anyone hears of these being passed 'on air', I'll be pleased to pass them on via this column.

## Exercise

Geoff Crowley writes with another interesting letter from Iceland. I dread to think what the propagation must be like up there. He mentions an exercise taking place in early November in which a station was talking with 'Architect', and was advised that 'Lima' was the new working frequency. Geoff says that he wasn't aware that the RAF assigned code-letters to their h.f. frequencies. Well Geoff, there appears to be two groups; one set comprises just single letters (such as 'Lima' above), and another series has two letters such as 'Hotel Mike'.

Logs received over the past few months sometimes list an occasional tie-up, but I'm not too sure about printing them in this column for two reasons - maybe the frequency/letter(s) tie-ups change, and I value my freedom and don't want a 'visit'! Sometimes, at the end of the 'Architect' hourly

weather broadcast, they read a series of letters - maybe there is a connection between the two?

Geoff's log of the exercise traffic was mainly anonymous 'tri-graph' callsigns (combinations of letters and numbers) talking to a station 'Buckam'; this is actually 'Buchan', which is one of the RAF's radar and communications centres, the others are at Neatishead and Boulmer. The fourth site (Staxton Wold) closed recently. The proper title for these is 'Air Defence Radar Units', and during exercises these stations are extremely busy - if you can find them, that is!

Incidentally, the 'Architect' service used to be broadcast from the old RAF airfield at Upavon in Wiltshire, but when I checked there during last summer I was told that everything had been moved away. I have since heard that it now operates from a site somewhere to the south-west of Oxford.

## More Coastal Control

Clive M writes from Cornwall, and mentions 'Coastal Control', and asks why haven't I mentioned it any more since July 1992. Well, Clive, partly through lack of information, and partly because I would like to be sure about what I print.

What is known is that the

'Coastal Control' set-up is used by the Royal Navy and Merchant Navy. There are a number of paired 'calling frequencies', where the shore station transmits a two-tone bleep every 5 seconds to indicate that the particular circuit is active and that it is available for use (the tones disappear when a contact is being set-up). One tip (from Ron Galliers) is to listen to the 'ship' frequency, so that you don't have to put up with the annoying tones. Clive says that he has heard both 2.702MHz and 4.420MHz active recently, sometimes simultaneously. Once contact is established between a ship and the shore station, both QSY to a pair of 'working frequencies'. These are rarely the same channel number, e.g. "ship 32, shore 51".

After the July 1992 mention of this service, I received an anonymous note that listed two pairs of ship and shore frequencies. After listening for quite some time, eventually a contact was set-up using one of the four frequencies listed; I went to that frequency and heard one half of a very brief conversation, and then the stations launched into some form of computer communications. When I tried a few days later on the same channel number, I heard nothing, so maybe the frequencies are changed regularly?

# Amateur Bands Round-up

Paul Essery GW3KFE, PO Box 4, Newtown, Powys SY16 1ZZ

**T**he question of 'special' prefixes seems to have got some people on the go a little.

If you look at the countries checklist on page 60 of the 1994 *RSGB Call Book*, or if you have a recent copy of Geoff Watts' *Prefix-Country-Zone List* you will see against a given country not only the amateur prefix but also the 'ITU allocation'. Consider the USA, for instance, we see AAA-ALZ, WAA-WZZ, NAA-NZZ, KAA-KZZ as the ITU allocation. We may say then, that a 'special' starting with one or two letters in these groups is US in origin. APA-ASZ, by contrast, is from Pakistan, so if you picked up a callsign of the form AS2ZZ for example, you could assume that (if he is genuine) he is in Pakistan. Thus when a new call is heard, if he can't be pulled out of the 'normal country/prefix list', then a reference to the ITU listings will usually resolve the question.

Properly, there are **NO** exceptions to this rule; however unofficial prefixes beginning with number 1 have been used; 1S Spratly was one such, 1A the Sovereign Military Order of Malta, 1B Blenheim Reef, 1G Geyser Reef, 1M Minerva Reef, 1P Pelican Island and 1Z the Karen State. This position **ONLY** arises in a place having no licence authority, so in fact it edges up to the outer edge of piracy, though maybe with the best of intent - so long as you are prepared to accept that a reef that dries at low water can be a 'country'!

Let's have a peep at the bands. By and large, conditions have been pretty poor this past month, though there have as always been bright spots.

To give yourself some guidance, it is as well to listen to one of the stations that put out the solar data on c.w., such as DK0WCY. To turn the data given back into something meaningful, consult the *RSGB Call Book* article on this topic.

## Letters

The first comes from new contributor **Andrew Maidens** who lives in Alford, Lincs. Andrew has left college and is now job-hunting; which has given him a little more spare time to build up Howes DX DC receivers from the kits and to put them to use. Outside, at 15m a.g.l. there is a 27MHz CB vertical of the 5% persuasion. Sticking to sideband, 21MHz gave all W call areas, VE3 & VY2RO in N America, Asians by way of 4Z4SG, YC2EWZ, A47RS, JI6KVR, S21AM, A71AN, 9K2WA, VU2TTC, YK1AN, HZ1TA, AP2JZB and various CIS signals; Africa contributed ZS1NL, EA8GQ, 9J2FB, 7X2DG,

A22MN, C53HG, 5N0GDE, SU1CS, J52AK, CN8NS, TY7ZZ, EC9BN, TU2PA, C91AT, Z21GZ, 9G1JI, 5X1C & J5UAE.

In South and Central America we can see LE1DCH, PY1CVJ, HK5JPS, CX6CB, CE5JLW, YV5ENI, CP5KB, K8UNP/P/C6A, NP4Z, 9Y4BA, YS1RRD, TG9GI, 6Y5DA & TI0CNE. Turning to 28MHz, Andrew proves that there's 'life in the old band yet' despite the low sunspot level. North Americans were absent on this band, but plenty of South American, Caribbean and African stations. Finally, a nice crop under the heading of 'other/unknown' included such as ZD8VJ (Ascension), ZD7DP (St Helena), 5R8DSF (Madagascar), FH5CB (Mayotte), V51BG, FR5EL (Reunion), P40W (Aruba) & FY5GJ (Fr. Guiana)

**Mark Malone** in Great Harwood tried a slightly different option, sticking to 14 & 21MHz. Stripping out the Europeans and the nearer CIS stuff, we find on 14MHz EA9TQ, W3NA, VU2DK, OD5ZJY, WA2JVM, 9M8R, RW9WA, VK2WJ, C31LJ, N1DUG, W1NIK, W5DJ, 6W6/KB3AYP & 9H4M. For 21MHz we see V01DGP, AK1L, AA3CE, VU2DK, N5KTG, A92EV, 9K2JC, N1DCM, N4MM & W2BXA.

Next we turn to **Mark Borthwick** who lives in Hawick on the Scots Border and runs a Sangean ATS-803A into some 9m of wire, in an end-fed arrangement. On 7MHz we see a crop of GB stations & EA9UK; on 14MHz s.s.b. there are lots of W1-2-3-6-7-9 & 0, along with H50/G4UAV, 4Z4ZB, 4Z1TC, 4X6KZ, ZS6RI, 7X5BK, 9K2YA, 9X/DL60BY, EA8BYR, VE0NBZ/MM close to the Moroccan coast at 34°N & 10°W, ET3SID, EA9TQ, PT7WX, IK8ESA with 3W, 7X2FK; not to mention RTTY received from CU1AC, EA6AB & CU3EM.

When Mark gave 18MHz a whirl, he logged W1-2-3-4-7-9, A92BE, A61AD, 5T5JC, PJ8AD, YB0ARF, 7X2BK, VE1KEP, CH1YX in Nova Scotia, JL1WPO, JA2DHF, JA2CG, JA7DRM & ZB2AZ. Turning to 21MHz, again lots of W1-2-3-4-5-6-7-8-9-0, plus FM5WE, VK5LED, C53HG, KP4GN, VP5N, VP5/K2TD, T05MM (Mortique Is), JY5IN, HZ1AB, 9K2TC, 7X2LS, 7X2WEK, PJ8AD, C91AJ, VU2RBI, YV5ENI, V3IDH, V31DX, ZS6JP, 9H3BKS, 9H1EL, PY1RR, OD5ZZ, VE3KWT, 4Z4JT & 4Z5DX.

On a different tack, Mark wonders whether it is worth recording in this column the times when particular stations are heard. I see no objection, but I suspect the Editor won't allow that sort of extra space! Mark himself seems to listen mainly during the day, rather than early morning or night-owling.

**Harry Richards** was a mite

tangled with the whole question of callsigns and I say to Harry, and anyone else in the same boat, do get hold of Geoff Watts, Lists (62 Belmore Road, Norwich) and keep it by you.

**Geoff Crowley** leaves his Midvangur, Iceland home about the time this is being written; he will be in Scotland over Christmas, and then probably on to Ecuador. Meantime, Geoff has taken his Amateur Radio exam, administered by the Icelandic Posts and Telegraph. They have three licence grades; a 'T' licence that seems akin to our v.h.f. licence, then an 'A' giving all bands but c.w. only, and then the 'B' licence that allows all modes and bands. Doubtless next time I'll hear he has passed. HC/TFxxx sounds an intriguing prefix!

Geoff remarks on the different behaviour of the bands in TF-land, and has fun on the low bands; in late October there is an approximate 'greyline' path between Iceland and VK/ZL/JA, which the 3.5MHz TF group have exploited to the full. The 'Grey Line' is the line round the globe at any given moment that traces out twilight at dawn or dusk; interesting to us because of the enhanced propagation that can occur along the greyline path.

As for signals, 24MHz yielded the odd W/VE signal, V01NE, CH1YE, Europeans 5T5JC, 7Q7XX, 7Q7ZZ, 4X6DK & TL8NG. 28MHz yielded a W, probably via the RS12 'bird' but otherwise Europeans. The very long 3.5MHz list shows the DX segment to have been the most productive, with N America, Europe of course, Asia, Africa & Australasia all well represented; 7MHz was also fun, with such plums as HK8JFF, JW7FD, CE6CG, JA3TXA, CH9NH, KG6LF, TI2VVR & P40L. 14MHz was also not bad, with VK, VP5JM, W7, ZD7CRC, 5H3EM, WA3NAN the station associated with the Space Shuttle launches, a 'probable' VR6, PY8EA, ZB2X, W7GMH/KH6 in Hawaii, and a bucket-full of ZLs. One of the 'VI' specials from VK, plus a questioned 'W7RM' heard twice, giving different names all gave interest on 21MHz, as well as the other DX logged.

Next we hear from **Matt Spencer**, in Redhill, who wonders whether anyone knows of a logging program for an IBM compatible computer, which is designed specifically for the s.w.l. Any suggestions please? Certainly I don't, though I would have thought that most of them could be used by a listener prepared to compromise a bit; for example the N3EQF, which is available in shareware. Matt's Sangean ATS-803A and 30m end-fed listened on Eighty to PT7BZ, VE2HQ,

VE3FJ, V01CA, V01MZ, V05FG, W2HOW, W4PRD, UA9MA & Europeans. Switching to 7MHz, Matt noted UZ3SWA, UA3AXL & V26B, while on 14MHz HK1HHX, OA4ANR, PT7CB, P40L, YV5NCJ & YW1A were booked in. Up again to 21MHz, for HC0E, P43A, TG0AA, VP2EC, V26N, V31DX, ZW5B, plus Canadian regions 1, 2, 3. The use of a Canadian call containing a 9 is mentioned by several people, so probably it's a special of some sort.

## QSL Etiquette

Now we come to a different question: paying to receive QSL cards. My personal view on this is simple and old-fashioned. I will send cards to and receive them from the Bureau. If someone sends me an IRC or a dollar bill, it goes back with the card. Anybody who demands payment for his QSL card, and, worse, anyone who refuses to answer Bureau cards, is **acting against the interests of amateur radio**.

Odd, I have a copy of *Practical Wireless* for January 1937 in front of me, containing a reader's letter complaining of the money-for-my card practice! Fifty-five years ago, the then BSWL was 'prepared to black-list the tin god amateurs' - it's not a new problem then, is it?

Putting it bluntly, new entrants to the hobby are needed all the time. Charging for cards, and refusing to use the Bureau system, puts off the newcomer, licensee or listener; and, perhaps worse, it debars poorer amateurs and pensioners from full participation in their hobby of maybe a lifetime.

The answer is simple; get every Bureau to stamp up cards going through them. Then let the DXCC Desk at Newington, add a new condition for recognition: that when the cards come in for verification, at least a specified proportion must bear one or another Bureau stamp. If this test is failed, the operation be declared invalid for DXCC credit.

To go on a DXpedition can only be one of two things for the operators: either a test of oneself, or an ego trip. Either way it is only right the cost should fall on the expediter.

## Finale

That's the lot for now! As usual, the deadline is for arrival by the beginning of the month and the address Box 4, Newtown SY16 1ZZ. Now to go outside into an S9-plus gale to check my antenna farm!

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# Airband

Godfrey Manning G4GLM  
c/o The Godfrey Manning Aircraft Museum,  
65 The Drive, Edgware, Middlesex HA8 8PS

Once February arrives, at last there will be noticeably more light in the evenings. Before long, better flying weather will be with us and many pilots start to practise their routines in preparation for the forthcoming display season. There's no prize, but I'll report here the first sighting any reader makes of an aircraft starting the season's practising. Rather like the first cuckoo of spring, as traditionally reported in the letters page of national newspapers.

Newcomers are not the only readers to be confused by the jargon of flight. Because information is repetitive and has to be conveyed quickly, so much relies on abbreviations and context. In next month's special aeronautical issue you'll find an article that I have written to try to disentangle all those numbers with which pilots fill their speech. Questions and feedback via this column please.

## Aeronautical Experiences

Thanks to an anonymous reader from Shropshire who sent various examples of aviation art (probably from a calendar) and information on pleasure flights operated by Air Atlantique DC-3 to view the tall ships taking part in the Cutty Sark race. The half-hour flight over the Tyne from Newcastle in the 1948 Dakota would have set you back £30. The sender of this information will be interested to hear that aviation activity was expected to be so heavy that the area was designated as temporarily restricted airspace during 17 July 1993. Newcastle was the controlling authority for the duration.

Local news from the Hastings area is supplied by Dave Shirley G4NVQ. Another RAF station on the MoD's hit-list is Manston and if it closes then personnel will transfer to Wattisham. Dave reports another case of a Gatwick arrival touching down on taxiway 2 instead of 08L. No harm done - this time. He also saw a B.747 of North West abort its take-off then try again successfully with no explanation as to what happened. At Gatwick, Dave recommends the spectator's terrace (open 0900-1600 in the winter) or, failing that, the top of No. 1 short-term car-park.

At the beginning of the 70s, when several types of British-built airliners were in regular use and strikes and terrorism had hardly been invented, John Parry GJ8RRP (Jersey) flew back from a holiday in

Majorca in a BAC One-Eleven. Dare I ask if Freddie Laker's name appeared on the side? Apparently it was shadowed by a BEA Trident (remember the red wings!) just before both aircraft entered cloud. Visibility remained poor all the way back to Jersey, which suggests an unusually low cruising level. On breaking cloud in the descent, that Trident was still there! John asks for my comments. Formation flying has been known under exceptional circumstances. The last two Tridents in British Airways service flew back to Heathrow in formation and landed simultaneously on the parallel runways. But, in cloud - never. Also, the Trident had an outstanding cruising Mach number and would leave anything else (One-Elevens included) well behind over a sector of that length. I've watched them overtake whilst I've been flying (but with vertical separation). So, I'm baffled.

John is aware of night-time overflights. Yes, major airports do accept flights at night and there is always a team on watch. Freight flights are allowed subject to noise restrictions and there is always the odd emergency or irregularity (e.g. landing *en-route* for fuel). The upper airways intersecting over Jersey are UR14 (preferentially southbound), UG4 (bidirectionally east/west), UG27 (preferentially from south-west to north-east) and UN484 (bidirectionally south-west/north-east). If you're interested, these are shown on the usual charts. A list of chart suppliers appears on Airband Factsheet that is free of charge from the Broadstone Editorial Office on receipt of a stamped, self-addressed envelope capable of holding a single A4 page.

## Frequency and Operational News

Once again, I summarise the latest changes in the *GASIL* (11/93) from the CAA. Deenethorpe has a change of frequency, 127.575 replacing 120.275MHz even though the latter has only recently been established. Castle Donington is well enough known since wartime. The old callsign finally disappears, but its replacement, 'East Midlands', is more in keeping with the modern context in which the airport operates. At Southend, radar services on 125.05 and 129.85MHz have ceased.

Some n.d.b.s have also been withdrawn and they are Clacton (CLN, 429kHz); Ottringham (OTR, 398.5kHz) and Strumble (STU, 400kHz). Other beacons at these



**Tornado: today's bomber. Taken at Mildenhall Air Fête 1993. Christine Mlynec.**

locations continue in service. Now for the Stornoway story. North of the airfield, on the 18 approach, was a locator (SWY, 669.5kHz). This has been withdrawn and a new beacon established on the airfield (SAY) with the same frequency. Don't get confused - check the Morse identification carefully before commencing an approach.

National Air Traffic Services (joint CAA and military air traffic control) are constantly striving to increase capacity on busy routes. At peak times, the London Upper Sector provides separate control for south-east England overflights. This sector has been split and is worked on 134.75 (west) and 127.425MHz (east). A new upper airway has been established, UB71 from Honiley to Biggin. For full details see *AIC* 164/1993.

Meanwhile in Scotland, improved traffic flow will be possible by repositioning some of the Edinburgh, Glasgow and Prestwick holds. Some SIDs are changed so that fast jets and slower propeller aircraft take separate routes and Prestwick's PTH and GOW SIDs have been withdrawn. Northbound arrivals and overflights approach Scotland along airways to the east side of the country and southbound flights will remain to the west; an anti-clockwise traffic pattern is thus established. For full details see *AIC* 165/1993.

## Follow-Ups and Foul-Ups

No prizes even if you spotted that the photo captions had been switched round in December. Ernest Marrows (Grimsby) was quickest off the mark in reporting this error, for which apologies.

In December, I entered the debate about allowing twin-engined airliners to fly long over-water sectors: extended-range twin-engine operations (ETOPS). The regulatory authorities don't share my personal concern that the reduced margin for error isn't worth the risk. Another question: what's to be gained? The lower purchase and ownership costs of two (rather than more) engines

must be balanced against the extra fuel consumed in following routes that are not too far from a landing, the modifications (and extra weight) that must be added to a twin to bring it up to ETOPS standard, the need for special maintenance procedures with a stricter Minimum Equipment List (allowable faults on despatch), specialised crew training, and the requirement to demonstrate all of this to the airworthiness authority.

It surprised regular traveller Andy Cadier (Folkestone) to be confronted with Britannia B.767-204ER G-BYAB (25139) when departing for San Juan (I assume this to be TJSJ on Puerto Rico). Andy asks how the maximum permitted passenger load is derived. What about evacuation in an emergency? Various factors operate here. The load must not be so great that the runway's take-off distance available is insufficient. Then there is a maximum weight beyond which the lift and thrust of the aircraft are inadequate to allow control in the air. The regulated take-off weight calculation sees to this at the flight planning stage. Another physical restraint on the number of passengers is that the seats must not be too close together. Seat pitch is adjustable in 1in increments as the seats themselves clip onto slotted tracks in the floor.

Evacuation must be demonstrated by filling the aircraft with people and then throwing them all out down the escape slides within a stipulated time. For this test, certain emergency exit doors are deemed to be inaccessible and hence remain closed. The flight crew complete the emergency drills and then usually vacate through the cockpit's direct vision windows, lowering themselves down an escape rope. It worries me that many of these trials are done with fit, healthy, young volunteers wearing sensible shoes and in the absence of simulated smoke.

There is something you can do as a passenger. Note the positions of the exits (not just the nearest one) and how to operate them.

CONTINUED ON PAGE 61

# Scanning

Alan Gardner  
PO Box 1000, Eastleigh, Hants SO5 5HB

**W**ith the start of a New Year, I thought that it would be a good idea to take a look at what radio related developments may take place over the next decade.

During the last year, the government has been engaged in a major review of the way a large part of the radio spectrum is currently being utilised, with the aim of determining the best way to manage its use during the next decade, and how to harmonise allocations throughout Europe. Previous reviews have already examined the microwave spectrum but this time the emphasis has been on the frequency range 28-470MHz, which is of particular interest to scanner owners. The final report of the spectrum review committee is anticipated fairly soon, but in the meantime it is worthwhile examining some of the topics already discussed and presented at a spectrum review seminar that was held at Lords cricket ground during the summer.

## Military Users

The largest users of the spectrum under review are Government services, particularly the MOD. With the end of the Cold War it could be argued that the requirement for access to large portions of the radio spectrum have diminished, but this would not seem to be the case.

The MOD currently performs most of its battlefield training exercises in Europe, but with the withdrawal of many forces back to the UK it is likely that there will actually be a greater requirement for large scale exercises within existing training areas. This will bring with it the need for a large number of single frequency radio nets operating mainly in the 30-47MHz band. In order to reduce the amount of spectrum required for such nets, NATO is considering the use of 12.5kHz channel spacing, although it would be a considerable time before this could be implemented.

However the main chunk of spectrum as far as the military are concerned is the huge block at 225-400MHz. This is currently administered by NATO and is used for a large range of single channel air-to-air, air-to-ground, ship-to-air, ship-to-ship and ship-to-shore communications as well as links via the Skynet and NATO 4 series of military communication satellites and Ptarmigan Tactical radio relay networks. The current thinking is that the top and bottom ends of this large band will be released to civil users sometime during the next decade.

Other MOD uses of the spectrum 400-450MHz include the new *PavePaws* Ballistic Missile Early Warning system at Fylingdales in North Yorkshire. This can be heard 'chattering' in the background of most u.h.f. p.m.r. transmissions throughout the North-east of England even though it is not likely to be operating at its full capability during peacetime. Intriguingly the MOD also claim to be operating large p.m.r.-like systems and a wide-area mobile telephone network but little additional information is available on the subject.

Two other defence networks are mentioned: one is 'MOULD' a national home defence communication system, which is now reaching the end of its design lifespan. Quite what will replace it is at this stage unknown, but it could have other implications as part of the system shares spectrum in the 430MHz amateur band. The other system is the Government Emergency Communications Network, this comprises of a microwave backbone network with local access via links at v.h.f. and u.h.f. An existing low band v.h.f. network that was intended for 'last ditch' communications has now been discontinued and the equipment passed on for use by local government.

## Emergency Services

The emergency services were also discussed at some length, the main topics being the integration of all the different communications systems into one nationwide network and the interference problems that many police forces experience during the summer months due to enhanced propagation conditions. This is made worse by current frequency planning that has all the main UK base station transmit and receive frequency bands reversed with respect to the rest of Europe.

This would be very difficult to change overnight, so the current thinking is to try and move existing users such as police personal radio systems to a new allocation in the frequency range 380-400MHz. It is intended to eventually make this allocation a new Europe-wide digital trunked p.m.r. allocation for a system called 'TETRA' that would be primarily used by the all the emergency services. But don't get



too excited as all of these networks are just proposals at this stage, however they do give an insight into the way commercial communications systems may evolve during the next few years.

Two other intriguing allocations listed as being assigned to the emergency services are the bands 168.3125-168.8375MHz and 173.9875-174.4125MHz, which I don't believe have been used since the late 1960s - does anyone know where or what these are used for?

## Private Mobile Radio

PMR services are mentioned as having an increased allocation in the v.h.f. lowband with mobiles transmitting in the range 68-70MHz paired with base transmitters operating between 81.5-83.5MHz. In the long term most p.m.r. services are expected to operate as trunked networks with the eventual transition to digital systems such as the proposed European 'TETRA' standard.

## DBS

Other topics worth mentioning include the possible allocation in 1995 of the band 216-225MHz as a temporary 'parking' band for Terrestrial Digital Audio Broadcasting - experimental transmissions are already being conducted in this band from the BBC site at Crystal Palace in London.

## Band III

Looking at further uses for the old TV Band III allocation, a small band between 189.7-189.8MHz has been set aside for radio and TV talkback channels, 199.5-200.5MHz is to be used for cordless PABX (telephone)

systems and 183.5-184.5MHz has been designated for low power devices that may include short-range remote gas, electricity and water meter reading equipment that are currently under development.

If you would like to read more about the subjects I have mentioned you can obtain the *Radio Spectrum Review Committee Stage 3: 28-470MHz Report of seminar proceedings 8th July 1993* by ringing the DTI Radio Communications Division Library on 071-215 2072 and asking for a copy.

## Antenna Design

Antennas seem to regularly feature in the letters I receive. **Charles Vasili** has noticed that most v.h.f. and u.h.f. antennas are constructed from aluminium, and he wonders if there would be any advantage in using a better conductor such as copper in order to improve the gain. Well, the answer is yes - but it only makes a few tenths of a dB in difference, which is such a small value as to be practically immeasurable.

The main reason for using aluminium is to reduce the cost and weight, electricity boards use it for overhead power lines for exactly the same reason. In actual fact, the resistance of a material used for antenna construction varies throughout the radio frequency spectrum. This is because of an effect known as skin resistance. At very low frequencies, the resistance of a conductor is directly proportional to its conductivity, cross sectional area and length. As the frequency is increased a progressively larger proportion of the current flows only in the surface layer of the material. The thickness of this layer is

# Scanning

proportional to the square root of the material resistivity. So in actual fact the thickness of the layer will be greater in materials of higher resistivity, which tends to counteract to a certain extent any improvement that could be gained from using a more conductive material.

One way of achieving the best use of materials is to coat or plate a relatively poor conductor with a thin layer of much higher conductivity metal such as gold or silver. This is particularly useful when physical constraints such as size or weight have to be taken into consideration, or when metal to metal joints have to be made, as is the case with connectors. Pure gold or silver connectors are too soft to be of practical use, as they would wear rapidly. By using a harder material such as brass or copper for the main part of the connector, and plating the actual contact surfaces, a much more durable design can be produced.

One of the other factors to be considered when constructing antennas is the need to avoid the use of dissimilar types of metals in conjunction with each other. A good example of this would be the use of brass nuts and bolts to connect to aluminium elements. This can cause electrolytic corrosion to take place, especially if the metals are likely to be used in

wet conditions or if there is a large amount of atmospheric pollution present. The two metals act rather like the plates of a wet cell battery, with the conductors slowly corroding away whilst producing a small direct current. The resultant joint can act as a non-linear junction causing all sorts of additional side effects including the production of harmonics and intermodulation products which may in turn interfere with other radio services, especially if they are likely to be co-sited. Professional designs produced for military use or cellular telephone base stations pay particular attention to the choice of materials and have a guaranteed intermodulation performance - but at a price.

## Security Tags

The production of spurious signals can also have practical uses. Have you ever wondered how the electronic security tags used in high street stores work?

Well one method is to make use of the non-linear junction effect. The security tag usually consists of two overlapping short metal strips of foil with a layer of a different material sandwiched between the strips, which are cut to form a half wave dipole at the frequency of operation. When the tag is passed through a security barrier it is

subjected to a strong r.f. field consisting of two signals transmitted at similar frequencies to each other. This causes the non-linear junction formed by the different metals to produce intermodulation products which are re-radiated by the simple foil dipole antenna. These signals can then be detected by a suitable receiver built into the security barrier. This can sometimes be fooled by other electronic equipment which also contain non-linear circuit elements such as diodes or transistors. In fact a slightly modified and more sensitive version of the electronic security barrier equipment is sold for use as a bug detector, as it can locate any electronic circuit even if it is switched off and concealed within another object such as a wall or desk.

## AOR 2001/2 Mods

Finally just a quick mention on this subject, for some reason several readers have simultaneously written to ask if I know of any modifications for the AOR 2001/2 series of receivers. The only ones I can recollect were published some years ago in the March 1985 and May 1987 issues of *Practical Wireless* and subsequently reproduced in Peter Rouse's book *Scanners 2* along with some additional information. The July

1991 *SWM* 'Scanning' column also contained a scan resume circuit that I find to be most useful.

In response to the most frequently asked questions, no I don't believe it is possible to increase the number of memory channels beyond the original 20 as they are retained in memory that is an integral part of the microprocessor controller chip.

The memory back-up capacitor in the AR2002 will only retain information for a few hours, rather than days as stated in the handbook. Rechargeable NiCad batteries would seem to be the best option if you can fit some in.

It is not possible to significantly increase the search and scan speeds by changing capacitors on the control board as the squelch and p.l.l. circuits cannot respond fast enough to operate correctly. Although the scanner appears to run much faster it will not stop when a signal is detected. The best you can hope for is double the speed providing you don't make large frequency changes during memory scans.

It just remains for me to thank you for your letters, calls and faxes during the past year and wish you all the best for 1994. Until next month - Good Listening.

# Airband

CONTINUED FROM PAGE 61

Recent aircraft have rows of luminous stripes on the floor; these guide you to the exits, so note their colours. If the worst happens, crawl on the floor to avoid smoke (follow the luminous stripes). If you are the first to reach a plug-type hatch, remove it and then throw it outside and well clear by passing it diagonal-wise through the opening. Be sure of which side the evacuation is to be on: don't vacate over the wing on the side of an engine fire!

It's never too late to re-discover the delights of radio so I hope that **Derek Pullen** (Abingdon) doesn't think that things have changed for the worse since he last wrote to this magazine 45 years ago! Derek retired from a specialised career during which he was involved in the development of radiographic imaging of gas turbine engines whilst running. In this way, clearances between the fixed and rotating components of an aero-engine can be assessed under different operating conditions. Derek has even published scientific papers on the subject. Derek has actually met Sir Frank Whittle who is credited with the British



**Maritime reconnaissance Nimrod. Taken at Mildenhall Air Fête 1993. Christine Mlynek.**

development of the gas turbine engine.

Derek points out that an engine-failed twin might typically drift down from FL350 to 190 in the space of two hours. This reassures me not.

## Information Sources

Dave Shirley notes that specialist aviation publishers BuchAir have a shop on the Gatwick spectators' terrace. He also reports that Sky One carries Skytext information (arrivals, etc.) but Sky News

doesn't.

Can anyone supply the circuit diagram for a Gauer's 6521 long/medium/airband receiver? If so, contact **John Parry** directly at No. 2, Thornley, Bagatelle Road, St. Saviour, Jersey JE2 7TB. John also wants a copy of *Ferry Command* by Don McVicar. The address I have for the publisher, Airlife, is 101 Longden Road, Shrewsbury SY3 9EB, Tel: (0743) 235651. If anyone knows better, write to me; if you've a spare copy of the book, write direct to John please.

## Abbreviations

AIC	Aeronautical Information Circular
B	Boeing
BEA	British European Airways
CAA	Civil Aviation Authority
DC	Douglas Commercial flight level
FL	flight level
GASIL	General Aviation Safety Information Leaflet
kHz	kilohertz
MHz	megahertz
MoD	Ministry of Defence
n.d.b.	non-directional beacon
SID	Standard Instrument Departure person

The next three deadlines (for topical information) are February 11, March 11 and April 15. Replies always appear in this column and it is regretted that no direct correspondence is possible. All letters to 'Airband', c/o The Godfrey Manning Aircraft Museum, 63 The Drive, Edgware, Middlesex HA8 8PS. Genuinely urgent information/enquiries: 081-958 5113 (before 2130 local please).

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# Info in Orbit

Lawrence Harris  
5 Burnham Park Road, Peverell, Plymouth, Devon PL3 5QB

**A** new year, perhaps with new opportunities. This month's column includes details of a free offer of PC software of interest to WXSAT enthusiasts.

## January METEOR launch

Just before press date for last month's *Info* I received news of the impending launch (on November 26) of METEOR 3-6 so was able to include it. On November 29 I heard METEOR transmissions on 137.30MHz that did not correspond to the times expected for METEOR 3-3 (that has also been using that frequency) so I presumed it was 3-6. I then noticed that the image corresponded to the path of METEOR 3-5, that we have not heard from since November 1992. Checking following passes showed that it was METEOR 3-5 and not a new satellite.

Meanwhile, the TASS news agency announced a delay in the launch of the new METEOR. Their correspondent Semen Ivanov reported that the satellite was due to be launched from Plesetsk in northern Russia, carrying scientific equipment provided by German and French companies. Postponement followed the discovery of an equipment malfunction. Launch is apparently re-scheduled for January, and will include a micro-satellite - TUBSAT - for amateur radio communications.

## FANAS Bulletins

An official announcement concerning CIS WXSAT operations stated that on December 1, METEOR 3-3 would be switched off. The FANAS bulletins - 'Forecast for Ascending Node for Automatic Satellites' give advance notice of

**Fig. 1: 1.6m dish for Primary Data: Brian Dudman.**



planned CIS operations, and are issued at regular intervals. I receive a copy on computer disk every fortnight, kindly sent to me by Paul Wilson of Macclesfield. I am not sure in what manner they are originally disseminated, but I will provide full details in due course.

We continued to receive transmissions from METEOR 3-3 until December 11 when it was then switched off. A later FANAS bulletin confirmed the operation of METEOR 3-5.

## NOAA Orbital Changes

Those who listen to WXSAT transmissions, but do not decode the pictures can still identify which satellites are operating. The effect of subtle orbital changes, however, might not be noticed. Those monitoring images may have noticed the improvement in lighting conditions that is affecting NOAA-9 morning passes. Conversely, NOAA-10 and NOAA-11 are slowly deteriorating. The changes are caused by the slow regression of the nodes of the orbits of each satellite.

NOAA-9 passes southbound each day at about 0834 local time (0834UTC in Britain) during morning daylight. Because of the slow rotation of its orbital plane, this WXSAT is not truly sun-synchronous. Measurements of its orbit - our old friend Kepler elements - reveal this change to be a little over 1° per day. This translates to over three minutes later per month, so NOAA-9 is passing over when the sun is a little higher than previously - hence the improvement in lighting for the morning passes.

NOAA-10 passes southbound at about 0620 local time (0620UTC in Britain) and its orbital change - a nodal regression rate of nearly 1° per day - makes it earlier. NOAA-10 is therefore moving towards darker mornings, and will eventually descend in darkness. Conversely its afternoon passes will improve as they encounter the sun at higher elevations.

NOAA-11 was originally a mid-afternoon WXSAT, providing well-illuminated images. Its orbit has drifted such that it is now crossing northbound (daylight ascending) at 1620 local time (1620UTC in Britain). It will continue to drift by about four and a half minutes later per month, corresponding to a nodal regression rate of over 1° per day.

The orbit of NOAA-12 is relatively stable, crossing southbound at 0728 local time (0728UTC in Britain). Its orbit is

slowly moving such that it crosses just 44 seconds earlier each month. Were NOAA-13 to be operational we would see it crossing northbound at about 1343UTC in Britain, and moving slowly forwards by almost a minute per month.

## Learning about Orbits - Free Software

The newcomer to satellite monitoring faces a bewildering collection of new technology and terminology. The most common query that I receive involves requests for explanations of Kepler elements, so some months ago I ran a series on this subject that seems to have been helpful to those new to WXSAT monitoring.

During the last few months I have been collecting software of both the shareware and public domain type, on topics relating to satellite orbits and utility programs. One was written by Major Tom Riggs of the US Air Force Academy's Astronautics Department, and illustrates Kepler elements by simulating the resulting orbit. It is excellent.

The program comes in compressed (Zipped) format, in two parts. One teaches the fundamentals, with illustrations to demonstrate the meaning of individual Kepler parameters. It allows you to fill in your own figures and then see the resultant orbit. I tried it on the CIS METEOR WXSATs and the simulation showed how the orbits precess over a period of weeks. Using low inclinations one could see how satellites having a low inclination do not normally rise above UK latitudes, unless they have a large orbital radius (and correspondingly long orbital period) - such as the geostationary satellites. Increasing orbital period towards the geostationary value (about 24 hours) demonstrates pictorially how these satellites appear to remain stationary in the sky.

When the simulation program is run, the screen provides three displays. The first shows the globe of the earth within the orbit of the satellite, and the relative position of the satellite in that orbit. A text field is adjacent, showing the selected Kepler parameters, together with some derived figures showing the satellite's current position. The lower half of the screen displays a map of the earth, with the sub-



**Fig. 2: METEOSAT-3 image of America: Brian Dudman.**

satellite point superimposed, leaving a trail. For demonstration purposes time is speeded up, so within a few minutes you can see the manner in which successive satellite passes cross at different longitudes.

This program includes everything about orbits that one needs to know, and I will be happy to provide a free copy on receipt of a self-addressed, stamped envelope containing a standard PC formatted disk, of either size. Please include two extra First Class stamps towards copying, etc.

## METEOSAT-6 operations

The successful launch of METEOSAT-6 was announced in a press release from Paris. An Ariane V61 boosted it into orbit at 0117UTC on 20 November 1993. The spacecraft was placed in the planned geostationary transfer orbit (GTO), and ESA's European Space Operations Centre (ESOC) established radio contact with the satellite soon after injection into GTO.

The initial configuration and checkout operations were successful, and control of the satellite was taken over by ESA's Operations Centre, ESOC, in Darmstadt, Germany, immediately after its separation from the launcher, 26 minutes after lift-off. A global network of four ground stations operated from ESOC's main Mission Control Centre, had been set up. During the first hours in orbit, ESOC performed configuration and check-out of the main electrical systems, while METEOSAT-6 was still in the elliptical, geostationary transfer orbit. Some 37 hours after launch, the apogee boost motor was used to circularise the orbit.

The spacecraft's longitude was then about 19° west and will be slowly drifted eastwards. The schedule was for it to drift past 10° on December 17. A further small adjustment may then be made to the drift rate, taking it to the final 0° longitude by the end of January 1994. There, drift will be stopped by a small orbit change obtained by firing the satellite's thrusters.

Commissioning of METEOSAT-6 is to be performed while it is drifting towards its final position, so that

ownership of the satellite can be transferred to EUMETSAT as from early February 1994.

## First Image

An important event in the commissioning phase is the transmission of the first image from METEOSAT-6, which was scheduled for the end of November. The infra-red detectors on board have to be cooled down first. The first infra-red images are transmitted two days later, but many more images are generated and their quality assessed before the satellite is declared operational.

EUMETSAT plans to make METEOSAT-6 the operational satellite, replacing METEOSAT-4, that will become the in-orbit, back-up satellite. METEOSAT-5, that has served as back-up so far, will then be moved westwards over the Americas. There it will take over from METEOSAT-3, that has been on loan to the US Weather Service, NOAA, since 1991, until NASA's next-generation geostationary satellites are launched and become operational. After five years of service, METEOSAT-3 has little propellant left for orbital manoeuvres, and needs to be replaced within a couple of months.

During the 1994 hurricane season, METEOSAT-5 is expected to play an important role in the detection and real-time tracking of these dangerous events.

METEOSAT-6 and METEOSAT-7, (scheduled to be launched at the end of 1995), will ensure continuity of vital weather data until the turn of the century. As from the end of 1995, EUMETSAT will take over operations of all METEOSAT satellites from ESA.

My thanks to **Gordon Bridge** of EUMETSAT, together with other ESA sources, for providing details for inclusion here.

## Letters

Regular readers of *Info* will recall **Ray Howgego** of Caterham, who has written to update me on his projects. Ray designed his own Lindenblad antenna, which received considerable interest from readers - I passed on several enquiries to him. He comments that some commercial crossed-dipoles appear to be scaled-up versions of 146MHz antennas and, he suspects, may have their phasing harnesses wrongly fitted. Hobbyists often discover the WXSATs while monitoring amateur radio satellites such as UoSAT-2 (and several others). These require the use of a left-circularly polarised

antenna for reception. The result of using such an antenna for the WXSATs (that use right-circular polarisation) would be to experience deep signal fades; it is worth remembering this possibility - particularly if weak signals are received from high elevation NOAA passes.

He also built an i.f. strip for his IC-R7000 receiver, and an eight-pole crystal filter to minimise pager interference. He uses a loop-Yagi for METEOSAT reception, and a Dartcom down-converter to change the 1691MHz carrier to the more conventional 137.50MHz signal. Ray comments that this is probably the cheapest way into METEOSAT reception.

**Brian Dudman** sent me a picture of his 1.6m dish, camouflaged in his picturesque Harrow garden - see Fig. 1. He also included a realistically coloured Primary Data visible light image of north and south America - see Fig. 2 - imaged by METEOSAT-3 and re-transmitted by METEOSAT-4.

**Bev Marks of Battle** (East Sussex) obtained a NOAA-9 image showing sun-glint near Italy, during summer. In order to obtain a good quality print he contacted **Chris Kaley** who is on the committee of the Remote Imaging Group. The DAT (PROsatll) format image was enhanced with Photostyler software (running under Windows 3.1) and converted to PCX format for printing out on a Laserjet printer - see Fig. 3.

**Quentin Hordle** provided Fig. 4, dated August 10, a large format picture showing Greenland, and down across the Atlantic to Spain and the tip of north Africa. This looks like a direct picture from NOAA 11, including sun-glint reflecting off the Atlantic.

## Decoder

*Info* correspondent **Tom Woolner** of Harpenden sent me a copy of his design for a circuit for decoding WXSAT audio output from a suitable receiver. Tom's circuit takes the output from his Cirkit WXSAT receiver and interfaces to a PC. The cost of the circuit is minimal, though other test equipment is required for setting up purposes. Tom sent me a disk containing some sample pictures that were impressive, particularly considering the cost of the decoder. There may be a separate description of Tom's project.

## Screen Photography

One or two correspondents have asked for advice on taking

photographs of screen images. A few pointers to successful photography can be given from experience! The camera must not operate the flashgun - though unfortunately some automatics cannot be disabled. Any flash, or other light shining into the screen will cause unwanted reflections.

In order to avoid image distortion, set the camera along an axis perpendicular to the screen. For best results, do screen photography during the evening when you can darken the surrounding area to obtain the best contrast.

Focusing is straight forward with the 'single-lens reflex' type of camera, but should be checked carefully when the image is suitably positioned. I use a 135mm telephoto lens, focused while set to f/1.8. Closing down the aperture to about f/4 for actual picture taking ensures that the image will be sharp.

Exposure time should be something over one tenth of a second to minimise the effect of screen refresh, though if you have the luxury of a non-interlaced monitor, such problems will not occur. I use colour film rated at 100 or 200ASA. Taking a few experimental pictures and noting the different settings should quickly provide optimum results.

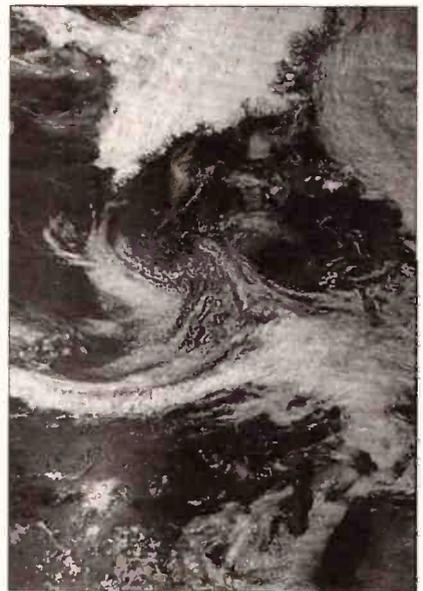
## Please!

Please note that I can only respond to brief requests accompanied by a stamped s.a.e. During the last few weeks I have received some letters asking for either tape recordings of the WXSATs, or for volumes of information, sometimes without even the courtesy of a stamp.

## Abbreviations

a.p.t.	automatic picture transmission
AVHRR	Advanced Very High Resolution Radiometer
BBS	Bulletin Board Service
DOS	Disc Operating System
EMS	Expanded (or extended) memory System
ESA	European Space Agency
EUMETSAT	European Organisation for the Exploitation of Meteorological Satellites
GOES	Geostationary Operational Environmental Satellite
GOMS	Geostationary Operational Meteorological Satellite
h.r.p.t.	high resolution picture transmission
NASA	National Aeronautics and Space Administration
PDUS	Primary Data User Station
SVGA	Super VGA

**Fig. 4:**  
**NOAA image of**  
**the Atlantic:**  
**Quentin Hordle**



Fortunately this is a small minority. I remain unemployed...

## Kepler Elements

I will send a print-out of the latest elements upon receiving a stamped s.a.e. and extra First Class stamp. All known weather satellites plus MIR can be included, together with their transmission frequencies if operating. This data originates from NASA.

## Frequencies

NOAAs 9, 11 a.p.t. on 137.62MHz; NOAAs 10, 12 on 137.50MHz; NOAA beacons on 136.77 and 137.77MHz; METEOR 3-4 or 3-5 on 137.30MHz.

**Fig. 3:**  
**NOAA-9 image showing**  
**summer sun-glint:**  
**Bev Marks.**



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**G**oeff Halligey of Bridgend has written pointing out that there was an error in my December update on Bracknell. Just to put the record straight, here are the current range of operating frequencies and times:

2.6185MHz (1800-0600UTC)  
4.61MHz (24hr)  
8.04MHz (24hr)  
14.436MHz (24hr) and  
18.261MHz (0600-1800UTC).

All frequencies operate using 10kW transmitters using the callsign GFA.

**David Packman** of Hampshire has what many would consider to be a dream station. The system starts with a 20m long wire antenna that feeds his JRC NRD-535 h.f. receiver via a Lowe magnetic balun. David also uses the impressive Icom R-7100 receiver to give continuous coverage right through to 2GHz. Utility decoding is done through an equally impressive array of equipment starting with an ICS FAX II decoder and 486 computer for FAX images. The received images are cleaned-up using Corel Draw and then taken into QuarkXpress for printing to a 360 dots per inch (d.p.i.) inkjet printer.

## Maghreb Arabe Press (MAP) Schedule

**Dave Woods** has this month sent me the latest schedule for this well established h.f. press station. As many readers have shown an interest in foreign language transmissions, I've included the full schedule of all transmissions.

### Arabic

*Directed to Africa and the Middle East*

0900-1030 & 1530-1700UTC on 18.4961MHz (CNM80/X11)

### French

*To Africa*

1000-1130UTC on 18.265MHz (CNM78) & 18.2209MHz (CNM76/X9)

1530-1700UTC on 18.2209MHz (CNM76/X9), 18.265MHz (CNM78) & 15.6549MHz (CNM65/1X),

*To Europe*

1000-1130UTC on 15.654.9MHz (CNM65/1X), 7.8424MHz (CNM20/1X), 14.76MHz (CNM61) & 19.1711MHz (CNM86/X11)

1530-1700UTC on 7.8424MHz (CNM20/1X), 10.6341MHz (CNM37/9X) & 19.1711MHz (CNM85/X11)

### English

*To Middle East and Africa*

1200-1400UTC on 18.4961MHz, 18.265MHz (CNM78) & 18.2209MHz (CNM76/X9)

*To Europe*

1200-1400 on 15.6549MHz (CNM65/1X), 7.8424MHz (CNM20/1X), 14.76MHz (CNM61) & 19.1711MHz (CNM85/X11)

### Spanish

*To Brazil*

1900-2100UTC on 13.873.9MHz (CNM58/X9)

*To Puerto Rico*

1900-2100UTC on 13.3634MHz (CNM47/X9)

*To Bogota*

1900-2100UTC on 13.4575MHz (CNM49)

All these transmissions use 50 baud RTTY with a 400Hz shift, so should be easily receivable subject to the prevailing propagation. If you want to QSL with this station, the latest address according to the *Klingenfuss Guide to Utility Stations* is: Maghreb Arabe Presse, Le Chef d'Exploitation, Rue Ibn Aicha, BP1049, RABAT Morocco.

For receiving the general utility modes, David uses the American Universal M-8000 and M-1200 decoders with SSTV from Comar. Just for the icing on the cake, David also has an AOR-3000A receiver with a laptop PC for portable/holiday listening. To put all this into perspective, David has been a keen short wave listener for some thirty-six years, his first receiver being the famous R1155, which was followed by a AR88 then a more modern Yaesu FRG-7000. By evolving over such a long period of time, David has been able to build a system that is ideally suited to his listening requirements.

**Chris Durkin** of Ormskirk has recently logged a very weak press station on 18.456MHz using 50 baud RTTY with a 400Hz shift. The station was heard at 1325UTC transmitting English news items relating to Indonesia. Does anyone out there have any information on this transmission?

**Mr M. Cox** of Wigan often monitors American c.w. stations but is confused by the word AMVER that keeps appearing in transmissions from Tuckerton. Can anyone help with an explanation?

## Korean Central News Agency (KCNA) Schedule

This station transmits a wide range of press information to most parts of the globe. **Jan Nieuwenhuis** has sent me a copy of the winter schedule as transmitted in November '93. One interesting feature for FAX enthusiasts is that they also send press photos at the following times and frequencies: 0030-0100UTC and 2330-0000UTC on 13.58MHz (HMF36) and 11.476MHz (HMF52). For 50 baud, 400Hz shift RTTY transmissions, the following schedule applies:

### English

*To Asia*

0400-0600UTC on 14.568MHz (HMF32) & 14.58MHz (HMF46)

1000-1100UTC on 10.58MHz (HMF46) & 8.152MHz (HMF86)

1500-1730UTC on 10.58MHz (HMF46) & 8.02MHz (HMF85)

*To Europe*

0400-0530UTC on 15.633MHz (HMF26) & 11.476MHz (HMF55)

1000-1200UTC on 15.633MHz (HMF26) & 11.43MHz (HMF55)

1500-1730UTC on 13.78MHz (HMF35) & 9.395MHz (HMF84)

*To America*

0400-0730 & 2130-2300UTC on 13.58MHz (HMF36) & 11.476MHz (HMF52)

*To Africa*

0800-1030UTC on 14.452MHz (HMF57) & 11.536MHz (HMF49)

1800-2100UTC on 11.476MHz (HMF52) & 8.02MHz (HMF85)

### French

*To Asia*

1145-1430UTC on 10.524MHz (HMF45) & 8.152MHz (HMF86)

*To Europe*

2130-0000UTC on 11.43MHz (HMF55) & 9.395MHz (HMF84)

*To Africa*

1145-1430UTC on 14.452MHz (HMF57) & 11.536MHz (HMF49)

1800-2100UTC on 11.536MHz (HMF49) & 9.395MHz (HMF84)

### Russian

*To Europe*

0600-0830UTC on 15.633MHz (HMF26) & 13.78MHz (HMF35)

1230-1430UTC on 15.633MHz (HMF26) & 11.43MHz (HMF55)

The latest QSL address for this station is: KCNA Pyongyang, Ministry of Communications, Department of International Relations, Korean Central Wireless Station, Oesong-Dong, Central District, PYONGYANG, N. KOREA.

**Dr J. Sime** from Falkirk is just starting out in utility decoding having developed an interest through reading *Short Wave Magazine*. He currently uses a Lowe HF-225 receiver and has access to a 80486 based computer. Having looked at the wide range of decoding systems, he's inclined to go for the Lowe Modemaster and wonders if this will do the job. A look at the review in the November issue should confirm that the package is well and truly fit for the purpose. I have also had the opportunity to use the package over an extended period and still find the FAX reception extremely good. In my case, the link between the program and the HF-150 receiver is particularly useful.

Just to prove the wide distribution of *Short Wave Magazine* I've just received a letter from **Steve Rawdon** of the Wellington Airport Met Service. He saw the chart I printed in the November issue and has sent me a copy of a companion chart. You should find it illustrating the column. He also sent me a complete transmission schedule but that will have to wait another month

as there's more than enough material for this column.

## NAVTEX Round-up

As a number of readers have asked for more information about this mode, I think it's about time I gave it another airing. NAVTEX is an acronym for NAVigational TEXt and provides a wide range of navigational information for those at sea. The system forms part of the Global Maritime Distress and Safety System and receivers are mandatory on all passenger ships and cargo ships over 300 tons. In practice, you will find that many smaller boats take advantage of the information as well.

One of the important aspects of NAVTEX is that it operates on just one frequency, 518kHz, but involves local ship-to-shore stations all over the world. The avoidance of radio 'collisions' is achieved in two ways

- i) the limited range of 518kHz transmissions and
- ii) each station is allocated specific timeslots in which to send their information.

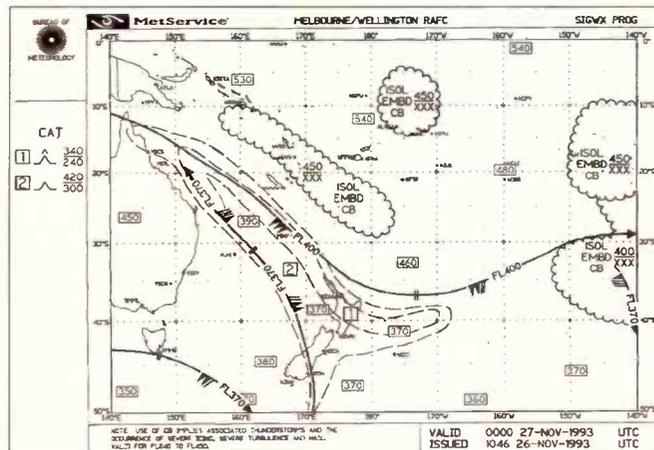
## Press RTTY

This month **Day Watson** has sent me a comprehensive press RTTY listing that he put together during November. As I know many of you have a particular interest in press transmissions, I have taken the opportunity to replace the normal frequency list with a press special. Because all the stations listed have been recently heard in the UK you are almost guaranteed success providing you listen at around the specified times.

Freq. (MHz)	Mode	Station	Time (UTC)
3.5600	ARABIC/50/N/600	SANA DAMASCUS (YKW1)	1726-33
4.4634	RTTY/75/N/85	USN ? LOC	1820-30
5.0550	RTTY/50/N/400	PETRA AMMAN (JYF)	1705-15
5.2200	ARABIC/75/N/450	MENA CAIRO (SUA94)	2004-34
5.2400	RTTY/50/N/400	TANJUG BELGRADE (40C2)	1657-1714
5.2750	RTTY/75/N/425	MENA CAIRO (SUA211)	2035-55
6.9720	RTTY/50/N/500	ROMPRES BUCHAREST (YOG59)	1643-57
7.6580	RTTY/50/N/400	TANJUG BELGRADE (YZD)	0823-25
7.7560	ARABIC/75/N/425	MENA CAIRO (SUA34)	0712-23
7.8060	RTTY/50/N/400	TANJUG BELGRADE (YZD7)	1706-08
7.8424	RTTY/50/N/425	MAP RABAT (CNM20.1X)	1646-51
7.8500	RTTY/50/N/500	ATA TIRANA (ZAA)	1858-1930
7.9590	RTTY/50/N/400	IRNA TEHRAN (9BC23)	2100-24
7.9960	RTTY/50/N/400	TANJUG BELGRADE (YZD9)	1708-15
8.0200	RTTY/50/N/250	KCNA PYONGYANG (HMF85)	1523-27
8.0490	RTTY/50/N/400	IRNA TEHRAN (9BC25)	1910-14
8.1365	RTTY/50/R/850	AA ANKARA (TCY1)	1452-1516
9.1140	RTTY/50/R/425	MTI BUDAPEST (HGG31)	1000-27
9.1330	RTTY/50/N/500	ATA TIRANA (ZAA6)	0901-04
9.4630	ARABIC/50/N/400	PETRA AMMAN (JYF4)	1035-38
9.7970	RTTY/50/N/400	ROMPRES BUCHAREST (YOJ)	0857-0922
10.1625	RTTY/50/N/400	INA BAGHDAD (YIL71)	1336-47
10.6341	RTTY/50/N/425	MAP RABAT (CNM37.9X)	1651-53
11.0800	ARABIC/50/N/600	SANA DAMASCUS (YKP28)	1723-26
11.1235	FEC/A/96/E/400	PIAB BONN (DGL26L2)	0644-53
11.6040	RTTY/50/N/400	TANJUG BELGRADE (YZJ2)	1133-34
11.6060	RTTY/75/N/400	XINHUA BEIJING (BZS21)	1432-34
12.1100	RTTY/50/N/425	ROMPRES BUCHAREST (YOM21)	1100-04
12.1200	RTTY/50/N/200	SUNA KHARTOUM	1610-18
12.1860	RTTY/50/R/400	JANA TRIPLOI	1527-30
12.2125	RTTY/50/N/400	TANJUG BELGRADE (YZO7)	1151-53
12.2284	RTTY/75/N/400	XINHUA BEIJING (BZP62)	1428-32
13.4400	RTTY/50/N/400	TANJUG (YZJ5)	1150-54
13.5630	RTTY/50/N/800	CNA TAIPEI (3MA22)	0728-57
13.5800	RTTY/50/N/250	KCNA PYONGYANG (HMF36)	0759-0811
14.3670	RTTY/75/N/400	XINHUA BEIJING (BZP54)	1122-24
14.5600	ARABIC/50/N/400	PETRA AMMAN (JYF2)	1038-41
14.7600	RTTY/50/N/425	MAP RABAT (CNM61)	1000-03
14.7850	RTTY/50/N/550	MEA NEW DELHI (ATP65)	0945-49
15.4620	RTTY/50/R/425	JANA TRIPOLI	1105-21
15.5440	RTTY/75/N/400	XINHUA BEIJING (BZS25)	1125-26
15.6549	RTTY/50/N/425	MAP RABAT	1654-55
15.7050	RTTY/50/N/425	TANJUG BELGRADE (YZJ6)	1125-31
15.9350	RTTY/75/N/400	MENA CAIRO (SUA291)	0908-11
16.1170	RTTY/50/N/400	PANA DAKAR (6VK317)	1533-51
16.1360	RTTY/75/N/400	XINHUA BEIJING (BZR66)	1127-29
17.4430	RTTY/50/N/400	XINHUA BEIJING (BZG48)	1130-32
18.0400	RTTY/50/N/825	AA ANKARA (TCY4)	1114-21
18.2209	RTTY/50/N/425	MAP RABAT (CNM76X9)	1015-17
18.2550	RTTY/50/R/400	MEA NEW DELHI (ATB68)	0942-44
18.4961	RTTY/50/N/400	MAP RABAT (CNM80X11)	1336-38
18.5610	RTTY/50/N/500	IRNA TEHRAN (9BC31)	1011-15
19.1711	RTTY/50/N/425	MAP RABAT (CNM85X11)	1017-19
19.9800	ARABIC/50/N/400	IRNA TEHRAN (9BC33)	1153-1200
20.0850	RTTY/50/R/400	ANSA ROME (ISX20)	0900-06
20.2040	RTTY/50/N/400	TANJUG BELGRADE (YZJ)	1331-35
21.8075	RTTY/50/N/400	ROMPRES BUCHAREST (YOV28)	0818-22

The following table shows how these timeslots are shared out for stations covering the North Sea area.

Station	Identifier	Transmission Times (UTC)
Cullercoats Radio	G	0048, 0448, 0848, 1248, 1648 & 2048
Harnosand Radio	H	0000, 0400, 0800, 1200, 1600 & 2000
Coast Guard Texel	P	0348, 0748, 1148, 1548, 1948 & 2348
Oostende Radio	T	0248, 0648, 1048, 1448, 1848 & 2248
Rogaland Radio	L	0148, 0548, 0948, 1348, 1748 & 2148
Stockholm Radio	J	0330, 0730, 1130, 1530, 1930 & 2330
Tallinn Radio	U	0030, 0430, 0830, 1230, 1630 & 2030
Vardoe Radio	V	0300, 0700, 1100, 1500, 1900 & 2300



Wellington FAX Chart from Steve Rawdon.

The single letter in the Identifier column is used to indicate the navigational area covered by that station and can be used at the receiving end to select which stations you want to receive, but more of this later. To show you how the collision avoidance system works, let's look at Harnosand Radio that transmits on the hour every four hours. A look through the international timing charts shows that the only other stations using those time slots are: Miami, Antofagasta (Chile), San Francisco and Vladivostock. You can see from this that there is little likelihood of interference between these stations.

The transmission mode used for NAVTEX is standard Forward Error Correction (FEC) that goes under various names depending on the decoder you use. Some of the most common examples are: SITOR B, AMTOR B or FEC.

Now let's take a closer look at the way NAVTEX messages are built-up. To make the system as useful as possible each station restricts its transmission to information directly relevant to its assigned area. This area being that indicated by the single letter area identifier I mentioned earlier. In addition to grouping the information into geographic areas there are a range of different message types available. These are currently divided into ten different types using letters of the alphabet as follows:

- A = Navigational warning
- B = Meteorological warning
- C = Ice report
- Q = Search and rescue
- E = Meteorological forecast
- F = Pilot message
- G = DECCA message
- H = LORAN-C message
- I = OMEGA message
- J = Differential OMEGA message

The great benefit of having these well define areas and message formats is that the receiver can be set to receive only those messages that are important for the craft concerned. There is also the facility for urgent warnings to be transmitted outside the

normal schedule.

Let's now take a look at how a typical message is transmitted. The example shown here is a direct copy of a real message.

ZCZC SA35  
WZ 1709  
IRELAND, WEST COAST.  
APPROACHES TO GALWAY BAY.  
FINNIS ROCK BUOY  
53-03N 09-29W UNLIT.  
NNNN

The first line of this message carries the information required to clearly identify the source. ZCZC is a standard code to indicate the start of a message. Of the next characters, 'S' identifies the station as Niton Radio, 'A' shows that the message is a navigational warning and the number 35 is just a message serial number.

In addition to these standard message formats the transmission follows a standard practice that includes a minimum ten second period of idles at the start of the transmission with a further five seconds between messages. These periods of idles are required as many FEC decoders can only synchronise while the station is sending idles. More information about this mode can be found in the *Klingenfuss Radioteletype Code Manual* available from the *SWM Book service*. Full details of the station identities and timeslots is in the *Admiralty List of Radio Signals Vol 2* or the *Klingenfuss Guide to Utility Stations*.

## Regular Offers

I am currently offering a number of services to readers to help with your listening as follows. For a copy of Day Watson's Beginners Frequency list or my own Decode list just send three first or second class stamps and an address label to the address at the head of the column.

For those of you with access to an IBM compatible computer, I can also offer the latest version (6.0) of the popular JV-FAX program. All you need to do is send me a blank, formatted 3.5in disk, three first class stamps and an address label.

# Long Medium & Short

By Brian Oddy G3FEX,  
Three Corners, Merryfield Way, Storrington, West Sussex RH20 4NS

Note: l.w. & m.w. frequencies in kHz; s.w. in MHz; Time in UTC (=GMT). Unless stated, all logs compiled in the four week period ending November 30.

## Medium Wave Chart

Freq (kHz)	Station	Country (KW)	Power	Listener	Freq (kHz)	Station	Country (KW)	Power	Listener	Freq (kHz)	Station	Country (KW)	Power	Listener
320	Hof-Saal (BR)	Germany	0.2	A*,P*,Q*	810	Madrid(SER)	Spain	20	C*,I*,P*,Q*,V*,W*	1224	COPE via ?	Spain	?	C*,I*,P*
531	Ain Beida	Algeria	600	A,C*,I*,P*	819	Batna	Egypt	450	I*,P*,Q*,V*	1224	Virgin R	UK	?	X
531	Torshavn	Faroe Is.	100	E,P*	819	Toulouse	France	50	P*,Q*	1233	Liege	Belgium	5	Q*
531	Leipzig	Germany	100	A,D*,J*,P*,Q*,T*,U*,V*,W*	819	Tneste	Italy	25	I*,P*	1242	Marseille	France	150	P*,Q*
531	RNES via ?	Spain	?	C*,I*,P*,Q*	819	Warsaw	Poland	300	H*,I*,P*,V*	1242	Virgin R	UK	?	A,N*,Q*,R*,X
531	Beromünster	Switzerland	500	I*,R*	819	San Sebastian(EI)	Spain	5	C*,I*,P*	1251	Mercati	Hungary	500	P*,Q*,V*
540	Wavre	Belgium	150/50	A,D,L*,N*,P*,Q*,T*,U*,V*,W*	828	Hannover(NDR)	Germany	100/5	P*,Q*	1251	Tripoli	Libya	500	P*
540	Solt	Hungary	2000	E*,I*,P*,Q*,V*	837	Barcelona(SER)	Spain	50	C*,I*,P*	1251	Hulsberg	Netherlands	10	P*,Q*
540	Conamara	Ireland (S)	2	F*,R	837	Khariv	Ukraine	150	P*,Q*	1251	R.Renascença via ?	Portugal	10	I*
540	Sidi Bannour	Morocco	600	I*,P*	837	Nancy	France	200	P*,Q*,V*,W*	1260	Porto	Portugal	10	I*
549	Les Trembles	Algeria	600	A,C*,E*,I*,P*	837	COPE via ?	Spain	?	C*,E*,I*,P*,Q*,V*	1260	SER via ?	Spain	?	C*,I*,P*,Q*,V*,W*
549	Thurau (OLF)	Germany	200	A,D,E*,L*,N*,P*,Q*,T*,U*,V*,W*	846	Ostrava	Czech. Rep.	30	I*	1269	Neumünster(DLF)	Germany	600	A,D*,E*,F*,H*
549	St.Petersburg	Russia	1000	A,C*,D*,I*,N*,P*,Q*,T*,U*,V*,W*	855	Rome	Italy	540	A,D*,E*,P*,Q*,T*,U*,V*,W*	1269	COPE via ?	Spain	?	C*,I*,P*,V*
549	Qurayyat	Saudi Arabia	2000	V*	855	Berlin	Germany	100	F*,P*,Q*	1278	Strasbourg	France	300	V*
558	RNES via ?	Spain	?	C*,I*,P*,Q*,T*	855	RNE1 via ?	Spain	?	C*,D*,E*,I*	1278	Dublin(Cork)(RTE2)	Ireland (S)	10	N*,Q*,T*,V*,W
558	Berlin	Germany	100	P*,Q*	864	Santah	Egypt	500	I*,P*,V*	1287	Litomyšl/Melnik(RFE)	Czech Rep.	300/200	A,E*,P*,Q*,V*,W
567	Tullamore(RTE1)	Ireland (S)	500	A,D,E*,F*,K,N*,P*,R,T,U,V,W	864	Socuellamos(RNE1)	Spain	2	C*,I*,P*	1287	Lérida(SER)	Spain	10	C*,I*,P*,V*
567	RNE5 via ?	Spain	?	A,I*,Q*	873	Frankfurt(AFN)	Germany	150	C*,I*,P*,Q*,T*,U*,V*	1296	Pirsagat	Azerbaijan	150	S*
576	Mühlacker(SDR)	Germany	500	A,D*,E*,P*,Q*,U*	873	Zaragoza(SER)	Spain	20	C*,I*,P*,Q*	1296	Valencia(COPE)	Spain	10	C*,I*,P*,Q*,W*
576	Riga	Latvia	500	I*,S*	873	Enniskillen(R.U)	UK	1	P*,R	1296	Rebia	Sudan	1500	S*
576	Braga	Portugal	10	P*	882	COPE via ?	Spain	?	C*,E*,P*,Q*,V*	1305	Marche	Belgium	10/5	Q*
576	Barcelona(RNES)	Spain	50	A,C*,D*,I*,N*,P*,Q*,T*,U*,V*,W*	891	Algers	Algeria	600/300	C*,D*,I*,L*,P*,T*,V*,Y*	1305	Rzeszow	Poland	100	P*
585	Orf Wien	Austria	600	A	891	Hulsberg	Netherlands	20	C*,D*,I*,L*,P*,T*,V*,Y*	1314	Kvitavay	Norway	1200	A,I*,P*,V*,Y*
585	Paris(FIP)	France	8	F*,Q*,U*,Y	891	Vilamoura	Portugal	10	P*	1314	RNES via ?	Spain	?	A,D*,E*,F*,P*,Q*,R*
585	Madrid(RNE1)	Spain	200	K,N*,D*,E*,H,I*,P*,R,T,U,V,W*	900	Milan	Italy	600	I*,N*,P*,Q*,V*	1323	Leipzig(RMWS)	Germany	150	E*,I*,P*,Q*,U*,V*,W*,Y
585	Dumfries(BBC Scot)	UK	2	A,D*,E*,F*,P*,Q*,U*	900	COPE via ?	Spain	?	C*,I*,P*,Q*	1323	Wachenbunn	Germany	1000/150	A
594	Frankfurt(HR)	Germany	1000/400	A,D*,E*,F*,P*,Q*,U*	908	Angra Do Heroismo	Azores	5	P*	1332	Brno(Domani)	Czech Rep.	50/25	A
594	Muge	Portugal	100	I*,P*,Q*	909	Mallorca(RNES)	Spain	10	N*,P*	1332	Rome	Italy	300	I*,L*,P*,V*,Y*
594	Duba	Saudi Arabia	2000	V*	918	Moscow	Russia	75	S*	1332	Lakhegy	Hungary	300	Q*,V*
594	Lyon	France	300	N*,P*,Q*	918	R. Ljubljana	Slovenia	600/100	I*,P*,V*	1341	Tarassia(SER)	Spain	100	C*,I*,P*,V*
603	Sevilla(RNE5)	Spain	50	C*,E*,I*,P*,Q*,T*	918	Madrid(R. Int)	Spain	918	C*,D*,I*,N*,P*,Q*	1341	Nancy(Nice)	France	100	C*,I*,P*,Q*,T*,U*,V*
603	Newcastle(BBC4)	UK	2	D*,E*,F*,I*,N*	927	Wohertem	Belgium	300	A,D,N*,P*,Q*,T*,U*,V*,W*	1350	Casvieme/Koldiga	Cosovo	100	P*,Q*,S*
612	Athlone(RTE2)	Ireland (S)	100	A,D*,E*,F*,N*,P*,R,T,U,V,W	927	Evor(RRE)	Portugal	1	P*	1359	Melilla	Morocco	5	P*
612	RNE1 via ?	Spain	?	C*,I*,Q*	936	Izmir	Turkey	200	A*,P*	1359	Arganda (RNE-FS)	Spain	600	C*,I*,P*
612	Wavre	Belgium	80	D*,F*,P*,Q*,T*,U*,V*	936	Lov	Ukraine	500	S*	1368	Foxdale(Manx R)	I.O.M.	20	P*,Q*,R,U*,W
621	Batna	Egypt	2000	B*,P*,S*	936	Bremen	Germany	100	P*,Q*,V*,W	1368	Venice	Italy	20	I*
621	RNE1 via ?	Spain	?	C*,I*,P*,Q*	936	Bremer	Germany	100	P*,Q*,V*,W	1377	Lille	France	300	A,E*,P*,Q*,R
621	Barcelona(OCR)	Spain	30	P*,Q*	936	RNES via ?	Spain	?	C*,I*,N*,P*	1377	Lille	France	300	A,E*,P*,Q*,R
630	Dannenberg(NDR)	Germany	100	F*,I*	945	Toulouse	France	300	L*,P*,Q*,U*,V*	1386	Athens	Greece	50	P*,Q*
630	Vigra	Norway	100	E*,P*,Q*,Y*	954	Rostov-na-Donu	Russia	300	P*,Q*,V*	1386	Kaliningrad	Russia	500	A,I*,P*,Q*,R
630	Tunis-Djedeida	Tunisia	600	C*,I*,P*,Q*	954	Brno(Dobruchov)	Czech Rep.	200	P*,Q*,V*	1386	Kaliningrad	Russia	500	A,I*,P*,Q*,R
630	Limassol(BBC)	Cyprus	500	I*	963	Madrid(OC)	Spain	20	C*,D*,I*,N*,P*,Q*	1386	Kaliningrad	Russia	500	A,I*,P*,Q*,R
639	Praha(Liblice)	Czech	1500	A,I*,P*,Y*	963	Pori	Finland	600	A,D,N*,P*,Q*,T*,U*,V*,W*	1386	Kaliningrad	Russia	500	A,I*,P*,Q*,R
639	RNE1 via ?	Spain	?	D*,E*,F*,I*,N*	963	Tir Chonaill	Ireland (S)	10	P*,R	1386	Kaliningrad	Russia	500	A,I*,P*,Q*,R
648	RNE1 via ?	Spain	?	C*,I*,N*,P*,Q*	963	Seixal(RRE)	Portugal	10	P*,R	1386	Kaliningrad	Russia	500	A,I*,P*,Q*,R
657	Neubrandenburg(NDR)	Germany	150	D*,P*,Q*,W	972	Hamburg(NDR)	Germany	300	A,D,P*,Q*,T*,U*,V*	1422	Valmiera	Latvia	50	I*
657	Murmansk	Russia	250	P*,Q*	972	RNE1 via ?	Spain	?	C*,I*,N*,P*	1431	Mikolajiv	Ukraine	400	P*,S*
657	Madrid(RNES)	Spain	30	C*,E*,I*,P*,Q*	972	RNE1 via ?	Spain	?	C*,I*,N*,P*	1440	Kyzylorda	Kazakhstan	?	A*,S*
657	Wrexham(BBC Wales)	UK	2	F,L,N*,Q*,R,T,U,V*	972	RNE1 via ?	Spain	?	C*,I*,N*,P*	1440	Marmach(RTL)	Belgium	1200	A*,P*,Q*,R,T,U*,V*
666	Bodensee's d(SWF)	Germany	300/180	A*,L*,Q*,S*	980	RNE1 via ?	Spain	?	C*,I*,N*,P*	1440	Damman	Saudi Arabia	1600	C*,I*,P*,Q*,R*
666	R. Vilnius	Lithuania	500	A*,L*,Q*,S*	980	RNE1 via ?	Spain	?	C*,I*,N*,P*	1448	Redmos(BBC4)	UK	5	P*,Q*
666	Lisboa	Portugal	135	C*,P*	1008	Rheinsender(SWF)	Germany	600	A,D,P*,Q*,T*,U*,V*,W*	1458	Lushnje(Tirana)	Albania	500	I*
666	Barcelona(COPE)	Spain	10	C*	1017	Rheinsender(SWF)	Germany	600	A,D,P*,Q*,T*,U*,V*,W*	1467	Esfahan	Iran	200	V*
666	Marseille	France	600	A,D*,P*,Q*,T*,V*,W*	1017	RNES via ?	Spain	?	C*,I*,P*,Q*	1467	Monte Carlo(TWR)	Monaco	1000/400	F*,L*,P*,Q*,R*,T*,U*,V*,W*
675	Bodo	Norway	10	E*	1026	Graz-Dobl	Austria	100	E*,Q*,U*	1476	Wien-Bisamberg	Austria	600	E*,M*,P*,Q*,U*,V*
675	Uzhgorod	Ukraine	50	S*	1026	SER via ?	Spain	?	C*,P*,V*	1485	SER via ?	Spain	?	C*,I*,P*
684	Sevilla(RNE1)	Spain	500	C*,I*,N*,P*,Q*,V*	1035	Tallinn	Estonia	500	C*,V*	1485	Bormenuth(BBC1)	UK	2	P*,U*
684	Kairoan	Tunisia	10	S*	1035	Milan	Italy	50	P*	1485	Carlsle(BBC4)	UK	1	B*,P*
684	Beograd	Yugoslavia	2000	A,E*,I*,P*,Q*,V*	1035	Lisbon(Prog 3)	Portugal	120	I*,P*,Q*,V*	1494	Clermont-Ferrand	France	20	P*,Q*,Y
693	Ain-el-Hamam	Algeria	5	P*,Q*	1044	Dresden	Germany	250	E*,P*,Q*,U*	1494	St.Petersburg	Russia	1000	I*,L*,P*,Q*,U*
693	Berlin	Germany	250	P*,Q*	1044	Saba-Aoun	Morocco	300	P*	1503	Stargard	Poland	300	I*,L*,M*,P*,Q*,U*,V*
693	Viseu(RDP1)	Portugal	10	P*	1053	San Sebastian(SER)	Spain	10	C*,I*,P*,Q*,V*	1503	RNES via ?	Spain	?	I*,P*,Q*
693	Tortosa(RNE1)	Spain	2	Q*	1053	Iasi	Romania	1000	P*	1512	Volventem	Belgium	600	A,F*,L*,P*,Q*
693	Enniskillen(BBC5)	UK	1	R	1053	Zaragoza(COPE)	Spain	10	P*,Q*	1512	Jeddah	Saudi Arabia	1000	P*,Q*
702	Flensburg(NDR)	Germany	5	A,P*,Q*	1062	Kalundborg	Denmark	250	D*,E*,N*,P*,Q*,U*,V*	1521	Kosice(Cizatic)	Slovakia	600	I*,Q*,V*
702	Monte Carlo	Monaco	300	I,Q*	1071	Prague	Czech Rep.	60	P*,Q*	1521	Duba	Saudi Arabia	2000	C*,P*
702	Zamora(RNE1)	Spain	10	C*,I*,P*,Q*	1071	Brest	France	20	U*	1521	R.Manresala(SER)	Spain	2	C*,I*,P*
702	Catalca	Turkey	150	P*	1071	Lille	France	40	A,N*,P*,Q*,R	1530	Keflavik(AFRIS)	Iceland	0.25	E*
711	Rennes 1	France	300	A,D,K,N*,P*,Q*,T*	1071	Riga	Latvia	150	V*	1530	Vabcan R	Italy	150/450	I*,L*,M*,N*
711	Heidelberg	Germany	5	P*,Q*	1071	Bilbao(EI)	Spain	5	I*,P*,V*	1539	Mainflingen(DLF)	Germany	700	D*,M*,P*,Q*,R*
711	Laayoune	Morocco	600	C*,P*	1080	Katowice	Poland	1500	B,E*,N*,P*,Q*,V*	1539	Valladolid(SER)	Spain	5	I*,P*,V*
720	Murcia(COPE)	Spain	5	C*,P*	1080	Toledo(OCR)	Spain	5	P*	1544	LVO de Sahara	Morocco	?	I*,P*,W*
720	Holzkirchen(RFE)	Germany	250	N*	1080	RNE1 via ?	Spain	?	C*,I*,N*,P*,Q*,V*	1557	Nice	France	300	P*,Q*
720	Langenberg	Germany	200	Q*,Q*	1089	Krasnodar	Russia	300	P*	1557	Kaunas (R.Vilnius)	Lithuania	75	P*
720	Norte	Portugal	100	P*,Q*,V*	1098	Nitra(Jarok)	Slovak Rep	1500	D*,E*,P*,Q*,V*	1566	Vila de Porto,Azores	Portugal	10	P*
720	Santa Cruz	Tenerife	20	I*,P*	1098	RNES via ?	Spain	?	C*,I*,N*,P*,Q*,V*	1566	Mayak	Russia	?	Q*
720	Lots Road, Ldn(BBC4)	UK	0.5	Q*	1107	Munich(AFN)	Germany	40	P*,Q*,T*	1566	Monte Cenerio	Switzerland	300	P*
729	Putbus/Bergen(NDR)	Germany	10	Q*	1107	RNES via ?	Spain	?	C*,I*,P*,Q*	1566	Samen	Switzerland	300	LV*
729	Cork(RTE1)	Ireland (S)	10	E*,G*,P*,T,W*	1107	Wallasey(BBC1)	UK	0.5	E*,P*,R	1566	Sfax	Tunisia	1200	C*,I*,P*
729	RNE1 via ?	Spain	?	C*,D*,E*,I*,N*,P*	1116	Bari	Italy	150	V*	1575	Genova	Italy	50	I*,P*,V*
738	Paris	France	4	P*	1116	Bologna	Italy	60	P*	1575	SER via ?	Spain	5	C*,I*,P*
738	Poznan	Poland	300	E*,I*,P*,V*	1118	Pontevedra(SER)	Spain	5	C*,I*,P*,Q*,V*	1575	SER via ?	Spain	5	C*,I*,P*
738	Barcelona(RNE1)	Spain	300	C*,D*,I*,P*,Q*,V*,W*	1125	La Louviere	Belgium	20	D,E*,Q*	1584	SER via ?	Spain	2	C*,I*,P*
747	Flevoland(Hiv2)	H												

## Local Radio Chart

New contributors to this column are always welcome. Please be sure to state your name, address and post code on all correspondence. Your full address will always be treated here as confidential - only an approximate location will be quoted in the text.

When compiling a report please state the frequency first, then station name followed by time of reception in UTC (=GMT). If possible, indicate SINPO rating, language used, target area and duration of the broadcast. Group the entries so that all m.w. local radio is together, all 17MHz together, etc.

### Long Wave Reports

Whilst listening at midnight on November 14, Roy Merrall (Dunstable) heard Kazakh Radio sign-on with their National Anthem at 0001UTC on 243kHz. Their 500kW signal from Alma Ata was under a broadcast in Danish. To be sure of the ident he tuned to their parallels on 1.440MHz and 3.955MHz.

An increase in the strength of the ground waves from the reserve transmitter at Raszyn, Poland on 225kHz has been noted in the day by Sheila Hughes in Morden. In contrast, John Stevens has found their signal to be inaudible in Largs. He says, "there is a whisper sometimes in the evenings, but that is all". A marked improvement in reception should be evident when the rebuilding of the giant mast radiator at Gabin has been completed.

### Medium Wave Reports

The conditions for m.w. transatlantic DXing proved to be good on several nights in November. Whilst checking the band at 0730 on November 3, John Parry (Northwich) was amazed to find WBBR in New York on 1130 still coming in during daylight! Exceptional conditions were observed on November 27 by Paul Logan in Lisnaskea, Co. Fermanagh. That night he compiled an impressive list of stations in Canada, N/S America and the Caribbean, see chart. By far the strongest signal came from CFBC in St. John on 930, it rated 4444 at 0355.

The sky waves from some stations in N Africa and the Middle East were also heard after dark by listeners in the UK, see chart. Those from Les Trembles, Algeria (600/300kW) on 540 and Oujda, Morocco (100kW) on 594 reached Iceland, some 4650km (2900miles) away! They were rated 4244 at 2101 and 3232 at 2107 respectively by Geoff Crowley in Hafnarfjörður.

A new LR station in High Wycombe on 1170 was logged by John Wells in East Grinstead. It is called '1170-AM', Tel: (0494) 446611 for more details. Following the closure of the m.w. outlet of BBC Greater London Radio (GLR), 1458kHz has been taken over by Sunrise Radio for a 24hr Asian service. Reception reports on their 50kW transmission should be sent to Sunrise Radio, Sunrise House, Sunrise Road, Southall, Middlesex. Tel: 081-574 6666.

### Short Wave Reports

A change in h.f. propagation occurred towards the end of November, which resulted in the 13m, 16m and 19m bands closing here quite early in the evening. Even the 25m band became unreliable. Some broadcasters revised their published schedules and moved to frequencies in the 31m band, which then became congested. Nevertheless, the higher frequency bands were open during daylight and good reception from some areas was evident.

Although we are now well down the slope of the present sunspot cycle, the 25MHz (11m) band is still being used by some to reach listeners in Africa. How well their signals are received there is unknown to me, but several listeners in the UK logged them via back

Freq (kHz)	Station	HR / BBC	e.m.p (kW)	Listener
558	Spectrum R	I	7.50	D.G.H.R.T.*V
585	R. Solway	B	2.00	D.H.O.P.Q.S
603	Cheltenham(CD603)	I	?	J.R.V
603	Invicta SG (Coast)	I	0.10	D.H.V
630	R. Bedfordshire(3CR)	B	2.00	D.G.H.J.J.R.U.V
630	R. Cornwall	B	2.00	G.H.V
657	R. Clwyd	B	2.00	D.H.O.Q.*R.V
666	DevonAir R	I	3.04	G.H.J.P.*V
666	R. York	B	0.80	D.H.K.S.V
729	BBC Essex	B	0.20	B.D.G.H.K.R.U.*V
738	Hereford/Worcester	B	0.037	D.H.I.J.R.V
756	R. Cumbria	B	1.00	D.P.Q
756	R. Maldwyn	I	0.63	H.J.M.*O.R.T.*V
765	BBC Essex	B	0.50	B.D.H.K.O.R.T.*V
774	R. Kent	B	0.70	D.H.V
774	R. Leeds	B	0.50	F.H.O.*S
774	Gloucester (3CSG)	I	0.14	J.O.*R
792	Chiltern IS.Gold	I	0.27	D.H.R.*V
792	R. Foyle	B	1.00	N.O.Q
801	R. Devon	B	2.00	H.J.D.Q.*U.*V
828	Chiltern S.Gold	I	0.20	D.H.V
828	R. Aire (Magic828)	I	0.12	F.S
828	2CR (Cl. Gold)	I	0.27	H.*V.U
837	R. Cumbria/Furness	B	1.50	N.D
837	R. Leicester	B	0.45	D.H.J.O.*R.T.*V
855	R. Devon	B	1.00	V
855	R. Lancashire	B	1.50	F.N.O.P.Q.*S
855	R. Norfolk	B	1.50	H.O.H.V
855	Sunshine R	I	0.15	H.J.M.*O.R.T.*V
873	R. Norfolk	B	0.30	B.O.H.S.U.V
936	Brunel R (Cl. Gold)	I	0.18	H.L.V
945	R. Trent (Gem AM)	I	0.20	D.F.H.K.M.P.*R.T.*V
954	DevonAir (Cl. Gold)	I	0.32	H.K.O.*V
954	R. Wymern (WYVN)	I	0.16	H.J.Q.O.*R.T.*V
990	WABC (Nice & Easy)	I	0.09	F.H.R.T.*U.V
990	R. Aberdeen	B	1.00	H.O
990	R. Devon	B	1.00	H.O.V
990	Hallam R. (Cl. Yks)	I	0.25	B.O.S
999	R. Solent	B	1.00	H.O.V
999	R. Trent (Gem AM)	I	0.25	D.H.T.*V
999	Red Rose (Gold)	I	0.80	O.Q.S
1017	Beacon R (WABC)	I	0.70	H.O.Q.R.S.T.*V
1026	Downton R	I	1.70	N.O.Q.U
1026	R. Cambridgeshire	B	5.00	D.H.K.N.O.*S.V
1026	R. Jersey	B	1.00	H.K.V
1035	NorthSound R	I	0.78	D.H.O
1035	R. Kent	B	0.50	H.L.*O.*V
1035	R. Sheffield	B	1.00	H.S
1035	West Sound R	I	0.32	N.O.P.*Q
1107	Moray Firth R	I	1.50	H.N.O.V
1116	R. Derby	B	1.20	D.F.H.N.O.P.*Q.R.T.*V
1116	R. Guernsey	B	0.50	H.K.N.O.V
1152	BRMB (Xtra-AM)	I	3.00	R
1152	Great North (IGNR)	I	1.80	O*
1152	LBC (L. Talkback R)	I	23.50	H.V
1152	Piccadilly R(Gold)	I	1.50	F.O.*S.T*
1152	R. Broadland	I	0.83	B.O.*O.*S.V
1152	R. Clyde (Clyde 2)	I	3.06	N.O*
1161	Brunel R. (Cl. Gold)	I	0.16	H.L.O.*V
1161	R. Bedfordshire(3CR)	B	0.10	H.V
1161	R. Sussex	B	1.00	H.K.L.*S.*V

#### Listeners:-

- A. Leo Barr, Sunderland.
- B. Vera Brindley, Woodhall Spa.
- C. Tim Bucknall, Congleton.
- D. Sean Cooper, Wells-next-the-Sea.
- E. Geoff Crowley, Hafnarfjörður, Iceland.
- F. Martin Dale, Stockport.
- G. Ron Damp, Worthing.
- H. Gerry Haynes, Bushey Heath.
- I. Francis Heagne, N Bristol.
- J. Simon Hockenhill, E Bristol.
- K. Sheila Hughes, Morden.
- L. Rhoderick Illman, Oxted.
- M. Stephen Jones, Oswestry.
- N. Ross Lockley, Stirling.
- O. Paul Logan, Lisnaskea.

Freq (kHz)	Station	HR / BBC	e.m.p (kW)	Listener
1161	R. Tay	I	1.40	N.O.*P.*Q
1161	Humbersides(Gt. Yks)	I	0.35	D.O.*S
1170	GNR Teeside	I	0.32	O.*S
1170	Portsmouth (SCR)	I	0.12	H.V
1170	R. Orwell (SGR)	I	0.28	H.N.O.*V
1170	Signal R. (S. Gold)	I	0.20	F.H.N.O.*R.T.*
1170	Swansea Sound	I	0.58	O*
1242	Invicta Sound(Coast)	I	0.32	H.T.V
1242	Ile of Wight R.	I	0.50	H.O.*P.*V
1251	Saxon R. (SGR)	I	0.76	E*.H.N.O.*P.*U.*V
1260	Brunel R (Cl. Gold)	I	1.80	H.O.R.*V
1260	R. York	B	0.50	U
1260	Sunrise R	I	0.29	H.R.V
1260	Marcher Sound (Gold)	I	0.64	F.H.O.P.*Q.*T.*
1278	Bradford (Gt. Yks)	I	0.43	H.O.*P.*S
1305	Barnsley (Gt. Yks)	I	0.15	O*
1305	Red Dragon (Touch)	I	0.20	F.H.O.Q.*V
1323	R. Bristol (Som. Int)	B	0.63	H.J.O.Q.*V
1323	Brighton (SCR)	I	0.50	H.O.*V
1332	Hereward R. (WGBMS)	I	0.60	D*.H.K.N.O.P.*V
1332	Wiltshire Sound	B	0.30	H.J.K.O.Q.*T.*V
1359	Essex R. (Breeze AM)	I	0.28	H.O.O.*T.*V
1359	Mercia Snd(Xtra-AM)	I	0.27	H.O.R.*T.*V
1359	Red Dragon (Touch)	I	0.20	O.*T
1359	R. Solent	B	0.85	O.V
1368	R. Lincolnshire	B	2.00	D*.H.O.V
1368	R. Sussex	B	0.50	H.K.V
1368	Wiltshire Sound	B	0.10	H.J.O.*T.*
1413	Sunrise R	I	0.125	H.V
1431	Essex R. (Breeze AM)	I	0.35	H.O.P.*Q.*T.*V
1431	R 210 (Cl. Gold)	I	0.14	H.O.P.*V
1449	R. Peterborough/Cambs	B	0.15	H.O.*P.*V
1456	GMR	B	5.00	F.H.N.O.P.*Q.S.U.*
1458	R. Cumbria	B	0.50	N.O.Q
1458	R. Devon	B	2.00	H.N.O.V
1458	R. Newcastle	B	2.00	H.O.P.*P.*V
1458	Radio WM	B	5.00	H.I.R.T.*V
1476	County Sound	I	5.00	G.N.O.P.*Q.*T.*U.*V
1485	R. Humberside	B	1.00	A.B.O.H.O.P.*S
1485	R. Merseyside	B	1.20	N.O.P.*H.R.S
1485	R. Sussex	B	1.00	H.V
1503	R. Stoke-on-Trent	B	1.00	H.L.*N.O.Q.*R.T.*V
1521	Reigate (Cl. Yks)	I	0.64	H.N.*O.*P.*Q.*V
1530	Sheffield (Gt. Yks)	I	0.74	B.N.O.P.*S
1530	R. Essex	B	0.15	H.K.N.V
1530	R. Wymern (WYVN)	I	0.52	H
1548	Capital R (Cap G)	I	37.50	H.O.*U.V
1548	R. Bristol	B	5.00	O.*P.*Q*
1548	Liverpool (City G)	I	4.40	O.*T*
1548	R. Forth (Max AM)	I	2.20	H*.N.O.*P.*S*
1548	R. Hallam (Gt. Yks)	I	0.74	B.S
1557	Chiltern R. (Gold)	I	0.76	H.N.O.P.*Q.*R.*S*
1557	Southampton (SCR)	I	0.50	H.N.*O.*P.*S.*V
1557	R. Lancashire	B	0.25	O.*S*
1557	Tending (Mellow)	I	?	A*.H.*O*
1584	Kettaring (KCBC)	I	0.04	H.V
1584	R. Nottingham	B	1.00	H.O.P.*O.*V
1584	R. Shropshire	B	0.50	H.R.T*
1584	R. Tay	I	0.21	H.N.O.P.*
1602	R. Kent	B	0.25	C.H.N.*O.P.*T.*V

scatter and other modes. They come from R. Norway Int, Oslo 25.730 (Norw 1300-1329) 25312 at 1307 by Eddie McKeown in Newry; R. Denmark via RNI 25.730 (Da 1330-1355) 43333 at 1340 by Robert Connolly in Kilkeel; RFI via Allouis 25.820 (Fr 0900-1555) 24422 at 1100 by Simon Hockenhill in E Bristol; R. Nederland via Flevo 25.970 (Du 1030-1125, Sun only) SIO242 at 1100 by Kenneth Buck in Edinburgh.

Conditions in the 21MHz (13m) band have enabled the signals from a number of different areas to reach our shores. Those from R. Australia were heard on 21.525 from Darwin (Eng to S Asia 0100-0900) 22222 at 0816 by Gerry Haynes in Bushey Heath; 21.595 from Carnarvon (Eng to S Asia 0100-0900) 32343 at 0832 by Martin Price in Shrewsbury; 21.725 from Darwin (Eng to S Asia 0900-1100) 45544 at 0910 by Ross Lockley in Stirling.

Among those from other areas in the morning were R. Japan via Moyabi, 21.575 (Eng to Eu, M East 0700-0900) 34333 at 0702 by Chris Shorten in Norwich; R. Pakistan, Islamabad 21.520 (Eng to Eu 0800-0845) SIO444 at 0828 by Bill Clark in Rotherham & (Eng to Eu 1100-1120) 44444 at 1100 in Morden; UAE R. Abu Dhabi 21.630 (Ar to Far East? 0800-1100) SIO444 at 0919 by Philip Rambaut in Macclesfield; SRI via Sottens? 21.820 (It, Eng, Fr, Ger to Aust, S Pacific 0830-1030) 24342 at 0930 by Michael Griffin in Ross-on-Wye; BBC via Kranji 21.715 (Eng to Far East 0900-1030) 23332 at 0930 in Kilkeel; UAE R. Dubai 21.605 (Eng to Eu 1030-1055) SIO455 at 1030 in Edinburgh; HCJB, Ecuador 21.455 (u.s.b. + p.c.) 45333 at 1149 by Vera Brindley in Woodhall Spa.

In the afternoon, R. Moscow Int 21.450 (Eng WS 0700?-1300) was 55444 at 1208 by Ronald Kilgore in Co. Londonderry; RAI Rome 21.520/21.535/21.710 (It Home service relay to Africa/Lat. Am/USA) Sun only, 1330-1700) 45544 at 1347 by David Edwardson in Wallsend; DW via Jülich? 21.560 (Ger to S Asia 1400-1550) 43343 at 1505 by Peter Pollard in Rugby; R. Portugal via Sines 21.515 (Eng to M East? 1530-1600) 44443 at 1542 by Rhoderick Illman in Oxted; HCJB Quito 21.455 (u.s.b.+ p.c.) 35333 at 1630 by Harry Richards in Barton-on-Humber; WYFR via Okeechobee, 21.615 (Eng to Eu, Africa 1600-1700) 25332 at 1645 by Darren Beasley in Bridgwater; also 21.500 (Eng, Ger to Eu, Africa 1700-1900) 45555 at 1705 by John O'Toole in Stratford; R. Nederland via Bonaire 21.590 (Eng to W Africa 1730-2025) 45222 at 1745 in Hafnarfjörður.

Some of R. Australia's 17MHz (16m) signals have also reached the UK in the early morning. Their transmission to S Asia via Carnarvon 17.750 (Eng 0700-0900) was 33222 at 0744 in Bushey Heath; to S Asia via Darwin 17.695 (Eng 0700-0900) 45344 at 0857 by Mary McPhillips in Co. Monaghan.

Also logged here in the morning were R. Romania Int, Bucharest 17.720 (Eng to Pacific areas 0645-0715) 55555 at 0658 in Norwich; R. Japan via Yamata 17.860 (Eng to Oceania 0900-1000) 23433 at 0945 by Darran Taplin in Brenchley; Voice of Greece, Athens 17.525 (Gr, Eng to Aust 0800?-0950) 44344 at 0945 in Shrewsbury; BBC via Woofferton & Skelton 17.640 (Eng to E Eu, India, Africa 0800-1500) 22232 at 0953 by Leo Barr in Sunderland; R. Vlaanderen Int, Belgium 17.515

# Long Medium & Short

## Long Wave Chart

Freq kHz	Station	Country (Mhz)	Power	Listener
153	Bechar	Algeria	1000	A,P*
153	Donebach	Germany	500	A,B,D,E,G,H,I,K,L,N*,O*,P*,R*,S*,U
153	Brasov	Romania	1200	K*,O*
162	Allouis	France	2000	A,B,D,E,H,I,K,L,N*,O*,P*,Q*,R*,S*,U
171	Kalinigrad	Russia	1000	A,D*,G*,I,K*,L*,N*,O*,Q*,R*,S*,U
171	Medi 1-Nador	Morocco	2000	A*,P*
171	Moscow	Russia	500	A,H*
177	Oranienburg	Germany	750	A,G,H,I,K*,N*,O*,Q*,R*,U
183	Saarflous	Germany	2000	A,D,E,K,L,N*,O*,P*,Q*,R*,S*,U
189	Tbilisi	Georgia	500	A
198	Warsaw 3	Poland	200	K*
198	BBC Droitwich	UK	500	A,D*,E,H,I,K,L*,N,D,O*,R*,S*,U
207	Munich	Germany	500	A,B,G,K*,L*,N*,P,Q*,R*,U
207	Reykjavik	Iceland	100	D
207	Kiev	Ukraine	500	O*
216	RMC Roumoules	S France	1400	A,D,G,K,N*,O*,P,Q*,R*,U
216	Oslo	Norway	200	E*,K*,P*,U*
225	Raszyn Resv TX	Poland	?	A,C,G,H*,K*,L*,N*,O*,P,Q*,R*,S*,T*,U
234	Beidweiler	Luxembourg	2000	A,D*,E,I,K,L,N*,O*,P,Q*,R*,S*,U
234	St.Petersburg	Russia	1000	A,K*,R*
243	Kalundborg	Denmark	300	A,D*,G,H,I,K*,L*,N*,O*,P,Q*,R*,U
243	Alma-Ata	Kazakhstan	500	M*
243	Erzurum	Turkey	200	A*
252	Tipaza	Algeria	1500	A,L*,P*,R*,U*
252	Atlantic 252	S Ireland	500	A,B,D*,E,H,I,J*,K,L,N,O,P,Q*,R*,S*,U
261	Burg	Germany	200	A,G*,L*,P*,R*,U
261	Taldom(Moscow)	Russia	2000	A,O*,K*,N*,O*,U
270	Topolná	Slovak Rep.	1500	A,F*,G,H,I,K,L*,N*,O*,P,Q*,R*,U
270	Orenburg	Russia	40	K*
279	Minsk	Belarus	500	A,F,K*,N*,O,P*,Q*,R*,U

### Listeners:-

- A. Ted Bardsy, N London.
- B. Vera Brindley, Woodhall Spa.
- C. Tim Bucknall, Congleton.
- D. Geoff Crowley, Hafnarfjörður, Iceland.
- E. Martin Dale, Stockport.
- F. John Eaton, Woking.
- G. Simon Hockenhill, E Bristol.
- H. Sheila Hughes, Morden.
- I. Stephen Jones, Oswestry.
- J. Ronald Kilgore, Co Londonderry.
- K. Eddie McKeown, Newry.
- L. Mary McPhillips, Co. Monaghan.
- M. Roy Merrill, Dunstable.
- N. Sid Morris, Rowley Regis.
- D. David Nettleton, Bradford.
- P. Fred Pallant, Stormington.
- Q. Martin Price, Shrewsbury.
- R. Harry Richards, Barton-on-Humber.
- S. Tom Smyth, Co. Fermanagh.
- T. John Stevens, Largs.
- U. Phil Townsend, E London.

### Oxers:-

- A. Ted Bardsy, N London.
- B. Darren Beasley, Bridgwater.
- C. Robert Connolly, Killeel.
- D. Gerry Haynes, Bushey Heath.
- E. Paul Logan, Lisnaska.
- F. Roy Merrill, Dunstable.
- G. John Parry, Northwich.

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

(Eng to Africa 1000-1025) 43333 at 1000 in Morden; Monitor R. Int via KHBI 17.555 (Eng to N Asia 0900-1055) SIO333 at 1007 in Rotherham; R. Pakistan, Islamabad 17.900 (Eng to Eu 1100-1120) 44443 at 1110 by **George Tebbitts** in Penmaenmawr; HCJB Quito 17.490 (Sp, Eng to Eu [u.s.b. + p.c.] 1030-1230?) 54444 at 1125 in Killeel.

After mid-day, HCJB Quito 17.890 (Eng to USA 1130-1600) was SIO322 at 1214 in Macclesfield & 17.790 (Eng to Eu 1900-2000) 44344 at 1935 by **John Eaton** in Woking; Voice of Greece, Athens 17.535 (Gr, Eng to C Africa 1300-1350) 44444 at 1318 by **Martin Dale** in Stockport; Africa No.1, Gabon 17.630 (Fr, Eng to W Africa 0700-1600) 43433 at 1324 by **Ron Damp** in E Worthing; RTM Tanger, Morocco 17.595 (Fr to M East, N Africa 1400-1700) 44333 at 1600 in Bridgwater & 17.815 (Eng, Fr to M East, N Africa 1700-1900) 44344 at 1702 in Woodhall Spa; WEWN Birmingham, 17.510 (Eng to Eu 1600-1700) 22212 at 1630 in Rugby; VoA via Morocco? 17.790 (Eng to Africa 1630-1730) 54444 at 1650 in Barton-on-Humber; R. Nederland via Bonaire 17.605 (Eng to W Africa 1930-2025) 55555 at 2013 in Hafnarfjörður and 34232 at 2017 in Oxted.

Quite good reception of R. Australia's 15MHz (19m) broadcasts has been reported by listeners in the UK. 15.565 to S Asia (Eng 1100-1300) was 45333 at 1100 in Bushey Heath; 15.170 to N Asia via Carnarvon (Eng, Chin, Cant 0900-1400) was 32322 at 1140 in Newry.

Many other signals have reached the UK in the morning including R. Pyongyang, Korea 15.180 (Eng to SE Asia 0600-0650) 44444 at 0646 in Norwich; R. Moscow Int 15.540 (Eng WS 0700-1000) SIO433 at 0830 by **Francis Hearne** in N Bristol; R. Austria Int via Moosbrunn 15.450 (Ger, Eng to Aust 0800-1100) 44444 at 0849 in Co. Monaghan; AIR via Aligarh 15.050

(Eng to NE Asia, Aust, NZ 1000-1100) 33322 at 1015 in Sunderland; SRI via Schwarzenburg 15.505 (Eng, Fr, Ger to Far East, SE Asia 1100-1230) SIO322 at 1126 in Rotherham; R. Kuwait, Kbad 15.495 (Ar to M East 0715-1315) 32332 at 1135 in Killeel; R. Prague, Czech Rep 15.355 (Eng to Eu 1130-1157) heard at 1130 by **Tim Bucknall** in Congleton.

In the afternoon the BBC via Antigua 15.220 (Eng to N/S Am 1100-1400) was 12221 at 1331 in E Worthing; BBC via Limassol 15.575 (Eng to M East, India 0400-1500) 33222 at 1340 in Rugby; Vatican R, Italy 15.090 (Eng to Aust, NZ 1345-1405) 43443 at 1345 in Morden; Israel R, Jerusalem 15.640 (Eng to W Europe, USA 1400-1425) 45434 at 1417 in Woodhall Spa; RTM Tanger, Morocco 15.360 (Ar to N Africa 1045-1700) 45324 at 1530 in Woking; WWCN Nashville 15.685 (Eng to Eu 1100-0000) 33433 at 1620 in Shrewsbury; China R. Int via Mali 15.130 (Eng to E/S Africa 1600-1657) 34443 at 1621 in Brenchley; Ch. Africa, Johannesburg 15.240 (Eng to Africa 1600?-1755) SIO212 at 1630 by **Tom Smyth** in Co. Fermanagh.

In the evening, WEWN Birmingham, 15.695 (Fr to Eu 1700-1900) was 54444 at 1700 in Penmaenmawr; VoA via Morocco 15.410 (Eng to Africa 1600-2200) 55545 at 1709 in Co. Londonderry; WRNO New Orleans 15.420 (Eng to USA, Eu 1600?-2300?) 42222 at 1806 in Stratford; R. N Santiago, Chile 15.140 (Sp 0930-0500) SIO211 at 1810 in Macclesfield; KTBN via Salt Lake City 15.590 (Eng to USA 1600-0200) 33333 at 1840 by **Adrian O'Leary** in Cork; RAE Buenos Aires, Argentina 15.345 (Eng to Eu, Africa 1900-2000) 24442 at 1900 in Stirling; RNE via Noblejas 15.375 (Eng to Africa 1900-2000) 44434 at 1900 in Ross-on-Wye; RNB Brasilia, Brazil 15.265 (Eng, Ger to Eu 1800-2055) 35333 at 1920 in Bridgwater; HCJB Quito 15.270 (Eng to Eu 1900-2000)

SIO333 at 1930 in Edinburgh and 45444 at 1943 in Hafnarfjörður; WYFR Okeechobee 15.566 (Eng to Eu, Africa 2000-2200) 34232 at 2028 in Oxted; BBC via Ascension Is 15.400 (Eng to Africa 1500-2315) 35333 at 2030 in Barton-on-Humber.

Potent signals from R. Australia have been reaching the UK in the 13MHz (22m) band. Their signals on 13.605 from Darwin (Eng, Chin to Asia 0900-1400) peaked 54444 at 1140 in Penmaenmawr; 13.755 from Carnarvon (Kh, Eng to S Asia 1230-1430) 44444 at 1312 in E Worthing.

Also logged here in the morning were Monitor R. Int, via KHBI Saipan 13.615 (Eng to Oceania 0800-1000) 43343 at 0855 in Shrewsbury; SRI via Sottens? 13.685 (It, Eng, Fr, Ger to Aust, S Pacific 0830-1030) 55455 at 0904 in Co. Monaghan; also 13.635 (Eng, Fr, Ger to Far East, SE Asia 1100-1230) SIO333 at 1124 in Rotherham; AWR (KSDA) Agat, Guam 13.720 (Ind to Asia 1100-1200) 33233 at 1145 in Killeel.

Later, R. Nederland via Flevo 13.700 (Eng to S Asia 1330-1625) was 33333 at 1600 in Newry; R. Pakistan, Islamabad 13.590 (Eng to M East 1600-1630) 34344 at 1610 in Norwich; WWCN Nashville 13.845 (Eng to USA 1200-0100) 32332 at 1649 in Woking; VoA via Selebi-Phikwe 13.710 (Eng to Africa 1600-2200) 55433 at 1835 in Co. Londonderry.

Broadcasters using this band to reach Europe include UAE R. Dubai 13.675 (Eng 1030-1100) SIO444 at 1030 in Edinburgh; R. Austria Int via Moosbrunn 13.730 (Ger, Eng, Fr, Sp 0500?-1900) SIO444 at 1230 in Co. Fermanagh; R. Bulgaria, Sofia 13.645 (Eng 1130-1300, also to USA) 53553 at 1245 in Bridgwater; WHRI

Freq (kHz)	Station	Location (UTC)	Time	DXer
<b>USA</b>				
660	WFAN	New York, NY	0300	E
770	WABC	New York, NY	0510	E
850	WHDH	Boston, MA	0240	E
1010	WINS	New York, NY	0030	D, E
1050	WEVO	New York, NY	0050	E
1090	WBAL	Baltimore, MD	0120	E
1130	WBRR	New York	0400	E, G
1180	WHAM	Rochester, NY	0300	E
1500	WTOP	Washington, D.C.	0200	E
1510	WSSH	Boston, MA	0035	A, E
1520	WVKB	Buffalo, NY	0700	E
1560	WDEW	New York	0055	E
<b>CANADA</b>				
560	CHVO	Carbonear, NF	0215	E
580	CJFX	Antigonish, NS	2135	E
590	VOAM	St John's, NF	2145	E
600	CBNA	St Anthony, NF	0000	E
620	CKCM	Grand Falls, NF	0120	E
650	CKGA	Gander, NF	0120	E
670	CKOB	Musgrave town, NF	0040	E
680	CKXG	Grand Falls, NF	0035	E
690	CBF	Montreal, PQ	0100	E
710	CKVO	Clareville, NF	0000	E
740	CHCM	Marystown, NF	0120	E
750	CBGY	Bonaville Bay, NF	2210	E
820	CHAM	Hamilton, ON	0055	C, E
920	CJCH	Halifax, NS	0700	E
930	CFBC	St. John, NB	2230	E
930	CJYQ	St. John's, NF	0155	A, D, E
940	CBM	Montreal, PQ	2345	E
950	CHER	Sydney, NS	0120	E
1050	CHUM	Toronto, ON	0040	E
1060	CJRP	Quebec, PQ	0320	E
1150	CKOC	Hamilton, ON	0120	C, E
1290	CHRM	Metane, PQ	0210	E
1375	RFO	St. Pierre et Miquelon	0100	E
1380	CFDA	Victoriaville, PQ	0125	E
1400	CBG	Gander, NF	2300	E
1410	CIGD	Pt. Hawkesbury, NS	2319	E
1510	CJRS	Sherbrooke, PQ	0045	E
1570	CKLM	Montreal, PQ	0400	E
<b>C AMERICA &amp; CARIBBEAN</b>				
990	Caribbean Beacon	The Valley, Anguilla	0010	E, F
990	TWR	Bonaire, Ned. Antilles	0300	E
1400	Harbour Light	Carrisou, Grenada	0100	E
1610	Caribbean Beacon	The Valley, Anguilla	0305	D
<b>SOUTH AMERICA</b>				
950	HJK Antena 2	Bogotá, Columbia	0500	E
960	R. Mundial	Rio, Brazil	0110	E
940	R. Jormal	Rio, Brazil	0215	E
950	YVKG R. Vision	Caracas, Venezuela	0140	E
1470	R. Vibración	Carúpano, Venezuela	0140	E

South Bend 13.760 (Eng 1700-0000) 44444 at 1700 in Stratford; R. Kuwait via Kbad 13.620 (Eng 1800-2100) heard by **David Nettleton** in Bradford; R. Prague, Czech Rep 13.580 (Eng 1800-1830) 24433 at 1814 in Hafnarfjörður.

Some of the 11MHz (25m) signals to Europe come from HCJB Quito 11.835 (Ger, Fr, Eng 0600-0830), heard at 0700 in Bradford; BBC via Rampisham 11.680 (Eng 0900-0930) 44434 at 0928 in Sunderland; R. Romania, Bucharest 11.940 (Eng 1300-1400) 55555 at 1315 in E Worthing; Polish R, Warsaw 11.815 (Eng 1300-1355), noted as 'fair' at 1340 in Congleton; ERT Thessaloniki, Greece 11.595 (Gr 1000-2245) SIO454 at 1525 in Edinburgh; Israel R, Jerusalem 11.585 (Eng 2000-2030) 44333 at 2005 in Woodhall Spa; R. Japan via Moyabi, 11.925 (Eng 2100-2155) 54444 at 2100 in Penmaenmawr; AIR via Bangalore 11.620 (Eng, Hi 1745-2230) 22222 at 2110 in Rugby; RCI via Sackville 11.945 (Eng 2130-?) 24222 at 2149 in Oxted; VOFC via Okeechobee 11.915 (Eng 2200-2300) 22222 at 2200 in Morden.

While beaming to other areas HCJB Quito 11.925 (Eng to S Pacific areas 0730-1130) was SIO433 at 1115 in Rotherham & (Eng to USA 1130-1600) 44333 at 1148 in Co. Londonderry; FEBC, Philippines 11.690 (Eng to China, N. Guinea 0900-1100) 33333 at 0958 in Cork; Voice of the Mediterranean, Malta 11.925 (Eng, Ar to N Africa 1400-

# Tropical Bands

Freq (MHz)	Station	Country	UTC	DXer
2.310	ABC Alice Springs	Australia	2013	G,J
2.325	ABC Tennant Creek	Australia	2017	G,J,P
3.220	R. Togo, Lomé	Togo	2244	H,J
3.245	AIR Itanagar	India	1624	D,G,H,J
3.255	BBC via Maseru	Lesotho	2128	G,H,J,M,P
3.270	SWABC 1, Namibia	SW Africa	2110	D,H,J,P
3.277	AIR Srinagar	India	0115	D,G,H,J
3.295	SWABC Windhoek	SW Africa	1906	J
3.300	R. Cultural	Guatemala	0237	J
3.315	AIR Bhopal	India	1630	D,H,S
3.316	SLEB Goderich	Sierra Leone	0000	H,M,R
3.325	FRCN Lagos	Nigeria	2004	H,J
3.355	AIR Kurseong	India	1600	G,H,J,M,S
3.356	R. Botswana	Gaborone	1923	G,J
3.365	R. Rebelde, La Julia	Cuba	0100	D
3.365	AIR Khampur	India	1527	G,H,J
3.365	GBC R-2	Ghana	1920	D,N,P,R,V
3.375	R. Dourados	Brazil	0105	D
3.375	R. Nacional Sao Gabriel	Brazil	0105	D
3.385	RFO Cayenne	Guiana	0215	D
3.905	AIR Kingsway(Feeder)	India	1620	G,H,J,S
3.915	BBC Kranj	Singapore	1615	G,H,J,N
3.925	AIR Khampur(Feeder)	India	1621	J
3.945	AIR Gorakhpur(Feeder)	India	1545	H,S
3.955	BBC Skelton	England	1840	D,E,G,I,L,N
3.955	Novosibirsk Rly A Ata	Kazakhstan	1600	J,S
3.965	RFI Paris	France	2204	D,K,N,P
3.970	RFE Munich	Germany	2205	D,N
3.975	BBC Skelton	England	2206	N
3.980	VoA Munich	Germany	2020	D,E,F,N,P
3.985	China R. Int via SRI	Switzerland	2130	N,P
3.985	SRI Beromünster	Switzerland	2023	D,F
3.990	Xinjiang BS, Urumqi	China	1607	H
3.990	BBC via Limassol	Cyprus	0542	J
3.995	OW via Jülich	Germany	2220	D,F,J,N,P
4.500	Xinjiang BS, Urumqi	China	1418	H
4.600	R. Perla del Acre	Bolivia	0240	J
4.682	R. Paititi	Bolivia	0005	D
4.735	Xinjiang, Urumqi	China	0100	D,H,J,N
4.750	Nei Menggu PBS, Hailar	China	1425	H
4.755	R. Educ CP Grande	Brazil	0120	D
4.760	Yunnan PBS, Kunming	China	1415	H
4.760	ELWA Monrovia	Liberia	2008	H,M
4.760	TWR	Switzerland	1925	J,R
4.765	Brazzaville	P. Rep. Congo	2332	F,J
4.765	RRI Medan	Indonesia	2235	M
4.770	FRCN Kaduna	Nigeria	2110	A,C,E,F,G,H,I, J,M,N,P,R,T,V
4.775	R. Gabon, Libreville	Gabon	2120	E,H,P,R
4.780	V. Carabobo	Venezuela	0243	J
4.783	RTM Bamako	Mali	2034	D,H
4.785	R. Tanzania	Tanzania	1907	J
4.790	Azad Kashmir R.	Pakistan	0215	D,H,N
4.790	R. Antártida	Peru	0245	J
4.790	TWR Manzini	Swaziland	1926	F,H,V
4.800	R. Nac Amazonas	Brazil	0135	D
4.800	CPBS 2 Beijing	China	2340	D,F,H
4.800	R. Popular Cuenca	Ecuador	0225	F
4.800	AIR Hyderabad	India	1626	H,J
4.800	LNBS Lesotho	Maseru	1937	H,J
4.805	R. Nac. Amazonas	Brazil	2241	N
4.810	R. San Martín Tarapoto	Peru	0220	F
4.810	R. South-Africa	S Africa	1922	O,R
4.815	R. Difusora, Londrina	Brazil	0130	D
4.815	China R., Beijing	China	1550	D,G,H
4.815	R. diff TV Burkina	Ouagadougou	2140	D,H,M,R
4.820	E Prov. Huia	Angole	2213	N
4.820	La Voz Evangélica	Honduras	2318	D,F
4.820	AIR Calcutta	India	0130	D,E,J
4.825	R. Canção Nova	Brazil	0005	F,J
4.830	R. Botswana, Gaborone	Botswana	1923	E,G,H,N,P,R
4.830	R. Táchira	Venezuela	0015	D,F,G,J,M,N
4.835	R. Tezulutlán, Cobán	Guatemala	0135	D,J
4.835	RTM Bamako	Mali	2108	B,D,E,F,G,H,J,K,M,N,R
4.840	Heilongjiang, Harbin	China	1353	H

Freq (MHz)	Station	Country	UTC	DXer
4.845	R. Cabocla, Manaus	Brazil	0714	J
4.845	RTM Kuala Lumpur	Malaysia	0715	E
4.845	ORTM Nouakchott	Mauritania	1943	D,E,F,H,K,N,P,R
4.850	R. Yaoundé	Cameroon	2216	N
4.850	R. Luz y Vida, Loja	Ecuador	0254	J
4.850	R. Verdes	Brazil	0251	J
4.865	PBS Lanzhou	China	2330	D,F,H,K,R
4.865	Caracol	Colombia	0045	M
4.865	LV del Cinaruco	Colombia	0045	D,E,N
4.870	R. Cononou	Benin	2119	H,J,P,R
4.875	R. Vac. Boa Vista	Brazil	0249	J
4.880	R. Bangladesh	Dacca	1530	M,D
4.885	R. Clube do Pará	Brazil	2330	O,J,N
4.885	China R., Beijing	China	2340	O,G,H
4.885	Voice of Kenya	Kenya	1620	H
4.890	RFI Paris	via Gabon	0528	J
4.895	R. Bare, Manaus	Brazil	0254	J
4.895	Voz del Rio Arauca	Colombia	0025	D,J
4.900	SLBC Colombo	Sri Lanka	1624	H
4.905	R. Nat. Ni'djamena	Chad	2220	C,E,G,H,J,M,N,P,R
4.910	AIR Jaipur	India	1632	A,H,J,S
4.910	R. Zambia, Lusaka	Zambia	1751	F,J,R
4.915	R. Antagueru	Brazil	0713	E,J
4.915	R. Nac. Macapá	Brazil	0140	D,J
4.915	PBS Guangxi, Nanning	China	0000	D,H
4.915	GBC-1, Accra	Ghana	2120	C,D,E,F,G,H,J, K,M,N,P,R,U,V
4.915	Voice of Kenya	Kenya	1911	R
4.920	ABC Brisbane	Australia	1908	R
4.920	R. Quito	Ecuador	0025	D
4.920	AIR Madras	India	1608	H,J,S
4.925	R. Nacional, Bata	Eq. Guinea	2018	J
4.926	R. Cobiza 2000	Peru	0259	J
4.935	R. Capixaba, Vitória	Brazil	0715	J
4.935	Voice of Kenya	Kenya	1918	H,N,P,R
4.950	V. of Pujang	China	1443	H
4.960	R. La Merced	Peru	0030	D
4.962	R. Cima	Dominion Rep.	0730	O
4.970	PBS Xinjiang	China	1416	H
4.970	R. Rumbos, Caracas	Venezuela	0025	D,E,N
4.975	R. Uganda, Kampala	Uganda	1920	E,H,J,M,N,P,R
4.980	PBS Xinjiang, Urumqi	China	0930	O,H,J
4.980	Ecos del Torbes	Venezuela	2319	D,E,F,G,K,M,N,V
4.990	Hunan 1, Changsha	China	0025	D
4.990	FRCN Lagos	Nigeria	2203	E,H,J,M,P,R,U
4.990	R. Ancash, Huaraz	Peru	0711	J
5.005	R. Nacional, Batá	Eq. Guinea	2047	E,H,J,N,R
5.005	R. Nepal, Kathmandu	Nepal	1610	D,H,J,M
5.010	R. Gerousa	Cameroon	2108	P,R
5.010	SBC Singapore	Singapore	2304	H,M
5.020	PBS-Jiangxi Nanchang	China	2324	D,F,G,H,N
5.020	ORTN Niamey	Niger	2022	H,J,N
5.025	R. Parakou	Benin	2055	H,M,R
5.025	BBS Thimpu	Bhutan	0535	J
5.025	R. Rebelde, Habana	Cuba	0150	D,J
5.025	R. Uganda, Kampala	Uganda	1922	J,N,R
5.035	R. Aparecida	Brazil	0709	J
5.035	R. Bangui	C Africa	2102	D,H,J,K,N,P,R
5.040	PBS Fujian, Fuzhou	China	1053	H
5.040	Voz del Upano, Mscas	Ecuador	0537	J
5.045	R. Cultura do Pará	Brazil	0045	U,E
5.047	R. Togo, Lomé	Togo	2102	D,E,F,H,J,M,N,R,U
5.050	Voz de Yopal, Yopal	Colombia	0222	N
5.050	R. Jesús del Gran Poder	Ecuador	2330	F,Q
5.050	AIR Aizawi	India	0035	D
5.050	SBC Singapore	Singapore	2327	D,F
5.050	R. Tanzania	Tanzania	2100	H,J,M,P,R
5.052	SBC R-1	Singapore	2245	H,M
5.055	R. Difusora, Cáceres	Brazil	0040	D
5.055	RFO Cayenne(Matoury)	French Guiana	2335	D,E,H,J,N
5.060	PBS Xinjiang	China	0040	D
5.062	RN Progreso, Loja	Ecuador	0155	D
5.075	Caracol Bogotá	Colombia	0700	D,E,G,J,K,M,N,P

## DXers:-

- A. Leo Barr, Sunderland.
- B. Vera Brindley, Woodhall Spa.
- C. Bill Clark, Rotherham.
- D. Geoff Connolly, Kilkeel.
- E. Geoff Crowley, Iceland.
- F. John Eaton, Woking.
- G. David Edwardson, Wallsend.
- H. P. Gordon Smith, Kingston, Moray.
- I. Robin Harvey, Bourne.
- J. Gerry Hayes, Bushey Heath.
- K. Sheila Hughes, Morden.
- L. Ronald Kilgore, Co. Londonderry.
- M. Ross Lockley, Stirling.
- N. Eddie McKeown, Newry.
- O. Roy Merrill, Dunstable.
- P. Sid Morris, Rowley Regis.
- Q. John O'Toole, Stratford.
- R. Fred Pallant, Storrington.
- S. John Perry, Northwich.
- T. Peter Pollard, Rugby.
- U. Philip Rambaut, Macclesfield.
- V. Darren Taplin, Brenchley.

Monaghan; WJCR Upton 7.490 (Eng to E USA 2100-1000) 33233 at 2259 in Woking.

The 41m broadcasts to Europe include WEWN Birmingham 7.465 (Eng 0500-1000) 42444 at 0900 in Stockport; AWR via Forli 7.230 (Eng 1000-1100) 34443 at 1029 in Cork; R. Prague, Czech Rep 7.345 (Eng 1130-1157), heard at 1130 in Congleton & (Eng 1930-1955) 54333 at 1930 in Norway; Vatican R, Italy 7.250 (Eng 1715-1730) 44343 at 1727 in Shrewsbury; AIR via Aligarh 7.412 (Hi, Eng 1745-2230) S10323 at 1800 in Co. Fermanagh; R. Bulgaria, Sofia 7.455 (Eng 1830-2000) 44444 at 1830 in Morden; Voice of Greece, Athens 7.450 (Eng, Fr, Ger, It 1900-1950) 54544 at 1900 in Ross-on-Wyfe; R. Romania Int, Bucharest 7.195 (Eng, Ger 2100-2200) 42533 at 2135 in Bridgwater; R. Ukraine Int, Kiev 7.195 (Eng 2200-2300) 55544 at 2200 in Stirling; also 7.240 (Eng 2200-2300) 33333 at 2206 in Newry; R. Budapest, Hungary 7.220 (Eng 2200?-?) 54333 at 2204 in Bourne; Israel R, Jerusalem 7.465 (Eng 2230-2300, also to USA) 44444 at 2230 in Penmaenmawr; Voice of Turkey, Ankara 7.185 (Eng 2300-0000, also to M. East) 43333 at 2305 in Storrington.

In the 6MHz (49m) band R. Australia via Shepparton 6.080 (Eng to Pacific areas 0800-0900) was 32222 at 0801 in Bushey Heath; & via Carnarvon 5.890 (Eng to S Asia 1800-2200) 33333 at 2031 in Kingston Voice of Lebanon, Beirut 6.550 (Ar, Eng, Fr 24hrs) 33543 at 1615 in Northwich; R. Nac de Guinea Equatorial via Malabo 6.250 (Sp to Africa 0600-0800, 1100-2300) 33333 at 2040 in Stirling; R. Nederland via Flevo 6.020 (Eng to USA 2330-0030) S10222 at 2330 in N Bristol; Monitor R. Int via WSHB 5.850 (Eng to USA 0000-0400, also to Caribbean 0000-0100) 44444 at 0001 in Kilkeel; BBC via Antigua 5.975 (Eng to C/S Am 2000-0730) 54434 at 0151 in Woking.

Whilst broadcasting to Europe, HCJB Quito 6.205 (Eng 0700-0800) rated 55444 at 0730 in Ross-on-Wyfe; Croatian R via Deanovec 5.920 (Cr, Eng 24hrs [News 0806]) 35553 at 0806 in Wallsend; R. Nederland via Flevo 5.955 (Eng 1130-1325) 43443 at 1233 in Stockport; RFI via Allouis 6.175 (Eng 1600-1700) 55555 at 1640 in Stratford; R. Austria Int via Moosbrunn 5.945 (Eng 1930-2000) S10333 at 1940 by Julian Wood in Elgin; R. Yugoslavia, Belgrade 6.100 (Eng 1930-2000) 33333 at 1947 in Rugby; R. Sweden via Karlsborg? 6.065 (Eng 2230-2300) heard at 2230 in Bradford.

1600) 44444 at 1452 by Peter Polson in St.Andrews; R. Australia via ? 11.660 (Eng to S Asia 1430-2200) 44433 at 1519 in Brenchley; R. Pakistan, Islamabad 11.570 (Eng to M East 1600-1630) 55545 at 1605 in Norwich; R. Nac de Amazonia, Brazil 11.780 (Port 0900-0200) S10222 at 2150 in Macclesfield.

An improvement in the reception of R. New Zealand's 9MHz (31m) signals to Pacific areas was noted by UK DXers. Their 100kW signal from Rangataiki on 9.700 (Eng 0650-1206) rated 25552 at 0830 in Wallsend, S10333 at 1030 in Rotherham and 21222 at 1128 in Woodhall Spa.

Many of the 31m broadcasts are to Europe. They include the BBC via Limassol 9.660 (Eng 0700-1515) 25333 at 1045 in Barton-on-Humber; R. Nederland via Flevo 9.650 (Eng 1130-1325) heard at 1130 in Bradford; Voice of Greece, Athens 9.425 (Gr, Eng 1200-1250) 43344 at 1240 in Rugby; Croatian R. via Deanovec 9.830 (Cr 24Hrs, Eng 1303-1306) 22232 at 1304 in Cork; Polish R, Warsaw 9.525 (Eng 1600-1655) 45444 at 1630 in Woking; R.

Jordan, Amman 9.560 (Eng 1700-1730) S10212 at 1700 in Co. Fermanagh; R. Algiers Int via Bouchaoui 9.535 (Eng 1700-1800, also to M East) S10233 at 1718 in Dunstable; SNBC Omdurman, Sudan 9.165 (Eng 1800-1900) 33232 at 1808 by P. Gordon Smith in Kingston, Moray; R. Portugal via Sines? 9.780 (Eng 1900-1930) 43343 at 1909 in Co. Monaghan; R. Bulgaria, Sofia 9.700 (Eng 1830-2000) 43433 at 1915 in St.Andrews; VoA via Gloria 9.760 (Eng 1700-2100) 45444 at 1925 in Co. Londonderry; VOIRI Tehran 9.022 (Eng 1930-2030) 43433 at 1930 in Newry; Monitor R. Int via WSHB, 9.355 (Eng 1900-2200) S10333 at 2050 in Largs; R. Cairo via Abis 9.900 (Eng 2115-2245) 55544 at 2130 in Stirling.

While beaming to other areas SRI via Sottens? 9.885 (Eng, Fr, Ger to Far East, SE Asia 1100-1230), rated 43433 at 1104 in Sunderland; R. Australia via Carnarvon 9.510 (Eng, Chin to Asia 0900-1100) S10233 at 1120 in Edinburgh; also via Shepparton 9.770 (Eng to S Asia 1430-1600) 52432 at 1505 in Bushey Heath; Voice of Vietnam, Hanoi

9.840 (Eng to Africa 1600-1630) 54444 at 1610 in Norwich; R. Nederland via Talata Volon 9.605 (Eng to W/SE Africa 1730-1925) S10444 at 1830 in Macclesfield; Yemen R, Sana'a 9.780 (Ar to M East 1000?-2145 [Eng 2100-2135]) 34333 at 2115 in Morden; UAE R, Abu Dhabi 9.770 (Eng to USA 2200-0000) 32322 at 2201 by Robin Harvey in Bourne; also 9.605 (Eng to USA 2200-0000) S10333 at 2330 in N Bristol; R. Nac del Paraguay 9.735 (Sp 0800-0400) 43433 at 2330 in Bridgwater; Voice of Turkey, Ankara 9.445 (Eng to USA 2300-0000) 45444 at 2345 in E. Bristol.

In the 7MHz (41m) band KTBN Salt Lake City 7.510 (Eng to USA 0200-1600) was S10222 at 1000 in Rotherham; R. Australia via Carnarvon 7.260 (Eng to S Asia 1430-2100) 32333 at 1638 in St.Andrews, S10333 at 1815 in Macclesfield and 54334 at 2008 in Barton-on-Humber; Voice of Nigeria, Ikorodu 7.255 (Fr to W Africa) 22432 at 2125 by Fred Pallant in Storrington; VoA via Selebi-Phikwe 7.415 (Eng to Africa 1900-2200) 44444 at 2151 in Co.

# Watching Brief

Andy Cadier,  
28 Romney Avenue, Folkestone, Kent CT20 3QJ

**W**ith some notable exceptions, personal computers have not made major inroads into ATV operation. Sure, some people use Amigas for generating on-screen graphics and captions and in North America, where the NTSC standard reigns, the addition of a Video Toaster board turns an Amiga into a highly effective video special effects generator.

That's North America though and there are no plans for a PAL version of the Toaster. There is an add-on for IBM PCs and their clones that does the same for these computers but it's a lot more expensive than the Video Toaster and has not caught on in amateur circles, which is a shame.

## Computers in SSTV

Where the PC does have a role to play is in slow scan television (SSTV) and a new product called Pasokon TV deserves careful attention. The name sounds Japanese (a lot of products there are called Paso-something, it's the way they pronounce personal), but the origins of the name are not so obvious. What is clear is the specifications, so here is a description of Pasokon, but first a word of explanation. For many years operating SSTV meant either building a dedicated receive converter, transmit converter and, for colour operation, multiple memory units, or buying a ready-built commercial unit. Neither of these methods has been particularly cheap, in fact, commercial units have generally been of the order of between somewhat dear and very expensive.

Another problem with these hardware-based SSTV systems is that they are 'mode orientated'. That is, hardware-based SSTV converters will only operate in one mode at a time, and to change mode - and this is only possible on a few systems - then the firmware has to be exchanged. Not a satisfactory method of operating slow-scan, especially in these days of multiple modes and operating systems. Invariably, ownership of one of these hardware based converter systems means that you are limited to the reception and transmission of only one, or at best, a limited number, of modes.

Many protagonists (and detractors!) of SSTV have argued that the mode suffers badly from this variety of 'standards' and the time has come for a rationalisation of the multifarious modes, transmission times, etc. Failing that, what operators want is a system that allows them to receive and transmit in a variety of modes and at the flick of a switch, and at an affordable price. Also, this slow scan system must be updated easily to allow new modes to be added to the repertoire, thus giving the operator the ability to keep pace with the 'art'.

## The Pasokon TV

Well, this Utopian dream of a multi-mode SSTV transmit and receive converter has been realised. With the advent of the affordable PC (as low as £25 at the last Cranfield rally!), the simple addition of a card in one of the slots and a disk of software means you can be running full colour transmit and receive SSTV in a choice of modes within a

few minutes!

Yes, Pasokon TV has arrived to revolutionise Slow Scan operation, (well, at least it will play its part). Pasokon TV is a PC-based full-colour transmit and receive slow scan TV converter. The system consists of a PC card requiring a 16-bit slot, the operating software on a floppy disk, a user manual and a 25-way D-type connecting plug. The idea, system and software is the brainchild of SSTV's old friend, **John Langner WB2OSZ**, who has been at the forefront of computerised SSTV for many years.

The distributor says the user manual is well presented (although those who purchased the initial version were not so lucky) and explains all you need to know in layman's terms. That is you neither need to be a computer expert nor an electronics whizz-kid to get the system installed and operational.

Pasokon is able to send and receive all popular modes: Robot, Martin, Scottie, AVT and Wraase, producing full colour images during reception. It features automatic receive mode selection and automatic fine-tuning for signals up to 100Hz off frequency. The program reads and writes popular image file formats and offers simple image manipulation and easy operation overall. It works with any 286 or later CPU and at least 640K RAM and VGA display.

Operating SSTV with Pasokon is simplicity itself. On receive, with the program loaded, you just tune transceiver into a slow-scan signal, switch over to Pasokon, hit the ENTER key and it does the rest. It selects the correct mode and speed and the incoming image is displayed in full colour real-time

during reception. Transmitting a picture is just as easy.

The only complaint with the system at all is that, unlike conventional hardware based converters, you cannot feed a camera or video signal direct into Pasokon to snatch an image for transmission. Instead a separate image capture system is needed, although a software link is provided in Pasokon for direct access to the VIP 640C Frame Grabber that John Langner recommends.

To sum up, Pasokon TV provides a relatively inexpensive means of becoming fully operational on SSTV on all modes, even if it means purchasing a PC as well. If you already have a PC in the shack then the system is highly cost-effective when compared to conventional scan converters. It is simple to use and the quality of the received pictures is said to be as good as any other system used. The only failing, as mentioned, is the inability to snatch live pictures direct.

Otherwise the quality of the pictures resolved and the colour content is of very high quality by all accounts. Pasokon TV costs £180.00 plus £6 P&P (£12.00 Overseas). A receive-only version, called Snooper, consisting of a very small interface that will plug directly into a spare serial port on the PC, program disk and user manual, costs £85 plus £2.50 P&P. Pasokon and Snooper are available exclusively from: **KM Publications, 5 Ware Orchard, Barby, Rugby CV23 8UF. Tel: (0788) 890365; FAX: (0788) 891883.**

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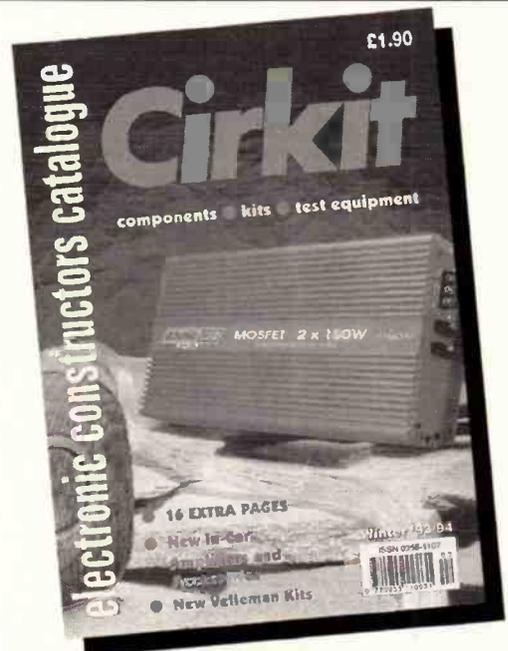
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PRD46 hand-held scanner c.w., NiCads, charger etc., 2 months old, accept, £140. Dwner wants R535 airband base receiver. Tel: Bristol (0454) 772168.

Pye Fenman III 1950s four speaker radio, been stored many years, excellent condition with service information, exchange for Sony SW1, SW20 or good shortwave radio, or will accept, £75. Tel: Glos (0453) 753035 anytime or leave message.

Racal RA117, mint condition, 0-30MHz u.s.b., l.s.b., a.m., £150 o.n.o. Racal RA98 independent sideband adapter, £50. B40 receiver, £50, all three, £230. Tel: Derby (0332) 372696.

Racal RA17 with RA237B l.f. converter in original Racal steel rackcase, 10-980kHz, eight ranges, 0-30MHz h.f., £200. Original manuals included, excellent condition, also Saisho SW5000 receiver (Sangean ATS803A clone), £50. A. Walker, 8 Richmond Avenue, Merridale, Wolverhampton. Tel: (0902) 26124.

Racal RA17, 0-30MHz receiver, v.g.c., £175, can deliver. Jim M-75 GaAs f.e.t. pre-amplifier, mint with box, £50. Revco discone, mint, N-type socket, £20. Tel: Berks (0753) 840534.

Racal RA17, £50. Racal RA17/l.f. converter/s.s.b. unit, £65. Infortec FAX converter, all speeds inc. grey scale, £60. All cash and collect. Richard, Yorkshire. Tel: (0535) 600667 after 7pm.

Radio compass receiver R1933A, as new, £30. 100-400MHz receiver (valve), £20. Philips tape recorder, solidstate, £25. Mr Hayward, Kent. Tel: (0304) 853375.

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Skipstep 15-20amp p.s.u., £70. Ham International mobile amp, 100 watt f.m., 200 watt sideband pre-amp, £110. 64MHz beam, £110 new or as new. Log periodic antenna wanted, also Linear amp for FT290R11. Tel: Kettering (0536) 522007 any reasonable time.

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Yaesu FRG-7700 0-30MHz receiver, good condition, handbook and diagrams, £230 o.v.n.o. Tel: Reading (0344) 866711.

Yaesu FRG-8800 receiver with v.h.f. converter, excellent condition, £400. Brian, Lancs. Tel: (0254) 208571.

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## Wanted

AR3000A/ICR700 base scanner required, must be excellent condition, also wanted Global ATU1000 and Dressler/Datong wideband active antennas. Tel: North Yorks (0609) 888222 9am to 7pm weekdays please.

NRD 525 options (v.h.f./RTTY), external speaker or s.s.b. filter required. Tel: Bournemouth (0202) 422273.

Original mains transformer for AR88D required, please help. Roger Livsey, 39 Brompton Park, Rhos-on-Sea, Colwyn Bay, Clwyd, North Wales. Tel: (0492) 545325.

Pre-war HMV Marconi combined radio and TV table model, any condition, will collect any distance, swap possible. Michael Usher, 85 Bromham Road, Bedford, MK40 4BS. Tel: (0234) 354767.

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Pocom decoder with manual and monitor for Lowe HF150 receiver. George, Nr. Preston. Tel: (0253) 790339.

Sangean ATS-803A digital radio, new condition, boxed with manual, exchange for Codar CR70A receiver, or pay cash, also required Codar pre-selector, have also Codemaster CWR601E RTTY/c.w. for exchange. Mr Borthwick, 42 Eildon Road, Hawick, Roxburghshire, Scotland. Tel: (0450) 370937.

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Short Wave Magazine, February 1994

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This guide was produced with the sole aim of assisting airband listeners to quickly find details of a flight, once they have identified an aircraft's callsign. Identifies the flights of airlines, schedule, charter, cargo and mail, to and from the UK and Eire and overflights between Europe and America. 122 pages. £5.95

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